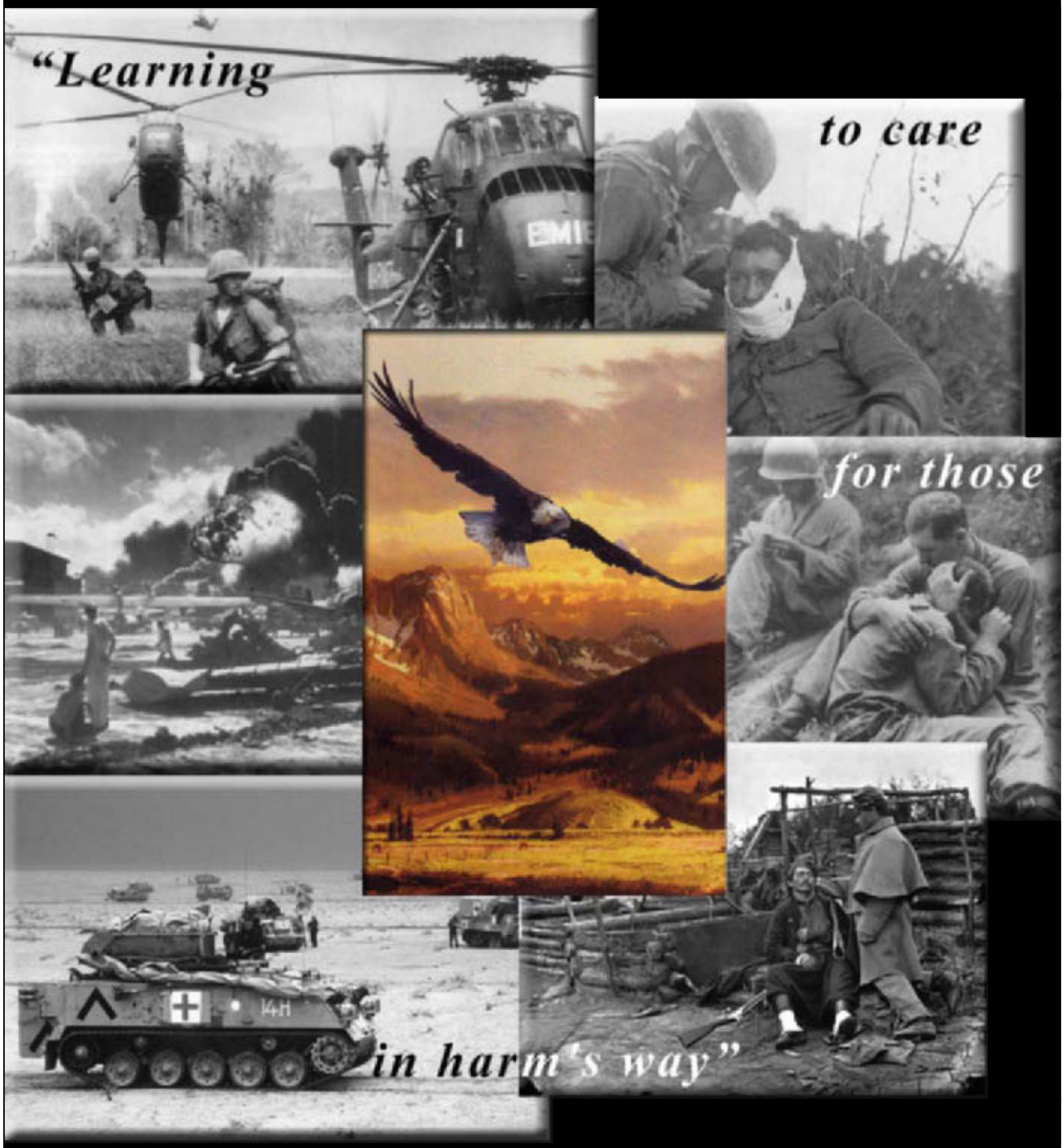
Uniformed Services University of the Health Sciences

JOURNAL 2002 Edition



Editor- in-Chief
Vice President for Administration and Management: Mary A. Dix

RELEVANCE • READINESS • OPTIMIZATION

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 20814-4799
www.usuhs.mil

OFFICE OF THE
PRESIDENT

August 25, 2003

Editor's Foreword

As a member of the USUHS Board of Regents and the USUHS Executive Committee and as the designated Executive Agent for the University, I am pleased to say that the University's focus on relevance, readiness, and optimization continues to be aligned with both its establishing legislation and the special needs of the Military Health System (MHS). The University, which holds full accreditation from its fourteen accrediting organizations, continues to meet and exceed its mission to provide continuity and leadership for the MHS. The University's mission statement, *Learning to Care for Those in Harm's Way*, succinctly captures its essential commitment to Force Health Protection... Today, USUHS is reaching out to other Federal agencies and the civilian medical communities to share its curricula and expertise. I echo the assessment of USUHS provided by the Secretary of Defense on March 22, 2001. "The training USUHS students receive in combat and peacetime health care is essential to providing superior force health protection. We place great emphasis on the retention of quality physicians in the military." USUHS is a unique national asset and a vital integrated part of the Military Health System.

- **Vice Admiral Michael L. Cowan, Surgeon General of the Navy,** Testimony before the Armed Services Committee, Subcommittee on Military Personnel, United States House of Representatives, April 10, 2002.

Mission Accomplishment. Once again, directly due to the on-going and tremendous support of the Surgeons General of the Uniformed Services, the Office of the Secretary of Defense, and the Congress of the United States, the *2002 Edition of the USU Journal* documents that the Uniformed Services University of the Health Sciences (USU) continues to meet, or exceed, its Congressionally established and Department of Defense (DoD)-directed mission to provide continuity and leadership and ensure medical readiness for the Military Health System (MHS).

A Continuous Process of Data Collection, Assessment and Reporting. The University's first annual report consisted of 18 pages. Many significant events and accomplishments took place in 1994; however, nine years ago, the University was just initiating the challenging process of coordinating with over 70 USU activity heads and chairs to assess and report on the annual achievements of the entire University community. Today, the USU annual report is regarded, both externally and internally, as an essential and comprehensive publication largely due to the strengthening of the University's assessment processes, the increased availability and accuracy of data, and the remarkable accomplishments, contributions, and cooperation of the USU faculty, staff, students, and alumni. Over the past nine years, the visionary foresight of the United States Congress and unwavering support from many others have allowed the University to establish its credibility with 14 accrediting entities. Current assessments of available data clearly demonstrate ***"that USU graduates have become the backbone for our Military Health System"*** (**The Honorable Donald Rumsfeld, Secretary of Defense**, Letter to USU, March 22, 2001). In addition, an independent study completed during 2003, documents that the outstanding retention rates of the USU SOM alumni ***"make USUHS the most cost-effective accession source for filling 0-6 grade physician requirements in the MHS"*** (*Phase II: The Impact of Constraints and Policies on the Optimal-Mix-of-Accession Model*, Life-Cycle Costs of Selected Uniformed Health Professions, Center for Navy Analysis (CNA), April 2003).

Relevance - Readiness - Optimization. Preparing each year for the next Edition of the USU Journal is an on-going assessment process of collecting data and summarizing events that focuses on: *program relevance*; the University's strategic objectives (to provide continuity and leadership and ensure *medical readiness* for the MHS); stewardship (*optimization*); and, *accountability* for established strategic objectives. Section I of the *2002 Edition of the USU Journal* includes University-relevant information and assessment data submitted and reviewed by the USU activity heads and chairs, encompassing the following: establishment; governance; mission; strategic planning (to include achievements related to each goal of the strategic plan); relevance and mission accomplishment; accreditation process and status; contributions of students, faculty, staff, and alumni; optimization of resources; USU as the Academic Center for the Military Health System; examples of successful educational and research programs; and, organizational culture (*stewardship of the human and physical resources of USU*). Sections II through VII provide similar information at the individual program level for the following USU activities: the School of Medicine; the Graduate School of Nursing; Graduate Education; Graduate Medical Education; Continuing Education for Health Professionals; and, the Armed Forces Radiobiology Research Institute.

The intent of this year's *Foreword* is not to repeat the significant accomplishments and events described throughout the *2002 Journal*, but rather to emphasize selected efforts of the superb USU staff and faculty who cost-effectively establish, implement and maintain the infrastructure of the University, upon which, the educational and research endeavors depend.

Responsible Stewardship. The USU community does not take its mission or performance responsibilities lightly. Throughout the USU campus, dedicated individuals exhibit their accountability for meeting the University's primary goal, ***Learning to Care for Those in Harm's Way***. In accordance with USU's strategic objectives, University faculty and staff consistently search for cost-effective approaches to ensure a sound infrastructure for supporting the University's multiple educational and research missions.

External and Internal Communication. Both external and internal communication efforts continue to reflect prudent management and careful use of appropriated funding. For example, ***expanded electronic library services*** *by the USU Learning Resources Center (LRC) to the Military Services have resulted in the cost-effective provision of 4,000,000 pages from the LRC Remote Services to 6,885 faculty, staff, students, alumni and off-campus faculty.* During 2002, support services for the Walter Reed Army Libraries increased by 20 percent; and, the Army Medical Research and Materiel Command at Fort Detrick was added to the list of DoD research facilities being provided electronic access to the LRC. Since August of 2002, an electronic interlibrary loan system has provided Internet-based delivery of borrowed items and reduced the waiting time from two weeks to 48 hours.

As the owner of a Class B Internet License, *the USU Information Services Management Center (UIS) cost-effectively serves as the* ***Internet Service Provider*** *for the USU campus and 13 off-site locations*. During 2002, 916 desktop computers were in a three-year technology refreshment cycle; and, UIS implemented the scheduled addition and cycled replacement of 342 leased computers. *The* ***standardization of computer equipment and software*** *provides efficient, cost-effective electronic support to the USU community.*

The USU Center for Multidisciplinary Services (MDL) completed the installation of upgraded video projectors throughout the USU lecture rooms and the renovation of the working and storage areas in the Anatomical Teaching Laboratory. *By the end of 2002, MDL was providing a total of 100 computers throughout the lecture and conference rooms, which significantly increased capabilities for using* ***a broad range of teaching tools****; as a result of cost-effective planning, all new systems were compatible with the currently existing equipment.*

Medical Informatics. During 2002, the USU ***MedPix Medical Image Database System*** was cost-effectively deployed via the Internet to provide medical students, researchers, and clinicians a descriptive on-line database housing medical case examples. A fully-functional archive of clinical photographs and radiologic images, primarily of abnormal and disease conditions is provided. The result has been a shared Internet teaching file filled with a variety of illustrated medical cases available to anyone interested in learning more about an affliction or in sharing research information and images from cases they have seen. These cases are further complemented with posted summaries, reports and editorial comments. The site began with a Radiology focus and has since branched off into the Dermatology and Pathology disciplines. *It is recognized as* ***a powerful teaching tool*** *for Graduate Medical Education.* During 2002, monthly Neuroradiology Teleconferencing took place between USU and the Naval Medical Center in San Diego, California. *The USU MedPix Medical Image Database System is now used by all DoD Radiology Residency Programs and it is the primary teaching tool for: the National Naval Medical Center; the Walter Reed Army Medical Center; the Tripler Army Medical Center in Honolulu, Hawaii; the Madigan Army Medical Center in Tacoma, Washington; and, USU.* The MedPix Case of the Week is distributed by e-mail to more than 1,700 registered users each week, as well as to USU students across all four years of the SOM.

Currently, USU uses ***interactive, real-time video teleconferencing*** to link five sites for its six-week clerkship in Obstetrics and Gynecology. In sessions that last from 60 to 150 minutes, site coordinators meet with the clerkship directors and administrative personnel to discuss such crucial issues as curricula, student problems and evaluation, and faculty development. *Since May of 1998 through 2002, USU has found that these sessions enable the standardization of curricula, facilitate the sharing of ideas, reduce administrative tasks through centralized support, and improve the assessment, consistency, and level of detail in student evaluations.*

Over the past five years, ***on-line quizzes and formal examinations*** have become more widely used by USU instructors; the USU SOM Departments of Microbiology and Immunology and Pathology intend to convert from paper-based formal examinations to on-line examinations during 2003. And, the USU SOM Department of Medicine has introduced a widely used innovation in course administration. ***CWebLog*** *is a WWW-based database for logging students' clinical experiences during the medicine clerkship*. As students submit data, they may be presented with a set of reviewed links related to the type of cases they are reporting. Student entries are stored in an SQL database that is used to produce browser-based reports on any combination of clerkship experiences. Currently, six of the seven SOM clerkships have adopted *CWebLog* as one means of recording student experiences in the clinic. The project was expanded to include the collection of information with PDAs (***portable digital assistants have been provided as an educational tool to USU students since 2001***). Data from these devices is synchronized to the SQL database along with data from personal computers and a web browser. The GSN Nurse Practitioner faculty use a similar WWW or PDA-based system and the GSN Nurse Anesthesia faculty utilize data collection in an aggregated spreadsheet format. *Thus, outcomes assessment and results are readily available for use in educational or research endeavors.*

The above described endeavors in responsible stewardship, combined with numerous others, assisted the University in meeting its strategic goals and objectives during 2002. The *2002 Edition of the USU Journal* replaces the 2001 Edition as the source document for the University's responses to congressional, executive, and general requests for information.

Mary A. Dix
Vice President for Administration
and Management and
Editor-in-Chief
USU Journal - 2002 Edition

Today, while the other medical schools are in the process of initiating programs and training in WMD, USUHS has been providing such education since its first School of Medicine (SOM) Class of 1980; 3268 SOM graduates and 170 advanced practice nurses have now had this training. The USUHS SOM graduates currently represent 22 percent of the physicians on active duty in the Military Health System; *thus, ensuring continuity and leadership for military medicine*. During his many years of support for USUHS, Mike Rexroad constantly acted upon his personal knowledge of what can go wrong when continuity and leadership are not ensured for military medicine. USUHS became a significant part of his overall commitment to the preservation of the hard-won knowledge of the battlefield, the absolute priorities of preventive medicine, the tremendous achievements of uniformed research, and the need for an academic home for military medicine.

- Congressional Record, In Remembrance of Brigadier General Vorley (Mike) Rexroad, USAF, (Retired), **The Honorable Strom Thurmond, the United States Senate**, November 12, 2002, pages S10832-S10833.

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I. RELEVANCE

Recent tragic events and the current Global War on Terrorism clearly show the benefits of preparedness and training. It is gratifying to know USUHS is leading the way in preparing military health care professionals to meet current and future challenges. Please accept my appreciation and pass on a hearty "Well Done!" to your colleagues and the students for their dedicated efforts in support of our men and women in uniform.

- **General Richard B Myers, Chairman of the Joint Chiefs of Staff**, Letter to USU, March 29, 2002.

Due to both the extensive military training provided only in the multi-Service environment of USUHS and the extraordinary retention rates of the USUHS graduates who serve, on average, at least 18.5 years, USUHS has met, or has exceeded, the goals set by Congress.

- Resolution Number 71, The Eighty-Fourth National Convention of **The American Legion**, August 27-29, 2002.

The Army appreciates the many contributions of the Uniformed Services University and the high quality of the Army physicians and other medical personnel who graduate. Clearly, training provided to the students at the University is world class.

- **The Honorable John P. McLaurin III, Deputy Assistant Secretary of Defense (Human Resources)**, letter to USU on behalf of the Secretary of the Army, May 1, 2002.

The accrediting commission pointed out in its summary findings to the University that the mission and philosophy of the USUHS Graduate School of Nursing (GSN) is grounded in the University's mission and in the mission of the Uniformed Services. The GSN curriculum is designed to be specific to the unique mission of military service nurses: to serve in times of war and peace.

- Congressional Record, Tribute to Dr. Faye Glenn Abdellah, **The Honorable Daniel K. Inouye, the United States Senate**, May 16, 2002, pages S4488-S4489.

As a member of the USUHS Board of Regents and the USUHS Executive Committee, and as the designated Executive Agent for the University, I am pleased to say that the University's focus on relevance, readiness, and optimization continues to be aligned with both its establishing legislation and the special needs of the Military Health System (MHS). The University, which holds full accreditation from its fourteen accrediting organizations, continues to meet and exceed its mission to provide continuity and leadership for the MHS. The University's mission statement, *Learning to Care for Those in Harm's Way*, succinctly captures its essential commitment to Force Health Protection... Today, USUHS is reaching out to other Federal agencies and the civilian medical communities to share its curricula and expertise. I echo the assessment of USUHS provided by the Secretary of Defense on March 22, 2001. "The training USUHS students receive in combat and peacetime health care is essential to providing superior force health protection. We place great emphasis on the retention of quality physicians in the military." USUHS is a unique national asset and a vital integrated part of the Military Health System.

- **Vice Admiral Michael L. Cowan, Surgeon General of the Navy**, Testimony before the House Armed Services Committee, Subcommittee on Military Personnel, April 10, 2002, pages 20-21.

I truly wish there was some way we could bring all 535 members of Congress to see USUHS so they would fully appreciate the national resource that sits in their back yard. The work you do has never been more important or relevant.

- **Kenneth A. Goss, Director, Government Relations, The Air Force Association**, Letter to USU, January 30, 2002.

Each of our 3,268 physician graduates has received in-depth instruction in the recognition, diagnosis, management, and decontamination of casualties from weapons of mass destruction (WMD). Since its inception in 1972, USUHS has attracted researchers and educators who are focused on these critical issues. WMD education is integrated into our undergraduate medical curriculum through didactic classroom/ laboratory instruction and relevant field exercises. To our knowledge, we are the only medical school in the United States to provide such material. Further, our Department of Pathology conducts a well-recognized graduate level course entitled "The Scientific, Domestic and International Policy Challenges of Weapons

of Mass Destruction and Terror." This unique course incorporates a simulated terrorist attack, utilizing our Medical Simulation Center. The strength of the USUHS Simulation Center is its capacity to design specific crises for students to gain familiarity with unusual events.

- **USU Board of Regents**, Report to the Secretary of Defense, June 1, 2002, page 2.

I was extremely impressed by your facility, the staff as well as the students whom I had the opportunity to meet. An institution the caliber of the Uniformed Services University of the Health Sciences is unparalleled. I felt the enthusiasm reflected by the staff and students. I truly appreciate your fine facility and the unique training it is providing to our future military leaders

- **The Honorable Thomas V. Colella, Principal Deputy Assistant Secretary of the Navy (Manpower and ReserveAffairs)**, Letter to USU, February 27, 2002.

The Department takes great pride in the fact that the USUHS graduates have become the *backbone for our Military Health System*. The training they receive in combat and peacetime medicine is essential to providing superior force health protection and improving the quality of life for our service members, retirees, and families. All of us in the Office of the Secretary of Defense place great emphasis on the retention of quality physicians in the military. The USUHS ensures those goals are met.

- **The Honorable Donald Rumsfeld, Secretary of Defense**, Letter to the Chairman of the USU Board of Regents, dated March 22, 2001.

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I. THE UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES (USU)

The University community completed the Year 2002 with renewed dedication to public service and its mission-driven goal of *Learning to Care for Those in Harm's Way*. In accordance with strategic guidance, the University has continued its focused attention on: RELEVANCE - the critical, or core relevance, of its unique mission to provide continuity, leadership, and responsiveness to the special needs of the Military Health System (MHS); READINESS - the provision of physicians, advanced practice nurses, and graduate degree recipients who are uniquely qualified to respond to the aftermath of weapons of mass destruction (WMD) and to provide assistance during humanitarian, disaster, or operational contingencies; and, OPTIMIZATION - the cost-effective management of its resources to ensure the generation of annual cost avoidance for the MHS through its multiple, fully accredited programs (estimated cost avoidance during 2002 was $24.6 million).

ESTABLISHMENT, DEVELOPMENT, AND GOVERNANCE

The Uniformed Services Health Professions Revitalization Act of 1972 Establishes the University. Public Law 92-426, *the Uniformed Services Health Professions Revitalization Act of 1972*, established the University as a separate agency within the Department of Defense (DoD). Planning for the development of USU began with the **President of the United States Richard Nixon's** appointment of a Board of Regents and **Anthony R. Curreri, M.D.,** as the University's first President in 1974. Initial efforts were focused on establishing the USU School of Medicine (SOM) as the University's first academic program.

******

Collaborative Efforts by the Joint Services and Civilian Medical Communities in the Development of the University. The initial development of objectives for the USU SOM was accomplished through the combined efforts of the USU Board of Regents; the Board of Regents' Educational Affairs Committee; **Doctor Curreri**; the USU SOM Dean, **Jay Sanford, M.D.**; and, special working groups. Activities used to develop these objectives included committee meetings, retreats, and consultation with a variety of experts from military medicine and civilian medical organizations and institutions. Individuals and groups consulted included: the Surgeons General of the Army, Navy, and Air Force; Chiefs of the Medical Departments/Services of the Army, Navy, and Air Force; physicians from the Walter Reed Army Medical Center, the National Naval Medical Center at Bethesda, the Malcolm Grow United States Air Force Medical Center at Andrews Air Force Base, the Wilford Hall United States Air Force Medical Center, the United States Army Academy of Health Sciences, the Sheppard Air Force Base Academy of Health Sciences, the Brooke Army Medical Center, and the Armed Forces Institute of Pathology; the Secretary of the Air Force; the Secretary of the Navy; the Association of American Medical Colleges (AAMC); the American Medical Association (AMA); the Liaison Committee on Medical Education (LCME); the Department of Health, Education, and Welfare; the National Institutes of Health (NIH); George Washington University; Georgetown University; and, Howard University. The fine tradition of the University's identifying and responding to the special needs of the Uniformed Services has been an on-going process since 1974.

******

DoD Directive 5105.45. Significant changes in the USU governance structure resulted from actions taken during 1991. On April 15, 1991, the Secretary of Defense revised the DoD Directive for Health Affairs, 5136.1, to delegate responsibility for the University from his office to the Assistant Secretary of Defense for Health Affairs (ASD/HA). The authority to appoint the President of the University was retained by the Secretary of Defense. On April 19, 1991, the DoD Directive for USU, 5105.45, was updated to reflect those changes and to define in detail the mission, organization, responsibilities, functions, relationships, authorities, and governance of the University. In a memorandum dated May 3, 1991, the ASD/HA re-delegated the authority for the day-to-day management of the University to the USU President; the current delegation of authority to the USU President for the on-going management of the University is also included in DoD Directive 5105.45. (A copy of the current revision of DoD Directive 5105.45, dated March 9, 2000, is at Appendix A.)

******

Board of Regents' Charter. Prior to 1991, the USU Board of Regents (BOR) had been an independent policy-making body; it is now an advisory committee to the Secretary of Defense. A Charter for the BOR was approved by the Office of the Secretary of Defense (OSD) on April 1, 1991; the most current edition of the BOR Charter is dated April 4, 2003. The Charter defines the objectives and scope of the BOR to: 1) provide advice and guidance to the Secretary of Defense through the ASD/HA for the operation of USU; and, 2) assure that the University operates in the best tradition of academia and is in compliance with the appropriate authorities on accreditation. The USU administration and faculty provided substantial input into the revision of both the USU DoD Directive and the BOR Charter. As a result, the administrative/governance documents of 1991 reflect the coordinated efforts of the ASD/HA, the BOR, the USU administration and activity heads, SOM department chairs, the SOM Faculty Senate, and the Dean's Executive Advisory Committee. In addition, during this process, the Acting Dean of the SOM coordinated with, and briefed, the LCME and the Commission on Higher Education of the Middle States Association of Colleges and Schools to ensure compliance with the University's accrediting entities on issues regarding governance and administration. To codify the Board's activities, BOR Bylaws were written during 2000 under the leadership of **Lonnie R. Bristow, M.D., Chair, USU Board of Regents**. On February 6, 2001, the BOR Bylaws were approved. (Copies of the current BOR Charter and Bylaws are at Appendix A.)

******

USU and the 1998 Defense Reform Initiative. In November of 1997, **William Cohen, Secretary of Defense,** substantiated his support of the University by including USU as part of his Fiscal Year 1998 Defense Reform Initiative (DRI). Program Budget Decision (PBD) 711 issued on December 17, 1997, outlined the DRI and moved USU from under the direct oversight of the Office of Health Affairs, Office of the Secretary of Defense (OSD), to the collective oversight of the Surgeons General of the Army, Navy and Air Force. The PBD ensured manpower and funding for USU and established the Surgeon General of the Navy as the Executive Agent for program, budget, and funding execution responsibilities. ***The PBD also directed that the University's funding would continue to be programmed, budgeted, and executed within the Defense Health Program.***

******

The Establishment of the USU Executive Committee. The administrative process for fiscal matters was defined during 1998 by the ASD/HA, in consultation with the USU BOR, the USU administration, and the Surgeons General. As a result, DoD Directive 5105.45 was updated on May 17, 1999, to include the formal establishment of the USU Executive Committee (to be composed of the three military Surgeons General; current membership includes: **Lieutenant General James B. Peake, Surgeon General of the Army**; **Vice Admiral Michael L. Cowan, Surgeon General of the Navy**; and, **Lieutenant General George P. Taylor, Jr., Surgeon General of the Air Force**) to provide management oversight for the University. As outlined in DoD Directive 5105.45, the USU President reports through the Executive Committee to the ASD/HA. The Executive Committee, chaired by **Lieutenant General James B. Peake**, conducts meetings that focus on important academic and administrative issues at the University. The USU Executive Committee and the USU Board of Regents have developed a close working relationship in a shared effort to enhance the academic and administrative programs at the University (a copy of the current Charter for the USU Executive Committee dated December 18, 2000, is at Appendix A).

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As a member of the Uniformed Services University of the Health Sciences (USUHS) Board of Regents and the USUHS Executive Committee, and as the designated Executive Agent for the University, I am pleased to say that the University's focus on relevance, readiness, and optimization continues to be aligned with both its establishing legislation and the special needs of the Military Health System (MHS). The University, which holds accreditation from its fourteen accrediting organizations, continues to meet and exceed its mission to provide continuity and leadership for the MHS.

- **Vice Admiral Michael L. Cowan, Surgeon General of the Navy,** Testimony before the House Armed Services Committee, Military Personnel Subcommittee, April 10, 2002.

Responsibilities of the Navy as the Executive Agent for USU. As the Executive Agent, the Navy Surgeon General's Office provides oversight for the University's budgeting and programming activities. The DoD Directive 5105.45 further clarifies that the USU funding and personnel requirements will not be offset against the Navy Surgeon General's budget or work-year allocations; thus, USU funding remains within the Defense Health Program.

USU Employees Become Navy Employees. Section 7.2.1 of Directive 5105.45 also directs that USU civilian personnel authorizations will be under the purview of the DoD Executive Agent (Navy) and that USU civilian employees should be moved from OSD and carried on the rolls of the Department of the Navy. The USU civilian employees officially converted from OSD to Navy employees with the changing of the University's Subelement and Unit Identification Code at the end of Fiscal Year 1999. All official reporting documents reflect this change.

An inclusive review of the USU personnel instructions to assure compliance with the Navy personnel instructions was completed by the USU Civilian Human Resources Directorate during 2000; and, a Navy-conducted review and evaluation of the USU Civilian Human Resources Directorate was conducted on January 14-15, 2002. The Navy review team found that *the USU Civilian Human Resources Directorate was in compliance with the self-assessment requirements of SECNAV Instruction 12273.1 of March 16, 1999, with no corrective actions required*.

Following the implementation of the Modern Defense Civilian Personnel Data System (MDCPDS) during August of 2001, both the USU government service/wage grade (GS/WG) and the USU administratively determined (AD) employees had to be manually reported as Navy civilian employees pending the revision of computer software, which occurred during 2002. It was agreed that the Human Resource Services Center (HRSC) of Washington Headquarters Services (WHS) would continue to service the University for its personnel requirements through 2002. By March of 2003, upon the completion of all software and coordination requirements, all USU personnel services had been placed under the purview of the Navy; payroll services were placed under the Navy payroll office by mid-2003.

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The Department takes great pride in the fact that the USUHS graduates have become the *backbone* for our Military Health System. The training they receive in combat and peacetime medicine is essential to providing superior force health protection, and improving the quality of life for our service members, retirees, and families. All of us in the Office of the Secretary of Defense place great emphasis on the retention of quality physicians in the military. The USUHS ensures those goals are met. I look forward to continued excellence from the University.

- **The Honorable Donald Rumsfeld, Secretary of Defense,** Letter to the Chair of the USU Board of Regents, dated March 22, 2001.

A Strengthened Relationship Between USU and DoD. The evolving relationship between the USU and DoD from 1991 through 2002 has proven beneficial to the University and the MHS. This new relationship has clarified and strengthened the position of the University within the entire DoD structure. The expansion of the oversight role of the Executive Committee (the three military Surgeons General) over USU has proven to be quite positive in terms of strategically identifying the ever-changing requirements of the MHS and evaluating how USU is currently meeting the needs of its primary customers, the Surgeons General. One example of the successful relationship of USU with the Surgeons General and OSD was evidenced by the presentation of the Joint Meritorious Unit Award by **The Honorable William S. Cohen, the Secretary of Defense,** to the University on December 11, 2000. In addition, on March 22, 2001, **The Honorable Donald Rumsfeld, the current Secretary of Defense**, also confirmed his on-going support for the critical mission of the University (as quoted above).

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USU BOARD OF REGENTS.

Although the events of September 11, 2001, have galvanized the Nation, much of our work was on-going long before then. In November 2001, School of Medicine Dean, Dr. Val Hemming noted in testimony before the House Committee on Veterans' Affairs, Subcommittee on Oversight and Investigations, that each of our 3,200 physician graduates has received in-depth instruction in recognition, diagnosis, management, and decontamination of casualties from weapons of mass destruction (WMD). Since its inception in 1976 (with the enrollment of the first SOM Class of l980), **USU has attracted researchers and educators who are focused on these critical issues. WMD education is integrated into our undergraduate medical curriculum through didactic classroom/ laboratory instruction and relevant field exercises... Further, our Department of Pathology conducts a well-recognized graduate level course entitled, *The Scientific, Domestic and International Policy Challenges of Weapons of Mass Destruction and Terror*. This unique course incorporates a simulated terrorist attack, utilizing our Medical Simulation Center. The strength of this Center is the capacity to design specific crises for students to gain familiarity with unusual events.**

- USU Board of Regents Annual Report to the Secretary of Defense, June 1, 2002, page two.

Membership of the Board of Regents. The USU Board of Regents (BOR) is an advisory committee governed by the Federal Advisory Committee Act (Public Law 92-463, Section 1), the General Services Administration Final Rule (41 C.F.R. Part 101-6), and Department of Defense Directive 5105.45. The nine members of the Board are distinguished academics, educators, health care providers and public servants; and, they are Presidential appointees confirmed by the United States Senate. As of April 2003, the USU BOR includes the following individuals: **Everett Alvarez, Jr., J.D., Chair**; **Linda J. Stierle, MSN, RN, CNAA, Vice Chair**; **Otis Webb Brawley, M.D.**; **Lonnie R. Bristow, M.D.**; **L.D. Britt, M.D.**; **John E. Connolly, M.D.**; **William C. De La Peña, M.D.**; **Ikram U. Khan, M.D.**; and, **Vinicio E. Madrigal, M.D.**

Newly Appointed Members of the BOR.

Otis Webb Brawley, M.D., was confirmed by the United States Senate to be a Member of the USU Board of Regents on November 14, 2002; and, he was sworn in as a member of the BOR on February 4, 2003. Since June of 2001, Doctor Brawley has held the position of Professor of Medicine, Hematology and Oncology at Emory University School of Medicine; and, he holds the title of Professor of Epidemiology at the Rollins School of Public Health, Emory University in Atlanta, Georgia. In addition, he has held the position of Senior Investigator (Tenured), Division of Cancer Prevention, at the National Cancer Institute from 1996 to present; and, he has served as the Assistant Director, National Cancer Institute, Office of Special Populations Research, from June of 1996 to present. Doctor Brawley completed his Medical Staff Fellowship in Medical Oncology at the Medicine Branch, National Cancer Institute in 1990; and, he has Board Certifications with: the National Board of Medical Examiners (1986); Internal Medicine (1988); and, Medical Oncology (1993). Doctor Brawley has also been recognized with numerous Fellowships, Scholarships and other special appointments; and, he is the co-author of more than 80 scientific publications and has presented more than 25 invited talks at national and international meetings since 1996.

L.D. Britt, M.D., M.P.H., F.A.C.S., F.C.C.M., was confirmed by the United States Senate to be a member of the USU Board of Regents on August 1, 2002. Doctor Britt is currently the Chairman, Department of Surgery, and the Chairman, Council of Clinical Chairmen, at the Eastern Virginia Medical School in Norfolk, Virginia. He is a member of numerous distinguished committees and boards, such as: the Federation of State Medical Boards of the United States, Inc., USMLE Step 3 Committee Member; the American Surgical Education Foundation, Board of Directors; the Central Judiciary Committee, American College of Surgeons Board of Regents; the USMLE Committee on Irregular Behavior and Score Validity; and, the Board of Regents, American College of Surgeons. Among his notable honors, he has been selected: America's Top Doctors, Castel Connolly Medical, Ltd. (2002); Honorary Man of Tomorrow, Beta Theta Zeta Chapter of Zeta Phi Beta Sorority, Inc. (2002); and, recipient of the Martin Luther King, Jr., Achievement Award, Duke University Chapter of the Student National Medical Association (2001).

William De La Peña, M.D., was confirmed by the United States Senate to the USU Board of Regents on August 1, 2002. Doctor De La Peña is the Medical Director of the De La Peña Eye Clinic, Medical Group, Inc., located in the cities of Montebello, Los Angeles, Huntington Park, Santa Ana, and Van Nuys, California. He has also held the position of Director of the Department of Ophthalmology at the Santa Marta Hospital in Los Angeles, California, since 1984. In addition, Doctor De La Peña is a Professor of Ophthalmology and the Co-Chairman of the Department of Ophthalmology at the University of Costa Rica. He holds medical licensure in California, Louisiana, England, and Mexico; and, he has received over 16 prestigious awards. Doctor De La Peña resides in Montebello, California.

Vinicio E. Madrigal, M.D., was confirmed by the United States Senate to be a member of the USU Board of Regents on August 1, 2002. Doctor Madrigal resides in Kenner, Louisiana, where he is the Director of the Madrigal Family Medicine Center. Doctor Madrigal has served as a Captain in the United States Army Medical Corps (Reserves) since 1984. He received his medical degree from the Universidad Autonoma de Guadalajara in Guadalajara, Mexico. He completed his residency in Surgery at the Flushing Hospital and Medical Center in Flushing, New York; and, in 1984, he completed his residency in Emergency Medicine at Louisiana State University, Charity Hospital, in New Orleans, Louisiana. Doctor Madrigal is licensed to practice in the State of Louisiana.

Linda J. Stierle, MSN, RN, CNAA, was confirmed by the United States Senate to the USU Board of Regents on August 1, 2002. Ms. Stierle has served as the Chief Executive Officer (CEO) of the American Nurses Association (ANA) in Washington, D.C., since April of 2000. As CEO, Ms. Stierle facilitates leadership and management for a staff of 200 and manages a $25 million budget. From April of 1995 through February of 2000, Brigadier General Stierle, USAF, NC (now Retired) served as the Director, Medical Readiness and Nursing Services, at the Bolling Air Force Base. In that position, she was responsible for a $4.5 billion budget and ensured a quality, cost-effective, prevention-based health care continuum for 2.7 million beneficiaries worldwide. She also held the position of Chief Nursing Officer at the Air Mobility Command at the Scott Air Force Base where she supervised and monitored a regional peacetime health care system with assets of $1.4 billion, a $255 million budget, and 7,200-plus medics providing care to over 510,000 beneficiaries. Ms. Stierle is affiliated with the American Organization of Nurse Executives, the American Society of Association Executives, and the Sigma Theta Tau International Honor Society of Nursing.

Ex Officio Members of the Board. In addition to the nine White House appointed members, the Board also has six *ex officio* members. These include: 1) **William Winkenwerder, Jr., M.D., M.B.A.**, the Assistant Secretary of Defense for Health Affairs; 2) **Vice Admiral Richard H. Carmona, M.D., United States Public Health Service**, The Surgeon General of the United States; 3) **Lieutenant General James B. Peake**, the Surgeon General of the United States Army; 4) **Vice Admiral Michael L. Cowan**, the Surgeon General of the United States Navy; 5) **Lieutenant General George P. Taylor, Jr.**, the Surgeon General of the United States Air Force; and, 6) **James A. Zimble, M.D., Vice Admiral, USN (Retired)**, the President of USU (who serves as a non-voting member).

Advisors to the Board. **General Thomas R. Morgan, (Retired)**, the former Assistant Commandant of the Marine Corps, serves as the Military Advisor to the Board. There are eight additional advisors to the Board: 1) the Dean, School of Medicine (SOM); 2) the Dean, Graduate School of Nursing (GSN); 3) the Commander, Wilford Hall Medical Center; 4) the Commanding General, North Atlantic Regional Medical Command and Walter Reed Army Medical Center; 5) the Commander, National Naval Medical Center; 6) the Commander, Malcolm Grow Air Force Medical Center; 7) the Commander, Walter Reed Army Health Care System; and, 8) the Commander, Defense Medical Readiness Training Institute, in San Antonio, Texas.

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While the Regents have always recognized the importance of maintaining a medical curriculum which incorporates the unique challenges created by the use of biologic, chemical and radiologic weapons, we were especially pleased to note that DoD's University of the Health Sciences is now widely recognized as a *first stop* for reliable education, training and research in the medical response to weapons of mass destruction. The entire University effort in support of our Nation's response to the terrorist threat is a testament to the foresight of the Department in maintaining such a unique asset.

- **Everett Alvarez, Jr., J.D., Chairman, USU Board of Regents,** Memorandum to the Secretary of Defense, dated December 4, 2001.

The Board's Significant Role in Academic Affairs. The BOR has continuously played a prominent role in academic affairs at the University. Faculty appointments, promotions and organization, awarding of degrees, curriculum design and implementation, academic requirements for admission and graduation, and related matters vital to the academic well being of the University are all included in the definition of *academic affairs* as provided by DoD Directive 5105.45. The Directive clarifies it is DoD policy that **...consistent with the performance of the DoD mission and with established practices covering academic independence and integrity in the fields of medical and health sciences education, the Department of Defense recognizes the unique role of the USUHS Board of Regents in advising the Secretary of Defense. The Assistant Secretary of Defense for Health Affairs, the USUHS Executive Committee, and the President of the USUHS will be guided by the advice of the USUHS Board of Regents on academic affairs.** The Board's duties include the final review of candidates for the USU President prior to the Secretary of Defense's selection.

University Presidents:

Anthony R. Curreri, M.D., was appointed by **President Nixon** in 1974 and retired in 1976;

The Honorable David Packard, Acting President, served from November 1976 until May 29, 1981;

Jay P. Sanford, M.D., served from May 1981 through 1990; and,

James A. Zimble, M.D., has served since July 1991 to the present.

The BOR also reviews the final selections for the Deans of the SOM and GSN prior to their selection by the USU President:

School of Medicine Deans:

Jay P. Sanford, M.D., was appointed as the first Dean, SOM, in May 1975 and served through 1990;

Harry C. Holloway, M.D., served as the **Deputy Dean** from 1990 through June 1992;

Nancy E. Gary, M.D., was appointed as Dean on June 28, 1992, and served through mid-1995;

Val G. Hemming, M.D., served as Interim Dean from July 2, 1995 through May 3, 1996; and, following a national search, served as Dean from May 3, 1996 through May 19, 2002; and,

Larry W. Laughlin, M.D., Ph.D., was appointed as Dean on May 20, 2002, and continues to serve in that position.

Graduate School of Nursing Deans:

Faye G. Abdellah, Ed.D., Sc.D., RN, FAAN, served as Acting Dean following the establishment of the GSN in 1993; and, following a national search, was selected as Founding Dean, GSN, serving from May 17, 1996 through May 31, 2002; and,

Patricia A. Hinton Walker, Ph.D., RN, FAAN, was appointed as Dean on June 1, 2002, and continues to serve in that position.

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The Board's Mission and Responsibilities. The Board's principal mission is to assure compliance with the University's accrediting authorities. The Regents approve academic titles for military and civilian members of the faculty. Additionally, upon the recommendation of the University's faculty and Deans, the Regents approve the granting of appropriate academic degrees to successful candidates. The BOR recommends the establishment of postdoctoral and postgraduate programs, technological institutes, and programs in continuing medical education for military members of the health professions. The Regents also recommend reciprocal education and research programs with foreign military medical schools. Additionally, the BOR is significantly involved with the University's strategic planning process. On April 4, 1999, the BOR's Charter, which outlines the mission, membership, duties and responsibilities of the BOR, was revised and approved by the Office of the Secretary of Defense (OSD); the most current edition of the BOR's Charter is dated April 4, 2003. In addition, the Bylaws of the Board of Regents were updated and approved on February 6, 2001. (Copies of the BOR Charter and Bylaws are at Appendix A.)

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The Board's Sixth Report to the Secretary of Defense. Since 1997, the USU Board of Regents has submitted an annual report to the Secretary of Defense. This report partially fulfills the Board's obligation to advise the Secretary on the University's operation and often focuses on contributions that USU makes to the Department of Defense. *The 2002 Annual Report, driven by the tragic events of September 11, 2001, summarizes the ways in which USU contributes to homeland security through its intramural and extramural educational programs and describes the University's on-going areas of research relevant to the readiness and force health protection missions of the Department of Defense*. Examples of such research programs described within the report include: Vaccine Development; Traumatic Stress; Wound Therapy; Medical Countermeasures to Irradiation; and, Simulation Technology for Medical Education.

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STRATEGIC PLANNING

A Perpetual Work-In-Progress. The USU Strategic Plan has been continuously evolving to reflect the changing requirements of the Strategic Plan of the Military Health System, which, in turn, is also linked with the Strategic Plans of the University's primary customers, the Surgeons General of the Army, Navy, and Air Force.

All Proposals for Funding Must Tie Into the USU Strategic Plan. Beginning with the USU Strategic Planning Process initiated during 1991, an increasingly systematic approach has been developed for setting the University's priorities and allocating resources based upon relevance to the USU Strategic Plan. *USU activity leaders must show a direct relationship with the current USU Strategic Plan when submitting their written requests for future budgets*. Thus, a formal process has evolved for identifying program needs and for the submission of budget requests. Involvement of USU administration, faculty, and staff at both the formal and informal levels of the decision-making process assists in the equitable allocation of resources throughout the University's wide range of activities. The USU Strategic Plan is also used to develop the University's annual Program Objective Memorandum (POM) submission. The POM request, covering a five to six year timeframe, is submitted to the Department of Defense, through the Office of the Navy Surgeon General, in order to gain the necessary funds for the USU budget as part of the Defense Health Program.

Strategic Planning Initiatives During 2001 and 2002. During 1998, the University updated the basic objectives under each of the goals of its Strategic Plan. Then, during 1999 through 2000, metrics or performance measurements were established and monitored for each objective. Next, to ensure that the USU Strategic Plan was accurately reflecting the evolving requirements of the MHS, on April 25-27, 2001, the senior staff of USU, representatives from the teaching hospitals, the Chair of the BOR, and senior staff from the offices of the Surgeons General met to participate in a three-day strategic planning session. The purpose of the retreat was to review and update the goals and objectives of the USU Strategic Plan so that they appropriately reflect the current requirements of the MHS. Reference materials included the Service Strategic Plans, the USU Strategic Plan, and survey results as they were recorded during the initial group discussions.

Through group interaction, the attendees of the 2001 retreat reviewed USU's internal and external customers and stakeholders. Then, the concerns of those stakeholders were identified, discussed, and weighted during an analysis of the strengths, weaknesses, opportunities, and challenges existing within USU's current environment. Following those discussions, *seven strategic issues were identified: marketing; resources; people; USU as a strong advocate for the MHS direct care mission; education/research/partnerships; strategic thinking; and, communication*. Those seven strategic issues were carefully developed into the seven strategic goals of the USU Strategic Plan with forty-one objectives within the goals. Next, 22 of the most significant objectives were prioritized for initial implementation and action. At the conclusion of the 2001 strategic planning session, the current mission statement was reviewed to identify a shorter, yet accurate reflection of the University's purpose and future; the attendees agreed on the following: ***Learning to Care for Those in Harm's Way.***

Goal Champions were appointed to oversee the development and implementation of the actions required to accomplish the objectives and ultimate realization of each of the seven goals. Finally, the attendees designated Team Leaders to develop action plans for accomplishing one, or more, of the prioritized objectives; and, teams were formed to work on the selected objectives. Throughout 2001 and 2002, the staff, faculty, and students of the University continued their efforts to meet the goals and objectives of the 2001-2002 Strategic Plan. Individual progress reports on each of the seven goals were provided to the USU President who forwarded them to the USU Board of Regents. Over 250 members of the USU Community developed and implemented strategies under the seven goals and forty-one objectives as the University continued to meet its mission - ***Learning to Care for Those in Harm's Way***.

In December of 2002, the senior staff of USU, representatives from the Offices of the Surgeons General and the military teaching hospitals, the Chair of the BOR, and the USU Faculty Senate participated in a retreat to revise and update the 2001-2002 Strategic Plan. The group identified current issues facing the Nation and the University's stakeholders and realigned USU's resources and strategic goals and objectives to better meet the evolving requirements of military medicine. Five new goals and twenty-six objectives were identified. To ensure that relevant objectives were retained from the 2001-2002 Strategic Plan, a working group was selected to integrate significant objectives into the new plan. **James G. Smirniotopoulos, M.D., Professor and Chair, USU SOM Department of Radiology and Radiological Sciences,** volunteered to lead a five-month initiative to formalize the 2003 Strategic Plan. His process included expanded faculty involvement in the development of the strategies. During May of 2003, the USU Board of Regents voted to accept the newly designed USU Strategic Plan. (Copies of the 2001-2002 Strategic Plan and the currently approved USU Strategic Plan are at Appendix B.)

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Progress Toward Achieving the University's Seven Strategic Goals during 2002. As the strategic planning process evolved during 2002, the USU community incorporated the seven strategic goals and 41 objectives into its on-going efforts to meet its mission and respond to the requirements of the MHS. The following are examples of selected issues and accomplishments that responded to the University's seven strategic goals during 2002 (additional information on each of the listed accomplishments is also provided throughout this edition of the USU Journal).

GOAL 1: We will enhance the reputation of USU as a premier health sciences academic institution with a unique global and military perspective.

<u>USU - The Academic Center for Military Medicine.</u> During 2002, the University continued to serve as the Academic Center for Military Medicine for the 2,794 active duty, off-campus USU faculty who are located throughout the MHS. Through its continuing medical education programs and academic centers, the University presented military-relevant conferences and continued its collaborative efforts for the Military Health System. Selected examples follow.

1) ***The Sixteenth Conference on Military Medicine, Enhancing Readiness: Implementing Change in Military Medical Education, Was Held on June 17-20, 2002.*** The 16th Conference on Military Medicine was held on the USU campus with 120 participants. *Conferees were divided into four working groups to focus on four key aspects of military medical education: content; methods of learning; outcomes measurement; and, certification.* The content group built directly upon the foundation laid by participants from the 15th Annual Conference on Military Medicine (held in June of 2001). *The 2002 participants further prioritized and divided the series of objectives, identified during 2001, into the areas of: emerging technologies; emerging threats; ethical considerations; and, changing missions and operations.* The second working group, addressing methods of learning, developed a sample template for determining the best methods of learning given a specific learning task. *The group concluded that the teaching of a given element should occur at multiple levels, to provide important repetition, while also facilitating the addition of more complex elements of knowledge, skills and attitudes over time.* The third group addressed the measurement of outcomes associated with modifications in the process of military medical education. Following an in-depth review of a series of outcome measures, *the group concluded that simulation had the greatest potential for enhancing military medical readiness*. The last group examined the potential for establishing certification of expertise in military medicine. *The participants agreed upon a design that would establish two levels of certification at the operational and expert levels; the expert level would result in a Master of Science Degree in Military Medicine.* The participants determined that USU was the most logical certifying authority. (The significant outcomes of the 16th Conference for Military Medicine are described in greater detail in this section of the Journal, under *Academic Center for the Military Health System*.)

2) ***The Center for the Study of Traumatic Stress of the USU SOM Department of Psychiatry Continued its Ongoing Support for the MHS and the Nation throughout 2002.*** The Center for the Study of Traumatic Stress (CSTS) was established at the University in 1987. Since that time, the CSTS has been continuously recognized and sought out, at both the national and international levels, for its consultative, educational, and research capabilities reference the impact of traumatic stress. Under the leadership of **Robert J. Ursano, M.D., Professor and Chair, USU SOM Department of Psychiatry, and Founding Director, Center for the Study of Traumatic Stress (CSTS),** during 2002, the Center completed the only two empirical studies of *Family Violence and the Army* using an Army data base for one study and a study of troops from Fort Hood (to include their spouses) who were deployed to Bosnia in the other. *Currently, the CSTS is initiating studies on the effects of the traumatic stress resulting from the October 2002 Sniper Acts of Terrorism in the Washington, D.C. area on both the Military Health System and the civilian emergency responder communities*. Also of significance during 2002, *the CSTS was the major planner in the recent DoD/National Institutes of Health (NIH) Consensus Meeting on Early Interventions Following Incidents of Mass Violence* to prepare state and local leaders for the stress resulting from bioterrorism. In addition, Doctor Ursano was invited to write an editorial on *Post-Traumatic Stress Disorder*, for the January 10, 2002 issue of the New England Journal of Medicine. Also during 2002, he was one of three speakers at the *Annual Carter Center Symposium on Mental Health Policy and September 11th* along with **Julie Gerberding, M.D., Director, Centers for Disease Control,** and **Neil Cohen, M.D., of the Commission of Health for New York City**. And, the CSTS collaborated on a publication entitled, *Mental Health Intervention and High-Risk Groups in Disasters*, for World Psychiatry, a widely circulated international journal. (See Section II, *Research Centers and Programs*, for additional contributions of the CSTS during 2002.)

3) ***The USU Casualty Care Research Center Hosted the Sixth International Conference on Tactical Emergency Medical Support on June 7-9, 2002, in Las Vegas, Nevada.*** The USU Casualty Care Research Center (CCRC), established in July of 1989, serves as a repository of resources and information relating to injury control, injury epidemiology, and operational medicine for the Uniformed Services. The location of the CCRC within the multi-Service environment of USU with its emphasis on education and development, scientific studies, research, and on-going clinical and operational practice, is critical to the development and sustainment of the CCRC's ability to maintain its core competency - the capability to provide military-unique, medical expertise and experience required by both uniformed and civilian emergency/health care responders to respond to weapons of mass destruction (WMD)-related and other national security contingencies. During 2002, the CCRC was proud to again sponsor a conference that is consistently well attended and offers significant support to the law enforcement and public safety communities. This year's conference was entitled, *Protecting the Protectors*, and included a Keynote Address by **Lieutenant General Frank Libutti, USMC (Retired), Deputy Commissioner for Counter-Terrorism, New York City Police Department**. Presentations provided by personnel involved directly with the World Trade Center and Pentagon catastrophes were well received, as were presentations from several other clinicians and operators in the fields of Tactical EMS and Special Operations Medicine. The *2002 David Rasumoff Memorial Award for Heroism* was presented to **John Busching of the New York City Police Department Emergency Services Unit** for his selfless acts of bravery following the terrorist attacks at the World Trade Center. (See Section II, *Research Centers and Programs*, for additional information on the significant contributions of the CCRC during 2002.)

4) ***The USU Center for Disaster and Humanitarian Assistance Medicine, USU SOM Department of Military and Emergency Medicine, Hosted a Conference to Increase the Expertise in Laboratory-Based Epidemic Outbreak Surveillance in Panama City, Panama.*** The USU Center for Disaster and Humanitarian Assistance Medicine (CDHAM), established in 1998, has served as a focal point in the MHS for assisting in the critical management of relief efforts in the medical response to weapons of mass destruction, terrorism, natural disasters, and humanitarian assistance contingencies through new developments in the areas of disaster and humanitarian assistance medicine. During 2001, a collaborative study between the CDHAM and the Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES) was funded by the United States Southern Command (SOUTHCOM) to identify health research and capacity enhancements that would strengthen the local capacity for prevention and response before, during, and following man-made or natural disasters. In accordance with one of the short-term recommendations identified in the initial USU-ICGES Study, an integrative project was executed with the DoD-Global Emerging Infections System (DoD-GEIS) to increase the sub-regional expertise in laboratory-based epidemic outbreak surveillance. A conference, co-sponsored and organized by CDHAM, served as the venue for this effort during 2002. The *Phase II Course/Workshop on the Public Health Laboratory Information System (PHLIS) for Central America and the Dominican Republic* was held in Panama City, Panama, as requested by SOUTHCOM. The conference, hosted by the Gorgas Institute's Public Health Central Reference Laboratory in Panama City, Republic of Panama, included break-out sessions in disaster preparedness medicine and a two-day working meeting for the public health laboratory directors from the six sub-regional countries in Central America, in addition to Panama and the Dominican Republic. The training at the Panama conference was collaboratively planned, organized and implemented by DoD-GEIS, CDHAM, the Pan American Health Organization (PAHO), and the Pan American Health and Education Foundation. Thirty Ministry of Health professionals (epidemiologists, bio-informatics, and laboratory directors) from eight countries (El Salvador, Guatemala, Belize, Nicaragua, Honduras, Costa Rica, the Dominican Republic, and Panama) attended. *The*

main objective of this public health intervention process, which was successfully met, was to ensure the fortification of early warning capabilities for the disaster health information systems located throughout the eight countries, especially between the reference laboratories and the epidemiology departments, to support contingency planning and the management of emergency situations resulting from natural or man-made disasters.

United States - Mexico Pre-Conference Workshop on Medical Preparedness for Man-Made Disasters. Also during 2002, the CDHAM participated in a one-day, pre-conference workshop for community emergency/ first responder civil authorities, border health workers, and military personnel of the United States and Mexican Armed Forces as part of the 60th Annual Conference of the United States - Mexico Border Health Association (USMBHA). The workshop sponsors conducted a bioterrorism exercise simulated to occur along the United States-Mexican Border; the CDHAM provided real-time, hands-on demonstrations using commercial, off-the-shelf telemedicine equipment. (See Section II, *Research Centers and Programs*, for more information on the contributions of CDHAM during 2002.)

5) ***The Armed Forces Radiobiology Research Institute Provides WMD-Related Training to the National Guard Support Teams.*** The Armed Forces Radiobiology Research Institute (AFRRI) was established in 1961 to conduct relevant applied radiobiological research in support of the military medical mission and to support accidental or premeditated events involving nuclear weapons, radiological dispersal devices, and other nuclear/ radiological situations. AFRRI's unique provision of direct support to the Office of the Secretary of Defense and the Joint Chiefs of Staff has proven to be essential since the events of September 11, 2001. For example, a Presidential Directive, following September 11th, established National Guard Civil Support Teams to provide the State Governors with cadres of first responders specifically trained and equipped to deal with terrorist incidents involving chemical, biological, radiological, nuclear or explosive (CBRNE) incidents. In March of 2002, AFRRI's Medical Radiological Advisory Team (MRAT) hosted a two-week conference to train personnel assigned as first responders to the newly established civil support teams. The training included lectures on operational health physics, Federal/DoD regulations, risk analysis, radiological instrumentation, DoD and non-DoD radiological assets, and design characteristics of nuclear power plants, radiological dispersal devices and nuclear weapons. *Learning objectives focused on decision-making during the crucial first 12 hours following a nuclear/radiological event*. The conference was highly successful; as a consequence, the National Guard Bureau of Washington, D.C., has requested that the AFRRI MRAT provide training on an annual basis. (See Section VII for greater detail on the significant contributions of AFRRI during 2002.)

6) ***The USU Graduate School of Nursing Provides Accredited Academic Programs and Responds to the Special Needs of Military Medicine.***

> **I wish to convey my congratulations to you, Dr. Abdellah, and the entire staff of the USU Graduate School of Nursing. Your outstanding performance was recently recognized by the National League for Nursing Accrediting Commission (NLNAC) in its report granting continuing accreditation for an impressive eight additional years. I am particularly gratified by the following statement: *This program provides an outstanding model for preparing advanced practice nurses for military service***

and care of patients in crisis and disaster situations. This program is on the cutting edge of effectively incorporating advanced technology into the curriculum and instruction process to produce a highly competent practitioner... **This is a truly outstanding review of the school, which reflects great credit upon your entire staff and our Military Health System. Congratulations to all for a job exceptionally well done!**

- **The Honorable William Winkenwerder, Jr., M.D., Assistant Secretary of Defense for Health Affairs,** Letter to the USU President, dated January 24, 2002.

In the short time since its establishment in 1993, and with the significant cooperation and support of the Federal Nursing Chiefs, the USU Graduate School of Nursing (GSN) has: *recruited a qualified faculty*; *successfully established curricula for the Family Nurse Practitioner and Nurse Anesthesia options* in its Master of Science in Nursing (MSN) Program; *received official recognition from OSD* on February 26, 1996; developed and implemented an administrative structure that *provides for faculty and student participation in the overall governance of the GSN*; and, initiated an on-going successful six-year collaborative relationship with the Department of Veterans' Affairs (VA); *the 20-month USU/VA Post-Master Certificate Nurse Practitioner Distance Learning Program has been recognized as a model for cost-effective collaboration. At its inception, it was the first program in the Nation to offer a complete nurse practitioner curriculum via distance education; over 70 nurses have graduated from the Program*.

During 2002, the GSN accomplished the following for the MHS:

- Identified accredited clinical practice sites and *completed memoranda of understanding (MOUs) for those relationships with 21 military treatment facilities (MTFs) to include an additional 111 non-DoD, Federal, and civilian clinical sites*;

- Submitted self-studies during 2001-2002 and ***received accreditation/commendation from its professional accrediting entities***:

  - On March 18, 2002, USU was formally notified by the *National League for Nursing Accrediting Commission* that the GSN had received accreditation, with no requests for supplemental reports, for the maximum term of eight years;

  - On May 16, 2002, USU received notification from the *Commission on Collegiate Nursing Education* that the GSN had received accreditation, with no requests for supplemental reports, for the maximum term of ten years;

  - On June 18, 2003, USU received notification from the *Council on Accreditation (COA) of Nurse Anesthesia Educational Programs* that the GSN had been favorably reviewed by the COA Site Team for accreditation; official notification will not take place until the Council on Accreditation meets during October 9-11, 2003;

- Initiated, implemented, and continuously reviewed the outcomes evaluation process for its academic program; *on February 26, 2002, credentialing scoring information released by the American Nurse Credentialing Center's Commission on Certification showed that of the 15 GSN Family Nurse Practitioner graduates who took their certification examinations, all 15 passed with a mean score of 123.3, the highest ever achieved*;

- Since 1993 through 2002, *the GSN has granted Masters of Science in Nursing Degrees to 183 advanced practice nurses,* with over 80 percent of those graduates remaining on active duty;

- In June of 2001, *the Federal Nursing Chiefs requested the establishment of a Clinical Nurse Specialist (CNS) option in the GSN Master of Science in Nursing Program*; *in January of 2002, the GSN Founding Dean presented the CNS option to the USU Executive Committee and received approval from the three Surgeons General; the CNS option was presented to the Board of Regents on February 27, 2002, and received final approval; the GSN will welcome its Charter Class of eight students in the GSN Perioperative CNS option in Mid-2003*; and,

- To meet an evolving requirement for nursing research relevant to the MHS, the USPHS, and other Federal Health Systems, *in March of 2002, with the support of the Federal Nursing Chiefs, the GSN began the process for the development of a Doctoral Program in Nursing; with the approval of the USU Board of Regents, the enrollment of the Charter Class in the Doctoral Program in Nursing will occur during 2003*. (See Section III for greater detail on the GSN significant contributions during 2002.)

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GOAL 2: We will anticipate changes in society, medicine and the military to meet the academic and unique needs of health care delivery in the MHS.

USU Has World-Wide Recognition as the One Place Where Physicians Are Trained to Respond to Weapons of Mass Destruction.

The combination of DoD's expertise in the field treating casualties from unconventional attacks and the VA infrastructure of medical centers, clinics, satellite broadcast capabilities and affiliations with medical schools will enable U.S. medical professionals to become knowledgeable and medically competent in dealing with future attacks. Content for the training sessions would be based on programs established at the USUHS School of Medicine, the Nation's only Federal medical school. Sometimes referred to as the *West Point for Doctors*, USUHS offers an education in military medicine, preparing graduates to handle *real world scenarios that most doctors are ill-equipped to face*. Students would learn how biochemical and radiological agents act on the human body and how to handle a suspected exposure - from the point of detection through to decontamination and medical countermeasures, according to information from Congressman Buyer's office.

- Washington Fax, *VA bills would offer treatment, research and physician training to fight chemical, biological and radiological attacks*, April 9, 2002.

For over 25 years, USU has been at the forefront of weapons of mass destruction (WMD)-related medical education. The University has successfully prepared its uniformed graduates to provide military-unique health care and expertise in austere conditions and to respond to injuries caused by chemical, biological, radiation, nuclear, and explosive (CBRNE) weapons. Where the average school of medicine (SOM) in the United States offers 13 hours of preventive medicine training, the USU SOM provides 130 contact hours; while the DoD scholarship physicians receive between 50 to 132 hours of medical readiness training, the USU SOM students receive between 784 and 889 hours. A military-unique focus and operational training exercises are interwoven throughout the SOM curriculum; as a result, career-committed USU graduates with their military-unique education and extraordinary retention rates are providing quality care, continuity, and leadership throughout the Uniformed Services. *The Association of American Medical Colleges Reporter has twice featured USU as the one place where physicians are trained for the medical response to WMD in its December issues of 1998 and 2001*. In addition, during 2002, the Medical Staff at the White House, the Congress of the United States, the Chairman of the Joint Chiefs of Staff, the USU Executive Agent (the Navy Surgeon General), and the USU Board of Regents have all validated USU's long-standing expertise in WMD-related training and expertise (see Section II, *MILITARY UNIQUE CURRICULUM*, for further information).

USU Extramural Educational Programs and WMD-Related Training. With military units deployed world-wide, USU leadership was acutely aware of the need for distributed learning to provide medical personnel with up-to-date training. During 2002, in response to multiple requests, USU faculty members developed and delivered training programs for DoD and other Federal agencies, medical institutions, and public safety organizations on the response to terrorism and WMD. *For example, the Administrative Offices of the United States Courts and the United States Marshals Service requested that the USU CCRC design and execute a train-the-trainer program in Chemical/Biological Response.* Today, this program continues to assure that there are well-trained WMD first-responders in every Federal courthouse in the United States. Lessons learned, during this and other efforts, were then incorporated into the CCRC Emergency Medicine Resident Rotation in Operational Medicine Course and the CCRC Military Medical Field Studies Rotation utilized by the MHS. *The operational experiences of the CCRC Medical Support Teams are integrated throughout the USU SOM curriculum as tangible demonstrations of the most current medical science being taught.* Also during 2002, an unsolicited offer from Global e-Medicine and Lippincott, Williams and Wilkins publishers resulted in a collaborative agreement to produce an interactive asynchronous, Internet-based WMD medical training program. The program not only delivers highly relevant information in an innovative learning format, but also facilitates testing, evaluation, and tracking of student performance and provides commanders with an objective measure of personnel readiness.

USU Is Invited to Participate with the OSD/VA Committee on Collaborative Initiatives. Based, in part, upon the unique mission of USU, which includes training uniformed officers for the medical response to WMD, Public Law 107-287, *the Department of Veterans' Affairs (VA) Emergency Preparedness Act of 2002*, directed that the VA model its WMD-related medical training after that found at USU. (During 2001-2002, the USU Vice President for Administration and Management was requested by the Office of the Navy Surgeon General and OSD Legislative Affairs to coordinate a response with the VA on how USU would participate in this training effort; this was successfully completed and incorporated into the initial draft of Public Law 107-287.) *Public Law 107-287 and the expressed intent of the leadership of both the DoD and the VA led to the establishment of an Office of the Secretary of Defense (OSD/VA) Committee to further collaborative initiatives between the two Departments.* USU was invited to participate in the first meeting of the OSD/VA Committee on Collaborative

Initiatives, which was held on January 22, 2003, directly due to the University's on-going successful, six-year collaborative relationship with the VA and its coordinating efforts related to Public Law 107-287. The OSD/VA Committee on Collaborative Initiatives recognized that USU could play an essential role in the implementation of one of the DoD/VA Collaborative Initiatives, *Emergency Preparedness*. The OSD/VA Committee had earlier defined this initiative to include the sharing of vital information and training regarding the diagnosis and treatment of injuries or illness that result from exposure to biological, chemical, or radiation exposure. *The documented WMD-unique training and expertise found at USU, combined with the University's record of successful collaboration with the VA, made USU a logical placeholder for the OSD/VA Initiative on Emergency Preparedness.*

USU Centers and Activities Form a Nucleus During the Planning Phases of the OSD/VA Collaborative Initiative on Emergency Preparedness. Three USU Centers, the Combat Casualty Care Research Center (CCRC); the Center for Disaster and Humanitarian Assistance Medicine (CDHAM); and, the Center for the Study of Traumatic Stress (CSTS) - are serving as a nucleus during the planning stages of the OSD/VA Collaborative Initiative on Emergency Preparedness. Essential expertise is also being provided by the USU Armed Forces Radiobiology Research Institute (AFRRI), the USU Graduate School of Nursing (GSN), the USU SOM Department of Surgery, the USU Office of Continuing Education for Health Professionals (CHE), the USU National Capital Area Medical Simulation Center (SIMCEN), and the USU Patient Simulation Laboratory (PSL). All of these USU Centers and Activities have developed on-going working relationships with their counterparts throughout DoD, VA, other Federal and State entities, and the civilian sector. Efforts for the OSD/VA Collaborative Initiative on Emergency Preparedness are expected to continue throughout 2003. (CCRC, CDHAM, CSTS, AFRRI, the GSN are discussed above, under the previous goal; a description of the SIMCEN follows.)

The National Capital Area Medical Simulation Center.

The National Capital Area Medical Simulation Center (SIMCEN), a collaborative project between USU and the Surgeons General, officially began operations on April 21, 2000 (actual operations began in October of 1999). The SIMCEN, located at the Walter Reed Army Medical Center Annex in Forest Glen, Maryland, uses virtual reality technology, life-like mannequins and *actor patients* to support not only the USU programs but the other military medical centers in the Washington, D.C. area. The USU SIMCEN is unique among the limited simulation centers currently found at civilian medical schools because ***five state-of-the-art components are included under one roof:*** 1) standardized patients (*patient actors*); 2) multi-media, interactive, clinical case presentations on LAN or web-based CD-ROMS; 3) virtual reality software applications; 4) medical simulators (computerized mannequin simulators); and, 5) video-teleconferencing/distance education. The importance of simulation technologies, particularly in training, is that the simulators allow *virtual* training before the actual provision of medical treatment; thus, *students are able to develop clinical skills without the risk of harming a patient*. The SIMCEN also generates cost-avoidance for the MHS through the provision of training and distance learning for SOM and GSN students, graduate medical education, medical readiness, and research.

The recent changes in the military health care environment such as the redistribution of resources, military down-sizing, the shift to outpatient from inpatient care, and privatization issues with TRICARE have all had an impact on medical education. Most of the clinical faculty at the military *teaching hospitals* are requested to accept increased clinical, operational, and administrative responsibilities at their respective clinical sites as well

as multiple academic tasks. This directly impacts the faculty's availability for the instruction of medical students. Since 1999, the SIMCEN has successfully served as the site for the *Introduction to Clinical Medicine I*, a course that teaches medical interviewing skills. In 2000, the Center proved to be essential for USU to support the *Introduction to Clinical Medicine III Course*; and, during 2001-2002, USU continued to focus on current clerkship issues, to include careful analyses of current trends and the SIMCEN's future role in addressing related areas of concern.

During 2002, the SIMCEN also reported the following accomplishments:

- From 2000 through 2002, the SIMCEN has supported 57 educational activities: 17 School of Medicine; 10 Graduate School of Nursing; 23 Graduate Medical Education and Operational Medicine; and, 7 Research Training activities. *These educational activities, in turn, have supported over 9,249 student encounters;*

- In a collaborative partnership with the Walter Reed Army Medical Center, Johns Hopkins University, and the Centers for Disease Control, *the SIMCEN successfully participated in developing an Anthrax Vaccine Immunization Provider Response Program.* The objective of the project was to develop an educational product to guide medical personnel dealing with patient concerns about anthrax immunization;

- The completion of the Internet 2 Initiative with the National Library of Medicine provided USU, during 2002, with its first I-2 workstation. Faculty members in the USU SOM Department of Obstetrics and Gynecology can now access a genetic counseling I-2 multi-media software application;

- The SIMCEN's *beta-testing* collaboration with Surgical Science led to the development of a more user-friendly, robust software application for enhancing/developing laparoscopic procedure skills;

- Collaboration with the University of Maryland resulted in further refinements to the existing needle insertion devices currently used in several medical simulators (this work is linked to enhancing the capabilities of the two needle insertion devices developed at USU, the Pericardiocentesis and Diagnostic Peritoneal Lavage Simulators. These simulators led the American College of Surgeons to approve, for the first time, an Advanced Trauma Life Support Certification of Surgical Skills without the use of animals or cadavers); as a result, *the SIMCEN conducted the Nation's first Advanced Trauma Life Support (ATLS) Course using virtual-reality based simulators, computer-controlled mannequins, and medical models instead of animals*; and,

- An initiative, completed during 2002, was the development of a series of Clinical Case Scenarios developed under contract with the National Board of Medical Examiners (NBME). These cases, along with others developed in other centers, may be used by the NBME as part of Step 2 of the United States Medical Licensing Examination (USMLE) in the near future.

Hand-Held Computers for Students.

By November of 2000, the USU SOM Biomedical Informatics Department was formally established and began the implementation of a Hand-Held Computer Program for the SOM students during 2001. Hand-held computers were provided by the University to the second-year medical school class. These computers provided common paths of communication as School of Medicine (SOM) students entered their rotation cycles. *Surveys have documented that the hand-held computers are a superb educational tool; as such, the provision of these computers was continued in 2002.*

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GOAL 3: We will optimize resources to efficiently and effectively implement USU core capabilities.

Optimization of USU Resources Generated $24.6 Million of Cost Avoidance for the MHS during 2002. Continuous accreditation by 14 accrediting entities has enabled USU to support and generate cost avoidance for the MHS through its multiple educational programs and activities. In addition to 3,451 USU Alumni (3,268 uniformed physician officers and 183 advanced practice nurse officers as of April 2003), the Office of the Secretary of Defense (OSD) has officially recognized the many cost-effective products of USU: (**Accredited Programs:** i.e., Graduate Education; Graduate Medical Education; Continuing Education for Health Professionals; the VA/ DoD Distance Learning Program; and, the Military Training Network; **Centers of Unique Expertise for:** i.e., the Study of Traumatic Stress; Preventive Medicine and Public Health; Casualty Care Research; Disaster and Humanitarian Assistance Medicine; and, Prostate Disease Research; and, **Institutes for:** Armed Forces Radiobiology Research and United States Military Cancer Research). Each year, *the Office of the USU Vice President for Administration and Management coordinates the development, organization, and presentation of inclusive data as required for the USU FACT SHEET on COST-AVOIDANCE Generated for the DoD.*

USU SOM Department Chair Develops the MedPix Medical Image Database System. **James G. Smirniotopoulos, M.D., Professor and Chair, USU SOM Department of Radiology and Radiological Sciences, and Professor of Neurology and Biomedical Informatics,** began an exciting Distance Learning Program by providing monthly Neuroradiology Teleconferencing between USU and the Naval Medical Center in San Diego, California. Working with the USU Office of Technology Transfer, Doctor Smirniotopoulos filed a patent application for the MedPix Medical Image Database System. *The MedPix System is now used by all DoD Radiology Residency Programs and it is the primary teaching file for: the National Naval Medical Center (NNMC); the Walter Reed Army Medical Center (WRAMC); the Tripler Army Medical Center in Honolulu, Hawaii; the Madigan Army Medical Center in Tacoma, Washington; and, USU.* The MedPix Case of the Week is distributed by e-mail to more than 1,700 registered users each week, as well as to USU students across all four years of the School of Medicine.

USU Facilities Division and the Navy Public Works Center Streamline a Process for Obligating Funding for Urgently Required Renovation Projects at USU. For six years, the USU Facilities Division has successfully coordinated with the Navy Public Works Center (PWC) to streamline and maximize the process for obligating funding for urgently required renovation projects throughout the University's infrastructure, especially at the end of the Fiscal Year. Throughout 2002, the USU Vice President for Administration and Management met weekly with the Facilities Division and PWC representatives to: 1) ensure open communication; 2) resolve on-going concerns and issues during the implementation of previously funded projects; and, 3) ensure the preparation of documentation for future projects and the on-going obligation of funding once it has been identified by the USU Vice President for Resource Management. A continuously updated project listing includes the following information: 1) the status of unfunded projects for the current Fiscal Year (currently, there are more than 43 active projects); 2) totals and status of completed documentation submitted to the USU Vice President for Resource Management of projects ready for funding in the current Fiscal Year; 3) totals and current status of projects already funded during the current Fiscal Year; and, 4) the current status of all funded projects from the previous Fiscal Year *(a total of $9,165,975 was obligated during Fiscal Year 2002). The Facilities Division Project Listing serves as an evolving Strategic Plan for the Construction and Renovation Requirements throughout the University.* As projects are completed, new requirements are constantly being identified by the PWC engineers and the USU Facilities Division; once recognized, they are entered into the Project Listing for documentation and eventual funding. As a result, the USU campus is well maintained, as required to support the core competencies of the University, reflecting excellent stewardship on the part of USU leadership. Without this time-proven process, USU would not be in a position to promptly accept funding from OSD or other resources during, or at the end of, the Fiscal Year.

Financial Management Activities.

The USUHS Program Manager for the SmartPay Travel Card participated in our Best Practices Joint Session. He shared the University's tools for success with Agency Program Coordinators from all components of the Department of Defense, military as well as civilian. Because of this leadership and unbiased focus on the responsible use of a convenient, cost-effective and efficient travel management tool, USUHS enjoys an enviable *benchmark* setting reputation ahead of the other Department of Defense Agencies and military departments.

- **Christopher D. Slack, Government Card Executive, Bank of America,** Letter to USU, September 17, 2002.

Due to an aggressive Travel Card Program implemented by the USU Financial Management Division Travel Pay Office, the USU Travel Card Manager, and the USU senior management, the University continued to be recognized by the DoD throughout 2002 for consistently maintaining the lowest travel card delinquency rate in the entire Department. Beginning during Fiscal Year 2000 throughout 2002, under the coordination and leadership of the USU Vice President for Resource Management, USU also continued its partnership with the Navy Bureau of Medicine and Surgery (BUMED) to jointly manage the funding levels of USU's procurement account in order to maximize benefits for both USU and the DHP. Under this agreement, USU is responsible for

executing the University's procurement program and requesting and justifying any long-term capital equipment requirements; BUMED assists in the management of the appropriation process, facilitating the matching of funds with the timing of procurement actions. Also during 2002, there was new emphasis on shared problem-solving of budgetary issues with all USU activity heads.

Grants Management Activities. During 2000, the University established the Grants Management Office and Grants Officer Position to provide administrative management services in support of the University's research community for grant or cooperative agreements; this included providing fiscal management and guidance to grant recipients and investigators. During 2002, the Grants Management Office awarded 16 new grant agreements worth more than $33,000,000; and, it completed over 100 modification actions to existing awards. Currently, there are 125 active USU awarded grant agreements ranging from $5,000 to $29,000,000 managed by the Grants Office. The University has 75 principal investigators conducting research on projects awarded to some 12 grant recipients; and, there are 33 agencies providing funding support for the active grants. The USU Grants Office also provides oversight support for the TriService Nursing Research Program which has more than 70 grants. During 2002, Grants Management implemented the *Electronic Certification System (ECS)* for invoices. Working closely with the Defense Finance Accounting System (DFAS) Offices located in Columbus and Charleston and the Henry M. Jackson Foundation (the grant recipient), *USU Grants Management implemented the ECS, allowing the University certifying officer to review and approve invoices electronically, decreasing payment time and reducing paper*.

Resource Management Information Activities. During 2002, the Resource Management Information (RMI) Office developed, maintained and administered the University's resource management information systems and worked on two major University initiatives: 1) RMI served as the Lead Agent for the Resource Management Information System Search Committee, which was established to find a suitable replacement for the University's principal resource management information system, the College and University Financial System (CUFS). The committee must effectively evaluate the available options for the appropriate system and, following its selection, propose a recommended implementation plan; during 2002, RMI was instrumental in orchestrating the fit/gap analysis of the Defense Finance Accounting System E-Biz System Initiative to ensure its capability to meet the functional requirements of the University; and, 2) RMI also developed a Research Activity Reporting System, a data repository and reporting tool for collating financial, personnel and grant information. *This reporting system provides tracking, analysis and projection modeling capabilities for research activities throughout the University*.

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GOAL 4: We will build a sustaining financial base.

Two Programs Added to the University's Financial Base. Through the support and approval of the USU Executive Committee, permanent funding for the *National Capital Area Medical Simulation Center* and the *USU Military Training Network* has been incorporated into the University's financial base; these activities support health professional education and training throughout the Military Health System. During 2002, the University continued to focus on *resource acquisition* to build a sustaining financial base and on *resource stewardship* to effectively and efficiently support USU's core missions in teaching, research, service, and medical readiness.

USU Research Programs Increase Funding Levels. Growth in research funding at USU has continued to increase over the past years. As reported during August of 2002, extramural research funding granted to the USU researchers totalled some $53.3 million and was almost evenly divided between DoD and nine other Federal Agencies. *Of note, funding from the National Institutes of Health has steadily increased ($4.3 million in 1997; $6.1 million in 1998; $9.0 million in 1999; $12.3 million in 2000; $16.7 million in 2001; and, 19.9 million in 2002).*

During 2002, *the USU SOM Department of Anatomy, Physiology and Genetics (APG) competed successfully for selection as one of the National Heart Lung and Blood Institutes (NHLBI) Proteomic Centers.* This contract represented $3.2 million in Fiscal Year 2002; funding will be continued by NHLBI throughout the next seven years as part of a $12.7 million grant. **Harvey B. Pollard, M.D., Ph.D., Professor and Chair, USU SOM Department of Anatomy, Physiology and Genetics,** is the principal investigator on this contract. The goal of the new Proteomic Center at USU is to identify proteins whose expression and function are significantly increased or decreased in cystic fibrosis. The rationale is that the identification of such proteins will provide critical information for the development of new clinical diagnostics and the discovery of new drugs with which to treat cystic fibrosis. The USU Proteomic Center is one of ten funded centers by NHLBI; other centers include: the Medical College of Wisconsin; Yale University; Boston University; Stanford University; Johns Hopkins University; University of Texas Medical Branch at Galveston; and, the University of Texas Southwestern Medical Center. *In terms of NIH funding, this moves the USU SOM Department of APG into the ranks of the top twenty equivalent Departments in United States Medical Schools*; the Proteomic Center will also serve as a crucial resource for research efforts across the entire University.

The USU Office of Research (REA) provides service primarily to three communities: the University as an institution; USU faculty and student investigators; and, the funding agencies which support research at the University. *During 2002, the Office of Research also provided oversight for nine multi-site, Congressionally-funded research programs with Fiscal Year 2002 funding totalling $59.9 million*: 1) the TriService Nursing Research Program; 2) the Center for Prostate Disease Research; 3) the Defense Brain and Spinal Cord Injury Program; 4) the Coronary Artery Disease Reversal Program; 5) the Clinical Breast Care Program; 6) the Post-Polio Research Program; 7-8) programs for Comprehensive Neuroscience and Hepatitis C; and, 9) the United States Military Cancer Institute. Together, these programs support approximately 150 individual research projects conducted at USU and elsewhere.

USU Extramural Research Programs during 2002 Were Funded at approximately $53.3 million. The USU extramural research programs are supported by Federal agencies such as the National Institutes of Health, the National Science Foundation, the Department of Energy, the United States Army Medical Research and Material Command, and the Office of Navy Research. These investigations explored a variety of scientific areas, mechanisms, transmission, and control of a wide range of infectious diseases; a variety of crucial topics in combat casualty care, operational medicine, and health education and promotion; DoD women's health issues; and, the development of new methods for the diagnosis and treatment of medical problems faced by the United States military and their dependents. In addition, *Intramural Research Programs were funded at $2.7 million; Congressional Programs were funded at $59.9 million; and, Extramural Programs were funded at $53.3 million. Thus, the total of the USU Intramural, Extramural, and Congressional Research Programs was approximately $119.9 million in 2002 with a total of 414 active projects and 533 publications*. During the past year, the USU Office of Research continued to establish baselines for research funding from both extramural and intramural

sources in order to assess progress and growth potentials. In addition, research plans were developed that will allow USU investigators to request funding for multi-investigator grants from the National Institutes of Health. (Further information is provided later in this Section of the Journal, *The Office of Research*.)

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GOAL 5: We will optimize our role in military and federal medical education and research.

USU Research Studies Critical Issues for the Military. *In 2002, the USU intramural program was funded at $2.7 million with 125 intramural faculty projects in place; of those research projects, the majority consisted of militarily relevant protocols, with 52 clinical research awards, and three projects in areas of educational research*. Standard awards by USU for militarily relevant research were typically 90 percent of the applicant's budget request; clinical research projects were usually supported by the University at 90 percent. A wide array of research protocols at USU investigate specific disease threats faced by the Armed Forces during peacetime and deployment. These research projects support the military mission by advancing the understanding of the mechanisms, transmission, and control of a wide range of pernicious and/or common diseases that may be faced by warfighters. These protocols are expected to provide important applications in support of the growing requirements for Homeland Defense and Security. The knowledge gleaned by USU researchers should open new avenues to better control, diagnose, and provide treatment when responding to natural and man-made biological threats, both at home and abroad. *USU studies also support the critical requirements of combat casualty care* by: exploring the pain-control mechanisms that underlie established treatments; providing the groundwork for effective strategies to limit nerve damage and encourage nerve regeneration; and, identifying possible causes of life-threatening complications of the combination of exertion and injury commonly found under combat conditions.

USU Research Is Recognized by Science as One of the Top Ten Scientific Breakthroughs of 2002. During 2002, in the area of military operational medicine, two USU researchers advanced the understanding of, and the ability to manipulate, the physiological mechanisms of stress and immunity, human sleep and seasonal cycles, and the neurological changes underlying short- and long-term memory. **Ignacio Provencio, Ph.D., Assistant Professor, USU SOM Department of APG,** and **Mark D. Rollag, Ph.D., Professor and Vice Chair, USU SOM Department of APG,** identified a *photoreceptive net*, a new light-detecting apparatus in the retina. *Based on their work, recognized by Science as one of the Top Ten Scientific Breakthroughs of 2002,* other scientific laboratories have extended their findings. According to a report on the subject featured in the Harvard Gazette, light is a mixture of different frequencies or colors. By determining the frequency needed to reset the internal clock after it has been knocked out of synch by travel across time zones, scientists could develop a cure for jet lag. *From the perspective of the Armed Forces, not having to acclimate or adjust the clock could ultimately save lives.* These discoveries, as well as other research conducted at USU, may soon enable deployed MHS warfighters to: remain awake longer with fewer detriments to performance; develop better strategies for enhancing and preserving memory and reasoning capabilities under battlefield conditions; assist the DoD and the VA to understand and ultimately prevent and treat neuropsychotic illnesses such as depression and post traumatic stress disorder; and, assist deployed troops and their families to better prepare for, and contend with, the significant stressors associated with military operations.

The USU SOM Interdisciplinary Graduate Program in Emerging Infectious Diseases. In the early 1990's, medical officers aboard the *USS Saratoga* were overwhelmed with visits to sickbay by sailors exhibiting symptoms of viral gastritis. In all, over 70 crew members grew ill, forcing the Commanding Officer to impose a *stand down*, or a halt in the ship's daily operations, to accommodate the loss of crucial manpower. The culprit: salmonella. The bacterial outbreak on the *USS Saratoga* had a significant impact on the Commanding Officer's ability to carry out his mission. With so many of the areas of the World beset with conflict and political instability, parasitic, bacterial, fungal and viral infections pose serious threats to deployed military forces and public health. Recognizing that these serious challenges to military personnel demand a dedicated response, *USU created an innovative interdisciplinary Graduate Education Program in Emerging Infectious Diseases, the first of its kind in the Nation.* In August of 1999, the USU Board of Regents gave its final approval for a Graduate Education Program in Emerging Infectious Diseases (EID); in September of 1999, **Eleanor S. Metcalf, Ph.D., Professor, USU SOM Department of Microbiology and Immunology,** was selected as the Program Director. The concept for the EID Program came from **Val G. Hemming, Professor and Dean Emeritus, USU SOM**. Dean Hemming searched for the correct venue for utilizing the vast infectious disease expertise among the USU faculty; he formed a committee to explore possibilities for not only utilizing the expertise, but to also *build a bridge* between the clinical and basic scientists. The inaugural graduate student class of 10 entered the EID Program in the Fall of 2000; this class took its Qualifying Exams in June of 2002; and, the students are currently conducting their thesis research on a full-time basis. In the Fall of 2001, 10 new students entered the EID Program; these students have now selected their academic track and thesis mentors and are taking advanced courses; they will take their Qualifying Exams in June of 2003. Eleven students entered the EID Program in the Fall of 2002; they are in the process of completing the first year of their Core Curriculum and have begun to take track-specific courses and laboratory rotations. The EID program-unique course, *Models of Emerging Infectious Diseases*, is underway, and both second- and first-year EID students take this course together; a situation designed to promote both academic and informal interactions between the two classes. The graduate students are provided with the essential components for understanding an infectious disease environment, whether during an epidemic or in the general population. The number of applicants increased by 40 percent during the past year; and, the EID Program now has more outstanding applicants than it has stipends.

The EID Program Addresses the Extent to which Basic Science Advances in the Area of Infectious Diseases Can Affect the Current and Future Health of Individuals throughout the MHS. The EID Program addresses issues relevant to the military, in particular, with regard to the current focus on bioterrorism, biowarfare, and biodefense. Many of the organisms being studied by the USU graduate students, faculty, and investigators are considered *Category A or B Potential Bioterrorism Agents* by the Federal government. Among those being researched are critical toxins released by ubiquitous strains of water and foodborne enteric bacteria, such as *E. coli 0157:H7*, which places soldiers and others at risk for serious infections. Scientists hope to define the pathogenic mechanisms that cause infectious disease, its life-threatening kidney dysfunction among children, and its potential use as a biological weapon. *EID investigators are also studying anthrax, dengue virus, HIV, tuberculosis, shigella, and salmonella, among many others, to assess the threat to military troops and to develop military-relevant vaccines.* One of the programs's unique aspects is its faculty. EID faculty are from USU, the Walter Reed Army Institute of Research, the Naval Medical Research Command, and the United States Army Medical Research Institute of Infectious Diseases. As a consequence, the contributions of a wide array of experts give students a unique educational opportunity. One such faculty member is **Doctor James Hughes of the Centers for Disease Control and Prevention in Atlanta, Georgia**. Doctor Hughes is the Director of the National Center for Infectious Diseases and has agreed to serve as an active consultant and as a member of the EID Program's External Review Committee. In keeping with the rationale for its establishment, the USU EID Program is preparing research and

clinical scientists and clinical specialists to provide state-of-the-art health care for military personnel; to work and conduct research in the DoD domestic and overseas research laboratories; and, to provide timely and informed consultation to military Commanding Officers in operational units.

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GOAL 6: We will create a powerful, committed and energized University family.

USU Community Sessions. During 2002, the USU Office of Equal Employment Opportunity (EEO), with the volunteered-support of the USU Special Emphasis Program Managers, continued to present USU Community Sessions to reinforce both the understanding of, and the appreciation for, the cultural diversity that exists throughout the University. *The January 2002 Dr. Martin Luther King Jr. Birthday Celebration: Living the Dream, Let Freedom Ring*, featured **Brigadier General Clara Adams-Ender, USA (Retired)**, who presented the Keynote Address to over 200 faculty, staff, and students from the USU community. On May 28, 2002, 80 members of the USU family met to acknowledge *Asian American/Pacific Islander Month; the 2002 theme was: Challenges that Asian Americans and Others Must Face in the New Millennium*. One of the USU family members, **Colonel Robert R. Eng, MS, USA, Director, Armed Forces Radiobiology Research Institute (AFRRI)**, delivered a moving message describing his vision for the new Millennium from his perspective as an Asian-American; the audience participated during an enthusiastic discussion session following Doctor Eng's presentation. Then, on September 25, 2002, 70 members of the USU community met to recognize *Hispanic Heritage Month; the 2002 theme was: Who Are the Hispanics?* The Keynote Address was presented by **Ms. Yolanda Maldonado-Echevarria, Director of the Hispanic Employment Program, the United States Army Equal Employment Agency**. The presentation was followed by a discussion session with audience participation. Also, during September of 2002, *a Memorial Service was coordinated by the Office of the USU Brigade Chaplain: Honoring the Memory of the Victims of the Terrorist Attacks on September 11, 2001*, to acknowledge the one-year anniversary of the tragic event. Eight hundred members of the USU family either gathered together to share a moment of silence, or remained at their work stations; all demonstrated their respect and sense of loss for those whose lives were ended by the violent event.

Throughout 2002, the Offices of University Recruitment and Diversity (ORD), Student Affairs, EEO, Equal Opportunity (EO), the USU Brigade Commander, and the Civilian Human Resources Directorate collaborated to ensure: 1) the communication of equal opportunity principles throughout the University; 2) the timely sharing of information; and, 3) training in personal development, supervisory skills, and the appreciation of diverse cultures. In addition, the USU Student National Medical Association (SNMA) Chapter, the SNMA Minority Forum, the USU Asian Pacific American Medical Students Association (APAMSA), and the Women in Medicine and Science Group (WIMS), sponsored by ORD, participated in numerous activities and meetings throughout 2002, which also served to enhance the appreciation and understanding of the diverse cultures existing within the USU Community.

USU Orientation Program. Since October of 2000, *the USU Civilian Human Resources Directorate, with the assistance of the USU Brigade Command and the senior leadership at USU, has provided formal sessions of the USU Orientation Program to 256 new, civilian and uniformed members of the University community*: 45 in 2000; 92 during two sessions held in 2001; and, 119 in three sessions held during 2002. The purpose of the

program is to present the philosophy, goals, policies, and leadership principles of the University. Orientation packets with key facts and other selected information are provided for review and future reference. In addition, *the SOM Office of Faculty Affairs maintains a Faculty Handbook on the USU web site*, which serves as a quick guide for the delegation of responsibilities at USU and where to seek information, guidance, or other faculty-related requirements; new faculty members are introduced to the USU web site and encouraged to utilize the information. *The USU Environmental Health and Occupational Safety (EHS) Department briefs the new employees on its initiatives to raise the safety consciousness of the USU researchers and the general community*. The USU Orientation Program continues to successfully promote a positive experience for the new employees and also allows them to meet the senior management of USU. Similar sessions will continue throughout 2003.

Development and Recognition Programs. During 2002, extensive efforts were made to present opportunities for the personal development and recognition of the USU community: 1) *the USU Institutional Animal Care and Use Committee and Laboratory Animal Management (LAM) continued to provide its self-developed Protocol Writing Workshop* for USU investigators who utilize animals in research and education; 2) a renewed emphasis was placed by the Civilian Human Resources (CHR) Directorate on *Individual Development Plans for the civilian workforce*; the initial goal of ten percent participation was achieved during 2002; 3) CHR used 200 training vouchers and 60 on-line training subscriptions for computer-related training at CompUSA and New Horizons throughout 2002; and, *CHR sponsored training for 538 USU employees* through on-site classes; 4) the Department of Family Medicine, in coordination with the SOM Office of Faculty Affairs, offered numerous courses and seminars which strongly supported faculty development throughout the USU community; during 2002, more than *320 attendees from the USU faculty earned over 810 hours of continuing education credit*; 5) to date, the University President has personally presented service awards to 87 USU civilian employees; during 2002, the USU Brigade Office of Military Personnel approved and processed 99 awards for the uniformed members of USU; and, 32 USU Honorary Awards were issued during 2002; 6) under CHR coordination, *100 percent of all USU civilian employees (faculty, staff, and administration) received performance evaluations during 2002*; and, 7) the University continued its sponsorship of both the USU Toastmasters International Club (32 active members) and the USU Mentoring Programs (22 participants).

Provision of Formal and Informal Counseling. The USU Offices of Equal Employment Opportunity (EEO), Equal Opportunity (EO), Recruitment and Diversity (ORD), and Student Affairs (OSA) continued to provide formal and informal counseling throughout 2002. The EO Office did not have to provide formal counseling sessions to the uniformed members of USU during 2002; the EEO Office provided one formal and eight informal counseling sessions to the USU civilian staff during the past year. The Office of OSA conducted counseling sessions for well over 300 USU uniformed students throughout 2002; ORD also continued to provide individual counseling sessions for numerous uniformed students. The success of these counseling sessions is evidenced by the ever-increasing appreciation and respect shared among the individual members of the University. Also, the EO representatives for the USU Brigade provided EO training for all uniformed members of the University during 2002; the training addressed diversity, acceptance of others, management of difficult situations, and the identification of harassment in both the work place and in the academic setting.

Recruitment Strategies. The on-going recruitment strategies implemented or maintained during 2002 by the Office of University Recruitment and Diversity (ORD), in coordination with the Offices of Student Affairs, University Affairs, Graduate Education, and the USU Brigade Commander, document the University's commitment

to increase the matriculation of underrepresented minorities. Some of the major efforts during 2002 included: 1) the USU Liaison Program supported and coordinated 12 USU Alumni and 25 ORD staff visits to universities, colleges, recruitment fairs, Reserve Officer Training Corps (ROTC), and Junior ROTC units throughout 2002; *an estimated 3,000 plus students were introduced to USU at either their respective campuses or at various career fairs they may have attended*; 2) The Office of *ORD responded to over 600 requests for the continued replenishment of more than 4,500 packets of recruitment materials* previously mailed to ROTC units, military bases (installations and hospital commanders, chief enlisted advisors and education offices), pre-medical advisors at the military service academies, and undergraduate institutions nationwide. Additionally, written advertisements in various undergraduate marketing venues were produced; 3) *the on-going coordination of a joint venture to enhance the numbers of qualified applicants for both USU and the Health Professional Scholarship Program (HPSP) recruitment offices* continued throughout 2002; 4) the use of the USU web page for electronic recruitment information increased during 2002; 5) numerous tour groups and visits to USU were conducted whenever requested throughout 2002; and, 6) the USU Post-Baccalaureate Program, established in 1998 as a trial program and modeled after current civilian post-baccalaureate programs, maintains compliance with Federal laws and restrictions and simulates service academy preparatory schools. *The program's goal is to increase representation at USU of economically or educationally disadvantaged students and to include current active duty enlisted and/or uniformed officers*. Three individuals were accepted into the Program during 2001 and two during 2002. To date, the students from this program have been accepted into the SOM and are preforming well academically.

The Helping Hands Project. Since the establishment of the *USU Helping Hands Project* in 1996 through 2002, over 600 USU students (medical and advanced practice nursing) and numerous physicians have provided assistance to the poor and homeless at clinics in three Maryland communities. Those clinics are located at: the KenGar First Baptist Church in Kensington; the Shepherds Table at the First Baptist Church of Silver Spring; and, the Adventist Community Center in Takoma Park. The USU students and participating faculty members of the USU SOM Department of Family Medicine became acquainted with available community resources and learned about the health care needs of their patients. The patients are treated for chronic problems such as hypertension, depression, arthritis, and diabetes. Depending upon the clinic, students see from six to fifteen patients during their three-hour shifts. This on-going Project has provided USU students and faculty the opportunity to work with patients from diverse backgrounds who have unique life experiences.

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GOAL 7: We will effectively communicate the right information to the right people at the right time.

High-Speed Network Link to Internet-2. Through collaboration with the National Library of Medicine, an ultra, high-speed network link to Internet-2 was completed for the main USU campus and the USU Simulation Center. This network link has enhanced the University's teaching programs through the use of virtual reality methodologies and distance learning; for example, faculty members in the USU SOM Department of Obstetrics and Gynecology can now access a genetic counseling I-2 multi-media software application.

External and Internal Communication. During 2002, the on-going efforts of the Center for Informatics in Medicine, the Office of University Affairs, the Civilian Human Resources Directorate, the Office of Research Administration, the publication of the USUHS Journal and the USU Quarterly Magazine, and the USU Information Services Management Center all combined to: facilitate awareness of the current activities of the University; provide electronic programs to enhance computer orientation courses, existing educational programs, and new educational services; and, create web pages for general information (including instructions, procedures, and evaluation processes) for the entire USU community. The sharing of the *Editions of the USU Journal* with the USU internal and external communities during the past three years has resulted in letters of acknowledgement and accolades from USU Deans and Department Chairs, the USU Board of Regents, the Secretary of State, the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, the Chief of Naval Operations, the Commandant of the Marine Corps, the Army Chief of Staff, the Secretary of the Air Force, Members of the United States Senate and House of Representatives, military associations, the American Medical Association, and many others.

USU Comprehensive Annual Faculty Listing Report. As part of an on-going process for sharing information, the USU Vice President for Administration coordinates and publishes a comprehensive annual faculty listing report. During each year, all full-time faculty members *(329 full-time faculty during 2002 - 209 civilians; 120 uniformed officers)* are counted in the totals of the Department where each holds his or her primary faculty appointment. Although it only captures a point in time, the annual report documents the unique and wide-reaching, collaborative relationships of the University with its off-campus faculty *(3,989 off-campus faculty during 2002 - 1,195 civilians; 2,794 uniformed officers)*. Since the initial report completed in 1998, recommendations from the USU community have been incorporated so that the following information is included within the annual report: 1) totals of full-time faculty (civilian and uniformed faculty members are identified by name); 2) the tabulation of academic titles, in accordance with USU Instruction 1100; 3) totals of part-time faculty (identified by name); 4) totals of off-campus faculty (civilian and uniformed off-campus faculty are identified by academic title); and, 5) totals of civilian faculty with tenure or with tenure pending (identified by name). All of this information is broken out by Department or Activity; it is then combined and totalled for the School of Medicine or the Graduate School of Nursing; then, all totals are combined to form an inclusive summary for the University. A copy of the 2002 annual faculty listing report was provided on November 15, 2002, to the USU President, Deans, Department Chairs, Activity Heads, the USU Board of Regents (to include the Assistant Secretary of Defense for Health Affairs), the USU Executive Committee (the Surgeons General and their staffs), and the Office of the Chancellor of Education and Professional Development in the Office of the Secretary of Defense.

Expanded Library Services to the Military Services. The USU Learning Resources Center (LRC), in collaboration with the USU Executive Committee and the Services, continued its successful efforts to extend its electronic library services (e.g., 220 full-text books and over 5,475 journals) to the Service libraries and DoD health professionals; these services have been available since 2000. *In 2002, the LRC assisted 6,885 registered patrons, who accessed 4,000,000 pages from the LRC Remote Services.* During 2002, support services for the Walter Reed Army Libraries increased by 20 percent and the Army Medical Research and Materiel Command at Fort Detrick was added to the list of DoD research facilities being provided electronic access to the USU LRC. *ARIEL*, an electronic interlibrary loan delivery system, was added to the LRC available resources during August of 2002; ARIEL provides Internet-based delivery of borrowed items and reduces the waiting time from two weeks to 48 hours (items can be delivered to the patron's desktop in PDF format). In addition, *LoansomeDoc*, a service that allows users to search the National Library of Medicine's *PubMed Database* and order items directly on-line, was initiated in September of 2002.

Communication Services of the USU Information Services Management Center. The USU Information Services Management Center (UIS) continued throughout 2002 to implement projects for improving both technology and customer service at USU. **Customer Support -** *UIS provided support and coordination services for: 3,000 information systems users accessing e-mail, remote dial-in accounts, Internet Protocol connections, satellite, and software applications; 1,500 dial-in users; 2,750 telephone and fax lines; and, 1,200 Voicemail Systems*. As the owner of a Class B Internet License, UIS acts as the Internet Service Provider and supports areas on and off the USU campus, such as the National Naval Medical Center and 12 off-site DoD locations. **Desktop Computers -** In accordance with guidance from Health Affairs, a plan to lease desktop computers by the University has been implemented since 1998 through 2002. *During 2002, 916 desktop computers were in a three-year technology refreshment cycle*. The scheduled addition and cycled replacement of 342 leased computers took place in 2002. **Helpdesk -** The selection of a single set of desktop tools greatly simplified user support and improved helpdesk response from 1999 through 2002. *Over 6,839 customer requests were received in 2002*. The total calls assigned and resolved by the Helpdesk in 2002 totaled 3,422; of this number, 145 tickets were for dial-up requests and 170 tickets were in response to computer viruses; the remaining requests were assigned to other branches within UIS for action. Other projects during 2002 included: data base maintenance; test and deployment of new software products; deployment and replacement of two rounds of leased machines; and, the management of UIS supported products. The helpdesk staff continued to participate in on-campus training on standard operating procedures and in off-site training to acquire professional certification, which contributed to a reduction in calls and an increase in user productivity.

9th Faculty Senate Research Day and Graduate Student Colloquium - 2002. The 9th Annual Faculty Senate Research Day and Graduate Student Colloquium were held at USU on May 15-16, 2002. This year's theme was *The Post Genomic Era: Implications for Research, Education, and Public Health*. The two-day event brought approximately 250 individuals to the USU campus, including researchers from affiliates such as the National Naval Medical Center, the Walter Reed Army Medical Center, the Armed Forces Institute of Pathology, the Washington Hospital Center, and the Walter Reed Army Institute of Research. This year's events included internationally known keynote speakers as well as presentations of on-going research by USU faculty, USU graduate students, and investigators from the above listed affiliated institutions. This year's three symposia, workshop and poster presenting sessions addressed: career development strategies for graduate students; emerging issues in proteomics and bioinformatics; technology transfer; and, ethical issues in research with human subjects. A special panel on bioterrorism featured **The Honorable Saxby Chambliss, former member of the United States House of Representatives from Georgia**; **United States Ambassador, The Honorable Donald A. Mahley**; **Debra Krikorian, Ph.D., United States Army Medical Research and Materiel Command**; and, faculty from both USU and AFRRI. During the Research Day Dinner on May 15, 2002, two awards were presented to those faculty members who were determined to have made significant contributions to research over the past three years. The selection process included a review of nominations from the USU faculty by a subset of the USU Merit Review Committee, which selected the two recipients: **Ignacio Provencio, Ph.D., Assistant Professor, USU SOM Department of Anatomy, Physiology and Genetics (APG)**, received the *Henry Wu Basic Science Research Award*; and, **Andre Dubois, M.D., Ph.D., Research Professor, USU SOM Department of Medicine**, received the *James Leonard Clinical Science Research Award*.

The Graduate Student Colloquium was established in 1980 to promote scholarly interchange between graduate students and the academic community at USU and to recognize the research achievements of USU graduate students. ***The 2002 Graduate Student Colloquium*** featured a career workshop organized by the students, platform and poster presentations given by students, and the *John W. Bullard Lecture*. The Career Development

Workshop consisted of seven presentations by accomplished individuals working in various aspects of the scientific enterprise. These ranged from medical school faculty, to scientific review administrators, to patent lawyers involved with biotechnology, to a study director at the National Academy of Science. Nine scientific poster presentations by graduate students were followed by a lunch, which included the Bullard Lecturer and six oral presentations by students. *The 2002 Bullard Lecture* was presented by **Marc K. Jenkins, Ph.D., Professor, Department of Microbiology, University of Minnesota,** on *Tracking the Generation of Memory CD4T Cells in vivo*. Awards were given for the best poster and platform presentation.

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RELEVANCE - MISSION ACCOMPLISHMENT

USU Graduates Provide Continuity and Leadership and Ensure Medical Readiness.

The School of Medicine. ***Continuity and leadership ensure both readiness and the preservation of lessons learned during combat and casualty care***; these were significant factors that motivated the Congress of the United States and the Executive Office of the President to recommend and approve the establishment of USU and the Health Professions Scholarship Program (HPSP) as complementary sources of accession for uniformed physicians. In 1972, Public Law 92-426, *the Uniformed Services Health Professions Revitalization Act*, established the HPSP to be a flexible source for the quantity of physicians required by the Armed Forces; and, ***USU was established to provide a cadre of military medical officers who would serve a career as active duty physicians and effectively ensure continuity and leadership for the MHS.***

Continuity.

The *extraordinary retention* of these military officers *ensures continuity* for the MHS and the safeguarding of lessons learned during combat and casualty care... Furthermore, a significant number of USU graduates who have completed their residency training hold *leadership* or *operational* positions throughout the MHS... We place great emphasis on the retention of quality physicians in the military.

- **Vice Admiral Michael L. Cowan, Surgeon General of the Navy,** Testimony before the House Armed Services Committee, Subcommittee on Military Personnel, April 10, 2002.

With the graduation of the 23rd School of Medicine (SOM) Class in May of 2002, 3,268 uniformed officers have been granted Medical Degrees. ***As of April 2003, the 2,526 USU physicians on active duty in the Armed Forces represent 21.2 percent (one out of every five) of the 11,907 physicians on active duty in the Army*** (*Total Army Physicians* - 4,189; *USU Physicians* - 1,016)***, Navy*** (*Total Navy Physicians* - 4,023; *USU Physicians* - 748)***, and Air Force*** (*Total Air Force Physicians* - 3,695; *USU Physicians* - 762); the congressional founders had hoped for a representation of ten percent. (In addition, there are 94 USU SOM alumni on active duty in the United States Public Health Service; therefore, a total of 2,620 USU SOM graduates remain on active duty.)

Leadership. The overall retention for USU graduates from the Class of 1980 to the present (23 SOM classes) is 83.6 percent; the Congress had originally envisioned retention rates close to 70 percent. In accordance with this extraordinary retention, recent reviews have documented that one, out of every two SOM alumni who have completed their residency training, is in a significant operational or leadership position in the MHS.

Two In-Depth Studies Reflect that USU SOM Graduates Are the Most Cost-Effective Accession Source for Filling Senior Positions in the MHS and USU SOM Alumni Are Well Prepared for, and Succeed in, Operational and Leadership Positions. During 2003, the Center for Navy Analysis (CNA), conducted an in-depth study entitled, *Life-Cycle Costs of Selected Uniformed Health Professions*, part of which included the development of a Cost Model Methodology. In Phase II of the study, CNA used the cost and historical retention patterns from Phase I, in addition to current constraints and business practices. CNA, in its summary report of Phase II, page one, stated that ***USU is the most cost-effective accession source for filling 0-6 grade physician requirements***. This directly relates to the September 1995 GAO Report, *Military Physicians - DoD's Medical School and Scholarship Program*, page 43, which states that ***43 out of 44 commanders of major military medical units perceived that physicians from the University have a greater overall understanding of the military, greater commitment to the military, better preparation for operational assignments, and better preparation for leadership roles***. Without a doubt, the continuity and leadership provided by the USU SOM alumni ensure readiness and the preservation of lessons learned for the MHS.

Medical Readiness.

Recent tragic events and the current Global War on Terrorism clearly show the benefits of preparedness and training. It is gratifying to know USU is leading the way in preparing military health care professionals to meet current and future challenges. Please accept my appreciation and pass on a hearty, "Well Done!" to your colleagues and the students for their dedicated efforts in support of our men and women in uniform.

- **General Richard B. Myers, Chairman of the Joint Chiefs of Staff,** Letter to USU, March 29, 2002.

USU is the Nation's only University dedicated to ensure readiness for the MHS. In the December issues of both 1998 and 2001, the Association of American Medical Colleges (AAMC) Reporter recognized USU as the ***one place where the physicians of tomorrow do get thorough preparation to deal with the medical aspects of chemical and biological terrorism. USU students learn how nuclear, biological, and chemical agents act on the human body and what to do in the event of a suspected exposure - from detection to decontamination and medical countermeasures.*** The MHS must provide quality health care during humanitarian, civic assistance, or operational contingencies. This critical medical response requires that physicians in the MHS be provided a solid background in tropical medicine and hygiene, parasitology, and the use of epidemiologic methods and preventive medicine. USU students are provided with approximately 130 contact hours of study in these areas, compared to about 13 hours found in the typical civilian medical school curriculum. In addition, the multi-Service environment of USU facilitates the students' understanding of the cultures and vocabularies of the United States Army, Navy, Air Force, and Public Health Service, which ensures two of the essential components of readiness: *flexibility and continuity during joint service operational contingencies.* And, the USU SOM has implemented innovative efforts to meet the evolving requirements of medical readiness: the newly established National Capital Area Medical Simulation Center and the USU Patient Simulation Laboratory; the SOM Department of Biomedical Informatics; and, the newly established interdisciplinary graduate program, Emerging Infectious Diseases (see Section II for a detailed description of these SOM programs). As mentioned above, in December of 2001,

following the terrorist attacks of September 11th, the AAMC Reporter featured USU and reconfirmed the findings reported in its earlier article: ***Large-scale terrorist attacks and biological intimidation campaigns on American soil have sent shockwaves of change rippling through every layer of society. Each unexpected new challenge requires an adjustment in preconceptions and contains a practical lesson for the future. But at USUHS, it is learning as usual. Students have been explicitly trained to provide a medical response to terrorism scenarios like the ones that are playing out in the United States and abroad today.***

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The Graduate School of Nursing.

The Uniformed Services University of the Health Sciences Graduate School of Nursing (GSN) has met and exceeds all criteria for continuing education. This program provides an outstanding model for preparing advanced practice nurses for military service and care of patients in crises and disaster situations. This program is on the cutting edge of effectively incorporating advanced technology into the curriculum and instruction process to produce a highly competent practitioner. This program can serve as a model to advance nursing education, practice and scholarship as nursing moves into care of the global community.

- Final Report of the National League for Nursing Accrediting Commission dated March 18, 2002, granting accreditation to the GSN for a maximum term of eight years.

In 1993, Congress directed the initiation of a demonstration program for the preparation of family nurse practitioners to meet the needs of the Uniformed Services. In the short time since its establishment, the USU Graduate School of Nursing (GSN) has:1) recruited a qualified faculty; 2) successfully established curricula for the Family Nurse Practitioner and Nurse Anesthesia options in its Master of Science in Nursing Program; 3) received formal approval on February 26, 1996, from Health Affairs, Office of the Secretary of Defense; 4) identified accredited clinical practice sites and completed memoranda of understanding for those relationships with 21 military treatment facilities (MTFs) and an additional 111 non-DoD, Federal, and civilian clinical sites; 5) developed and implemented an administrative structure that provides for faculty and student participation in the overall governance of the GSN; 6) submitted self-studies to its three accrediting entities; received notification of accreditation with commendation during 2002 from the National League for Nursing Accrediting Commission (NLNAC) and the Commission on Collegiate Nursing Education (CCNE) with maximum terms of accreditation, eight and ten years respectively; and, the GSN was notified, in June of 2003, by the Site Team for the Council on Accreditation (COA) of Nurse Anesthesia Educational Programs that a positive report had been submitted with official notification expected from the COA in October of 2003; 7) initiated, implemented, and continuously reviewed the outcomes evaluation process for both academic programs; on February 26, 2002, credentialing scoring information released by the American Nurse Credentialing Center's Commission on Certification showed that of the 15 GSN Family Nurse Practitioner graduates who took their certification examination, all 15 passed with a mean score of 123.3, the highest ever achieved; and, 8) as of April 2003, awarded 183 Masters of Science

in Nursing Degrees to advanced practice nurse graduates through its MSN Program options in Nurse Practitioner and Certified Registered Nurse Anesthesia with over 80 percent remaining on active duty; all GSN graduates have passed their certification examinations with greater than a 97 percent pass rate on the first attempt. The GSN is the first advanced nursing school in the United States to serve the Uniformed Services with a clear mission of ***Learning to Care for Those in Harm's Way***.

Advanced Degrees Earned Through Distance Learning. The GSN has enjoyed an on-going, successful six-year collaborative relationship with the VA. The 20-month VA/DoD Distance Learning Program has been recognized as a model for cost-effective collaboration. *At its inception, it was the first program in the Nation to offer a complete nurse practitioner curriculum via distance education.* The collaborative efforts of the GSN with the Department of Veterans Affairs (VA) in the area of distance learning successfully demonstrated a cost-effective form of advanced education where nursing students received advanced training in critically-required specialty areas while maintaining their current positions at the VA medical centers. Twenty-six students, through a *virtual commencement exercise*, graduated from the VA/DoD Distance Learning Program on May 18, 1999; an additional student completed requirements during August of 1999, bringing the total to 27 graduates from the first class. The virtual graduation was broadcast from USU and linked with eight VA Medical Centers located across the United States. All graduates were eligible to sit for the American Nurses Association Credentialing Examination for Adult Nurse Practitioners. This graduation marked the first virtual advanced-level graduation for either the VA or DoD. Outcome data from present students, alumni, and employers reflect extremely high levels of satisfaction with the distance learning program. A second class, with 33 students located in ten VA Medical Centers, graduated on May 15, 2001. And, a third class of ten students graduated on May 13, 2003. *To date, 70 individuals have successfully graduated from this exceptional distance learning program.*

Lessons Learned Are Published. The experience gained by both the GSN and the VA will allow future projects in distance learning to benefit from the lessons learned and the technologies tested during the twenty-month VA/DoD Distance Learning Program. To ensure that other Federal entities could easily access the lessons learned during this Program, a joint report was issued by the GSN and the VA Nursing Strategic Healthcare Group in November of 2000. The report, *The VA/DoD Post-Master Adult Nurse Practitioner Distance Learning Program - From Concept to Graduation*, documents, in chronological order, the formulation of the partnership between the DoD and the VA, the conceptual stages and developmental processes, learning strategies, course evolvement, assessment methodologies, clinical experiences, and the transmission effectiveness for the entire program. In short, the report provides an inclusive road map for implementing a distance learning program - from concept to the matriculation of the second class. Future initiatives between the GSN and the VA are being considered with an emphasis on improving nursing practice and health care for veterans. (See Section III for a detailed description of this GSN program.)

A New Doctoral Degree Program in Nursing and a Clinical Nurse Specialist Option Are Established. To meet the evolving requirement for nursing research relevant to the MHS, the USPHS, and other Federal Health Systems, in March of 2002, with the approval of the Federal Nursing Chiefs, the GSN began the process for the development of a *Doctoral Program in Nursing*. The new Program will prepare nurses to be uniquely qualified as leaders in research, education, and clinical practice. The GSN Doctoral Program was presented to the USU

Board of Regents (BOR) and received formal approval on October 24, 2002. The Doctoral Program in Nursing will be open to DoD nurses (active duty, reserve, and civilian) and to nurses from other Federal agencies who are nominated and supported by their Service or Agency. The new program will accommodate both full-time and part-time students and will incorporate aspects of both distance and alternative learning. *The first doctoral students will be welcomed by the GSN in the Fall of 2003.* In addition, the Federal Nursing Chiefs identified a need for a *Clinical Nurse Specialist (CNS) option in the GSN MSN Degree Program* in June of 2001. The new program option was presented to, and favorably received by, the USU Executive Committee in January of 2002; next, it was presented to the USU BOR and received formal approval on February 27, 2002. The perioperative specialty content evolved from a comprehensive process of blending field research, program goals, and clinical expert interviews with the Federal Nursing Chiefs. *Eight uniformed officers will join the USU GSN students when the CNS option in the GSN MSN Degree Program is launched in June of 2003.*

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In Addition to the SOM and GSN Alumi and Achievements, Five Other OSD-Recognized, Significant Areas of Support and Products Are Provided by USU for the MHS.

Clinical Support for the Military Health System. During 2002, during their course of teaching, the USU faculty provided over 141,842 hours of clinical care at the Army, Navy, and Air Force Medical Treatment Facilities (MTFs) in the National Capital Area. Without this significant provision of support during 2002, the MTFs would have had to augment their medical staffs by 141,842 work hours in order to maintain the level of patient care within the direct care system of the MHS.

The USU SOM Graduate Education Programs. As of April 2003, the SOM Graduate Degree Programs have conferred a total of 727 Basic Science Degrees: 229 Doctors of Philosophy; 11 Doctors of Public Health; 69 Masters of Science; 386 Masters of Public Health; 4 Masters of Science in Public Health; 25 Masters of Tropical Medicine and Hygiene; and, 3 Masters of Military Medical History. During 2002, 35 uniformed officers received advanced degrees (30 Masters Degrees and 5 Doctoral Degrees). The USU SOM Graduate Education programs are responsive to the special needs of the Military Health System; a detailed discussion on the superb responsiveness of the USU Graduate Education Programs is provided at Section IV of the Journal.

The USU SOM Office of Graduate Medical Education. The USU Office of Graduate Medical Education (GME) provides essential support for the MHS in that it serves as the Administrative Office and provides oversight for the National Capital Consortium (NCC). The USU SOM Office of GME collects and evaluates data on DoD GME programs to ensure academic and scientific excellence; and, it provides consultation and advice for the Dean of the SOM, the President of USU, and others throughout the MHS on military-unique medical curricula. During 2002, all of the GME programs in the National Capital Area came under the cost-effective sponsorship of the NCC, bringing the current total to 65 programs.

The USU Office of Continuing Education for Health Professionals and the USU Military Training Network. The USU Office of Continuing Education for Health Professionals (CHE), to include the Military Training Network (MTN), provides significant, cost-effective and relevant support for the MHS by facilitating the continued professional growth of health care professionals throughout the MHS. In carrying out its principal responsibilities during 2002, CHE sponsored continuing medical education for 719 activities with an attendance of 5,208 physicians; provided continuing nursing education for 62 activities with an attendance of 1,378 nurses; and, approved Category II (non-ACHE) continuing education credit for 25 programs for 480 members of the American College of Healthcare Executives, and one continuing education activity for 4 psychologists. Also, the DoD sites affiliated with the USU MTN are approved to conduct self-sustained resuscitative and trauma medicine training. This continues to prove cost-effective for the MHS because it eliminates the need to pay premium training costs for civilian resuscitative and trauma medicine programs. During 2002, 223,735 DoD personnel were trained through the USU MTN.

USU Serves as the Academic Center for 2,794 Active-Duty Faculty in the MHS. USU serves as the Academic Center for academic and research activities for 2,794 active-duty, off-campus USU faculty located throughout the MHS. USU on-site faculty have sponsored, hosted, or participated in the major conferences held by the MHS during 2002; in addition, military relevant consultation is continuously provided to the MHS and other Federal agencies by the internationally recognized experts within the University's multiple centers, departments, programs, and institutes. As addressed in this Section of the Journal, *the military-relevant research conducted at USU, in collaboration with many hundreds of off-campus USU faculty assigned throughout the MHS, addresses critical issues for the Armed Forces*. The knowledge documented by the on-site and off-site USU faculty through their collaborative research is opening new avenues to: enhance the quality of clinical care; and, better control, diagnose, protect, and provide treatment for millions of MHS beneficiaries.

All of these products and services are resourced as part of the operating budget of the University and are discussed throughout this report.

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ACCREDITATION

I want to extend my congratulations to you, the leadership and the faculty at the Uniformed Services University for your exemplary performance in receiving a ten-year accreditation with commendation from the Middle States Commission on Higher Education!

This is a notable achievement, and it reflects a successful, long-term commitment to the highest levels of professional medical education for this Nation's Military Health System. The quality of your graduates continues to serve as a testament to the quality of the teaching that was endorsed by the Middle States Commission. You and your staff continue to make significant contributions to our Nation's military readiness and our national medical preparedness.

- **The Honorable William Winkenwerder, Jr., M.D., Assistant Secretary of Defense, Health Affairs,** Letter to the USU President dated July 22, 2003.

The Middle States Association of Colleges and Schools. The University is accredited by the Middle States Association of Colleges and Schools Commission on Higher Education (MSA/CHE). The MSA/CHE is an institutional accrediting agency recognized by the United States Secretary of Education and the Commission on Recognition of Postsecondary Accreditation. Following its establishment in 1972, USU received *candidate for accreditation status* from the MSA/CHE in 1977, and has retained accreditation since 1984. In order to maintain the accreditation of the educational programs within the School of Medicine and the Graduate School of Nursing, the University must receive accreditation from the MSA/CHE. Accreditation by the MSA/CHE is an expression of confidence in an institution's mission and goals, its performance, and its resources. Based upon the results of an institutional self-study and an evaluation by a team of peers and colleagues assigned by the MSA/CHE, accreditation attests to the judgment of the MSA/CHE that an institution has met the following criteria: it is guided by well-defined and appropriate goals; it has established conditions and procedures under which its goals can be realized; it is accomplishing its goals substantially; and, it meets the standards of the MSA/CHE.

In 1993, the University underwent a successful institutional self-study and a reaccreditation site visit by the MSA/CHE. As requested by the MSA/CHE, a Periodic Report was submitted by USU to the MSA/CHE in June of 1998. In July of 1998, the MSA/CHE reported that the USU Periodic Report was... ***to be applauded for its serious and candid review of the areas of concerns pointed out by the Middle States Evaluation Team in 1993***. The MSA/CHE correspondence further emphasized that... ***it is clear that USUHS is responding to its internal and external environments and preparing aggressively for the future.*** On December 1, 1998, the USU President was notified by the MSA/CHE that the University had been granted accreditation, with no follow-up required.

The next evaluation visit by the MSA/CHE was scheduled for the Spring of 2003. The MSA/CHE does not prescribe a particular institutional planning process. However, it does strongly suggest that planning be conducted within the context of the institution's goals, priorities, resources, and commitments. This means, at a minimum, that the institution has: carried out a thorough examination of its mission; reviewed its internal and external environments to form preliminary estimates of its strengths, weaknesses, opportunities, and threats;

developed and implemented a formal system for setting priorities and for developing budgets, strategies, activities, and timetables; and, devised an evaluation procedure for systematically reviewing self-study planning, the self-study process, and self-study findings and recommendations. A steering committee must be established that is responsible for providing leadership to the entire self-study process, to include: determining the key issues for the self-study; preparing the design; developing charges to the subcommittees and coordinating their work on the various issues studied; ensuring that the timetable is implemented as planned; arranging for one or more campus hearings to review drafts of the self-study; and, overseeing the completion of the final self-study report. In accordance with the above, the USU President established a steering committee to draft a self-study design proposal; the design proposal was submitted to the MSA/CHE staff liaison in April of 2001 for review and approval. The MSA/CHE liaison visited the USU campus on May 18, 2001, and met with members of the USU administration, the Board of Regents, and students and faculty; the outcome of the visit was quite positive, with only one recommendation for USU on the inclusion of information on how outcomes assessment will be integrated into the self-study document. The self-study design was revised to include the MSA/CHE liaison's recommendation and received approval in August of 2001. During September of 2001, the University established fifteen self-study subcommittees. Draft reports were scheduled for submission to the steering committee beginning in early February of 2002; subcommittee final reports were due to the steering committee in May of 2002. The steering committee reviewed and merged the subcommittee reports into one comprehensive report for the MSA/CHE. A draft of the comprehensive report was circulated to the University for review and comment. Revisions were incorporated, as appropriate, into the draft document by the steering committee prior to the final review by the Office of the USU President; copies were then submitted to the MSA/CHE. Submission of all required documents to the MSA/CHE was completed during February of 2003.

A Middle States Evaluation Team Visits the University. Following the receipt and review of the USU Self-Study, an Evaluation Team representing the Middle States Commission on Higher Education visited the USU campus on March 30 - April 2, 2003. The Team indicated a positive review of the University upon the conclusion of their visit. On July 1, 2003, the University President was notified by the Middle States Commission on Higher Education that USU had received accreditation with commendation with the next self-study to be conducted during 2012-2013.

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Fourteen Accrediting Entities Ensure that Educational Standards Are Met by the University. In addition to the MSA/CHE accreditation, the following thirteen professional organizations continue to authorize accreditation for the University's schools and programs:

SOM: 1) the Liaison Committee on Medical Education (LCME); 2) the Accreditation Council for Graduate Medical Education (ACGME); 3) the American Psychological Association Committee on Accreditation; 4) the Council on Education for Public Health;

GSN: (5) the National League for Nursing Accrediting Commission (NLNAC); 6) the Council on Accreditation of Nurse Anesthesia Programs (COA); 7) the American Association of Colleges of Nursing Commission on Collegiate Nursing Education (AACN/CCNE);

University: 8) the Nuclear Regulatory Commission (NRC); 9) the American Association for the Accreditation of Laboratory Animal Care (AAALAC); 10) the Accreditation Council for Continuing Medical Education (ACCME); 11) the American Nurses Credentialing Center's Commission on Accreditation; 12) the American College of Healthcare Executives (ACHE); and, 13) the State of Maryland Department of Health and Mental Hygiene Board of Social Work Examiners.

Individual discussions on the accreditation of the School of Medicine, the Graduate School of Nursing, the Graduate Education Programs, the Graduate Medical Education Program, and the Office of Continuing Education for Health Professionals are provided at sections II, III, IV, V, and VI of this report.

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OPTIMIZATION - OSD RECOGNITION OF USU's MULTIPLE PRODUCTS
THE JOINT MERITORIOUS UNIT AWARD
THE GENERATION OF COST-AVOIDANCE
CENTER OF NAVY ANALYSIS REPORTS

I just received a copy of the Joint Meritorious Unit Award citation for USUHS. Congratulations! The entire staff can be justifiably proud. USUHS provides an invaluable service to the Armed Forces and to America. Nowhere else will you find a similar quality of research and medical training with the specific goal of meeting the demands of military medicine. And the price is right! As the citation points out, you are actually saving money for the government and the taxpayers.

- **The Honorable F. Whitten Peters, Secretary of the Air Force, Department of Defense**, Letter to USU, dated January 20, 2001.

OSD-Conducted Surveys Recognize USU's Academic Certification and Faculty Credentials. In mid-1997, Management Reform Memorandum 3, Office of the Secretary of Defense (OSD), called for a study of the educational and professional development programs sponsored by OSD. That study and the efforts of the Defense Reform Task Force led to the Defense Reform Initiative's decision to establish an Office of the Chancellor for Education and Professional Development. Throughout 1997 and 1998, the USU Vice President for Administration and Management (VAM) coordinated the University's participation in intensive surveys on streamlining education throughout DoD. The University provided inclusive responses to the Office of the Deputy Assistant Secretary for Civilian Personnel Policy; those responses included all of the services and products resourced by USU as part of its operating cost. *These OSD-conducted surveys mark the first official OSD recognition of the multiple products of USU in addition to its medical school graduates.* As a result of those surveys, and based on the average course length of the continuing education efforts of the University, OSD analysts identified approximately 188 student man years in addition to the 820 (SOM - 660; GSN - 70; Graduate Education - 90) uniformed students who are traditionally credited to the University.

During 1998, in response to DoD's Defense Reform Initiative Directive 41, a two-part survey on faculty credentials was conducted by the USU VAM for use in the development of a blueprint for the Office of the Chancellor to be established within OSD. *The Office of the Deputy Assistant Secretary for Civilian Personnel Policy concluded, as in August of 1997, that USU has the strongest academic certification and faculty credentials among all activities surveyed.*

USU Comprehensive Annual Faculty Listing Report. As part of an on-going process for sharing information with OSD reference the credentials of the USU faculty, the USU Vice President for Administration and Management coordinates and publishes a comprehensive annual faculty listing report. During each year, all full-time faculty members *(329 full-time faculty during 2002 - 209 civilians; 120 uniformed officers)* are counted in the totals of the Department where each holds his or her primary faculty appointment. Although it only captures a point in time, the annual report documents the unique and wide-reaching, collaborative relationships of the University with its off-campus faculty *(3,989 off-campus faculty during 2002 - 1,195 civilians; 2,794 uniformed*

officers). Since the initial report completed in 1998, recommendations from the USU community have been incorporated so that the following information is included within the annual report: 1) totals of full-time faculty (civilian and uniformed faculty members are identified by name); 2) the tabulation of academic titles, in accordance with USU Instruction 1100; 3) totals of part-time faculty (identified by name); 4) totals of off-campus faculty (civilian and uniformed off-campus faculty are identified and totaled by academic titles); and, 5) totals of civilian faculty with tenure or with tenure pending are identified by name. All of this information is broken out by Department or Activity; it is then combined and totaled for the School of Medicine or the Graduate School of Nursing; then, all totals are combined to form an inclusive summary for the University. A copy of the 2002 annual faculty listing report was provided on November 15, 2002, to the USU President, Deans, Department Chairs, Activity Heads, the USU Board of Regents (to include the Assistant Secretary of Defense for Health Affairs), the USU Executive Committee (the Surgeons General and their staffs), and the Office of the Chancellor of Education and Professional Development in the Office of the Secretary of Defense.

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OSD Joint Meritorious Unit Award Recognizes the Multiple Products of USU. On December 11, 2000, the Secretary of Defense awarded the Joint Meritorious Unit Award to the University. *This significant award documents OSD's recognition of the essential mission, exceptional service over the past decade, and the multiple cost-effective programs of USU* (the SOM, the GSN, Graduate Education Programs, Graduate Medical Education, Continuing Education for Health Professionals, the Military Training Network, Clinical Support for the MTFs, etc.). Public Law 92-426, *the Uniformed Services Health Professions Revitalization Act of 1972*, mandated that the University should meet the special needs of the Military Health System (MHS) through the provision of uniquely trained, career physician officers who would ensure continuity and leadership for the MHS. As validated by the Secretary of Defense in the citation for the Joint Meritorious Unit Award, the University has exceeded the goals set by the early visionaries who established USU.

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In addition to the Multiple Products and Services of USU, Four USU Programs Generate 24.6 Million Dollars of Cost-Avoidance for the Military Health System. Critical to the University's efforts for optimization, the Middle States Association of Colleges and Schools Commission on Higher Education (MSA/CHE) has granted accreditation to USU from 1984 through 2013. This essential accreditation, most recently with commendation, has enabled the University to support and generate cost avoidance for the MHS through its multiple educational programs, all of which are accredited by a total of thirteen independent accrediting entities, in addition to the MSA/CHE. In meeting the mandates of its establishing legislation and the standards for accreditation as an academic institution, ***USU provides multiple services and products for the Military Health System (MHS), all of which are recognized by the Office of the Secretary of Defense.***

The Alumni of the USU School of Medicine. The principal product of USU continues to be its 3,268 USU SOM uniquely trained, career-oriented physicians who are prepared to practice military medicine in the multi-Service environment of USU; and, as a result, USU ensures continuity and leadership for the MHS (stated totals are effective through April of 2003); ***the 2,526 USU SOM alumni on active duty in the Armed Forces***

represent twenty-one percent of the 11,907 physicians on active duty in the MHS (the Army has a total of 4,189 physicians on active duty, of which, 1,016 are USU graduates; the Navy has a total of 4,023 physicians, of which, 748 are USU graduates; and, the Air Force has a total of 3,695 physicians, of which, 762 are USU graduates). In addition, 94 USU SOM alumni continue to serve on active duty in the United States Public Health Service, for a total of 2,620 USU SOM alumni who continue to serve their Nation in the Uniformed Services; the overall retention for USU SOM graduates from the first graduating Class of 1980, through April of 2003, is 83.6 percent; and, of the USU SOM alumni who have completed their residency training, almost one out of every two USU graduates holds an operational or leadership position.

The Graduate School of Nursing. The fully accredited USU Graduate School of Nursing (GSN) has provided 183 Masters of Science in Nursing Degrees to advanced practice nurse graduates through its MSN Program options in Nurse Practitioner and Certified Registered Nurse Anesthesia with over 80 percent remaining on active duty; ***all 183 GSN graduates have passed their certification examinations with greater than a 97 percent pass rate on the first attempt*** (as of April 2003); during 2002, at the request of the Federal Nursing Chiefs, the GSN developed and received approval from the USU Executive Committee and Board of Regents for a Doctoral Degree Program in Nursing and a Clinical Nurse Specialist option in the MSN Degree Program; both will be implemented in 2003.

Clinical Services Provided by USU/SOM/GSN on-site Faculty. In 2002, during their course of teaching, the USU faculty provided over 141,842 hours of clinical care at the Army, Navy, and Air Force Medical Treatment Facilities (MTFs) in the National Capital Area; *the annual, manpower cost avoidance generated by the USU faculty through this clinical support (141,842 hours) is estimated at $10,254,109*.

The SOM Graduate Education Programs. As of April 2003, the SOM Graduate Degree Programs have conferred a total of 727 Basic Science Degrees; *the annual cost avoidance generated by the USU SOM Graduate Education Programs for the MHS during 2002 was estimated at $1,050,000*.

The USU Office of Continuing Education for Health Professionals and the Military Training Network. The USU Office of Continuing Education for Health Professionals (CHE), to include the Military Training Network (MTN), provides significant, cost-effective support for the MHS by facilitating the continued professional growth of health care professionals throughout the MHS; *because CHE and MTN bring training to the military health care providers, an annual, estimated cost-avoidance of $13,286,774 was generated during 2002 for the MHS*.

The SOM Office of Graduate Medical Education. The USU Office of Graduate Medical Education (GME) provides cost-effective support for the MHS in that it serves as the Administrative Office and provides oversight for the National Capital Consortium (NCC); collects and evaluates data on DoD GME programs to ensure academic and scientific excellence; and, provides consultation and advice for the Dean of the SOM, the President of USU, and others on military-unique medical curricula. During 2002, all of the GME programs in the National Capital Area came under the sponsorship of the NCC, bringing the current total to 65 programs.

USU Serves as the Academic Center for the MHS. USU serves as the Academic Center for academic and research activities for 2,794 active-duty, off-campus USU faculty located throughout the MHS; USU on-site faculty have sponsored, hosted, or participated in the major conferences held by the MHS; in addition, military relevant consultation is continuously provided to the MHS and other Federal agencies by the internationally recognized experts within the University's multiple centers, departments, programs, and institutes. As addressed in this Section of the Journal, *the military-relevant research conducted at USU, in collaboration with many hundreds of off-campus USU faculty assigned throughout the MHS, addresses critical issues for the Armed Forces*. The knowledge documented by the on-site and off-site USU faculty through their collaborative research is opening new avenues to: enhance the quality of clinical care; and, better control, diagnose, protect, and provide treatment for millions of MHS beneficiaries.

All of these products and services are resourced as part of the operating cost of the University and are discussed throughout this report.

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Two Studies by the Center for Navy Analysis on Retention and Cost-Effectiveness Recognize the Critical Requirement for USU SOM Graduates. An example of the critical role of USU SOM graduates in the MHS was reported during February of 2001, when the Center for Navy Analysis (CNA) provided data on medical retention to the Navy Surgeon General for use in his response to the Senate Appropriations Committee. The Navy Surgeon General informed the Congressional Committee that his most undermanned specialties were general surgery and all surgical subspecialties, orthopedic surgery, diagnostic radiology, anesthesiology, and urology. Many of these specialties are critical wartime specialties and shortfalls could have a negative impact on medical readiness. The Navy response stated the following... ***Overall, the median length of non-obligated service for physician specialists averages only 4.4 years. That average drops to 2.9 years when USU graduates are excluded; the median length of non-obligated service as a specialist for USU graduates is 9 years.***

In April of 2003, CNA released *Phase II: The Impact of Constraints and Policies on the Optimal-Mix-of-Accession Model* from its major study, *Life-Cycle Costs of Selected Uniformed Health Professions*. The second of six major CNA findings states... ***Policy-makers need to consider the costs and benefits for each accession source. For example, even though USUHS accessions are the most costly*** (when including all Federal costs, a 1995 General Accounting Report (GAO) found that USU and HPSP Scholarship graduates are comparable in cost)***, their better retention makes USUHS the most cost-effective accession source for filling 0-6 grade requirements in the MHS***. Thus the outstanding retention rates of USU SOM graduates ensure that critical wartime specialties are filled; medical readiness requires the continuity and leadership provided by the USU SOM alumni.

Summary. The strengthened relationship of the University with OSD and OSD's recognition of the numerous cost-effective programs of USU is documented by the following: 1) the OSD surveys of 1997 and 1998 which officially recognize the multiple products, academic certification, and faculty credentials of USU; 2) the awarding of the Joint Meritorious Unit Award to USU by the Secretary of Defense, which specifically recognizes the multiple, cost-effective programs of USU; 3) the cost-avoidance generated by the University for DoD during 2002 (estimated at $24.6 million); and, 4) the two studies by the Center for Navy Analysis (CNA), which document both the outstanding retention rates of the USU SOM graduates and the resulting cost-effectiveness of utilizing USU alumni to fill leadership positions throughout the MHS.

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ACADEMIC CENTER FOR THE MILITARY HEALTH SYSTEM

Following his service in both World War II and the Korean War and his review of the medical capabilities during the Vietnam War for the United States Senate, he became dedicated to preserving the lessons learned in military medicine; he concurred with *Congressman F. Edward Hebert's philosophy that America needed an academic home for military medicine...* USUHS became a part of his overall commitment to the preservation of the hard-won knowledge of the battlefield, the absolute priorities of preventive medicine, the tremendous achievements of uniformed research, and the need for an academic home for military medicine.

- **The Honorable Strom Thurmond, the United States Senate,** Congressional Record, *In Remembrance of Brigadier General Vorley (Mike) Rexroad, USAF (Retired),* November 12, 2002, pages S10832-S10833.

Active-Duty, Off-Campus USU Faculty Total 2,794. Multiple USU academic and research activities contribute to the medical knowledge and technology base available to the MHS. During 2002, 2,794 active-duty, off-campus USU faculty members throughout the MHS collaborated with the University through academic and research efforts. ***Through these collaborative efforts, USU serves as the Academic Center for those military medical officers and health care providers who seek to advance their military careers and their knowledge of uniformed health care.*** For their valuable service to the University, these active duty, off-campus faculty members are awarded appropriate academic rank. **This section provides selected examples of military relevant conferences or academic activities sponsored by, or collaborated with, the University; all of which document why USU is serving as the Academic Center for Military Medicine.**

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16th Conference on Military Medicine - Enhancing Readiness: Implementing Change in Military Medical Education, June 17-20, 2002, USU Campus. The University continued to serve as the Academic Center for Military Medicine through the planning and presentation of the 16th Conference on Military Medicine - *Enhancing Readiness: Implementing Change in Military Medical Education*, which was held on the USU campus from June 17-20, 2002, with 120 attendees. The military medicine conferences are annual continuing education activities that focus specifically on current challenges facing military medicine. Distinguished speakers included: **The Honorable William Winkenwerder, Jr., M.D., MBA, Assistant Secretary of Defense for Health Affairs; Lieutenant General Paul Carlton, Surgeon General of the Air Force; Rear Admiral Donald Arthur, MC, Deputy Surgeon General of the Navy; Major General Kevin Kiley, MC, USA, Commander, Army Medical Command Center; Val G. Hemming, M.D., Dean Emeritus, USU School of Medicine (SOM); Larry W. Laughlin, M.D., Ph.D., Dean, USU SOM; CAPT Greg Martin, MC, USN, Program Director, Infectious Diseases, National Capital Consortium; Norman M. Rich, M.D., Professor and Founding Chair of the USU SOM Department of Surgery; and, COL Christoph Kaufmann, MC, USA, Chief, USU Division of Trauma and Combat Surgery, USU SOM, Department of Surgery**. Conferees were divided into four working groups to focus on four key aspects of military medical education: content; methods of learning; outcomes measurement; and, certification.

Four Objective Areas Are Prioritized and Provide a Framework for the Identification of Key Curricular Components.

Four Objectives Are Identified: Emerging Technologies; Emerging Threats; Ethical Considerations; and, Changing Missions and Operations. The content group built directly upon the foundation laid by participants in the 15th Annual Conference on Military Medicine (held in June of 2001). *The 2002 participants further prioritized and divided the series of objectives, identified during 2001, into the areas of: emerging technologies; emerging threats; ethical considerations; and, changing missions and operations.* Despite overlap among the four areas, the division into four areas provided a useful framework for the identification of key curricular components. Objectives within each domain were categorized as *need to know*, *ought to know*, and *nice to know*; they were then further prioritized within each of those categories. This provided a guideline for inserting elements into the continuum of military medical education; however the participants did not identify areas that might be cut back within the current curriculum. An Executive Curriculum Committee under the leadership of the Dean, USU SOM, was identified to coordinate the incorporation of these recommendations as part of an on-going process of curriculum renewal.

The RIME Approach - Teaching of a Given Element at Multiple Levels. The second working group, addressing methods of learning, developed a sample template for determining the best methods of learning given a specific learning task. The group concluded that the teaching of a given element should occur at multiple levels, to provide important repetition, while also facilitating the addition of more complex elements of knowledge, skills and attitudes over time. The ***RIME Approach*** includes: ***R***: at the introductory level, the student learns to be a good reporter, mastering the medical history and physical examination and case presentation; ***I***: at the next level, the learner demonstrates the ability to be an interpreter, able to develop a differential diagnosis for the constellation of signs and symptoms identified in a given patient; ***M***: at this level, the learner demonstrates the ability of a manager, describing a sensible plan for the diagnosis and management of a patient's problems; ***E***: at the highest level of learning, the learner becomes an educator, capable of teaching patients and peers; for example, counseling patients about behaviors or treatment preferences and identifying potential benefits and risks. In addition, the second group constructed a *toolbox* for students learning with the various methods identified and an instructional manual to aid the user. The group recognized a need for faculty development in order to assist faculty members with becoming adept at using the new technological tools students are using, or can be expected to use, in the near future. The ***RIME Approach*** is already being used at USU: in USU Computer Courses; at the USU Simulation Center; during Faculty-Developed Seminars; and, other activities as described under *Information Technology* found in this section of the Journal.

The Teacher-Learner-Content Triad. The third working group addressed the complex task of measuring outcomes associated with modifications in the process of military medical education. The group first recognized the importance and relative ease of firmly establishing appropriate structure and processes for medical care in order to achieve desirable outcomes. Methods of ensuring that this is the case were discussed. Outcomes were then viewed in terms of the *Teacher-Learner-Content Triad*; and, the importance of the perspective from which outcomes are viewed was emphasized. The strengths and weaknesses of a series of outcomes measures were reviewed by the group, to include the following: multiple choice tests; essay tests; yes/no tests; the military medicine test question bank; a web-based learning data bank; role play; surveys; direct observation; chart review;

stimulated chart review; Objective Structured Clinical Examinations (OSCE); standardized patients; self-assessment; peer-assessment; virtual reality; interative CD-ROM; interactive web-based training; simulation modules; clinical skills examination; data mining; and, case-based scenarios. The participants agreed that the decision to select a particular tool should be made within the context of the type of information being taught and the domains one wishes to test. *However, the group concluded that simulation, particularly through the creation of an interactive on-line or CD-ROM based game, has the greatest potential for enhancing military medical readiness*. The group determined that the development of this method of learning deserves the highest consideration in time and resources. In addition, this group, like the methods of learning group, recognized the importance of faculty development, and suggested the use of a *Train-the-Trainer Approach* to disseminate military medical expertise across the military medical teaching institutions.

Certification of Expertise in Military Medicine. The fourth group examined the potential for establishing certification of expertise in military medicine. *Group members expressed the opinion that, despite some differences between medical specialties and Branches of the Services, there is a core body of knowledge and skills that is important to all military physicians*. The benefits of a certification process would include: recognition of achievement; qualification for leadership; and, identification of experts who could be called upon during times of critical need. Various approaches to certification were considered before agreeing upon a design that would establish two levels of certification at the operational and the expert level; the expert level, supplemented by a research project, would form the basis of a Master of Science Degree Program in Military Medicine. Requirements would be completed through experience or course work in seven areas: Leadership; Preventive Medicine; Field Experience; Administrative Aspects of Military Health Care; Casualty and Incident Management Care; Scholarly Activity; and, Service and Specialty Specific Considerations. In addition, three letters of recommendation from supervisors or colleagues would be required to describe experience and qualifications for certification. A certifying board would review the submitted credentials and award certification. The participants agreed that the most logical certifying authority would be USU, particularly if a Master of Science Degree in Military Medicine is required; other alternatives such as coordination with the Association of Military Surgeons of the United States (AMSUS) might be considered, depending upon the format that is selected.

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Activities of The Center for the Study of Traumatic Stress, USU SOM Department of Psychiatry. The USU SOM Center for the Study of Traumatic Stress, CSTS, established in 1987, has been highly sought out, both nationally and internationally, for its consultative, educational, and research capabilities in the area of traumatic stress. During 2002, the CSTS completed the only two empirical studies of Family Violence and the Army using an Army data base for one study and a study of troops from Fort Hood (to include their spouses) who were deployed to Bosnia in the other. *Currently, the CSTS is initiating studies on the effects of the traumatic stress resulting from the October 2002 Sniper Acts of Terrorism in the Washington, D.C. area on both the Military Health System and the civilian emergency responder communities*. During 2002, *the CSTS was the major planner in the recent DoD/National Institutes of Health (NIH) Consensus Meeting on Early Interventions Following Incidents of Mass Violence* to prepare state and local leaders for the stress resulting from bioterrorism. In addition, Doctor Ursano was invited to write an editorial, *Post-Traumatic Stress Disorder*, for the January 10, 2002, issue of the New England Journal of Medicine. Also during 2002, he was one of three speakers at the Annual Carter

Center Symposium on Mental Health Policy and September 11th, along with **Julie Gerberding, M.D., Director, Centers for Disease Control**, and **Neil Cohen, M.D., of the Commission of Health for New York City**. During 2002, the CSTS collaborated on a publication entitled, *Mental Health Intervention and High-Risk Groups in Disasters*, for World Psychiatry, a widely circulated international journal. (See Section II, *Research Centers and Programs*, for additional contributions of the CSTS during 2002.)

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6th International Conference on Tactical Emergency Medical Support, "Protecting the Protectors." The USU Casualty Care Research Center (CCRC), established in July of 1989, serves as a repository of resources and information relating to injury control, injury epidemiology, and operational medicine for the Uniformed Services. On June 7-9, 2002, the CCRC was proud to sponsor another of a series of conferences, which have been consistently well attended and have offered significant support to the law enforcement and public safety communities. This year's conference was held in Las Vegas, Nevada and entitled, *Protecting the Protectors*, and included a Keynote Address by **Lieutenant General Frank Libutti, USMC (Retired), Deputy Commissioner for Counter-Terrorism, New York City Police Department**. Presentations provided by personnel involved directly with the World Trade Center and Pentagon catastrophes were well received, as were presentations from several other clinicians and operators in the fields of Tactical EMS and Special Operations Medicine. The *2002 David Rasumoff Memorial Award for Heroism* was presented to **John Busching of the New York City Police Department Emergency Services Unit** for his selfless acts of bravery following the terrorist attacks at the World Trade Center. (See Section II, *Research Centers and Programs*, for additional information on the significant contributions of the CCRC during 2002.)

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USU Center Sponsors a Three-Day Conference in Panama City, Panama, and a One-Day Pre-Conference Workshop at the 60th Annual Conference of the United States - Mexico Border Health Association. The USU Center for Disaster and Humanitarian Assistance Medicine (CDHAM), established in 1998, has served as a focal point in the MHS for assisting in the critical management of relief efforts in the medical response to weapons of mass destruction, terrorism, natural disasters, and humanitarian assistance contingencies through new developments in the areas of disaster and humanitarian assistance medicine. In 2002, the USU CDHAM hosted a conference to increase the sub-regional expertise in laboratory-based epidemic outbreak surveillance in Panama City, Panama, as requested by the United States Southern Command (SOUTHCOM). During 2001, a collaborative study between the CDHAM and the Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES) was funded by SOUTHCOM to identify health research and capacity enhancements that would strengthen the local capacity for prevention and response before, during, and following man-made or natural disasters. In accordance with one of the short-term recommendations identified in the initial USU-ICGES Study, an integrative project was executed with the DoD-Global Emerging Infections System (DoD-GEIS) to increase the sub-regional expertise in laboratory-based epidemic outbreak surveillance. A conference, co-sponsored and organized by CDHAM, served as the venue for this effort during 2002. ***The Phase II Course/ Workshop on the Public Health Laboratory Information System (PHLIS) for Central America and the***

Dominican Republic was held in Panama City, Panama, as requested by SOUTHCOM. The conference, hosted by the Gorgas Institute's Public Health Central Reference Laboratory in Panama City, Republic of Panama, included break-out sessions in disaster preparedness medicine and a two-day working meeting for the public health laboratory directors from the seven sub-regional countries in Central America, in addition to Panama and the Dominican Republic. The training at the Panama conference was collaboratively planned, organized and implemented by DoD-GEIS, CDHAM, the Pan American Health Organization (PAHO), and the Pan American Health and Education Foundation. Thirty Ministry of Health professionals (epidemiologists, bio-informatics, and laboratory directors) from eight countries (El Salvador, Guatemala, Belize, Nicaragua, Honduras, Costa Rica, the Dominican Republic, and Panama) attended.

Also during 2002, the ***CDHAM participated in a one-day, pre-conference workshop for community emergency/first responder civil authorities, border health workers, and military personnel of the United States and Mexican Armed Forces as part of the 60th Annual Conference of the United States - Mexico Border Health Association (USMBHA)***. The sponsors of the workshop conducted a bioterrorism exercise simulated to occur along the United States-Mexican Border; the CDHAM provided real-time, hands-on demonstrations using commercial, off-the-shelf telemedicine equipment (see Section II, *Research Centers and Programs*, for more information on the contributions of CDHAM during 2002).

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9th Faculty Senate Research Day and Graduate Student Colloquium - 2002. The 9th Annual Faculty Senate Research Day and Graduate Student Colloquium were held at the USU campus on May 15-16, 2002. This year's theme was *The Post Genomic Era: Implications for Research, Education, and Public Health*. The two-day event brought approximately 250 individuals to the USU campus, including researchers from affiliates such as the National Naval Medical Center, the Walter Reed Army Medical Center, the Armed Forces Institute of Pathology, the Washington Hospital Center, and the Walter Reed Army Institute of Research. This year's events included internationally known keynote speakers, as well as presentations of on-going research by USU faculty, USU graduate students, and investigators from the above listed affiliated institutions. This year's three symposia, workshop and poster presenting sessions addressed: career development strategies for graduate students; emerging issues in proteomics and bioinformatics; technology transfer; and, ethical issues in research with human subjects. A special panel on bioterrorism featured **The Honorable Saxby Chambliss, former member of the United States House of Representatives from Georgia**; **United States Ambassador, The Honorable Donald A. Mahley**; **Debra Krikorian, Ph.D., United States Army Medical Research and Materiel Command**; and, faculty from both USU and AFRRI.

The Graduate Student Colloquium was established in 1980 to promote scholarly communication between graduate students and the academic community at USU and to recognize the research achievements of USU graduate students. The 2002 Graduate Student Colloquium featured a career workshop organized by the students, platform and poster presentations given by students, and the *John W. Bullard Lecture*. The Career Development Workshop consisted of seven presentations by accomplished individuals working in various aspects of the scientific enterprise. These ranged from medical school faculty, to scientific review administrators, to patent lawyers

involved with biotechnology, to a study director at the National Academy of Science. Nine scientific poster presentations by graduate students were followed by a lunch, which included the Bullard Lecturer and six oral presentations by students. *The 2002 Bullard Lecture* was presented by **Marc K. Jenkins, Ph.D., Professor, Department of Microbiology, University of Minnesota,** on *Tracking the Generation of Memory CD4T Cells in vivo.*

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ORGANIZATIONAL CULTURE

Stewardship: We will protect and enhance both the human and physical resources of the University to maximize productivity while promoting a sense of family and community, both on and off campus.

- Goal 5, USU Strategic Plan, approved by the USU Board of Regents during May of 2003.

Continuous Efforts to Ensure a Diverse Community that Is Powerful, Committed, and Energized. A common challenge for most educational institutions is the goal to recruit and retain highly qualified students, faculty, and staff. As USU works to achieve that goal, it must also strive to reflect the diversity which exists in both the Services and our Nation. The five USU Offices of University Recruitment and Diversity (ORD), Student Affairs (OSA), Civilian Equal Employment Opportunity (EEO), Military Equal Opportunity (EO), and the Brigade Commander (BDE) collaborated with the Civilian Human Resources (CHR) Directorate during 2002 to ensure that the University continued to promote respect, appreciation, and understanding throughout its multi-Service activities. During 2002, the University's emphasis was on encouraging cooperation, development, diversity, communication, and collegiality by: 1) the identification and encouragement of equal opportunity principles and diverse cultures through numerous university forums, individual counseling sessions, recruitment strategies, and community service activities; 2) the timely sharing of relevant information through continuing orientation programs, on-going USU publications, educational web sites, and advanced technology; and, 3) the provision of extensive development and recognition programs for the civilian and military members of the USU family.

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Communicating Equal Opportunity Principles and Appreciation of Diversity.

1,150 USU Personnel Participate in Four Community Events. During 2002, the USU Office of Equal Employment Opportunity (EEO), with the volunteered-support of the USU Special Emphasis Program Managers, continued to present USU Community Sessions to reinforce both the understanding of, and the appreciation for, the cultural diversity that exists throughout the University. The *January 2002 Dr. Martin Luther King Jr. Birthday Celebration: Living the Dream, Let Freedom Ring*, featured **Brigadier General Clara Adams-Ender, USA (Retired)**, who presented the Keynote Address to over 200 faculty, staff, and students from the USU community. On May 28, 2002, 80 members of the USU family met to acknowledge *Asian American/Pacific Islander Month; the 2002 theme was: Challenges that Asian Americans and Others Must Face in the New Millennium*. One of the USU family members, **Colonel Robert R. Eng, MS, USA, Director, Armed Forces Radiobiology Research Institute (AFRRI)**, delivered a moving message describing his vision for the new Millennium from his perspective as an Asian-American; the audience participated during an enthusiastic discussion session following Doctor Eng's presentation. Then, on September 25, 2002, 70 members of the USU community met to recognize *Hispanic Heritage Month; the 2002 theme was: Who Are the Hispanics?* The Keynote Address was presented by **Ms. Yolanda Maldonado-Echevarria, Director of the Hispanic Employment Program, the United States Army**

Equal Employment Agency. The presentation was followed by a discussion session with audience participation. Also, during September of 2002, a Memorial Service was coordinated by the **USU Brigade Chaplain, CAPT Steven Evans, USN**: *Honoring the Memory of the Victims of the Terrorist Attacks on September 11, 2001*, to acknowledge the one-year anniversary of the tragic event. Eight hundred members of the USU family either gathered together to share a moment of silence, or remained at their work stations; all demonstrated their respect and sense of loss for those whose lives were ended by the violent event.

Student Professional Activities and Meetings. The coordinating efforts of the USU Office of Recruitment and Diversity (ORD) with members of the ***USU Student National Medical Association (SNMA) Chapter***, the ***SNMA Minority Forum***, and ***Women in Medicine and Science (WIMS)*** resulted in the successful sponsoring of numerous meetings and activities throughout 2002. Dinner socials provided SNMA and WIMS members with an opportunity to socialize and network with faculty and physicians in a relaxed atmosphere; and, opportunities were provided for discussing important issues such as residency selections, physician and patient expectations, professional demands in the military setting, effective time management, and societal minority and gender issues.

The ***USU Chapter of the Asian Pacific American Medical Students Association (APAMSA)*** is a student organization that was initiated under the sponsorship of ORD during 2001 and functioned throughout 2002. The APAMSA was founded in 1995 and represents over 16,000 Asian Pacific American medical students; the organization serves as an advocate for the advancement of quality medical care for the growing Asian Pacific community. The USU APAMSA Chapter initiated several successful projects during 2002 with the Johns Hopkins University School of Medicine APAMSA Chapter, to include: a *back-to-school social* with the George Washington University and Georgetown University APAMSA Chapters; a *lecture on stress* providing techniques for addressing their common concerns; a *lottery night* to prepare for the third-year clerkships; and, a *winter celebration* event.

Also during 2002, the USU medical students continued their weekly and/or monthly trips to public schools to discuss medicine, science, research, and the medical profession with young students through a community outreach program entitled, the ***Youth Science Enrichment Program (YSEP)***. The YSEP is designed to motivate America's youth toward medical, scientific, and military careers. The USU students familiarized the young students with such areas as the human skeleton, first-aid care with bandaging and braces, and medical triage based on the severity of injuries and potential scenarios. In addition, the YSEP Committee, under the leadership of the USU SNMA, continued its coordination of on-going USU community support for the Washington, D.C. Public Schools through visits and seminar presentations.

Provision of Formal and Informal Counseling. The USU Offices of Equal Employment Opportunity (EEO), Equal Opportunity (EO), Recruitment and Diversity (ORD), and Student Affairs (OSA) continued to provide formal and informal counseling throughout the Year 2002. The EO Office did not have to provide formal counseling sessions to the uniformed members of USU during 2002; the EEO Office provided one formal and eight informal counseling sessions to the USU civilian staff during the past year. Beginning in September, OSA conducted well over 300 formal interview and counseling sessions for the first and third-year medical students; in addition, ORD also continued to provide individual counseling sessions for numerous uniformed students. The success of these counseling sessions is evidenced by the ever increasing appreciation and respect shared among the individual members of the University. In addition, the EO representatives for the USU Brigade provided EO

training for all uniformed members of the University during 2002; the training sessions addressed diversity, acceptance of others, management of difficult situations, and the identification of harassment in both the work place and in the academic setting.

Faculty Senate Outreach Program for Working Mothers. In response to recommendations of the USU faculty and the President of the Faculty Senate, the Office of Administration and Management coordinated the construction and establishment of a Mother's Lactation Room to assist working mothers who wish to continue breast-feeding their babies after returning to work. The room provides for privacy and is equipped with appropriate furniture, electrical outlets, and a refrigerator for the storage of expressed milk. At the time of its establishment during 2000, USU was the only DoD entity to provide such a facility. The program continued throughout 2002.

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Timely Sharing of Information.

The USU Web Is Used to Provide Information Throughout the USU Community. During 2002, the Center for Informatics in Medicine (CIM) continued to provide computer orientation courses for faculty and students. The Center currently hosts over 100 educational web sites, which support distance learning residents and students and local residents, students and faculty. *Highlighted sites include Telegenetics* (the USU SOM Department of Obstetrics and Gynecology) *and the University's on-line student assessment of instruction* (the GSN and SOM); self-assessment; surveys; quizzes; and, examinations are utilized by: the Faculty Senate; the GSN VA/DoD Distance Learning Program; GSN Nurse Anesthesia; GSN Nurse Practitioner; and, the School of Medicine Departments of: Anatomy, Physiology and Genetics; Medicine; Pathology; Pediatrics; Pharmacology; Preventive Medicine and Biometrics; and, Radiology and Radiological Sciences. The Vice President for Teaching and Research Support, in coordination with the Department of Biomedical Informatics, CIM, and the University executive management, monitored electronic programs to enhance existing educational programs and new educational services; meetings between faculty representatives, staff, and executive management were followed by the electronic distribution of meeting summaries.

The 2001 Edition of the USU Journal. To ensure that information was shared with both internal and external customers, the University published and distributed more than 800 copies of the 2001 Edition of the USU Journal during 2002. Each copy included a CD-ROM; and, all 329 USU faculty members received a copy of the Journal in CD-ROM format. Each Edition of the USU Journal provides an inclusive background on the history and development of the University; it also describes the achievements of the past year and any changes which may have taken place throughout USU's educational programs, centers, and institutes. The Journal, sometimes referred to as *The USU Encyclopedia*, serves as a source document for the University's responses to congressional, executive, and general requests for information throughout the current year. This annual report, coordinated by the Vice President for Administration and Management with the University President, documents how relevance, readiness, and optimization are successfully emphasized throughout the University's programs and activities and how the goals of the USU Strategic Plan have been met during the past year. Numerous letters

of acknowledgement and accolades have been received by the University since its initial distribution; selected examples include: the USU Deans, Department Chairs, and Activity Heads; the Deputy Secretary of Defense; the Secretary of the Air Force; the Chairman of the Joint Chiefs of Staff; the Chief of Naval Operations; the Commandant of the Marine Corps; the Surgeons General of the Army, Navy, Air Force, and the United States Public Health Service; the American Medical Association; and, the current Secretary of State.

USU Orientation Program. Since October of 2000 through 2002, the *USU Civilian Human Resources Directorate*, with the participation of the senior leadership at USU, has *sponsored formal sessions of the USU Faculty and Staff Orientation Program for 256 in-coming civilian and uniformed members of the University community: 45 during 2000; 92 during two sessions held in 2001; and, 119 during three sessions held during 2002*. Initially coordinated by the USU Civilian Human Resources Directorate, the Military Personnel Office, and the Associate Dean of the Graduate School of Nursing, the purpose of the on-going program is to present the newly-appointed members of the USU community with the philosophy, goals, policies, and leadership principles of USU. Orientation packets with key facts and other selected information are provided for review and future reference. For example, *the USU Environmental Health and Occupational Safety (EHS) Department briefs the new employees on its initiatives to raise the safety consciousness of the USU researchers and the general community*. In addition, since February of 2000, *the SOM Office of Faculty Affairs has maintained a Faculty Handbook on the USU web site*. The handbook describes the organization and functions of the various components of the University; and, it is designed to orient the new USU faculty members to the structure and history of USU, the SOM, and the GSN. The handbook also serves as a quick guide for the delegation of responsibilities at the University and where to seek information, guidance, or other faculty-related requirements. New faculty members are introduced to the USU web site and encouraged to utilize the information. Since its establishment, the USU orientation process has promoted a positive initial employment experience and has successfully initiated the socialization of 256 new employees with the USU organizational culture. Similar sessions will continue during 2003.

USU Development Program. The Vice President for Executive Affairs presented the newly established USU Development Program to the USU Board of Regents in August of 1999. Initially, consultants at the Mayo Clinic and Harvard University mentored the new Program. The USU Development Program was established to be compliant with federal law, which prohibits USU from soliciting funding. The Program continues its development in cooperation with the Henry M. Jackson Foundation where non-federal funding was identified to be used in hiring the initial staff. A marketing video and CD-ROM were also completed during 1999. Following the establishment of the Program, the Packard Foundation notified the University that it had approved one million dollars for a Packard Chair in the Department of Surgery. Under the supervision of the USU Vice President for Executive Affairs, **Mrs. Helaine C. Ahern**, was hired by the Henry M. Jackson Foundation to serve as the first **Assistant Vice President for Development**. During its first two years of existence, the USU Development Program implemented activities outlined in the business plan developed in early 2000, complementing the goals of the USU Strategic Plan to increase awareness and financial resourcing. During 2002, numerous proposals were sent to targeted foundations requesting support for the priority needs of USU, with a focus on post-traumatic stress, humanitarian/disaster medicine, and operational medicine training. In addition, site visits to the campus were arranged for representatives of foundations and other potential sources of funding. Faculty, parents, and alumni were again solicited, and the USU SOM Class of 2002 was supported in its efforts to raise funds for an

endowment for medical education. In addition, the Graduate School of Nursing (GSN) was assisted in its initiation of a research endowment in honor of Dean Emerita Faye Glenn Abdellah. More than $60,000 has been raised to date as a result of these various initiatives, approximately half of which is unrestricted. The second issue of USU Medicine was published, with a focus on research; the publication, produced by the USU Development Office, was distributed to 3,700 alumni, friends, 125 medical school deans, and other external audiences. Adjunct faculty members have also been cultivated in response to their estate planning and other philanthropic interests. While it is still early in the growth of this program, the staff has been successfully working to increase the visibility of USU's unique strengths and financial requirements, in order to provide the groundwork for long-term major fund development.

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Personal Development and Retention.

Individual Recognition. Throughout 2002, the USU community worked to build and strengthen cooperation, integrity, trust, and collegiality as well as to reward individual members for their contributions. An on-going performance evaluation process developed by the Civilian Human Resources Division (CHR) and the Brigade Command ensured that each employee received an annual rating and appropriate recognition for his/her accomplishments. During 2002, CHR continued its procedures for tracking individual employee's years of service. The University President personally presented service awards to designated employees at their work sites. *To date, 87 civilian service awards have been presented; the program has been well received. And, during 2002, the Office of Military Personnel approved, processed, and presented 99 awards for the USU military personnel*: 29 Joint Service Achievement Medals; 16 Joint Service Commendation Medals; 41 Defense Meritorious Service Medals; 3 Army Achievement Medals; 3 Army Commendation Medals; and, 1 Military Outstanding Volunteer Service Medal. In addition, 32 USU Honorary Awards were issued during 2002.

Training Opportunities Provided to USU Employees. During 2002, the USU Offices of Civilian Human Resources (CHR), Medical Education (MEE), Faculty Affairs (ADF), Research Administration (REA), the Brigade Command (BDE), University Recruitment and Diversity (ORD), Equal Employment Opportunity (EEO), and Equal Opportunity (EO) provided programs and support to assist the University community in its self-development and training requirements. Civilian Human Resources continued to expand the USU Mentor Program by sponsoring 22 participants; both the participants and their mentors received on-going training and guidance throughout 2002. CHR also sponsored the establishment of a University Toastmasters International Club in 1999; active participation continued during 2002 with 32 members. In addition, numerous training opportunities were provided by CHR to the USU civilian workforce that were linked closely with the establishment and expansion of Individual Development Plans. *CHR used 200 training vouchers during 2002 and 60 on-line subscriptions for computer-related training for the Microsoft Office Suite*. Through the use of vouchers, USU faculty and staff were provided opportunities to attend off-site computer classes through CompUSA and New Horizons. USU employees were also provided an on-line computer training option through a USU contract with Element University; on-line training allows the student to complete assignments through the Internet while at home or at work. *A total of 605 employees were trained on-site*, to include the 67 attendees at the Ethics Training Classes, which were conducted by the Office of the USU General Counsel. On-Site Classes provided by CHR included: Coping & Stress

Management (15 participants); Time Management (33 participants); Retirement Planning (22 participants); Proofreading & Grammar Skills (27 participants); Mediation and Conflict Resolution (16 participants); Drug-Free Workplace and Employee Assistance Program (EAP) Orientation for Supervisors (17) and for Employees (58 participants); and, Prevention of Sexual Harassment (350 participants).

USU Faculty Attend Development Courses and Seminars. During 2002, **Cindy C. Wilson, Ph.D., Professor, USU SOM Department of Family Medicine,** coordinated on behalf of her department with the SOM Offices of Faculty Affairs and Medical Education, to sponsor numerous courses and seminars, which strongly supported faculty development at the University. ***During 2002, 320 attendees earned over 810 hours of continuing education.*** The following are selected examples of the successful activities during 2002, which led to the enhancement of the professional skills of the USU faculty members: 1) Office Ergonomics: Creating a Healthy Workplace; 2) How to Captivate the MTV Generation with Your Lectures; 3) Writing for Impact; 4) The Adult Learner, Part I; 5) Learners in Trouble; 6) Giving Successful Presentations; 7) Putting Punch in Your Power Point Presentations; 8) The Quasi-Socratic Method of Seminar Teaching; 9) Critical Reading; and, 10) Managing Clinical References.

Office of Government Ethics Review Finds USU Ethics Program Provides Quality Advice and Counseling Services. The Office of Government Ethics conducts periodic program reviews to evaluate agency ethics programs throughout the Executive Branch of the Federal Government. These reviews are conducted to ensure compliance with *Standards of Ethical Conduct for Employees of the Executive Branch*.

The USU Ethics Program was reviewed in the Fall of 2002 and a report was issued on December 10, 2002. The report highlighted that the University... ***continues to operate a strong and meaningful ethics program*** and provides... ***high quality advice and counseling services***. The report concluded... ***we are pleased to report that the University's Ethics Program continues to comply with applicable ethics laws and regulations***. There were no recommendations for improvement of the USU Ethics Program.

On December 13, 2002, the Office of Government Ethics issued an electronic newsletter, which read in part... ***the University, Congressionally established to train men and women for careers as medical officers in the military services and Public Health Service, faces unique ethics challenges, which it successfully addresses***.

USU Health Center Tobacco Cessation Program. Established during 2002, the USU Health Center Tobacco Cessation Program is a four-session program designed to help individuals to quit using tobacco products. Most individuals requesting tobacco cessation assistance are cigarette smokers, but individuals who use smokeless tobacco (dip or chewing tobacco), pipes, cigars, etc., may enroll in the program. The lead for the USU Tobacco Cessation Program for uniformed personnel is **Major Nicole L. Frazer, Ph.D., USAF, BSC, Assistant Professor, USU SOM Department of Family Medicine, and Director, Clinical Health Psychology**; she can be reached at <*nfrazer@usuhs.mil*>.

The program is based on the guidelines established by the Agency for Health Care Policy and Research (AHCPR; 1996); the Clinical Practice Guideline for Treating Tobacco Use and Dependence (United States Public Health Service; 2000); and, the VHA/DoD Clinical Practice Guideline for Promotion of Tobacco Use Cessation in the Primary Care Setting (2001). The program consists of at least four sessions with the provider including the

enrollment session, the quit date session, and two follow-up sessions. The program is a comprehensive behavioral treatment program that involves behavior modification, stress management skills training, and the use of medications. Six weeks of nicotine replacement therapy involving the nicotine patch are available as part of the program for those participants who are medically qualified. Zyban (buproprion) is also available for eight weeks beginning with the first enrollment session. Individuals must participate in the tobacco cessation program and attend the sessions to obtain the medications. Research indicates that these medications do not work unless combined with a comprehensive behavioral treatment program. A data base has been created so that all participants can be entered and tracked at three, six, and twelve months following their *quit date*. It is conservatively estimated that seven individuals have quit smoking since November of 2002 when the program was initiated. Civilian employees at the University who wish assistance with ending their use of tobacco products may contact the University Environmental Health and Occupational Safety (EHS) staff at <*asorrels@usuhs.mil*>.

OSD Confirmation of USU Title 10 Authority. During Fiscal Years 1997 and 1998, there was a one year suspension on the inclusion of allowances in the calculation of retirement benefits for the USU Administratively Determined (AD) employees (faculty and staff) who are covered under TIAA-CREF, Fidelity, or any other retirement system not established under Title 5 U.S.C. This issue, which involved USU's Title 10 authority, was resolved with OSD through the coordinated efforts of the OSD Office of the Deputy Assistant Secretary for Civilian Personnel Policy, Washington Headquarters Services, the USU President, and the USU Vice President for Administration and Management. As a result, the inclusion of allowances in the calculation of benefits for USU AD employees was reinstated by OSD for Fiscal Year 1999 and has been continued through the present; 2002 and current, OSD-approved, AD salary schedules include footnote references that confirm the reinstatement of this benefit.

Legislative Language Removes the Limits of Executive Level IV for the Annual Rate of Basic Pay. Previously, the annual rate of basic pay for USU AD employees was limited to be no more than the rate set for Executive Level IV. In many cases, this limitation resulted in the need for allowances to bring the total pay up to the limits established by OSD in the USU salary schedules. During the last quarter of Fiscal Year 1998, the OSD Office of the General Counsel, at the request of the Deputy Assistant Secretary for Civilian Personnel Policy, recommended the legislative change contained in Section 1108 of the Conference Report for the National Defense Authorization Act for Fiscal Year 2000. As a result, when the Authorization Bill for Fiscal Year 2000 was signed, it effectively removed the limitations of Level IV for the USU AD employees; *as appropriate, the upper pay limits of the USU AD salary schedules are now limited to the rate set for Executive Level I.* Implementation actions for the reduction of allowances were initiated and implemented during 2000 by CHR and continued, as appropriate, during 2002 to the present.

USU Administratively Determined Salary Schedules Are Approved. Previously, the USU salary schedules for the Administratively Determined (AD) employees had remained the same from 1993 through 1997. To address this concern, a Memorandum of Understanding signed by the OSD Office of Civilian Personnel Management Services (CPMS), the Navy Bureau of Medicine, and the USU President has successfully resulted in the implementation of annual comparability studies by CPMS. These comparability studies, completed in coordination with the USU Civilian Human Resources Directorate and the USU Faculty Senate Comparability

Committee, serve as a critical component in the on-going review, updating, and implementation process for the USU AD salary schedules. As an example of the implementation procedures, when the Principal Deputy Assistant Secretary of Defense (Force Management Policy) approved salary schedules for the USU AD employees on August 25, 1999, an increase in base pay was automatically provided for any AD employees whose base pay was lower than the minimum limits of the new salary scales; this process, based on currently approved salary schedules, has been continued to the present. Updated salary schedules have been continuously approved since 1998 as follows: in July of each year, revised and OSD-approved salary schedules are effective and implemented based on current data and the CPMS comparability studies; then, in January of each year, the salary schedules are adjusted by CPMS to implement the Executive Level I pay level, as required.

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University Recruitment and Diversity.

Implement a comprehensive plan for the recruitment and retention of qualified citizens to become uniformed personnel who will serve our diverse Nation as successful leaders, ready to respond to the Nation's medical and scientific needs during peace and war.

- Mission Statement for the Office of University Recruitment and Diversity, developed during 2001.

Office of University Recruitment and Diversity. The USU Office of Minority Affairs was established in 1991 with a mission to increase the participation and advancement of traditionally underrepresented minority and women students, faculty, and staff at the University. The Office of Minority Affairs, under the initial leadership of **Jeannette E. South-Paul, Colonel, MC, U.S., Vice President for Minority Affairs**, established numerous programs to especially increase the recruitment and retention of underrepresented minorities at the University. Following COL South-Paul's selection to serve as Chair, SOM Department of Family Medicine, **Charles W. Campbell, Jr., Colonel, USAF, MC, FS,** served as the second USU Vice President for Minority Affairs. In April of 1999, **Carolyn L. Miller, Lieutenant Colonel, USAF, BSC,** was selected as the third USU Vice President for Minority Affairs. During 1999, following extensive discussions with the USU President and the Board of Regents, the University's Strategic Plan specifically addressed University recruitment and diversity. Subsequently, during 1999, the Office of Minority Affairs was renamed as the Office of University Recruitment and Minority Affairs; during 2000, strategy sessions to enhance the recruitment efforts of the University resulted in a decision to further modify the office title to the Office of Recruitment and Diversity (ORD). Today, the USU Strategic Plan retains strategies for both marketing the University and targeting the increased recruitment of women and underrepresented minorities. Today, ORD remains committed to increasing the general public's awareness of the University; thus, ORD continues to market the University and introduce military medicine, USU, and the United States Public Health Service to prospective applicants. By the end of 2001, the following areas were included among the numerous program responsibilities of ORD: on-going recruitment efforts; retention and student support activities; community service; and, the USU Post-Baccalaureate Program.

The Year 2002 did not bring significant changes in the ORD-sponsored programs. The ORD Mission continued to direct that the USU student body, to the extent possible, should reflect the gender and ethnic representations as found in the Armed Forces of the United States. Following the departure of LtCol Miller on

July 31, 2002, a change in leadership occurred with the September 26, 2002 announcement by the USU President of his selection of **Cynthia I. Macri, CAPT, MC, USN, Director of the Health Professional Scholarship Program (HPSP), Naval Medical Education and Training Command (NMETC), to serve as the USU Vice President for Recruitment and Diversity.**

USU Liaison Program. USU Alumni participation in the USU Liaison Program continued to evolve and grow during 2002. *The USU Liaison Program involves the recruitment of medical school applicants by USU SOM alumni; these USU alumni serve as superb representatives of the University*. As part of the Liaison Program during 2002, USU alumni made 12 visits to universities, colleges, recruitment fairs, and Reserve Officer Training Corps (ROTC) and Junior ROTC Units. These efforts have resulted in the expansion of USU marketing efforts, the identification of new recruitment opportunities, and an increase in potential applicants. An aggressive recruitment initiative has also been formulated, which targets USU alumni and links them with ROTC units in their areas of assignment. *The alumni liaisons provide guidance and information to potential applicants. To date, USU alumni liaisons have attended recruitment fairs at all colleges and universities from which invitations have been received*. Recruitment opportunities are especially sought at colleges and other well known institutions with student bodies that will help USU to achieve a diverse pool of qualified applicants.

Provision of USU Recruitment Materials. During 2002, ORD, as the centralized office for USU's recruitment efforts, responded to over 600 requests for the continued replenishment of USU materials initially provided in more than 4,500 packets of recruiting materials that were mailed to: Reserve Officer Training Corps (ROTC) Units; military bases (installations and hospital commanders, chief enlisted advisors and education offices); and, pre-medical advisors at the military Service Academies and undergraduate institutions nationwide. Additionally, ORD placed advertisements on USU programs in various undergraduate marketing venues; and, members of the USU community (e.g., faculty, staff, the Board of Regents, external contacts, etc.) were provided, upon request, with recruitment packets (the USU recruitment video, CD-ROM, and USU brochures) for presentations at their hometown educational institutions, professional society meetings, or at various geographical sites while on travel. Throughout 2002, ORD staff responded to continuous inquiries from prospective applicants reference USU's various program requirements. The ORD staff also continued to respond to numerous requests from colleges and universities to promote the military-relevant Graduate Education Programs available at USU.

During the 2001-2002 Academic Year, more than 25 visits were made on behalf of USU recruitment efforts by ORD staff. For example, visits were made to the University of Illinois-Champaign/Urbana; the University of Wisconsin at Milwaukee; Loyola University of Chicago; Xavier University; Dillard University; Louisiana State University; Tulane University; the Great Lakes Naval Training Center; the University of Tennessee; and, Morehouse College. *An estimated 3,000 plus students were introduced to USU at either their respective campuses or at the various career fairs, which they may have attended*. The ORD continues to accept invitations from selective undergraduate schools that will yield the most benefit to the University's search for the most qualified applicants.

Joint Recruitment Venture with HPSP Recruiters. A significant initiative launched during 2001 was centered on a joint venture between USU and the recruitment staffs for the Health Professions Scholarship Program (HPSP). USU representatives attended the October 2001 HPSP TriService Conference; as a result,

three initiatives were agreed upon: a proposed application form that includes both the USU and the HPSP Programs; the referral of USU applicants to the HPSP Program once the USU slots have been filled; and, HPSP links have been added to the USU recruitment web page. One example of the success of this new partnership occurred during the 2001 ORD staff visit to the Annual ROTC Basic Camp Branch Orientation at Fort Knox, Kentucky. USU was invited to join the United States Army and regional HPSP recruitment teams in presenting science and medical career opportunities to more than 1,700 cadets who attended the event. Efforts for the sharing of resources between USU and the HPSP recruitment offices continued throughout 2002. However, this joint venture is now being coordinated by **Mr. Peter Stavish, Assistant Dean, USU Admissions and Academic Records,** who can be reached at <*pstavish@usuhs.mil*>.

Collaborative Participation in Biomedical Research, Medical Education, and Clinical Operations. During 1999, USU and the University of Maryland Eastern Shore (UMES) began a collaborative effort to increase participation by minority students in biomedical research. USU and UMES have agreed to undertake initiatives to: increase the number of UMES undergraduate honor students enrolled in programs leading to a doctorate in the biomedical sciences; aid in the development of a research training infrastructure at UMES; foster the exchange of visiting faculties to conduct graduate seminars at each institution; and, increase the number of minority students enrolled in the graduate programs at USU. The USU Office of the Dean sponsored six students from UMES during the Summer of 2000. Those six students and one faculty member from UMES were able to participate in on-going research projects in various USU laboratories; the experience was a positive one for both the UMES personnel and USU. The program continued throughout 2002; however, the USU and UMES faculties and students were not able to participate in any new initiatives mostly due to a reduction in funding at UMES. ORD and UMES officials will meet to identify initiatives that can be undertaken with limited funding.

During October of 2001, an academic affiliation agreement was completed between USU and Franklin & Marshall (F&M) College. The agreement allows F&M pre-med students to participate in a *shadowing program* at USU and the local teaching hospitals. Under the agreement, USU will give F&M students access to USU faculty members, facilities, and medical student training and instruction. They will also observe clinical operations at the National Naval Medical Center, the Walter Reed Army Medical Center, and the Malcolm Grow United States Air Force Medical Center at Andrews Air Force Base. There is no monetary compensation or logistical support responsibility requirement for USU or the medical centers; the students will be registered as hospital volunteers. This agreement will allow USU to more effectively market the SOM to prospective applicants and increase awareness about the University. It will also increase familiarity and appreciation for military medicine, while exposing the University to a broader population of medical school applicants. During 2002, ORD staff visited the Franklin & Marshall campus to meet with officials and students; once Franklin & Marshall identifies resources to finance the effort, the program will be implemented.

Electronic Recruitment. The USU recruitment web page is currently undergoing extensive revision. As part of the HPSP recruitment venture, HPSP links for each of the Uniformed Services have been added to the USU recruitment page. The USU web site lists Federal, national, and some regional summer experiences for medical school applicants. Also, a map of the United States has been added to the web site, which includes USU SOM student photos and biographies, designates their respective states, and references their undergraduate institutions. ORD has tentatively hired a University of Maryland student worker who will work part-time in the office; the student worker's sole function will be to develop a new ORD web page and to keep it current with new USU policies and changes relevant to recruitment and the University.

USU Post-Baccalaureate Program. The University began its one-year Post-Baccalaureate Program on August 9, 1999; three individuals were accepted into the Program during 2001; and, two were accepted during 2002. The Program is modeled after current civilian post-baccalaureate programs, while maintaining compliance with Federal laws and restrictions. The Program is much like those presented in the Service Academy Preparatory Schools. Through the Program, USU identifies students who would benefit from a year of medical school curriculum; if the Program students excel in the selected first-year medical school courses, which are taken along with the first-year USU SOM students, they are then allowed to reapply for admission to the medical school. Students considered for the Program must meet the same admissions criteria, physical and security standards required of all USU medical school applicants prior to matriculation. *The goal of the Program is to increase representation at USU of economically or educationally disadvantaged students and to especially include current active duty enlisted and commissioned officers.* The students who entered the Program during 1999, 2001, and 2002 were fully accepted by the USU SOM and are currently enrolled in the USU School of Medicine. The Program includes the first United States Public Health Service SOM students since 1995. The Program students are performing well academically with graduation dates of 2004, 2005, and 2006, respectively. ORD prepared documentation to justify the Program as a permanent USU program, to include manpower billets and funding; the documentation was submitted to the USU Executive Committee for review during 2001; USU technology transfer funding has financed stipends for each of the trial years. During 2002, the USU Admissions Office, the USU Office of the General Counsel, and the ORD staff worked together to ensure that no preferential criteria were used in the USU selection process. Current decisions by the United States Supreme Court should not have a negative impact on the Program or the USU criteria for admission.

Community Involvement and Student Support Programs. Members of the USU Student National Medical Association (SNMA) Chapter and Women in Medicine and Science (WIMS) sponsored meetings and activities throughout 2002. Dinner socials provided SNMA and WIMS members with an opportunity to socialize and network with faculty and physicians in a relaxed atmosphere and to discuss significant issues such as residency selections, physician and patient expectations, professional demands in the military setting, effective time management, stress management, and societal minority and gender issues.

During 2002, the USU medical students continued their weekly and/or monthly trips to public schools to discuss medicine and the medical profession with the public school students through a community outreach program entitled ***the Youth Science Enrichment Program (YSEP),*** which is designed to motivate American youth toward medical, scientific, and military careers. The objective of the visits by the USU students is to strengthen the *educational pipeline* between public schools and advanced education, and to especially encourage careers in uniformed medicine. The USU students familiarized the public school students with such topics as the human skeleton, first-aid care, to include bandaging and braces, and medical triage based on the severity of injuries and potential scenarios. The students are divided into teams of two and each team prepares a classroom presentation. During 2002, specific topics included health maintenance (brushing teeth, etc.), personal safety (wearing seat belts and bike helmets), preventative measures (hazards of smoking and drug abuse), and environmental awareness (insects and reptiles). Additionally, the Youth Science Enrichment Program (YSEP) Committee, under the leadership of the USU SNMA, is coordinating community support for the Washington, D.C. Public Schools through visits and seminar presentations. The USU YSEP is committed to serving as a role model for young Americans and to establishing a lasting and positive impact on the young, public school students within the neighboring communities.

The ***USU Asian Pacific American Medical Students Association (APAMSA)*** is a student organization that was initiated under the sponsorship of ORD during 2001 and functioned throughout 2002. The APAMSA, founded in 1995, represents over 16,000 Asian Pacific American medical students; the organization serves as an advocate for the advancement of quality medical care for the growing Asian Pacific community. The USU APAMSA initiated several successful projects during 2002 with the Johns Hopkins University School of Medicine APAMSA Chapter, to include: a *back-to-school social* with the George Washington University and Georgetown University APAMSA Chapters; a *lecture on stress* providing techniques for addressing their common concerns; a *lottery night* to prepare for the third-year clerkships; and, a *winter celebration* event. During the past year, ORD identified faculty mentors for the three major student organizations. And, ORD sponsored the annual 2002 Award Luncheon for members of APAMSA, SNMA, and WIMS who contributed to their respective organizations in an exemplary manner; members of the USU Board of Regents, the USU President, and the Dean, SOM, normally attend.

The Helping Hands Project.

Four days a week, USU medical students and USU physicians continue to find time to provide family health care to low-income families in the Washington D.C. metropolitan area, citizens who would not otherwise have access to medical treatment.

- Office of University Recruitment and Diversity, *Update on Community Support Activities*, dated February 2002.

Each week, USU medical students and USU physicians find time to serve in free clinics and to help provide medical care to low-income families in the Washington D.C. Metropolitan Area. These are citizens who would not otherwise have access to medical treatment. This community free medical care occurs through the student-led ***Helping Hands Project*** volunteer program. The Project includes three clinics located in Maryland that are sponsored by the Mobile Medical Care, Inc. The clinics are located at the KenGar First Baptist Church in Kensington; the Shepherds Table at the First Baptist Church of Silver Spring; and, the Adventist Community Center in Takoma Park. The three clinics provide services such as physical examinations, laboratory analysis, the management of acute and chronic diseases, mental health problems, general health concerns, and referrals for X-ray examinations and specialty and secondary care.

The mission of the Project is to ensure that people receive stable family health care when they would otherwise be unable to afford it. The students continue to uphold the standards of the mission; *no one is turned away*. The USU students become acquainted with available community resources and learn of the health care needs of a diverse population of patients. USU students take patient histories and present them to physicians; they assist in examinations; and, in general, observe the attending doctors. The patients are treated for chronic problems such as hypertension, depression, arthritis, and diabetes; the students also observe the care provided to acute-care patients. Depending on the clinic, students assist with six to fifteen patients during their three-hour shifts. *Mobile Medical Care Inc. has been so pleased with the performance of the USU students, that a request was made for the students to volunteer four, as opposed to two, days per week*. Student volunteers are exposed to people from different backgrounds who have varying requirements, with limited ability to pay for health care services. The Helping Hands Project developed into the current program largely due to the vision of a student

organizer, **Raymond J. Legenza, a 1996 USU SOM Graduate**. The Office of Recruitment and Diversity takes great pride in sponsoring this program; the essential physician support is volunteered by the exceptional faculty of the USU SOM Department of Family Medicine. *Helping Hands* has become a significant USU program; it encourages a meaningful contribution of essential health care by USU faculty and students to their neighboring communities. And, it provides a tremendous experience for the USU students.

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The Office of the Brigade Commander. The USU Brigade Commander is recognized as *the senior active duty officer* of the University and reports directly to the President of USU. It is the responsibility of the Brigade Commander to ensure that the uniformed personnel assigned to the University adhere to the appropriate service specific standards set by their parent Services. In addition, the Brigade Commander assures that the interests of the military members assigned to the University are addressed and that they remain competitive for promotion with their service peers. Under the leadership of the Brigade Commander, the uniformed students, faculty, and staff assigned and reporting to the School of Medicine (SOM), the Graduate School of Nursing (GSN), the Graduate Education Programs, or other USU activities, programs or divisions must participate in all activities and events as they would in any other command of the Uniformed Services. Regular formations are held; physical fitness exercises, standards, and testing are adhered to; performance evaluations are completed and rated; and, uniformed personnel are trained in the appropriate uniformed programs and customs.

A Multi-Service Environment. The USU Brigade provides a clear chain-of-command for all uniformed members, thus allowing individuals to rapidly assimilate into their new units and the multi-service environment of USU. The Brigade Command structure includes a designated Commandant for both the SOM and the GSN. The SOM has three company commanders representing the Army, Navy, and the Air Force; they are specifically assigned to USU to provide for military training in officership and leadership. A United States Public Health Service officer is also responsible for providing this special training to the Public Health Service students. The company commanders are mentors for the students and they deploy with them during each of the University's field training exercises. The USU uniformed faculty and staff also conduct service-unique and combined inspections and military formations. Similar to the Service Academies, each student class also has its own military command leadership structure. The students rotate positions among the class members, which increases individual exposure in the management of specific assignments, duties, and *command* roles. Tactical senior medical non-commissioned officers are also assigned to each student company to provide mentorship and to assist the company commanders with officership training.

Establishment of the Office of the USU Chaplain. In July of 1999, the Navy Surgeon General approved the resourcing of billets for a Navy chaplain and an enlisted assistant at the DoD joint command of USU. The arrival of the chaplain and his assistant as *the first permanently assigned ministry team at USU* filled a void in pastoral care that had existed since the foundation of the University. Following the establishment of the Office of the USU Chaplain within the Brigade Command, essential counseling and guidance is now available and provided to the USU students and assigned staff.

The mission of the Office of the USU Chaplain is to support and enhance the quality of life of the USU military personnel, to include their families, through spiritual development, as needs are identified and requested. The Office facilitates the free exercise of religion for USU military personnel and their families. Chaplain ministry is needs-based, performed cooperatively, and executed within a pluralistic environment. Faith-specific Student Associations are formed as needs are identified. USU faculty and staff are encouraged to participate in the Student Association of their choice and to support and/or mentor the students in their spiritual formation in a similar manner as guidance is provided for the development of academic skills. Within regulations under the University President and the Brigade Commander, and administered by the Office of the Chaplain, the Student Associations are self-governed to meet the specific needs and interests of their constituents. The areas of Ministry are: 1) Pastoral Care (to include prayer, scriptures, insight, listening, encouragement, and support); 2) Pastoral Counseling (provision of individual, marriage and family counseling on moral, ethical, emotional, spiritual, or faith issues); 3) Pastoral Visitation (ministry of presence at the University, visitation of the hospitalized and confined, pre-operative prayer or counseling, as requested); 4) Spiritual Direction (integration and guidance provided to an individual for spiritual development); 5) Observance of Religious Rites (religious observances, command functions, memorial services and social activities); 6) Classes and Seminars (discussions in the areas of value formation, ethical decision-making, bioethics, and faith-related topics); 7) Literature Ministry (provision of devotional, inspirational, and self-help literature); 8) E-Mail (communication of the thought for the day and weekly inspirational thoughts); 9) Referral Service (assistance in locating a place of worship, military or civilian, and counseling referrals for requested guidance outside of the Chaplain's expertise); and, 10) Field Exercises (provide worship services, training, and ministry in the field environment for students and staff).

Development of International Relationships. In the Fall of 2000, the USU Brigade Commander initiated a dialogue with the Commander, German Armed Forces Command, United States and Canada, which resulted in the establishment of the German Troop Duty Proficiency Badge Program at USU, making the University the first United States Armed Forces medical organization in the Military District of Washington to gain sponsorship from the German Armed Forces Command for this program.

The program provides USU students and faculty with an opportunity to compete for, and attain, the prestigious German Troop Duty Proficiency Badge, which recognizes excellence in both physical fitness and readiness. Besides being a foreign badge, the award is unique because it is strictly based on the abilities of each participant and not dependent on the decision of an awards board. Facilities and logistics for the USU program involve strong community relations with agencies and personnel outside of the University, including the Walt Whitman High School at Fort Meade, Maryland, and the National Naval Medical Center in Bethesda, Maryland.

In order to earn the badge, individuals must achieve minimum standards involving times and distances while qualifying in the following events: shot put; long jump; sprint (75 meters for women; 100 meters for men); swim (200 meters); marksmanship (9 millimeter pistol); long distance run (2,000 meters for women; 3,000 meters for men); and, a road march (distances range from 20 to 30 kilometers, depending on age, sex, and type of badge - *bronze, silver, or gold* - that the participant is qualifying for). Participants must also be in good standing with the University/Brigade and pass a first-aid course. There are two main road marches each year, followed by an awards ceremony; the US/GE Day is hosted by the Military District of Washington during the Spring; and, the GE/US Day is hosted by the German Armed Forces Command during the Fall.

Upon successful completion of all events, each participant is presented a certificate and badge by the German Armed Forces Commander. Participants may then provide their USU Unit Awards and Decorations Representatives with a copy of their certificates, which are then forwarded to their respective Service Major

Command Personnel Centers for inclusion in their permanent military records. Army personnel are authorized to wear this badge on their service dress uniforms; Air Force personnel may wear the badge on their service dress uniforms, but only while in Germany (the host nation); Navy personnel are not authorized to wear the badge. During 2002, the actual qualification time of each participant was reduced from three months to less than two months. ***Nearly 100 USU medical students and faculty members were awarded the German Troop Duty Proficiency Badge during 2002.***

Assurance of Operational Skills. The Brigade's Operations Department provides the planning, coordination, and logistical support for the USU military field training exercises for the first and fourth-year medical students. The development of plans continued during 2002 for the major exercises at the University: 1) January 22-26, 2002 - **Operation Bushmaster III-02** at Camp Bullis, Texas; 2) June 24 - June 28, 2002 - **Operation Kirkesner** at the Marine Corps Base at Quantico, Virginia; 3) September 14-21, 2002 - **Operation Bushmaster IX-02** at Camp Bullis, Texas; and, 4) November 9-16, 2002 - **Operation Bushmaster XI-02** at Camp Bullis, Texas. Through training such as Operations Kirkesner and Bushmaster, USU encourages each uniformed student to develop and maintain the special skills required to earn a leadership position in military medicine (these events are further described in Section II).

During the Summer of 2002, the USU Brigade Commander reported that the second year medical students had participated in the following activities: **Army** - U.S. Army Airborne School; Mountain Warfare School; clerkships at the Army Surgeon General's Office; Operational Emergency Medical Skills Course; Expert Field Medical Badge; and, USA Operational Units (e.g., Fort Bragg, Fort McCoy, Fort Carson, Fort Riley, and Vicenza, Italy); **Navy** - Diving School; Aerospace Medicine (USS Roosevelt); USN SEALS; Top Gun; Mountain Warfare Training; Amphibious Warfare School; Neuroanatomy Computing; USNS Mercy Hospital Ship; the USN Special Warfare Detachment; Tropical Medicine Course, Brazil; and, Sigonella, Italy; **Air Force** - Operational Emergency Medical Skills; Top Knife; Expert Field Medical Badge; Mountain Warfare School; and, USAF Hospitals and Research. From qualifying for the Expert Field Medical Badge to conducting undersea medical research with the United States Navy SEALS, USU students are developing and maintaining the special skills required to assume leadership positions in uniformed medicine. Additionally, the diverse and exciting training USU students complete during summer training helps the University to accomplish Strategy 6.4.2 of the USU Strategic Plan: *USU faculty, staff, students, and alumni, both on-site and off-site, will be provided information relevant to their career enhancement, mission, and interests.*

The Brigade Headquarters Company is the enlisted Brigade Command support element for USU and is commanded by the only Marine assigned to the University. In addition to the performance of their military occupation specialties during normal duty hours, the enlisted members of the Headquarters Company ensure that equipment, supplies, transportation, and personnel are positioned to accomplish all major field exercises each year. The Brigade is responsible for ensuring that the enlisted personnel at USU are proficient in their operational support skills, which enable them to remain competitive for promotion.

Orientation Responsibilities. Another responsibility of the Brigade, during the first quarter of each Academic Year, includes the in-processing requirements for all uniformed students, whether they are matriculating into the SOM, GSN, or the Graduate Education Programs in the SOM. In the case of the first-year medical students for Academic Year 2002, Brigade letters were issued to the incoming students to include a detailed

calendar of events outlining their in-processing week. This increased level of detail facilitates the orientation process and eliminates students' concerns over appropriate uniform, classroom, and Brigade requirements. The military aspects of the USU were stressed during the first week, as well as the students' responsibilities in their primary role as military officers.

Recruitment Efforts for Underrepresented Communities. The Brigade continued to reach out to the ROTC and underrepresented communities during 2002. The Brigade's recruitment efforts during 2002 included presentations on the value of a USU medical education at the following universities: the University of Arkansas at Little Rock; the University of Westminster, Missouri; and, the University of Mississippi. The membership of **Charles S. Serio, Colonel, MS, USA, USU Brigade Commander,** on the Medical Advisory Selection Committee at West Point continues to give USU exposure to some of the top military academy students in the country.

USU Color Guard. Formal ceremonies have continued to be an important element of military tradition since the earliest armies and navies entered combat. Whether at a retirement, change-of-command, or a unit stand-up, the military goes to great lengths to showcase its command, its people, and its pride in the Nation. Color guards have long been an important part of these ceremonies, and USU is carrying on that tradition, forming its own color guard in 1997. The USU Color Guard is comprised of enlisted members (E-5 and below) from the Army, Navy, and the Air Force. The first major performance of the USU Color Guard occurred at the 1997 USU Graduation; the colors were also presented during the USU Brigade Change-of-Command Ceremony in 1998 and the Headquarters Company Change-of-Command Ceremony in August of 2001. This year, the USU Color Guard also had the opportunity to represent the University and the military at the opening of major sporting events in the local area. During the May graduations from 1998 through 2002, the USU Color Guard brought the colors on stage during the commencement ceremonies, which were held at the National Society of Daughters of the American Revolution Constitution Hall in Washington, D.C. And, during 2002, the USU Color Guard performed at the annual *USU Dining-In* ceremony.

Officer Indoctrination Training of USU Matriculants. Formal studies were conducted during 2001-2002 to assess the value of conducting a basic officer indoctrination course on the USU campus for all Army, Navy, and Air Force matriculants to the USU SOM. At the present time, the Surgeons General spend approximately $500,000 per year to transport and house USU non-prior-service Navy and Air Force matriculants and all of the USU Army matriculants so that they can attend their service-specific officer indoctrination courses prior to their arrival at USU. Because of the time constraints that occur due to the timing of college graduation, the notice of final acceptance by USU Admissions, and the receipt of official military orders, some of the USU matriculants have been unable to attend these courses prior to their arrival at USU. Due to the USU requirements for military training during the Summer following the first year of medical school, it is almost impossible for those students who miss their indoctrination courses to make them up without impacting on their medical education requirements. The Brigade currently proposes to investigate the efficiency of having all USU matriculants attend a USU TriService Indoctrination Course to be held at USU during July and August prior to the Brigade orientation and class initiation activities. Topic sessions, which are applicable to all Services, would be held in a large lecture room, while service-specific topic sessions would be held in smaller USU classrooms. Faculty from USU could be augmented with temporarily assigned instructors as required by each of the present course coordinators. Incoming

students would no longer be required to travel elsewhere prior to their arrival at USU, which would accommodate the location of housing for themselves and their families prior to course commencement. Although cost-savings would be partially offset by the temporary travel and housing for the visiting faculty, the overall savings would still be significant. In addition, each incoming class would have the opportunity to develop a strong sense of *esprit de corps* prior to the beginning of classes. This effort would fall under Strategy 6.4.2. of the 2002 USU Strategic Plan, since USU would be providing an additional level of military educational training specifically for the USU SOM students. Goal 3 of the USU Strategic Plan, *we will optimize resources to efficiently and effectively implement USU core capabilities*, supports the proposed USU effort to coordinate with each of the Services to generate cost-effectiveness for the administrative and financial aspects of the current process for USU SOM student indoctrination.

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Goal 6 of the 2002 USU Strategic Plan includes a requirement for the University to establish an enhanced sense of intramural community. The Combined Federal Campaign is one event which crosses all boundaries within the University and unifies the entire USU community through a common goal of sharing with those who are in need, either in our own community, or on a global scale.

USU Exceeds Established Goals for the Combined Federal Campaign. From 1997 through 2002, the University has reached its Combined Federal Campaign (CFC) goal due to the tremendous efforts and coordination of the Office of the USU Brigade Commander. Under the leadership of the USU Campaign Managers, the total contributions reached over $167,600. Approximately 74 percent of the USU staff, students, and faculty contributed to the Year 2002 Campaign for worthy community, national, and world charities. ***The Year 2002 marks the sixth consecutive year in which the University exceeded its goal.***

USU also earned the 2002 CFC Chairman's Award for attaining 100.4 % of its goal of $167,000. In doing so, USU had a total of 63 Eagle donors (51 single Eagles with contributions representing at least one percent of the employee's salary; and, 12 double Eagles with contributions representing at least two percent of the employee's salary). In addition, the University was able to announce on January 2, 2003, that USU had won First Place in the Best Goal Poster Category of the DoD CFC Communications Contest. **Technical Sergeant Waverly Johnson, USAF, USU Audio Visual Center,** created the winning entry. His poster, entitled *Walk a Mile in Their Shoes*, was displayed in the lobby entrance area of Packard Hall (Building A). Sergeant Johnson's poster was entered by DoD into the National Capital Area CFC Communications Contest where it will compete against entries from all of the Federal Departments.

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UNIVERSITY HONORARY DEGREES, AWARDS AND RECOGNITION

The public understands the unique roles and values of the Uniformed Services University.

- Goal One, Objective 1.1.1, USU Strategic Plan, 2002.

The University Has Granted a Total of 29 Honorary Degrees Since its Establishment. Since the first Honorary Degree that was granted in 1991, through April of 2003, a total of 29 recipients have been selected. The Honorary Degree recognizes individuals who have demonstrated outstanding support for the Military Health System and/or the Uniformed Services University of the Health Sciences.

Honorary Degree Recipients:

1991 **Jay Sanford, M.D., Third President of the University and first Dean of the School of Medicine,** recognized as a major participant in the establishment and early leadership of the University;

1992 **Harry C. Holloway, M.D., Professor, USU Department of Psychiatry, and Deputy Dean from 1990 through June 1992,** recognized for unwavering support during a transitional period;

1993 **The Honorable Daniel K. Inouye, United States Senator from Hawaii, Senate Appropriations Committee,** recognized for continuous leadership and support for Military Medicine and the University as one of the original members of the Congress who supported the establishment of the University;

1994 **Mr. Zachary Fisher, Champion of the Armed Forces,** recognized for his founding of the Intrepid Museum, the Fisher House Foundation, the Fisher Armed Services Foundation, and his tremendous support for both Military Medicine and the University;

The Honorable David Packard, Former Deputy Secretary of Defense, first Chairman of the USU Board of Regents, and Acting President of USU from 1976 to 1981, recognized for his oversight during the original construction of the USU campus and his constant support for Military Medicine and the University from its establishment in 1972, until his death in 1996;

1995 **The Honorable Sam Nixon, M.D., Former Chairman of the USU Board of Regents and Founder of the USU Tradition of the Mace** for the University Commencement Ceremonies, recognized for his dedication to Military Medicine and the superb leadership he provided to the University;

Frank Reynolds, M.D., Internationally recognized throughout the practice of civilian medicine and for his continuous support and interest in both Military Medicine and the University; he was also the commencement speaker during the 1995 Commencement Ceremonies;

The Honorable Strom Thurmond, United States Senator from South Carolina, Chairman, Senate Armed Services Committee, recognized for continuous leadership and support for Military Medicine and the University and as one of the original members of the Congress who supported the establishment of the University;

1996 **Michael E. DeBakey, M.D., Renowned Surgeon who has been recognized by numerous Presidents of the United States** and leaders of many nations for his knowledge of medicine and his unwavering support for Military Medicine and the University;

The Honorable Melvin R. Laird, Former Secretary of Defense and continuous supporter of Military Medicine and the University, recognized for his provision of essential guidance and support since the establishment of USU;

Francis D. Moore, M.D., Internationally recognized as a distinguished Surgeon and supporter of Military Medicine and for his consistent support to the educational programs within the University;

1997 **Donald L. Custis, M.D., Vice Admiral (Retired), Former Surgeon General of the United States Navy,** recognized for his career of dedicated service to Military Medicine and consistent support for the University;

The Honorable C. Everett Koop, M.D., Former Surgeon General of the United States and Member of the USU Board of Regents, recognized for his consistent support for Uniformed Medicine and the University;

The Honorable Constance Morella, Member of the United States House of Representatives from the State of Maryland, recognized for her outstanding dedication to quality health care, medical research and technology, and for her unwavering support for the University;

President Ronald W. Reagan, President of the United States from 1980 through 1988, recognized for his dedication to the welfare of the Armed Forces, Military Medicine, and the University;

1998 **General Charles Krulak, Commandant, United States Marine Corps,** recognized for his outstanding support for Military Medicine and for the welfare of the University; he presented the commencement address during the 1998 Commencement Ceremonies;

Joshua Lederberg, Ph.D., Nobel Laureate and Internationally Recognized as a Leader in Medicine and for his participation in, and support of, University activities and programs;

V. M. Rexroad, Brigadier General, United States Air Force, recognized as one of the original supporters of the University and for his dedication to Military Medicine and long-term dedication to the welfare of the University from its establishment until his death in 2002;

David C. Sabiston, Jr. M.D., Internationally Recognized throughout the Civilian Practice of Medicine for his dedication and support of Military Medicine in general and for his unwavering support for the University;

1999 **Oliver H. Beahrs, M.D., Professor of Surgery, Emeritus, Mayo Medical School, Past President of the American College of Surgeons,** recognized for his continuous support for Military Medicine in general and for his on-going and dedicated support for the University;

Sheila Burke, Executive Dean, Lecturer in Public Policy, John F. Kennedy School of Government, Harvard University, Former Chief of Staff, Office of the Republican Leader, United States Senate, from 1986 to 1996, recognized for her dedication to Military Medicine and the University;

The Honorable Paul S. Sarbanes, United States Senator from Maryland, recognized for his unwavering support of, and dedication to, essential legislation for both the Military Health System and the University;

2000 **The Honorable William S. Cohen, Secretary of Defense,** recognized for his outstanding support and dedication to Military Medicine and to the welfare of the University;

2001 **The Honorable Robert J. Dole, Former United States Senator from Kansas and Senate Majority Leader,** recognized for his tremendous history of service to his Nation during War and Peace and for his commitment to the health care of the Armed Forces and to the University;

Val G. Hemming, M.D., Professor and Dean Emeritus, USU School of Medicine, recognized for his dedicated and outstanding service to the Nation, which began in 1965 through his retirement in 2002; his sincere and successful leadership resulted in tremendous acclaim for the University from the Department of Defense and the United States Congress;

The Honorable Theodore F. Stevens, United States Senator from Alaska and Chairman of the Senate Appropriations Committee, recognized for his great dedication to the Nation and the health care of the Armed Forces and the continuation of the University;

2002 **Faye Glenn Abdellah, Ed.D., Sc.D., RN, FAAN, Professor and Dean Emerita, USU Graduate School of Nursing,** recognized as a nurse, educator, researcher, an internationally acclaimed leader, and the Founding Dean of the newly established and accredited Graduate School of Nursing (description follows);

F. William Blaisdell, M.D., Professor of Surgery, UCD, and Chief of Surgical Services, Sacramento, VA Medical Center, recognized as a physician, researcher, and scholar, for a lifetime of service to the cause of medicine, and as a friend of military medicine and USU (description follows); and,

The Honorable Lonnie R. Bristow, M.D., Past President of the American Medical Association and Chairman of the USU Board of Regents, recognized as a driving force in the American Medical Association and for the initiation of a ground-breaking project in performance measures to determine the success of USU students and graduates (description follows).

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Three Honorary Degrees Recognized During the 2002 Commencement Ceremonies.

Faye Glenn Abdellah, Ed.D., Sc.D., RN, FAAN, Professor and Dean Emerita, USU Graduate School of Nursing, received the Doctor of Science in Military Nursing, *Honoris Causa*, during the 2002 Commencement Ceremonies at Constitution Hall on May 18, 2002. Dean Abdellah served as Acting Dean during the establishment of the Graduate School of Nursing (GSN) from 1993, until her selection as Founding Dean on May 17, 1996. She held this position until her retirement on May 31, 2002. Recognized internationally for her public service in nursing, education and health care, prior to her selection as Dean, she was the Chief Nurse Officer and Deputy Surgeon General of the United States Public Health Service. The recipient of 90 professional and academic honors and twelve honorary degrees, Dean Abdellah is recognized as a national pioneer in nursing research and long-term care policy, mental retardation, the developmentally disabled, home health services, aging, hospice and AIDS. Doctor Abdellah was actively involved in working with the Surgeon General of the United States in the formation of national health policies related to AIDS, drug addiction, violence, smoking, and alcoholism. The author, or co-author of more than 152 publications, some translated into six languages, Dean Abdellah developed the first nationally tested coronary care unit, saving thousands of lives. She also designed the first Federal training program for health services researchers, health services administrators and geriatric nurse practitioners. Her innovative work as a nurse researcher altered modern theory and practice. In recognition of these accomplishments, she was inducted into the National Woman's Hall of Fame during 2000. Before her retirement in 2002, Dean Abdellah received notification of accreditation for the GSN from both the National League for Nursing (NLN) Accrediting Commission and the Commission on Collegiate Nursing Education (CCNE) for the maximum terms of 8 and 10 years, respectively. Both accrediting entities recognized the GSN for its cutting-edge programs and as a model in advanced nursing education, practice, and scholarship.

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F. William Blaisdell, M.D., Professor of Surgery, UCD, and Chief of Surgical Services, Sacramento, VA Medical Center, received the Doctor of Military Medicine and Surgery, *Honoris Causa*, during the USU 2002 Commencement Ceremonies. In 1978, Doctor Blaisdell assumed the role of Chairman, Department of Surgery, at the University of California Davis. He brought with him experience as: Chief of Surgery, VA Hospital San Francisco; Chief of Surgery, San Francisco General Hospital; and, Professor of Surgery, University of California, San Francisco. He was instrumental in developing the UCD Department of Surgery, and he also founded one of the country's first Trauma Programs - the forerunner of Trauma Centers in the United States. He currently holds the position of Professor of Surgery, UCD; and, is the Chief of Surgical Services at the Sacramento VA Medical Center. He is Board Certified in General Surgery, Thoracic Surgery, Vascular Surgery, and in Surgical Critical Care. Doctor Blaisdell travels worldwide, speaking at conferences and symposiums. He is a published author of historical and medical information. His clinical research includes: Shock, Organ Failure Syndrome; Coagulopathies following injury and major surgery; and, Vascular Surgery Principles including the first extra-anatomical bypass procedures. And, he was elected to preside over the USU Surgical Associates during 2000-2001. Known as the *Friend of Military Medicine*, he has devoted countless hours to the development of USU, the education of uniformed medical students, the practice of medicine, and caring for his patients.

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The Honorable Lonnie R. Bristow, M.D., Past President of the American Medical Association and Chairman of the USU Board of Regents, received the Doctor of Military Medicine, *Honoris Causa*, at the USU Commencement during 2002. The Honorable Lonnie R. Bristow was appointed as Chairman of the USU Board of Regents by the President of the United States and confirmed by the United States Senate in June of 1996. He held that position until September of 2001. Doctor Bristow is a well-recognized spokesman concerning important public health issues and the improvement of the Nation's health policy. Doctor Bristow has had broad experience throughout many levels of organized medicine. He was the President of the California Society of Internal Medicine and President of the American Society of Internal Medicine. In 1977, he was elected to membership in the Institute of Medicine (IOM) of the National Academy of Sciences. He also contributed to the IOM's landmark report, *To Err is Human*, which focused on medical errors in American hospitals and put the need for systemic change on the national health policy agenda. He has been on the American Medical Association's Board of Trustees since 1985, serving as its Chair from 1993 to 1994, and as a member of the Executive Committee from 1990 through 1997. Doctor Bristow was President-Elect of the American Medical Association in 1994 and subsequently served as President before coming to USU. Doctor Bristow brought his Naval submarine service experience and a lifetime of dedicated medical experience to his appointment as Chairman of the USU Board of Regents. His commitment to improving the Nation's health is illustrated by his untiring efforts to keep young people tobacco-free and his emphasis on drug treatment and prevention. As the Chairman of the Board of Regents, he engaged the USU community in intellectual discussions across the full spectrum of medical education. Doctor Bristow's inclusive style of leadership encouraged and challenged Board members and the USU staff toward helping the University achieve its vision; and, he championed USU's efforts to recruit underrepresented minority students and faculty.

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The University Medal.

Background. The University Medal is one of the University's highest honors. It was created in 1999, to pay tribute to deserving alumni, staff, and faculty members, friends and supporters of the University, its schools, programs, and mission. The recipients are recognized for professional or academic success or public service. Receipt of the University Medal is by endorsement and recommendation of the USU Committee for Names and Honors, submitted through the USU President, with the approval of the USU Board of Regents.

The University Medal, molded from silver, displays the University Seal on the front side; the medal's number, recipient's name, and the award date are engraved on the reverse side. 2002 marked the third annual presentation of the University Medal during the USU Commencement Ceremonies. As of April 2003, a total of 15 individuals have received the University Medal.

University Medal Recipients:

1999 **Lieutenant General Ronald Blanck, Surgeon General of the Army,** received the first University Medal at the November 1, 1999 Meeting of the Board of Regents. As Surgeon General, he served as a member and Chair of the USU Executive Committee; he was also the Assistant Dean of Student Affairs at USU from 1976 through 1979;

2000 **David O. Cooke, Director of Administration and Management, Office of the Secretary of Defense,** was awarded the University Medal during the USU Commencement Ceremonies on May 20, 2000, in recognition of his long-term service in the Office of the Secretary of Defense (OSD). From 1957 until his death in 2002, Mr. Cooke provided continuous support and administrative guidance for Military Medicine and the University;

Rear Admiral Michael L. Cowan, MC, USN, Chief of Staff for the Assistant Secretary of Defense for Health Affairs (and later Surgeon General of the Navy), received the University Medal in recognition of thirty years of dedicated service in support of Military Medicine and the University. Admiral Cowan received the University Medal during the USU Commencement Ceremonies on May 20, 2000, following his presentation of the Commencement Address;

Jeffrey R. Swope, Director, USU Audio Visual Center, upon his retirement from public service, was recognized for his leadership in the establishment of the University Audio Visual Center during 1977 and for his 23 years of continuous dedication and unwavering support to the USU community. The University Medal was presented on May 20, 2000, during the USU Commencement Ceremonies;

2001 **Lieutenant Colonel Yvonne Andejeski, MC, USA, USU SOM Class of 1983,** completed a residency in radiation oncology; she was board-certified in 1987 and was active in patient care and research. She served as the Acting Chief of Radiation Oncology at the National Naval Medical Center and as the Chief of Radiation Oncology at the Walter Reed Army Medical Center, as well as the Radiation Oncology Consultant to the Surgeon General of the Army. In addition to serving as the Program Manager for a congressionally-directed $240 million breast cancer research program, in 1998, she co-designed and co-managed the development of the DoD Breast Cancer Treatment Guidelines using a TriService, multi-specialty panel of oncologic, surgical, and primary care and psycho-social clinicians. Following her own diagnosis of breast cancer in 1994, she selflessly continued her work through the Spring of 2001, when she retired from the Army and assumed a position at the National Cancer Institute. On March 31, 2001, during a retirement party in Doctor Andejeski's honor, Doctor Lee Poth presented the University Medal, on behalf of the University, in recognition of LTC Andejeski's significant contributions to research, medicine, the military, and the University. Doctor Andejeski died in October of 2001;

Gerald W. Fischer, M.D., Colonel, MC, USA (Retired), received his commission in the United States Army in 1971, and began his pediatric training at the Madigan Army Medical Center, followed by an Infectious Disease Fellowship at the Tripler Army Medical Center. After arriving at USU in 1977, he earned the faculty rank of professor within four years. During his twenty-year tenure in the USU Department of Pediatrics, he held numerous positions of importance. He is a superb clinician who has trained numerous military physicians as fellows in his specialty. His scientific career has been quite successful, earning both national and international recognition; he has also founded his own biotechnology company, Biosynexus. The University Medal was presented on May 19, 2001, during the 2001 Commencement Ceremonies;

Connie Mariano, Rear Admiral, MC, USN, USU SOM Class of 1981, the first USU SOM Graduate to be promoted to 0-7, was the Commencement Speaker during the 2001 USU Graduation Ceremonies. During June of 1992, RADM Mariano became the first military woman to be named White House Physician; in February of 1994, she was promoted to Director of the White House Medical Unit and Senior White House Physician. Dr. Mariano was promoted to Rear Admiral (lower half) on July 1, 2000, making her the first Filipino American to become an admiral in the history of the United States Navy. The University Medal was awarded following RADM Mariano's presentation of the USU Commencement Address on May 19, 2001;

Michael N. Sheridan, Ph.D., USU SOM Associate Dean for Graduate Education, was recognized for his tremendous service to the University since 1980. Following his planned retirement during 2002, the University's presentation of this award reflected the tremendous respect and gratitude held by all for Dr. Sheridan's dedicated service and accomplishments during his more than twenty years of outstanding service to the University. The University Medal was presented during the USU Commencement Ceremonies on May 19, 2001;

Craig Llewellyn, M.D., Professor and Chair, Department of Military and Emergency Medicine, received the University Medal on August 23, 2001, during the welcoming ceremonies for the new students. The award recognized the superb dedication of Doctor Llewellyn who served as the Department Chair of Military and Emergency Medicine for 14 years (1987 through 2001). Doctor Llewellyn first joined USU in 1982, when he was selected to serve as the Commandant of Students from 1982 through 1987. Doctor Llewellyn has served as a foundation for the University in its continuous efforts to effectively respond to the special needs of military medicine. He remains at USU as a tenured professor and also as the Director of the Center for Disaster and Humanitarian Assistance Medicine (CDHAM);

Norman M. Rich, M.D., Professor and Chair, Department of Surgery, was awarded the University Medal on August 23, 2001, during the 16th Annual Surgery for Trauma Day. Since the very inception of the University, Doctor Rich has continuously provided support and encouragement to the faculty, students, and graduates of the School of Medicine. On both the national and international scenes, Doctor Rich has contributed to a positive awareness of the University through his international efforts and memberships in elite organizations. He has been responsible for on-going visits by prestigious organizations to USU. Two examples of such visits include the Society of University Surgeons (this premier organization for young academic surgeons has held two meetings at USU, whereas the majority of United States medical schools have never been visited) and, the International Surgical Group composed of Professors from leading Canadian, British, Scandinavian, and United States Schools of Medicine;

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Val G. Hemming, M.D., Professor and Dean Emeritus, USU School of Medicine, was awarded the University Medal on April 25, 2002, by the University President during Dean Hemming's retirement ceremony. Dean Hemming first came to USU in 1980 and served in the Department of Pediatrics where he was appointed as the Department Chair in 1987. In 1995, he served as the Interim Dean until his appointment as Dean in May of 1996. Under his leadership, the curriculum of the SOM was thoroughly reviewed and enhanced to better meet the special needs of the Uniformed Services. In all matters, Dean Hemming efficiently kept the welfare of the students, faculty and staff of the SOM as a driving force during his successful leadership;

Scott R. Lillibridge, M.D., CAPT, USPHS, USU Class of 1981, Leader of the Health and Human Services Coordinated Bioterrorism Initiative in July 2001, was awarded the University Medal on May 18, 2002, at the USU Commencement Ceremonies. CAPT Lillibridge was also the Guest Speaker at the 2002 USU Commencement. At the time of the graduation ceremony, CAPT Lillibridge served as the Special Assistant for Bioterrorism for the Secretary of Health and Human Services (HHS) and directed anti-terrorism efforts across HHS. CAPT Lillibridge also served as the Director of the Bioterrorism Preparedness and Response Program for the Centers for Disease Control and Prevention from 1998 through 2001. He joined the CDC in 1990, and in 1995, he led the United States Medical Delegation to Japan after the sarin gas attack in the Tokyo subway. Also during that year, Dr. Lillibridge was the lead physician for the

United States Public Health Service response following the Oklahoma City bombing. He has worked in 14 nations on epidemiology and other public health issues; has had three books in press; and, authored or co-authored 25 publications on bioterrorism and various other public health issues;

Chester J. Pletzke, A.M.L.S., Former Director of the USU Learning Resource Center, received the University Medal at the USU Commencement Ceremonies on May 18, 2002. Mr. Pletzke provided exceptional service to USU for 24 years as the Director of the USU Learning Resource Center (LRC). His visionary planning, advocacy, entrepreneurship, marketing skills, and great creativity resulted in the LRC becoming one of the outstanding medical university libraries and information centers in the United States. He forged partnerships with the National Library of Medicine, medical publishers, other medical libraries, information technology providers, and various government libraries to ensure that the LRC retained its national leadership. Every accrediting entity since the establishment of the LRC has recognized his superb leadership and the extraordinary support provided by the LRC to the students, faculty and staff of USU;

Dale C. Smith, Ph.D., Professor and Chairman, Department of Medical History, received the University Medal at the USU Commencement Ceremonies on May 18, 2002. Doctor Smith has already provided over twenty years of exemplary service to the University as a superlative teacher; mentor and critic; scholar of the history of medicine, military medicine and science; and, as a department administrator. His contributions in redefining scholarship and revising the University's essential policies for faculty appointment, promotion, and tenure have been critical. He has assisted with the development of new graduate programs in medical history, military applied physiology, and laboratory and animal medicine. In his capacity as an invited lecturer on medical and military history throughout the Nation and in many parts of the World, he has enhanced the recognition of USU, its mission, and the proud heritage of military medicine in the United States; and,

Faye Glenn Abdellah, Ed.D., Sc.D., RN, FAAN, Professor and Dean Emerita, USU Graduate School of Nursing, received the University Medal on May 30, 2002, from the University President during her retirement ceremony. Upon her arrival at USU in 1993, Doctor Abdellah was faced with urgent requirements to establish curricula, select a faculty, and gain approval from accrediting entities for the establishment of the USU Graduate School of Nursing (GSN). She accomplished all requirements with extraordinary success. As of April 2003, 183 advanced practice nurse graduates of the GSN have received graduate degrees in their specialties and serve the Nation in the Uniformed Services. The Nursing Chiefs of the Armed Forces extolled the success of the GSN during 2001-2002, when they met with the two accrediting organizations. Under the leadership of Dean Abdellah, the GSN met its mission and succeeded far beyond the established goals of the United States Congress and the Military Health System.

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The Carol Johns, M.D., Medal.

Background. **Carol J. Johns, M.D., Professor, John Hopkins School of Medicine,** was a long-time enthusiastic and effective supporter of the University. Doctor Johns worked for the health and survival of the University in numerous ways. She served as a member of the USU Board of Regents from 1985 until her death in 2000. A warm and gifted woman with remarkable personal humility and gentleness, Doctor Johns achieved the highest honors in academic medicine as a nationally recognized clinician, academician, and teacher. The University established an annual award in her name, the *Carol J. Johns, M.D. Medal*. The Medal will honor the faculty member whose accomplishments emulate Doctor Johns' spirit in: furthering the welfare and excellence of the USU faculty; promoting outstanding educational programs for the students; and, advancing the reputation of the University locally, nationally, and internationally. The Carol J. Johns, M.D. Medal was presented for the first time during the 2001 USU Commencement Ceremonies. Two individuals were chosen to receive the award during the 2002 commencement ceremonies. As of April 2003, a total of three individuals have received this prestigious award.

Recipients of the Carol J. Johns, M.D. Medal:

2001 **Louis Pangaro, M.D., Colonel, MC, USA (Retired), Professor, USU SOM Department of Medicine,** was the first individual to receive the newly established Carol J. Johns, M.D. Medal during the 2001 USU Commencement Ceremonies on May 19, 2001. Doctor Pangaro was selected due to his internationally recognized leadership in academic medicine and his commitment to the promotion of outstanding educational programs, which are acknowledged by his on-going selection to university and national initiatives dealing with curriculum reform;

2002 **Rosemary C. Borke, Ph.D., Professor, USU SOM Department of Anatomy, Physiology and Genetics,** was nominated by the USU Faculty Senate for the 2002 Carol J. Johns, M.D. Medal. Doctor Borke is recognized as: an outstanding educator of medical and graduate students; an innovative leader in the development and implementation of curricula; a model for faculty leadership at the Department and University level; and, an internationally recognized expert in the area of peripheral nerve injury and repair. Her involvement in, and contributions to, all aspects of USU faculty service have established a level of unsurpassed excellence that stands as a model for all USU faculty. She has demonstrated excellence in promoting outstanding educational programs, furthering the welfare and excellence of the USU faculty, and advancing the reputation of the University locally, nationally, and internationally; and,

Val G. Hemming, M.D., Colonel, USAF, MC (Retired), Professor and Dean Emeritus, School of Medicine, was chosen to receive the Carol J. Johns, M.D. Medal during the 2002 USU Commencement Ceremonies on May 18, 2002. Nominated by the USU Faculty Senate, Dean Hemming was recognized for his endeavors in research

for over 20 years. His research led to an innovative treatment that prevents death and disability from Respiratory Syncytial Virus infection in vulnerable pre-term infants. During his term of service as the Dean of the School of Medicine, he continued his on-going efforts to improve and reform the curriculum of the medical school. As with the rest of the Nation, the USU SOM faced a marked reduction in the number of patients available to students during their clinical rotations. To address this concern, Dean Hemming was instrumental in the implementation of the USU Simulation Center (SIMCEN), which allows the effective and efficient use of simulated patients. In addition, the SIMCEN facilitates the implementation of the latest technological and educational advances for the teaching of physicians and students. His success in this effort will guarantee the value of USU as a resource for the effective training and testing of medical students and for the continuing medical education of health care providers for generations to come.

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The Year 2002 Curreri Award.

Background. Following his retirement as the first University President in November of 1976, **Anthony R. Curreri, M.D.,** was awarded the Department of Defense (DoD) Distinguished Public Service Award. The DoD award, presented in 1977, cited Dr. Curreri for "collaborating with the military departments and for the development of the overall objectives and goals of the University to develop and implement an educational system of the highest quality to serve the physician manpower needs of the military services." The 1996 Graduating Class of the School of Medicine established the Curreri Award to both recognize exceptional contributions to the continuation and well being of the University and to memorialize the leadership of Dr. Curreri as USU's first President. Since the initial award in 1996, all of the graduating classes (SOM, GSN, and Graduate Education) have participated in selecting the recipients of this award.

Recipients of the Curreri Award:

1996	**Vorley M. (Mike) Rexroad, BG, U.S. Air Force (Retired)**;
1997	**John Dressendorfer**;
1998	**Lorraine B. Sanford**;
1999	**Charles C. Partridge, COL, USA (Retired)**;
2000	**Enrique Mendez, Jr., M.D.**;
2001	**Frederic G. Sanford, M.D., RADM, MC, USN (Retired)**; and,
2002	**Barry W. Wolcott, M.D., COL, MC, USA (Retired).**

Barry W. Wolcott, M.D., COL, MC, USA (Retired), Receives the 2002 Curreri Award. On May 10, 2002, the USU graduating classes awarded the 2002 Curreri Award to **Barry W. Wolcott, M.D.** The award recognized Doctor Wolcott for his on-going and extraordinary support of USU. Doctor Wolcott served as the first Chair of the Section on Emergency Medicine (later to become the USU SOM Department of Military and Emergency Medicine) from 1982 through 1983. As Chair, he was instrumental in the design and implementation of the first *Bushmaster Exercise* held in 1980 and in the evolution of the USU undergraduate Medical Education Program in Emergency Medicine. Doctor Wolcott served as a USU SOM Associate Professor of Medicine while stationed outside of the Washington D.C. area; in that capacity, he mentored USU students at the Brooke Army Medical Center in San Antonio, Texas, and at the Madigan Army Medical Center in Tacoma, Washington. He returned to USU as Commandant of Students for his last active tour and instituted the *Commandant's Call* as a teaching forum for instruction in officership. During his distinguished career, he has taken an active role in medical organizations and journals by serving as: President of the Society for Academic Emergency Medicine; an Editorial Board Member for the Annals of Emergency Medicine; a Charter Member of the Emergency Medicine Residency Review Committee; and, as the American College of Physicians Representative to the Accreditation Review Committee for Physician Assistants. Currently, Doctor Wolcott serves as the Senior Physician at WebMD Health, where he is responsible for assuring the medical quality and appropriateness of the consumer site. In retirement, Doctor Wolcott has continued to serve the University in numerous ways as: a consultant and guest faculty/lecturer in the USU SOM Department of Military and Emergency Medicine; a small group leader in various medical student courses; a fundraiser for the Sanford Chair in Tropical Medicine; a mentor to the USU Commandants; and, a supportive friend to the USU students. The USU community considers it to be a reflection of great credit upon the University when an individual, such as Doctor Wolcott, has demonstrated such long-standing appreciation, dedication, and support for the USU mission and educational programs.

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The 2002 Packard Lecture.

Background. The Packard Lecture Series was named in honor of **The Honorable David Packard** (September 7, 1912 - March 26, 1996), distinguished friend and supporter of the University. Mr. Packard was the Deputy Secretary of Defense when USU was created in 1972. He served as the first Chairman of the USU Board of Regents; and, he was the Acting President of the University from 1976 to 1981. Mr. Packard also served as the first Chair of the Council of Directors of the Henry M. Jackson Foundation for the Advancement of Military Medicine for over six years. The USU Faculty Senate established the Packard Lecture in 1985, to annually honor individuals who have made significant contributions to the military medical community; it is considered among the greatest honors bestowed by the USU faculty.

The David Packard Lecture Series:

1985 Enrique Mendez, M.D.	***Teaching Humanism to Medical Students***
1986 Joshua Lederberg, Ph.D.	***The Complexity of Biological Systems***

1987 C. Everett Koop, M.D.	***The Fight Against AIDS***
1988 Robert Petersdorf, M.D.	***Some Issues in Graduate Medical Education***
1989 ADM James Watkins, USN	***AIDS, The Political, Ethical and Social Aspects***
1990 Arnold Relman, M.D.	***Scientific Misconduct***
1991 VADM James A. Zimble, MC, USN	***Navy Medicine Goes to War, A Time For Evaluation, Reflection and Discussion***
1993 Philip R. Lee, M.D.	***Re-Inventing Public Health***
1995 David A. Kessler, M.D.	***Accelerating Approval for Drugs for Serious and Life Threatening Diseases***
1996 Joseph A. Califano, Jr.	***Radical Surgery: What's Next for America's Health Care***
1997 Michael DeBakey, M.D.	***History, the Torch that Illuminates Lessons from Military Medicine***
1998 Francis D. Moore, M.D.	***New Kinds of War: New Kinds of Peace***
1999 Senator Nancy Kassenbaum Baker	***The Federal Advisory Committee on Gender Integration Training and Related Issues***
2000 David P. Stevens, M.D.	***The Future of Medical Education: Bytes, Ticks and Finding Your Way***
2001 Wayne T. Hockmeyer, Ph.D.	***Perspectives in Biotechnology***
2002 Kenneth M. Ludmerer, M.D.	***The Coming of the Second Revolution in Medical Education***

The 2002 David Packard Lecture Features Kenneth M. Ludmerer, M.D., Professor of Medicine and History, Washington University, St. Louis. The President of the USU Faculty Senate, **Linda L. Porter, Ph.D., Professor, USU SOM Department of Anatomy, Physiology and Genetics**, reported to the USU Board of Regents on August 25, 2002, that one of the significant highlights of the Faculty Senate during 2002 was its sponsorship of the 2002 Packard Lecture which featured **Kenneth M. Ludmerer, M.D., Professor of Medicine and History, Washington University, St. Louis.** On May 9, 2002, 220 members of the USU faculty and staff attended the David Packard Lecture in the Sanford Auditorium. Doctor Ludmerer, an eminent internist, medical educator, and historian of medicine, delivered a lecture entitled *The Coming of the Second Revolution in Medical Education*. The lecture presented an overview of his recently released book, Time to Heal, which examines the evolution of American medical education from the turn of the Century to the present era of managed care. The 2002 Packard Lecture was well received and considered to be most relevant by the USU community.

Doctor Ludmerer is best known for his work in medical education and the history of medicine. His first book, Genetics and American Society (1972), a study of the American Eugenics Movement, was placed by *Saturday Review* on its list of the year's outstanding science books. His second book, Learning to Heal (1985), on the creation of America's system of medical education, was nominated for a Pulitzer Prize and Bancroft Prize. His recently released, Time to Heal (1999), has been called by reviewers ***a masterpiece of great national importance*** and ***the most important work in medical education since the Flexnor Report***. This book was nominated for a Pulitzer Prize and Bancroft Prize and is the first book by a living author to be selected for inclusion in The Classics of Medicine Library.

Doctor Ludmerer is a member of Phi Beta Kappa, Alpha Omega Alpha, the Association of American Physicians, the American Clinical and Climatological Association, and the American Academy of Arts and Sciences. He is a Fellow of the American Association for the Advancement of Science and the American College of Physicians. He is also President of the American Association for the History of Medicine and a member of the National Council of Harvard Medical School. He has served on the editorial boards of eight professional journals and has delivered named lectures at over 100 educational institutions or professional societies. In 1997, he received the Nicholas E. Davies Award of the American College of Physicians for Outstanding Contributions to the Medical Humanities; in 2000, the Distinguished Alumnus Award of the Johns Hopkins University; and, in 2001, the Inaugural Daniel C. Tosteson Award for Leadership in Medical Education from Harvard Medical School's Carl J. Shapiro Institute.

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TEACHING AND RESEARCH SUPPORT

Background. The nine activities organized under the Office of the USU Vice President for Teaching and Research Support (TRS) were originally established as part of the School of Medicine (SOM). As the University's activities and programs expanded to include the Graduate School of Nursing, Continuing Education for Health Professionals, and the Armed Forces Radiobiology Research Institute, it became apparent that the central support functions of TRS were no longer limited to the SOM. As a result, the TRS activities were moved from responsibilities designated to an Associate Dean of the SOM, to a University Vice President. As this evolution occurred, it was also determined that these activities should be called Centers to more accurately reflect their missions as central resources for USU. The nine TRS Centers include: the Audio Visual Support Center; the Center for Multidisciplinary Services; the Learning Resource Center; the Center for Informatics in Medicine; the Center for Laboratory Animal Medicine; the Center for Environmental Health and Occupational Safety; the Biomedical Instrumentation Center; the Information Services Management Center; and, the Pharmaceutical Supply Center.

The Audio Visual Support Center.

Visual communications media can demonstrate cause and effect relationships to convey complex concepts, furnish flawless demonstrations, and interactively involve students to learn in less time and more effectively than through or by traditional approaches.

- Herman Lewis, Educational Films: Writing, Directing, and Producing For Classroom, Television, and Industry, Crown Publishing Incorporated, New York, New York, 1965.

The USU Audio Visual Center (AVC) functions as an essential teaching and research support resource for the USU faculty and staff; it provides support for education and research through computer graphics, still photography, video, multimedia products, and consultation services. ***The Medical Photography Branch*** provides professional photographic services to include: patient photography in a clinical setting; gross specimen photography for Pathology and Anatomy studies; documentation of research projects; and, coverage of University events for public affairs programs. Photographic Laboratory services include: custom printing; film processing support; digital image enhancement; traditional slide duplication; flat art copy; small object studio subjects; and, portraiture services. ***The Computer Graphics Branch*** provides the following graphic art services for: charts; graphs; text for medical/scientific information in journal publications; poster session displays; and, 35 mm slides for classroom presentation. Detailed original medical illustrations in full color or line drawings are prepared to supplement teaching programs, accompany articles for publication, or illustrate research displayed in poster sessions. A variety of products are designed for Internet and electronic delivery in support of medical education and training programs. Signs, forms, brochures, logos, book covers, folders, and flyers are also produced in support of academic and administrative functions. ***The Medical Television Branch*** provides studio and remote video tape recording and broadcast services. Extensive editing, titling, and duplication are provided in support of laboratory demonstrations, field exercise documentation, and classroom lectures. Multimedia (CD-ROM/DVD) production

and web page design services are also available to enhance course materials and the distribution of University information. ***Streamlining Activities During 2002.*** Throughout 2002, the AVC further streamlined its services to more efficiently support the USU mission. In doing so, AVC has eliminated all chemical photographic processing through the acquisition of additional digital cameras and printers; it has also established contracts with the private sector for those remaining projects requiring chemically-based processing. Renovations and modifications to the Medical Photography Branch resulted in the removal of all hazardous chemicals, the remaining slide film processor, and the darkroom. During the renovation process, much needed space was made available to centralize the digital printers and to provide a dedicated area for video editing and CD-ROM/DVD production. In addition, the AVC Branches have supplemented their digital infrastructure by acquiring faster and more powerful digital production equipment and software. All of these modifications have enabled AVC to provide its USU customers with powerful and dynamic multimedia and interactive products.

Support for CFC and CD-ROM Production. For the fifth time, the USU AVC won the award for the Best Designed Poster for the Department of Defense, during the 2002 CFC Campaign. The University was able to announce on January 2, 2003, that USU had won First Place in the Best Goal Poster Category of the DoD CFC Communications Contest. **Technical Sergeant Waverly Johnson, USAF, USU Audio Visual Center,** created the winning entry. His poster, entitled *Walk a Mile in Their Shoes*, was displayed in the lobby entrance area of USU's Packard Hall (Building A). Sergeant Johnson's poster was entered by DoD into the National Capital Area CFC Communications Contest where it will compete against entries from all of the Federal Departments.

Following the terrorist attacks of September 11, 2001, the USU AVC provided rapid response to a Nation-wide requirement for information through the collaborative production of the CD-ROM, *Effective Medical Responses to Disasters*, with the USU SOM Department of Psychiatry and the USU Center for the Study of Traumatic Stress. Through the use of DoD contracts, over 11,000 copies of this product were distributed to members of the Association of Military Surgeons of the United States (AMSUS), the Governors and Health Officials from all 50 States, the Congress of the United States, and the Supreme Court of the United States. And, for the first time, in collaboration with the USU Vice President for Administration and Management, AVC developed a CD-ROM version of the *2001 Edition of the USU Journal*; designed in-house, and replicated through the use of a DoD contract. The electronic format of the USU Journal provides direct and searchable access to the wealth of information provided in the annual edition of the USU Journal. Copies of the *2001 Edition of the USU Journal*, in CD-ROM format, were provided to the 329 members of the USU faculty, the USU Board of Regents, the Surgeons General of the Uniformed Services and their immediate staffs, the Commanders of Military Treatment Facilities throughout the Defense Health Program, the Congress of the United States, and many others; it was also placed on the USU Web Site.

Digital Archive of Historical Images of USU. Throughout 2002, the Office of the Vice President for Teaching and Research Support, in conjunction with several USU activities, continued the development of a digital archive of historical images for the University. An annotated database of USU's historical images has commenced with significant images related to the University's Board of Regents. As it is expanded, this database will provide a permanent record of those images that capture USU's historical events beginning with its establishment through the maturation of the University. To date, approximately 1,000 images have been cataloged. This process includes sorting through the existing collection, scanning images into a digital format, applying appropriate captions, organizing into categories by subject matter, and preparing a CD-ROM for archival storage.

Center for Multidisciplinary Services.

The existing general facilities for teaching are excellent. Teaching and research support activities are providing a high quality of service to both academic departments and administrative/support activities.

- *Institutional Resources*, Chapter III, USU Self-Study Report to the Commission on Higher Education of the Middle States Association of Colleges and Schools, 2002, page III-12.

On-Going Renovation in Support of the Teaching Mission. By 1996, the USU Center for Multidisciplinary Services (MDL), the USU Faculty Senate, the Offices of the Deans of the SOM and GSN, and the USU President were aware that the teaching tools available in the lecture halls and auditorium required major renovation. Based on surveys of students, faculty, and staff, an engineering design was commissioned to upgrade the equipment; the project was then expanded to include the replacement of both carpeting and seating. The Office of the Vice President for Teaching and Research Support and MDL successfully coordinated a major renovation of the Sanford Auditorium and the USU lecture halls during 1998 and 1999. Since then, throughout 2002, subsequent upgrades of the teaching facilities have been on-going, to include a major purchase of tables and chairs for the teaching classrooms in September of 2001. All of these activities are in compliance with Goal 1 of the USU Strategic Plan. By upgrading the lecture halls, classrooms, and the auditorium, USU has enhanced its ability to: provide a quality educational environment for its students, faculty, and staff; conduct continuing medical education; and, sponsor military medical conferences for the MHS in a manner *that will enhance the reputation of USU as a premier health sciences academic institution.*

Upgrades in Support of the USU Teaching Mission. All of the USU lecture halls have been designed with the same equipment and controls so that instructors and students can learn one system and move from one lecture room to the next without readjusting to unfamiliar teaching tools. The upgraded equipment provides the faculty with a broader range of teaching tools to present their material. On-going upgrades include: 1) the installation of upgraded audio and projection equipment; 2) the provision of computer capability and Internet access; 3) enhanced video capabilities in each room, to include in-house cameras for overflow viewing throughout the campus; and, 4) *smart* classroom capabilities in Lecture Room C, to include video-teleconferencing and a state-of-the-art audience response system. A majority of these upgrades took place during the summer of 1998; and, equipment installation occurred around class schedules throughout 1998 and 1999. Similar upgrades are also being planned for the Board of Regents Conference Room, selected conference rooms throughout the campus, and the Multidisciplinary Laboratories. In September of 2000, resources were identified to obtain computer and video projector equipment to upgrade the major USU conference rooms with systems similar to those available in the lecture halls; this upgrading process continued throughout 2001.

During 2002, the MDL completed the installation of new video projectors in all of the USU lecture rooms. This was in keeping with the original upgrade plan for the redesign of the USU lecture hall control systems as described above. The control systems, installed during 1998-1999, allowed the lecturers to control various aspects of the audiovisual support as well as to facilitate future upgrades of the equipment within the lecture halls without having to change an entire system. The 2002 process of upgrading the video projectors proved to be a simple process due to careful planning for future requirements.

Renovation Efforts Are Completed in the Anatomical Teaching Laboratory. In 1998, it was identified that the working and storage areas and the freezers in support of the Anatomical Teaching Laboratory (ATL) required significant renovation. Following coordination with the Vice Presidents for Administration and Management, Resource Management, and Teaching and Research Support, funding was identified in September of 2001 for the renovation of the working and storage areas and the replacement of the ATL freezers. Following extensive consultation and planning by the USU Facilities Division, the Anatomical Curator, and the Navy Public Works Center, the renovation project began in December of 2001, and was successfully completed during 2002.

Upgrades for the Teaching Laboratories and Conference Rooms. In the past, the University utilized oscilloscopes and chart recorders to facilitate the teaching of physiological changes due to disease and treatment in the first-year teaching laboratories. These units were failing and replacement equipment was becoming increasingly unavailable. Following the identification of the need to replace the twenty-five-year-old system, MDL planned, justified, secured funding for, purchased (during 2000), and installed (during 2001) a system of computer-based teaching workstations at each first-year laboratory table. Since the installation of the computers in the teaching laboratories, the USU SOM Department of Anatomy, Physiology and Genetics (APG) has utilized the new resource for laboratory exercises. The students learn to monitor their heart rates and to run a series of experiments studying the changes in heart rates. Once students have become familiar with the basic operation of the equipment, it is used in the advanced cardiac physiology laboratory exercises. Both of these teaching laboratories have been judged to be quite successful by the students and faculty. *While the computers were purchased primarily to replace the physiological recorders mentioned above, they have become a source of greatly expanded, computer-assisted, teaching applications in a variety of disciplines.* For example, because of the powerful nature and adaptability of these new tools, the MDL received requests from Biochemistry, APG, Neuroanatomy, Microbiology and Immunology, Pharmacology, and Radiology and Radiological Sciences for the expanded use of this equipment in their laboratory exercises. Through the utilization of the centralized and networked controls of this computer system, a wide variety of demonstrations, laboratory simulations, experimental exercises, and testing procedures are currently being used, or are under development for expanded use, by multiple SOM Departments. Additionally, this equipment is planned for use in computer-based testing applications. These demonstrations, simulations, exercises, and procedures have been found to provide cost-effective, true-to-life, experiences for students that were not formerly available; and, they have been so successful that plans have been made to duplicate the system throughout the second-year student laboratories.

During 2002, the MDL procured and integrated eight new LCD projectors for use in the USU laboratories and conference rooms. Because many USU departments have increased their use of computer presentations during laboratory exercises and lectures, the MDL has been increasing its state-of-the-art computer projection equipment for use by the USU community. This has allowed the instructors greater flexibility in selecting the teaching modality for presenting material to the students. In fact, the MDL has ordered sufficient LCD projectors to permanently mount one in each teaching area and increase user capability throughout the USU laboratories and conference rooms. Also, during the past year, the University has leased an additional fifty computers for use throughout the MDL. These, added to the original fifty, have significantly increased the capabilities for the instructors to use a broad range of tools for instructing USU students. As described above, the SOM Department of Anatomy, Physiology, and Genetics utilizes the computers in three of four teaching blocks; and, the Pathology Department was among the first to utilize the computers for testing medical students. Based upon the success of Pathology's process, several other SOM Departments are interested in similar activities during the next academic year; the students also use the computers as an additional study resource for reviewing class materials and

presentations. During 2002, the MDL replaced the computers used for presentations throughout all USU lecture halls; again, that process was streamlined due to excellent planning by MDL for future upgrades.

Throughout 2002, the MDL managed and supported over 2,500 room requests for teaching and meeting requirements; many of which were for multiple rooms over numerous timeframes. Support was provided by the MDL staff for several international conferences and workshops during the past year. The MDL continues to provide superb service to faculty, students, and staff at USU (as noted during the Self-Study for the Middle States Commission completed during 2002) and to meet the needs of the military medical community for space and teaching support.

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The Learning Resource Center - Globally Available.

The Learning Resource Center staff is highly trained and knowledgeable and is responsive to the needs of students and faculty... The LRC staff is effective in meeting the changing demands of the University community. *They have blended the traditional print resources with the electronic versions to achieve a broader scope of information that is accessible worldwide.* The growing collection of unique web-based resources will enhance the University's position in the academic world.

The physical library is well maintained and cataloged. In conjunction with its mediated database and interlibrary loan services, it provides ready access to biomedical and clinical information in support of educational programs. A variety of computerized web-based resources supports information retrieval and management, and offers students opportunities for self-paced learning. The LRC has also made a strong commitment to working in teams with the academic departments to develop programs and services to better serve its user populations.

- *Institutional Resources*, Chapter III, USU Self-Study Report to the Commission on Higher Education of the Middle States Association of Colleges and Schools, 2002, page III-14.

World-Wide Access for Health Sciences Information. The Learning Resource Center (LRC) ensures that students, faculty, alumni, and other members of the USU community can continuously access current medical information twenty-four hours a day through its electronic knowledge-based resources. LRC customers are provided immediate and knowledge-based material on new or alternative treatments, diagnostic tests, background information for a student's case presentation, practice of evidence-based medicine, or a literature search in preparation for a research article or grant, whether or not the LRC is open or closed.

The USU Learning Resource Center (LRC) continued, throughout the Year 2002, to ensure that its electronic resources were globally accessible; the LRC assisted 6,885 registered patrons by making current, medically-related information available via the Internet. Unique gateway software enabled users to access on-line medical information from Kosovo, Japan, Iceland, Bosnia, Germany, Italy, the United Kingdom, Turkey, Saudi Arabia, on board ships traveling around the world, and from sites located throughout the United States.

Selected examples of the LRC customer base include: physicians; all four classes of USU medical students; USU alumni; Graduate School of Nursing students; distance learning students; USU faculty both on and off campus; residents, nurse practitioners, and registered nurses throughout the Military Health System (MHS); and, the Office of the Secretary of Defense. *During the Year 2002, 6,885 users requested 4,000,000 pages from the LRC Remote Services*.

The LRC staff continues to meet traditional information needs by providing print articles and books to its patrons and libraries worldwide. The LRC lends more than it requests; for example, during 2002, only 1,700 articles or books were requested by the LRC from other libraries, which indicates that USU faculty and staff are able to fill most of their information requirements from the print and electronic holdings offered by the LRC. The LRC provides articles to other libraries within four to twenty-four hours; however, rush patient care requests are usually completed within one hour. The *ARIEL* software facilitates sending an article instantaneously after the journal is retrieved from the shelf. This interlibrary loan service works both ways; the LRC receives articles for its patrons in a very short time. In the past, interlibrary loans took as much as from one, to two weeks, to provide the same service.

Approximately 3,200 requests were handled by the LRC during 2002 for public, medical, and even major university libraries. Requests were also received from local hospitals, universities, and medical centers, such as the National Institutes of Health (NIH), the Walter Reed Army Medical Center, and military medical facilities located in Germany. The LRC also reaches many physicians, nurses, students, and patients by providing medical articles, which they have requested through their local medical or public library.

Reliable Leadership and User-Friendly Access.

A variety of space is available for student study at the school. The LRC is a favored site because many different types of study space and equipment are convenient to the students. There are 10 study rooms for individual or group study in the LRC. In the Spring and Fall, students can also study at tables and benches located on the second and third floor patios of the LRC. Since the 1993 LCME self-study and site visit, the number of private study carrels in the LRC has been increased from 18 to 64. Almost 90 PC and MacIntosh computers, with computer-based educational software programs developed either commercially or on-site, are now accessible in the LRC for students to use while learning, reviewing and self-testing information. A training classroom in the LRC with 40 computers can also be reserved for student testing and/or review.

- Section VI, School of Medicine Self-Study, page 6, submitted during 1999 and reconfirmed in Chapter III, *Institutional Resources*, Self-Study Report for the Commission on Higher Education of the Middle States Association of Colleges and Schools, 2002, pages 12-14, and 18.

Since its establishment, the LRC has succeeded in providing both an outstanding learning environment and state-of-the-art educational tools for the USU students and faculty. Following the retirement of **Chester J. Pletzke, Founding Director of the USU Learning Resource Center,** during 2002, a Nation-wide search was

conducted by the University. In mid-November of 2002, **Ms. Ursula Scott was selected as the new Assistant Vice President for the LRC.** In this position, Ms. Scott will not only have oversight of the LRC, she will also focus on outreach activities. This outreach would include providing a gateway to electronic content for other DoD research or medical libraries, along with group purchases. Grant writing would be another aspect of this process. **Ms. Janice Powell Muller**, who served as acting director upon the departure of Mr. Pletzke, **was assigned the permanent responsibility of Director, Campus Learning Resources**.

Reference Services. During the past year, a University-wide initiative was undertaken to assist the LRC patrons in the use of the LRC's electronic resources. First, the available resources were identified and advertised to all patrons; this effort included direct mailing and the personal delivery of special information sheets and bookmarks. A series of classes were held for both LRC patrons and the LRC staff; among the topics covered were *PubMed*, *EndNote*, *ARIEL*, and *Loansome Doc*. Additional courses are being developed for the USU Faculty Development Grand Rounds; in addition, the USU Reference Librarian created three subject bibliographies and six electronic research guides during the past year. Reference Services provides on-line request forms to facilitate mediated literature searches and interlibrary loans. The purchase and installation of the *ARIEL* software enabled the LRC to deliver articles to patrons in PDF format, via e-mail; thus, *ARIEL* has greatly reduced the turn-around time for the delivery of interlibrary loan articles to patrons due to the electronic transmission of information rather than the traditional mail service. In addition, the implementation of the National Library of Medicine's *Loansome Doc* service allows the LRC patrons to electronically request articles not owned by the LRC.

Remote Computer Services. Since its establishment, the LRC has continued to diversify and update its resources to meet its customers' changing requirements. New proxy technology improved the reliability and compatibility of remote access to the LRC's electronic collection. Selected journals, once restricted to campus, have become available through remote computer services. These remote services have added support and instructions tailored to various *browsers*. The LRC's remote services administrative databases were also redesigned; as a result, improved reporting functions offer administrators enhanced usage data for their decision-making. Electronic journals are now more directly linked to content than ever before, thus reducing search time for the LRC patrons.

Computer Classroom/Laboratory. The LRC's computer classroom provides 40 workstations, to include an instructor's station. When it is not being used for classes, the laboratory is utilized by individual students for assignments and electronic activity. The LRC Computer Classroom hosted 198 teaching sessions during 2002, with twenty to thirty sessions per month. LRC staff reserve, prepare, and provide technical assistance for these classes. The classroom was used for academic instruction with hands-on practice by the following USU activities: Departments and Programs in the SOM (Biomedical Informatics; Dermatology; Family Medicine; Medical and Clinical Psychology; Molecular and Cell Biology; Pharmacology; and, Preventive Medicine and Biometrics); the Graduate School of Nursing; Faculty Development; Contracting; the Learning Resources Center; Finance; and, University Information Systems. In addition, the Graduate School of Nursing and the Departments of Pathology and Dermatology made extensive use of the classroom for on-line examinations and quizzes.

Library staff members taught sections in *Introduction to Computers for Molecular and Cell Biology*, *Computer Fundamentals for Master of Public Health*, *Nursing Research*, *Educational Methods*, *PubMed*, and numerous faculty development seminars and student, faculty, or staff orientations. In addition to the computer

classroom, there are approximately 50 additional computers available in the LRC for student and faculty use. While the majority of computers are PC's, the LRC does provide 23 MacIntosh computers. There are heavy-duty printers, scanners and CD burners, along with special software packages, which can also be used for educational purposes.

Microcomputer Help Desk. Members of the LRC's Applied Medical Informatics Branch staff the help desk. They answer technical questions in-house, on the telephone, and from e-mails sent from clinical faculty, students and researchers on assignments around the world. The help desk not only supports the computers in the LRC, but also provides assistance to patrons experiencing problems related to the Remote Computer Service. The help desk is part of the effort to provide extraordinary customer service as well as to assist students in becoming *computer literate*, as appropriate.

Internet Information Resources During 2002. During the past two years, the scope of the LRC Internet services was expanded to ensure that USU students, faculty and staff have access equal to that found at any other major medical library. Patrons now have access to a one-stop information center, particularly clinical faculty and alumni located at remote sites where first-line patient care must be provided. *UpToDate Online*, an on-line, easy-to-use textbook, was licensed and deployed during 2002. The LRC also provides the following:

1) ***Books.*** Standard textbooks are available in all major medical specialties. All electronic editions are constantly updated and thus provide current information for the practice of health care. Currently, there are more than 220 full-text books available through the LRC. These include such familiar titles as *Harrison's Principles of Internal Medicine*, *Scientific American Medicine*, *Cecil's Textbook of Medicine*, *Current Medical Diagnosis and Treatment*, *Sabiston's Textbook of Surgery*, *Conn's Current Therapy*, *Nelson's Textbook of Pediatrics*, *Merritts' Textbook of Neurology*, *Griffith's 5 Minute Clinical Consult*, the *Washington University Manual of Medical Therapeutics*, *Campbell's Urology*, and *Danforth's Obstetrics and Gynecology*. During 2002, books from Ovid and Merck were added; these included the *Kelley's Textbook of Internal Medicine*, the *5 Minute Emergency Medicine Consult*, the *Merck Manual of Geriatrics*, the *Merck Manual of Diagnosis and Therapy*, and the *Merck Manual of Medical Information*;

2) ***Journals.*** Conversion to the electronic editions of health-related journals or periodicals continued throughout 2002. The LRC currently has 5,475 journal titles available on-line in full-text to assist its users. *ScienceDirect* was increased to 1,491 titles. Dialog databases, along with full-text journals from Synergy, Highwire Press, and Ovid were added. This was in addition to the existing collections from Adonis, Catchword, Ingenta, Kluwer, Karger, Gale, Ebsco, BMJ, and MD Consult. And, Medical Specialties Yearbooks continue to be available;

A Quick Look at LRC's Print, Video and Electronic Resources.

Print Volumes (Book and Journal)	107,218
Electronic Book Titles	228
Print Journals	760
Electronic Full-Text Journals	5,475
Audiovisuals	450
Educational Software	50
Electronic Databases	493

3) ***Practice Guidelines.*** With the addition of MD Consult, over 500 Clinical Practice Guidelines contributed by more than 50 medical societies and government agencies are now available through the LRC; during 2001 through 2002, plans were coordinated for access to the new MD Consult Cardiology Program;

4) ***Patient Education.*** More than 2,500 patient education handouts, which can be personalized to include special instructions provided by the attending physician or staff, are available;

5) ***Continuing Medical Education.*** There are more than 300 Continuing Medical Education (CME) Modules; each offers 1.5 Category I credits, for a total of 450 hours of Category I credit, which can be applied toward the American Medical Association Physicians' Recognition Award. The collection provides practical topical updates across eleven specialties of medicine. Each CME test is enhanced with links to related information contained in the electronic books, journals, practice guidelines, and drug information as well as to other web sites with relevant information;

6) ***Today in Medicine.*** This module allows the health care professional to stay informed about the newest developments in medicine. The module provides current developments from all of the major journals, government agencies, and medical conferences. Also provided are concise clinical summaries and links to additional sources of information on the Internet; and,

7) ***In This Weeks Journals.*** The health care practitioner can keep up with all of the major weekly journals through this module. Key contents of the major clinical journals (*Journal of the American Medical Association*, the *New England Journal of Medicine*, the *Archives of Internal Medicine*, *Lancet*, etc.) are presented each week in an easy-to-scan format, which includes concise article summaries.

Archival Collection for Preserving the University's History. The primary functions of this newly created LRC branch are: to preserve, arrange, and describe items of significance to USU history and rare collections; and, to provide world-wide access to key documents for research via the Internet. With the advice and financial

support of senior management, along with **Val Hemming, M.D., Professor and Dean Emeritus, USU School of Medicine,** and the USU SOM Department of Medical History, the LRC has made great strides in implementing an archival program for the University. The mission of the new branch is to preserve and make accessible materials that document the history and unique qualities of USU, as well as the history of military medicine. The Archival Collection has received donations from USU faculty members and administrators since its establishment. These collections provide invaluable historical information on the significant activities of USU. Other unique donations pertain to both USU history and military medical history. A significant collection of papers from the Society of Medical Consultants of the Armed Forces was also obtained; it includes their meeting minutes and materials, as well as the papers and oral histories from prominent members of the society. Standard archival procedures for organization and storage are employed; documents are stored in acid-free document cases, ensuring their availability for future researchers. Search aids, including the use of specialized computer databases, will facilitate easy access for future researchers; holdings currently consist of sixty linear feet of space.

A Digital Archival Collection. A significant accomplishment of the LRC Archival Collection was the development of a digital archival system. This program was first conceived during the Summer of 1999; and, it has grown into an expanded electronic collection of over 120 historical documents available through the LRC web site: *<http//www.lrc.usuhs.mil/(select)Military Medicine Historical Documents>*. Historical military medical government documents already owned by the LRC are being scanned into Adobe's Portable Document Format (PDF) for universal use. When possible, Optical Character Resolution (OCR) is being used to make the documents fully searchable, in both MacIntosh and Pc format, while maintaining the page format of the original. This special project includes documents from the Civil War through World War II. In addition to historical documents, USU theses and dissertations have been digitized. Graduate School of Nursing theses written since 1998, and recent SOM Graduate Education dissertations and theses, are the first to be included. Any current, or former students, who have written theses or dissertations for USU, are encouraged to submit an electronic format of their work to the LRC archival collection; it will be converted to PDF format and placed on the web site. Thus, world-wide access to the research findings of USU students will be available, which will showcase their work. To date, there are over 100 theses and dissertations on-line.

Partnership for Peace Information Management Systems. The success of the global use of the LRC resulted in the initiation of a cooperative venture with the Partnership for Peace Information Management Systems (PIMS) during August of 1999. This project enables access via the Internet to specific medical care information systems for the medical community in the Republic of Georgia; it officially opened for registered users on December 15, 1999. During 2002, Uzbekistan was added to the cooperative venture. Health care professionals in the Republic of Georgia and Uzbekistan are provided access to a selection of clinical medicine journals, books, and databases such as Micromedex and MD Consult. This project continued throughout 2002; PIMS plans to expand access to Romania and other countries. This exchange of health care information is expected to be relevant to the unique preparation of USU students for operational assignments; outcome assessments will be used in determining the future expansion of this project as resources are identified.

Support to Other Military Medical Libraries and Institutions. In 2002, the LRC entered into, or maintained, cooperative agreements with the Walter Reed Army Institute of Research (WRAIR), the Navy Medical Research Center (NMRC), the Portsmouth Naval Medical Center, the Department of State Medical Services, the Association

of Military Surgeons of the United States (AMSUS), the United States Army Medical Research and Materiel Command (USAMRMC), and others to extend on-line services to health care professionals and researchers. Significantly, this service extends LRC computer expertise to assist other DoD groups and libraries.

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Informatics - An Expanding and Essential Component of Education in the Health Sciences.

Background. Efforts in computer-assisted instruction as a study aid for USU students have been ongoing since 1979, when a series of medical students developed, in Apple Pascal, the first drill and practice question bank within the SOM. Course directors provided questions entered into the University Board Review System. In succeeding years, several departments (Biochemistry, Pathology, Pharmacology, and Physiology) developed their own on-line examination archives or examination item databases, which have been well received by the students. Over time, this type of material was delivered to students first on stand-alone computers, then on networked computers (HyperPharm, HyperRenal, and others) and most recently as world-wide web (WWW) based sites accessible both inside and outside of the University by students in the SOM Departments of Biochemistry, Pathology, Pediatrics, Pharmacology, and Physiology and the GSN students majoring in Nurse Anesthesia and Nurse Practitioner. Perhaps the most ambitious of these efforts is the Biochemistry question database of examination questions for testing, which was developed between 1991 and 1996. This archive is available at <*http://bob.usuhs.mil/biochem/exams/exams-f.html*>.

Innovative Web-Based Study Aids, Teleconferencing Sessions, Exercises, and Course Administration. Image-based study aids have been developed by the USU faculty. The earliest of these efforts were Radiological Anatomy, Neuroanatomy, and Chest Film Review laser disc programs developed and deployed between 1985 to 1995 by the Department of Radiology and Radiological Sciences. In 1996 and 1997, this material was also made available to students as CD-ROMs; and, in 1997, the material was migrated on the WWW at <*http://rad.usuhs.mil/rad/edu/edu.htm*>. The Department of Radiology and Radiological Sciences has established collaborative efforts with faculty at the Mayo Clinic Foundation and Emory University, which provide USU medical students access to the Visible Human data set. Both SOM and GSN students utilize this resource. Another current effort encourages the students to draw correlates between anatomy, physical diagnosis, clinical neurology, and radiology.

Currently, USU uses interactive, real-time video teleconferencing to link five different sites for its six-week clerkship in Obstetrics and Gynecology. In sessions that last from 60 to 150 minutes, site coordinators meet with the clerkship directors and administrative personnel to discuss such crucial issues as curricula, student problems and evaluation, and faculty development. Since the sessions began in May of 1998, USU has found that the sessions enable the standardization of curricula, facilitate the sharing of ideas, reduce administrative tasks through centralized support, and improve the meaning, consistency, and level of detail in student evaluations.

The Physiology Course (Graduate Education and SOM first-year students) provides an acid/base game in which students diagnose an acid/base disorder from patient data on a Davenport diagram, treat it, and see what the treatment does to the patient. Other exercises include body fluid compartments and Yannet-Darrrow diagrams, and the control of glomerular filtration, Tm and the countercurrent mechanism. These exercises are treated as a

regular laboratory in the course. The Pharmacology Course (Graduate Education, GSN, and SOM second-year students) has included a computer-based pharmacokinetics simulation exercise and a computer-based drug information exercise, as integral parts of the course for the last 15 and 10 years, respectively. These exercises, designed by USU faculty, are conducted individually by students or in small groups in the Learning Resource Center (Nurse Anesthesia, Graduate Education, and SOM second-year students).

Over the past five years, on-line quizzes and formal examinations have become more widely used by both the SOM and the GSN. One of the first, routine on-line quiz at USU was introduced during 1999-2000 in the Department of Medicine's (MED) Clinical Concepts Course. Subsequently, similar quiz material was introduced in MED's Introduction to Clinical Medicine, Biomedical Infomatics, Radiology and Radiological Sciences, and the Health Service Administration Division of Preventive Medicine and Biometrics Courses. The GSN Pharmacology Course for Nurse Anesthesia students introduced formal examinations as an on-line exercise during the 2000-2001 academic year. This effort continued during 2002 and was expanded to other GSN courses. The GSN intends to move most formal examinations to an on-line format; the SOM Departments of Microbiology and Immunology and Pathology intend to convert from paper-based formal examinations to on-line examinations by 2003.

The USU SOM Department of Medicine has introduced a widely used innovation in course administration. *CWebLog* is a WWW-based database for logging students' clinical experience during the medicine clerkships. As students submit data, they may be presented with a set of reviewed links related to the type of case they are reporting. Student entries are stored in an SQL database that is used to produce browser-based reports on any combination of clerkship experiences. A preliminary description of this project has been published and is described at: *<http://cweblog.usuhs.mil>*. Over subsequent years, six of the seven SOM clerkships have adopted *CWebLog* as one means of recording student experiences in the clinic. The project was expanded to include the collection with PDAs. Data from these devices is synchronized to the same SQL database as is data from personal computers and a web browser. The GSN Nurse Practitioner faculty use a similar WWW or Portable Digital Assistant (PDA)-based system and the GSN Nurse Anesthesia faculty utilize data collection in a spreadsheet format aggregated in their department's office.

<u>MedPix, An Internet Teaching File for the Health Sciences.</u> The USU MedPix System was developed to offer medical students, researchers, and clinicians a descriptive on-line database housing medical case examples. The intent is to provide a fully-functional archive of clinical photographs and radiologic images, primarily of abnormal and disease conditions. The result has been a shared Internet teaching file filled with a variety of illustrated medical cases available to anyone interested in learning more about an affliction or in sharing information and images from cases they have seen. These cases are further complemented with posted summaries, reports and editorial comments. **James Smirniotopoulos, M.D., Professor and Chair, SOM Department of Radiology and Radiological Sciences**, and third-year medical student **Ensign Henry Irvine** originated the USU program as a text-only database with aspirations to develop it into a multi-level program. Instead of using only static web pages, it was decided to use a database and dynamically generated pages. The intention was to allow its users, at remote sites, to add images and cases into the database. The site began with a Radiology intent and has since branched off into the Dermatology and Pathology disciplines. Visitors to the site can also practice identifying ailments by selecting a "hide-text" feature. This allows the user the opportunity to take a self-quiz before the introduction to the actual illness. It has become an impressive site in terms of complexity and depth of resources.

It is also recognized as a powerful teaching tool for residents. In fact, during 2001, Radiology residents used MedPix data for teaching files at such hospitals as the Tripler Army Medical Center, the Naval Medical Center at San Diego, and throughout the National Capital Region. Continuing through 2002, Doctor Smirniotopoulos' Distance Learning Program has provided monthly Neuroradiology Teleconferencing between USU and the Naval Medical Center in San Diego, California. The MedPix Medical Image Database System is now used by all Department of Defense Radiology Residency Programs and it is the primary teaching file for: the National Naval Medical Center: the Walter Reed Army Medical Center; the Tripler Army Medical Center in Honolulu, Hawaii; the Madigan Army Medical Center in Tacoma, Washington; and, USU. The MedPix Case of the Week is distributed by e-mail to more than 1,700 registered users each week, as well as to USU students across all four years of the School of Medicine.

Compact Disc Provides Cost-Effective Assistance. The Department of Pathology has digitized its entire 2x2 slide collection, some 1,300 images, used in the MS-II Pathology Course; the images are available to students via the WWW. The Pathology Department has developed a compact disc of approximately 1,000 photographic images of pathological specimens. Directed to second-year medical students, the compact disc provides assistance for preparing for pathology laboratories and examinations; the disc provides a comprehensive collection of images covering all major organ systems. The department finds that the compact disc increases the accessibility of images to students and results in significant financial savings because duplication costs for lost or damaged 2x2 slides are eliminated. In addition to the image data bank, this WWW site archives old examinations and the SOM Pathology Laboratory Manual, and administers 14 quizzes to students during the course. Each year, USU students access the 14 on-line quizzes, which use photographic images, answer the quiz questions in an open book format, and submit their answers electronically to the department. A data bank of questions written by USU faculty are archived by computers and used in testing medical students. The use of archived questions allows the department to compare class performance from year to year and to evaluate the quality of the questions, which has reduced ambiguity in examinations. The Department of Anatomy, Physiology, and Genetics (APG) has also digitized large portions of its 2x2 histology collections; these digital collections are available to students on and off campus. The Department of Pathology also uses Internet technology to provide a web page independent of the University's web site. This page enables students to access information regarding Pathology's educational activities, links them with other medical schools and pathology web sites, informs the public of USU departmental personnel and research activities, and advertises the department's Ph.D. Program in Pathology. In recognition of the need for the deployed military physician to have access to Continuing Medical Education (CME), the Pathology Department has also used computer technology to provide CME credit to these physicians. Through this web page, uniformed physicians could review cases written by the pathology faculty, answer a series of questions based on the specific case, and receive CME credit. More than 300 CME certificates have been issued by USU for this activity.

eMedicine.com - USU Faculty Help to Revolutionize Medical Textbook Publishing. During 2001, two USU department chairs and many other USU faculty played key roles in a publishing breakthrough that has redefined the way today's health care professionals can obtain timely and critical medical information (a skill which is essential to the medical students' future practice). The new "revolution" is called *eMedicine.com* and its impact is worldwide. *eMedicine.com*, the medical education network that has developed the first and largest on-line, peer-reviewed medical reference library, is available to the entire world, free of charge, assuming Internet access. It consists of 59 on-line reference books covering every medical specialty. Radiographic images, photographs, audio and video clips relevant to each topic are incorporated. Each chapter features 1.5 hours of Category I American Medical Association (AMA) Physician's Recognition Award continuing medical education (CME) credit. There are an estimated 15,000 hours of CME credit. Authors and medical editors are volunteers

and are not compensated in any way for their efforts. There is significant supervision of content, with several layers of medical and copy editors to assure accuracy and quality. Unlike traditional textbooks, which can be as much as six years out of date at the time of publication, the information in the *eMedicine.com* chapters is updated 24 hours a day, 365 days per year. If an important new study is published in a journal, the research is immediately included in the on-line textbook. The United States military is the largest user of the site to date. There are at least five million users per year, and that figure is rapidly increasing every six months. **Leonard Sperling, COL, MC, USA, Professor and Chair, USU SOM Department of Dermatology**, is one of the editors and authors of the Dermatology Textbook on *eMedicine.com*. And, **James G. Smirniotopoulos, M.D., Professor and Chair, USU SOM Department of Radiology and Nuclear Medicine**, is one of the editors-in-chief of the Radiology Textbook on *eMedicine.com*. Numerous USU faculty members also contribute to this web site.

Virtual Reality-Based Environment for Teaching Clinical Anatomy. *Anatomic VisualizeR* is a virtual reality (VR)-based environment for teaching and learning clinical anatomy, which was initially developed by the University of California, San Diego (UCSD). Currently, educational applications of *Anatomic VisualizeR* are being jointly explored by UCSD and USU. *Anatomic VisualizeR* made its curricular debut outside of UCSD in 1999, when it was used for teaching two graduate-level nursing Neuroscience lectures; USU is currently the only school approved to use *Anatomic VisualizeR* outside of the UCSD. The two universities have jointly developed six new lessons. The application is utilized by both the GSN (Neuroscience and Pathophysiology) and the SOM (Introduction to Structure and Function). *Anatomic VisualizeR* provides a virtual dissection room in which students and faculty can directly interact with three-dimensional models and concurrently access supporting curricular materials. A broad range of virtual exploratory tools enables users to investigate structures in ways not possible in the real world.

Telegenetics Web Site Assists with Genetics Education and Services for the DoD. Computer assisted simulations are used as an integral part of several SOM courses. For several years, the Biochemistry Course (MS-I) has used a human genetics tutorial, developed by USU SOM faculty. This is supplemented in the clinical years by the internationally used Telegenetics web site (*http://www.usuhs.mil/genetics/*) authored by the USU SOM faculty from the Department of Obstetrics and Gynecology. In response to the recognized need for genetic services, USU designed an Internet solution to assist with genetics education and services for the DoD. The Telegenetics web site was initially developed in 1996 with the assistance of the United States Navy Telemedicine Department and the Applied Physics Laboratory (APL) at Johns Hopkins University. The Telegenetics site was moved to USU in 1997 to focus on educational goals and to provide consultations in genetics to the DoD's deployed forces. The mission of the Telegenetics web site is to provide information and education about genetics to DoD primary care providers, specialist physicians, USU medical students, graduate students and researchers, and interns, residents, and fellows within the DoD Graduate Medical Education Programs. The web site acts as a centralized knowledge resource, providing its recipients with on-line genetics lectures, written information, instructional aids like On-line Mendelian Inheritance in Man (OMIM), and links to articles, laboratory services, and patient support groups. Through store and forward technology, the Telegenetics web site also enables consultations about genetic disorders. Health care providers have accessed this site from within the continental United States as well as from international locations, including Yokota, Misawa, and Okinawa in Japan. Costs for transporting patients to consultants in genetics may be decreased by providing information about genetics to patients and health care providers in remote locations via the World Wide Web. During 2002, the web site was maintained and used for providing information to deployed personnel. In addition, educational information was also provided through the use of PowerPoint slides. And, as coordinated by **Charles J. Macri, CAPT, MC,**

USN, NNMC, on February 12, 2002, during a Tele-MFM conference with Landstuhl, Germany, USU has offered use of the web site for Genetics information to personnel in Germany and Italy. Current plans include further development of the web site to provide information about new genetic services and tests as they become available.

The USU Clinical Simulator, Patient Simulator Laboratory, and SIMCEN Present Scenarios Applicable to Combat Casualty Care, Anesthesia, Critical Care, Trauma, and Emergency Medicine. During 1997, the USU Departments of Anesthesiology and Anatomy, Physiology and Genetics (APG), in collaboration with the National Naval Medical Center's Department of Anesthesiology, developed the Clinical Simulator and Patient Simulator Laboratory (PSL) located in the USU Department of Anesthesiology. The PSL has evolved into a fully interactive clinical training laboratory, equipped as an operating room with standard monitoring equipment, instruments, life support system, defibrillator, and complete audio/video recording equipment. Throughout 2002, Numerous groups of students and medical personnel made regular use of the PSL both as a training facility and as a research resource: 1) **USU First Year Medical Students - Cardiovascular Physiology.** During the last four academic years, the PSL has been used as an integral part of the Physiology Course with the entire class of graduate and medical students rotating, in groups of eight, through a cardiovascular simulation. For these students, the simulator is used to complement a teaching laboratory that demonstrates the basic interactions of heart rate, blood pressure, cardiac output, stroke volume, and circulatory resistance; 2) **USU Third Year Medical Students - Two-Week Anesthesiology Rotation.** The simulator helps these students to learn the fundamentals of anesthesia; they practice connecting a patient to external life support. It also helps to ensure that all of the students are presented with a core learning experience; 3) **USU Graduate Students in Nurse Anesthesia in the MSN Degree Program.** USU Graduate School of Nursing (GSN) students undergo basic and advanced simulator training, during which they must handle unique cases with unexpected complications. In the Basic Principles of Anesthesia Course, GSN students use the simulator to practice airway management, interpret EKG patterns, practice line placement, and begin learning anesthesia induction; during the next semester, the simulator is used to expand on these basic skills. Some nurse anesthesia students use the simulator as a laboratory instrument for their required Master Degree Thesis Project; 4) **Walter Reed Army Medical Center (WRAMC) Nurses - ICU Certificate Program.** These nurses are exposed to advanced patient care scenarios that include extensive equipment use and critical medical situation training; 5) **Uniformed Anesthesia Residents from Military Centers in the National Capital Region.** These resident physicians are challenged with complex, specifically-tailored medical scenarios, designed to prepare them for dealing with critical, time-sensitive situations. For example, recent, incoming classes of anesthesia residents from WRAMC were given an extensive trauma training/evaluation with the simulator. When the GSN became concerned that its students were not prepared to deliver anesthesia under austere conditions, because they rarely had an opportunity to work with Field Anesthesia Medicine, the GSN Nurse Anesthesia faculty developed a CD-ROM on field anesthesia, which is now a required part of the GSN Anesthesia curriculum; 6) **Collaborative Efforts with the R. Adams Cowley Shock Trauma Center of Baltimore, Maryland.** In this area, the simulator is used as a test device to evaluate how experienced Emergency Room personnel can respond during critical medical emergencies; 7) **USAF Critical Care Air Transport Teams.** Once a month, USU hosts an Air Force Critical Care Air Transport Team (CCATT) session, during which the three-person team treats the simulator as a real case. Practicing nurses, physicians, and respiratory therapists are involved in the CCATT training scenarios. They receive a call that their services are required, gather their gear, leave their hospital (Malcolm Grow Medical Center), travel to the site of the patient (USU PSL), evaluate the patient's condition, and provide sufficient treatment to ensure successful transport of the patient back to a hospital. Once they leave the hospital, they can use only equipment and supplies that they brought with them.

The patient simulator, featured at: *<www.usuhs.mil/psl/>*, offers many benefits to students and instructors. Without putting a life at risk, students can experience handling rare conditions such as malignant hyperthermia, learn to recognize a wide variety of problems, practice using instruments and equipment, develop decision-making skills, and accumulate first-hand experience with military-specific problems like combat trauma. Instructors can tailor each case to individual students, selecting the type, level of speed, and degree of severity according to the student's level of competence. If the instructor wants to give feedback or additional directions, the lesson can be paused and repeated as many times as necessary. Sessions are recorded and played back, enabling the students, with the instructors, to analyze their performance and to recognize their strengths and weaknesses. Because no life is at stake, instructors can purposely push students beyond their competency levels so they can learn and retain critical lessons. The patient simulator is a valuable addition to the USU curricula, one that will play an expanded role in the future; only a small percentage of the 125 United States Medical Schools have patient simulators. Offering the single simulator in the PSL to teach a class size of more than 165 students requires complex scheduling. During 2000, collaboration between the PSL, the Simulation Center (SIMCEN) at Forest Glen, and the patient simulation facility at the Naval School of Health Sciences (located on the NNMC base) made three simulators available to better accommodate the larger class sizes.

During 2002, the PSL was used over a high bandwidth local area network (ADEN, Advanced Distance Education Network, gigabit Ethernet) to provide a clinical supplement to the didactic anesthesia agent lecture in the Pharmacology Course for the GSN, SOM, and Graduate Education Students. When completed, ADEN will link the PSL, the major lecture halls and classrooms at USU, and the new advanced teaching classrooms at the National Naval Medical Center, with the new optical fiber that connects the National Library of Medicine with the USU SIMCEN.

A Multi-Disciplinary Approach for Teaching Responses to Weapons of Mass Destruction and Terrorism. Beginning in 2000 and throughout 2002, the USU Patient Simulation Laboratory has provided educational experiences for both clinicians and emergency operations personnel in Weapons of Mass Destruction and Terrorist (WMD/T) scenarios during a USU SOM Course, ***The Scientific, Domestic and International Policy Challenges of Weapons of Mass Destruction and Terror***. The Course on WMD/T includes two modules: *Part I, The Emerging Threat of Biological Weapons and Bioterrorism*; and, *Part II, Nuclear, Radiological, High Explosives, Chemical Agents, and Unusual Weapons*. Simulated scenarios have been designed through the cooperation of experts in bioterrorism, chemical warfare, medical effects of radiation, and trauma. Students who take this course include senior military officers, physicians, nurses, lawyers, career politicians, administrators, and logistic personnel. Part I culminates in extensive simulated crisis events including inhalational anthrax, pneumonic plague, marine toxins, and other biological agents. Part II culminates in an intense simulated crisis event involving the terrorist use of chemical, radiological and explosive devices. Non-clinical students, functioning as staff in emergency operation commands, embassies, and/or hospital response centers, manage conflicting information from on-scene observers, other agencies, and media resources. Clinical students, functioning as staff in an emergency room, provide direct care of multiple patients presented by both mannequin-based simulators and human actors. Debriefing entails discussions about performance in: leadership and followership skills; team performance and dynamics; communication skills; data management; logistic support; resource allocation; emergency declaration; assessment and reevaluation of situation(s); medical triage; medical diagnosis; medical treatment; containment of outbreak(s) or agent(s); and, appropriate notification of other officials. These simulated presentations have received overwhelming approval from the participants as documented in the students' course critiques. Course

instructors have requested continuation of past presentations as well as new scenarios. Crisis Management following a WMD/T attack can be taught using patient simulation as the foundation for the event; and, multi-disciplinary input has resulted in simulated events which are overwhelmingly accepted by students. This experience allows personnel who will fill positions involving the management of a WMD/T attack to have their *first time for real* through a simulated educational event.

Virtual Reality Telepresence Surgery System. The USU virtual reality Telepresence Surgery System (TeSS) has gained recognition as an exciting technology training tool. Two USU SOM Class of 1982 graduates, also faculty members in the USU SOM Department of Surgery, have been working with the system since July of 1997. Wearing three-dimensional glasses, students place their hands on a surgical instrument. Peering into a video screen, students at the National Capital Area Medical Simulation Center' (SIMCEN) are able to *touch*, *tug*, *cut*, or *sew* the tissue displayed on the screen; they actually *feel* the movement. The reach-in display table issues a report on how well the student performs during the procedure. The USU Division of Ophthalmology has coordinated with the new Surgical Director at the SIMCEN, who is also a member of the USU SOM Department of Surgery, to enhance the surgeon further with this technology. The new addition to the TeSS system allows a magnified view of the eye, and scales down the hand motions of the surgeon from the magnified view and motions to the real microscopic motions in placing sutures accurately. In addition, tremor is dampened out of the system. *Thus, the surgeon's hands are now smaller and steadier and the surgeon's vision is improved to microscopic levels.*

Establishment of a Center for Informatics in Medicine. Biomedical data and the field of informatics continue to rapidly expand. Processes of knowledge retrieval and decision-making are critical to the future health care provider. In light of technology's role in knowledge development, biomedical informatics has become an essential component of education in the Health Sciences. Following graduation, health care professionals must be able to use biomedical information to define, study, and solve problems.

In 1996, decisions were made to establish a USU Center for Informatics in Medicine to be placed under the Vice President for Teaching and Research Support (TRS) as an interim step toward the creation of an academic Department of Biomedical Informatics. Since that time, the Center for Informatics in Medicine has enhanced USU informatics research and education through introductory computer courses, a workshop on Internet applications in diagnostic pathology, and the development of such diverse areas as web sites on educational technology, military graduate education, and HIV in the military. During 2002, the Center continued to provide computer orientation courses for faculty and students. The Center maintains over 100 educational web sites for the University. Highlighted sites include Telegenetics and the University's on-line student assessment of instruction (for both the SOM and the GSN). Also provided are self-assessment, surveys, quizzes, and examination sites for the following USU activities: the Faculty Senate; the GSN VA/DoD Distance Learning Program; the GSN Nurse Anesthesia and Family Nurse Practitioner options in the GSN MSN Program; and, the SOM Departments of: Anatomy, Physiology and Genetics; Medicine; Pathology; Pediatrics; Pharmacology; Preventive Medicine and Biometrics; and, Radiology and Radiological Sciences. CIM continues to have responsibility for video teleconferencing interface at USU; support is provided to the GSN VA/DoD Nurse Practitioner Program (six sites); the SOM Department of Obstetrics and Gynecology Clerkship Coordinators Meeting (three to five sites); the 8th NASA Medical Topics: Occupational/Environmental Health and Safety Primer and Issues Series; and, a video teleconference between the SOM Department of Pediatrics and Rota, Spain, on a repeating basis.

From 1997 through 1999, a coalition of CIM, the LRC, and the appropriate Dean's Office (SOM or GSN), initiated steps to prepare incoming USU students for the expanded role of informatics in their studies and professional careers. It is recognized that if students are to fulfill the five key roles of health care providers - *lifelong learner*, *clinician*, *educator/communicator*, *researcher*, and *manager* - they must have the benefits of a dedicated biomedical informatics program. In June of 1998, the Dean, SOM, appointed a committee to assist in creating the Department of Biomedical Informatics; during 1999, the USU Board of Regents approved the creation of the new academic department.

> **Informatics Education. The doctor is the most highly trained individual in the health care system, and as such it is the doctor who should be the final judge of the data entered into the electronic medical record. If the medical record is also a research tool, then this gives a new responsibility and value added to the physician. Educating medical students to do this well is a major challenge. Students who are not exposed to this type of thinking and practical training in medical school will be at a disadvantage when it becomes the norm, as it surely will.**
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> - Journal of Investigative Medicine, Volume 46, No. 8, October 1998, page 345.

The Department of Biomedical Informatics. The SOM's Department of Biomedical Informatics, approved by the Board of Regents during 1999, and provided space through the restructuring of the USU Logistics Division's Self Service Store, is recognized as a basic science department with three areas of specialization: bioinformatics, medical informatics, and education. It is conceived as a resource center to extend and enhance already strong curricula through departmental and interdisciplinary courses that will integrate basic sciences with clinical experiences, offer simulated clinical training experiences, continue current teaching efforts in introductory computing, and focus on student-centered learning through case-based, small-group sessions. It will also serve as a clearinghouse for USU informatics applications, and provide a testing facility for informatics research. The new department will help to ensure that all USU graduates have a foundation in informatics that will support them, as career professionals, in the Military Health System. Specifically, the charter for the new department includes the following: 1) support for the curricula through educational technology; 2) extension of the curricula through biomedical informatics; and, 3) identification and research of innovative informatics applications for military health care.

During 2000 and 2001, the Department of Biomedical Informatics (BID) was charged to act as a resource center to *support* and *extend* the USU medical curriculum and to act as a *focus* for developmental and research activities in informatics. The university-wide operations of the Center for Informatics in Medicine have been retained as the new department's service-based component. Research computing will eventually be reassigned to the Department of Biomedical Informatics and it will no longer be considered a part of the Information Services Management Center (UIS). The Department of Biomedical Informatics will serve as the focal point for USU's academic computing support, spear-heading such activities as sequence analysis, statistical computing, and the student web page pilot project. It will also solve problems associated with the University's widely dispersed informatics initiatives. In the past, attempts to incorporate informatics into USU curricula have been handled by individual departments, leaving the efforts vulnerable to collapse if a key member of the department left or was reassigned. The Department of Biomedical Informatics now serves as a central resource into which all departmental informatics endeavors can be incorporated. Resources for this department will be gradually increased in accordance with the requirements of the SOM and the Military Health System.

Two projects supported by BID, from 2000 through 2001, involved innovative education applications for military health care. A collaboration with the University of California at San Diego (UCSD) brought the National Library of Medicine's Visual Human to the USU campus as part of an application developed at UCSD - *Anatomic VisualizeR*. This 3-D visualization tool for the Visible Human Data Set uses a high end Silicon Graphics workstation for stereoscopic rendering of the data set. Currently, this collaboration has developed six lessons specifically for the SOM and the GSN Anatomy Courses. In August of 2000, the Dean of the SOM charged the Department of Biomedical Informatics to implement a USU Medical Portable Digital Assistant (PDA) Initiative. A working group of students, staff, and faculty devised a staged working plan to deploy the PDA to include: distribution and introduction of the PDA to the SOM students; usage training; communication deployment at USU; communication deployment to the Military Treatment Facilities (MTFs); and, evaluation and refinement of the initiative. The PDA devices were provided to the USU second-year medical students in December of 2000. Studies have confirmed that physicians and medical students are able to successfully incorporate PDAs into their patient care workflow. With the use of a drug information database, clinicians save time, improve knowledge for themselves and their patients, and possibly decrease preventable adverse drug effects. The goal of the USU Medical PDA Initiative is the integration of this technology into the clinical setting. The objectives of the USU PDA Initiative follow: 1) communication while students are at clinical sites (HandDBase and associated databases); 2) clinical encounter log collection (CWebLog developed within the USU Departments of Biomedical Informatics and Medicine); 3) clinical reference material access (qRx(ePocrates) and 5-Minute Clinical Consult; and, 4) clinical calculator availability (MedMath). USU students are responsible for installing five applications and the *CWebLog* channel on their PDAs. During their clerkships, each student is expected to operationally maintain his or her PDA. The PDA serves as a significant option that the USU students have for maintaining a log of their clinical encounters. During 2001, this educational tool was determined to be a complete success and that distribution would be continued in the future. During 2002, the Department continued its support for the PDA Initiative. Personal Digital Assistants have been issued to three classes of SOM and Graduate Nursing students. In January of 2002, the USU PDA Initiative was highlighted at a symposium, *Teaching Old Docs New Tricks*, as part of the 10th Medicine Meets Virtual Reality Conference by **Leon Moore, Ph.D., Professor and Chair, USU SOM Department of Biomedical Informatics,** at San Diego, California. In addition, a paper, written by Doctor Moore and his colleagues, describing the outcomes of the Initiative, *The USU Medical PDA Initiative: The PDA as an Educational Tool*, was submitted and published in the Journal of the American Medical Informatics Association in November of 2002.

During 2002, BID was responsible for the Clinical *CWebLog* (at *<http://cweblog.usuhs.mil/>*), which is used by USU SOM students to document their experiences during their clinical rotations; *CWebLog* is currently used by the seven third-year clerkships. The Department also organizes and teaches MCB-501, *Introduction to Computers for Graduate Students*, with assistance from faculty and staff in the SOM Department of Preventive Medicine and Biometrics and the Learning Resource Center. During 2002, BID established its second course, BID-510, *Introduction to Bioinformatics Computer Skills*. It is anticipated that this course will be offered during 2003. This past year, BID provided organizational and administrative support for two campus-wide educational events: *Research Day 2002* and a lecture and hands-on computer workshop on GenBank and related molecular biology databases at the National Center for Biotechnology Information, which was received quite well by approximately 50 USU faculty, postdoctoral fellows and students. BID continues to support the implementation of a high performance research network at USU (Internet2). Due to an operational connection to Internet2 through the National Library of Medicine, BID hosted demonstrations from two USU laboratories (the Patient Simulation Laboratory and the SOM Department of Radiology and Radiological Sciences) during 2002.

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National Capital Area Medical Simulation Center.

Just as the military has remained a driving force behind the evolution of flight simulation, the Uniformed Services University of the Health Sciences (USUHS) National Capital Area Medical Simulation Center, with its mission to establish a world-class, cutting-edge medical education facility, is definitively ahead of the curve in terms of the utilization of simulation to enhance medical education and readiness. The Center pushes medical simulation into the 21st Century.

- Military Medical Technology, *Locating the Cutting Edge*, Volume 5, Issue 5, 2001, page 32.

Background. In response to new technologies, a requirement for standardization in assessment, and also the rapid downsizing of the inpatient teaching base, United States medical educators have developed a variety of new training and testing tools (trauma and anesthesia simulators, interactive computer-based testing (CBT), distance learning, virtual reality applications, and clinical simulations using "standardized patient" actors (SPs). All of these innovations are being rapidly implemented throughout the United States and are being incorporated as new quality standards for medical education and testing. For example, the National Board of Medical Examiners scheduled the implementation of CBT in the United States Medical Licensing Examination (USMLE) for 1999; and, clinical testing utilizing standardized patients will be implemented as part of the USMLE Step 2 by 2005. Similar requirements are being discussed by the accrediting entities for advanced practice nurses.

These innovations in medical education conform with the 1995 DoD Medical Readiness Strategic Plan, which states: *The use of modern technological advances such as computer simulations and virtual reality has the potential to provide realistic training in battlefield techniques and procedures, and should be pursued to enhance medical readiness training*. In July of 1995, the Dean of the USU School of Medicine, and the Commander of the Walter Reed Army Medical Center (WRAMC) established a committee to plan for a model military medical simulation center for the: 1) development and use of military medicine databases for education and training; 2) simulation, teaching, and measurement of patient interviewing, physical examinations, and diagnostic skills; 3) instruction, assessment, and documentation of readiness skills; and, 4) focused pre-deployment training. The Associate Dean for Clinical Affairs, SOM, was appointed chair of the planning committee and designated to coordinate the project for the University.

Upon the determination of space and personnel requirements by the planning committee, a building on the WRAMC Annex at Forest Glen, Maryland, was identified and approved by the Commander of WRAMC as the location for the center. An initial design study, funded jointly by USU and WRAMC, was completed in September of 1996. In 1997, the concept was briefed to the Assistant Secretary of Defense for Health Affairs and the Surgeons General during a meeting of the TRICARE Readiness Executive Committee (TREC), who referred it to the Defense Medical Readiness Training and Education Council (DMRTEC). Following a briefing on September 25, 1997, the DMRTEC approved the concept and recommended that USU program for funding. In 1998, the President of USU allocated funds for the renovation of the Forest Glen space and the purchase of equipment. The one hundred percent design was completed on August 12, 1998. Funds for renovation, furniture, and security were obligated on September 30, 1998. Program development and the hiring of staff began late in Fiscal Year 1998, and continued throughout Fiscal Years 1999 and 2000. The construction, required for renovation,

was completed during 1999; in October of 1999, the simulation center began training and testing military physicians, nurses, and medical students. On April 21, 2000, the 11,000 square foot National Capital Area Medical Simulation Center (SIMCEN) was officially opened at the Walter Reed Army Medical Center Annex in Forest Glen, Maryland. The SIMCEN was the first single location to integrate the use of virtual-reality technology, computer-controlled mannequins, and human simulated patients under one roof.

Educational Activities. During 2002, the SIMCEN was instrumental in introducing medical simulation technology in support of numerous and distinct medical education programs. ***Since October of 1999, the SIMCEN has supported 57 educational activities: 17 School of Medicine; 10 Graduate School of Nursing; 23 Graduate Medical Education and Operational Medicine; and, 7 research training activities. These educational activities, in turn, supported over 9,249 student encounters.*** At present, the SIMCEN expects to support a similar number of programs and student encounters during 2003.

Since its establishment, the SIMCEN has conducted over 350 tours (35 foreign nations; 70 educational institutions; and, over 200 visits from military, professional, congressional, and private organizations). To date, the SIMCEN is currently serving as a template for more than 35 educational institutions that are attempting to employ similar simulation technology into their own medical education programs. As an example of the growing reputation of the SIMCEN, on February 21, 2001, the USU SIMCEN was included in the Discovery Channel Series, *The Nature of Things*. The segment of the program featuring the SIMCEN was entitled, *Surgeons of the Future*. To date, reports of the SIMCEN's activities and simulation capabilities have led to reports in newspapers and professional journals and in national television programs; some examples include: *The New York Times*; *GeoWissen*; *U.S. Medicine*; *Institute for Electrical and Electronic Engineers*; *American Forces Information Services*; *Military Medical Technology*; *Sea Power*; *Stripe*; *USU Quarterly*; and, television reports in: *NBC Nightly News*; *The Discovery Channel*; and, *The Canadian Broadcasting Corporation*.

Multi-Simulation Techniques Under One Roof. While an increasing amount of professional health care training uses simulation techniques, the SIMCEN is unique among the limited simulation centers found at civilian medical schools in the United States because five state-of-the-art teaching components are included under one roof: 1) standardized patients (*patient actors*); 2) multi-media, interactive, clinical case presentations on LAN or web-based CD-ROMS; 3) virtual reality software applications; 4) medical simulators (computerized mannequin simulators); and, 5) video-teleconferencing/distance education. It uses technology and actors posing as patients to teach students about situations that they may encounter as practitioners, but might not otherwise experience while training in hospital wards. It also allows for a safe transition between simulations in the classroom and real-life situations in the clinic for learning procedural and surgical skills, and for the interaction with patients in sensitive or difficult situations. Another use of the SIMCEN is the instruction of readiness skills and focused pre-deployment training for wartime, peacekeeping, and humanitarian missions.

The SIMCEN is divided into four functional areas: the Administrative Area; the Clinical Skills Teaching and Assessment Laboratory; the Computer Laboratory; and, the Surgical Simulation Laboratory. Each distinct area can sustain educational activities on its own; and, when necessary, integrate the operations of the entire SIMCEN for a more comprehensive approach. All of the functional areas have been designed to maximize students' access to clinical experience in a state-of-the-art learning environment. The SIMCEN's current research activities include validating the educational efficacy of cutting-edge simulation technology. Some examples of the specialized simulation equipment currently being used include: 1) CathSim AccuTouch: Immersion Medical;

2) Vascular Anastomosis Simulator: Boston Dynamics, Inc.; 3) Bronchoscopy Simulator: Immersion Medical; 4) Laparoscopy Simulator: Immersion Medical/Surgical Science; 5) Ultrasound Simulator: MedSimEagle; 6) Human Patient Simulators: MedSimEagle; 7) SimMan Patient Simulator: Laerdal/Medical Plastics Laboratory; 8) Hand-Immersive Workstation: Cie-Med; 9) Head Mounted Display; and, 10) People-Shop Software: Boston Dynamics, Inc.

The Administrative Area. The Administrative Area serves as the hub for the SIMCEN; the area includes both the administrative offices as well as the Video Teleconference (VTC) Room. In addition to daily operational activities such as personnel, budgeting, and resource allocation, the Administrative Area houses the offices of the SIMCEN Director, Deputy Director, and Standardized Patient Trainer. The VTC Room is the SIMCEN's audio/video entry and exit point to the outside world. Equipped with state-of-the-art video teleconferencing equipment, any of the video signals throughout the SIMCEN can be routed through the VTC Room and sent to any connected site in the world. This capability allows individuals at remote sites to participate and to review many of the exercises that take place in the SIMCEN. The VTC Room is equipped with a *telecommuting* conference table, which allows up to twelve students, faculty, or visitors to connect their computer laptops to twelve local area network ports for high-speed Internet access. The table is also outfitted with sixteen headphone ports, allowing various audio exercises which permit instructors and students to simultaneously utilize the same audio files for review and discussion. As a standard conference room, it is also equipped with a slide-to-video converter, document camera, and VCR.

The Clinical Skills Teaching and Assessment Laboratory. The Clinical Skills Teaching and Assessment Laboratory (CSTAL) is designed for teaching and evaluating students in the basic clinical skills of history-taking, physical examination, communication, and interpersonal skills. Here, encounters with simulated patients provide an ideal transition from the classroom to real patient contact. The CSTAL also prepares medical students for the United States Medical Licensing Examination (USMLE). The area consists of four sub-sections: the Orientation Room; the Clinical Examination Room area; the Monitoring Area; and, the Standardized Patient Lounge. The Orientation Room is used to brief the students. A ceiling-mounted, drop screen and LCD projector are used to display PowerPoint and/or video presentations for orientation, registration, and briefing students on specific event protocols. The students are registered for clinical events through a log-in process, which tracks the students throughout their activities at the SIMCEN.

The Clinical Examination Room Area consists of 12 examination rooms, which serve as the simulated clinical environment for the SIMCEN. There are ten typical (120 square feet) examination rooms and two large (220 square feet) rooms with hospital beds that can be used for inpatient and/or critical care simulation. The large rooms are also suited for trauma simulation and small group teaching events. In the Clinical Examination Area, students have the opportunity for encounters with live patients who simulate specific challenges in outpatient, inpatient, or critical care settings. Specifically, individuals, referred to as standardized patients, are hired and trained to simulate scripted clinical cases. These clinical cases may be simulated using performance, make-up, real conditions, or a combination of all three. Each Clinical Examination Room is equipped with two video cameras and microphones that permit encounters to be recorded for subsequent analysis and self-evaluation. Each room is equipped with a computer for the patient; a wall-mounted computer is also located outside of each room for students to use for documentation, before and after, the encounter. Typically, clinical examinations are designed following a directive to achieve specific educational goals. The Standardized Patient Trainers and the Medical Director collaborate with faculty members to create projects that meet stated educational goals.

The Monitoring Area is located at the center of the Clinical Examination Area and allows the Standardized Patient Trainer and faculty instructors to monitor the progress of the clinical examinations. A specialized video router controls 24 videotape decks that track the students as they move from room to room. A touch screen control panel permits cameras to be positioned for optimal imaging. Faculty and students are able to view recorded tapes as if they were in the room, allowing for more detailed observation and more dynamic feedback. The Monitoring Area is also used for training simulated patients.

The Standardized Patient Lounge is a staging area for simulated and standardized patients to prepare for, and to relax following, activities at the Center. This area is required as the *patient actors* often use theatrical make-up to simulate traumatic injuries or other conditions.

The Computer Laboratory. The Computer Laboratory has two sections: the Computer Laboratory itself and an adjacent Control Room. The Computer Laboratory has two primary functions. The first is to identify, develop, and/or use medical education software that contributes towards clinical or medical readiness skills. The second is to provide an environment in which computer-based, interactive clinical examinations can be administered. The Computer Laboratory consists of sixteen Internet accessible workstations that can run a variety of medical educational CD- ROMs. Eight overhead cameras and a one-way mirror between the Computer Laboratory and the Computer Control Room ensure that examinations are properly monitored when the Computer Laboratory is being used for testing. Students use the Computer Laboratory to work with interactive software programs that may be linked to activities occurring in other functional areas of the SIMCEN. Additionally, the Computer Laboratory is designed to meet the specifications of the National Board of Medical Examiners (NBME) for a certified United States Medical Licensing Examination (USMLE). Although not currently certified, the Computer Laboratory assists students in preparing for the USMLE through the use of test preparatory software packages. Students and faculty can also use the computers to learn and evaluate various clinical and surgical skills (e.g., communication, history-taking, physical examinations, and cardiac auscultation) through interactive software applications. Many of the applications are offered using the local area network (LAN). Other applications are web based and accessed via the Internet. The Computer Laboratory also includes a separate Video Teleconferencing/ Advance Distributive Learning (VTC/ACL) capability that serves as the audio/video entry and exit point to the outside world. Video signals from anywhere in the SIMCEN can also be viewed via a fiber optic connection and can be transmitted worldwide via VTC or the Internet.

The Computer Control Room is adjacent to the Computer Laboratory; it is the nerve center for the SIMCEN. All data, voice, and video signals are fed through the Control Room and can be routed to other areas in the SIMCEN accordingly. The Control Room also houses several departmental servers that handle the current requirements of the Center. During testing, the Control Room operates as a monitoring station for instructors, allowing overall viewing of the Computer Laboratory through a one-way, mirrored window or specific viewing of the individual workstations from the overhead camera.

The Surgical Simulation Laboratory. The Surgical Simulation Laboratory (SSL) uses virtual reality and a full-scale operating room mock-up to provide highly realistic scenarios for surgical training. This area is the first site approved to investigate teaching the surgical skills practicum for the Advanced Trauma Life Support Course through the use of computer-based simulators and plastic models rather than anesthetized animals or cadavers. *During the past year, the SIMCEN conducted the Nation's first Advanced Trauma Life Support (ATLS) Course using virtual-reality based simulators, computer-controlled mannequins, and medical models instead of*

animals. The Operating Room is furnished to look and feel like a full-scale operating room. In addition to the typical Operating Room equipment, the room holds intravenous catheterization, bronchoscopy, endoscopy, and diagnostic ultrasound simulators designed to provide highly realistic scenarios for trauma, anesthesia, and surgical training. The Operating Room can be configured to match the conditions of a standard Operating Room, an Emergency Room, or an Intensive Care Unit. Here, a single human patient simulator responds to various drugs and interventions. Driven by two computers, the human patient simulator can be pre-programmed with patient characteristics or variables such as age, anatomy, and physiology factors depending upon the training event. Students are faced with real-life situations as the human simulator breathes out Carbon Dioxide, and breathes in various gases, depending upon the scripted clinical procedure. Beginning in 2000, when the second mannequin-based simulator was installed at the SIMCEN, through 2002, the two-day introduction to the SOM third-year surgical clerkship has included a day at the Surgical Simulation Laboratory operating room (OR) at the SIMCEN. Courses taught in the OR include an Introduction to Surgery Course for third-year SOM students, and an airway management workshop taught by the GSN Nurse Anesthesia faculty for providers at local Military Treatment Facilities. The OR is featured at the SIMCEN web site: (*http://simcen.usuhs.mil/Surgery/OR/index.html*).

The simulator has five palpable pulse areas and will exhibit the appropriate physiologic reactions in response to various intravenous or inhaled agents. Presently, there is a capability for 80 different drugs to be *virtually* administered by various computer microchips. The simulator responds to the type and amount of these drugs according to instructor-determined, pre-programmed patient variables. In the Operating Room Control Room, a two-way headset and a one-way mirror into the Operating Room allow instructors to communicate with the Operating Room Coordinator. From the Control Room, the coordinator can change patient variables on the computer and even speak into a hidden microphone feed on the simulated patient in order to bring more realism to the scene.

The Virtual Reality Room, which is funded, in part, by the Association of Military Surgeons of the United States (AMSUS), develops computer-based surgical simulators and software applications with 3-D, haptic feedback features, designed to meet the educational objectives of USU. Two functional directives of the Virtual Reality Room are research that advances simulation procedures and harnesses the capabilities of existing technologies. In the Virtual Reality Room, state-of-the-art computer-based equipment enables students to view medical objects in two or three dimensions. *A haptic interface allows the computers to re-create the tactile sense, which permits users to touch, feel, manipulate, create, and alter simulated 3-D anatomic structures in a virtual environment*. Here students can teach themselves, at their own pace, and they can feel comfortable about making mistakes as well as repeating an exercise. The Virtual Reality Room is equipped with simulators for Vascular Anastomosis, Pericardiocentesis, a Diagnostic Peritoneal Lavage Unit, and a hand-immersive environment for on-going research. Both the Pericardiocentesis and Diagnostic Peritoneal Lavage Simulators were developed in the Virtual Reality Room. These two simulators are the first of their kind and, they are unique to the SIMCEN.

Examples of Recent Achievements. During 2002, the USU/SIMCEN faculty and staff provided numerous presentations, tutorials, posters or exhibits at the following professional meetings: the Association for Medical Education in Europe; the Association of American Medical Colleges; the American Medical Association; the American College of Surgeons; the Association of Military Surgeons of the United States; the Association of the United States Army; Advanced Technology Applications for Combat Casualty Care; Medical Image Computing and Computer Assisted Intervention; the International Society for Optical Engineering; and, the Association of Standardized Patient Educators. A list of published papers and the tutorials can be found at the SIMCEN web site home page, <*http://simcen.usuhs.mil*>.

Telementoring and telesurgery systems can provide a solution when expertise for treating conditions caused by highly toxic or contagious contaminants is not available. Previous telesurgery attempts have been limited by the necessity of dedicated, high-bandwidth links between master and remote units. The recent development of the Internet2 High-Bandwidth Network is a potential solution to the problem. Internet2 is a consortium of more than 190 universities, in partnership with industry and the government, to develop advanced network applications and technologies. USU is a member of the consortium. *During 2002, the Internet2 Initiative with the National Library of Medicine was completed providing USU with its first fully-operational, dedicated I-2 workstation. Faculty members in the USU SOM Department of Obstetrics and Gynecology are now reviewing a genetic counseling I-2 multi-media software application* provided by Dartmouth.

The SIMCEN's *beta-testing* collaboration with Surgical Science led to the development of a more user-friendly, robust software application for developing laparoscopic procedure skills. SIMCEN and USU faculty contributions led not only to software improvements but also provided opportunities to purchase the finished products at a reduced cost.

The SIMCEN collaboration with the University of Maryland resulted in further refinements to the existing needle insertion devices currently used in several medical simulators. Future collaboration will focus on developing more realistic haptic or sensory feedback properties. This work is linked to enhancing the capabilities of the two needle insertion devices developed by USU/SIMCEN faculty in the Virtual Reality Room and the Pericardiocentesis and Diagnostic Peritoneal Lavage Simulators. As mentioned, these simulators led the American College of Surgeons to approve, for the first time, an Advanced Trauma Life Support (ATLS) Certification of surgical skills without the use of animals or cadavers. As a result, *the SIMCEN conducted the Nation's first ATLS Course using virtual-reality based simulators, computer-controlled mannequins, and medical models instead of animals*.

In a collaborative partnership with the Walter Reed Army Medical Center (WRAMC), Johns Hopkins University, and the Centers for Disease Control (CDC), *the SIMCEN participated in the development of an Anthrax Vaccine Immunization Provider Response Program*. The objective of the project was to develop an educational product to guide medical personnel dealing with patient concerns about anthrax immunization.

And, an initiative completed during 2002, was *the development of a series of Clinical Case Scenarios developed under contract with the National Board of Medical Examiners (NBME)*. These cases, along with others developed in other centers, may be used by the NBME as part of Step 2 of the United States Medical Licensing Examination (USMLE) in the near future.

Future Initiatives. The SIMCEN is currently planning for the development of a Computer-Aided Virtual Environment (CAVE). The CAVE is an immersive, virtual reality environment suitable for simulating mass casualty, triage and/or bio-chemical training scenarios. Students would be physically immersed in a virtual environment with patients, which can be either virtual, live, or high fidelity computer-driven human patient simulators. Students would be exposed to a variety of scenarios, and equally important, participate in a scenario where they can respond as an individual provider or as a member of a medical team. Further, the training scenarios could be linked via I-2 to other geographic locations so that other responders can participate in the same training scenario. The CAVE would be established in adjacent space to the SIMCEN. USU has already obligated funding to plan, design, and renovate the adjacent space; the Navy Public Work Center is coordinating with the USU Facilities Division and the SIMCEN to manage these efforts. SIMCEN staff have also collaborated with the University of Michigan and the Army Research Laboratory in Aberdeen, Maryland; as both have on-going CAVE projects.

And, in an initiative proposed by the American Institute of Research, the SIMCEN will also participate in a project to demonstrate the practical application of hand-held wireless devices such as the use of portable digital assistants (PDAs) in a clinical setting. This project will be the second phase of the demonstration, which began by using PDA devices at the Walter Reed Army Medical Center and at other United States Army Medical Centers.

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Research Administration.

We will optimize our role in military and federal medical education and research.

- Goal 5, USU Strategic Plan, 2002.

Background. The Office of the Vice President for Research was established at USU to facilitate, promote, and oversee the research activities at USU. The position of the Vice President for Research evolved through recommendations from the USU faculty. Following an extensive search, **Ruth Ellen Bulger, Ph.D., was selected as the first Vice President for Research and was appointed during March of 1996**; she served in that position until March of 2000, when she resigned as Vice President to focus on teaching and her many other professional commitments. *Michael N. Sheridan, Ph.D., Professor of Anatomy and Associate Dean for Graduate Education, subsequently served in the position while a national search was conducted*. **Steven Kaminsky, Ph.D., was selected as the second Vice President for Research and assumed the position in March of 2001.**

The Office of Research (REA) currently consists of fourteen full-time staff (thirteen civilians and one Army officer) who report to the Vice President for Research. The Office of Research reviews, monitors, and coordinates approvals for all matters dealing with research at the University, to include the following: identification of potential funding sources; pre-award review and administration; grant awards and receipts; post-award administration; administration of the human research protection program, to include review and approval by the University's Institutional Review Board (IRB); and, the monitoring of all regulatory compliance requirements.

The Office of Research also provides coordination and support for the Graduate Student Colloquium and the Faculty Senate Research Day. The 9th Faculty Senate Research Day was held at USU on May 15-16, 2002. This year's theme was *The Post Genomic Era: Implications for Research, Education, and Public Health*. The two-day event brought approximately 250 individuals to the USU campus, including researchers from affiliates such as the National Naval Medical Center, the Walter Reed Army Medical Center, the Armed Forces Institute of Pathology, the Washington Hospital Center, and the Walter Reed Army Institute of Research. This year's events included internationally known keynote speakers as well as presentations of on-going research by USU faculty, USU graduate students, and investigators from the above-listed affiliated institutions. Workshops and symposia are also sponsored by REA on topics of interest to the USU community.

The Office of Research provides service to three communities: the University as an institution; USU faculty and student investigators; and, more than 100 funding entities that support research at the University. The REA staff manages the intramural grant program and provides administrative support for the SOM Research

Merit Review Committee, which conducts peer review of all faculty applications for intramural funding. During 2002, the USU Intramural Program was funded at $2.7 million with 125 intramural faculty projects in place; of those research projects, the majority consisted of militarily relevant protocols, with 52 clinical research awards, and three projects in areas of educational research. Standard USU awards for militarily relevant research were typically funded at 90 percent of the applicant's budget request; clinical research awards were usually supported at 90 percent. As part of the University's on-going efforts to encourage young faculty, new assistant professors with a standard award in either category received 90 percent of their budget requests. The 2002 USU student research programs supported the work of 8 medical students, 16 students in the Graduate School of Nursing, 21 candidates in the Master of Public Health Program, and 14 candidates in the Ph.D. or Dr.P.H. Graduate Education Programs. Student applications were reviewed by a faculty committee in each student's area of study and by the appropriate Dean.

Similarly, in 2002, the Office of Research provided oversight for nine multi-site, Congressionally-funded research programs which totaled $59.9 million: the TriService Nursing Research Program; the Center for Prostate Disease Research; the Defense Brain and Spinal Cord Injury Program; a Coronary Artery Disease Reversal Program; the Clinical Breast Care Program; the Post-Polio Research Program; Programs for Comprehensive Neuroscience and Hepatitis C; and, the United States Military Cancer Institute. Together, these programs support approximately 150 individual research projects conducted at USU and elsewhere.

Extramurally funded research at USU was funded at a total of $53.3 million during 2002 and included hundreds of projects supported by Federal agencies such as the National Institutes of Health (NIH), the National Science Foundation (NSF), the Department of Energy (DOE), the United States Army Medical Research and Materiel Command (MRMC), and the Office of Naval Research (ONR). These investigations explored a variety of scientific areas, including basic biomedical issues central to the mission of the Military Health System: the mechanisms, transmission, and control of a wide range of infectious diseases; a variety of crucial topics in combat casualty care, operational medicine, and health education and promotion; Defense women's health issues; and, the development of new methods for the diagnosis and treatment of medical problems faced by the United States military and their dependents. *Thus, the total of the USU Intramural, Extramural, and Congressional Research Programs was approximately $119.9 million in 2002, with a total of 414 active projects and 533 publications*. (See Appendix C for examples of the achievements and recognition awarded to individual USU researchers.)

<u>USU Researchers Investigate Diseases of Special Interest to the Military.</u> A wide array of research protocols at USU investigate specific disease threats faced by the Uniformed Services during peacetime and deployment. These projects all supported the essential military mission by advancing the understanding of both the transmission and the internal mechanisms of a spectrum of pernicious and/or common diseases that may be faced by warfighters. This research is expected to provide equally important applications in the growing effort devoted to homeland defense. The understanding gleaned by USU researchers will open avenues to better control, diagnosis, and treat natural and man-made biological threats both at home and abroad. Also, malaria is endemic in many areas where the military deploys its fighting forces; technological advances conducted by USU researchers have made it possible to predict mosquito population levels and transmission risk for a range of mosquito-borne diseases such as malaria, even within precise areas and timeframes. By using satellite imaging and remote sensing devices, researchers assist in predicting high-risk locations for the occurrence of malaria and similar diseases. These predictions focus disease control operations and conserve scarce finances as well as human resources. Infectious diseases studied at USU have included, or continue to include, the following:

malaria; Venezuela equine encephalitis (VEE); leishmaniasis; E. coli, H. pylori; and, bartonellosis. Examples of additional disease-related research have included: identification of previously unknown bacterial virulence genes; and, analysis of the genesis and pathology of various types of virus.

USU Research and Combat Casualty Care. Research conducted by USU faculty in the area of combat casualty care continues to enhance the provision of rapid diagnostic methods and treatments that ensure military readiness, excellent care for deployed forces, and the rapid return of the injured and sick to active duty. Protocols that deal with combat casualty care have focused on the following areas/examples: the exploration of the pain-control mechanisms that underlie established treatments such as morphine; the provision of groundwork for effective strategies to limit nerve damage and to encourage nerve regeneration; and, the identification of possible causes of life-threatening complications resulting from the combination of exertion and injury common under heavy battle conditions.

USU Research Strengthens Military Operational Medicine. USU researchers in the area of operational medicine advanced the understanding of, and the ability to manipulate, the physiological mechanisms of stress and immunity; human sleep and seasonal cycles; and, the neurological changes underlying short- and long-term memory. USU research will eventually: enable warfighters to stay awake longer with fewer detriments to performance (recognized by *Science* as one of the top ten scientific breakthroughs of 2002); lead to better strategies for enhancing and preserving memory and reasoning capabilities under battlefield conditions; help the Uniformed Services and Veterans Affairs to understand, and ultimately prevent and treat, neuropsychiatric illnesses such as depression and post-traumatic stress disorder; and, assist deployed troops and their families to better prepare for, and contend with, significant, common stressors of military operations.

Enhancement of Administrative Services. During 2002, REA extended its regular meetings with the Research Administrators, who represent the USU departments, centers, and activities, to include a monthly request that each Research Administrator provide a list of the applications likely to be submitted within a short timeframe. Compiling this monthly list has helped REA, department support staff, and faculty investigators to coordinate their efforts and to enhance the quality and timeliness of the submitted applications. The REA staff and Research Administrators continue to meet regularly to: identify and resolve problems; examine the processes for the submission, review, and administration of grant applications; and, strengthen their working relationships. REA staff also meet at least monthly with the Sponsored Project Office of the Henry M. Jackson Foundation for the Advancement of Military Medicine, which provides administrative services for more than 80 percent of USU's extramurally funded projects.

During 2001, the Vice President for Research conducted a series of weekly workshops that provided sustained, focused instruction and peer critiques for junior and mid-career faculty engaged in writing applications for extramural funding. Workshop sessions addressed specific skills and expertise required to complete each section of the typical grant application, to include: writing the abstract for the grant proposal; summarizing the scientific background for the area of interest and proposed approach; developing the hypotheses and specific aims; presenting preliminary results; outlining experimental design and methodology; and, conducting a statistical analysis. Two workshops were conducted in 2002; and, four workshops are planned for 2003, which will include a special series for post-doctoral fellows.

Institutional Review Board. The Human Research Protections Program and the USU Institutional Review Board (IRB) jointly ensure the protection of human volunteers for research at USU and its affiliates from research-associated risks. The Program's administrative staff, which functions as a part of the Office of Research, reviews each protocol with human subjects that is conducted at the University or by a member of the USU faculty or student body to ensure that: 1) the research complies with the regulations and standards of DoD and other Federal entities, as applicable; 2) potential risks to the subjects are minimized by the research design and do not outweigh the actual benefits of participation; 3) appropriate processes for obtaining informed consent from potential subjects are in place, adequate to the backgrounds of the volunteer population as well as the research design; processes are not coercive or disrespectful of the needs of the individual volunteers; and, 4) the documents produced during the consent process and the conduct of the research protocol are maintained in accordance with standard scientific practice and Federal regulations.

Each research project, following staff review and recommendations, is presented to the full IRB at its monthly meetings. In 2002, the IRB reviewed and approved the following: 211 initial proposals for human subject research; 120 amendments to protocols already underway; and, 119 annual or semi-annual reviews of previously approved projects. A second IRB coordinator was added to assist with the growing number of reviews and approvals, particularly as required for the Congressional programs overseen by USU. The IRB meets at least once a month, with additional, *ad-hoc* meetings, as required, over the course of each year.

The USU IRB consists of 21 voting members, including eight physicians, one basic scientist, five social/behavioral scientists, two nurses, one epidemiologist, the USU Chaplain, the SOM Commandant, an enlisted soldier, and one other representatives from the non-scientific USU community. Eighteen of the 21 members are drawn from the USU faculty and staff; two are employed by NIH; and, one is assigned at WRAMC. Three *ex officio*, non-voting members attend each meeting and provide additional support: the Director for Human Research Protections Program (who also serves as the IRB's Executive Secretary); the Assistant Vice President for Research; and, a member of the USU Office of the General Counsel.

A separate IRB for the United States Military Cancer Institute (USMCI), formally approved on January 14, 2002, continues to develop as the USMCI's protocols acquire scientific approval at the member institutions. The USMCI IRB draws its members from the University and its affiliated medical centers: the National Naval Medical Center (NNMC); the Walter Reed Army Medical Center (WRAMC); the Armed Forces Radiobiology Research Institute (AFRRI); and, the Malcolm Grow Medical Center (MCMG). The USMCI IRB ensures that its member institutions and their physicians, dentists, nurses, and other health care providers pursue oncology research in compliance with Federal regulations and accepted ethical standards of scientific conduct. Protocols conducted under the auspices of the USMCI are designed not only to improve the quality of patient care but also to contribute to better staff education and training.

Positive Reviews of the USU IRB Program. A review of the USU IRB Program was conducted during July of 1997, by the Director, Scientific Activities, Office of the Assistant Secretary of Defense for Health Affairs. *This review found no significant deficiencies* and the REA staff has since been expanded to accommodate the growing number of protocols requiring IRB review. In addition, the Food and Drug Administration (FDA) has cognizance over Federal IRB Programs where research is conducted with investigational new drugs and devices. Because some USU research falls into this category, the FDA has the authority to audit the entire USU program. On March 22 and 23, 1999, an FDA inspector conducted a two-day audit of the USU Human Use Program and

the USU IRB. The audit included a review of IRB minutes from 1997, 1998, and 1999, plus a random sampling of the IRB files on protocols with a greater than minimal risk to human subjects. *The USU IRB Program was found to be in full compliance with the governing regulations (Title 21, Code of Federal Regulations, Parts 50 and 56) with no need of corrective action by the Division of Scientific Investigations, Office of Medical Policy, Center for Drug Evaluation and Research of the FDA.* During 2001, in addition to the previously awarded Assurance of Compliance from DoD, *USU also obtained a Federal-Wide Assurance from the Department of Health and Human Services (HHS).* Each assurance sets out USU's institutional responsibilities in the protection of human subjects to include: 1) standards for the initial and continuing review of research protocols; 2) requirements for the prompt reporting of information required by each Federal agency, to include the suspension or termination of any study due to non-compliance with regulations or unexpected, serious harm to a research volunteer; and, 3) guidelines for the appropriate training and educational requirements for IRB members, USU investigators and administrative staff. *The audits conducted by the Director of Scientific Activities for the Office of Health Affairs in July of 1997, and the FDA in March of 1999, combined with the Assurance of Compliance obtained from DoD and the Federal-Wide Assurance from HHS, have validated the outstanding support rendered by the USU Human Research Protections Program and the USU IRB.*

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The 9th Faculty Senate Research Day and 2002 Graduate Student Colloquium. The 9th Annual Faculty Senate Research Day and Graduate Student Colloquium were held at USU on May 15-16, 2002. This year's theme was *The Post Genomic Era: Implications for Research, Education, and Public Health.* The two-day event brought approximately 250 individuals to the University; attendees included researchers from affiliates such as the National Naval Medical Center (NNMC), the Walter Reed Army Medical Center (WRAMC), the Armed Forces Institute of Pathology (AFIP), the Washington Hospital Center, and the Walter Reed Army Institute of Research (WRAIR). This year's events included internationally known keynote speakers as well as presentations of on-going research by USU faculty, USU graduate students, and investigators from the above-listed affiliated institutions. This year's three symposia, workshop and poster presenting sessions addressed: career development strategies for graduate students; emerging issues in proteomics and bioinformatics; technology transfer; and, ethical issues in research with human subjects. A special panel on bioterrorism featured: **The Honorable Saxby Chambliss, former member of the United States House of Representatives from Georgia; United States Ambassador, The Honorable Donald A. Mahley; Debra Krikorian, Ph.D., United States Army Medical Research and Materiel Command**; and, faculty from both USU and AFRRI.

During the Research Day Dinner, held on May 15, 2002, two awards were presented to those faculty members who were determined to have made significant contributions to research during the past three years. The selection process included a review of nominations from the USU faculty by a subset of the USU Merit Review Committee, which selected the two recipients. **Ignacio Provencio, Ph.D., Assistant Professor, USU SOM Department of Anatomy, Physiology and Genetics,** received the *Henry Wu Basic Science Research Award*; and, **Andre Dubois, M.D., Ph.D., Research Professor, USU SOM Department of Medicine,** received the *James Leonard Clinical Science Research Award.*

The 2002 Graduate Student Colloquium, established in 1980, featured: a career workshop organized by the students; platform and poster presentations given by students; and, the *John W. Bullard Lecture*. The Career

Development Workshop consisted of seven presentations by accomplished individuals working in various aspects of the scientific enterprise. They ranged from medical school faculty, to scientific review administrators, to patent lawyers involved with biotechnology, to a study director at the National Academy of Science. Nine scientific poster presentations by graduate students were followed by a lunch, which included the Bullard Lecturer and six oral presentations by students. The *2002 Bullard Lecture* was presented by **Marc K. Jenkins, Ph.D., Professor, Department of Microbiology, University of Minnesota,** on *Tracking the Generation of Memory CD4T Cells in vivo*. Awards were given for the best poster and platform presentation.

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USU Center for Laboratory Animal Medicine, Veterinary Surgery Division. On November 5, 2002, the USU Center for Laboratory Animal Medicine received confirmation of continued accreditation from the Council on Accreditation of the Association for the Assessment and Accreditation of Laboratory Animal Care, International (AAALAC). AAALAC is a private, nonprofit organization that promotes the humane treatment of animals in science through a voluntary accreditation program. AALAC's voluntary accreditation process is a way in which animal research programs demonstrate that they not only meet the minimum standards required by law, but are exceeding those standards to achieve excellence in animal care and use.

> **The Council on Accreditation of the AAALAC has reviewed the report of the recent site visit to USUHS... The Council commends you and your staff for providing and maintaining a high quality program of laboratory animal care and use. Especially noteworthy were the commitment and dedication of personnel at all levels, the Institutional Animal Care and Use Committee's program oversight and monitoring, the outstanding husbandry practices, and the well maintained facilities. In addition, development of the rodent breeding database and efforts focused on environmental enrichment were commendable. The Council is pleased to inform you that the program conforms with AAALAC International standards as set forth by the Guide for the Care and Use of Laboratory Animals, NRC, 1996. Therefore, FULL ACCREDITATION shall continue.**

Background. During 2002, the USU Veterinary Surgery Division (VSD) of the Center for Laboratory Animal Medicine provided full surgical training support to qualified USU faculty supporting both teaching and research protocols. VSD is composed of two large teaching laboratories and two operating rooms used chiefly for research protocols involving non-rodent species. These areas are equipped with modern surgical and surgical support equipment, which allows comprehensive care and monitoring. Support areas include separate instrument cleaning and sterilization rooms, a surgeon's scrub area, and a large multi-purpose room used for both pre-operative procedures and post-operative recovery. During 2002, a third operating room was utilized by a LASER research team for special procedures.

Current Activities. A variety of significant teaching laboratories were conducted during 2002 by the VSD. These laboratories provided students with invaluable experience working with biological tissue; and, the laboratories were frequently reported by the medical students to be one of their most valuable learning experiences. The teaching laboratories provide the students with the opportunity to gain experience in basic surgical skills and the proper handling of tissue among other critical techniques. These skills help students to more effectively

function during their future residencies and in the practice of medicine. Also, in the event that as military physicians they will be deployed under battlefield conditions, the familiarity and heightened skill level afforded by the teaching laboratories can prove to be of significant value. Students are exposed to a combination of training techniques prior to specific training on the use of animals. The use of computer simulation and mechanical surgical simulation devices complements the students' surgical training experiences and also reduces the number of animals required to provide the necessary training. Navy corpsmen staff the VSD; all are trained human surgical technicians, which enables a solid professional relationship between veterinary surgery staff members, surgeons, and students. The corpsmen also contribute significant preoperative and monitoring skills to all of the teaching laboratories of the Multidiscipline Laboratories. An assignment to USU has been found to tremendously broaden the experience of the corpsmen and to afford a unique training opportunity through the combination of human surgical skills with current veterinary technology. Also, co-located with the surgical section are radiology support services that include a human hospital GE Advantx X-ray unit equipped with fluoroscopy. This equipment allows advanced diagnostic capabilities for the central animal facility and serves as a tremendous resource for USU investigators. In November of 2002, a water-softening system was installed in the LAM cage washing area; this system now assists in decreasing the build-up of harmful mineral deposits in the cage washing machinery, thus extending the *life* of this critical equipment. In addition, the old flooring was removed in the G200 area (area that houses the large animal species) and replaced with epoxy-resin flooring, which will allow for enhanced sanitation practices and ensure a safe and comfortable environment for the research animals hosted in this area.

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USU Barrier Facility. A rodent barrier facility occupying approximately 2,558 square feet within the USU Central Animal Facility is capable of housing 6,000 mice. This resource was conceived and developed by the Vice President for Teaching and Research Support and veterinarians from the Center for Laboratory Animal Management, along with input from the USU Institutional Animal Care and Use Committee, and interested USU investigators. The facility, opened during 1999, is equipped to accommodate the needs of USU investigators whose protocols require that research animals (rodents) be kept under ultra clean conditions. Ultra clean conditions are necessary to reduce the chance of pathogen exposure, which could have devastating effects on research goals and potentially result in the waste of animal lives, investigators' time, and related resources. The facility is also intended for the housing of transgenic mice (mice that have been altered genetically to simulate disease states or modified biochemical conditions).

The Barrier Facility includes one full-time technician who is specifically trained in transgenic techniques and is capable of producing transgenic animals; the technician daily monitors animals housed within the barrier and is responsible for: 1) written entry procedures (which include the use of personal protective equipment) and the restriction of non-essential personnel; and, 2) the conduction of training on barrier-housed animal handling procedures. Equipment acquisitions in support of the barrier include ten additional ventilated cage racks and a computerized, controlled-rate freezer for the cryopreservation of crucial reproductive elements (embryos, eggs, and sperm). The controlled-rate freezer is a state-of-the-art piece of equipment that allows the long-term storage of frozen mouse embryos. Once a transgenic or other valuable mouse line is developed, the cryopreservation technique keeps that line viable without having to house large numbers of breeding animals to maintain the line. When a particular mouse line is required, the embryos are thawed, implanted, and normal breeding of the line continues. This saves a tremendous amount of space and resources that would normally be required for maintaining a breeding colony. *The capability to produce transgenic animals for investigators is a research tool that is not available at other Department of Defense research facilities in the National Capital Region.*

The barrier is equipped with a limited access card key system and consists of four sections: an autoclave area with two physically separate rooms; five clean animal holding rooms; one procedure room; a laboratory for transgenic surgical and manipulative procedures; and, a storage area. One of the animal holding rooms can be used as a quarantine room for animals awaiting final clearance of health status. All barrier mice are housed in specially ventilated cage racks, such that the animals are only exposed to highly filtered (sterile) air. All supplies (caging, bedding, food, and water) are sterilized prior to entry or use in the barrier. The transfer of mice from soiled caging to clean cages is performed in a positive pressure laminar flow cabinet, which further ensures protection from pathogenic agents. The USU barrier has the distinction of being free of rodent diseases due to the significant efforts of the USU staff.

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Implementation of Safety Strategies. The overall mission of the USU Center for Environmental Health and Occupational Safety (EHS) is to provide a safe and healthy environment for employees and the general public. The center consists of a highly trained team of professionals dedicated to preventing/minimizing environmental and safety concerns through the provision of proactive, prompt, and reasonable health and safety recommendations for all personnel assigned at USU. Primary areas of concern, during 2002, were centered on protecting the USU community from chemical, biological, radiological, and physical hazards.

The Center is composed of three divisions: the Occupational Medicine Division; the Radiation Safety Division; and, the Bioenvironmental Engineering Division. Significant activities were conducted, during 2002, to improve the overall safety climate of the University and a number of long-term goals were realized.

The Establishment of two University Committees on Safety and the Management of Lasers. Two long-standing deficiencies were corrected, in 2002, with the establishment of two formal University committees: the Safety Committee and the Laser Safety Committee. The University has long had a number of key elements for its safety program reviewed by various committees; but, there had never been an over-reaching entity to manage this effort. In a similar manner, USU did not have a formal entity for reviewing the overall management of hazardous lasers. A USU committee, consisting of representatives from the major laser users and the EHS staff, was created to meet this need and to meet the guidelines, rules, and regulations regarding the use of lasers.

EHS Secures on-going CDC Select Agent Registration and Nuclear Regulatory Commission Registration for the USU Community. The Center for EHS is responsible for managing a number of permits, licenses, and agreements established between the University and its regulating agencies. Two of these documents were revised and renewed during 2002: the CDC Select Agent Registration (three years); and, the Nuclear Regulatory Commission (NRC) Irradiator License (ten years). Both of these documents represent significant efforts on the part of EHS and allow the University to continue to conduct research in these vital areas. The Center is also responsible for providing the University with safe operating instructions covering the following areas: Biohazard Suite Management; Smoking; Minors Working in the University; and, Incident Reporting. All were updated or established, during 2002, through coordination with various USU activities. The Radiation Safety Division is producing, in coordination with the USU research community, a comprehensive radiation safety laboratory notebook that will organize and provide all of the required forms, instructions, permits, contact information, and other

relevant material in one location, consistent from lab to lab, across the USU campus. All of the EHS Divisions provide training on various topics; efforts are made to continually improve this training and to explore as many alternate training methods as possible.

The day-to-day management of EHS efforts requires a tremendous level of organization, documentation, and interaction with various activities throughout USU. To assist in this effort, the Center purchased a comprehensive data base management system, which was an expansion of the current system in use by the Radiation Safety Division. The program not only provides a structure to the EHS efforts, it also contains a web interface that allows Principal Investigators to: review their chemical, biological, and radioactive material inventories; maintain the training status of employees; and, request services. Other significant efforts include the support required to bring Building 139 on board, which required amending the NRC license to include Building 139 as an authorized radioactive material-use location and establishing chemical and radiological waste and evaluation processes for use by the personnel housed within Building 139. There has also been an increased focus on fire and physical safety concerns throughout the USU laboratories.

The EHS Occupational Health Division has been working diligently with the USU community reference anti-smoking efforts and the installation of self-reading blood pressure equipment. This proactive approach to problem solving was well received during 2002. The Center for EHS also experienced a major turn-over of senior staff during the past year, to include: the Director, EHS; the Director of the Bioenvironmental Engineering Division; and, the departure of enlisted personnel. Despite these disruptions, the Center was able to focus on its mission and successfully meet the needs of the USU community. Senior staff, such as **Christopher Holland, M.D.,** and **Lieutenant Colonel Mark Bower, Director, EHS,** were asked to provide expertise to various Federal entities. Doctor Holland was selected to serve as the Chair of the Expert Medical Panel on Biohazards by the United States Environmental Protection Agency; and, he provided medical support for the Anthrax Project at the Anthrax Center in Washington, D.C. LTC Bower conducted audits of the radiation protection programs at the Walter Reed Army Medical Center, the Armed Forces Radiobiology Research Institute, and the Center for Health Promotion and Preventive Medicine. He was also a presenter in the *Medical Effects of Ionizing Radiation (MEIR) Course* at Fort Lewis, Washington.

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SOM Department of Psychiatry Sponsors a Collaborative Relationship with the Stanley Laboratory of Brain Research.

> **The Stanley Brain Bank, part of the Stanley Medical Research Institute, is made possible through the generous funding of the Theodore and Vada Stanley Foundation... The Brain Bank is part of the School of Medicine Department of Psychiatry of the Uniformed Services University of the Health Sciences and is located on the grounds of the National Naval Medical Center in Bethesda, Maryland. The Stanley Brain Bank now has 500 specimens; in addition to using the tissue for its own research, the Stanley Brain Bank has sent over 100,000 sections and blocks to 120 research groups around the world. At most national and international research meetings on schizophrenia and bipolar disorder, at least half of the presentations and posters on neuropathology reflect work utilizing tissue from the Stanley Brain Bank.**
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> - **E. Fuller Torrey, M.D., Executive Director, the Stanley Foundation Research Programs on Schizophrenia and Bipolar Disorder**, *Stanley Brain Bank Newsletter*, No. 10: Spring 2002.

Background. In February of 1999, during a ribbon-cutting ceremony, the University President welcomed the Stanley Laboratory of Brain Research to the SOM Department of Psychiatry. Through a collaborative arrangement with the University, the School of Medicine, and the Stanley Foundation, the USU community now has access to the Stanley Laboratory's brain specimens from individuals who suffered from diseases such as schizophrenia, bipolar disorder, and severe depression - the largest of such collections in the World. The Stanley Foundation Brain Bank and Neuropathology Consortium is made possible through funding from the Theodore and Vada Stanley Foundation. Its purpose is to collect postmortem brain tissue and to distribute it, without charge, to research groups working on schizophrenia and bipolar disorder (manic-depressive illness).

Current Activities. **E. Fuller Torrey, M.D.**, and his research group continued to provide outstanding expertise to the University throughout 2002. The Stanley Foundation postmortem brain collection for research on schizophrenia and bipolar disorder has over 500 specimens; the USU Laboratory has distributed more than 100,000 sections and blocks of tissue to 120 research laboratories worldwide that are conducting research on these diseases. Some 55 large freezers contain the collection located at the Brain Research Laboratory in the USU SOM Department of Psychiatry. The specimens are approximately evenly divided among individuals who were diagnosed with schizophrenia, bipolar disorder (manic-depressive illness), severe depression, and normal controls. Most of the specimens are provided to researchers doing research on schizophrenia, bipolar disorder or depression. For example, during 2000, the Stanley Foundation donated a normal control specimen to a World Health Organization project dedicated toward the establishment of worldwide standards for brain tissue for comparison with prion-caused diseases such as Creutzfeldt-Jakob Syndrome. On April 9, 2001, The Washington Post featured Doctor Torrey in an article entitled, *Thinking Outside the Box*. The article included the following statement: *The Stanley Foundation is supporting a quarter of the research on schizophrenia and half of the research on manic-depression in both the United States and Europe*. And, in April of 2002, Doctor Torrey's article, *Severe Psychiatric Disorders May Be Increasing*, was published in Psychiatric Times, Volume XIX, Issue 4, April 2002.

When the Stanley Foundation initially assumed responsibility for the Neuropathology Consortium, it looked forward to the day when it would have hundreds of measurements on the same parts of the brain from many different laboratories. That task is being addressed through the work of **Doctor Michael Knable** who is assessing over 1,000 markers of brain function in the prefrontal cortex, cingulate, hippocampus, and superior temporal area. Many abnormalities from this study have already been published in Brain Research Bulletin (Volume 55, pages 651-659, 2001) and Clinical Neuroscience Research (Volume 2, pages 171-181, 2002); other publications are in progress.

In May of 2001, Morley Safer of *60 Minutes* interviewed Doctor Torrey with a focus on his research on schizophrenia and bipolar disorder. That interview was featured on the April 21, 2002 edition of *60 Minutes*. Doctor Torrey co-authored the book, Surviving Manic Depression: A Manual on Bipolar Disorder for Patients, Families and Providers (published by Basic Books, 2002); and, he was profiled in the American Medical News and the Stanford Magazine.

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Information Technology.

Background. During 1994, committees were formed at the University by the School of Medicine and the Faculty Senate to address USU's future use of computers and technology in general. With the future development of Information Technology (IT) and Medical Informatics at USU in mind, the University President sent a delegation of seven USU representatives to the American Association of Medical Colleges (AAMC) Information Technology Conference. The conference served to reenforce the University's inclusion of computer-assisted communication and technology within its strategic planning process. With total support from the leadership at USU, strategic goals were developed so that Medical Informatics would be utilized to emphasize distance learning, continuing medical education, computer-assisted medical education, access to medical databases, and other medical information systems. The focus of those efforts, in accordance with the University's mission, would be on the unique educational requirements of military and disaster medicine. In October of 1997, a number of USU information technology-related committees were combined to form the Automated Information Systems Policy Committee (AISPC). This committee has met, as required, to review guidance and objectives, identify resources, develop requirements, and plan information technology policy strategies and training.

Extensive technical improvements continued throughout 2002 in the following areas: servers; desktop computers; software development; teleconferencing; e-mail; network; and, teaching facilities. The USU Information Services Management Center (UIS), while continuously responding to user concerns, long-range technology refreshment plans, and the USU Strategic Plan, continues to implement numerous projects, in collaboration with USU's Core Management, to improve technology services, products, and its working relationships with the USU community. Improvements reported during 2002 include the following: **Servers:** Developed in-bound and out-bound servers for scanning e-mail. **E-mail:** Reduced the number of e-mail distribution lists maintained by UIS in support of the University's Strategic Plan. **Network:** Implemented the acquisition of large optical storage devices to support the archival requirements for University data. **Enterprise Database:** Successfully implemented the Personnel Locator System, which is Phase I of the University's Corporate Database System. **University Homepage:** The USU Homepage contains thousands of pages of information and over 33,000 links to additional information; the vast majority of USU departments now have active homepages and many are sharing teaching

and research information via the Internet on a regular basis; during 2002, USU Webmasters provided major support for the University's core web pages, to include compliance with Section 508 of the Federal Accessibility Act. **Training:** The UIS training officer provides on-going, face-to-face training for faculty, students, staff and Information System Coordinators, in addition to publishing a quarterly electronic newsletter, which provides information on IT issues; during 2002, the UIS training officer also developed the UIS Quick Reference Guide in support of the University's Strategic Plan. **Desktop Computers:** During 2002, UIS continued its on-going management of a three-year technology refreshment cycle for 916 desktop computers within the University and managed all of the USU-supported software for the central computing facilities. **Centralized Software and Support:** UIS tested, recommended, and implemented UIS-supported software, to include Operating Systems. **Teleconferencing:** UIS substantially improved systems for up- and down-links for the University's video teleconferencing systems. **UIS Professional Training.** UIS personnel continued to receive certification and training (e.g., MCP, MCSE, Oracle, Contracting, Supervisory, and Networking) that was utilized throughout the various USU departments and activities.

Customer Support. During 2002, UIS provided support for: almost 3,000 information systems users with: accessing e-mail, remote dial-in accounts, Internet Protocol (IP) and IP2 connections, and satellite and software applications; 1,500 dial-in-users; 2,750 telephone and fax lines; and, 1,200 Voicemail Systems located on campus, off-site at the National Naval Medical Center, other DoD facilities, and at some non-DoD entities. In addition, as the owner of a Class B Internet Protocol License, USU acts as an Internet Service Provider (ISP) for the National Naval Medical Center and 12 off-site DoD activities from Groton, Connecticut to Quantico, Virginia.

Desktop Computers. Following Assistant Secretary of Defense, Health Affairs (ASD/HA) guidance, a plan to lease desktop computers by the University has been implemented since 1998. The plan calls for all basic office automation and teaching computers to be replaced with leased systems. The UIS Helpdesk is about to oversee the fourth phase of the University's desktop computer leasing program. In 2002, 916 desktop computers were in a three-year technology refreshment cycle. The scheduled addition and cycled replacement of 342 leased computers took place during 2002. This process successfully ensures standardization, technology refreshment, enhanced budget planning, compatibility, and improved user support. UIS continues to manage $500,000 in contracts to support the leased machines and $256,000 to support software licenses for the central computing facilities.

Help Desk. A set of desktop tools, also based on ASD/HA guidance and USU requirements, was recommended by the AISPC and approved by the USU President. In addition, the University signed an agreement under a Maryland State Educational Contract (the Maryland Enterprise Educational Consortium (MEEC) with the Microsoft Corporation that provides site licenses at significantly reduced educational rates. This agreement allows the UIS Help Desk to make the latest Microsoft software available to all faculty, staff, and students. The selection of a single set of desktop tools has greatly simplified user support and improved the Help Desk response. During 2002, the Help Desk received 6,839 requests for assistance. The Help Desk resolved 3,422 customer requests, which included 145 tickets for dial-up requests and over 170 tickets for viruses; the remaining requests were assigned to other branches within UIS for action. Throughout the year, the UIS Help Desk alerts USU customers reference potential viruses and provides advice on the resolution of, and protection from, their harmful impact. Successful Help Desk projects during 2002 included: IP tracking and database maintenance; testing and deploying new software products; deployment and replacement of two rounds of leased machines; and, management

of USU supported products. The UIS Help Desk personnel continue to increase their knowledge through in-house training on standard operating procedures and off-site training to acquire professional certification, which, in turn, contributes to the reduction of calls and an increase in user productivity.

Software Development. In 2002, the UIS Information Engineering Branch (IEB) successfully deployed the USU Personnel Locator, a component of the USU Corporate Database. The Personnel Locator is a web-based, on-line directory of USU faculty, staff, students, and contractors. Viewable via a web browser, it provides location information such as the individual's telephone number, room number, organizational title, and other location information. Additionally, the on-line USU Phonebook was developed in conjunction with the Personnel Locator. Both applications replace old legacy systems. During 2002, the Information Engineering Branch successfully completed the analysis and design phase of software applications that support the Graduate Education Office, the Alumni Office, and the Laboratory Animal Medicine Center, all of which are components of the Corporate Database. These systems are scheduled for deployment in 2003. In 2002, IEB processed 1,038 customer requests. The Branch continues to staff a stable development team comprised of experienced software developers and a Database Administrator. The staff members hold Oracle and Microsoft professional certifications and employ the systems development life-cycle methodology in all software engineering projects. IEB formalized the processes for: performing systems analysis; confirming system requirements; implementing software code reuse; software testing; and, system roll-out, including system documentation and training. In an effort to provide the University with a state-of-the-art software application, IEB acquired upgraded Oracle 9i software, which allows former client-based applications to be converted into web-based applications.

Web Support. In 2002, the UIS Operations Division maintained and supported three web servers - *Primary*, *Interim*, and *Back-Up*. The Primary Web Server hosted over 3,500 web pages; it runs under Sun Solaris with a Netscape Enterprise Server as the web engine. The Sun Solaris administrator upgraded the operating system and created a procedure to watch the web server process for errors. If an error occurs, the procedure automatically logs the error and restarts the process, thus creating a 99 percent up-time status. The Interim web server supported 85 Page Masters within the University. The server runs under Red Hat Linux with Apache as the web engine. The administrator has patched security holes on this server, which creates a 99 percent up-time status. A new process for the back-up web server was installed to automatically update the web pages from the primary web server, thus allowing the back-up server to stay current with the primary web server. In 2002, the USU Web Masters from the UIS Information Engineering Branch continued to provide support to the University's Page Masters. This included a formal training program for the development and implementation of Section 508 of the Federal Accessibility Act, the use of the Interim and Operational Server, as well as a Page Master's User Guide for reference.

Web Development. Web development projects, during 2002, included the USU Personnel Locator, the USU Marine Corps Survey (second year), and the USU Social Work Conference (second year). The Web Masters used a systematic methodology to perform web development activities; web projects were developed using Microsoft ASP and ran on a Microsoft IIS server in a Windows 2000 environment. To ensure data integrity and security from intrusions, all servers were routinely monitored and backed-up.

Training. During 2002, the UIS Training Officer provided classroom training for all SOM, GSN, MPH, and Graduate Students at USU, as well as for personnel located at off-campus sites to include USU's leased space at Silver Spring, Maryland; the Walter Reed Army Medical Center; and, the National Naval Medical Center. The Training Officer also provided training for the newly developed USU Faculty and Staff Orientations, which are held quarterly. Specialized *hands-on* and *one-on-one* training were provided for users on Microsoft Applications, GroupWiseE-Mail, the proper use of network and computer resources, and network security. Support was also provided for all UIS software and special requirements. The Training Officer, partnered with the USU Security Office, provided annual security awareness training required for all faculty, staff, and students. Also, during 2002, the UIS Training Officer electronically distributed issues of the UIS Newsletter; developed and published the *UIS Quick Reference Guide*; and, developed a *UIS User's Guide*, currently in draft form. Both guides were developed in response to the University's strategic planning efforts to improve on-site and off-site communication.

System Operations. In 2002, UIS System Operations (Network, Telecommunications, NetWare, and VAX) produced significant gains in the stabilization of the network. General hardware remained the same, while a large emphasis was placed on server stability and the formulation of a USU-approved security policy; this security policy was implemented on servers, as well as firewalls and other support devices. Again, USU experienced a University WEB exposure of over 99 percent uninterrupted up-time.

Network. Network personnel are responsible for the University's network design, implementation, maintenance, and configuration management. In 2002, the UIS System Operations Division managed to keep all local distribution systems on-line with very limited down-time. A virus scanning filtering system was put in place using an open source product (LINUX). *This product prohibited more than 4,250 viruses from entering the University in 2002*, greatly reducing the quantity of viruses to which the University systems were exposed. The large data storage unit was brought on-line and produced an active on-line data retrieval system. Network Operations development and monitoring have produced a more robust and pro-active response to equipment failure. The Bethesda Naval Base Network, which is maintained by USU, retained 100 percent connectivity with a 99.9 percent Internet access. Loss of connectivity only occurred when planned maintenance was scheduled or when system updates were required.

Telecommunications. In 2002, UIS Communications personnel provided support for: 2,236 voice and fax telephone lines; 1,200 voice mailboxes; and, video teleconferencing and satellite technical assistance for a wide variety of users. Significant improvements were made in the reliability of communications, video conferencing, and satellite services. New telephone lines and support equipment were installed in several newly acquired locations. In addition, numerous telephone lines and support equipment had to be replaced throughout Buildings B and C. Video conference technology support was provided to the Graduate School of Nursing (GSN) for the VA/DoD Distance Learning Program as well as to the School of Medicine (SOM) Departments of Medicine, Preventive Medicine and Biometrics, Medical and Clinical Psychology, and Obstetrics and Gynecology. Satellite programs were also downloaded for the SOM Department of Preventive Medicine and Biometrics and the Armed Forces Radiology Research Institute (AFRRI). During 2002, the Telecommunications Branch processed 1,104 customer requests. The Branch was also responsible for upgrading the ATM circuit from 10 Mbps to 15 Mbps and for the installation of the Verizon Internet dial-up modem, which provides for faster and more reliable Internet connection and should minimize the current costly and more unreliable analog modem bank. During the

same period, forty-seven analog lines were determined to be no longer in use and were disconnected, resulting in annual savings for line rental fees. In addition, the Telecommunications Branch provided assistance to the Telecommunications Services Control Office (TSCO) at the National Medical Education Training Center (NMETC) in determining communications requirements, ordering equipment and service through the use of the WITS on-line ordering system; the Branch also assisted the NMETC TSCO in establishing an inventory database and provided instructions in the programming of various ISDN telephones in use within the NMETC command.

Netware. In 2002, the UIS Netware Branch processed more than 1,280 customer requests. Responsible for the Novell Local Area Network (LAN), the GroupWise E-Mail Servers, and two in-bound and out-bound servers, the Netware Administrators provided maintenance support for the following: back-up of over 600 gigabytes of data; space allocations; on-line support of hardware failures; virus protection; testing and implementing vendor patches and upgrades; LAN account creation and deletion; reliable mail and file storage; and, the maintenance, creation, and attrition of over 3,000 e-mail accounts and over 450 dial-in accounts.

VAX. The VAX Administrator processed more than 95 customer requests in 2002. The VAX Administrator is responsible for: system maintenance; account creation; hardware configuration; and, upgrading the Operating System to resolve problems that can cause frequent system crashes. The VAX Administrator successfully replaced the University's older and slower mainframe, which supported the USU financial system, with a more robust computer system. This replacement was performed at no cost the University. In addition, the VAX Administrator: reduced the overall cost of contracts by modifying equipment contracts; increased performance and reliability by adding enhanced disc drives; improved central support through the installation of software upgrades; and, enhanced the management of user accounts and print services.

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Technology Transfer Program.

Background. Since 1980, Federal law has encouraged Federal laboratories and public academic institutions to transfer inventions and other technology to the public sector, which includes industry, state and local governments, and other academic institutions. This "technology transfer" process allows the benefits of public investment in research and development to be shared with all segments of our society. At the same time, institutions which invest public and tax-free funds in research are permitted to share in the downstream financial benefits of this investment - returning funds for use in further research and to provide limited financial incentives for individual researchers. Technology transfer includes cooperative research and development, patenting and protection of intellectual property, and licensing of inventions in return for a percentage of royalties. Because of the legal issues associated with these mechanisms and other aspects of technology transfer, the USU Office of the General Counsel is directly involved in the oversight of the University's Technology Transfer Program. Recognizing the need to monitor and market the growing patent and intellectual property developed by the University faculty, the USU President determined that the Technology Transfer Program should be recognized as a formal entity within the University. In 1999, the USU Technology Transfer Program was formally recognized with a mission to enhance interrelationships with USU researchers and to facilitate interaction with the DoD Patent Office.

Since the establishment of the USU Technology Transfer Program by the USU President in 1999, it has become one of the most productive and successful income producers among all government agencies. This success has enabled the University to provide substantial funding support for USU research and significant monetary awards to individual scientists. University initiatives are advanced through the use of collaborative research and development agreements, licensing inventions, intellectual property protection, and partnering with designated patent management organizations. The Technology Transfer Program functions under the requirements of the Federal Technology Transfer Act of 1986 and related legislation, which encouraged making technology developed in Federal laboratories available to the public. As discussed above, the goals of the Act are to promote the disclosure of inventions and product development, stimulate economic development and promote research collaboration between Federal laboratories, public academic institutions, private industry, state and local governments, state-sponsored organizations, and other academic institutions.

Current Activities. Because the University is a leader in many areas of biomedical research, an academic institution, and includes Federal laboratories, the USU Technology Transfer Program has been, and continues to be, a successful effort. A significant indicator of the success of this program is its efficient facilitation of the sharing of the USU research in a manner that promotes progress in science and improvement in the quality of health care for both the Armed Forces and the world community. In 2002, the University entered into: seven Cooperative Research and Development Agreements (CRADAs); 54 Material Transfer Agreements filed in cooperation with the Henry M. Jackson Foundation (HJF); 13 patent applications; and, 14 provisional patent applications. And, USU licensed seven inventions. In addition, numerous faculty researchers received information and guidance from the staffs of the USU Office of Technology Transfer and the HJF Office of Technology Commercialization. Significant efforts were also made in managing and maintaining previously protected intellectual property, CRADAs, and licenses. Significant highlights, during 2002, also include: 1) continued development, in conjunction with HJF and several faculty members, of a Joint Patent and Technology Review Group; 2) involvement in the University's annual Research Day, including participation in a break-out session on technology transfer; 3) funding of short- and long-term research and educational efforts through special project funds and endowment accounts administered by the HJF; 4) direct funding support for the SOM's newly established Institute for Vaccine Research; 5) royalty sharing for nine faculty researchers; and, 6) assistance reference the limited funding of graduate student stipends.

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RESOURCE STEWARDSHIP

We will optimize resources to efficiently and effectively implement USU core capabilities.

- USU Strategic Plan, Goal 3.

New Construction on the USU Campus.

Background. Since 1978, there has been no additive construction to support USU activities despite the growth in the number of degree-granting programs conducted by the University and major increases in the cost-effective oversight responsibilities assigned to the USU by the Office of the Assistant Secretary of Defense for Health Affairs (OASD/HA). Some of the expanded responsibilities include: the Graduate School of Nursing (GSN); administration of the TriService Graduate Medical Education (GME) Programs for the National Capital Region; mandated professional Continuing Health Education (CHE); and, essential credentialing programs for the MHS. In addition, *the accrediting entities for the University have continuously recommended that USU address the expanded academic program requirements for small classrooms; and, they have expressed serious concerns over the separation of the GSN faculty and students between two locations, which adversely impacts student instruction, mentorship, and counseling*. Between September 1993 and December 1997, USU was prohibited from participating in the military construction process. However, following the December 1997 decision of the Secretary of Defense that the University should remain open, as stated in Program Budget Decision 711, the USU Vice President for Administration and Management (VAM) was directed by the USU President to provide oversight for the resubmission of all documentation and related efforts required for the construction of a fifth building on the USU campus.

On April 4, 1997, a Health Affairs site team determined that the construction of a fifth building at USU in Fiscal Year 2001 would eliminate leasing costs and would be cost-effective. Following that determination and extensive coordination by the VAM, on March 26, 1998, Design Authorization 98-N-10 was provided to the Naval Facilities Engineering Command with the following directions: 1) the inclusion was to take place in Fiscal Year 2001; 2) the scope of construction was to include 8,312 gross square meters; 3) the design amount was $15,000,000; and, 4) DD Form 1391 and a Draft Program for Design were provided with the authorization. The Navy Facilities Engineering Command completed its call for contractor bids on the design requirements for the USU construction project and remained on hold until the USU construction was approved by Health Affairs. In May of 1998, Health Affairs determined that construction at USU would not be included in the Fiscal Year 1999 Defense Health Program (DHP) MILCON package; and, the Surgeons General would be required to identify funding from their Medical Construction Programs if the USU project were to be included in the DHP MILCON Program. *In June of 1998, the Senate Committee for the 1999 Military Construction Appropriation Bill urged "the Department of Defense to address the requirement for a fifth building construction project in the Fiscal Year 2000 budget."*

During 1999, *the Military Construction Appropriations Bill for FY2000 included the following: "The Tricare Management Agency is directed to accelerate the design of this project* (the construction of a fifth building on the USU campus), *and to include the required construction funding in its fiscal year 2001 budget request."* In

response to the congressional directive, and, in its capacity as the Executive Agent for USU, on October 26, 1999, the Navy Bureau of Medicine (BUMED) Facilities Planning and Programming Division initiated the contracting process for a Project Planning Study. The first phase of the USU Project Planning Study, to develop a quantifiable needs assessment for space, began on December 6, 1999, at the USU campus. To facilitate the verification of the study, the Office of the Surgeon General of the Navy also established a Study Team to discuss and validate the identified requirements with appropriate entities within the MHS; and, the USU President also established an *ad hoc* committee to assist the VAM. A contractor was hired by BUMED, using USU funding, to prepare supporting documentation and the planning study.

To accommodate the rapid turn-around of the first phase of the study, which was to be provided in draft form to the TRICARE Management Agency by late January of 2000, the VAM organized and provided to all concerned parties, inclusive background notebooks that provided documentation, projected space requirements, and mission-related information for the nine entities included in the Planning Study: **1)** the Graduate School of Nursing (GSN faculty and staff are housed in leased space in Silver Spring, Maryland; the separation of faculty and students has been identified as a concern by the GSN accrediting entities; the new construction would: unify the GSN faculty, staff, and students; eliminate the leasing of space; and, facilitate the degree-granting GSN distance learning programs); **2)** USU small classrooms and lecture halls are scheduled at capacity and do not allow flexibility for the SOM or the GSN; the new construction would provide some 12,065 gross square feet of urgently required small classroom and lecture areas with distance learning/military readiness capabilities); **3)** Continuing Education for Health Professionals; **4)** the Military Training Network; **5)** Graduate Medical Education (to include the Administrative Office for the National Capital Consortium); **6)** the Office of Educational Affairs (to include USU readiness and simulation requirements); **7)** the Preventive Medicine and Biometrics TriService Tropical Medicine and Master of Public Health Programs; **8)** the TriService Nursing Research Program; and, **9)** requirements of the Office of the USU President, to include the USU Chaplain.

<u>BUMED Study Validates the Proposed Construction.</u> The BUMED Study Team focused on two primary areas of concern: 1) the functional shortfall of current and projected requirements for small, multi-functional, and multi-configuration capable classrooms; and, 2) the cost-effective relocation of the Graduate School of Nursing (GSN), Continuing Education for Health Professionals (CHE), the Military Training Network (MTN), and Preventive Medicine and Biometrics (PMB) staff from leased space to the USU campus. The BUMED Study Team coordinated a justification/validation process with the Services for the requested space. Following the validation process, a memorandum was completed by BUMED and forwarded by the Navy Surgeon General on February 17, 2000, to the Chair of the USU Executive Committee; the memorandum recommended that the Surgeons General pursue a joint decision to program funding for the proposed construction of Building E on the USU campus. On April 12, 2000, USU was informed by BUMED that a consensus had been reached among the Surgeons General on the following factors that represented the position of the USU Executive Committee: 1) the project represents validated space requirements and is needed; 2) the current estimated project cost ($9 million) is appropriate; and, 3) the project should be programmed by TMA (TRICARE Management Activity) utilizing standard MILCON processing milestones (i.e., FY05 or later). *On September 25, 2001, USU was notified by BUMED that its construction project was in the TRISERVICE Medical MILCON Program for Fiscal Year 2006 at a total cost of $9,300,000.*

<u>Scope of the Construction Project.</u> The total scope of the proposed construction project is 56,020 gross square feet, which includes underground parking. The Program for Design distributes 41,055 gross square feet to meet the University's requirements for ample circulation associated with the movement of students and staff

between classrooms. The 41,055 square feet will be constructed with a fibre-optic backbone throughout the occupied portions of the building and connected to the existing USU IT network. Breakout of the 41,055 square feet reflects as follows: Education Offices/Administrative Support - 21,315 gross square feet; Classroom/Classroom Support Space - 12,065 gross square feet; General Support (Toilets/Lockers, etc.) - 4,346 gross square feet; Distance Education Production Laboratory (Studio) - 2,654 gross square feet; and, Computer Learning/Testing Area (20 Stations) - 675 gross square feet.

Final Study Required for the USU MILCON Project Is Completed. The coordination process for the proposed USU construction project was developed using the Defense Medical Facilities Office, Office of the Assistant Secretary of Defense for Health Affairs Space and Equipment Planning Systems (SEPS). From November of 1999 through January of 2003, **Mr. James Burke**, Bureau of Medicine Facilities Division, provided extraordinary support to the USU VAM in the successful management of the entire process. The Bureau of Medicine, the Engineering Field Activity Chesapeake, the Naval Facilities Engineering Command, and the TRICARE Management Activity, Health Affairs, directly coordinated in the development of the construction project for USU. *The following studies/analyses were completed and provided in a Project Notebook dated October 2000:* the DD Form 1391; the Facility Study (to include graphic materials); the Site Survey Checklist; the Program for Design; the Economic Analysis; the Planning Study (to include validation of requirements); and, the Statement of Architectural Engineering Services. The *Environmental Assessment Study*, a process initiated in October of 2000, was coordinated and subsequently completed. In mid-November of 2001, USU was informed that the proposed construction would not adversely impact the environment; and, an Environmental Impact Statement would not be warranted. Based upon the Environmental Assessment findings, on November 29, 2001, USU forwarded, through its Chain-of-Command, a request to the Chief of Naval Operations (CNO) for a formal determination that the proposed construction on the USU campus would have no significant impact on the environment; *CNO findings of no significant impact and approval of the environmental assessment findings was dated September 17, 2002.*

TMA Approves Design Authorization for the USU Academic Program Center Project. The Military Construction Appropriations Bill for FY2003 included $1,300,000 for the accelerated design of the USU Academic Program Center. During December of 2002, BUMED requested that the USU VAM provide/present a briefing paper on the University and a tour of USU for staff from the TRICARE Management Activity (TMA). Next, the VAM, as requested, provided an overview of the on-going collaborative activities between the USU and the Department of Veterans Affairs (VA). *On January 8, 2003, USU was provided with documentation from TMA authorizing the design of the USU Academic Program Center Project at $9,600,000 and the approved Program for Design.*

The Architectural and Engineering (A&E) Firm Is Selected by the NAVFAC Medical Facility Design Office. The A&E firm selected by the Engineering Field Activity Chesapeake Naval Facilities Engineering Command was *Ewing Cole Cherry Brott* (located at 1025 Connecticut Avenue, S.W., Suite 900, Washington, D.C.). On March 17, 2003, representatives from BUMED, the NAVFAC Medical Facilities Design Office (EFA Chesapeake), and the A&E firm met at USU for a preliminary meeting pending the awarding of the contract for design. The USU President, the VAM, and the Facilities Division represented the University. *Following the awarding of the contract, on May 21-22, 2003, a pre-design conference was hosted at the Washington Naval Yard by EFA Chesapeake*. USU representatives included: the USU President; the USU VAM; the Deans of the SOM

and the GSN; the Directors of the USU Facilities and Logistics Divisions; members of the USU Offices of Continuing Health Professional Education and the Military Training Network; and, members of the GSN faculty. A large portion of the time was spent determining which activities would be placed on the ground, first, and second floors of the new building. The University was asked to respond to several action items following that conference which included: 1) scheduling the next A&E Conference at USU in mid-September, 2003; 2) co-locating conference rooms with movable partitions between the different USU activities to allow for maximum use of space; 3) determining the flexibility of the size of the classrooms (the USU Vice President for Teaching and Research Support resolved this issue with the two Deans after reviewing the actual use/requirements of classrooms at the University. It was decided that instead of having 12 small classrooms with movable partitions so that they could be re-configured into four larger classrooms, that USU would prefer one, 100-seat lecture hall and eight small classrooms with movable partitions); and, 4) the possibility of combining the administrative areas of activities located on the same floor. All information was provided to EFA Chesapeake by June 10, 2003. A field investigation was scheduled for the week of July 21, 2003, which will include a site visit to USU to conduct soil borings and measure the surface of the project area.

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Navy Base Allocation of Space to USU. From 1998 through 2001, the Vice President for Administration and Management (VAM), as directed by the USU President, and the USU Facilities Division coordinated with the National Naval Medical Center (NNMC) for the reallocation of space currently occupied by the Naval Medical Research Center (NMRC). NMRC began its relocation from the National Naval Medical Center to the Forest Glen community near the Walter Reed Army Medical Center during 1999; the relocation process for NMRC was completed during July of 2001. Inclusive reviews and cost analyses were conducted by the VAM and the USU Facilities Division; all findings were coordinated with the USU President, the Deans of the SOM and the GSN, the USU Vice President for Resource Management, and other appropriate USU management, to ensure that the projected renovation and annual costs for the reallocated space could be absorbed within the USU budget. Projected reviews and analyses included: 1) information systems requirements; 2) telephone, fax and copier equipment; 3) minor construction; 4) furniture; and, 5) maintenance costs to include utilities and janitorial services. Following agreement over funding sources and a thorough coordination process, the USU President approved moving forward to request the reallocation of space from NNMC to the University.

Memoranda of Understanding with NNMC Are Completed. USU and NNMC completed memoranda of understanding to reallocate responsibility (from NNMC to USU) for Buildings 53, 59, 79, 28, and 139 which had been vacated by NMRC. Building 53 was assumed by USU in July of 2001; Building 59 was turned over to USU during 1999; Buildings 79 and 28 were turned over to the University during 2000; and, Building 139 was allocated to USU in February of 2001.

By December of 2002, four USU School of Medicine Departments (11,969 square feet), the Graduate School of Nursing (635 square feet) and the Multi-Disciplinary Laboratories (676 square feet) occupied a total of 13,280 useable square feet in Building 53; Building 59 was occupied by the SOM Department of Military and Emergency Medicine with 1,066 useable square feet; and, Building 28 was occupied by the Graduate School of Nursing (GSN) and the SOM Department of Medical and Clinical Psychology in 2,571 useable square feet. In accordance with the USU Strategic Plan, which called for the acquisition of additional laboratory and administrative space for the University programs, *at the end of 2002, six SOM Departments occupied 14,320 square feet of space in the newly acquired buildings; the GSN occupied 1,920 square feet; and, the MDL controlled a USU*

Conference Room with 676 square feet. Over 16,916 useable and renovated square feet had been allocated to eight USU activities and departments.

Building 53. Building 53 is a two-story structure with an additional mid-level basement that houses the building and hyperbaric mechanical support systems. The allocation of Building 53, which includes approximately 32,285 square feet, addresses USU's urgent requirements for laboratory, administrative, and storage space; these requirements will **not** be addressed by the proposed construction of a fifth building on the USU campus. Building 53 includes 12 large laboratories and several thousand usable square feet of administrative space. At the request of the USU President, the Dean of the SOM directed his space committee to make recommendations through him to the USU President for the allocation of space on the second floor of Building 53. That process continued between 1999-2002 with the following results:

- **Department of Psychiatry.** The USU SOM Department of Psychiatry and the Stanley Foundation moved initially into first floor space in early 1999. Signed agreements were completed by all parties; and, the University has been reimbursed by the Stanley Foundation for an appropriate percentage of the costs of operating the building. Currently, the Department of Psychiatry and the Stanley Foundation, together, occupy approximately 6,567 square feet of laboratory, administrative and storage space on the first and second floors, to include hallway areas dedicated to the storage of freezers.

- **Department of Radiology and Radiological Sciences.** During 2000, the Department of Radiology and Radiological Sciences moved a Division, largely resourced by a grant, into 1,870 square feet of administrative and storage space on the second floor of Building 53; since then, an additional 156 square feet of storage space on the first floor has been allocated to the Division; resourcing was coordinated by the Vice President for Resource Management with the Department of Radiology and Radiological Sciences for extensive information system requirements and minor renovations; all have been completed, and the Division is currently occupying 2,026 square feet.

- **Graduate School of Nursing.** One room, on the second floor, with 635 square feet, was allocated to the Graduate School of Nursing for mentoring, counselling, and teaching requirements; minor renovation, which created five working areas, was completed; the space was used during 2002.

- **Department of Neurology.** The Department of Neurology was allocated one large laboratory (746 square feet) on the second floor; renovation plans were coordinated during 2001; construction, funded through a Neurology grant, began in March of 2002, and was completed during 2002.

- **Department of Medicine.** The Division of Clinical Pharmacology in the SOM Department of Medicine completed its coordination process; and, the relocation took place in March of 2002. Clinical Pharmacology currently occupies 2,630 square feet of laboratory, administrative, and storage space on the second floor of Building 53.

- **Naval Medical Research Center.** The Naval Medical Research Center, NMRC, as a result of collaborative efforts with the three USU Departments of Military and Emergency Medicine; Psychiatry; and, Anatomy, Physiology and Genetics and coordination with the USU Vice President for Resource Management,

was responsible, throughout 2002, for the maintenance and related costs of the hyperbaric chambers (hyperbaric chambers - 7,215 square feet) located on the first floor of Building 53.

- **USU Multidiscipline Laboratories - Common Area.** A large conference room, located on the second floor, with 676 square feet, was renovated during 2000, and was used throughout 2002, by the USU community.

- **Information Services Management Center.** The USU Information Services Management Center (UIS) has been allocated two rooms (approximately 318 square feet) for the storage requirements of the support equipment for the information systems in Building 53.

- **Remaining Space for Allocation.** Approximately 979 square feet (Rooms 53-111 and 53-112A), located on the second floor, remained open for allocation by the University Space Review Committee at the end of 2002. For Fiscal Year 2003, the annual utility bill for Building 53 (32,285 square feet) was estimated at $510,964; the estimated custodial requirements for one year were estimated at $111,487. The VAM will continue coordination efforts with the Vice President for Resource and Management and all entities allocated space within Building 53 for the equitable distribution of these costs.

Building 59. Building 59, a two-story structure, has 4,072 usable square feet that include an immersion pool/tank, a physiology lab, an instrumentation lab, and divers' lockers. Following minor renovations completed during 1999, investigators from the Department of Military and Emergency Medicine moved into Building 59. Building 59 receives its information systems support through equipment located in Building 53.

In addition to research grants administered by the Department of Military and Emergency Medicine, the immersion pool will also facilitate collaborative efforts between three University Departments (Military and Emergency Medicine; Anatomy, Physiology, and Genetics; and, Psychiatry). In addition, the course work presented in the Military Applied Physiology Course, Operational Emergency Medicine Skills, and the recently approved Graduate Education Program in Applied Human Biology (Undersea Medicine and Aviation Physiology) will be significantly enhanced by directly exposing students to the ongoing applied research in Building 59. Building 59 will support collaborative research for the above-mentioned USU Departments. The annual utility bill for Building 59 is estimated at $32,365; the estimated cost of annual custodial requirements for Building 59 is approximately $12,658.

Building 79. Building 79, adjacent to Building 59, is a two-story structure with an unfinished second floor; it offers 1,066 usable square feet. The annual utility bill for this building is estimated at $2,475; the annual custodial requirements will be calculated when the space is utilized; no expenses were obligated during 2002; and, by September of 2003, funding will have been obligated for the design and renovation of the building.

Building 28. Building 28 is a two-story structure with a total of 5,155 square feet. Renovation of the second floor was completed and by mid-2002, it was used by two USU activities: the Graduate School of Nursing and the SOM Department of Medical and Clinical Psychology. The two activities are located on the

second floor of the building in 2,571 square feet. Approximately 2,500 square feet of space on the first floor is currently being renovated for use by the USU/OSD Patient Safety Program; renovation is scheduled for completion in October of 2003. Utility costs during 2002 were $1,242; the annual custodial costs were $3,322.

Building 139. Building 139 is a one-story structure with approximately 5,562 square feet, which was made available for the USU SOM Department of Surgery and the USUHS/Windber Medical Center/Walter Reed Army Medical Center/Department of Navy Clinical Breast Care Project, during 2002. This research project utilizes a multidisciplinary approach as the standard of care for treating breast diseases and breast cancer. The multidisciplinary model integrates prevention, screening, diagnosis, treatment, and continuing care; the project is further unique in the proposed incorporation of advances in risk reduction, informatics, tissue banking, and research. The Clinical Breast Care Project paid for all required renovations; it also paid all costs associated with the building to include utility, maintenance, and custodial requirements during 2002.

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USU Facilities Division Project Listing Serves as the Strategic Plan for Construction and Renovation Requirements at the University.

Background. For six years, the USU Facilities Division, under the direction of the USU Vice President for Administration and Management (VAM), has successfully coordinated with the Navy Public Works Center (PWC) to streamline and maximize the process for obligating funding for urgently required renovation projects throughout the University's infrastructure, during, and at the end of, each Fiscal Year. Such a process requires extensive documentation and must comply with DoD regulations for the acceptance of funding by PWC or the USU Contracting Office.

During each Fiscal Year, the Facilities Division meets weekly with PWC personnel and the VAM to: 1) ensure open communication; 2) resolve on-going concerns and issues during the implementation of previously funded projects; and, 3) ensure the preparation of documentation for future projects and the on-going obligation of funding as it is identified by the USU Vice President for Resource Management. The Project Listing is regularly updated and provided by the Facilities Division to all participants at both PWC and USU to ensure that this demanding process is both open and accurate, to include the required monitoring of on-going projects and the maintenance of complete and accurate status information.

The Facilities Division Project Listing currently includes the following information: 1) the status of unfunded projects for the current Fiscal Year, to include design and construction costs; as of April 2003, there were 43 active projects in this section of the Project Listing; 2) totals and status of completed documentation submitted to the USU Office of Resource Management for projects recommended for funding in the current Fiscal Year; 3) totals and current status of projects already funded during the current Fiscal Year; as of mid-2003, $4,325,574 had been funded during the current Fiscal Year; and, 4) the current status of all previously funded projects during past Fiscal Years; from June 4, 2002 through September 30, 2002, a total of $9,165,975 had been obligated by USU with the PWC.

This process is both time consuming and complex; however, it has been found to be most acceptable by both PWC and USU management. The Facilities Division Project Listing serves as the Strategic Plan for the Construction and Renovation Requirements for the entire USU complex. As projects are completed, new requirements are constantly being identified by the PWC engineers and the USU Facilities Division; once recognized, they are entered into the Project Listing and begin the documentation and funding process. As a result, the USU campus is well maintained and reflects excellent stewardship on the part of the leadership of the University. Without the Facilities Division's time-proven process, the University would not be in a position to accept funding from Health Affairs or other sources during, or at the end of, each Fiscal Year. During the past three years, the support from the USU Vice President for Resource Management (RM) has been excellent. The VAM and Facilities Division spend many hours coordinating with RM to ensure that the infrastructure of the USU campus is well maintained through the obligation of funding with the PWC. The on-going selection, design, and renovation of research laboratories has also been streamlined through the decision-making process established by the Dean of the School of Medicine on July 2, 2002; the laboratory renovation process is coordinated with the USU Vice Presidents for Research and Resource Management.

Laboratory Renovations throughout Buildings A, B, C, and D. During 2000, with the approval of the USU President, and the identification of funding by the Vice President for Resource Management, the VAM and the USU Facilities Division provided oversight for the renovation of 2,310 square feet of laboratory space throughout the USU complex. Laboratory renovation was completed, through the Dean, SOM, for four Departments: Biochemistry; Obstetrics and Gynecology; Radiology and Radiological Sciences; and, Anatomy, Physiology and Genetics. During 2001, one laboratory with 468 square feet was renovated within the Department of Biochemistry. With the 33,127 square feet of renovated laboratory space that took place from 1993 through 2000, combined with the 468 square feet of renovation during 2001, the total of renovated laboratory space is approximately 33,595 square feet. *This amounts to 38.6 percent of the 86,926 square feet of laboratory space in the USU complex*. Three office areas within the SOM were also renovated for the Department of Anesthesia for a total of 559 square feet; in addition, 380 square feet of office space was renovated to accommodate the relocation of University Affairs. *During 2002, $693,992 was funded for laboratory renovations through collaborative efforts with the VAM, the USU Facilities Division, the Dean of the School of Medicine, and the Vice Presidents for Resource Management and Research.*

Renovated Space in Building 53. Throughout 2000 - 2002, with the approval of the USU President (and the identification of funding for projects by the Vice President for Resource Management), *the USU Facilities Division provided oversight for contracted work, support, and manpower from its Division staff for the renovation of a total of 7,899 square feet of laboratory and administrative space in Building 53*. The SOM Departments of Medicine (Clinical Pharmacology - 2,630 square feet), Psychiatry (1,932 square feet), and Radiology and Radiological Sciences (2,026 square feet) represented a total of 6,588 square feet of renovated space for the SOM; the Graduate School of Nursing had 635 square feet renovated for mentoring and educational use; and, the MDL Division of Teaching and Research Support had a conference room with 676 square feet renovated for use by the entire USU community. All of the extensive relocation and furniture requirements for the USU personnel assigned to these renovated spaces were coordinated by the USU Logistics Division. *During 2002, $207,366 was funded for an additional lab renovation project in Building 53*.

Heating/Ventilation/Air Conditioning (HVAC) Replacement Project. Following the identification of environmental and health concerns reference the necessary air exchanges required throughout the USU complex and the inability to procure replacement parts for the antiquated USU HVAC systems in Buildings B, C, and D, the VAM and the Facilities Division, with the approval of the USU President, coordinated with the Public Works Center (PWC) to design a complete replacement of the USU HVAC system. Building B was selected as the first area for renovation because it had the poorest air exchange in its laboratories. Phases 1 through 7 have been completed. Phases 1-7 ($8,900,000) included the construction of a mechanical room and the replacement of the HVAC system throughout Building B; this project began during 1999 and was completed in October of 2001. Phases 8 ($2,351,692) and 9 ($2,091,686) included Building C and were completed at the end of 2002. Phase 10 ($3,819,293) includes Building D and is scheduled for completion in November of 2003. Since Building A includes a different HVAC system than Buildings B,C, and D and replacement parts are available for its HVAC system, air-handlers and ductwork in Building A will be renovated as appropriate in future years. This expansive HVAC renovation project, including approximately 330,000 square feet, has required the continuous relocation of various USU personnel; both the USU Logistics and Facilities Divisions have dedicated extensive time and support to minimize disruption to the USU mission.

Anatomical Teaching Laboratory Renovation Efforts. During 1998, it was identified that the backroom/ storage areas containing the freezers and work space for the Anatomical Curator required significant renovation. Late in Fiscal Year 2001, the VAM requested a review of the project and began coordination with the USU Vice Presidents for Resource Management and Teaching and Research Support for the renovation of both the work areas and the freezers. With the approval of the USU President, and the identification of funding by the Vice President for Resource Management, the Facilities Division coordinated with the Navy Public Works Center for an accelerated design for construction. That effort concluded successfully and $201,254 was obligated for the construction requirements during September of 2001. Resource Management, through the USU Contracting Directorate, also obligated funding for the purchase of new freezers. The project was successfully completed during March of 2002.

Plaza and Elevator Repair. When the University was originally constructed, a drainage system had not been provided under the plaza. As a result, there had been a steady leakage of water throughout the underground garages and various areas at the ground floor level. Separate attempts had been made to correct this concern over the past years; however, none resolved the problem. During 2000, the Facilities Division worked with PWC to design a repair project for the plaza which included four phases. The first two phases were funded during 2000 and completed. Funding in the amount of $654,112 was funded in September of 2001 for the final two phases. Work was completed during 2002 and the contractors also finished some minor related projects to include the replacement of concrete.

Funding has also been obligated for the repair/renovation of the elevators in Building A (three elevators) and Building B (four elevators), and Buildings C and D (four elevators). Determination of the order of renovation for the 11 elevators throughout Buildings A, B, C, and D was based on the number of repair calls and general deterioration of the individual elevators. The renovation of the 11 elevators will take place one at a time to reduce the level of inconvenience to the USU community; estimated construction time per elevator is four months. Construction of the Building A elevators began in August of 2001 and was completed during December of 2002. Construction of the Building B elevators began in October of 2002, with a projected completion date of late 2003.

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USU Campus Meets National Naval Medical Center Fire Regulations.

Background. Following the events of September 11, 2001, regulations for the enforcement of fire codes have been revitalized throughout the Federal Government. Within minutes of the terrorist attack at the Pentagon, occupants found themselves struggling to breathe due to heavy smoke while they crawled along office floors and hallways to escape the resulting fires. This experience has reenforced the absolute necessity of providing written instructions, training, detailed evacuation routes, and unrestricted escape routes (hallways) for all personnel. Due to the shortage of office and storage space throughout the USU campus, complying with the mandatory fire regulations has proven to be an on-going, difficult, yet successful process. On August 14, 2002, the USU received a memorandum from the National Naval Medical Center (NNMC) Fire Chief that identified specific areas of concern and fire code deficiencies. The USU Vice President for Administration and Management (VAM) coordinated a memorandum that was distributed to all USU personnel on September 12, 2002. That memorandum addressed two major areas of concern: 1) occupant instruction and training regarding fire safety; and, 2) the clearing of all USU hallways in Buildings A, B, C, D, 53, 59, and 28. The USU Facilities, Logistics, Administrative Support, and Security Divisions worked directly with the SOM department chairs and administrative officers to meet the NNMC fire and safety regulations.

Actions Completed to Bring the University into Compliance with Fire Regulations. The first action concerned the USU Instruction providing the *Occupant Emergency Plan* for the University; it was updated and re-issued on October 25, 2002. Copies were provided to all activity heads and chairs and the instruction was also made available on the USU Web Site. A process has been implemented so that all current and new employees are made aware of the Occupant Emergency Plan. Next, *Emergency Evacuation Personnel Listings* of those USU personnel designated with specific responsibilities during an evacuation such as hallway monitors, assistants for the handicapped, etc., were updated and issued to all activity heads and chairs. The Director of the USU Security Division met with all personnel included on the listings to ensure that they were fully prepared to carry out their responsibilities. The USU Security and Facilities Divisions also *identified and verified all evacuation routes and posted evacuation signs throughout the USU campus*; this information is also posted on the USU Web Site. Following an emergency evacuation drill coordinated with the NNMC Fire Chief on November 8, 2002, the VAM issued a briefing paper to the USU community on November 19, 2002, on *emergency evacuation procedures*. The focus of the briefing paper was on the critical requirement for compliance and specific directions on what actions should be taken during an emergency evacuation. All activity heads and department chairs are responsible for ensuring that all of their personnel know the evacuation routes and procedures to be followed during an emergency evacuation. Two *training sessions were coordinated by the USU Security Division during January of 2003*.

The most difficult requirement for compliance included *the clearing of all hallways throughout the USU campus*. All hallways had to be cleared except for the following items: already existing duplicating equipment and one filing cabinet per principal investigator/course instructor. Nothing can be placed on top of the filing cabinets; no storage cabinets may be placed in the hallways. Approved items must be placed on only one side of the hallways, to include the carts and trash cans that are placed inside the laboratories at the end of each working day. The VAM and the Facilities, Logistics, Administrative Support, and Security Divisions established a schedule for meeting the NNMC Fire Regulations and conducted inspections throughout the entire campus. Since the process began during late 2002 and was successfully completed in March of 2003, *over 200 filing cabinets have been removed from the USU campus*. This is an incredible accomplishment on the part of the USU community.

It was a time-consuming and difficult process, which included an extensive review and disposition of files, equipment, and supplies by the activity heads, chairs, and their administrative officers. In support of this effort, over 100 file boxes have been stored in the record management holding area of the Administrative Division; and, additional storage areas were constructed, in coordination with the NNMC Fire Chief, on the second-floor walkway between Buildings B and C. Those storage areas were distributed in a manner to ensure compliance with the NNMC Fire Regulations. *At this time, the University has satisfactorily met all requirements of the NNMC Fire Chief.* The VAM and the Facilities, Logistics, Administrative Support and Security Divisions continuously inspect the hallways of the entire campus to ensure on-going compliance.

Resource Management Programs.

Background. The areas of responsibility described below are under the oversight of the USU Vice President for Resource Management. **Mr. John E. Dexter** was selected as the first USU Vice President for Resource Management in June of 1990; he served in that capacity until his retirement in January of 2001. Following an extensive search, the second USU Vice President for Resource Management, **Mr. Stephen C. Rice**, was selected and assumed the position in January of 2001.

Financial & Manpower Management Directorate. The University's Financial & Manpower Management (FMG) Directorate successfully closed out the Fiscal Year 2002 Operations and Maintenance account (one-year money) with obligations of $98,806,000, for an obligation rate of 99.995 percent. During the last quarter of Fiscal Year 2002, the University received an additional allocation of $2,243,000 to be applied against long-standing deficiencies in the University's maintenance and repair budget. FMG, in coordination with the USU Facilities Division, obligated funds through the Navy Public Works Center for the completion of the main campus elevator upgrades and the renovation of additional space for the USU Simulation Center located at Forest Glen. The University was also able to make significant progress on its equipment back-log, funding over $1,100,000 in support equipment.

Once again, the University maintained the finest Travel Card Program in the Department of Defense. USU's delinquency rate average of only 0.50 percent far exceeded the Department's *benchmark* of 3.0 percent. What makes this record noteworthy is the fact that hundreds of claims reflect long-term travel (30 days or more), but the reimbursement process is so prompt, for both partial and final settlements, that travelers are not inconvenienced. The level of support from the USU President, Deans, and Vice Presidents ensures the continued success of this highly visible program.

The University's reimbursement/charges for accounting support received from the Defense Finance and Accounting Service (DFAS) decreased by $225,000, or over 31 percent during Fiscal Year 2002 (from $718,000 to $493,000). This is primarily the result of the USU Accounting Systems & Policy Division's oversight and the provision of additional support to DFAS in the preparation of accounting reports. Implementation of procedures to collect for the cost of procurement services provided to other organizations on direct-cited funds saved $240,000 of USU administrative costs in comparison to zero recovery in prior years. FMG is actively participating in the University's on-going efforts to identify a modern replacement accounting system for the currently-used College and University Financial System (CUFS), which must be compliant with Federal and DoD requirements. FMG has worked closely with DFAS and the TRICARE Management Activity (TMA) to help implement the daily transfer of detailed accounting data into the DFAS Corporate Database (DCD) from CUFS. This daily transfer of data should be implemented during 2003.

Two significant financial management initiatives were continued during 2002. First, Resource Management staff have added new vigor to the mid-year review process, meeting individually with each Chair, Vice President, and Activity Head. This has resulted in an increased level of detail and justification during the University budget submission process, which has led to a clear articulation of priorities and the better use of resources.

Contracting Directorate. During 2002, the USU Contracting Directorate provided significant support to the many unique programs of the School of Medicine, the Graduate School of Nursing, University Activities, the Armed Forces Radiobiology Research Institute (AFRRI), and numerous DoD initiatives and programs. The Directorate processed over 2,000 USU (Operations and Maintenance (O&M) funded) requisitions for approximately $4,500,000 in support of USU Departments and Activities. The Contracting Directorate also received 209 AFRRI (RDT&E-funded) requisitions for approximately $1,100,000. In addition, the Directorate received approximately 41 funding documents, totaling $14,274,602, from numerous Federal and DoD agencies. These agencies were requesting USU contractual support for the DoD programs, to include funding for numerous scientific research programs, contracted with the Henry M. Jackson Foundation (HMJF) for the Advancement of Military Medicine. Some examples of major contractual efforts during 2002 include the following: 1) the USU SOM Department of Preventive Medicine and Biometrics (PMB) Medical Executive Skills Training Program, which provides training to the military's health care executives; 2) A research collaboration with the State of California, which resulted in a contract for $150,000 for the California Military Tobacco Study; 3) the Casualty Care Research Center (CCRC), which provides support and consultation services to several Federal Agencies, to include the FBI's Hazardous Materials Response Training Program and the United States Marshals Service; 4) the Deployment Health Center located at the Walter Reed Army Medical Center, which conducts research on a variety of diseases encountered during deployments; 5) the Center for Prostate Disease Research (CPDR), which conducts research into prostate disease through funding provided by the CPDR Endowment, currently valued at $25,909,000; 6) the Center for Disaster and Humanitarian Assistance Medicine (CDHAM), which is providing training and education for DoD, Mexico, and other Central and South American countries; 7) the Center for Ergonomics and Workplace Health, which is studying ways to make the Federal workplace a healthier and more productive environment; and, 8) a personal services support contract for the United States Army Center for Health Promotion and Preventive Medicine.

In addition to the above programs, the Directorate also awarded approximately 90 equipment contracts with a total value of over $3,400,000 in support of the University's annual Equipment and Unfunded Requirements Program. The Directorate also awarded eight construction contracts for approximately $195,000 for work at USU and AFRRI, including an A&E contract for a renovation design for the USU Health Clinic. All of the construction projects were awarded to 8(a) Small and Disadvantaged Businesses. During 2002, the USU/AFRRI Government Purchase Card Program continued to expand with over 20,600 purchase card transactions conducted, totaling approximately $9,770,000 in purchases. The Directorate now administers and manages funded programs valued at well over $50,000,000. Contracting once again met DoD competition and socio-economic goals.

Grants Management Office. In its third year of operation, the Grants Management Office (GRT), awarded 16 new grant agreements, worth more than $33,000,000; and, it completed over 100 modification actions to existing awards. Currently, the Grants Management Office manages 125 active USU agreements ranging from $5,000 to $29,000,000. The total award value of all awards is approximately $328,000,000.

There are more than 75 principal investigators conducting work on research projects awarded to 12 grant recipients. A majority of the awards goes to the Henry M. Jackson Foundation and the remaining is awarded to other non-profit organizations including universities, private foundations, and institutions. Currently, there are 33 agencies providing funding support for the active grants. The Grants Management Office processes an average of 48 invoices per month for payment. These invoices are paid at nine different pay stations, at DoD and Federal civilian sites.

The Grants Management Office also provides oversight for the TriService Nursing Research Program (TSNRP), a $6,000,000 annual program with more than 70 grants. TSNRP is a congressionally-funded program, which is supported by a staff and an Executive Director, who also serves as a Deputy to the USU Grants Officer.

Significant accomplishments during 2002 include the following activities: 1) converted the Defense Brain and Spinal Column Injury Program (DBSCIP) from a grant agreement to a cooperative agreement; this conversion was necessary due to increased involvement of the government in the program; 2) developed a *salary cap policy for grant and cooperative agreement awards* made by USU, following National Institutes of Health (NIH) guidelines, limiting salaries to Executive Level I; 3) developed *an annual adjustment amount policy* to limit the price changes on grants and cooperative agreements by USU, using the Consumer Price Index as applied by NIH; 4) *implemented the Electronic Certification System (ECS) for invoices*, by working closely with DFAS in Columbus, the grant recipient (the Henry M. Jackson Foundation), and the DFAS in Charleston; the ECS system allows the USU Certifying Officer to review and approve invoices electronically, thus decreasing payment time and reducing paperwork; 5) established a close working relationship with the DoD Grant Policy Chief to keep abreast of changes and to request guidance and assistance as needed for grant compliance issues; GRT is seeking participation in the Federal Demonstration Project in order to streamline and standardize the grant management process; 6) provided orientation for new principal investigators (PIs); developed a list of items and processes to familiarize new PIs with procedures, processes, and individuals providing administrative support; and, 7) *distributed award documents electronically using the Procurement Document Format*; distribution and informational copies of documents are made available by formatting the documents in PDF and sending them electronically to the recipient, investigators, and other parties.

Resource Management Information Office. The Resource Management Information Office (RMI) includes the Systems Administration Branch and the Information Systems & Services Branch. The RMI develops, maintains, and administers all University resource management information systems, primarily, the College and University Financial System (CUFS), DoD's Standard Procurement System (SPS), and the Research Administration (REA) Grants Management System (COEUS). During 2002, the RMI worked on two major University initiatives and accomplished the following: 1) served as the Lead Agent for the USU Resource Management Information System Search Committee; as part of the continuing effort to replace CUFS, the University's principal management system, the RMI was instrumental in orchestrating the fit/gap analysis of the Defense Finance Accounting System - Headquarters' (DFAS-HQ) E-Biz System Initiative, to determine its ability to meet the University's functional requirements; and, 2) developed a Research Activity Reporting System; the RMI developed a data repository and reporting tool for collating financial, personnel, and grant information. This reporting system provides tracking, analysis, and projection modeling capabilities for use by research activities at the University.

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II. READINESS

These graduates leave USUHS trained to provide continuity in ensuring medical readiness and the preservation of lessons learned during combat and casualty care. This critical role is, in fact, the significant factor that led the Congress to establish USUHS in 1972.

- Congressional Record, Tribute to Val G. Hemming, M.D., **The Honorable Paul S. Sarbanes, the United States Senate**, May 17, 2002, page S4533.

The Graduate School of Nursing (GSN) is successfully preparing unique advanced practice nurses to deliver care for the Uniformed Services during disaster relief and humanitarian interventions and, by doing so, ensures military readiness.

- Congressional Record, Tribute to Dr. Faye Glenn Abdellah, **The Honorable Daniel K. Inouye, the United States Senate**, May 16, 2002, pages S4488-S4489.

These USUHS alumni serve in critical roles that are vital to the readiness mission of the Military Health System (MHS). The extraordinary retention of these military officers ensures continuity for the MHS and the safeguarding of lessons learned during combat and casualty care. Currently, USUHS School of Medicine alumni represent over twenty-one percent of the total physicians on active duty in the military services. Furthermore, a significant number of USUHS graduates who have completed their residency training hold leadership or operational positions throughout the MHS.

- **Vice Admiral Michael L. Cowan, Surgeon General of the Navy**, Testimony before the House Armed Services Committee, Subcommittee on Military Personnel, April 10, 2002, page 20.

USUHS has integrated WMD-related education and training throughout its standard SOM curricula; in addition, following the terrorist attacks of September 11, 2001, USUHS has continued the development of exportable packages for distance learning for the medical response to WMD and has been designated in HR3254 to share its unique expertise with the Department of Veterans Affairs (VA) to assist the VA health care professionals in preparing to respond to WMD-related incidents.

- Resolution Number 71, The Eighty-Fourth National Convention of **The American Legion**, August 27-29, 2002.

The Uniformed Services University of the Health Science (USUHS) is recognized by the Association of American Medical Colleges (AAMC) as "the one place where physicians of tomorrow do get thorough preparation to deal with the medical aspects of chemical and biological terrorism. USUHS Students learn how nuclear, biological, and chemical agents act on the human body and what to do in the event of a suspected exposure."

- AAMC Reporter, December issues of 1998 and 2001.

USUHS medical support teams responded to the attack (on September 11, 2001) at the World Trade Center and supported Federal law enforcement agencies for several weeks. The USUHS Center for the Study of Traumatic Stress provided consultation to many institutions and physicians, while the Armed Forces Radiobiology Research Institute (AFRRI) at USUHS assisted in developing decontamination methodologies for the U.S. Postal Service in the wake of the anthrax attacks.

- **USU Board of Regents**, Report to the Secretary of Defense, June 1, 2002, page 2.

The combination of DoD's expertise in the field treating casualties from unconventional attacks and the VA infrastructure of medical centers, clinics, satellite broadcast capabilities and affiliations with medical schools will enable U.S. medical professionals to become knowledgeable and medically competent in dealing with future attacks. Content for the training sessions would be based on programs established at the USUHS School of Medicine, the nation's only federal medical school. Sometimes referred to as the "West Point for Doctors," USUHS offers an education in military medicine, preparing graduates to handle "real world scenarios that most doctors are ill-equipped to face. Students would learn how biochemical and radiological agents act on the human body and how to handle a suspected exposure - from the point of detection through to decontamination and medical countermeasures," according to information from Congressman Buyer's office.

- Washington Fax, "VA bills would offer treatment, research and physician training to fight chemical, biological and radiological attacks," April 9, 2002.

The Nation's only military medical school dedicated to the provision of uniformed physicians, advanced practice nurses, and scientists who will ensure readiness, retention, force health protection, the medical response to natural and man-made disasters and weapons of mass destruction (WMD), and medical support during humanitarian missions.

- Resolution Number 71, The Eighty-Fourth Convention of **The American Legion**, August 27-29, 2002.

The terrorist attack on September 2001 reconfirmed that not all serious injuries are physical in nature. The effects of traumatic stress on individuals, organizations, communities, and nations are of substantial concern in the current world climate. Mental health has become a national security issue. The USUHS Center for the Study of Traumatic Stress provides an integrative and comprehensive approach to an understanding of the biomedical, psychosocial and public policy effects of trauma and disaster on individuals and communities. Robert J. Ursano, M.D., Professor and Chairman, Department of Psychiatry and Director, USUHS Center for the Study of Traumatic Stress, along with members of his staff, distilled key points for widely distributed fact sheets (throughout the MHS and civilian medical communities) targeting topics related to the terrorist attacks. In recognition of his national and international stature (with the media and academia), Dr. Ursano was an invited participant on the Department of Defense Terrorism Task Force, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) Panel on Planning for Bioterrorism, and the World Psychiatric Association Symposium on Disaster and Terrorism.

- **USU Board of Regents**, Report to the Secretary of Defense, June 1, 2002, page 3; Appendix A, page 3.

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II. THE F. EDWARD HÉBERT SCHOOL OF MEDICINE

Content for the training sessions would be based on programs established at the USUHS School of Medicine, the Nation's only Federal medical school. Sometimes referred to as the "West Point for Doctors," USUHS offers an education in military medicine, preparing graduates to handle "real world scenarios that most doctors are ill-equipped to face. Students would learn how biochemical and radiological agents act on the human body and how to handle a suspected exposure - from the point of detection through to decontamination and medical countermeasures," according to information from Congressman Buyer's office (Congressman Steve Buyer, Chairman, Subcommittee on Health, House Veterans Affairs Committee)**.**

- The Washington Fax, "VA Bills Would Offer Treatment, Research and Physician Training to Fight Chemical, Biological and Radiological Attacks," April 9, 2002.

ESTABLISHMENT

Background. From 1945 to 1950, there was an acute deficit of medical experience resulting from the rapid downsizing after World War II. The loss of physicians was so acute, and retention so poor, that the Army and Navy medical departments began residency programs as a recruitment and retention device. In 1950, the physician shortages forced the involuntary recall of reservists and also forced the retention of those eligible to retire.

After the Korean War, the United States, for the first time in peacetime, maintained large, active-duty military forces through conscription and allocated significant resources to build and maintain a world-wide military presence. The medical departments of the Army, Navy, and Air Force participated in this expansion and relied on conscription. During this time, over 90 percent of all graduating physicians and dentists served on active duty for an average of two years.

During the conflict in Vietnam, from 1964 to 1972, medical support of a sophisticated nature was deployed in fixed facility hospitals with staff and equipment equal to those of academic medical centers in America. The helicopter essentially replaced the motor ambulance for evacuation; and, air evacuation to the United States became routine. Capitalizing on the lessons learned in past wars, preventive medicine kept the infectious disease and non-effectiveness (*inability of the forces to participate in combat activities*) rates at the lowest levels of any war, while rapid evacuation and advanced surgery reduced the died-of-wounds rate.

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The Uniformed Services Health Professions Revitalization Act of 1972, Public Law 92-426. The conscription of physicians, which began in 1950, ended in 1973 when the draft law was repealed. In anticipation of this, a military medical school (USUHS) and a scholarship program (HPSP) in civilian medical schools were established by Congress in 1972 to provide physicians for the Armed Forces. The Uniformed Services Health Professions Revitalization Act of 1972, Public Law 92-426, established the HPSP Program to be a flexible source for the quantity of physicians required by the Armed Forces; USUHS was established to provide a cadre of military medical officers who would serve as career officers, providing continuity and leadership for the Military Health System.

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USU's First Academic Program. The F. Edward Hébert School of Medicine was established by Congress as part of Public Law 92-426 in 1972, with its first class graduating in 1980. The early development of the University concentrated on USU's first academic program, the School of Medicine. **Anthony R. Curreri, M.D.,** was appointed as the University's first President in 1974; **Jay P. Sanford, M.D,** joined **Doctor Curreri**, at the USU President's request, and was later appointed as Dean, SOM, in May of 1975. He served as Dean through 1990. The initial development of objectives for the SOM was accomplished through the combined efforts of the Board of Regents (BOR), the BOR Educational Affairs Committee, Doctor Curreri, Doctor Sanford, and special working groups. Activities used to develop these objectives included committee meetings, retreats, and consultation with a variety of experts from military medicine and civilian medical organizations and institutions. Individuals and groups consulted included: the Surgeons General of the Army, Navy and Air Force; Chiefs of the Medical Departments/Services of the Army, Navy, and Air Force; physicians from the Walter Reed Army Medical Center, the National Naval Medical Center at Bethesda, the Malcolm Grow Air Force Medical Center at Andrews Air Force Base, the Wilford Hall United States Air Force Medical Center, the United States Army Academy of Health Sciences, Sheppard Air Force Base Academy of Health Sciences, Brooke Army Medical Center, and the Armed Forces Institute of Pathology; the Secretary of the Air Force; the Secretary of the Navy; the Association of American Medical Colleges (AAMC); the American Medical Association (AMA); the Liaison Committee on Medical Education (LCME); the Department of Health, Education, and Welfare; the National Institutes of Health (NIH); George Washington University; Georgetown University; and, Howard University.

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MISSION

The USUHS shall: 4.1. Educate and train competent medical personnel qualified to serve the needs of the Uniformed Services through providing the highest quality education programs in the health sciences; 4.2. Place high priority on educating and training personnel to meet the combat and peacetime medical needs of the Armed Forces; and, 4.3. Grant applicable advanced academic degrees; establish postdoctoral and postgraduate programs, and technological institutes; conduct medical readiness training and continuing education for members of the Uniformed Services in the health professions; and prepare individuals for careers in the health professions in the Uniformed Services.

- DoD Directive 5105.45, signed by **The Honorable John J. Hamre, Deputy Secretary of Defense**, dated March 9, 2000, page 2.

Consistent Mission Direction Focused on Readiness. USU has a thirty-year history of guiding statements, mission direction, goals and tasking documents from the Congress, the Executive Office of the President, and the Department of Defense. From the words of the School of Medicine's "Founding Father," **Congressman F. Edward Hébert**, ... as he described how he first envisioned the University during the 1947 timeframe:

The mission of USUHS is to produce...dedicated young officers who...will be able to mobilize and deploy rapidly...to meet military and civilian crises...The University will provide opportunities for aspiring young military officers to attain academic recognition..." (the Life and Times of Congressman F. Edward Hébert, 1976, page 408)

to the 1999 mission statement quoted above from the Department of Defense... the goals of the USU SOM have remained consistent. The USU SOM must provide: 1) a cadre of career-oriented physician officers who will provide leadership and continuity for Uniformed medicine; 2) unique training in combat medical care, trauma, mass casualties, the response to weapons of mass destruction, medical logistics, and rapid deployment; 3) joint training in a multi-Service environment; and, 4) the opportunity for health care professionals throughout the MHS to attain academic recognition.

Strategic Planning. A formal process of strategic planning was initiated, in 1991, to set priorities for the University. The process was conducted by an executive steering committee chaired by the USU President and included representation from the entire USU community. Mission and vision statements and guiding principles were completed in early 1992. Since that time, specific goals, strategies, and objectives have been established for the University, to include metrics for achieving those goals.

The SOM community has been actively involved in the development of the USU Strategic Plan, participating in the initial strategic planning training sessions during 1991, the finalization of objectives and metrics during 1999 and 2000, and the strategic planning sessions held during April of 2001 and December of 2002. This multi-year process has included institutional retreats, town meetings, departmental briefings, and printed and electronic updates as a means of communicating with the SOM faculty and staff.

To ensure that the SOM's future direction is consistent with the Military Health System, the SOM strategic planning process is guided by the current strategies and goals of the Military Health System, which reflect the strategic planning policies and guidance established by the Office of the Assistant Secretary of Defense for Health Affairs. The SOM Departments must show a direct relationship with USU's overall Strategic Plan when submitting their requests for future budgets. A formal process for identifying program needs and for submitting increased budget requests tied to the Strategic Plan has been established. A School of Medicine Strategic Plan has been written and has undergone review by the Basic Science Chairs Committee, the Clinical Science Chairs Committee, and the Faculty Senate.

Internal and External Departmental Review Process. A program was adopted by the School of Medicine in 1998, which mandated each SOM department to conduct a "self-study" every five years or at the time of the appointment of a new chairperson. The self-study would be followed with a review of the self-study by a group of "peers" from outside of the University. From 1999 through 2002, self-studies and external reviews have been completed by the Departments of Anesthesiology, Dermatology, Family Medicine, Military and Emergency Medicine, Obstetrics and Gynecology, Pharmacology, Neurology, Radiology and Radiological Sciences, and Surgery. Other departmental reviews pending completion include: Anatomy, Physiology and Genetics; Pathology; Pediatrics; and, Medical History. The results of these studies will be used to chart future courses for these departments in education, research, and community service.

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Mission Accomplishment...SOM Graduates Provide Continuity and Leadership for Military Medicine.

Retention of SOM Alumni and Unique Training Ensures Continuity for Lessons Learned in Military Medicine.

The extraordinary retention of these military officers (USUHS alumni) **ensures continuity for the MHS and the safeguarding of lessons learned during combat and casualty care... Furthermore, a significant number of USUHS graduates who have completed their residency training hold leadership or operational positions throughout the MHS... We place great emphasis on the retention of quality physicians in the military**.

- Testimony by the **Surgeon General of the Navy, Vice Admiral Michael L. Cowan,** before the House Armed Services Committee, Subcommittee on Military Personnel, April 10, 2002.

I believe our opponents don't understand our business... they say medical care, and they envision peace time medical care as the only business we are in. In fact, we have two broad categories of business. One is called readiness. The other is called the peace time benefit.

USUHS, is the best investment in readiness medicine that we can make, (it) **provides a tremendous baseline for us. We train our uniformed services graduates in the benefit missions through residencies, but they** (USUHS graduates) **have a foundation in readiness that we cannot get anyplace else. We don't practice medicine in the military. We practice military medicine.**

- Testimony by the **Surgeon General of the Air Force, Lieutenant General Paul K. Carlton, Jr.**, before the Senate Appropriations Committee, Subcommittee on Defense, February 28, 2001.

In Vietnam... I had no military training prior to coming in. It was a very challenging, difficult experience... when I got there I learned how to take care of Marines myself. I was alone. There was no place to med-evac patients, so through the night I had to keep casualties alive until we could move them during the daylight...

The emotional experience of a young doctor who does not have the right kind of training in these kind of things has driven me to where I am today.

My whole life since that time has been dedicated to try to prepare people for combat, and USUHS has been able to train these young physicians to be far more ready than I was. They are superb in

medicine. The training that USUHS provides is far more than just the medical training. What we have here is the ability to train Army, Navy and Air Force and Public Health Service physicians from day one to work together in a joint environment. They go and they jump out of airplanes with the Army, they go with us to the Marine Corps, they go with us aboard ships at sea, and they go to the air. They do all these things together... from day one... so they develop a joint mentality that has a value of which you cannot quantify the cost of. So, when the time came for me to select a doctor who was going to go on the Joint Task Force for Somalia, I chose a USUHS teacher, ...one who had been there, who spoke the language, who was able to do joint planning and to effectively bring the troops to Somalia. You cannot cost that out...the value of having people with this kind of training is really irreplaceable. There are many, many, many courses and experiences at USUHS that are just not duplicatable. It is a national resource. They come as leaders...they are dedicated to stay with us for a long time... We want experienced people to stay in the military... Now that we have USUHS, we cannot give that up.

- Testimony by the **Surgeon General of the Navy, Vice Admiral Donald F. Hagen,** before the Senate Armed Services Committee, March 2, 1994, pages 35-37.

USU SOM Alumni Represent 21.2 Percent of the Total Active Duty Physicians in the Army, Navy, and the Air Force. Since its first graduation in 1980, through April of 2002, USU has granted 3,268 medical degrees; 2,620 of those graduates remain on active duty in the Uniformed Services: Army - 1,016; Navy - 748; Air Force - 762; USPHS - 94. The active duty physician force in the MHS currently totals approximately 11,907 physicians (Army - 4,189; Navy - 4,023; Air Force - 3,695); the 2,526 USU SOM Graduates on active duty in the Army, Navy, and Air Force represent 21.2 percent of those 11,907 physicians. The early founders had hoped that the USU graduates would equal at least 10 percent of the total physician force; the USUHS SOM has exceeded that original milestone. USU has steadily provided an excellent source of career-minded physicians who are uniquely skilled in the practice of military medicine.

USU SOM Alumni Provide Overall Retention Rates of 83.6 percent Over 23 Years. Where Congress had envisioned a retention rate close to 70 percent, the overall retention rate for USU SOM graduates from its first graduating class in 1980 through the present, is 83.6 percent; of the ten USU SOM classes which graduated between 1990 and 1999, the retention rate is 95.3 percent. These retention rates become even more significant in light of the recruitment and retention concerns currently reported by the Armed Forces. In addition, the USU SOM graduates over 97 percent of those who matriculate.

<u>SOM Graduates Present Clinical Skills Required for MHS Residency Programs.</u>

I echo the assessment of USUHS provided by the Secretary of Defense on March 22, 2001: "The training USUHS students receive in combat and peacetime health care is essential to providing

superior force health protection... USUHS is a unique national asset and a vital integrated part of the Military Health System.

- Testimony by the **Surgeon General of the Navy, Vice Admiral Michael L. Cowan,** before the House Armed Services Committee, Subcommittee on Military Personnel, April 10, 2002.

The system in place for the documentation of the comparability of clinical educational experiences is an outstanding model for other institutions to emulate.

- Letter to USUHS, Liaison Committee on Medical Education (LCME), dated April 6, 2002.

Senator, the three of us (Surgeons General) make up the Executive Board for the Uniformed Services University of the Health Sciences (USUHS), and we have a direct impact on the university...over the last eight years, as I have commanded a major medical center and also as the Surgeon General, I have learned of the quality of the product of USUHS and the focus that USUHS has on military medicine and the importance (of USUHS) **to the Surgeons General. I would be hard put to be without the graduates of USUHS.**

- Testimony by the **Surgeon General of the Navy, Vice Admiral Richard A. Nelson**, before the Senate Appropriations Committee, Subcommittee on Defense, on February 28, 2001.

USUHS is a dramatic difference in depth and degree and experience and exposure and immersion in what we call military medicine, that is not available in the civilian community. My experience has been we have uniformly superior products in the (USUHS graduates)**. I happened to be stationed on an Army post before I came here, with a small clinic run by a young doctor. I saw the difference between his predecessor and himself, the USUHS graduate. He hit the ground running and turned the clinic around in just a few short weeks. It made a lasting impression on me.... From the clinics to the largest Air Force hospital in this country, Wilford Hall, USUHS graduates excel... A third of the USUHS graduates at Wilford Hall are in positions of high responsibility for their grade...I like what I see.**

- Testimony by the **Surgeon General of the Air Force, Lieutenant General Alexander M. Sloan,** before the Senate Armed Services Committee, March 2, 1994, page 37.

2002 AAMC Medical School Graduation Questionnaire Results Validate that USU Graduates Are Highly Satisfied with their Medical Education. Evidence of the high quality of training that SOM students have received comes from many sources. For example, each academic year, the Association of American Medical Colleges (AAMC), with the assistance of medical school administrators, conducts a survey of graduating seniors at medical schools throughout the United States. Students are asked to rate statements that cover their entire medical school experience. Included among the numerous topics surveyed are premedical preparation, pre-clinical education, clinical experiences, student services and the overall quality of the medical education received. In September of 2002, the USU Office of Student Affairs reported that the ratings of the Year 2002 Medical School Graduation Questionnaire show a consistently strong, positive evaluation by USU students at a level well above the all-schools comparison. For example, 81.5 percent of the USU SOM seniors strongly agreed with the statement, "Overall, I am satisfied with my medical education." Whereas, when averaging the replies from all responding medical schools in the United States, only 34.8 percent rated the statement as "Strongly Agree."

2002 Joint Service Graduate Medical Education Selection Board Results - 90 Percent Receive First Choice in Specialty. Traditionally, more than 75 percent of USU SOM graduates receive their first choice of specialty and location for their first year of residency training. In December of 2002, the Office of Student Affairs reported that the results of the 2002 Joint Service Graduate Medical Education (GME) Selection Board for the USUHS SOM Class of 2003 were favorable. The overall selection rate for FIRST CHOICE programs was 74 percent; 114 out of 155 USU students matched for their first choice both in specialty and training site. Twenty-five additional students received their first choice in specialty for a resulting 90 percent who received their first choice in specialty. Feedback obtained from residency program directors indicates that SOM graduates are consistently recognized as well-prepared to complete graduate medical training.

USU Students Pass the 2002 United States Medical Licensing Examination Step 2 at a Rate of 96 Percent. In addition, USU students have consistently passed the United States Medical Licensing Examination (USMLE) Steps 1 and 2 at rates higher than the national average. In 1999, the National Board of Medical Examiners (NBME) began computer-based testing (CBT) for the USMLE Step 1 and 2 Examinations. The Step Examinations are administered at Prometric Testing Centers throughout the calendar year. Most of the USU fourth-year students (SOM Class of 2003) completed the Step 2 CBT between July and September of 2002. The overall performance for the Class of 2003 was strong; the average performance for the class was 209 and the pass rate was 96 percent. The variability in scores has increased with the new CBT; this would be expected given the reduction in the number of questions and the introduction of a new testing format.

<u>Operational Assignments, Leadership Positions, and Unique Understanding of Military Medicine Are Substantiated.</u>

These USUHS alumni serve in critical roles that are vital to the readiness mission of the Military Health System (MHS). The extraordinary retention of these military officers ensures continuity for the MHS and the safeguarding of lessons learned during combat and casualty care. Currently, USUHS School of Medicine alumni represent over twenty-one percent of the total physicians on

active duty in the military services. Furthermore, a significant number of USUHS graduates who have completed their residency training hold leadership or operational positions throughout the MHS.

- Testimony by **Vice Admiral Michael L. Cowan, Surgeon General of the Navy**, before the House Armed Services Committee, Subcommittee on Military Personnel, on April 10, 2002.

Our Uniformed Services University of the Health Sciences has robust and long-standing educational programs in the medical aspects of biological and chemical terrorism developed for our military medical and graduate students. The University is now actively involved in adapting these programs to the civilian medical education community in both traditional and interactive web-based formats. The University works closely with other federal agencies, the private sector, and the American Association of Medical Colleges and the American Medical Association to accomplish these important and timely educational goals.

- Testimony by **The Honorable William Winkenwerder, Jr., M.D., Assistant Secretary of Defense for Health Affairs**, before the House Committee on Government Reform, Subcommittee on National Security, Veterans' Affairs, and International Relations, on November 7, 2001.

As for recruiting, we have some of the best programs in the world. The young men and women who are coming out of the Uniformed Services University of the Health Sciences are absolutely superb!

- **Surgeon General of the Army, Lieutenant General James B. Peake**, Military Medical Technology, Volume 4, Issue 6, 2000, page 18.

Do I value USUHS? ...I value it a great deal and (consider that) **it is a major asset to this country. I do value the output. I can tell you that in the Army we have a deficit of training in the type of individuals who can go into combat with a battalion...and I do get complaints from line officers that we very frequently have physicians in there who are not ready for that. That is never the case when a USUHS graduate fills that bill.**

- Testimony by the **Surgeon General of the Army, Lieutenant General Alcide M. LaNoue,** before the Senate Armed Services Committee, March 2, 1994, page 35.

USU SOM Alumni Hold Significant Leadership and Operational Positions Throughout the MHS. The highly dedicated USU graduates are earning promotions at above average rates; they have become well-respected in their medical specialties, and hold significant positions of leadership in areas of military medicine ranging from special operations and hospitals, to the White House and the newly established Department of Homeland Security, to deployments to Kosova and Iraq, and to assignments aboard ships at sea and with the Blue Angels. SOM alumni are engaged in patient care or research in military hospitals and clinics around the world, administering to active duty members, retirees, and their family members. These military physicians and the thousands of other health professionals who have taken advantage of the numerous graduate and continuing education programs provided by the SOM, are living testimony to USU's mission as the Nation's Federal Health Sciences University.

Review Documents USU SOM Alumni Meet the Special Needs of the MHS. Following an inclusive review in 1995, the General Accounting Office (GAO) confirmed that **"43 out of 44 commanders of major military medical units perceived that physicians from the University have a greater overall understanding of the military, greater commitment to the military, better preparation for operational assignments, and better preparation for leadership roles."** The GAO reviewers also pointed out that they **"perceive that University graduates have a better appreciation of and greater satisfaction with the physician's role within the military"** than other accession sources (General Accounting Office Report, "Military Physicians - DoD's Medical School and Scholarship Program," September 29, 1995, page 43). Recent congressional testimony by the Surgeons General reflect that these significant findings have been substantiated over the past eight years.

USU SOM Alumni Hold a Significant Percentage of Leadership and Operational Positions in the MHS. A review completed in January of 1998, documented that of the approximately 1,431 USU graduates on active duty who were eligible to hold leadership positions, and were not in a post graduate educational status, 292 were serving as chairs, chiefs or heads of departments, directors of services, or program directors in military hospitals, clinics or centers. An additional 60 USU alumni were serving in operational assignments for the three military services. These 352 USU physician alumni were holding significant leadership and/or operational positions throughout the Military Health System (MHS). Another review conducted in February of 1999, documented that of the first six classes of USU graduates, from 1980 through 1985, 408 alumni remain on active duty; 170 of whom (approximately 42 percent) hold senior operational or leadership positions. In April of 2003, a preliminary review has shown that over 50 of the most significant Command Positions in the MHS are held by USU graduates.

<u>The USU SOM Selection Process Ensures Commitment and Exemplary Retention Rates.</u>

Medical Students represent every state in the union and other locations where American citizenship is granted. Selection of students has been through a well orchestrated administrative and committee process that is regularly reviewed each year. We are seeking the customary bright individual with an array of non-cognitive endowments that matter to the profession of medicine, and matter to one's identity as a commissioned military officer. In this regard, we select individuals whom we

believe are gifted in leadership, self reflection, naturally engaging, adaptable and demonstrate evidence of placing service to others as a priority.

- *V. Students*, Subcommittee Report, Middle States Association of Colleges and Schools (MSA) Self Study, USU Web Site, dated February 5, 2003, page 3.

It is important to maintain a sense of continuity by remaining committed to the traditions, core values, and justifiable pride that are part of military medicine. Leaders organize, challenge others, provide the resources, and create the environment for others to achieve goals and accomplish remarkable feats... They make us believe in the nobility of a cause. The integrity and strength of character of the leader results in loyalty and devotion on the part of those who follow. It is the job of a teacher to keep bringing us back to certain basic principles. It is the moral obligation of the teacher to know his or her students, to recognize their individual needs, and to provide information, guidance, and encouragement during the learning process. The future of the medical departments appears bright when considering the quality of applicants seeking admission to the School of Medicine at USUHS. As a group, they have impressive credentials. Their application essays reflect a bright, highly motivated, and service-oriented cadre.

- **RADM Donald L. Sturtz, MC, USN, (Retired), Professor, Department of Surgery, USU School of Medicine**, "Commitment," Military Medicine, Volume 166, September 2001, pages 741-742.

High ethical standards, the candidate's own 'internal moral compass,' compassion, honesty, and integrity should be emphasized in the selection process for candidates to become the nation's physicians... Selection should employ MCAT scores and GPAs not as predictors of success in medical school, but as threshold measures to indicate only that applicants possess the intellectual endowment and scholastic aptitude needed to meet the academic rigors. Once candidates have satisfied those threshold requirements, we should give no further weight to academic credentials but make selections on the basis of character traits and aptitude for serving others.

- **Jordon Cohen, M.D., President, Association of American Medical Colleges (AAMC)**, in his opening speech at the 108th annual meeting of the AAMC, on November 6, 1997.

The USU SOM Selection Process Withstands the Test of Time. The USU SOM selection process has been identified as one of the major factors in the success of the overall retention rates of the USU alumni. All candidates are carefully screened during the interview process to determine the following: 1) already recognized sensitivity for national, public, and/or community service, which clearly has the potential for enhancement in

Federal service; 2) the presence of natural and adaptable leadership skills already documented in a variety of organizations and circumstances; 3) an enthusiasm for supportive care-giving directed at individuals and groups, forming the basis for evolvement as a physician in the broad areas of medicine, and military medicine in particular; and, 4) a documented record of academic success, which extends beyond the boundaries of any standard curriculum, as demonstrated through individual creativity, service, and/or research. A Matriculating Student Survey conducted by the Association of American Medical Colleges (AAMC) showed that compared to the national group of matriculants, USU SOM candidates were more likely to select medicine as a career because of the opportunity to serve the community and to lead, and less likely to seek a medical career for purposes of prestige or high income.

The SOM Committee on Admissions, faculty and student interviewers, and the SOM Office of Admissions work together to manage and implement the SOM Selection Process. The Committee on Admissions is comprised of men, women, active duty, civilian, clinical science, basic science, minority, and faculty representation for a total of 25 individuals. The applicant review process operates at subcommittee and full committee levels, with the initial review focusing on Medical College Admission Test (MCAT) scores and grade point averages (GPAs). The secondary review process is designed to enhance the opportunity for inviting applicants to interview. Candidates with academic records which would ordinarily preclude regular review at the subcommittee level and those not initially invited for interview are reviewed by the Assistant Dean for Admissions and Academic Support. This allows the identification of candidates who may have been overlooked and supports the SOM effort to recruit active duty military applicants, disadvantaged individuals and underrepresented minorities. Folders of all interviewed applicants are reviewed by three separate subcommittee members and are presented for full committee review if ranked above the minimum threshold. However, appropriate consideration is extended to underrepresented minority and active duty military applicants ranked at lower levels, and these candidates are also presented to the full committee. In addition, individual committee members may bring the application of any interviewed candidate to the attention of the full committee independent of the subcommittee ranking.

The "interview day" is consistently reported as a positive experience by applicants; during the interview process, the applicants take part in various activities, to include: organized briefings; two formal interviews; lunch; a tour of the campus with students; and, informal visits with: the Associate Dean for Student Affairs; the Assistant Dean for Clinical Sciences; the Director, Office of Admissions; the Assistant Dean for Admissions and Academic Records; the Vice President for University Recruitment and Diversity Affairs; faculty members; and, the SOM Commandant. Applicants are also given the opportunity to stay overnight with a student host. The selection process has continuously brought to the SOM a group of students who are academically qualified and well-motivated to practice medicine. In the history of the medical school, only two percent of the student body has had to be disenrolled for academic reasons; this is about one-third of the national average. The excellent percentage of students graduating (over 97 percent) is due to: 1) a good selection process; 2) a solid educational program; and, 3) genuine concern for those students who require academic or personal assistance during their time at USU.

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ACCREDITATION

At its meeting on April 3-4, 2002, the Liaison Committee on Medical Education (LCME) reviewed and accepted with appreciation your progress report on the documentation of the comparability of clinical educational experiences across clerkship sites. The system in place for documentation of the comparability of clinical educational experiences is an outstanding model for other institutions to emulate. Your next full accreditation survey is currently scheduled for the 2006-2007 Academic Year.

- Letter from the Liaison Committee on Medical Education to the Dean, School of Medicine, dated April 6, 2002.

Early Coordination with the Liaison Committee on Medical Education. The developmental process for establishing the initial objectives of the SOM were accomplished through the combined efforts of the founding USU President, **Anthony R. Curreri, M.D.**, the Board of Regents (BOR), the Dean, **Jay P. Sanford, M.D.**, and, special working groups. Activities used to develop these objectives included committee meetings, retreats, and consultation with a variety of experts from military medicine and civilian medical organizations and institutions. Significant among those coordinating entities was the Liaison Committee on Medical Education (LCME).

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SOM Program Accreditation.

Background. The LCME accreditation process is designed to certify that a medical program meets prescribed standards; and, by awarding accreditation, the LCME indicates confidence in the quality of the medical school program. The accreditation process also fosters institutional and program improvement. The SOM received provisional accreditation from the LCME, a joint activity of the Association of American Colleges (AAMC) and the Council on Medical Education of the American Medical Association (AMA) in 1976. The SOM was fully accredited by the LCME in 1979, and has continuously maintained that status.

The SOM prepared a Self-Study during 1992 and was visited by an LCME survey team during January 11-14, 1993. On April 7, 1993, the LCME voted to continue full accreditation for seven years. The Dean was asked to submit a report to the LCME by January 1, 1995, addressing: 1) progress in curriculum reform, including decompression in the first two years; 2) the empowerment and role of the curriculum committee to review, evaluate, design, and manage the curriculum; 3) the status of filling chairs of academic departments, with special reference to the availability of space and financial resources to do so and to the energizing of education and research; and, 4) the appropriateness of enrollment size and the adequacy of clinical resources. Following the LCME request, an ongoing curriculum renewal process was initiated in June of 1993. In November of 1993, the Dean's Policy Memorandum regarding the structure and function of the curriculum committee was updated to

assign responsibility to the curriculum committee in accordance with the LCME's guidance as described in Functions and Structure of a Medical School. Search committees were appointed to fill the open department chair positions. And, plans were initiated to develop third-year clerkship rotations at two additional sites. A report, submitted in December of 1994, detailed the status of progress in the four areas identified by the 1993 LCME response. The LCME accepted the report in February of 1995; and, it requested an additional report by September 1, 1996, to address the following: 1) any changes in class size stemming from the downsizing of the Uniformed Services; 2) the status of continued Federal support; 3) further progress in curricular management, evaluation, and reform; and, 4) the system and results of monitoring the equivalency of educational quality and the evaluation of students across sites of clinical education. The response, dated August 16, 1996, indicated that the class size had not been affected by the downsizing of the Uniformed Services and that Federal funding was sufficient to support the University's programs. Also, for the 1996-97 Academic Year, an additional ten percent reduction in contact hours for first and second-year students was implemented, resulting in an additional afternoon per week of student study time. In September of 1996, the LCME accepted that report; and, no further information was requested prior to the full accreditation survey scheduled for the 1999-2000 Academic Year.

LCME Self-Study and Site Visit - 1999. Following accreditation by the LCME in April of 1993, the LCME scheduled its next review of the SOM Program for reaccreditation in November of 1999. As a precursor to that review, the Associate Dean for Medical Education coordinated an institutional Self-Study. Self-Study Committees were established during 1998, assigned topic areas, and charged to review and analyze portions of the Medical Education Database as well as other information considered relevant to their topic areas. Reports were then submitted to the Steering Committee on February 1, 1999; all reports were reviewed by both the Steering Committee and a larger LCME Task Force. All data, Self-Study reports, and the Executive Summary were submitted to the Dean during the Summer of 1999. Following the Dean's review, those materials were submitted for review to the LCME and the Survey Team Members some months prior to the Survey Team Visit. The Site Visit took place between November 14-18, 1999. Exit briefings and follow-up correspondence from the LCME suggested a successful visit and continued accreditation. Official notice from the LCME was provided on April 13, 2000: "The School of Medicine received continued full accreditation of the educational program leading to the MD degree for a seven-year term. The next full survey will take place during the 2006-2007 academic year" (Letter from the LCME to the USU President, dated April 13, 2000).

Excerpts from the Summary of the LCME Full Accreditation Report as Provided in the USU Board of Regents 2000 Report to the Secretary of Defense.

There is ample evidence that a large number of faculty and staff members had taken the self-study seriously and participated fully in the preparation of the report, which was thorough and showed meticulous attention to detail. In reaching its decision to continue full accreditation of the medical school, the LCME identified numerous institutional strengths:

1. The School of Medicine is very successful in meeting its mission in graduating physicians who are well prepared and committed to military medicine;

2. The Dean holds a deep commitment to the values and success of the School of Medicine. He is a strong, capable leader who has been critically important in helping the school fulfill its mission;

3. The clinical curriculum is delivered in excellent military medical facilities, both locally and nationally;

4. The Department of Internal Medicine is to be commended for its success in creating a uniformly excellent clinical clerkship, comparable in quality across multiple educational sites;

5. The students are bright, academically talented, and uniformly dedicated to careers in military public service. They are consistently positive in their views toward their school and its faculty;

6. The support services provided by the Student Affairs Office are exceptional and appreciated by the students;

7. The faculty is available, interested and committed to student instruction and supervision. They work in a collegial fashion on behalf of the School of Medicine and the students; and,

8. The library, computer services, and the new simulation center are state-of-the-art, meeting the educational demands of the students for the future.

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2002 Progress Report Receives Commendations from the LCME. In its correspondence dated April 13, 2000, the LCME requested that the Dean of the SOM submit a progress report by March 1, 2002, addressing the following items: documentation of the comparability of clinical experiences across clerkship sites; planning and documentation of resources to support ongoing curriculum design and oversight and enhanced centralized faculty control and management of the curriculum; and, planning for facility improvements for research and education, including progress in addressing the limitations in research laboratory space, office space, and adequate space for small group instruction in the first two years.

The Dean of the SOM began initiatives to enable a timely response to the LCME's request for a progress report. In late April of 2000, the Dean met with the Curriculum Committee and charged its members to develop a plan to further enhance the process of curriculum oversight and management. This new plan was implemented at the beginning of the 2000-2001 Academic Year. The Associate Dean for Clinical Affairs was directed to develop a plan for documenting comparability of clinical experiences across clerkship sites. This task was accomplished in conjunction with the SOM clinical department chairs and hospital-based faculty. The SOM Space Review Committee developed and implemented processes for the review and assessment of space utilization. Baseline data was reviewed and recommendations were provided to improve assignment and utilization of existing space. This process, together with the additional use of 20,000 square feet of laboratory space on the grounds of the National Naval Medical Center and the addition of an approved construction project (41,055 square feet) in the Medical Military Construction Program for Fiscal Year 2006, demonstrated the SOM's progress in addressing space utilization concerns. On February 25, 2002, the USU SOM provided its progress report to the LCME. On April 6, 2002, the Dean, SOM, received notice from the LCME that it had "reviewed and accepted with appreciation the progress report on documentation of the comparability of clinical educational experiences across clerkship

sites, planning and documentation of resources to support curriculum design oversight, enhanced centralized faculty control, management of the curriculum, and planning for facility improvements for research and education." The LCME informed USU that the next full accreditation survey is scheduled for the 2006-2007 Academic Year.

Additional Accrediting Entities Provide Quality Assurance. In addition to the University's accreditation by the Commission on Higher Education of the Middle States Association of Colleges and Schools and the SOM's accreditation by the LCME, the following professional organizations continue to authorize accreditation for the various programs and activities of the SOM: 1) the Accreditation Council for Continuing Medical Education; 2) the Council on Education for Public Health; and, 3) the American Psychological Association Committee on Accreditation. Also, SOM Steering Committees are actively involved with the accreditation process for two additional areas of responsibility reviewed by: 4) the American Association for the Accreditation of Laboratory Animal Care; and, 5) the Nuclear Regulatory Commission.

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MILITARY UNIQUE CURRICULUM

Recent tragic events and the current Global War on Terrorism clearly show the benefits of preparedness and training. It is gratifying to know USUHS is leading the way in preparing military health care professionals to meet current and future challenges. Please accept my appreciation and pass on a hearty "Well Done!" to your colleagues and the students for their dedicated efforts in support of our men and women in uniform.

- **General Richard B. Myers, Chairman of the Joint Chiefs of Staff,** Letter to USUHS, March 29, 2002.

Each of our 3,268 physician graduates has received in-depth instruction in recognition, diagnosis, management, and decontamination for casualties from weapons of mass destruction (WMD). Since its inception in 1972, USUHS has attracted researchers and educators who are focused on these critical issues. WMD education is integrated into our undergraduate medical curriculum through didactic classroom/laboratory instruction and relevant field exercises. To our knowledge, we are the only medical school in the United States to provide such material. Further, the University conducts a well-recognized graduate level course entitled "The Scientific, Domestic and International Policy Challenges of Weapons of Mass Destruction and Terror." This unique course incorporates a simulated terrorist attack... for students to gain familiarity with unusual events.

- USU Board of Regents, Report to the Secretary of Defense, dated June 1, 2002, page 2.

General Overview. The School of Medicine is a fully accredited medical institution, which provides a year-round, four-year curriculum. This curriculum is 174 weeks in length, approximately 20 weeks longer than the average curriculum of medical schools in the United States. This expanded curriculum focuses on epidemiology, health promotion, disease prevention, tropical medicine, leadership, officership, the management of combat trauma, and combat casualty field exercises. Woven throughout the students' entire course of study, these and other subjects focus directly on the unique requirements of career-oriented military physicians. The USU SOM military unique training includes **"approximately between 784 and 889 hours of initial military education and medical readiness training compared to that provided to the Health Professions Scholarship graduates whose training ranges from 50 to 132 hours, depending on the Service"** (General Accounting Office Report, "Military Physicians - DoD's Medical School and Scholarship Program," September 29, 1995, page 41).

USU Represents a Total Military Medical Educational Environment and Acculturation Process. The USU SOM provides the Military Health System (MHS) with career-oriented medical officers who possess the knowledge, skills, and attitudes essential for effective deployment during joint service operations. The SOM's principal focus is on military medicine, which involves the prevention of disease and injury; the management of combat trauma; health promotion; and, diagnosis and treatment by medical personnel who are integral to the

military operations they support. This focus also involves the syndromes and injuries, which are either rare or unknown among non-military populations. Military medicine requires a solid background in tropical medicine and hygiene, parasitology, and the use of epidemiologic methods and preventive medicine. **The SOM, for example, provides its medical students with approximately 130 hours of study in these areas, compared to about 13 hours found in the typical civilian medical school curriculum.** Additional knowledge in such areas as military medical intelligence, psychologic stresses of combat and trauma, the medical effects of nuclear, chemical, and biological weapons, and the medical effects of extreme environments - aerospace, undersea, tropical or desert conditions - is essential to a physician's ability to properly support his/her military commander's responsibility for troop fitness. Also critical to a military physician's focus is his or her ability to provide disease prevention and health promotion under austere conditions.

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First-Year Curriculum.

Background. Four SOM Departments, Military and Emergency Medicine, Preventive Medicine and Biometrics, Medical History, and Psychiatry, share the major responsibility at USU for teaching the military unique course material, material not found in the curriculum of any other medical school in the United States. In addition to the usual first-year medical school courses, such as Anatomy, Physiology, Biochemistry and Human Behavior, students at the SOM have required courses in Military Studies, Military Medical History, Tropical Medicine (Diagnostic Parasitology and Medical Zoology), as well as Biostatistics and Epidemiology, all of which utilize military data and case studies. This provides an introduction to the scope and content of military medicine and exposes each student to all of the medical systems within the Uniformed Services. Students are focused on the delivery of preventive and treatment services in the "field" or in a deployed environment.

Overview of Military Studies. The Department of Military and Emergency Medicine is responsible for teaching the Military Studies Curriculum during the first and second years of medical school. The first course occurs during the Fall of the first year and is entitled, ***Overview of Military Medicine***; it introduces the students to military medicine through lectures and small group discussions. The content of the course includes the expectations that line officers have placed on the medical corps, the distribution and classification of combat casualties, the impact of disease and non-battle injuries on readiness, and the career patterns of the military medical officer. The remainder of this course deals with the echelon system and evolving modular concepts of battlefield health care and an introduction to the areas of chemical, biological, radiological, nuclear, and high explosive (CBRNE) warfare. During the second instructional period (Winter) of the first year, the students learn the basic skills of prehospital care in a course entitled, ***Combat Medical Skills***. This portion of the curriculum exposes the students to the level of medical training of the basic medic and introduces, at an early time, those skills which must be built upon and expanded during subsequent medical training. ***Military Applied Physiology*** is presented during the third instructional period (Spring) of the first year. While this course parallels the traditional Physiology Course, it also reinforces the concept that was introduced during the Fall, that military medicine is a form of occupational/ environmental medicine. The physiologic responses to stressors common to the military environment such as cold, heat, radiation, dysbarism, altitude sickness, and exercise are presented in the context of their impact upon readiness.

By the end of the first academic year, each student has completed course work and experiences considerably greater than those required by the Basic Medical Officer Course for any of the Uniformed Services. The first academic year spans 40 weeks of instruction within the SOM, one week of operational medicine, and five weeks of military medical field studies.

Operation Kerkesner.

I just returned from a 'fantastic' morning at Quantico observing Operation Kerkesner. I had no idea that the training had reached such a high state of sophistication... Some of my observations included the following: how integrated and well thought out the sequence and content of the

training was; how those students with prior military time helped the uninitiated ones so well; how professional and competent the Marine NCO cadre was. What a powerful lesson for those students to see how the NCO Corps truly is the backbone of the force; how impressed the two Thai Army officers and Japanese Naval officer were as they observed the training. USUHS no doubt is the global benchmark model; how the students praised this experience. Not one I spoke with had a negative thing to say.

- From a Letter to the USU President dated June 25, 1999, from **Colonel Frederick J. Erdtmann, MC, USA, Hospital Commander, Walter Reed Army Medical Center**.

Between the first and second year, all students participate in the required five-week course, ***Military Medical Field Studies*** (MMFS). The MMFS Course begins with instruction in military field skills: operating a radio, navigating the land in daylight and at night, using preventive medicine principles, and protecting oneself against CBRNE attacks. The knowledge from this block of instruction prepares the students to successfully complete a one-week leadership laboratory exercise at the Quantico Marine Corps Base. This exercise, ***Operation Kerkesner*** (named after a former Marine faculty member of USU), challenges the students' ability to overcome field problems through their own initiative and team work. The field exercise focuses on small unit operations in a field environment. The class of 165 students is divided into four platoons, which are further divided into eight person squads. Evaluators from the Department of Military and Emergency Medicine and platoon advisors from USU and Quantico live with the students and accompany them in all scenarios. Student leadership is rotated to place each student in a leadership position at squad or platoon level with all attendant responsibilities. The schedule includes operational scenarios that emphasize virtually all major points covered in the Military Studies I Course. Student leaders must know the medical threats (e.g., dehydration, insect-borne disease, sanitation, injury prevention, CBRNE avoidance and decontamination, physical and psychological stress) they may face and demonstrate how they would control these medical problems in their units. This course initiates the student to the field skills and small unit leadership experience required for the successful completion of Operation Bushmaster during the Military Contingency Medicine Course in the fourth year. Operation Kerkesner has been visited by a variety of active and reserve United States military medical personnel and has served as a model for the Navy's Rapid Deployment Medical Force (RADMF) training program. Elements of the course have been used in Public Health Service Disaster Medical Assistance Team (DMAT) training. Foreign military medical personnel have also attended the course to gain material to enhance their own training programs (e.g., the United Kingdom, France, Israel, Japan, Singapore, Thailand, and Mexico).

Non-Medical Operational Assignments. The field exercise is followed by the final portion of Military Medical Field Studies. During this time, prior service students may elect to participate in research, work with a mentor, or attend a military qualification school such as: Basic Airborne Training; Basic Air Assault School; Survival, Evasion, Resistance, and Escape (SERE) School Training; Underwater Operations (SCUBA); or, Expert Field Medical Badge (EFMB). Those students without prior service experience are required to spend four weeks with an operational unit in their parent Service. Students may be afloat on a Navy ship, with a Marine Battalion, with noncommissioned officers (NCOs), or with other junior officers learning the military occupational environment and developing a non-medical perspective on military medicine. Coordinators at each site report on the students' performance to the Department of Military and Emergency Medicine; and, each student produces a daily log and

a written report detailing his/her experience and lessons learned. During this same period, twenty-five to thirty-five percent of each class will elect and successfully complete, one of the military qualification schools listed above.

Special Programs in Operational Medicine Offered by the Casualty Care Research Center. The Casualty Care Research Center (CCRC) is a division of the SOM Department of Military and Emergency Medicine. The CCRC, created in July of 1989, is staffed by military and civilian physicians and scientists. The center provides USU medical students and other medical personnel disciplined training and research experiences in combat casualty care, medical counterterrorism, injury epidemiology, trauma management and other related areas. USU's medical students attend the CCRC programs either as an elective during their fourth year or as part of their summer experience between the first and second years of medical school.

During 2002, approximately 18 students between their first and second year of medical school, selected an area of interest and worked with CCRC faculty members on individualized courses of research and study. The students were also divided into groups; each group was responsible for completing a research effort and for a presentation of findings. Students attended one or more of the following CCRC training opportunities:

1. ***Emergency Medical Technician-Tactical (EMT-T) Course.*** The EMT-T Course was developed to provide relevant training to medical providers who work within the law enforcement special operations community. Topics in the EMT-T Program include: clandestine drug laboratory raids; emergency medical care in barricade situations; care under fire; forensic science during patient care; medical operations, planning and medical intelligence; wounding effects of weapons and booby traps; special medical gear for tactical operations; personal protective gear; special needs for extended operations; preventive medicine; and, injury control;

2. ***Emergency Medical Technician - Tactical Advanced Course.*** The Tactical Advanced Course includes the following topics: advanced technology applications in the remote assessment methodology; legal concepts and moot court; individual health care concepts; concepts in crisis intervention; sleep/wake cycle management; emerging issues in chemical restraint; operational dermatology; management of training injuries; nutrition and fitness for tactical teams; and, less lethal weapons systems; and,

3. ***Weapons of Mass Destruction (WMD) Training Program.*** The Center offers a variety of training programs in the area of WMD to include: Out-of-Hospital Response Training; and, a Health Care Facilities Course. Topics of instruction include: identifying potential chemical-biological-radiological-nuclear (CBRN) devices; threat recognition and evaluation; formulating a building response/evacuation plan; the role of quarantine and isolating exposed individuals; psychological effects of a WMD incident; and, principles of hasty decontamination.

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Second-Year Curriculum.

Extensive Hours of Preventive Medicine Training. During the second year, besides Pathology, Microbiology, Pharmacology, Ethics, Human Behavior, Introduction to Clinical Medicine and Physical Diagnosis, students have additional hours of preventive medicine, including an introduction to operational (field) preventive medicine; health promotion in the military; physical fitness programs, policies, and implementation strategies; environmental and occupational health; and, health services administration. On October 3, 2001, the Dean, SOM, issued a revised policy directing that *all second-year medical students must certify as Basic Life Support (BLS) providers at the "C" level.* The certification is in effect for two years and is provided during the sophomore year to maintain certification through May of the senior year. The Department of Military and Emergency Medicine schedules BLS certification sessions for the second-year students; students may elect to certify through officially approved off-campus courses under the auspices of the American Heart Association or the American Red Cross. These courses must be at the "C" level, also known as the health care provider level; students must be certified prior to the beginning of their third-year clerkships.

Military Studies. The second-year ***Course in Military Studies***, conducted by the Department of Military and Emergency Medicine, focuses on two general areas: the science base for the practice of military medicine (wound ballistics, extensive background on conventional and unconventional weapons effects, protective equipment, and decontamination procedures) and the command-and-staff functions of military medicine in Joint Commands (medical planning, medical logistics, medical evacuation systems, and blood programs). The second academic year spans 35 weeks of instruction within the SOM. After final examinations, students prepare for the United States Medical Licensing Examination (USMLE) Step 1, which is the first of three examinations in the process of becoming a licensed physician. The current second-year class completed the computer-based testing (CBT) for the USMLE, Step 1, between May and June of 2002, prior to beginning the first rotation of their third year. The Office of Student Affairs reported that 90.1 percent of the USU students in the Class of 2004 passed the examination on their first attempt. The national average percentage pass for 2002 was 90 percent.

Second-Year Medical Ethics Course. The second year, Medical Ethics Course: ***Ethical, Legal and Social Issues in Medicine*** was initiated during the Summer of 1977. The course, taken by all medical students, provides extensive material directly related to military medicine including the special concerns with sending soldiers back to combat, treatment of prisoners and civilians, and limitations imposed by the Geneva Conventions. A new issue posed this year was whether treatment of prisoners who had been terrorists should be any different from that of prisoners who had been former enemy soldiers fighting for countries that had signed the Geneva Convention. Other material stresses the resolution of hospital-based ethical problems in Federal institutions. A wide range of speakers is annually provided during the course: **Gordon Livingston**, a local psychiatrist and West Point Graduate, shares lessons learned during the Vietnam Conflict; and, **Craig Llewellyn,** Professor and Director, Center for Humanitarian and Assistance Medicine (CDHAM), USU SOM Department of Military and Emergency Medicine, summarizes the discussions by suggesting what the students should retain from the differing views presented on military medical ethics. There are four major issues that all USU students address: 1) Military Medical Triage. The students learn that the practice of military medical triage sometimes departs from traditional civilian medical procedures and that the top priority may be to further the military mission. The students discuss how the varying priorities may be necessary to save extensive lives, both military and civilian; 2)

Captured Enemy Service Persons. The USU students learn that if the captured enemy is ill or injured, he/she is to be regarded as a patient. There is no option for physicians or any service persons to mistreat prisoners or to treat them "less equally" for revenge or military gain; 3) Exploitation of Vulnerable Patients. In this session, the students learn that in medicine, physicians should never exploit vulnerable patients for military gain; and, 4) Self-Incriminating Information. In this final area, students are instructed that the two primary tasks of military physicians are to keep their patients healthy and to provide commanders with accurate information regarding the health of their patients. Over 150 faculty from USUHS, NNMC, and WRAMC led discussions on these and other issues with small groups of students. The final lecture, during both 1999 and 2000, was given by **Patricia Heberer**, an historian at the Holocaust Museum. In this year's session, the students viewed a film actually shown to the German public by the Nazi Government during World War II to justify policies of euthanasia for selected patient groups such as those who had severe mental illness. The students also learned that all physicians are susceptible to immoral behavior and that they must avoid the mistakes of the past.

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Third-Year Curriculum.

Overview. The third-year curriculum consists of clerkships in the principal specialties of medicine. Much of the instruction is provided by uniformed clinical faculty with an emphasis on teaching the special military relevance of the various clinical experiences. Of special note are the military clinical settings for instruction (military tertiary medical centers, military community hospitals, military outpatient ambulatory care clinics, and troop dispensaries on active military bases) and the patient population, which includes active duty personnel presenting diseases and injuries incurred during both training and combat deployments.

As a part of their training and work during their clerkships, USU SOM third (and fourth-year students) provide hundreds of thousands of hours of patient care related services in the MHS hospitals during each calendar year. Such services include: examination of patients; providing post-operative care; organization and maintenance of the completion of the medical history and physical examinations of patients; assistance at surgery and the delivery of newborns; and, updating progress notes in patient records. These services, performed by USU medical students in a supervised setting, provide necessary and important support in the provision of quality medical care to the men, women, and children receiving treatment throughout the MHS.

All SOM departments are providing a clinical experience within the ambulatory setting. The ambulatory services of all departments have grown significantly within the past seven years. The Department of Medicine has taken the lead and devoted extensive resources to the planning, development, and implementation of a comprehensive ambulatory teaching experience. The department's program and its faculty have become nationally recognized for accomplishments in this area; and, a number of publications in peer-reviewed journals and presentations have resulted.

Clerkships Represent the Entire Spectrum of the MHS. USU medical students complete their third and fourth-year clinical clerkships at over 22 military hospitals, representing the entire spectrum of the Military Health System (MHS). The third-year class of approximately 165 students has eight required clinical clerkship rotations of six weeks each, for a total of 1,320 third-year rotations: Family Practice (six weeks); Obstetrics/ Gynecology (six weeks); Pediatrics (six weeks); Psychiatry (six weeks); Internal Medicine (two six-week sessions); and, Surgery (two six-week sessions). Five of the USU SOM academic departments - Medicine, Surgery, Obstetrics and Gynecology, Pediatrics, and Psychiatry - use the Walter Reed Army Medical Center and the National Naval Medical Center as major clinical instructional sites.

The University regularly reevaluates and updates the affiliation agreements with its major teaching affiliates, which has improved the relationship between the SOM and its numerous clinical sites; it also ensures that clear routes of communication exist and areas of mutual interest are appropriately defined and addressed. The SOM Associate Dean for Clinical Affairs provides oversight for relationships and interactions between the SOM and its clinical teaching sites. Issues of concern from all parties can now be readily addressed as changes in the military health care delivery system are put into place.

The following teaching hospitals have affiliation agreements with the USU SOM: 1) **United States Army - (6)** Walter Reed Army Medical Center, Washington, D.C.; Brooke Army Medical Center, San Antonio, Texas; Tripler Army Medical Center, Hawaii; Madigan Army Medical Center, Tacoma, Washington; Eisenhower

Army Medical Center, Fort Gordon, Georgia; William Beaumont Army Medical Center, El Paso, Texas; 2) **United States Navy - (3)** National Naval Medical Center, Bethesda, Maryland; Naval Hospital, Portsmouth, Virginia; Naval Hospital, San Diego, California; and, 3) **United States Air Force - (6)** Malcolm Grow Medical Center, Andrews Air Force Base, Maryland; Wilford Hall Medical Center, Lackland, Texas; USAF Medical Center, Wright Patterson Air Force Base, Ohio; USAF Medical Center, Keesler Air Force Base; David Grant Medical Center, Travis Air Force Base, California; and, USAF 3rd Medical Group Regional Hospital, Elsmendorf, Alaska. In addition, USU students rotate through the following Medical Centers or Community Hospitals for at least one of their required specialty clerkships: 1) **United States Army - (4)** DeWitt Army Community Hospital, Fort Belvoir, Virginia; Martin Army Community Hospital, Fort Benning, Georgia; Darnall Army Community Hospital, Fort Hood, Texas; Womack Army Community Hospital, Fort Bragg, North Carolina; 2) **United States Navy - (2)** Naval Hospital, Jacksonville, Florida; Naval Hospital, Pensacola, Florida; and, 3) **United States Air Force - (1)** USAF 96th Medical Group Hospital, Eglin Air Force Base, Florida.

The Department of Obstetrics and Gynecology Successfully Utilizes Standardized Patients to Assure Mastery of Required Knowledge, Skills, and Professional Behaviors. Educators in Obstetrics and Gynecology and accreditation bodies have been concerned that a medical student may complete a required core clinical clerkship without the assurance of the mastery of essential clinical skills or the demonstration of the essential components of professionalism. The SOM Department of Obstetrics and Gynecology initiated a program of assessment utilizing standardized patients (trained actor-patients) in an Objective Structured Clinical Exam (OSCE) format with one-on-one faculty supervision at the end of each core six-week clinical clerkship. These sessions are conducted at USU's Medical Simulation Center for clerkships in the National Capital Area; and, sessions are provided in the Obstetrics and Gynecology Clinics located at the integrated Wilford Hall USAF Medical Center in Lackland, Texas; the Brooke Army Medical Center in San Antonio, Texas; and, at the Tripler Army Medical Center in Hawaii. As other clinical programs have done, the Department can now assure that the students have been observed correctly performing techniques. The following procedures are performed utilizing standardized patients during the OSCE: the clinical breast examination; the speculum pelvic examination; the bimanual pelvic examination; an interview of the adolescent gynecologic patient; and, an interview of the menopausal patient. Another innovation, initiated during 2001-2002, was the provision of direct, on-the-spot feedback to the medical students from the standardized patients and the faculty supervisors both at the conclusion of each of the essential techniques, or procedures, listed above, and following the final examination sessions. The standardized patients and faculty reinforce the skills and also provide guidance for improvement. Feedback from the students has been extremely positive; they understand the importance of being able to exhibit the required skills and behaviors; and, they particularly appreciate the immediate guidance and the opportunity to improve their performance of these essential skills. As a consequence, this clerkship experience leaves a permanent impression on the students, which eventually benefits their future patients in subsequent clinical encounters.

An Innovative Clinical Clerkship Management Tool Utilizing Palm-Type, Hand-Held Computer Devices. The Department of Obstetrics and Gynecology has also led the development and implementation of an innovative clinical clerkship management tool utilizing palm-type, hand-held computer devices for medical student performance evaluations. From 2000 through 2002, the residents in the USU, NNMC, and WRAMC-sponsored Uniformed Services Residency in Obstetrics and Gynecology Program have utilized a hand-held device operating system application, which was developed by faculty in the USU Department to establish a cumulative data base

encompassing the residents' individual patient care management experiences. On a weekly basis, each resident downloads his or her data to the main department computer through a "HotSync" function. This allows the program director to have timely, on-going access to the experiences of all of the residents. The positive impact of this program was published in the peer-reviewed premier journal, Obstetrics and Gynecology, and was showcased in a special session at the Annual Meeting of the Council on Resident Education in Obstetrics and Gynecology in March of 2001. Since the residents are the primary teaching interface with the USU medical students, a new program has been developed in the SOM Department so that the residents can enter their assessments of the performance of the USU medical students who are rotating on their respective services. When the residents download their own patient care experiences on a weekly basis, their evaluations of the USU medical students are automatically downloaded as well. The Clinical Clerkship Director then has ready access to the progress of all of the medical students in a format, which is automatically updated each week. As the program is further developed, it will be implemented at all clerkship sites. Data for all students in the Department of Obstetrics and Gynecology is downloaded weekly through a secure Internet site so that the Clerkship Coordinator can monitor the progress of all students at all sites. This process helped USU to meet the LCME requirements for uniform experience and assessment for all USU medical students across all sites.

The Department of Obstetrics and Gynecology Implements the Use of a Life-Sized Birth Simulator. During 2002, the Department of Obstetrics and Gynecology implemented the use of a life-sized birth simulator in the education of USU medical students and residents in the Uniformed Services Residency in Obstetrics and Gynecology. The simulator is located in a dedicated, mock-up delivery room in the Department's Education Unit, which is located in Building 1 at the National Naval Medical Center. **Lieutenant Colonel Andrew Satin, USAF, MC,** Professor of Obstetrics and Gynecology, Head of the Education Division, Department of Obstetrics and Gynecology, USU SOM, and Residency Program Director, and **Lieutenant Colonel Christian Macedonia, MC, USA,** Assistant Professor of Obstetrics and Gynecology, designed a curriculum employing the use of the birth simulator in the instruction of medical students during their core third-year clerkship experiences. Divided into small groups, the students each have an opportunity, under direct faculty supervision, to conduct a virtual, life-like "normal birth" so that they can gain the knowledge, skills, and confidence required of them during actual clinical care labor and delivery settings. The students have been universally enthusiastic in their appreciation of this novel instructional opportunity. A similar curriculum is utilized in the initial instruction of new interns in Obstetrics and Gynecology. Additionally, a curriculum has been designed to instruct more advanced residents in the principles of obstetric forcep applications and delivery and also for vacuum-assisted delivery. Measurable increases in knowledge, skills, confidence, and overall proficiency of the residents have resulted; and, the program has been presented at several national professional forums. The American Board of Obstetrics and Gynecology, among other organizations and institutions, has taken considerable interest in the further evolution of these instructional programs.

Pediatric Clinical Rotation - Exceptional Family Member Program. Several years ago, the Pediatric Clinical Rotation initiated home visits to families with children with special needs. This program has grown to include a set of educational experiences integrated across the four years of medical school. In the first year, medical students have an opportunity, coordinated with the Human Context in Medicine Course, to visit families or adult patients with special needs. In the second year, the Bioethics Course opens with a three-hour session that includes a lecture, film, and small-group discussions with parents whose children have been critically ill during

the first year or two of their lives. In addition to the Pediatric Home Visit in the third year, the Pediatric Clinical Rotation includes two sessions in which faculty members and parents collaboratively offer insights about developmental issues of childhood and provide practice and feedback about pediatric medical interviews. The Family Medicine Clinical Rotation now teaches about advocating for patients and families through standardized patient experiences, a three-and-a-half hour session taught collaboratively with adults with chronic medical conditions, and a home visit that focuses on medical and community resources. A Pediatric Research Elective in the fourth year provides an opportunity for students to: design and initiate research that involves parents and patients for providing insights about health care experiences; plan research that incorporates patients and families; and, respond to surveys and interviews. The Josiah Macy, Jr. Foundation has funded the development of this coordinated set of learning experiences through a grant implemented by **Colonel Virginia Randall, MC, USA,** and **Janice L. Hanson, Ph.D.** During 2002, Doctor Hanson received a three-year grant for $471,556 from the Health Resources and Services Administration, Department of Health and Human Services to further this work involving parents, patients, and families as advisors to the students. The new project will develop approaches to teaching and evaluating professionalism in the USU SOM Departments of Pediatrics and Family Medicine.

Pediatric Cardiology Module - Cardiac Auscultation at the Simulation Center. Beginning in 2000 and continuing throughout 2002, an innovative case-based, interactive scenario in pediatric cardiology has been introduced into the third-year medical student pediatric clerkship through the advanced technologies of the National Capital Area Medical Simulation Center. This teaching module is an interactive session between the instructor and medical students with discussions on the events of the cardiac cycle and a demonstration on their relationship to heart sounds and murmurs in the normal child as compared to the child with congenital heart disease. Interactive discussion is facilitated by the instructor and covers the following topics: 1) the electrical and mechanical events in the cardiac cycle; 2) the four common functional murmurs; 3) a short overview of congenital heart disease; 4) the normal cardiac auscultation of the child; and, 5) the abnormal clinical findings as illustrated by the more common congenital cardiac defects. The instructor's presentation is supported by slide presentations and the use of computer software. The demonstration of heart sounds and murmurs is based on a CD-ROM, which contains audio files of actual pediatric cardiac sounds as well as other visual resources that are available to the instructor and to each of the students at his/her individual work station. The teaching objective is for the student to recognize the normal clinical findings in the cardiovascular examination of the child and to differentiate between physiologic and pathologic sounds and murmurs. A pre-test is given at the beginning of the session; each student is tested on the heart sounds and murmurs provided by the computer software program. The teaching module is expected to complement the clinical experience during the clerkship and to help develop physical diagnosis skills; a post-test is given at the end of the six-week clerkship to evaluate the progress of the individual student. This educational experience was presented at the National Meeting of the Council on Medical Student Education in Pediatrics in San Diago in March of 2001. The USU SOM Pediatric Education Section presented a poster entitled, *Utilizing a case-based interactive learning module incorporating CD-ROM-based technology to optimize the teaching of cardiac auscultation skills in the pediatric clerkship.*

Patient Simulation Laboratory - A Collaborative Effort.

On April 10, 2001, and June 12, 2001, we brought eight registered nurse students to your anesthesia simulation laboratory for realistic and invaluable advanced cardiac life support training. The experience our students receive in your lab is consistently of the highest caliber and a highlight of their training. As usual, their evaluations of the experience were outstanding. I appreciate the learning opportunity your patient simulation laboratory affords our students. My wish is to continue the collaborative relationship we have established with your staff to provide exceptional simulator training for future Critical Care Nursing Course students.

- **Karen M. Whitman, MS, RN, CS, Major, U.S. Army Nurse Corps, Director, WRAMC Critical Care Nursing Course**, Letter to USU, June 28, 2001.

A collaborative project between the National Naval Medical Center's Department of Anesthesiology and two USU SOM Departments: Anesthesiology; and, Anatomy, Physiology, and Genetics led to the development, in 1997, of a fully interactive medical training laboratory at USU: the Patient Simulation Laboratory (PSL). As mannequin-based simulation was new not only to USU, but also quite rare, in general, throughout the world of medical education, almost every program offered by the USU PSL was developed and implemented by the USU PSL staff. The PSL has been in daily use since its first course offering. This instructional facility supports training in combat casualty care, anesthesia, critical care, trauma, and emergency medicine. Students gain experience in recognizing problems, developing decision-making skills, and refining techniques and procedures.

The PSL has six mannequins that span the range of ages from newborn to adult, both male and female. There are more than 35 customizable *events* ranging from anaphylaxis to ventricular fibrillation that can be assigned to the simulated patients. The *mannequin patient* presents a wide range of responses to the following computer-controlled scenarios: lung ventilation visibly detectable by chest movement; eye lid open/closure; pupil dilation/contraction; palpable pulses; arm motion; thumb twitch; tongue and airway swelling; and, urination. In addition, the *mannequin patient* responds to the following student implemented actions: drug and gas administration; chest tube placement; needle thoracentesis; pericardiocentesis; and, cardiac pulmonary resuscitation. Every kind of signal that can be captured from a *real* patient can be displayed and analyzed on the Clinical Monitor. Patient Simulators typically have over two dozen predefined *patients*, each with unique underlying characteristics and cardiovascular, pulmonary, and metabolic attributes. These patient profiles are modified and new *patients* are constructed to match the teaching objective. The patient simulator can present a wide variety of medical problems and altered physiological states as well as difficult airway management and equipment set-up and/or malfunction. The simulators present scenarios applicable to combat casualty care, anesthesia, critical care, trauma, and emergency medicine.

The drug models include intravenous and inhaled anesthetics, neuromuscular blockers, cardiovascular agents, and a wide range of infusion pharmaceuticals, which affect the simulators as they would human patients. The automated drug recognition system provides for realistic drug administration; each syringe is equipped with a unique computer chip that represents a specific drug. Thus, the instructor can: select the type of a case and adjust the speed and severity to match the ability level of the student; review and/or repeat clinical situations until

a desired level of performance is accomplished (a lesson can be *paused* to provide the instructor the opportunity to give the student feedback); evaluate student clinical decision-making judgments; schedule training at convenient times; and, use the simulator as a research tool for training or evaluation methodologies.

The patient simulators, located in the USU SOM Department of Anesthesiology, are used to train four primary groups: medical students; graduate nurses; anesthesia residents; and, students of the Crisis and Consequence Management of Weapons of Mass Destruction and Terrorism Course. In addition, training is also provided to the following TriService, post-graduate military medical readiness groups: The Army Medical Center and School from the Walter Reed Army Medical Center; the Air Force Critical Care Air Transport Teams from the Malcolm Grow Medical Center; and, USNS COMFORT clinical staff from the National Naval Medical Center.

The PSL has completed its fifth year of teaching the first-year SOM students a simulated cardiovascular reflex scenario as part of their Physiology Course; each year, the SOM students have expressed strong enthusiasm for this simulation presentation. The simulated patient definitely adds a clinical context to some of the physiological and pharmacological principles presented to both the medical and nursing students. In addition, to these hands-on small group (eight students) simulations, the PSL provides live, interactive distance education presentations to the second-year SOM students for illustrating simulated, clinical examples during their Pharmacology lectures. Thus, the PSL brings the hospital to the students through a newly installed Advanced Distance Education Network (ADEN), designed by the PSL staff.

During their third-year anesthesia rotation, SOM students are instructed in the basic fundamentals of anesthesia and the role of the anesthesiologist in surgery. They learn to connect a patient to external life support sources, such as an oxygen mask, a ventilator, or manual ventilation via endotracheal intubation. For the first time, USU medical students combine the lessons learned about the physiology of gas exchange and physiologic and pharmacologic responses, while actually performing the procedures and administering anesthesia on the patient simulator, <u>without</u> putting a patient, or themselves, at risk.

The USU SOM Departments such as Military and Emergency Medicine, Pharmacology, Biochemistry and Molecular Biology, Microbiology and Immunology, and Pathology offer classes focusing on the effects of chemical agents and radiation and biowarfare agents. One such course is the ***Scientific, Domestic and International Policy Challenges of Weapons of Mass Destruction and Terror: Part I***. The course, first offered in 2000, provides an understanding of the medical features and medical countermeasures for living agents or organic products that could potentially be used in warfare, terrorism, or criminal activities in the context of the political implications of weapons of mass destruction. Also incorporated into the course is a hands-on training phase conducted in the PSL; the simulator's real strength is that medical disasters can be scheduled and students can practice repetitively until they gain familiarity, competence, and poise with the unexpected. In conjunction with this course, the PSL has produced inhalational anthrax and marine toxin exposure scenarios, with another scenario featuring smallpox currently in development. The pneumonic plague scenario is also played out in the PSL, placing the students in a real-life situation. Part II of the course, first offered during 2001, focuses on nuclear, radiological, high explosives, chemical agents, and unusual weapons; and, it is also acted out in the laboratory. These realistic exercises result in the class members reaching out to others and forming teams to solve problems; they provide experience with almost every facet of a response to a biological or chemical terrorism event.

During both 2002 and 2003, the USU PSL team received the *First Place Research Award* for their presentations at the Society for Technology in Anesthesia International Meeting on Medical Simulation. The PSL study shows a remarkable reduction in error detection time, when doctors view clinical monitor data via a prototype Head Mounted Display. This concept of providing immediately accessible critical vital sign data to clinicians via a Head Mounted Display is the basis of a patent application by the PSL team; PSL's winning presentation showed acceptance by surgeons to wearing a Head Mounted Display in the operating room.

An Innovative Introduction to the Surgical Clerkship. The third-year surgical clerkship is preceded by a three-day introduction to clinical models and operative procedures utilizing the National Capital Medical Simulation Center (SIMCEN) and the animal surgical facilities in the USU Department of Laboratory Medicine. This innovative and comprehensive approach, which occurs with third-year SOM students every six weeks, familiarizes the students with patient interactions associated with the presentation of common surgical illnesses as well as introducing various surgical techniques, priorities, equipment and procedures. The advanced technologies of the SIMCEN employ live patient models well versed in specific disease histories and symptoms. Disease scenarios include common problems such as pancreatitis, appendicitis, ectopic pregnancy, and gallbladder disease. Students perform comprehensive, focused histories and physicals on two to three *patients* under real-time observation by a faculty-teaching surgeon. The encounter is also taped for interactive student-teacher reviews during small group discussions of techniques and performance. In addition to the patient encounters, separate laboratories are held to teach and perform knot tying, endotracheal intubation and ultrasound fast examination techniques on mannequins. A human patient simulator is used to teach acute trauma care, utilizing various scenarios creating positive and negative outcomes to specific student treatment choices. There is also a virtual reality laboratory for the performance of technical skills including suturing and cricothyroidotomy. The unique experience offered by the two days in the live animal laboratory introduces students to actual operative procedures on an anesthetized animal under sterile conditions. The instrumentation, scrub procedures, apparel and routine are true replicas of actual clinical hospital settings. Students are assigned in groups of three or four to a certified teaching surgeon for the entire two days. Abdominal procedures including appendectomy, splenectomy, bowel resection and cholecystectomy are carried out with each student serving as surgeon, scrub technician, and assistant. On the second day, the thoracic phase is carried out including a pneumonectomy, pericardial window, aortotomy, and chest tube placement. This intense three-day session prepares the student anatomically, physiologically and procedurally for the clinical rotation. The clinical rotations include the standard third-year clerkship in general surgery and surgical specialties. Small group mentoring preceptorships are held weekly as well as Distinguished Professor Lectureships, which are held bi-monthly.

Simulation Center Technologies Utilized During the Surgery Rotation. The advanced technologies of the National Capital Medical Simulation Center are being used in simultaneous fashion every six weeks to introduce the third-year medical students to their surgery rotations. The students are provided both an introductory discussion and a lecture regarding an abdominal surgery laboratory to be held the following day. The patient actors are used to provide an hour-long, three-patient opportunity to elicit, from the medical students, a medical history; and, the patient actors enable the medical students to perform a focused physical examination for a variety of acute abdominal diseases (e.g., appendicitis, pancreatitis, gallbladder disease, ectopic pregnancy, and others). These encounters are videotaped and the tapes are reviewed with the teaching surgeon during the subsequent hour. A suturing and knot-tying laboratory is held in the computer laboratory using both web-based and senior

surgeon instruction. Plastic mechanical models (Laerdal/MPL) are used to teach such skills as endotracheal intubation, chest tube insertion, and surgical airway. The human patient simulator (MEDSIM) is used to teach the best approach to simple clinical problems such as hypotension or hypoxemia. The virtual reality laboratory experience includes starting an IV (HT Medical), creating an anastomosis (BDI), and performing bronchoscopy (HT Medical). Two additional simulators are used to teach emergency trauma procedures: pericardiocentesis and diagnostic peritoneal lavage. These last two trauma skills simulator technologies were developed at the National Capital Area Medical Simulation Center. Through the use of this multi-modality facility, the experience of medical students can be enhanced so that the first time some of the above-described problems or procedures are encountered, it will not be with a live patient, but rather with the most appropriate simulator. Approaches, such as those provided by the advanced technologies of the Simulation Center, are expected to minimize the possibility of medical errors.

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Fourth-Year Curriculum.

Yours is the only medical school in America which trains physicians to be ready for duty on the bottom of the ocean or on the surface of the Moon, and any place in between...As students, you went through one of the most rigorous programs in the country... You prepared yourself to treat patients anywhere in the world, under any circumstances.

- **President Ronald Reagan**, Commencement Address, SOM Class of 1987.

Overview. The fourth academic year begins with a one-week Military Preventive Medicine Course. Early in the fourth year, approximately 165 students also take the USMLE Step 2. The 165 fourth-year students have ten four-week blocks for 1,650 rotations. Students must complete an eight week subinternship as well as the following four-week clerkships: Military Contingency Medicine; Military Emergency Medicine; and, Neurology. The senior year concludes with a one-week Transition to Residency Course.

Military Medicine. The Department of Military and Emergency Medicine conducts two courses in the senior year which are required for graduation from the SOM. Although separate in time, they are closely coordinated. For years, ***Military Contingency Medicine (MCM)*** has focused on medicine in a deployed environment and in response to a terrorist attack. The first two weeks of the course are currently devoted to reviewing and expanding basic concepts and manual skills learned in the first two years of Military Studies. While Combat Medical Skills included first-aid at the medic level for the first-year medical students, the ***Advanced Trauma Life Support (ATLS) Course*** is taught at the physician level to the fourth-year students. The USU SOM is one of only three medical schools in the United States that require ATLS for all of their students. Additional topics in the first two weeks include the management of combat trauma, chemical-biological-radiological (CBR) exposure, environmental injuries, and combat stress. Special sections focus on triage, women's issues, and working with non-governmental organizations in disaster relief or humanitarian assistance missions. Integration with national strategic goals, operational missions, and tactical objectives is emphasized in all aspects of the course. The third week of MCM is dedicated to ***Operation Bushmaster*** (see next paragraph) so that didactic lessons can be applied in multiple simulated situations during a field training exercise. The fourth week continues student education in military medicine and begins the transition into hospital-based emergency medicine. Students review basic and learn advanced life support interventions during this period; these two and one half days also prepare the SOM students to excel in a four-week clerkship entitled ***Military Emergency Medicine (MEM)***.

Operation Bushmaster.

I learned that I can't think only in the present, that I have to think ahead. Bushmaster gives those with no prior experience a taste of what is ahead in field medicine.

- **2nd Lieutenant Cristin Kiley, USA,** "Changes to Operation Bushmaster," The USU Quarterly, Winter Issue, 2002, page 6.

The field training exercise, ***Operation Bushmaster***, uses the constructs of two United States Army Battalion Aid Stations, one United States Marine Corps Battalion Aid Station, and one United States Army Forward Support Medical Company to allow students to practice skills learned in the Military Contingency Medicine Course and throughout the military and *traditional* SOM curriculum. These treatment facilities are designed to represent first- and second-echelon levels of care within the forward battlefield environment. Real-world and notional modular teams, such as the Air Force's Mobile Field Surgical Teams, have been integrated into the scenarios. Army units have provided front-line ambulances, UH-60 Blackhawk helicopters, and medical personnel to give students experience with front-line medical evacuation procedures and platforms. The scenario reflects a Joint Task Force (JTF) deployment involving all four Services and incorporates the updated policies established by the Secretary of Defense. The students are placed in a resource-restricted environment and are forced to coordinate with theater assets and their *sister* Services in order to accomplish their missions and deliver optimal patient care.

The students practice land navigation, radio communication and other field training, triage and combat casualty care, to include setting up a Battalion Aid Station. Drawing on their classroom lectures and teachings, SOM students are encouraged to develop novel solutions to many operational scenarios and problems. They also are forced to navigate the different evacuation requirements and procedures that each Service utilizes within the battlefield environment. This exposure will allow the USU SOM students to quickly integrate themselves into a future joint combat environment. Students occupy at least three leadership and medical evaluation positions throughout the field operation. They are evaluated on the following: medical proficiency while handling dozens of simulated casualties; leadership skills under demanding and stressful conditions; mission accomplishment and focus; and, teamwork. Drawing on all that the students have learned while at USU, Operation Bushmaster is viewed as the capstone exercise of their military medical education, allowing them to hone their skills in a simulated combat environment.

Operation Bushmaster is conducted three times each academic year, in September, November and January. One-third of the class attends each week-long session of Bushmaster at Camp Bullis in San Antonio, Texas. In a recent issue of the USU Quarterly, **Major Troy Johnson, MC, USA, USU SOM Class of 1995**, was interviewed reference his position as the Academic Director for Bushmaster. Within 18 months of his graduation from USU, Major Johnson, a flight surgeon with a special operations unit, was faced with a real-world mass casualty situation overseas involving the United States Marines who did not have a physician with their unit. Major Johnson had to provide care within a Marine Battalion Aid Station; he knew what to do, due to the training he had received at USU, and was subsequently decorated for his actions. As mentioned above, the USU students are now trained in the Marine Battalion Aid Station. In the past, the Bushmaster scenario was set in Bosnia. Today, the Bushmaster scenario is based in the Middle East; and, in the future, if another area of the World becomes significant, the USU instructors will change the cultural concerns and the diseases to match the new area of interest.

Emergency Medicine Clerkship. The USU SOM requires all students to complete a Clinical Clerkship in Emergency Medicine prior to their graduation as physicians. In preparation for their clinical work in an Emergency Department, all of the senior students participate in an intensive three-day overview of Emergency Medicine. During this didactic phase, students are taught how emergency medicine physicians problem solve. Lecturers demonstrate the steps they use when evaluating patients in the Emergency Department. In case study sessions (small group discussions) led by experienced emergency medicine physicians, students have the opportunity to practice problem-solving techniques. Lectures, case study sessions, and assigned readings give the students the factual knowledge they need to work in Emergency Departments. Students leave for their clinical rotations with a solid understanding of Emergency Medicine.

Students may choose from a variety of sites (military and civilian) to perform their Emergency Department clinical rotations. All military hospitals having training programs in Emergency Medicine are open to USU SOM students. These include: the Darnall Army Community Hospital at Fort Hood, Texas; the Madigan Army Medical Center in Tacoma, Washington; the Naval Hospital in San Diego, California; the Naval Hospital in Portsmouth, Virginia; the Medical Center at Wright Patterson Air Force Base, Ohio; and, the San Antonio Uniformed Services Health Education Consortium, which encompasses the Wilford Hall Medical Center in Lackland, Texas, and the Brooke Army Medical Center located in San Antonio, Texas. In addition, USU SOM students can choose from among several high-volume, trauma intensive civilian sites including: Charity Hospital in New Orleans, Louisiana; the Ben Taub General Hospital in Houston, Texas; and, the University of Maryland Medical Center in Baltimore, Maryland. In the Emergency Department, students function under the supervision of experienced Emergency Medicine physicians and are expected to be active members of the Emergency Department team as they care for patients of all ages and with a variety of medical and surgical problems. Students are encouraged to take part in the didactic activities of the Emergency Department in addition to patient care. Each year, about ten USU SOM students choose Emergency Medicine as their career choice; many have gone on to become leaders in Emergency Medicine.

Operational Electives. The Department of Military and Emergency Medicine, through its Education Division or one of its three centers, sponsors several electives in operational medicine. These may include clinical rotations in military emergency departments or aerospace medicine clinics, enrollment in military courses, or attendance at the Joint Readiness Training Center. Qualification as a flight surgeon may be obtained through either the United States Air Force School of Aerospace Medicine or the United States Army School of Aviation Medicine; during the past years, the Army School has altered the timing and structure of their course specifically to enable USU SOM students better access to this form of occupational medicine. Whereas only one student had attended in the previous two years, five students and one faculty member attended during 2001; four of those six were the top four graduates of the demanding six-week Army course. Nine students attended during 2002. Additionally, three students were sponsored by the Center for Disaster and Humanitarian Assistance Medicine to accompany an Air Force unit on a humanitarian mission to El Salvador. And, two students worked in a trauma center in Armenia before their graduation in 2002.

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USU SOM Curriculum Stresses a Military Focus. In addition to the military unique curriculum described above, ***the USU SOM academic departments and faculty have structured all of their courses to include: topics specific to military medicine and not covered in the traditional medical school curriculum; and, teaching examples and cases drawn from military medicine.*** This content focus is reinforced by the fact that many of the faculty (one third of the billeted basic science faculty and two-thirds of the clinical faculty) are uniformed officers representing the Army, Navy, Air Force, and the Public Health Service; these unformed instructors provide experience and contextual correlations during their teaching of traditional topics. ***The unique practice of military medicine is woven throughout the four years of medical school.***

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Curriculum Renewal.

Background. The SOM curriculum utilizes a variety of educational experiences and learning formats, including lecture, laboratory, clinical correlation, small group discussion, computer and web-based experiences, patient simulator, standardized patients, and experiential exercises. The SOM vision for the undergraduate curriculum is that the science of today is taught in an environment that will foster increased long-term, self-directed learning tomorrow. Toward this end, the SOM Executive Curriculum Committee (ECC) completed an exhaustive study of the undergraduate curriculum, and revisions are on-going to minimize the traditional curricular "stovepipes" through course integration and the increased use of clinical material.

In both the first and second years of medical school, there is a heavy emphasis on small group learning. In the first year, this takes the form of laboratories in Structure and Function and discussion groups in Human Context. Additionally, the Introduction to Clinical Medicine Course starts in the first year and begins to develop history-taking and physical diagnosis skills. In the second year, laboratories continue in Pathology and Microbiology, while there is increased use of a small group *problem-based learning* educational format. In both Pathology and Clinical Concepts, groups of 8 to 12 students team with a faculty member to review clinical scenarios. The format of these encounters is designed to flow seamlessly into the second-year portion of the Introduction to Clinical Medicine Course and the clerkships during the third year.

Integration of Clinical Medicine and the Basic Science Experience. There are numerous examples of clinical medicine being integrated into *the basic science experience*. Close collaboration between the Departments of Radiology and Radiological Sciences and Anatomy, Physiology, and Genetics led to the development of computer-based learning resources correlating basic anatomy with the radiological representation of normal and pathologic states. The integrated structure and function curriculum (Physiology and Anatomy) incorporates clinical faculty into its teaching. Several areas in particular - Cardiovascular, Renal, and Pulmonary - have demonstrated extensive clinical integration for many years. The Department of Pathology utilizes many clinical facilitators for its small group discussions. In addition, Pathology has coordinated the format of its case presentations with course directors from Clinical Concepts and Introduction to Clinical Medicine to provide a consistent experience for students. Pathology and Clinical Concepts have also coordinated their curriculum to provide the case scenarios in Clinical Concepts in sequence with topics being discussed in Pathology. The Department of Pharmacology also encourages clinical facilitators to participate in their small group exercises. There are currently several initiatives being considered to move basic science to the clinical years. One example is the proposal before the ECC to develop a computer or web-based curriculum of key basic science topics for exploration in the fourth year of medical school. These examples illustrate basic science and clinical integration either in place or under active consideration.

The Renewal Process. As the Chief Academic Officer of the SOM, the Dean is responsible for institutionalized curriculum management. Policy issues are reviewed and considered by the ECC, which reports to the Dean. Institutionalized curriculum renewal in the SOM is a high priority. The formalized process began with Phase I (1993-1995) of curriculum renewal. During Phase I, a steering committee with four subcommittees was developed to cover the following areas: 1) the history of medical education in the United States; 2) current experiments in curriculum reform; 3) curriculum at the USU SOM; and, 4) professional requirements and outcomes. Subcommittee reports and recommendations were generated and reviewed by the faculty. The Dean's Office and academic departments then offered recommendations on how to best implement the committee's recommendations.

During Phase II (1996-1997), a steering committee and five subcommittees were established; they reviewed or completed the following: 1) objectives and goals; 2) an organizational template for curriculum management; 3) basic science and intra-departmental and clinical integration; 4) outcomes and evaluations of the clinical clerkships, both required and elective; 5) the establishment of topic groups; 6) subcommittee and topic group reports and recommendations; 7) a consensus on the recommendations and implementation planning; and, 8) the implementation process.

In February of 1998, the Dean charged the ECC with reviewing the December 1997 Curriculum Review Report produced during Phase II of the curriculum renewal process. The ECC was also charged with providing oversight for the planning process and the development of an implementation plan for curriculum renewal. This implementation plan is envisioned as an evolutionary process, with changes in the curriculum occurring in an incremental fashion. The ECC completed a draft of the SOM educational objectives, which was reviewed by the Dean and distributed to faculty, students, and staff for comment, and finalized in November of 1998. As changes to the curriculum occur, the SOM Dean has also directed that his office establish and monitor processes for student, faculty, and TriService evaluation of the curriculum changes.

Responsibilities of the Executive Committee on Curriculum. On August 2, 2001, the SOM Dean issued a Policy Memorandum updating the responsibilities of the USU SOM Executive Committee on Curriculum (ECC). The members of the ECC are drawn from the faculty, student body, and administration. Members are charged with representing the interests of the SOM as a whole; not as representatives of specific constituencies. The twelve members of the ECC have been designated with responsibility in seven areas to: 1) articulate, with the concurrence of the Office of the Dean, well-defined learning objectives that each student must meet to receive the M.D. Degree; 2) conduct a biennial review of each required course/clerkship in the SOM undergraduate curriculum, including content, format, teaching methods, course materials and methods for verifying that graduating students have met all of the learning objectives; 3) establish a prospective course/clerkship review schedule that gives course/clerkship directors sufficient time for proper consultation and preparation before the biennial review; 4) complete the course/clerkship review and assessment within 60 days of submission and presentation by the course/clerkship director, including submission of findings and recommendations to the Office of the Dean; 5) request, if necessary, through the Office of the Dean, further information, seek consultation with faculty or external consultants, and, when appropriate, sponsor symposia on curriculum to assist course/clerkship directors or topic group leaders in curricular planning or improvement; 6) periodically review institutional policy concerning the curriculum and educational practices to ensure consistency in the implementation and management of the undergraduate medical education program; and, 7) address other curricular issues and educational initiatives as charged by the Dean, SOM.

Issues addressed by the ECC in recent years include: coordination and/or changes to examination schedules; changes to the academic schedule grid; review of grading policies; review of mandatory attendance policy; discussion and response to student-generated After-Action-Reports; review of fourth-year requirements; consideration of a diversity curriculum proposal; review of changes to the first and second-year Introduction to Clinical Medicine Courses; and, review of the students' military responsibilities and their impact on the overall academic experience.

Responsibilities of Department Chairs and Faculty. The Department Chairs are responsible for establishing objectives, designing content and presenting each course/clerkship assigned to his/her department and for assuring that the performance of students is evaluated in an appropriate and timely manner and in accordance with institutional policy. The Chairs are also responsible for supporting Course or Clerkship Directors with requisite faculty and specifically for assigning teaching responsibilities to faculty members and for allocating departmental resources as required to support the courses, clerkships, selectives, and electives assigned to their departments. Course or Clerkship Directors for departmental-sponsored courses will be appointed by the responsible Chair; Course or Clerkship Directors for interdepartmental courses will be appointed by the Dean, SOM. Faculty members are the content experts in the individual basic science and clinical science disciplines and collectively are responsible for the SOM curriculum. The processes of curricular design, implementation and evaluation must involve broad participation by the SOM faculty both at the departmental level and at the institutional level. Every assigned faculty member is responsible, generally, in coordination with the Course or Clerkship Directors, for fulfilling his/her assigned teaching responsibilities in the areas of undergraduate curriculum.

Center for the Enhancement of Healthcare Training and Outcomes. The Liaison Committee on Medical Education (LCME) has stated that medical faculty and students need to address gender and cultural biases in the delivery of health care and, in general, prepare providers to care for diverse patient populations. The USU SOM Departments of Medical and Clinical Psychology and Family Medicine have developed a biopsychosocial training program for medical students and residents, nursing students, clinical/medical psychologists, prospective health care professionals, and faculty. The Center for the Enhancement of Healthcare Training and Outcomes (CEHTO) enables the University to comply with the LCME requirements in addition to improving USU's curriculum and maximizing health care outcomes. CEHTO has been established to: 1) infuse concepts and processes into existing curricula in order to advance a biopsychosocial philosophy, improve cultural proficiency, and maximize health care outcomes; 2) provide a forum in which students have the opportunity to practice the skills and strategies addressed in the classroom; 3) facilitate the development of culturally respectful relationships - inside and outside of the USU community; and, 4) evaluate the impact of CEHTO and continuously improve and refine the training provided. Fundamentally, CEHTO is designed to teach students, residents, and health care professionals how to maximize their effectiveness. Its ultimate aim is to train providers to use a wide knowledge base, interpersonal skills, technology, and cultural awareness to effect the most beneficial treatment plans for patients. With customized training modules, CEHTO participants also receive training to enhance self-management (i.e., personal stress management, cultural awareness, interpersonal sensitivity) and others (i.e., resolving conflict or dealing with severe physical or mental illness). As a component of the Family Medicine Clerkship Curriculum, for example, medical students receive experiential training. Via facilitated conversations, small and large group exercises, and multi-media presentations, students learn about how cultural factors affect them, their patients, and their interactions with others. Experiences such as these foster an appreciation of cultural diversity, the patients' mental health

needs, and how our own beliefs and biases can impact patient care. Most important, this training gives SOM students the opportunity to consider, rehearse, and evaluate specific strategies to deal most effectively with diverse multi-cultural populations. Hands-on, experiential training modules utilize standardized patients (patient actors) at the USU Medical Simulation Center. Using realistic behavioral simulations, this state-of-the-art medical simulation center provides a unique forum in which participants can practice, develop, and refine new skills, and translate increased cultural awareness into culturally proficient behaviors. Detailed feedback is provided and individualized behavioral prescriptions are generated to assist participants in setting objective goals for improvement.

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Departmental Review. A program was adopted by the School of Medicine in 1998 that mandated each department to conduct a "self-study" every five years or at the time of the appointment of a new chairperson. The self-study would be followed with a review of the self-study by a group of "peers" from outside of the University. From 1999 through 2002, self-studies and external reviews have been completed by the Departments of Anesthesiology, Dermatology, Family Medicine, Military and Emergency Medicine, Obstetrics and Gynecology, Pharmacology, Neurology, Radiology and Radiological Sciences, and Surgery. Other departmental reviews pending completion include: Anatomy, Physiology and Genetics; Pathology; Pediatrics; and, Medical History. The results of these studies will be used to chart future courses for these departments in education, research, and community service.

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STUDENT AFFAIRS

Class of 2006. During August of 2002, the School of Medicine (SOM) matriculated its twenty-seventh class (the Class of 2006). 1,658 applicants representing all 50 states competed for 167 positions. There were approximately 10 applicants for each position, which allowed a diverse and highly qualified selection of candidates with a motivation toward public service. The Class of 2006 includes 63 Army, 51 Navy, and 51 Air Force, and 2 United States Public Health Service medical students. The demographics of the class are depicted as follows:

- Seventy-eight students (47 percent) were associated in some way with the military before USU matriculation. Of those,
    - Twenty-six students served previously as officers; sixteen had previously served as enlisted personnel; twenty-one were service academy graduates; twelve were direct graduates of ROTC programs; and, three were reservists;
- Forty-one students (25 percent) are women;
- Nineteen class members (11 percent) are minority students (including 11 students from groups classified as underrepresented by the Association of American Medical Colleges); and,
- The average age of the entrants at the time of application was 25 years.

All members of the Class of 2006 hold Baccalaureate Degrees; and, ten students hold Master of Science Degrees. Biology was the most represented undergraduate major of the matriculants (28 percent); eleven percent of the class had majors in Chemistry; and, five percent had majors in Biochemistry. Some of the other disciplines in which members of the Class of 2006 hold degrees are Economics, English, History, Nursing, Physical Education, Physics, and Zoology.

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The Office of Student Affairs. Throughout Fiscal Year 2002, the Office of Student Affairs (OSA) was engaged in personal and/or professional academic counseling and career guidance for the 668 students in the SOM. Beginning in September of each year, OSA conducts well over 300 formal interviews. In 2002, this process formally began with the post-matriculation interviews of all 167 freshmen from the first-year class.

Structured Interviews for the First Year Class. The purpose of the MS-I (medical student-first year) interview is to engage each new medical student in a relationship with the OSA and the office staff who will manage his/her professional development and career guidance. The interview is open with an emphasis on the future partnership (or the individual management and consulting network) that will exist between each student and the three deans in OSA. The interview covers five areas: 1) Transition - the move to Washington, D.C., e.g., housing, getting settled, family issues; 2) Sense of Membership in the Class, e.g., within and between Services, professional, social; 3) Sense of Professional Vision, e.g., vision for what will come after

medical school; 4) Adjustment to Student Life, e.g., how are they managing the 24-hour clock; and, 5) Inquiry about Image, e.g., aside from the roles of student, spouse, parent, athlete, what really defines them? Students are free to raise any questions, concerns, or thoughts. The interviews require considerable time, but have definitely proven to be worth the effort for both the students and OSA. These interviews set the stage for an on-going dialogue with each student over the four years of medical school and for establishing a sense of community throughout the student body.

Sponsor Program. In January of 2002, OSA allocated sponsor assignments for the newly accepted students in the Class of 2006. Upon acceptance to USU, members of the incoming class are individually matched with members of the current freshman class. First-year students serve as the incoming students' sponsors; the student sponsor answers questions about housing, moving to Washington, D.C., family issues, military summer training, and many other topics. The student-sponsor relationship has proven to be a valuable tool in assisting the incoming students through matriculation.

Jumping from an aircraft at 1,280 feet, 2nd Lieutenants Reed Kuehn, Chad Cryer, and Johannah Kone (Class of 2005 - on an operational assignment following their first year of medical school) **qualified as paratroopers while attending Jump School at Fort Benning, Georgia. The school was broken down into three weeks: *ground week*, which consisted of jumping out of a mock door, four people at a time, and practicing landing and falling by hooking a cable from a 34-foot tower; *tower week*, which advanced them to a 250-foot tower, fortifying the practice of landing and falling, mass exiting from an aircraft, air mobility and emergency malfunctions of the parachute and how to handle them; and, *jump week*, where all of the training is pulled together and the students perform four jumps, including a night jump. "The most exciting part was at the door waiting to jump, where it was extremely loud, then jumping into complete silence," said Kuehn.**

"We went to represent USU, complete the course and to gain knowledge for our futures," said Cryer. "It was good to see the everyday life of the people whom we will be taking care of and the conditions that they go through." All three students gained an understanding of the importance of preventive medicine. Just doing the simple things like staying well-hydrated and applying sunscreen helped keep troops comfortable with all of their gear on. "There was lots of monotony in the training, falling again and again, as repetition helped seed in people's minds what to be aware of to prevent many injuries," said Cryer.

In the case of most of the class, this was the group's first experience with the operational side of the military. The large volume of enlisted troops impressed Kone, in particular. "I think the experience gave me a better awareness of what soldiers go through," Kone said. "Even though half of the time we were sitting around waiting to jump, while we were waiting, we had to sit with all of the equipment on in the heat." Kone felt this experience gave her a better understanding of the unique burdens that the enlisted soldiers have to face... "When you are

treating someone and they see the patch (patch earned upon completion of the operational training) **... you have a connection with the patient."**

- *USU Students Gain Deployment Experience*, USU Medicine, Fall 2002, page 27.

USMLE Step 1 Preparation. During Fiscal Year 2002, OSA prepared the second-year students for the United States Medical Licensing Examination (USMLE) Step 1 Board Examination, which the students took between May and June of 2002, prior to beginning their first of the third-year clinical rotations. In 1999, the USMLE introduced computer-based testing for the Step 1 and 2 Examinations. During 2002, OSA provided class-wide presentations covering the fundamentals of the examination process, test preparation strategies, and test-taking skills. Students also organize their own informal programs, which have included mini-lectures on broad relevant topics, meetings with select faculty, and group study sessions. The USU first-time pass average for the Step 1 Board Examination during 2002 was 90 percent (the national first-time pass average for 2001 was also 90 percent). Most of the USU fourth-year students (SOM Class of 2003) completed the Step 2 Examination between July and September of 2002. The overall performance for the Class of 2003 was strong with a pass rate of 96 percent.

Third-Year Clerkship Scheduling. Also during February, OSA met with the second-year students to schedule their third-year clerkships. To increase student input into the orchestration of their third-year clerkship schedule, OSA has moved from a system where students were simply given a pre-selected schedule of randomly assigned clerkships. The student now has the ability to place rotations of special interest in the first half of his/her junior year and the opportunity to experience potential career choices at an early point. In addition, the current system allows students to coordinate some of the required travel in their academic third year with personal events that may already be planned or anticipated. The staff of OSA conducted Round 1 clerkship selections for the Class of 2004 using randomly assigned numbers. During the second week of February, students met as a group and picked rotations for the remaining rounds. The students shared equally in opportunities for assignments of choice and expressed their appreciation for the process.

Graduate Medical Education Planning Interviews. OSA conducts interviews with the third-year medical students during the fall term. During the first few months of 2002, OSA met individually with members of the junior class to conduct fourth-year planning. The hour-long meetings covered Graduate Medical Education (GME) planning, specialty choice, interviews, and specific sequencing of senior rotations to maximize the selection of their residency of choice; again, available selections for senior-year rotations exceeded the general expectations of the students. OSA arranged program schedules that enhanced student growth, professional experience, and individual preferences. A major product of this process is the Dean's Letter, which presents a comprehensive picture of each student's strengths. Selection for GME positions is competitive; OSA and students worked together to create the best nomination packages possible.

Graduate Medical Education Selection Board. The Joint Service Selection Board convened during the week of December 2 - 6, 2002; and, 155 USUHS seniors (the Class of 2003) were selected for PGY-1 positions: Army - 55; Navy - 50; Air Force - 50. The overall selection rate for FIRST CHOICE programs was 74 percent. USU had 114 out of 155 students match for first choice both in specialty and training site. Twenty-five additional students of the Class of 2003 received their first choice in specialty, resulting in 90 percent (139 out of 155) receiving their first choice in specialty. Nearly half of the class (45 percent) was selected for training in a primary care specialty. Seventy seniors will begin their residency training during this Summer in the following areas: Family Medicine - 26; Internal Medicine - 28; Pediatrics - 12;, and, Obstetrics and Gynecology - 4. The directors of the MHS military programs once again demonstrated confidence in the USU SOM graduates.

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The USU Military Medical Student Association. The Military Medical Student Association (MMSA), a quad-service, student-run organization, originated at USU more than thirteen years ago. MMSA's goals include developing lines of communication among military medical students nationwide, providing information, and promoting morale and unity among future military medical officers.

Unlike USU medical Students, the Health Professions Scholarship Program (HPSP) students attend universities in the civilian sector; they receive tuition and books and are paid a monthly stipend while working toward their medical degrees. The HPSP students receive limited military training and influence while attending the civilian schools. To share their unique military training, MMSA has sponsored conferences where residency directors and medical specialty representatives from around the country, and USU staff and faculty members present lectures and hold discussions on various topics, including service specific issues, military medical history, operational considerations of military medicine, and basic military concerns which affect both USU and HPSP medical students. The USU MMSA has also established the *MMSA Journal*, which provides valuable military information of interest to medical students; the MMSA goal is to make copies of the journal available to all HPSP students.

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USU Students Appointed on Liaison Panels. Among all of the medical students in the United States and Canada, the Association of American Medical Colleges (AAMC) chose two USU SOM students to represent medical students on a pair of key panels during 2001, two prestigious assignments. **Ensign David Brett Major**, at the time, a fourth-year medical student, was chosen to represent the AAMC as the student member on the Liaison Committee on Medical Education (LCME). His one-year term began on July 1, 2001, and ended shortly after his graduation in 2002. **Ensign Sean McBride**, now, a fourth-year medical student, was appointed by the Administrative Board of the AAMC to serve as the student liaison to the Committee on Admissions. Founded in 1876, the AAMC comprises the 125 accredited United States medical schools, 16 accredited Canadian medical schools, 400 major teaching hospitals and health systems, 90 academic and professional societies representing nearly 100,000 faculty members and the Nation's health through the advancement of medical schools and teaching hospitals. The AAMC and its members set a national agenda for medical education, biomedical research, and health care. The association also works to

strengthen the quality of medical education and training and knowledge, to advance research in the health sciences, and to integrate education into the provision of effective health care.

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ACHIEVEMENTS OF THE SOM ALUMNI

Recent tragic events and the current Global War on Terrorism clearly show the benefits of preparedness and training. It is gratifying to know USUHS is leading the way in preparing military healthcare professionals to meet current and future challenges.

- **Richard B. Myers, Chairman of the Joint Chiefs of Staff,** Letter to USU dated March 29, 2002.

The extraordinary retention of these military officers ensures continuity for the MHS and the safeguarding of lessons learned during combat and casualty care. Currently, the USU School of Medicine (SOM) alumni represent over twenty-one percent of the total physicians on active duty in the military services. Furthermore, a significant number of USU graduates who have completed their residency training hold leadership or operational positions throughout the MHS. The University's mission statement, *Learning to Care for Those in Harm's Way*, succinctly captures its essential commitment to Force Health Protection.

- **Vice Admiral Michael L. Cowan, Surgeon General of the Navy,** Testimony before the House Armed Services Committee, Military Personnel Subcommittee, April 10, 2002.

I deployed to the Gulf very early, August 11, 1990, as a senior medical officer with the Air Force Special Operations Command. Deployed in this capacity, my responsibilities ranged from flying training and combat support missions to representing my command at theater-level planning conferences...

The heat in August was incredible, with temperatures up to 125 degrees. Yet our maintenance personnel had to work around the clock to get our aircraft combat ready. Just sleeping six hours in the heat caused dehydration to the point of dizziness. Our medical team was on the flight line and around our tent-city bringing sunscreen and ice water to the personnel because they could not drink 100 degree water out of a canteen.

***My training at USUHS had prepared me for working in austere conditions without fixed facilities.* The tap water in our camp became contaminated by the sewer system, and water tanks had to be provided with chlorine levels monitored daily. Because of the *military medical history* classes I had at USUHS, I knew that disease and non-battle injuries could make an army ineffective before the battle began. *Preventive medicine* is an entire department and course of study at USUHS. I had the training and references... to avoid repeating the mistakes of previous wars... Because of the emphasis on *tropical medicine* at USUHS, I was able to advise the Commander and troops about potential infections and how to protect themselves... Because**

we *studied the air evacuation system* and did practice exercises using it at USUHS, I was able to coordinate a unique mini-mobile aeromedical staging facility at our intermediate operating base. This provided the transition from our helicopter rescue aircraft to the C-130 medical evacuation system. As our troop build-up progressed, hospitals from each Service increased. Because at USUHS I had been taught *the organization of medical systems in the other Services*, I was able to arrange referrals for our patients much more easily... We had no logisticians, but were able to obtain supplies through the Army depot system which I also learned about at USUHS.

Another area of major concern for our personnel was chemical warfare. Because of the thorough preparation and field training I had as a student at USUHS, I was *able to develop a training program in unconventional warfare, such as chemical and biological threats*, which increased confidence and decreased anxiety in our troops... When we deployed to our forward locations, there were no *designated disaster preparedness personnel*. The USUHS experience came in handy again, as I assumed those responsibilities. A plan for *decontaminating aircraft, vehicles, and personnel* was created. Materials were purchased and positioned to maximize readiness.

To summarize the impact of the 4-year immersion in military medicine at USUHS on my preparation for war, I appreciated the operational mission of my unit and how I, as a medical officer, fit into the process of planning and executing that mission. This went well beyond treating patients. It involved analyzing the tactical situation, advising the Commander, and integrating with other Services. *USUHS graduates were well prepared.*

- **Lieutenant Colonel Charles Beadling, USAF (USU Class of 1984, currently at the Rank of O-6,),**
  Testimony before the Senate Appropriations Sub-Committee on Defense, April 14, 1994, page 95.

General Overview. The graduating Class of 2002 was the twenty-third class to receive Medical Degrees from USU. *As of April 2003, of the total 3,268 medical school graduates, 2,620 remain on active duty in the Uniformed Services (Army - 1,016; Navy - 748; Air Force - 762; USPHS- 94); and, the 2,526 USU SOM alumni on active duty in the Military Health System represent over 21 percent of the total physician force in the Department of Defense - 11,907 physicians.* USU graduates have a seven-year obligation, which only begins after they complete their three-plus years of residency training. This obligation is exclusive of any other service obligations they may have already incurred, such as graduation from one of the Service Academies. After twenty-three graduations, data is now available to document that the USU SOM graduates are meeting, or surpassing, the goals established by the founders of USU. Since the first graduation in 1980 to April of 2003, the overall retention rate for USU graduates is 83.6 percent; of the ten USU SOM classes, which graduated between 1990 and 1999, the retention rate is 95.3 percent (Congress had originally envisioned retention rates close to 70 percent). The average USU physician graduate serves at least 18.5 years.

An example of the critical role of USU graduates in the MHS was reported during February of 2001, when the Center for Navy Analysis (CNA) provided data on medical retention to the Navy Surgeon General for use in his responses to the Senate Appropriations Committee. The Navy Surgeon General informed the Congressional Committee that his most undermanned specialties were general surgery and all surgical subspecialties, orthopedic surgery, diagnostic radiology, anesthesiology, and urology. Many of these specialties are critical wartime specialties and shortfalls could have a negative impact on medical readiness. *Overall the median length of non-obligated service for physician specialists averages only 4.4 years. That average drops to 2.9 years when USU graduates are excluded;* ***the median length of non-obligated service as a specialist for USU graduates is 9 years.***

Significantly, in April of 2003, CNA released *Phase II: The Impact of Constraints and Policies on the Optimal-Mix-of-Accession Model* of its major study, Life-Cycle Costs of Selected Uniformed Health Professions. The second of six major findings states: *policy-makers need to consider the costs and benefits for each accession source. For example, even though USUHS accessions are the most costly* (the General Accounting Office has reported that when all Federal costs are included, the cost of a USU graduate is comparable to the cost of an HPSP graduate), ***their better retention makes USUHS the most cost-effective accession source for filling O-6 grade requirements*** (page three of the report).

In just a short timeframe, USU graduates have become well respected in their medical specialties and have become the core leadership in areas of military medicine ranging from special operations and hospitals, to the White House and the newly established Department of Homeland Security, to deployments to Afghanistan and Iraq, and to assignments aboard ships at sea or with the Blue Angels, the NASA Johnson Space Center, the Secretary of Defense, and the Congress of the United States. Following the terrorist attacks on September 11, 2001, USU graduates were strongly represented among the medical relief workers at the World Trade Center and at the Pentagon; they led the efforts to identify remains at the Dover Port Mortuary; and, USU graduates assisted in directing the Nation's medical response in the wake of the anthrax attacks. On May 12, 2003, USU was provided with an *initial* (and ever-increasing) listing of physicians deployed for Operation Iraqi Freedom from the Army; of the 346 Army physicians, 67 (almost 20 percent) were USU SOM alumni. Other alumni are engaged in patient care or research in military hospitals and clinics around the world, administering to active duty officers and enlisted personnel, retirees, and family members. Currently, 14 of the 58 Specialty Consultants to the Army Surgeon General are USU graduates; 8 of the 45 Specialty Consultants to the Navy Surgeon General are USU graduates; and, 18 of the 59 Specialty Consultants to the Air Force Surgeon General are USU graduates. USU graduates are, and continue to provide, a strong cadre of leaders who ensure the continuity of military medicine.

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School of Medicine Is Recognized by the American Academy of Family Physicians. In keeping with its long-standing tradition, the Department of Family Medicine once more received a Family Practice Percentage Award from the American Academy of Family Physicians. The award recognizes medical schools for their success in making family practice a top career choice for graduating medical students. A total of 27 medical schools received the Year 2002 award, which recognizes the highest three-year average of graduates entering family practice residency training programs from 1999 through 2001. The USU SOM received a Bronze Percentage Award for a three-year average of 20.3 percent.

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Second USU Alumnus Is Promoted to O-7. USU's second flag officer, **Brigadier General Charles "Bill" Fox, MC, USA, USU Class of 1981**, was initially triple-hatted as the Corps Surgeon for the XVII Airborne Corps, Commander of the 44th Medical Command, and Director of Health Services at Fort Bragg, North Carolina. He is currently assigned as the Commanding General at the Brooke Army Medical Center and Great Plains Regional Medical Command at Fort Sam Houston, Texas.

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Third USU Alumnus Is Selected for Promotion to O-7. USU's third alumnus selected for flag officer is **Brigadier General (select) Bill Germann, USAF, MC, USU Class of 1982,** who was selected during 2003 to command the 89th Medical Group, Malcolm Grow USAF Medical Center, at Andrews Air Force Base, Maryland. Brigadier General (select) Germann is currently serving as the Air Education and Training Command Surgeon at Randolph Air Force Base, Texas.

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USU Alumni Earn Promotions to O-6.

USU Army Graduates Selected for Promotion to Colonel - 2002.

Thirty-eight percent of the medical corps officers selected for promotion to Colonel (O-6) were USU SOM graduates. Of 68 medical corps officers designated for O-6, 26 were USU SOM alumni; and, one of the two physicians selected below the zone was a USU alumnus.

USU Navy Captain Promotion Selectees -2002.

The Navy released the promotion list for Captain (O-6) Medical Corps during the first quarter of 2002. There were 256 physicians considered for promotion to O-6 in or above zone. Of those, 33 were

USU alumni; 223 were non-USU alumni. Overall, 72 physicians were selected for promotion, with no below zone selects. Of the 33 USU alumni considered for promotion, 11 were selected, resulting in a 33 percent selection rate. Of the 223 non-USU alumni considered for promotion, 61 were selected, resulting in a 27.4 percent selection rate. Again, USU graduates were selected at a rate higher than their peers.

USU Air Force Graduates Selected for Promotion to Colonel - 2002.

Lieutenant Colonel Andrew Satin, USAF, MC, USU SOM Class of 1986, the Director of the Uniformed Services Residency in Obstetrics and Gynecology and the Vice Chair and Professor of the USU SOM Department of Obstetrics and Gynecology, and **Lieutenant Colonel Christopher Zahn, USAF, MC, Class of 1986,** Associate Professor and Head of the Continuing Medical Education Division of the USU SOM Department of Obstetrics and Gynecology and Consultant to the Air Force Surgeon General for Obstetrics and Gynecology, were among the Air Force USU alumni recently selected for promotion to O-6.

U.S. Public Health Service Graduates Selected for Promotion to Captain - 2002.

The U.S. Public Health Service promoted several USU graduates to Captain during Fiscal Year 2002. **Commander Karen Parko, USPHS, USU SOM Class of 1991,** was one of only 18 PHS Commissioned Corps officers selected for an Exceptional Capability Promotion. She assumed the rank of Captain (O-6) on July 1, 2002. Commander Parko is assigned as the Director, Neurological Services, at the Northern Navajo Medical Center in Shiprock, New Mexico. **Captain Anderson Funke, USPHS, M.D., USPHS USU SOM Class of 1988,** was promoted to O-6 in October of 2002. Captain Funke is the Medical Director of the Carolina Health Centers in Greenwood, South Carolina.

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USU SOM Graduates Hold Leadership Roles and Earn Special Recognition throughout the Uniformed Services - Selected Examples from the USU SOM Alumni.

Class of 1980.

Colonel Howard Heiman, MC, USA, assumed the position of Chief of the Neonatal Service at the Wilford Hall Medical Center in late 1999 and continued in that assignment until his retirement in August of 2002. Among his most notable achievements was the development of the first modern aeromedical neonatal transport system for the Department of Defense, for which he set the national standards, and authored a chapter and technical review. He received the Best Resident Teaching Award two times, the Army Surgeon General's "A" Proficiency Designator, and served as the Consultant to the Army Surgeon General for Neonatology. During February of 2002, the following was reported over the *Air Force News Service:*

LACKLAND AIR FORCE BASE, Texas (AFPN) --People from a highly specialized team at Wilford Hall Medical Center flew to Okinawa, Japan, on February 9, 2002, and brought

back a 3-day-old boy who likely would not have survived without their help. The child of a Marine, stationed on Okinawa, was born on February 8th without a left diaphragm. Without the diaphragm, some of his intestines were putting pressure on his lungs and other organs in his chest. The baby's lungs were slowly failing. If this continued, medical officials said the baby would likely die in less than two days unless he was put on heart-lung by-pass, which is called extracorporeal membrane oxygenation, or ECMO... The ony long-range transport heart-lung by-pass capability in the world is at Wilford Hall Medical Center. Air Force doctors at the U.S. Naval Hospital in Okinawa asked specialists at Wilford Hall's specialized Neonatal Intensive Care Center for help on February 8th, and within 12 hours, a transport team was launched on a series of U.S. Air Force aircraft to Okinawa. The 16-member neonatal critical care air transport team loaded their equipment on a C-130 Hercules, and with the help of people from the 433rd Airlift Wing, flew out of Kelly Field just before dawn on February 9th, and arrived in Okinawa 25 hours later. Within three hours after arriving on Okinawa, the ECMO team put the infant on the portable heart-lung bypass system to stabilize the baby until surgery could be performed. "What our team did gave the baby a much greater chance of survival," said *Army Colonel Howard Heiman, the neonatologist who headed up the team.* "The baby went from a 5 percent to a 60 percent chance of survival with the help from our team." The team then transported the infant on a portable ECMO unit by ambulance to a C-141 Starlifter that flew them back to the United States. They arrived back at Wilford Hall Medical Center on February 11th, marking the end of the 56-hour rescue mission.

Captain Sandra Yerkes, MC, USN, is currently the Deputy Chief of the Navy Medical Corps, assigned to the Navy Bureau of Medicine and Surgery (BUMED) in Washington, D.C. Her previous assignment was as a senior medical corps detailer at the Naval Bureau of Personnel in Memphis, Tennessee.

Class of 1981.

Colonel Don Bradshaw, MC, USA, served during 2002 as the Director, Clinical Operations Division, of the TRICARE Lead Agent, Fort Carson, Colorado. Colonel Bradshaw was designated to assume command of the Martin Army Community Hospital at Fort Benning Georgia, during 2003.

Colonel Ken Franklin, MC, USA, retired at Fort Benning, Georgia, after 25 years of service in June of 2002. His final assignment was as Chief of the Winder Family Clinic and as faculty for the Martin Army Community Hospital Family Medicine Residency. Franklin remains active in the Uniformed Services Academy of Family Physicians and plans to speak on the rewards of a career in Army medicine at Michigan high schools and colleges.

Colonel Kevin Keenan, MC, USA, is currently serving as the Dean of the Joint Special Operations Medical Training Center at Fort Bragg, North Carolina.

Colonel Ann Norwood, MC, USA, Associate Professor and Associate Chair of the USU SOM Department of Psychiatry, has been actively working with the American Psychiatric Association to assist the areas impacted by the global war on terrorism. During October of 2002, Colonel Norwood was identified for the position of Special Assistant to the Assistant Secretary of Health at the Department of Health and Human Services (HHS); she transferred from USUHS to HHS during May of 2003.

Class of 1982.

Colonel David Burris, MC, USA, FACS, DMCC, was named as Interim Chair of the USU School of Medicine Department of Surgery in October of 2002. Colonel Burris completed his general surgery residency at the Walter Reed Army Medical Center, has his Critical Care Certification, and is the Military Region XIII Chief for the Advanced Trauma Life Support (ATLS) Subcommittee of the Committee on Trauma of the American College of Surgeons. In that position, Colonel Burris is responsible for all ATLS programs within the Department of Defense. *During March of 2002, Colonel Burris reported that USU is one of three universities in the country permitted to teach the ATLS Course without using animals.* The American College of Surgeons allowed testing a non-animal model program for the teaching of ATLS; and, the USU President and Dean, SOM, approved the use of non-animal simulators in the Courses at USU.

Colonel William Germann, USAF, MC, was selected for promotion to Brigadier General, making him USU's third alumnus to achieve flag rank behind Brigadier General William Fox, MC, USA, USU SOM Class of 1981 and Rear Admiral E. Connie Mariano, MC, USN (Retired), USU SOM Class of 1981. Brigadier General Germann will take command of the 89th Medical Group (Malcolm Grow USAF Medical Center), Andrews Air Force Base, Maryland, in June of 2003.

Colonel William P. Madigan, MC, USA, is the Chief of Ophthalmology at the Walter Reed Army Medical Center, the Army's Consultant to the Surgeon General for Ophthalmology, a member of the USU SOM Ophthalmology Division, and the architect of the Army's Laser Refractive Surgery Program. Colonel Madigan explains that the capability exists to dramatically enhance the fighting forces' combat readiness through application of new technology. According to Colonel Madigan, through the Army's Military Refractive Readiness Program, a soldier's vision can be dramatically improved, enabling him to better perform his duties and improve his survivability on the battlefield. It is estimated that one-third to one-half of soldiers on active duty require some form of optical correction. Since the first laser eye surgery was performed in January of 2002, more than 750 patients have been treated.

Colonel Alton Powell, USAF, MC, was selected to command the Air Force medical treatment facility at the 341st Medical Group, Malmstrom Air Force Base, Montana, during 2002. His previous assignment was at the hospital at Sheppard Air Force Base, Texas.

Colonel Lawrence Riddles, USAF, MC, assumed command of the Air Force medical treatment facility of the 5th Medical Group, Minot Air Force Base, North Dakota, during 2002. His previous assignment was as the surgical operations squadron commander at the 81st Medical Group, Keesler Air Force Base.

Class of 1983.

Colonel Cliff Cloonan, MC, USA, is serving as the Interim Chair of the Department of Military and Emergency Medicine at the USU SOM through June of 2003. Colonel Cloonan was assigned to USU in July of 2000, where he served as the Vice-Chair of the Department until August of 2001, when Craig Llewellyn, M.D., Colonel, USA (retired), stepped down as the Department Chair of Military and Emergency Medicine. Colonel Cloonan had previously served as the Dean of the Joint Special Operations

Medical Training Center at Fort Bragg, North Carolina, for three and one half years. From 1990 through 1993, Colonel Cloonan served in the USU SOM Department of Military and Emergency Medicine as an Assistant Professor; he was also the Course Director for both the Combat Medical Skills Course and the Introduction to Combat Casualty Care Course. Currently, in addition to serving as Interim Chair, Colonel Cloonan continues to serve as the current Emergency Medicine Specialty Consultant to the Army Surgeon General.

Captain Kevin Yeskey, M.D., USPHS, FACEP, Associate Professor, Department of Military and Emergency Medicine, Board Certified in Emergency Medicine, served during 2001, as the Director of the Bioterrorism Preparedness and Response Program for the Centers for Disease Control (CDC) in Atlanta, Georgia. Captain Yeskey was named as the Acting Director of the program on August 20, 2001; and, he was selected as the Director on December 1, 2001. As the Director, he was charged with enhancing CDC's capacities to assist States and other partners in responding to bioterrorism. In addition to infectious disease concerns, other CDC efforts under this program included consideration for chemical terrorism, a National Pharmaceutical Stockpile, and National Lab Enhancement. *Captain Yeskey is currently serving as the Director, Office of Emergency Response, in the newly established Department of Homeland Security.* During 2002, the Director of CDC delivered remarks at a ceremony in the Washington, D.C., Health and Human Services (HHS) headquarters to mark the one-year anniversary of September 11, 2001. The CDC Director stated the following:

> **The Secretary of HHS has already mentioned many of the CDC heroes and heroines who contributed to that response, but there are a few others that I would just like to mention. It's important to appreciate the role that *Dr. Kevin Yeskey* and Mr. Joe Henderson played. These were the two individuals who *provided the leadership for the Bioterrorism Preparedness and Response Program at CDC at the beginning of the 9/11 crisis, and sometime thereafter...overnight... created an operations center to handle the anthrax attacks which were the largest multi-jurisdictional outbreak investigation that CDC had ever conducted.* Now, for those of you who are used to command and control, that may seem like a straightforward decision, but for most of us at CDC, we had no idea what an emergency operations center was, and so we had to go into a very steep learning curve, and without their leadership, I don't think we would have been as successful with that as we were.**

Class of 1984.

Colonel Charles Beadling, USAF, MC, was selected to command the 375th Medical Group, Scott Air Force Base, Illinois, during 2002. Colonel Beadling's last assignment was as the Commander of the 95th Medical Group at Edwards Air Force Base, California.

Captain Sandra Kweder, USPHS, M.D., Associate Professor, USU SOM Department of Medicine, was selected to serve as the Deputy Director of the Food and Drug Administration's Office of New Drugs during 2002. Captain Kweder's previous assignments included serving as Deputy Director of the Office of Drug Evaluation IV, Co-Chair of FDA's Pregnancy Labeling Taskforce, Acting Director of the Office of Review Management, and Acting Director of the Office of Drug Evaluation II.

Colonel Kimberly Slawinski, USAF, MC, will assume the position of Commander of the 8th Medical Group at Kunsan Air Base, Korea, in June of 2003. Colonel Slawinski's previous position was the Director of the Surgeon General's Tactical Action Team at Bolling Air Force Base in Washington, D.C.

Colonel Terry Walters, MC, USA, finished her courses at the Army War College and was selected to command the 1st Medical Brigade at Fort Hood, Texas. Colonel Walters is also a graduate of the Master of Public Health Program at USU.

Class of 1985.

Captain Hans Brings, MC, USN, is a vascular surgeon attached to the Navy's Fleet Hospital Three (FH-3), the first expeditionary medical facility assigned to a war zone. Captain Brings, who is stationed at the National Naval Medical Center in Bethesda, Maryland, was among a team of 300 health care providers and construction battalion personnel deployed to Iraq with the Pensacola, Florida-based fleet hospital. FH-3 is the latest effort to increase the life-saving capabilities of Navy medicine. With an eye on delivering care faster, the 9-acre, 116-bed facility is designed to provide treatment in the field to those who risk their lives on the battlefield. FH-3 went to Iraq with 166 trucking containers filled with more than $12 million in medical equipment and supplies.

Captain Robert Darling, MC, USN, was named Senior Medical Advisor to the Navy Medicine Office of Homeland Security. "Fighting terrorism is the single most important objective to ensure our national defense, and we need our very best talent dedicated to the cause. Captain Rob Darling is our most highly qualified expert and will guide us well" (from remarks by Rear Admiral Donald C. Arthur, Deputy Surgeon General of the Navy and Chief of the Medical Corps). For example, during 1996, when the White House was looking for a new White House Physician, a post generally filled by internists, surgeons, or family physicians, Captain Darling was the first emergency physician to win the assignment. While at the White House, Captain Darling assisted the Secret Service to better understand the threat of a biological attack from a medical perspective.

Colonel Loren Erickson, MC, USA, was selected to command the U.S. Army Center for Health Promotion and Preventive Medicine-Europe, in 2003.

Lieutenant Colonel Bryan Funke, USAF, MC, previously the Commander of the 325th Aeromedical Squadron, at the Tyndall Air Force Base in Florida, is currently the Commander of the 14th Medical Group at the Columbus Air Force Base in Mississippi.

Lieutenant Colonel Doug Liening, MC, USA, who previously held an operational position as the Division Surgeon for the 82nd Airborne Division at Fort Bragg, North Carolina, is currently serving as the Deputy Corps Surgeon for the 18th Airborne Corps also located at Fort Bragg.

Colonel Sean Murphy, USAF, MC, currently a student at the National Defense University, Fort McNair, Washington, D.C., has been selected to serve as Commander of the 325th Medical Group at Tyndall Air Force Base, Florida.

Commander Tom Snead, MC, USN, is serving as the Officer-in-Charge of the Branch Medical Clinic at the Naval Base, Ingleside, Texas.

Class of 1986.

Colonel Kory Cornum, USAF, MC, assumed the position of Commander of the Medical Operations Squadron at Ramstein Air Base, Germany, during 2003.

Colonel Rhonda Cornum, MC, USA, featured in a special double issue of *U.S. News and World Report*, "Real Heroes: 20 men and women who risked it all to make a difference," is serving as the Commander of the 28th Combat Support Hospital in Landstuhl.

Colonel Clifford Porter, MC, USA, is on the staff of the General Surgery Service at the Madigan Army Medical Center in Tacoma, Washington. He is also the Commander of the 250th Forward Surgical Team (Airborne).

Lieutenant Colonel Andrew Satin, USAF, MC, is the Director of the Uniformed Services Residency in Obstetrics and Gynecology and the Vice Chair of the USU SOM Department of Obstetrics and Gynecology. The residency program was recently granted the maximum five-year accreditation by the Obstetrics and Gynecology (OBG) Residency Review Committee of the Accreditation Council for Graduate Medical Education. The residency program is the first in OBG to move from provisional status as a newly integrated program directly to the maximum accreditation of five years. It is a fully-integrated program under the institutional sponsorship of the National Capital Consortium based at the National Naval Medical Center and the Walter Reed Army Medical Center. Of the more than 250 OBG residency programs in the United States, only nine have achieved the five-year maximum accreditation.

Colonel Steven Swann, MC, USA, is currently assigned as the Command Surgeon for the Joint Special Operations Command at Fort Bragg, North Carolina. He will assume command of the Baynes-Jones Army Community Hospital at Fort Polk, Louisiana, during 2003.

Colonel Thomas Travis, USAF, MC, recently assumed command of the 311th Human Systems Wing at Brooks City-Base, Texas.

Class of 1987.

Captain Tom Grieger, MC, USN, Associate Professor, USU SOM Department of Psychiatry, was in charge of the Navy Special Psychiatric Rapid Intervention (SPRINT) Team helping out at the Pentagon and the Navy Annex following the terrorist attacks on September 11, 2001. The team provided supportive services to 2,000 active duty and civilian employees on the Navy staff. Captain Grieger continues to provide significant support as a member of the USU Center for the Study of Traumatic Stress.

Colonel Byron Hepburn, USAF, MC, is serving as the Command Surgeon of the United States European Command in Stuttgart, Germany. He was previously assigned as the Commander of the Hospital at McChord Air Force Base, Washington.

Colonel Timothy Jex, USAF, MC, is serving as the United States Central Air Force (USCENTAF) Command Surgeon, based at Shaw Air Force Base, South Carolina. Colonel Jex is responsible for the medical planning at USCENTAF. He also manages medical war readiness materials for the USCENTAF, provides supervision, establishes policy, works logistics issues for all of the deployed medical units, handles all medical issues for the Central Air Force Combat Command, and generally provides leadership for all of the deployed medical personnel. Colonel Jex was also deployed to Afghanistan during 2001.

Lieutenant Colonel Edward Lucci, MC, USA, is the Chief of Emergency and Operational Medicine at the Walter Reed Army Medical Center (WRAMC). He was the first emergency physician to arrive on the scene after terrorists crashed American Airlines Flight 77 into the Pentagon. On staff at WRAMC since 1997, Lucci serves as the hospital's team leader for the special response team for chemical and biological events. He was also interviewed by *U.S. News and World Report* (special edition) and a program that has been broadcast on the PBS Network.

Lieutenant Colonel Paul Mongan, MC, USA, is serving as the Chair of the USU SOM Department of Anesthesiology. *He is the first medical school alumnus to become a Chair of a clinical department at the University.* Lieutenant Colonel Mongan has been an Anesthesiology faculty member since 1997, serving as Director of Research and Associate Professor, and since 1999, as Vice Chair.

Class of 1988.

Lieutenant Colonel Michael C. Edwards, USAF, MC, FACS, holds dual positions as Chief of Surgical Services and Chief of the Professional Staff at the 99th Medical Group, Mike O'Callaghan Federal Hospital, Nellis Air Force Base, Nevada.

Captain Anderson Funke, USPHS, M.D., was promoted to O-6 in October of 2002. Captain Funke is the Medical Director of the Carolina Health Centers in Greenwood, South Carolina.

Class of 1989.

Colonel John Baxter, USAF, MC, has served as the Commander of the Pentagon Flight Medicine Clinic for some years; he is also the physician to the Secretary of Defense. Several months prior to the terrorist attack, Colonel Baxter's clinic had conducted mass casualty training exercises in conjunction with the Pentagon DiLorenzo Clinic. The exercise simulated a plane crashing into the building; on September 11th, members of both health care facilities agreed that the simulated training had proven to be invaluable.

Class of 1990.

Lieutenant Colonel Bruce Adams, MC, USA, is currently serving as the Chief Resident, Department of Emergency Medicine, at the Medical College of Georgia in Augusta, Georgia.

Class of 1991.

Lieutenant Commander Michael Harrison, MC, USN, an anesthesiologist, recently served at the Forward Operating Base, Camp Rhino, in Afghanistan.

Major Paul Pasquina, MC, USA, serves as the Program Director for the Physical Medicine and Rehabilitation Residency at the Walter Reed Army Medical Center. Major Pasquina led the department through its residency review by the Accreditation Council for Graduate Medical Education (ACGME); formal results were released during 2002.

Lieutenant Colonel Bill Rice, MC, USA, is serving as the Director of Occupational Medicine, at the U.S. Army Center for Health Promotion and Preventive Medicine-Europe in Heidelberg, Germany.

Class of 1992.

Commander Noel Delmundo, USPHS, M.D., was promoted to O-5 during 2002. She is assigned as staff in the Obstetrics and Gynecology Department at the Phoenix Indian Medical Center in Arizona.

Lieutenant Colonel Erin Edgar, MC, USA, continued the trend of USU alumni serving in operational positions, when he assumed the position of Division Surgeon for the 82nd Airborne Division at Fort Bragg, North Carolina. Lieutenant Colonel Edgar has been twice promoted below zone.

Lieutenant Colonel Nelson Hager, MC, USA, serves as the Chief of the Physical Medicine and Rehabilitation Service at the Walter Reed Army Medical Center in Washington, D.C.

Lieutenant Colonel Mark Koeniger, USAF, MC, recipient of the Malcolm Grow Award for Air Force Flight Surgeon of the Year in 1998, serves as the Commander of the 86th Aeromedical Squadron at the Ramstein Air Base in Germany.

Commander Mary Porvaznik, M.D., USPHS, continues to serve as the Chief of Family Medicine at the Northern Navajo Medical Center in Shiprock, New Mexico. She supervises a department of 13 physicians who provide primary care in the Medical Center and in several community clinics outside of the Center. Besides a busy out-patient clinic, Commander Porvaznik's department also runs a busy in-patient adult and pediatric service, including an intensive care unit and full obstetrical services. Commander Porvaznik was born in the Indian Health Service Hospital in Tuba City, Arizona; her father was a physician who also served the Native American population. Commander Porvaznik's father, who completed 30 years in the Public Health Service and retired as an Assistant Surgeon General and Rear Admiral, suggested that she apply to USU. Commander Porvaznik reported that she realizes the intense training she received at the USU SOM was outstanding and the summer field training sessions were incredibly useful.

Class of 1993.

Commander Kimberly (Clancy) Brownell, USPHS, M.D., was promoted to O-5 during 2002. Commander Brownell is serving as a Staff Pediatrician at the Northern Navajo Medical Center in Shiprock, New Mexico.

Commander Jeffrey Curtis, USPHS, M.D., was promoted to O-5 during 2002. Commander Curtis is a Staff Physician in the Medicine/Family Practice Department at the Phoenix Indian Medical Center in Arizona.

Commander Brent Warren, USPHS, M.D., was promoted to O-5 during 2002. Commander Warren is an Assistant Professor and Ophthalmologist in the USU SOM Department of Surgery.

Major Grant Tibbetts, USAF, MC, is currently assigned as the Chief of Special Imaging at the 3rd Medical Group, Elmendorf Air Force Base, Alaska.

Class of 1994.

Lieutenant Commander Staci (Valenzuela) Kelley, MC, USN, serves as the Head of the Inpatient Mental Health Division of the Naval Hospital located at Great Lakes, Illinois.

Lieutenant Commander Charles McCannon, MC, USN, who recently completed the Preventive Medicine Residency Program at USU, passed the Certified MBA examination and was awarded the CMBA designation by the International Certification Institute. He is among the first group of MBAs to earn the distinction. He is one of only 86 Certified MBAs in the United States and Canada. (There are over two million MBA graduates in the United States and Canada, with over 100,000 new graduates each year.) The CMBA is the only professional certification designed to confirm an MBA's command of the common body of knowledge required across all accredited MBA programs.

Class of 1995.

Major Shean Phelps, MC, USA, is serving as the Battalion Surgeon for the 1st Special Forces Battalion, 1st Special Forces Group, Panzer Kaserne, in Boeblingen, Germany.

Class of 1996.

Captain Daniel Irizarry, MC, USA, is the Regimental Surgeon for the 325th Airborne Infantry Regiment, 82nd Airborne Division, at Fort Bragg, North Carolina. He graduated in June of 2000 from the Womack Army Medical Center Family Practice Program at Fort Bragg.

Lieutenant Commander John M. McCurley, MC, USN, an internist, is serving as a Staff Physician in the Office of the Attending Physician on Capitol Hill.

Lieutenant Commander Mark Michaud, MC, USN, is the Senior Medical Officer aboard the USS Emory S. Land, a submarine tender based at Lamaddalena in Sardinia, Italy.

Lieutenant Commander John Mohs, M.D., USPHS, is assigned to the Northern Navajo Medical Center in Shiprock, New Mexico; he is the Vice Chief of Family Medicine and the Director of the Family Medicine Health Clinic. As such, he is responsible for scheduling, developing and maintaining practice guidelines, and for conducting performance improvement studies; there are 13 physicians and 10 nurses assigned to the clinic.

Lieutenant Commander Kimberly Mohs, M.D., USPHS, is assigned to the Northern Navajo Medical Center in Shiprock, New Mexico; she is the Chief of Internal Medicine. As such, she oversees a department of six internists who provide primary care as well as cardiology and pulmonary related procedures and endoscopy. Her department also holds a number of specialty clinics, including hypertension, tuberculosis, renal disease, gastroenterology, and a uranium miners clinic which she also runs. The Four Corners area has been a primary site for uranium mining over the years, and the clinic mainly treats patients with lung disease or other health problems resulting from exposure to uranium.

Class of 1998.

Lieutenant Commander Robert Johnson, MC, USN, served as a Flight Surgeon assigned to VAQ-133 and the Naval Hospital in Oak Harbor, Washington. He was selected for an Ophthalmology Residency at the Naval Medical Center in San Diego, California, in June of 2003.

Captain Jocelyn Kilgore, USAF, MC, completed her Psychiatry Residency and is now assigned as a Staff Psychiatrist in Germany.

Lieutenant Commander David Lesser, MC, USN, serves as a Flight Surgeon with the Navy Helicopter Squadron HSL-41 in San Diego, California.

Captain Christopher Lettieri, MC, USA, served as the Chief Resident in the USU SOM Department of Medicine for the 2001-2002 Academic Year.

Class of 1999.

Lieutenant Kimberly Fagen, MC, USN, is assigned as a Flight Surgeon to the Commander, Carrier Air Wing 9. When not deployed, Lieutenant Fagen is based at the Naval Branch Medical Clinic, Naval Air Station North Island, in San Diego, California.

Class of 2000.

Lieutenant John Ringquist, MC, USN, is stationed at Lamaddalena in Sardinia, Italy, where he is serving as the Undersea Medical Officer on board the USS Emory S. Land.

Class of 2001.

Lieutenant Kenneth Terhaar, MC, USN, is assigned as a General Medical Officer with the 3rd Medical Battalion, Bravo Company, in the 3rd Fleet Service Support Group at Okinawa, Japan. He previously completed his internship at the Naval Medical Center in San Diego, California.

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Selected Profiles of USU School of Medicine Graduates.

Army.

Lieutenant Colonel James Ecklund, MC, USA, USU SOM Class of 1987, serves as the Chief of the Walter Reed Army Medical Center's (WRAMC) Neurosurgery Service, the Residency Program Director at the National Capital Consortium, and as the Chief of the Division of Neurosurgery, in the USU SOM Department of Surgery.

By virtue of their jobs, United States Service Members around the world are at risk of life-threatening injuries. Whether fighting enemy forces in austere locations, jumping from aircraft during real-world events or at training exercises working with heavy equipment and weapons, troops face possible brain and spinal cord injuries. The Defense and Veterans Brain Injury Center (DVBIC) and the USU Neurotrauma Research Laboratory encompass research on the care of veterans and family members with neurotrauma injuries as well as comprehensive basic and clinical research on brain and spinal cord injuries - a leading combat casualty. The USU Neurotrauma Research Laboratory was initiated five years ago to study brain and spinal cord injuries to military members during combat and under austere conditions. Lieutenant Colonel Ecklund co-directs the program. According to Ecklund, "there is great research already being conducted in the civilian community for the hospital treatment of head and spinal cord injury resulting from common mechanisms seen in a civilian setting. In contrast, those of us in uniform have a vested interest and a responsibility to address the questions related to caring for neurologically injured soldiers, sailors, airmen, and Marines in a battlefield environment." For example, 80 to 90 percent of head injuries seen in a combat environment are penetrating injuries, whereas 80 to 90 percent of head injuries in the civilian sector are closed. While there are many robust research efforts investigating questions related to closed head injury in this country, there is no substantial basic science research being conducted on penetrating injuries. Additionally, the austere nature of the battlefield combined with resource limitations and delays in evacuation create an environment almost never encountered in the civilian sector. Two promising technologic devices under study are a radio frequency triage tool, *RAFT*; and, a wearable comprehensive physiologic monitor, called a *BioGlove*. Based on radio wave interrogation, RAFT has been developed to noninvasively image the brain and spinal cord. This device has been developed in collaboration with Biostaf and RGR, a civilian engineering consortium. Evaluation of this device on an intact physiologic level is being conducted at USU. The BioGlove, which is worn as a glove by the user, provides real-time information on EKG, respiratory rate, heart rate, pulse oximetry, and body temperature. It also has the potential for integration with RAFT. If research data proves to be promising, a clinical trial will follow. Lieutenant Colonel Eckland agrees that there must be an ongoing commitment to scientific research to ensure that appropriate advancements in medical care will be available for our country's most deserving patients - those who have been injured in her defense. *Ecklund finds conducting research for the soldier in the neurotrauma laboratory especially meaningful because the research is filling a large gap that is clearly mission relevant.* One of Ecklund's recent cases as a neurosurgeon included an 11-year-old boy who had been partially paralyzed on his left side for two years. Ecklund performed a craniotomy, exposing an aneurysm. The young patient was put on a bypass and his body temperature lowered to 64.4 degrees

Fahrenheit, stopping his heart. It took the surgical team 37 minutes to successfully complete the reconstruction using five aneurysm clips. The patient's left hemiparesis resolved and he is progressing well in school. Finally, as the Residency Program Director, Ecklund considers it an honor to guide and train the next generation of military neurosurgeons. "We have incredibly talented, bright and motivated residents; and, being part of their development is an honor." (USU Medicine, Fall 2002, pages 14-17.)

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Navy.

Captain John Perciballi, MC, USN, USU SOM Class of 1983, is based at the Pensacola Naval Hospital. *CNN News* reported on the work of Navy doctors who were travelling with the United States Marines on the front lines of the war in Iraq. The doctors, part of a shock trauma platoon, worked in a mobile operating room, under austere conditions, performing surgery on soldiers and Iraqis alike. Captain Perciballi, the unit's Chief Surgeon and a Clinical Assistant Professor at USU, made it clear to the reporters that the most severely wounded front-line fighters are treated first, whether they be allies or enemies. Because of the austere circumstances and temporary facilities, the surgeons had to carefully pick and choose those critically injured patients who had to be taken care of first. The scope of their work rivals any large trauma center in the United States.

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Commander Bruce Baker, MC, USN, USU SOM Class of 1986, is an anesthesiologist. His work was covered in an Associated Press article dealing with the *golden hour* of trauma for United States Navy surgeons in Iraq. USU SOM alumnus Commander Bruce Baker demonstrated his knowledge of operational medicine; he also reported to USU from the field in Afghanistan in the inaugural issue of USU Medicine in the Winter issue of 2002. Commander Baker was quoted in the Associated Press article about his ability to provide a high level of care in medical tents in host, dusty southern Iraq, although he had to work with different equipment, including a portable oxygen generator, blood-gas monitor and devices to warm fluids going into the patients. He served as a member of a forward resuscitative surgical systems team, operating for the first time in combat. With seven years in the design phase, the forward surgical units are truly mobile and replace ones that would have required a transport plane and landing field to move. This surgery team can move using four trucks and can set up or tear down in one hour. The unit includes two surgeons, an anesthesiologist, a nurse, operating technicians and corpsmen who are able to handle as many as 18 patients in a 24-hour period. As expected, the doctors treat all critically wounded people, whether they are Iraqi, American, or British. These patients represent 15 to 20 percent of those wounded in battle who would otherwise die if critical care were not provided within the first hour. Commander Baker described it as *damage-control surgery* and, for the Iraqis in particular, immediate surgery stemmed blood loss and led to their survival.

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Air Force.

Lieutenant Colonel Bill Beninati, USAF, MC, USU SOM Class of 1988, is a pulmonologist and the Medical Director of the Air Force CSTARS Program at the R. Adams Cowley Shock Trauma Center in Baltimore, Maryland. The 210-bed freestanding hospital sees between 6,500 and 7,000 patients annually, 100 percent of whom arrive via state police helicopters, paramedic ambulances, or via transfers from intensive care units at other hospitals. Lieutenant Beninati, along with other USU SOM graduates, believes that while a separate program should be maintained for each Service, shared goals that include ensuring that military medical professionals have clinical skills necessary to sustain themselves on the battlefield and are adequately prepared to work together as a team in combat are critical to medical readiness. The CSTARS - Coalition for Sustainment of Trauma and Readiness Skills - Program is comprised of 14 full-time Air Force staff members. In addition to Beninati, there are six physicians (including ***Major Jeffrey Johnson, USAF, MC, USU SOM Class of 1993, a Trauma Surgeon; and, Major Shawn Varney, USAF, MC, USU SOM Class of 1993, an Emergency Physician);*** a nurse anesthetist; intensive care unit, trauma, and operating room nurses; two medical technicians; and, one administrative officer. During the past few years, the Readiness Skills Verification Program, or RSVP, was established; and, one of its major tasks was to develop a list of critical skills that health care providers would need when deployed, so they could hit the ground running in the combat theater of operations. The end result was that a significant gap was identified between required battlefield skills and those that health care providers actually possessed. Indeed, only 20 percent of the active duty physicians in the Air Force, the USU alumni, have received similar training during medical school. The solution was CSTARS. The Air Force CSTARS Program only trains active duty service members. In addition to the program's role in enhancing clinical skills, Beninati said they are aiding in homeland security, providing teaching assistance through international engagement missions, and conducting research.

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United States Public Health Service.

Captain Karen Parko, M.D., USPHS, USU SOM Class of 1991, was promoted to O-6 in July of 2002. Captain Parko is the Chief of Neurology Services for the Northern Navajo Medical Center in Shiprock, New Mexico. She is also the sole neurologist for the Indian Health Service in the lower 48 United States. Commander Parko frequently travels to other service units on the Navajo reservation to help with neurology services and to educate other physicians in the care of neurological problems and she has also established specialty seizure and Parkinson's clinics for the area patients. Commander Parko runs a neurodiagnostic laboratory and performs nerve conduction studies and electromyography, as well as electroencephalograms. Dr. Parko has pointed out that her experience at USU provided her with a good overview of medicine and how it can be applied in different settings; the wide scope of medicine taught at the USU SOM has left her prepared to handle multiple medical situations outside of her specialty. Commander Parko's responsibilities also include administrative committee work in addition to serving as a

neurology tort claim reviewer for the Public Health Service. Captain Parko was one of only 18 officers selected by the Division of Commissioned Personnel of the United States Public Health Service for the 2002 Exceptional Capability Promotion.

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FACULTY OF THE SCHOOL OF MEDICINE.

Composition. As of November 2002, the School of Medicine had 310 full time assigned faculty members: 200 civilians; and, 110 uniformed officers. There are approximately 3,902 non-billeted or off-campus faculty who assist in the USU programs of which 1,154 are civilians and 2,748 are uniformed officers.

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SOM Clinical and Consultative Services Generate an Estimated $10,028,720 in Cost Avoidance for DoD in Fiscal Year 2002. The affiliated Medical Treatment Facilities (MTFs) in the National Capital Region (the National Naval Medical Center (NNMC), the Walter Reed Army Medical Center (WRAMC), and the Malcolm Grow Air Force Medical Center (MGMC) use the services of the USU faculty for the provision of health care.

The USU SOM civilian and military clinical faculty members, as a part of maintaining their credentials and level of proficiency, provide medical services and consultation to the hospital patients and staff and teach and supervise residents. In order to meet national accreditation standards, all teaching hospitals must provide both patient care and teaching/supervision of medical students, interns, and resident physicians. Cost avoidance in the Department of Defense (DoD) is generated by the hours of clinical service and medical expertise provided by the USU civilian and military faculty. Thirteen USU SOM academic departments (Anesthesiology, Dermatology, Family Medicine, Department of Medicine, Military and Emergency Medicine, Neurology, Obstetrics and Gynecology, Pathology, Pediatrics, Preventive Medicine and Biometrics, Psychiatry, Radiology and Radiological Sciences, and Surgery) provided clinical and consultative support to DoD that totalled some 138,358 hours in 2002, with an estimated cost avoidance of $10,028,720.

Without the patient care and special services provided by the USU SOM faculty throughout the DoD medical facilities, the military hospitals, clinics, and other facilities would find it necessary to augment their medical staffs by 138,358 work hours in order to maintain the level of patient care within the direct care system.

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USU SOM Faculty Achieve National and International Recognition. The SOM faculty members are regularly selected to serve on various study sections for the National Institutes of Health and for other research-granting agencies. Many faculty members, due to their national/international reputations are: 1) selected for editorial boards; 2) designated to serve as consultants or advisors to the White House, the Office of the Secretary of Defense, international schools of medicine (e.g., China, France, Japan, Mexico, Poland, Russia, Thailand, etc.), and numerous Federal Agencies; 3) requested to give invited lectures and to serve on Federal, national, and international committees; and, 4) recognized as senior officers in a wide

variety of professional organizations. A number of basic science and clinical faculty hold senior and deputy editor positions on journals representing their disciplines and specialties. Overall, the SOM faculty has clearly achieved recognition with its peers across disciplines and specialties. USU SOM faculty are routinely chosen to serve on university, military, and Federal and professional organization committees in a variety of leadership and service capacities. Due to the unique nature of the USUHS SOM mission and certain of its departments, faculty in the Departments of Military and Emergency Medicine, Preventive Medicine and Biometrics, Psychiatry, and Medical History have achieved national and international recognition (Appendix C provides examples of individual achievements and recognition).

The majority of SOM clinical faculty are located at the teaching hospitals. The large number of enthusiastic, well-trained primary care and specialist clinicians, based at the hospitals throughout the Military Health System, is an invaluable resource for teaching medical students. Under the oversight and guidance of clinical clerkship directors, this large faculty does an excellent job of medical student clinical training, based on surveys of both students and department chairs. A number of the hospital-based faculty are also involved in clinical research programs through the active clinical investigation programs based at the teaching hospitals. To further enhance communication and cooperation between the USU SOM and its affiliated teaching facilities, the Office of the Associate Dean for Clinical Affairs maintains an updated series of memoranda of understanding between the University and its affiliated teaching and research institutions that clearly defines areas of responsibility and accountability. Outcome data such as student-reported satisfaction, student performance on National Board examinations, hospital commanders' overall satisfaction with the performance of USU graduates, and the large percentage of operational and leadership positions held by USU graduates throughout the Military Health System, indicate that the SOM faculty is performing a stable and highly satisfactory job of educating medical students for the Uniformed Services.

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Collaborative Efforts.

Teaching. Cooperation in teaching has been systematically developed within the departments, between departments, and within subspecialties, to improve the educational experience of both medical and graduate students (the SOM faculty also provides the instructional base for the Graduate Education Programs at the University). The composite curriculum in behavioral sciences, drawing on Neurology, Psychiatry, and Medical Psychology, is a significant example of interdepartmental cooperation in undergraduate medical education.

The graduate programs in Neuroscience, Molecular and Cell Biology, and the newly established Interdisciplinary Graduate Program in Emerging Infectious Diseases illustrate a sound cooperative relationship in research and graduate education. The Tumor Biology Program, an interdepartmental effort between the Departments of Pathology and Surgery, serves as a bridge between basic science and clinical practice in Medical Oncology. The special interest groups in curriculum studies have resulted in basic science input into the hospitals, with collaboration in research, and more importantly, with collaboration in teaching, as the basic scientists provide science instruction to the medical house officers and junior faculty within certain subspecialties of mutual interest. In addition, faculty members use electronic mail and computer bulletin boards quite extensively, which also enhances their collaborative efforts throughout the Military Health System.

The Department of Anatomy, Physiology and Genetics. A significant change took place over the past three years in the academic structure of the USU SOM. The Department of Anatomy and Cell Biology and the Department of Physiology were formally merged to create the Department of Anatomy, Physiology and Genetics (APG). The philosophy of the newly formed department conforms with the mission and goals of the USU Strategic Plan. The philosophy is based upon a commitment to the highest level of excellence in teaching, research, and administration. The departmental merger has consolidated the teaching, research, and administrative functions of a substantial component of the University within a single faculty group under the leadership of a single Department Chair. Integration of the formerly separate anatomy and physiology curricula is resulting in a single, cohesive and dynamic educational experience that spans the entire first year of medical education. As expected, the departmental merger is yielding benefits beyond the immediate outcomes of curriculum integration.

A goal of APG is to integrate the "information explosion" resulting from the Human Genome Initiative and a myriad of cellular and molecular biological approaches, so that biomedicine explains how *the human body functions as an integrated self-regulating system. The systems biology approach is seen as a means to further improve the information transfer process for the major responsibility of APG - the education of USU medical and graduate students.* The Basic Anatomy and Physiology Courses have been integrated and are providing students with a comprehensive understanding of tissue and organ function. The APG faculty members oversee courses that extend for the entire first academic year; in fact, first-year medical students spend approximately 53 percent of their first year of medical education with APG faculty. APG has organized its basic instruction into three modules. *Introduction to Structure and Function* introduces the student to cell classification, organelle function, and cellular processes, followed by study of the gross anatomy of the human body. An emphasis is placed upon understanding anatomical relationships and the causes and functional consequences of anomalies arising from disease processes. Gross anatomical study of the head and neck region, neuroanatomy, and basic clinical neurology are taught in the second module: *Clinical Head and Neck and Functional Neuroscience.* Finally, the students return to cellular and subcellular analysis in the third module: *Structure and Function of Organ Systems*. This module presents an integrated approach to understanding the functions of different cells and organ systems, which includes: the functions of muscle; heart; endocrine systems; kidney; respiration; gastrointestinal physiology; hematology; and, reproduction.

The Department oversees other educational programs for medical and graduate education. In addition to faculty participation in graduate courses offered by various Ph.D. Programs at the University, APG faculty members, in a collaborative project with the National Naval Medical Center (NNMC) Department of Anesthesiology and the USU SOM Department of Anesthesiology, operate the Patient Simulation Laboratory (PSL). Since its inception in 1997, the PSL has created and presented patient simulation-based clinical education for USU students as well as for clinicians from local military treatment facilities. To extend the reach of the simulation-based education, the PSL recently installed an ultra-high speed Internet-2 Advanced Distance Education Network throughout USU with links to NNMC and the National Library of Medicine. APG faculty are also active members of two USU interdisciplinary programs: the Molecular and Cell Biology and the Neuroscience Graduate Programs. Many graduate students in these programs are undertaking their thesis research in APG laboratories. Future educational initiatives are in the planning stage. APG faculty members are preparing a Clinical Genetics Curriculum that will be an addition to the clinical course instruction of the fourth-year medical students.

The newly integrated Department, with over 100 members, offers wide-ranging, varied and collaborative research programs; and, these research programs study many fundamental biological problems. The APG faculty members employ a wide range of anatomical, electrophysiological, biochemical, cellular and molecular biological methods to address medical problems associated with neurodegenerative disorders, such as: Multiple Sclerosis; Parkinson's Disease and Alzheimer's Disease; Down Syndrome; Canavan Disease; and, central and peripheral nerve injury. Faculty members also have active research programs in hypertension and cardiovascular pathophysiology, neuroimmune responses of gastrointestinal function, and understanding metabolic disorders such as Cystic Fibrosis and Diabetes. Studies within the Department focus on: the regulation of neuronal gene expression; biological clock mechanisms; neuroendocrine secretory processes; the role of glial cells in CNS injury and disease; and, neuronal regeneration and plasticity. Several programs employ state-of-the-art approaches, to include: cell therapy using engineered cells; gene therapy using viral and chemical vectors; knock-out and transgenic mouse models; and, microarray and mass spectrometry technologies. The Department's research funding is supported by the National Institutes of Health, the National Science Foundation, the United States Air Force, the Juvenile Diabetes Foundation, the Cystic Fibrosis Foundation, the Department of Defense/Veterans Head Injury Program, as well as the USU Intramural Grants Program. In Fiscal Year 2002, APG research grant funding exceeded 8.8 million dollars.

Interdisciplinary Research Programs. The research and development goals of the USU strategic plan are to build, sustain, and publicize interdisciplinary research programs relevant to the needs of the Uniformed Services. In addition to the above-described research in the newly integrated Department of APG, there are three interdisciplinary research programs at USU: 1) **Emerging Infectious Diseases.** Initially, a special interest group from the USU SOM Departments of Microbiology and Immunology and Preventive Medicine and Biometrics, to include faculty from other departments who are interested in infectious diseases, began meeting and successfully submitted a proposal for an NIH training grant in this area. This effort led to the establishment of the Emerging Infectious Diseases (EID) Graduate Program in 2000. The EID Program has three academic tracks within the field of emerging infectious diseases: microbiology and immunology; pathology; and, preventive medicine/parasitology, with primary interest in the pathogenesis, host response, pathology, and epidemiology of infectious diseases. The research training emphasizes modern methods in molecular biology, cell biology and interdisciplinary approaches. The inaugural graduate student class of ten students matriculated in the Fall of 2000; ten students entered the EID Program in 2001; and, eleven students were enrolled in the Fall of 2002. **Eleanor S. Metcalf, Ph.D., Professor, USU SOM Department of Microbiology and Immunology,** is the Program Director; she can be contacted by e-mail at <*emetcalf@usuhs.mil*> or at <*www.usuhs.mil/mic/eid.html*>; 2) **Molecular and Cell Biology.** An Interdisciplinary Program, in Molecular and Cell Biology (including Genetics), was developed in 1993 to contribute to cross-disciplinary interactions and to develop critical skills needed for data presentation and analysis; the program also includes a seminar series and a journal club, all of which support the Ph.D. Program. This interdisciplinary Ph.D. Program offers training to address many of the fundamental questions of modern biology ranging from protein-nucleic acid interactions to cytokines, growth factors, and developmental biology. Research areas include molecular biology of lymphocyte interactions; host-pathogen interactions; cell surface, cytoplasmic and nuclear receptor signaling pathways, exocrine secretory processes, and gene targeting in mice to include a transgenic mouse facility for targeted gene disruption using homologous recombination. **Jeffrey M. Harmon, Ph.D., Professor, USU SOM Department of**

Pharmacology, was appointed as the third Director of the Molecular and Cell Biology (MCB) Program; he oversees the studies of 17 MCB students and coordinates with over 40 MCB faculty members. He can be contacted by e-mail at <*jharmon@usuhs.mil*> or <*www.usuhs.mil/mcb/index.html*>; and, 3) **Neuroscience.** The Interdisciplinary Program in Neuroscience and its Ph.D. Graduate Program are supported by faculty members whose primary appointments are established throughout the SOM departments. It provides a seminar series, and flexible program of courses and research areas for graduate students and postdoctoral fellows. Research areas strongly represented by faculty include: development, regeneration, and plasticity in the nervous system; molecular neurobiology; and, adaptive responses of the nervous system to stress, injury, and a changing environment. Integrated interdisciplinary instruction in the development, structure, function, and pathology of the nervous system and its interaction with the environment is also included. Three students entered the program, including one Medical Doctor/Doctor of Philosophy student, in the Fall of 2002. **Regina C. Armstrong, Ph.D., Professor, USU SOM Department of Anatomy, Physiology and Genetics,** is the Director of the Neuroscience Program; there are currently 17 students enrolled and over 40 participating faculty members; Doctor Armstrong can be contacted by e-mail at <*rarmstrong@usuhs.mil*> or at <*www.usuhs.mil/nes/home.html*>.

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Selected Profiles of USU School of Medicine Faculty.

USU SOM Dean Retires on May 19, 2002.

Tomorrow, on May 18, 2002, following the graduation ceremonies at the School of Medicine, Doctor Hemming will mark the end of his 37-year career in Federal service... As Dean, Doctor Hemming has worked to further the established mission and goals of the USUHS School of Medicine. Under his leadership, the University has continued to provide the Nation with highly qualified health professionals dedicated to career service in the Department of Defense and the United States Public Health Service. These graduates leave USUHS trained to provide continuity in ensuring medical readiness and the preservation of lessons learned during combat and casualty care. This critical role is, in fact, the significant factor that led the Congress to establish USUHS in 1972.

- **The Honorable Paul S. Sarbanes, the United States Senate,** Congressional Record, Tribute to Val G. Hemming, M.D., May 17, 2002, page S4533.

During 2001, **Val G. Hemming, M.D., USU SOM Professor and Dean Emeritus,** announced his retirement date of May 19, 2002. Appointed in May of 1996, Dean Hemming replaced *Nancy E. Gary, M.D., who had served as the second Dean of the School of Medicine from 1992 - 1995*. Dean Hemming had previously held the position of Chair, Department of Pediatrics, since his retirement from the Air Force in October of 1990 through May of 1996. Dean Hemming was first assigned to the Department of Pediatrics in 1980; while on active duty, he was appointed as Chair of Pediatrics in 1987. From 1983 through 1990, he also served as the Specialty Consultant in Pediatrics to the Air Force Surgeon General; and, from 1987 through 1990, he served as the Consultant in Pediatrics to the Assistant Secretary of Defense for Health Affairs. His academic and research interests have included the pathogenesis of Lancefield group B streptococcal infections in the neonate, pathogenesis of lower respiratory tract bacterial and viral infections in infants and young children, and pediatric education for undergraduate medical students. *Most significant has been his research in Respiratory Syncytial Virus (RSV) Infection; this research resulted in a biological product for the prevention of RSV infection for children, which was approved by the Food and Drug Administration in January of 1996.* Dean Hemming was awarded the Doctor of Military Medicine, *Honoris Causa*, at the USU Commencement on May 19, 2001. The citation for the honorary degree recognized Dean Hemming as a physician, teacher, scientist, military officer, humanitarian, husband, father, and grandfather. Also, the University award recognized Dean Hemming's "lifetime of pursuing multiple goals... always guided by a core principle of service... to family, church, and country..." Dean Hemming changed the SOM curriculum through a caring and thoughtful style of management and, by doing so, ensured the accreditation of the SOM by its accrediting organizations. The University's gratitude toward Dean Hemming for his accomplishments and contributions to the SOM and to the entire University is reflected in the standing ovation paid to him as he accepted the Honorary Degree of Doctor of Military Medicine. *Dean*

Hemming, the third USU SOM Dean and Professor Emeritus, is currently working on his research and serves as a voluntary faculty member in the USU SOM Department of Pediatrics.

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USU SOM Selects its Fourth Dean. Following a nation-wide search, ***Captain Larry W. Laughlin, M.D., Ph.D., USN (Retired),*** *was chosen to be the fourth Dean of the SOM.* Doctor Laughlin joined the University in 1991 and served as the Chair of the SOM Department of Preventive Medicine and Biometrics from 1998 through 2002, where he held the Sanford Chair in Tropical Medicine, named in honor of *the first Dean of the SOM, Jay P. Sanford, M.D.* Doctor Laughlin is certified by the American Board of Preventive Medicine and the American Board of Internal Medicine, Public Health and General Preventive Medicine. Prior to his USU assignment, he was the Commanding Officer of the Naval Medical Research Institute in Bethesda, Maryland. Captain Laughlin retired from active duty in the Navy and assumed responsibilities as Dean of the SOM on May 19, 2002. Since that time, Dean Laughlin has met extensively with his Department Chairs and Associate Deans to review the structural organization of the SOM to ensure that the Medical School has the flexibility to respond to the ever-changing requirements of the Military Health System. As Dean, Doctor Laughlin remains firm in his conviction that continued excellence in teaching is essential to the medical and graduate education students in the SOM. He has initiated a SOM-wide effort to enhance the teaching skills of the faculty through expanded mentorship, which, in turn, will enrich the experience of the SOM and Graduate Education students; Dean Laughlin currently participates in teaching SOM students. And, relevant to his expansive research experience and the successful publication of his related efforts, Dean Laughlin is also working with the Department Chairs and the USU Vice President for Research to assist new/junior faculty members with the complex requirements of the research application process through mentorship and instructional workshops. In addition, the new Dean has closely coordinated with the USU Vice Presidents for Administration and Management, Resource Management, and Research to develop and implement a year-round process leading to the eventual renovation of the research laboratories throughout the School of Medicine. These efforts are all part of Dean Laughlin's vision to enhance the teaching, research, and scholarship achievements of the SOM faculty.

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USU Department Chair Is Recognized for 25 Years of Extraordinary Leadership. Norman M. Rich, M.D., Professor and Chair, Department of Surgery, has provided leadership to the USU SOM Department of Surgery beginning in 1977, when he established the Department. Despite resource constraints and repeated threats against the University and the School of Medicine, Doctor Rich attracted and retained talented faculty, successfully developed a military medical surgical curriculum, and initiated a research program. One of his most successful innovations was to establish a bi-monthly Distinguished Visiting Professor Program that has continuously benefitted students and introduced nationally and internationally known surgeons to the University and to the outstanding student body of the School of Medicine. Another unique innovation established by Doctor Rich was the USU Surgical Associates, which served as a model for the founding of the Henry M. Jackson Foundation for the support of medical education and research. On August 21, 2001, Doctor Rich was awarded the University Medal during the 16th Annual

Surgery for Trauma Day. The award recognized Doctor Rich for: the continuous support and encouragement he has provided to the faculty, students and graduates of the SOM; his contributions to the positive awareness of the University through his international efforts and memberships in elite organizations; and, the on-going visits to USU by prestigious organizations. Two examples include the Society of University Surgeons (this premier organization for young academic surgeons has held two meetings at USU; whereas, the majority of United States medical schools have never been visited) and, the International Surgical Group composed of Professors from leading Canadian, British, Scandinavian, and United States Schools of Medicine. Doctor Rich also established: the American Trauma Society; the Society for Military Vascular Surgery; the Chesapeake Vascular Society; the Southern Association for Military Surgery; the American Venous Forum Foundation; the Ambroise Pare International Military Surgery Forum; and, the International Association of Trauma Surgery-Intensive Care. He has been a member of more than 56 professional societies. Due to his academic interest in the management of injured patients and vascular surgery, Doctor Rich has earned international recognition, lecturing in more than 35 countries, publishing in excess of 300 manuscripts and authoring or co-authoring five books. He has also received more than 50 awards and honors, to include: the Legion of Merit; the Bronze Star; the Republic of Vietnam Gallantry Cross; and, the Vietnam Service Medal. *On October 11, 2002, the University President announced that the Department would be named the Norman M. Rich Department of Surgery*. Doctor Rich stepped down as Chair of the Department in late October of 2002; he remains on the faculty and continues to provide consultative support to **Colonel David Burris, MC, USA, FACS, DMCC, USU SOM Class of 1982,** who has been named as Interim Chair of the Department of Surgery.

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USU Chair Receives $12.7 Million, Seven-Year Award from the National Institutes of Health. Harvey B. Pollard, M.D., Ph.D., Professor and Chair, USU SOM Department of Anatomy, Physiology and Genetics (APG), is the principal investigator for a National Institutes of Health (NIH)-sponsored study on the proteomics of cystic fibrosis. The award totals $12.7 million over a seven-year period. Under the leadership of Doctor Pollard, *the USU SOM APG Center for Medical Genomics and Proteomics has become one of ten academic organizations in the United States to win substantial support from the NIH for the establishment of a Proteomics Center.* This contract has allowed the University to acquire a world-class set of mass spectrometers, as well as support personnel, to form the critically required technical support base for proteomic research in the 21st Century. *In terms of NIH funding, this moves the USU SOM Department into the ranks of the top twenty equivalent Departments in United States Medical Schools* and also serves as a crucial research resource for the entire University. The goal of the Center is to identify proteins whose expression and function are significantly increased or decreased in cystic fibrosis. The rationale is that the identification of such proteins will provide critical information for the development of new clinical diagnostics and the discovery of new drugs with which to treat cystic fibrosis. Cystic fibrosis is the most common autosomal recessive lethal genetic disease affecting the population of the United States, with one out of every 1,600 live births afflicted. A cystic fibrosis patient carries two copies of a mutant cystic fibrosis transmembrane conductance regulator (CFTR) gene, and approximately five percent of the population carries at least one mutant CFTR gene. The average cystic fibrosis patient dies at the age of 28, primarily through lung inflammation, infection, and failure. Information derived from this research promises to impact on the understanding of challenging, but less understood, inflammatory diseases of the lungs

such as asthma, as well as inflammatory processes in other parts of the body. Faculty co-investigators and consultants at USU include **Gregory P. Mueller, Ph.D., Professor, APG; David Jacobowitz, Ph.D., Adjunct Professor, APG; Meera Srivastava, Ph.D., Associate Professor, APG; Ofer Eidelman, Ph.D., Research Assistant Professor, APG; and, Eleanor S. Metcalf, Ph.D., Professor, Microbiology and Immunology.** The Center for Medical Genomics and Proteomics is the armature for the NIH-funded program and provides a world-class mass spectrometry facility located in the USU Biological Instrumentation Center (BIC).

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Department Chair Receives Lifetime Distinction Award. Robert E. Goldstein, M.D., Professor and Chair, USU SOM Department of Medicine, was named a Master of the American College of Physicians (ACP) - American Society of Internal Medicine (ASIM). He was one of 34 internists nationwide honored during the ACP-ASIM annual convocation in Philadelphia, Pennsylvania, in the Spring of 2002. The Lifetime Achievement Distinction Award is based on many years of service to internal medicine. The award permanently entitles Doctor Goldstein to use the initials *MACP* as part of his professional signature. Doctor Goldstein was nominated for this award by the Metropolitan Washington, D.C. Chapter of the American Society of Internal Medicine. In addition to Doctor Goldstein, two current members of the Faculty of the USU SOM Department of Medicine were also among the 34 internists honored: **Kurt Kroenke, M.D., Adjunct Professor of Medicine**; and, **Michael Kussman, M.D., Adjunct Associate Professor of Medicine**. Both were named Masters in the ACP-ASIM. **Robert J.T. Joy, M.D., Professor and Chair Emeritus, USU SOM Department of Military History,** delivered a special address at the meeting.

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The American College of Obstetricians and Gynecologists Recognizes USU SOM Chair. The American College of Obstetricians and Gynecologists Distinguished Service Award was presented to **William H.J. Haffner, M.D., Professor and Chair, USU SOM Department of Obstetrics and Gynecology.** The award was presented at the Presidential Inauguration and Convocation of the 50th Annual Clinical Meeting of the American College of Obstetricians and Gynecologists (ACOG). The event was held at the Los Angeles Convention Center on May 8, 2002. Doctor Haffner, a retired career United States Public Health Service (USPHS) medical officer, served as Chair of the USU SOM Department of Obstetrics and Gynecology (OB/GYN) for almost nine years before retiring from the USPHS on August 1, 2001; he was selected to continue as Professor and Chair of the USU SOM Department of OB/GYN in his new capacity as a civilian employee. Doctor Haffner maintains his clinical practice at the National Naval Medical Center in Bethesda. He began his USPHS career with the Indian Health Service in 1971, where he served in OB/GYN leadership roles. Doctor Haffner is active in the Armed Forces District of the ACOG and has served, or is currently serving, on several ACOG committees, including the Committee on American Indian Affairs, the Committee on Practice Bulletins-Gynecology, and the Committee on Health Care for Underserved Women. Doctor Haffner is also the Secretary-Treasurer-Elect of the Association of Professors of Gynecology and Obstetrics.

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Robert J. Ursano, Professor and Chair, USU SOM Department of Psychiatry, Director, USU Center for the Study of Traumatic Stress, and internationally recognized expert on Post Traumatic Stress Disorder and mass psychological response to terrorism, was the keynote speaker at a National Academy of Science Workshop on the Psychological Consequences of Terrorism and Systems for Response. Doctor Ursano is a member of the National Academy of Science Institute of Medicine Committee on Responding to the Psychological Consequences of Terrorism; the committee will meet over twelve months to: address the gaps in the knowledge required by policy-makers for planning, preparedness and intervention and, provide recommendations for options on how to optimize the public health response to the long- and short-term mental health consequences of terrorism. During 2002, Doctor Ursano was appointed to the expert Advisory Board of the National Partnership for Workplace Mental Health; this is a partnership of the American Psychiatric Association and a number of the largest corporations in the United States. He was also asked to serve on the planning committee for the Annual Rosalynn Carter Symposium on Mental Health Policy. The 2002 theme was *Status Report - Meeting the Mental Health Needs of the Country in the Wake of September 11*.

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Department Chair Develops the MedPix Medical Image Database System. James G. Smirniotopoulos, M.D., Professor and Chair of the USU SOM Department of Radiology and Radiological Sciences, and Professor of Neurology, and Biomedical Informatics, began an exciting Distance Learning Program by providing monthly Neuroradiology Teleconferencing between USU and the Naval Medical Center in San Diego, California. Working with the USU Office of Technology Transfer, Doctor Smirniotopoulos filed a patent application for the MedPix Medical Image Database System. The MedPix System is now used by all Department of Defense Radiology Residency Programs and it is the primary teaching file for: the National Naval Medical Center (NNMC); the Walter Reed Army Medical Center (WRAMC); the Tripler Army Medical Center in Honolulu, Hawaii; the Madigan Army Medical Center in Tacoma, Washington; and, USU. The MedPix Case of the Week is distributed by e-mail to more than 1,700 registered users each week, as well as to USU students across all four years of the School of Medicine. Significantly, Doctor Smirniotopoulos was designated responsibility for the *Neuroradiology Case of the Day* at the world's largest Radiology Meeting, the Radiological Society of North America, held in December of 2000. In addition, in February of 2002, he was a *Featured Faculty Member* in meetings held in Mexico City. He also participated in numerous continuing medical education courses around the Nation, as well as one week as a Visiting Professor at the Tripler Army Medical Center in Honolulu, Hawaii. Under his guidance, Doctor Maurice Reeder completed a DoD-sponsored project to create a comprehensive website on Tropical Imaging. Together, Doctors Reeder and Smirniotopoulos have begun a *Teach the Teach*ers project, which will be used to train African Radiologists in Tropical Imaging.

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Department Chair is Selected for the USU SOM Department of Preventive Medicine and Biometrics. Captain Gerald V. Quinnan, Jr., M.D., USPHS, was selected to chair the Department of Preventive Medicine and Biometrics following a nation-wide search. Captain Quinnan succeeded Doctor Larry Laughlin, M.D., following his selection as the Dean of the SOM. Captain Quinnan came to USU in 1993; he holds academic appointments in the School of Medicine as a Professor of: Preventive Medicine and Biometrics; Molecular and Cell Biology; and, Emerging and Infectious Diseases. He is an expert in virology and infectious diseases and has served as a member of the Department of Defense Select Panel on Biological Warfare Vaccine Research and Development; in addition, he serves as a consultant to the Pan American Health Organization, the World Health Organization, and the Centers for Disease Control and Prevention. Captain Quinnan is also a Fellow of the Infectious Disease Society of the American Board of Internal Medicine.

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Paul D. Rick, Ph.D., Professor of Microbiology and Immunology, Has Been Appointed as the Chair of the USU SOM Department of Biochemistry and Molecular Biology. After more than 25 years as a faculty member at the USU SOM, **Paul Rick, Ph.D.,** was selected to lead the Department of Biochemistry and Molecular Biology. Doctor Rick joined USU in 1977, after completing a postdoctoral fellowship at the University of Connecticut Health Sciences Center; he received his Doctoral Degree in Biochemistry in 1971, from the University of Minnesota. Doctor Rick's research interests have been primarily focused on the processes involved in the assembly of cell-surface structures in bacteria. His laboratory works to define the genes and enzymes involved in the assembly of the enterobacterial common antigen of gram-negative enteric bacteria. He and the members of his laboratory have made great progress in defining the function of this unique polymer. Funded steadily since 1984, by grants from the National Institutes of Health, Doctor Rick has received intramural support from USU as well. Graduate students and postdoctoral fellows who worked in his laboratory have received training in the application of biochemical and molecular biological approaches to research. The School of Medicine community recognizes Doctor Rick as a distinguished scientist and faculty leader at USU; one who is well respected within the SOM and who will continue to be a strong contributor to faculty leadership.

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USU Research Discovers a new Mechanism for Photoreception and Is Recognized by <u>Science</u> as one of the Top Ten Scientific Breakthroughs of 2002. Two thousand United States troops were sent from a base in North Carolina to the Sinai Desert, fulfilling their rapid deployment force mission to deploy anywhere in the world in 18 hours. While the soldiers were ready fighting forces when they left North Carolina, because of the effects of jet lag, their performance would have been degraded if they had had to engage in combat immediately upon arrival in the Desert. A discovery by scientists in the USU SOM Department of Anatomy, Physiology and Genetics (APG) could eventually result in a treatment for jet lag and help to optimize performance by deployed service members. Researchers have been studying the eye for several hundred years. Santiago Ramon Cajal, a Spanish neuroanatomist, who is frequently referred to

as *the father of neuroanatomy*, was the first to anatomically characterize the cells of the retina. Cajal's work showed that the rods and cones were the only two types of photoreceptors in the retina, initiating sight by activating nerve cells that send signals to the brain. The rods are the cells responsible for vision at low light levels, while the cones are active at higher light levels. His work done around the turn of the 20th Century, showing that rods and cones were the only photoreceptors in the eye, was long considered the standard until USU faculty member, **Ignacio Provencio, Ph.D., Assistant Professor, USU SOM Department of APG,** and colleagues from the University of Virginia found that some mammals lacking rods and cones could still reset their internal clocks to light. They demonstrated that mice without rods and cones still adjusted their biological rhythms in response to light. **Doctor Mark D. Rollag, Ph.D., Professor and Vice Chair, USU SOM Department of APG,** recruited Doctor Provencio to USU for a post-doctoral fellowship, and the two began their collaboration on research to identify a novel photopigment that could explain the mouse findings. A search for another photoreceptor was launched. The two investigators searched for the protein in frogs, specifically in the frog skin cell because it was easy to study in their laboratory. Their work showed that frog skin cells responded to light using opsin photopigment, as used by visual photoreceptors. A closer look into the frog eye revealed the phantom photoreceptor, which they named *melanopsin* for its location within the skin pigment cell. Doctor Rollag checked for melanopsin in chickens and Doctor Provencio found it in mice. Using that data, they looked for the protein in humans. The photoreceptor was found in the retina, but not in the rods and cones. The expression in the eye of the mouse looked exactly like the ganglion cells that projected to the biological clock, suggesting it could play a role in regulating the body clock. Using a marker for melanopsin cells in the retina, they identified a *photoreceptive net*, a new light-detecting apparatus in the retina. Based on their work, other scientific laboratories have extended their findings and have shown that melanopsin-contained ganglion cells are photoreceptors that are completely different than vision cells, but are still found in the eye. Doctors Rollag and Provencio found that melanopsin does play a role in resetting the body's clock, and in February of 2002, scientists and colleagues from Brown University proved their prediction that these melanopsin-containing cells are indeed directly sensitive to light. According to a report on the subject featured in the *Harvard Gazette*, light is a mixture of different frequencies or colors. By determining the frequency needed to reset the internal clock after it has been *knocked out of synch* by travel across time zones, scientists could develop a cure for jet lag. From the perspective of the Armed Forces, not having to acclimate or adjust the clock could ultimately save lives.

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USU Researchers Target Malaria at Home and Abroad. Within the last year, an estimated two to three million deaths world-wide were caused by malaria. Combating this global threat is important to the military since fighting forces are often deployed into areas where malaria is endemic. Researchers at USU, led by **Donald R. Roberts, Ph.D., Professor of Tropical Public Health, USU SOM Department of Preventive Medicine and Biometrics,** are helping nations predict high-risk locations for malaria occurrence through satellite imaging and the use of geographic information system (GIS) technology. The technology is used to predict malaria mosquito population levels and disease transmission risks within precise areas and time frames. The National Aeronautics and Space Administration (NASA) is the primary sponsor of this research. Remote sensing and GIS technologies have the potential for targeting and managing malaria vector control in Belize, a Central American country that experienced a resurgence of malaria in the

mid-1990's. Through stratification, the country has reduced malaria rates since 1995. However, in 2000, Belize had to replace DDT with more expensive and less effective insecticides. To make efforts more cost-effective, officials could increase the use of remote sensing and GIS technologies to more precisely target the application of control measures. Past research in Belize has shown that these technologies can be used to identify favorable mosquito habitats through characterization of vegetation, bodies of water, and other environmental factors. This information, along with specific locations of human habitations, can help Belize's Ministry of Health pinpoint houses and high risk areas to reduce malaria control operational costs and the amounts of chemicals needed for effective levels of control. Once a functional GIS is developed for the whole country, it can also be used in other public health programs such as immunizations and dengue control. In September of 2002, two confirmed cases of malaria were discovered in Northern Virginia. In response, Doctor Roberts and his team, under existing memoranda of understanding, helped local and state health authorities trap and test mosquitoes that might be harboring malaria. They collected and verified the presence of malaria-positive pools of mosquitoes from Selden Island. The island is part of Montgomery County, Maryland, but is located on the Virginia side of the Potomac River. The USU team, led by Doctor Roberts, continues to provide technical and consultative expertise to authorities on this issue.

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USU Faculty Member Selected as Finalist for Humanism in Medicine Award. Lieutenant Colonel Francis G. O'Connor, MC, USA, Assistant Professor, USU SOM Department of Family Medicine, Director, Primary Care Sports Medicine, was selected during 2002 as a finalist for the 2001 Humanism in Medicine Award, an annual award sponsored by the Association of American Medical Colleges (AAMC) through the support of the Pfizer Medical Humanities Initiative. Doctor O'Connor was one of 56 honorees from across the Nation who were selected by the AAMC Organization of Student Representatives. The selection is based on five characteristics of humanism in medical education: positive mentoring skills; community service; compassion/sensitivity; collaboration; and, observance of professional ethics. *"Medical Students learn by exposure to role model physicians who are not only scientifically qualified, but who also exemplify compassion, understanding and partnership,"* said Mike Magee, M.D., Senior Medical Advisor for Pfizer, Incorporated, and Director of the Pfizer Medical Humanities Initiative. *"Doctor O'Connor is such a physician and the students of the USU School of Medicine, through this award, have expressed their appreciation to him as both a physician and as an outstanding human being."*

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New USU Clinic to Study Post-Polio Syndrome. A new USU clinic is being used to research a chronic condition with symptoms that can be confused with aging. The Post-Polio Syndrome Clinic opened its doors on September 6, 2002, with an open house and a ribbon-cutting ceremony for the public. People with Post-Polio Syndrome (PPS), a chronic condition, can experience increasing disabilities related to

fatigue, muscle weakness, joint pain, and sleep disturbances. **Colonel Bahman Jabbari, M.D., Ph.D., USA, is the Director and Principal Investigator of the Post-Polio Syndrome Program; he also serves as Professor and Chair for the USU SOM Department of Neurology.** It is estimated that there are about 1.6 million polio survivors in the United States and Post-Polio Syndrome affects roughly one in five of these polio survivors. The clinic, located in USU Building 53 on the National Naval Medical Center compound, is part of the Clinical Neuroscience Laboratory, which also includes the Spinal Cord Injury Program Clinic. The staff of both clinics will use the laboratory to conduct future research project designs, program administration, patient evaluation/physicals, collections of specimen samples, data analysis, and management and sleep studies. Under the leadership of Colonel Jabbari, the clinic staffs support a multi-center study, which will aim to find the cause of Post-Polio Syndrome (PPS) and study treatment options for the affected patients. In Fiscal Year 2001, Congress provided funds to support research on the cause and treatment of PPS. Members of the Uniformed Services and civilians can participate in the PPS Program, which includes collaborators from USU, the National Naval Medical Center, the Walter Reed Army Medical Center, the National Institutes of Health, the National Rehabilitation Hospital, and the Conemaugh Health System located in Johnstown, Pennsylvania.

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USU Faculty Member Elected to the Board of Directors of the American College of Emergency Physicians. Lieutenant Colonel Linda Lawrence, MC, USAF, FACEP, SOM Commandant, Associate Professor, USU SOM Department of Military and Emergency Medicine, was elected to the Board of Directors of the American College of Emergency Physicians (ACEP), the Nation's largest emergency physician association. Lieutenant Colonel Lawrence will serve a three-year term. The Council is composed of representatives from the organization's 53 chapters and 22 sections of membership and the Emergency Medicine Residents Association. The Board of Directors has 12 elected directors plus the president and immediate past-president and is the ACEP policy-making body that is responsible for the organization's management and control. ACEP, a national emergency medicine medical specialty society with nearly 23,000 members, is committed to improving the quality of emergency care through continuing education, research and public education. Lieutenant Colonel Lawrence was inducted as a Fellow of ACEP in 1995, and has held several leadership positions with the organization, including President of the Government Services Chapter from 1997 through 1998. Doctor Lawrence has more than 12 years of experience in emergency medicine, including four years spent at USU where she developed, and served as faculty for, the Introductory Emergency Medicine Didactic Course.

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Appendix C provides selected examples of billeted and off-campus members of USU Departments and Programs and Department Activities receiving special recognition during 2002.

RESEARCH CENTERS AND PROGRAMS.

We will optimize our role in military and federal medical education and research.

We will effectively communicate the right information to the right people at the right time.

- Goals 5 and 7 of the USU Strategic Plan, 2002.

Research is Directed Toward Military Requirements. As discussed in the *Strategic Planning* and *Research Administration* sections of Part I of this annual report, the majority of the research programs and projects currently taking place at USU are focused on meeting the needs of the Uniformed Services. Research protocols throughout the SOM study diseases of high military relevance for troop deployment and sustainment. During 2002, the USU intramural program consisted of 72 militarily relevant protocols; extramurally funded research at USU, in 2002, included 173 projects supported by Federal agencies such as the National Institutes of Health (NIH), the National Science Foundation (NSF), the Department of Energy (DOE), the United States Army Medical Research and Materiel Command (MRMC), and the Office of Naval Research (ONR). These 245 protocols explored a wide span of scientific areas, including basic biomedical questions central to the mission of the Military Health System such as: 1) the mechanisms, transmission and control of a wide range of infectious diseases; 2) a variety of crucial topics in combat casualty care, operational medicine, and health education and promotion; 3) women's health issues in the DoD; and, 4) the development of new methods for the diagnosis and treatment of medical problems faced by the United States military and their dependents. Research contributed by SOM faculty relating to combat casualty care continues to provide rapid diagnostic methods and treatments that ensure military readiness.

The USU researchers support the military mission by advancing the understanding of both the transmission and the internal mechanisms of a spectrum of pernicious and/or common diseases that may be faced by warfighters. *For example, technological advances by USU researchers have made it possible to predict mosquito population levels and transmission risks for a range of mosquito-borne diseases such as malaria, even within precise areas and time frames.* By using satellite imaging and remote sensing devices, USU researchers assist in predicting high-risk locations for the occurrence of malaria and similar diseases. These predictions focus disease-control operations and conserve scarce finances as well as human resources.

The following SOM Centers, Activities, and individual researchers are provided as selected examples of the research and consultative services taking place throughout the School of Medicine.

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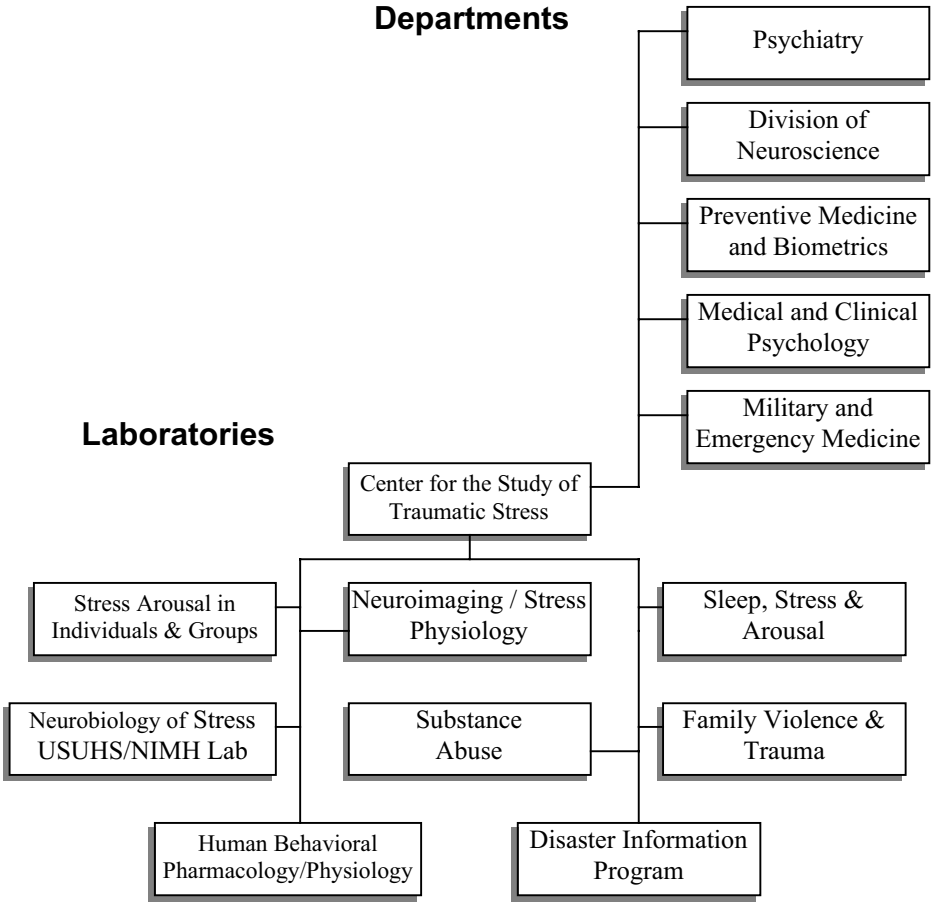
SELECTED PROFILES OF SOM CENTERS AND PROGRAMS

(See Appendix C for Additional Examples of Individual Achievements and Recognition)

USU School of Medicine Department of Psychiatry and the Center for the Study of Traumatic Stress.



Establishment. The terrorist attacks at the World Trade Center and at the Pentagon on September 11, 2001; hostage events; the poison gas attack on the Tokyo subway; the bombings at Oklahoma City, Africa, and the USS Cole; and, disasters such as Japan's Kobe Earthquake, which left 6,000 dead, 30,000 injured, and 300,000 homeless; as well as, more common *traumatic events* such as motor vehicle accidents, hurricanes, tornadoes, and physical assaults are all *substantial health risks to those who serve our Nation in the Uniformed Services* and to the general population of the United States. As the Academic Health Sciences Center for the Uniformed Services, USU is both nationally and internationally recognized for its consultative services to government and private organizations in times of disasters and critical incidents. The University is well situated to assist in meeting the needs of the Military Health System and of the Nation in the area of *traumatic stress*.

The USU Center for the Study of Traumatic Stress (CSTS) was established in 1987, as a center of excellence for responding to DoD's long-term concerns over the substantial health risks resulting from the traumatic impact of: 1) the possibility, or actual use, of weapons of mass destruction (WMD) during combat, acts of terrorism or hostage events; 2) combat, peacemaking, peacekeeping, and operations other than war; 3) natural disasters such as hurricanes, tornadoes, or floods; and, 4) more common stress producing events such as physical assaults and motor vehicle, shipboard, or airplane accidents. At present, investigators from the four USU SOM Departments of Psychiatry, Preventive Medicine and Biometrics, Military and Emergency Medicine, and Medical and Clinical Psychology, and the SOM Division of Neuroscience are collaborating on extensive studies of traumatic stress. The CSTS scientists are involved in a wide range of projects including responses to natural, man-made, and environmental disasters; the studies examine community responses to loss of life and property, community displacement, and organizational leadership. In addition, the CSTS research projects involve the examination of the physiologic change after trauma and the neurobiology of stress.

Terrorist attacks require our health care system to prepare for the unspeakable. The primary goal of terrorism is to erode the security of a nation, to disrupt the continuity of society, and to destroy the nation's social capital - its morale, cohesion, and values.

- **Robert J. Ursano, M.D., Chair, Department of Psychiatry, Director, Center for the Study of Traumatic Stress, USUHS,** The New England Journal of Medicine, *Post-Traumatic Stress Disorder*, Volume 346, January 10, 2002, pages 130-132.

Mission. Today, the Center for the Study of Traumatic Stress (CSTS) serves as a cutting-edge scientific endeavor. The CSTS continues to increase the military's medical knowledge (epidemiology, psychological, biologic, origins, and treatment) of the consequences of bioterrorism, trauma, and disaster and to apply that knowledge in addressing the real world problems and requirements of homeland defense, the response to terrorism and disaster, and humanitarian assistance. **Robert J. Ursano, M.D., Professor and Chair, USU SOM Department of Psychiatry, serves as the Director of the CSTS.**

Core Military Competency. The location of the CSTS within the multi-Service environment of USU, with its emphasis on education and development, studies, research, and on-going clinical and operational practice is critical to the development and sustainment of CSTS's ability to provide its core competency - *the capability to ensure the continued provision of critically required military-unique, medical expertise and consultative support in response to the impact of traumatic stress during and following activities related to crisis management, disaster response, and homeland defense.* The successful assessment and management of the behavioral, psychological, and social consequences of WMD-related and other national security contingencies is essential to DoD during the organization of effective responses to such events. Failure to attend to the consequences of WMD may lead to panic or demoralization and could undermine the confidence of the Armed Forces and American citizens in their government and its institutions. Only DoD has a self-renewing source of physicians and other medical personnel with interest and experience in these areas. USU, through its students in the School of Medicine and the Graduate Education Programs, and its career-focused faculty and staff, plays a vital role for the DoD in the

renewal process of militarily-focused and experienced health care providers in the study of traumatic stress. The Center's unique military medical capability to assess and manage the traumatic impact of WMD and other disaster-related contingencies provides direct support to Homeland Security and Defense.

Response/Support Subsequent to September 11, 2001. Within hours of the terrorist attacks in New York and at the Pentagon, CSTS staff provided: 1) immediate, on-going consultation to the hospitals, medical care planners, and elected leaders of New York City, the State of New York's Response Management Team, the Pentagon's Response Planning Team, and Arlington Hospital (42 casualties were received from the Pentagon) on staff stress/interventions; 2) continuous manning for the Stress Support Office at the White House/Executive Office Building; 3) on-going provision of resources and information packets for the USNS COMFORT deployment teams for stress related to body handling and concerns over families and terrorist activities; 4) a Disaster Care Resources Site on the USU Trauma Center Web Page; 5) OSD-coordinated and immediate responses to requests for consultation and expertise from Newsweek, ABC News, The Washington Post, and, The New York Times; 6) information packets to the Body Recovery Teams in both New York and Washington, D.C.; and, 7) membership on the Secretary of Defense's 12-member Task Force, "RED NUFF." During 2001, the Center also published *Military and Disaster Psychiatry* in the International Encyclopedia of the Social & Behavioral Sciences; this publication provides an overview of military and disaster psychiatry and examines the consequences of disasters and wars for communities and the evolution of medical responses to traumatic experiences.

The Center continued its ongoing support for the Nation from September 11th throughout 2002. Under the leadership of Doctor Ursano, the CSTS was highly sought out for its consultation, education, and research capabilities. Doctor Ursano was invited to a number of prestigious conferences relating to terrorism; in July of 2002, he was a participant in the NATO-Russia Advanced Scientific Workshop on Planning for Bioterrorism. And, he consulted with the World Health Organization on issues related to bioterrorism and mental health. In addition, Doctor Ursano was invited to write an editorial, *Post-Traumatic Stress Disorder*, which was published in the New England Journal of Medicine, Volume 346, January 10, 2002, pages 130-132. Also during 2002, Doctor Ursano was one of three speakers at the *Annual Carter Center Symposium on Mental Health Policy and September 11th*, along with Doctor Julie Gerberding, Director, Centers for Disease Control, and Doctor Neil Cohen of the Commission of Health for New York City.

During 2002, the CSTS collaborated on a publication for World Psychiatry, a widely circulated international Journal, entitled *Mental Health Intervention and High-Risk Groups in Disasters*. In addition, during the past year, the Center completed the only two empirical studies of Family Violence and the Army using an Army database for one study and a study of troops from Fort Hood (to include their spouses) who were deployed to Bosnia in the other. Currently, the CSTS is initiating studies on the effects of the traumatic stress resulting from the October 2002 Sniper Terrorism in the Washington, D.C. area on both the Military Health System and the civilian emergency responder communities. During 2002, the CSTS was the major planner in the recent DoD/ National Institutes of Health consensus meeting on early interventions following incidents of mass violence to prepare state and local leaders for the stress resulting from bioterrorism.

Doctor Ursano and his colleagues in the CSTS and the Department of Psychiatry published numerous articles during 2002, some examples include: 1) *Mental Health Intervention and High-Risk Groups in Disasters*, World Psychiatry, 1(3), pages 157-158, 2002; 2) *Psychological and Behavioral Impacts of Bioterrorism*, PTSD Research Quarterly, 13, page 107, Fall 2002; 3) *Post-Traumatic Stress Disorder*, New England Journal of Medicine,

346(2), pages 130-131, 2002; 4) *Regional Specificity of Brain Glucocorticoid Receptor mRNA Alterations in Subjects with Schizophrenia and Mood Disorders*, Molecular Psychiatry, 7, pages 985-995, 2002; and, *5) Decreased Calcium-Dependent Constitutive Nitric Oxide Synthase (cNOS) Activity in the Prefrontal Cortex of Patients with Schizophrenia and Depression*, Schizophrenia Res., 58, pages 21-30, 2002. The CSTS also had two books in press, in late 2002, at the Cambridge University Press - Terrorism and Disaster: Individual and Community Responses to Extraordinary Events and Planning for Bioterrorism: Individuals, Communities and Nations.

The CSTS welcomed **Rear Admiral Brian W. Flynn, United States Public Health Service (Retired), as an Associate Director** during 2002. Doctor Flynn is an international expert on disaster mental health and has presented at international conferences and provided consultation to state, national, and international organizations. During the past year, he traveled to Geneva to develop guidance on disaster and emergency planning; he also consulted with the United States Agency for International Development to design and implement a mental health program in post-war Afghanistan. In addition, Doctor Flynn assisted the Washington, D.C. Department of Mental Health in the development of an all-hazards disaster plan and follow-up on anthrax incidents. On May 7, 2003, he presented *Promoting Psychosocial Resilience in the Face of Terrorism* to members of the United States House of Representatives and their staffs.

Colonel Ann E. Norwood, MC, USA, USU SOM Class of 1981, Associate Professor and Associate Chair, USU SOM Department of Psychiatry, continued to serve as the Chair of the American Psychiatric Association's Committee on Psychiatric Dimensions of Disasters during 2002. During the past year, Doctor Norwood provided numerous presentations on bioterrorism to a number of organizations to include the Federal Emergency Management Agency (FEMA), the Environmental Protection Agency (EPA), and the Chemical Stockpile Emergency Preparedness Program (CSEPP). **Colonel Molly J. Hall, USAF, MC, Associate Professor, USU SOM Department of Psychiatry,** presented on the psychological and behavioral responses to weapons of mass destruction at the United States Air Force School of Aerospace Medicine and the District of Columbia Emergency Management Authority.

During the past year, the CSTS, with sponsorship from the Center for Mental Health Services/Substance Abuse and Mental Health Services Administration, joined with Walter Bartmen, founder and Director of the Yellow Barn Galley in Glen Echo, Maryland, to develop an innovative program to assist state and local community leaders in addressing the psychological impact of bioterrorism on the public. A group of artistically talented 11th and 12th grade students from Montgomery County, Maryland, participated in the project entitled, *Emerging Hope in the Face of Bioterrorism*. The project sponsored gifted teenage artists in a painting project to develop art for public service announcements after a bioterrorist attack. The art provides visual components to foster a sense of security and control and hope for the future following a bioterrorist attack. In addition to the art project, a series of videotapes and CDs were developed with input from experts who participated in the disaster response to September 11th and the anthrax attacks. These educational materials provide practical guidance to state and local officials on the psychological and behavioral consequences of bioterrorism. Admiral John Eisold, the United States Capital Physician; Doctor Neal Cohen, Commissioner of Health for New York City on September 11th; Ms. Mary Walsh, the National Security Producer for *CBS Evening News with Dan Rather*; and, other distinguished experts summarized the *lessons learned* since September 11th. The distribution of the CDs has been widely acknowledged by the leadership of individual States, the Supreme Court of the United States, and the Congress of the United States.

National and International Recognition of the Center's Leadership. **Robert J. Ursano, M.D., Professor and Chair, USU SOM Department of Psychiatry**, is internationally recognized as an expert in traumatic stress. In November of 2000, Doctor Ursano received the Lifetime Achievement Award, the highest award given by the International Society for the Study of Traumatic Stress. This award is given for outstanding and fundamental contributions to the understanding of traumatic stress; the award citation made particular note of Doctor Ursano's national and international contributions. Following September 11th, Doctor Ursano was widely quoted in the media including The New York Times, The Washington Post, and The Wall Street Journal; he also appeared on ABC News, NBC News, and the National Public Radio to discuss the psychological and behavioral effects of the September 11th terrorist attacks on the Nation. In addition, he was an invited participant at the DoD Terrorism Task Force, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) Panel on Planning for Bioterrorism, and the World Psychiatric Association Symposium on Disaster and Terrorism. **Doctor Ursano; Colonel Ann Norwood, MC, USA, USU SOM Class of 1981, Associate Professor and Associate Chair, USU SOM Department of Psychiatry; Carol S. Fullerton, Ph.D., Research Associate Professor, USU SOM Department of Psychiatry**; and, **Captain Thomas A. Grieger, MC, USN, USU SOM Class of 1987, Associate Professor, USU SOM Department of Psychiatry**, participated as subject matter experts in an International Consensus Conference on Acute Interventions following Mass Violence and Trauma. In October of 2001, Doctor Ursano and Colonel Ann Norwood participated in a panel discussion on *The Commitment and Role of Psychiatrists in Disasters - Lessons from the September 11th Disasters*, organized by the International Congress of the World Psychiatric Association. And, as mentioned earlier, in July of 2002, Doctor Ursano was a participant in the NATO-Russia Advanced Scientific Workshop on Planning for Bioterrorism; he also consulted extensively with the World Health Organization on issues related to bioterrorism and mental health. Also during 2002, Doctor Ursano served as a member of the Institute of Medicine, National Academy of Sciences Committee on Responding to the Psychological Consequences of Terrorism.

Areas of Study. Twelve major projects are currently funded with over six million dollars from the following sources: the Department of the Army; the National Institute of Mental Health; the National Alliance for Research on Schizophrenia and Depression; the National Alliance for the Mentally Ill Research Institute; the National Institute on Drug Abuse; the Substance Abuse and Mental Health Services Administration of the Department of Health and Human Services; the Stanley Foundation; and, the United States Marine Corps. *Ongoing studies include the following areas:* psychological and behavioral responses to weapons of mass destruction; combat stress; the prevention of stress-related disease; shipboard fires and emergencies; relocation stress; prisoners of war; leadership of those suffering from grief; medical personnel in disasters; traumatic stress and the immune function; community responses to disaster; identification of high risk populations; chronic stress; medical treatment following trauma; biomedical responses to stress; family violence; and, others. *Recently funded studies include:* combat stress in Bosnian-deployed troops; stress among emergency workers after an air disaster; psychological stress in the United States military deployed to Desert Storm/Shield; family violence and trauma; stress and women's health; combat, deployment, contingency operations, and trauma; basic neurobiology of genetic and second messenger stress responses; stress and arousal symptoms in individuals and groups using the Persian Gulf War symptoms as a paradigm; disaster psychiatry education; natural disasters and health outcome: adult and adolescent responses to Hurricane Andrew; genetic risk for substance abuse and cognitive processing; and, animal models for the study of the neurobiology of trauma responses and depression.

The CSTS Neuroscience Program grew significantly during 2002. Funding was received from DoD to begin laboratory renovations and to obtain stimulus presentation equipment for functional magnetic resonance imaging (fMRI). **Elizabeth Osuch, M.D. Assistant Professor, USU SOM Department of Psychiatry,** received

an R01 Grant from the National Institute of Mental Health to study *Functional Neuroimaging in Acute Stress Disorder and PTSD*. She also presented an invited lecture entitled, *Identifying and Accounting for Complexity in PTSD Functional Imaging*, at the Conference of the International Society for Traumatic Stress Studies in Baltimore, Maryland.

The impact of terrorism on individuals and communities continued as a major focus of the CSTS research during 2002. **Captain Thomas A. Grieger, MC, USN, USU SOM Class of 1987, Associate Professor, USU SOM Department of Psychiatry,** initiated several research and health surveillance projects examining post-trauma disorders and perceptions of safety and threat related to terrorism experienced by survivors of the attacks at the Pentagon and during the recent rampage of the Washington, D.C. area sniper on both the uniformed and civilian communities. **Carol S. Fullerton, Ph.D., Research Associate Professor, USU SOM Department of Psychiatry,** designed a survey to examine the impact of the sniper attacks on the Washington, D.C. metropolitan area that was distributed over the Internet. During the several-week period of the Washington D.C. area sniper attacks, an Internet-based survey was also designed to examine the impact of those attacks on personnel at the National Naval Medical Center. Data collected from personnel working at the World Trade Center, the USNS Comfort Disaster Workers and Personnel, and the Marines exposed to the explosion at the Pentagon were examined to better understand risk and protective factors. Captain Grieger is also collaborating on a study of the psychological reactions of the crew of the research submarine, the USS Dolphin, following a major flooding accident. In addition, Captain Grieger served as the senior faculty in a Joint-Service Humanitarian Mission to provide mental health education and consultation to the Republic of South Africa Defense Forces. Doctor Grieger also spoke at several national meetings regarding *The Principles of the Psychiatric Response to Disaster and Terrorism* and *Navy Medicine's Response to the September 11th Attack at the Pentagon.*

Focus of the Nine CSTS Laboratories. The CSTS has nine research laboratories that concentrate on the following areas of study: 1) stress and arousal in individuals and groups; 2) neuroimaging/stress physiology; 3) sleep, stress and arousal; 4) social function in high stress environments; 5) neurobiology of stress; 6) family violence and trauma; 7) human behavioral pharmacology/physiology; 8) substance abuse; and, 9) disaster information.

Scope of Research/Consultative Efforts. The Center's staff serve as consultants to a large number of Federal and non-Federal institutions involved with the understanding of responses to traumatic events and in the development of health policies. The CSTS collaborative efforts in education and clinical research respond to the following entities: **Federal Consultations -** the United States Army, Navy, Air Force, and the Marine Corps of the Department of Defense; the Department of Veterans Affairs; the Department of State; the Agency for International Development; the National Aeronautics and Space Administration; the National Institute of Mental Health; the National Transportation Safety Board; and, the Peace Corps; **Private Sector Consultations -** The American Medical Association; the American Psychiatric Association; the American Red Cross; the American Psychological Association; the Montgomery County (Maryland) School Systems and Police Departments; the Maryland Office of Motor Vehicles; the Oklahoma State Department of Health; and, the Los Angeles earthquake areas; **International Consultations -** the World Health Organization (consultation to Yugoslavia); the Armenian Ministry of Health; the Singapore Armed Forces; the Disaster Stress Center of the University of Oslo, Norway; the University of Beirut, Lebanon; and, the Traumatic Stress Center of the Hadassah Medical Center, Jerusalem, Israel. Scientists from the USU CSTS and their international collaborators from Norway, Israel, and Russia are performing studies at USU to better understand the individual, community, national, and international responses to traumatic events.

Fellowship Programs. The CSTS sponsors two trauma and disaster-related fellowship programs: the Visiting Science Fellowship Program and the Military Psychiatry Fellowship Program. Graduates of these programs serve as catalysts for research, educational, and clinical programs throughout the world. During 1998, the Center sponsored a visiting scientist from the Japanese National Defense Medical College. Since October of 1998, the CSTS has hosted a total of eight scientists from numerous nations, to include Japan, Singapore, Korea, and Germany.

Consistent with the DoD requirement to provide behavioral health expertise for mass casualty responses, population-oriented behavioral health programs and behavioral health epidemiology, the Department of Psychiatry and the CSTS, developed a new two-year Disaster/Preventive Psychiatry Fellowship sponsored by the National Capital Consortium and approved by the United States Army. The program will matriculate its first Fellow in the Summer of 2003. In addition to applying through the established Graduate Medical Education route, candidates must also apply to the USU SOM Graduate Education Programs and be accepted by the USU Master of Public Health Program for their first year. The second year will be spent with the Department of Psychiatry's CSTS and includes didactic experience, research, and rotations at other institutions.

Educational Activities. Another effort of the CSTS is its sponsorship of trauma and disaster-related programs. During 2001, the Center conducted a conference, *Planning for Biological Events: Responses to Terrorism & Infectious Disease Outbreaks*. The Center for the Study of Traumatic Stress, the USU SOM Department of Psychiatry, and the Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, Department of Health and Human Services, sponsored a three-day conference. Attendees included internationally known scientists, public health and mental health leaders from the state and local levels, and representatives from the state executive branches. The conference was organized to: examine how communities perceive their needs for behavioral and mental health response preparedness in anticipation of bioterrorism and infectious disease outbreaks in the wake of training provided by DoD and the Department of Justice; develop recommendations for behaviorally and psychologically informed interventions to maintain and restore community function; provide recommendations on health communication and risk appraisal to state and local community leaders and others in order to respond more effectively to the mental health consequences of terrorist attacks; and, develop recommendations for education, training, and resource requirements to assist state and local officials to prepare for the mental health aspects of infectious disease outbreaks. The conference included four major presentations: 1) Learning from the Past: The 1918 Influenza Pandemic; 2) Biological Agents of Terror and Community Response; 3) State and Local Response Plans; and, 4) the New York City Experience. The conference extensively discussed how biological agents are the *atomic concern* for the New Millennium. The anthrax attacks demonstrated the ability of agents such as bacteria, viruses, and prions to create substantial disruptions. *Future management of bioterrorism requires a multidisciplinary approach to understanding the effects of these agents on nations, communities, families, and individuals.*

In September of 2002, the Deployment Health Clinical Center, directed by CSTS **Colonel Charles C. Engel, Jr., MC, USA, Associate Professor, USU SOM Department of Psychiatry,** sponsored, *Risk Communication & Terrorism: New Clinical Approaches*, the First Annual Conference on Post-Deployment Care. During 2002, Doctor Engel served on two national committees, a National Institute of Health Study Section, and the Department of Veterans Affairs National External Mental Illness Research & Education Clinical Center (MIRECC) Advisory Board; he also co-authored 19 peer-reviewed articles and two book chapters.

Preservation of Lessons Learned. The health implications of traumatic stress are a focused interest immediately following each trauma or disaster, but the data tends to be lost from institutional memory because of the lack of an organized center for the maintenance and development of the resulting information. The USU CSTS has served the Military Health System by capturing, organizing, and maintaining relevant information following disasters, terrorist events, and wars. Currently, the Center's basic computer data base (accessible to the Uniformed Services) provides over 15,000 items on traumatic stress. It is this data base that enabled the CSTS to effectively respond, throughout 2002, to the traumatic stress resulting from the terrorist acts of war against our Nation. Additional information is available at *<http://www.usuhs.mil/psy/disasterresources.html>* or *<http://www.usuhs.mil/psy/traumaticstress/newcenter.html>*.

Accomplishments of the Center's Family Violence and Trauma Project. The Center's Family Violence and Trauma Project (FVTP) entered its seventh year in October of 2002. The Center's FVTP provides support to command including the Army Community and Family Support Center Headquarters and Staff; the Headquarters, Department of the Army Family Advocacy Committee; the Family Advocacy Research SubCommittee; Family Advocacy Program Managers; Chiefs of Social Work Services; and, Army Social Workers. The FVTP has provided immediate responses, briefings, papers, and staff studies to the Headquarters Department of the Army Family Advocacy Program Managers and the Family Advocacy Research SubCommittee reference issues involving the scientific and medical aspects of child and spouse abuse.

In addition, during 2002, the FVTP completed the only two empirical studies of Family Violence and the Army using an Army database for one study and a study of troops from Fort Hood (to include their spouses) who were deployed to Bosnia in the other. Also, an analysis was initiated on the Army's Transitional Compensation data base, which lists cases of soldiers who have been discharged from the Army where spouse or child abuse has been a part of the discharge. Joining Forces, a quarterly newsletter of the FVTP, brings important research to the field and enjoys strong popularity within the Army and the DoD. The FVTP has also continued to add to its scientific literature data base of family violence articles. This data base is used for scientific reference to improve the development of family violence research protocols and to further the research education of Army military and civilian research social workers. Many of these articles have been sent to investigators and program managers in the Army's Family Advocacy Program (FAP) and FAP-related programs such as the military police school for teaching police to respond to incidents of family violence.

The CSTS Is Positioned to Respond to Future Requirements of the Military Health System. The USU CSTS, with its acknowledged experts and collaborative network of national and international scientists, is positioned to continue in its response to the special needs of the Military Health System and the Nation as requirements are identified in areas such as: 1) adaptation, recovery, and resiliency; 2) posttraumatic and terrorism-related psychiatric illness; 3) neurobiology of stress; 4) medical illnesses developing as a consequence of traumatic stress; and, 5) the impact of traumatic stress on the health of individual family members, family units, and organizational and community functioning.

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The USU School of Medicine Department of Preventive Medicine and Biometrics, Graduate Education in Preventive Medicine and Public Health, and the Centers for Preventive Medicine and Public Health.

Graduate Education in Preventive Medicine and Public Health.

The SOM Department of Preventive Medicine and Biometrics (PMB) offers programs of study leading to the graduate Degrees of Master of Public Health (MPH), Master of Tropical Medicine and Hygiene (MTM&H), Master of Science in Public Health (MSPH), Doctor of Public Health (DrPH), and Doctor of Philosophy (PhD) in Medical Zoology and Environmental Health Sciences. Between 1983 and April of 2003, PMB has graduated 436 individuals and granted 386 MPH, 4 MSPH, 25 MTM&H, 1 MS, 11 DrPH, and 9 PhD Degrees. During 2002, 36 Preventive Medicine and Biometrics students were awarded advanced degrees: 1 Doctor of Philosophy; 4 Doctors of Public Health; 29 Masters of Public Health; and, 2 Masters of Science in Public Health. The PMB Graduate Programs have undergone considerable growth over the past several years and have approximately 60 students currently enrolled in the Master and Doctoral Programs. With its stated mission *to produce knowledgeable and highly skilled public health professionals in support of the health and global mission of the Uniformed Services*, the PMB Department has sought to be responsive to the needs of its customers; and, this is reflected in the types of programs and training offered. During 2002, PMB continued its collaborative educational agreements with the Walter Reed Army Medical Center Preventive Medicine Residency Program and Internal Medicine Fellowship Program, the Army Program for Training in Health Services Administration, the United States Army and United States Public Health Service Laboratory Animal Medicine Program, the Navy Dental Research Institute Program in Dental Public Health, and the Indian Health Service Environmental Health Training Program. In addition, the PMB Department is affiliated with the United States Army and Navy Biomedical Research Laboratories located in: Bangkok, Thailand; Rio de Janeiro, Brazil; Nairobi, Kenya; Cairo, Egypt; Jakarta, Indonesia; and, Lima, Peru. The MTM&H Program includes a six-week overseas clinical experience in tropical medicine; graduate students find excellent opportunities at these overseas laboratories. A research program also exists under an agreement with the Ministry of Health in Belize. Doctoral students have found considerable opportunities to do research in these various locations.

The class composition, as of April 2003, for the Graduate Programs in Public Health consists of 48 master-level students (MPH, MTM&H, and MSPH); these programs are designed for students with at least three years of experience in a health-related field. Forty-four of these students are in the Uniformed Services and four are civilians. *The 48 master-level students include:* 19 physicians; 12 veterinarians; 3 dentists (including a member of the Canadian Forces); 2 nurses; 1 physical therapist; 1 dietitian; 1 statistician; 1 engineer; 4 environmental science and industrial hygiene officers; 3 Air Force Biomedical Science Corps (BSC) officers (in the health physics and international health specialist tracks); and, 1 health services administrator. First-year residents in General Preventive Medicine/Public Health and Occupational and Environmental Medicine take courses and meet all of the requirements for the MPH or MTM&H Degrees as part of their residency training. *The 12 doctoral-level students include:* 8 individuals (3 uniformed officers; 5 civilians) who are Doctor of Public Health candidates; and, 4 individuals (3 uniformed officers; 1 civilian) who are Doctor of Philosophy candidates.

The Graduate Education Programs offered by the PMB Department, as an integral part of the SOM and the SOM Office of Graduate Education, are included in the full accreditation granted by the Commission on

Higher Education of the Middle States Association of Colleges and Schools to the University. In addition, the PMB graduate programs are nationally accredited by the Council on Education for Public Health (CEPH). CEPH is the recognized accrediting body for graduate schools of public health and graduate programs in community health education and community health/preventive medicine. The CEPH report, following the June 1998 site visit by a team of external evaluators, noted that *the values of the institution and the philosophy of military medicine are an exceptionally good fit with the values and philosophy that underlie public health and preventive medicine. The program has strong ties to the military community, both locally and worldwide, and the instructional programs have particular relevance to the needs of the Uniformed Services to which the program graduates will return after their training. The curriculum is quantitatively-oriented and rigorous*. The PMB Graduate Programs in Public Health are fully accredited through 2005. The **Program Director, Colonel Gary D. Gackstetter, DVM, Ph.D, MPH, BSC, USAF, Assistant Professor, USU SOM Department of PMB,** can be contacted by e-mail at <*ggackstetter@usuhs.mil*> or at <*www.usuhs.mil/pmb/pmb.html*>.

Following the CEPH accreditation process in 1998, an *ad hoc* committee was established to articulate the mission, goals, and objectives of the PMB Graduate Programs. This document has since become part of a dynamic process of program review and evaluation for continuous quality improvement, including efforts to identify measurable program outcomes. In addition to the rigorous, quantitatively-focused curriculum (60 credit hours), *students are required to complete a 108-hour practicum experience*, as well as an independent project. Greater emphasis has been placed on basic research methodology, and students are encouraged to present their research results at scientific meetings and to submit manuscripts to peer-reviewed journals for publication. Each June, the Department sponsors an annual Public Health Colloquium to feature the four or five best independent projects. A growing number of student projects eventually culminate in publications in peer-reviewed journals.

In response to the CEPH requirement for a practicum or field experience as part of the MPH Program, a new departmental program office was established to direct graduate student activities related to the practicum experience and the required MPH independent project. During their 108-hour practicum experience, students have the opportunity to apply knowledge and skills learned in the classroom within various *real world* settings at public health agencies and other health-related organizations offering practical experiences as a planned, supervised, and evaluated educational activity. Examples of practicum sites include the following: Headquarters, United States Air Force Safety Center; the National Security Administration; the Pentagon, Defense Medical Oversight Committee; the Food and Drug Administration, Center for Veterinary Medicine; the State of Maryland, Department of Health and Mental Hygiene; the United States Consumer Product Safety Commission; the Office of the Assistant Secretary of Defense for Health Affairs, Clinical and Program Policy; and, the White House Commission on Complementary and Alternative Medicine Policy. **Tomoko (Tonie) I. Hooper, MD, MPH, Assistant Professor, USU SOM Department of PMB,** is the Director of Graduate Research and Practicum Programs; and, she also serves as the Deputy Director for the Department of PMB's Graduate Education Programs.

Outstanding Responsiveness to the Continuing Medical Education Requirements of the TriServices. A new PhD Program in ***Environmental Health Sciences*** was recently established in response to the identified needs of the Uniformed Services; it currently has two military students, both active duty Navy officers, enrolled in the program. In addition, the ***Master of Science in Public Health (MSPH) Program*** has graduated four degree candidates between 2000 and 2002, with one other individual expected to complete the program in June of 2003. The two-year MSPH Program is designed for the non-physician public health practitioner planning a

career in one of *four specialty areas of public health: environmental health*; *industrial hygiene*; *health physics*; or, *medical entomology*. Students have the opportunity to design and develop research protocols leading to a Master's Thesis. *Following the September 11, 2001, attack on the Pentagon, two MSPH students and one PhD student, as well as the PMB Department staff, assisted the United States Army and the Environmental Protection Agency (EPA) to set up a command unit for chemical detection at the site of the disaster.*

The Division of Aerospace Medicine has been providing course work in the area of applied Aviation Physiology for the past three years as a specialty track in the Master of Public Health Program offered by the USU SOM Department of PMB. This track consists of five courses: Aviation Operational Physiology I and II; Aviation Human Factors; Aviation Exercise Physiology; and, Special Topics in Aviation Physiology. This course of study prepares students for a career in the military as an ***Aviation Physiologist***. Since its beginning in 1999, six students have completed the program and three additional students have audited the course. During 2003, the program will be expanded with the addition of a flight familiarization aspect.

Recognizing the importance of occupational musculoskeletal injuries among military personnel and in response to the Army's request for specialty training in occupational ergonomics within the MPH Program, a new area of concentration was established, ***the Occupational Ergonomics Concentration in the Department of Preventive Medicine & Biometrics Master of Public Health Program***; the first student entered this program in July of 2002, and will graduate in June of 2003. The Occupational Ergonomics Program is the only established graduate-level injury prevention program in the Department of Defense. And, the ***International Health Specialist Program*** was added as an additional area of concentration within the MPH Program in response to a request from the Surgeon General of the Air Force. Four students entered the program in July of 2002, and will receive their MPH Degrees in June of 2003.

In response to the request of the Military Health System, ***the TriService Advanced Military Tropical Medicine Course*** has been offered at USU, beginning in 1996, through the Summer of 2002. The course resulted from a consolidation of the Walter Reed Army Institute of Research's Tropical Medicine Course and the Navy's Medicine in the Tropics Course. Under the auspices of the USUHS-SOM Department of Preventive Medicine and Biometrics, *Department of Defense personnel receive education and training in tropical infectious diseases as an integral part of their medical readiness training for foreign military operations*. The four-to-seven-week Military Tropical Medicine Course is held annually in July. During 2002, 75 military medical officer students were trained in operational military medicine, consisting of four weeks of lectures and laboratories in the advanced diagnosis and treatment of tropical diseases. Approximately 70 lecturers provided 106.5 hours of didactic instruction. The course included parasitology, bacteriology and virology laboratories; one medical entomology laboratory; and, one outbreak investigation laboratory taught by multiple PhD instructors. Military medical officer students have traveled on numerous field missions to oversea sites with PMB faculty members. They have been able to observe, examine, diagnose and treat patients with tropical diseases in their local settings. To date, approximately 375 students have completed the course.

The ***Tropical Medicine and Travelers' Health Course*** is offered as a 12-week course during the Spring Quarter of the MPH Program. It includes a comprehensive lecture, seminar, laboratory and case-based curriculum approved by the American Society of Tropical Medicine and Hygiene and leads to eligibility for the qualifying examination in Tropical Medicine and Travelers' Health. To date, 27 medical officers have completed the course, including 16 who have subsequently taken and passed the certification examination. The ***Diagnostic Parasitology Course*** is offered as a series of lectures and hands-on laboratory sessions for individuals wishing to study parasitic

infections in humans. Military and civilian medical technologists and physicians from all parts of the world have completed this course. Participants for the course have included: United States Embassy personnel from Asian and African countries sent by the United States Department of State; members of the Peace Corps; a medical doctor from the Japan Ground Self Defense Force; and, civilians from various foreign and domestic health-related organizations. Since 1988, over 263 individuals have taken the course; to include, the 27 individuals who took the course during 2002.

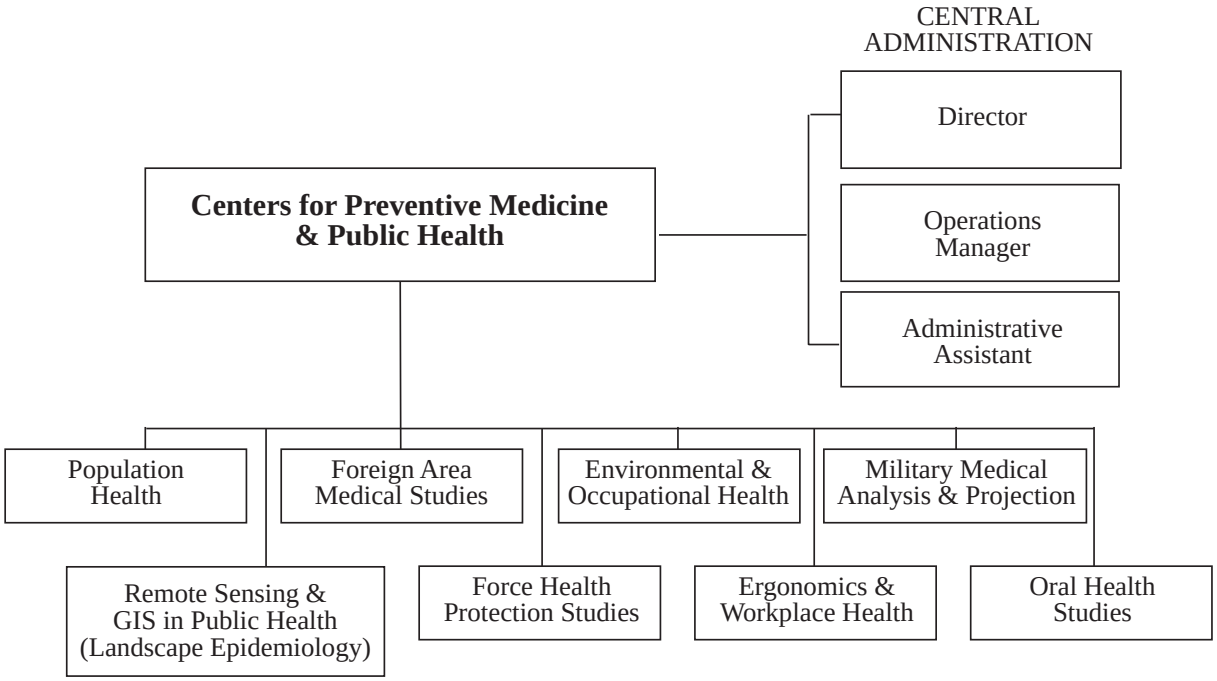
The ***Medical Executive Skills Training - Integrating Clinical Managerial Decisions to Improve Population Health Course*** is a five-day training course held five times each year. It was established in 1995, in response to the Congressional mandate requiring current and prospective DoD health care leaders to receive training in health care management and administration. The program integrates lectures, hands-on computer laboratory exercises, and web-based distributed learning approaches. Continuing Medical Education credit has been approved by the following: the Accreditation Council for Continuing Education; the American Nurses Credentialing Center's Commission on Accreditation; the American Academy of Family Physicians Commission on Continuing Medical Education; and, the American College of Healthcare Executives. To date, 29 sessions have been held in the TRICARE regions and approximately 850 senior officers have been trained for the MHS.

The ***Master of Comparative Medicine is an Interdisciplinary Graduate Program*** and offers a new degree, the Master of Comparative Medicine (MCM). The MCM Program falls within the scope of graduate programs defined as appropriate for the University, responds to a specified need of the Uniformed Services, and fosters a positive collaborative relationship with USU, the National Institutes of Health, the United States Public Health Service, and the Department of Army Medicine. *The program will continue to fulfill the obligation undertaken by USU in 1993, to build a graduate degree program in support of Laboratory Animal Medicine (LAM) residency training.* This Master Degree Program is the redesignation of graduate courses approved by the USU SOM Graduate Education Committee for the USU Master of Public Health Degree Program in the Department of Preventive Medicine and Biometrics. The Comparative Medicine faculty will consist largely of non-billeted LAM veterinarians and other USU faculty who qualify for secondary faculty appointments in the MCM Program under the terms of USU Instruction 1100, *The Appointment, Promotion, and Tenure of the Faculty*. Leadership for the program, pending adequate senior faculty in Comparative Medicine, will be provided by a committee of USU senior basic science faculty familiar with the issues of graduate education and the use of laboratory animals in medical schools. This committee, called the Academic Administrative Committee, will consist of at least three professorial faculty and will evaluate candidates for matriculation, approve graduate programs of study, counsel students in difficulty, and recommend students for the awarding of the degree on completion of an approved program of study. Until such time as the Comparative Medicine Program achieves mature status with a critical mass of senior faculty principally interested in the program, it will not have independent representation on SOM committees, but will report *ad hoc* as needed. Since the program is a redesignation of existing student programs and course work, no new space or faculty resources are required. While the primary motivation for establishing the Comparative Medicine Residency Program, of which this Master Degree is a part, is collaboration with other Federal health agencies, there are also benefits to USU and its graduate programs. While working with the students from this program, USU faculty and graduate students will share their interests and scientific work. And, the alumni of this program will return to animal facilities in the Department of Army Medicine, the United States Public Health Service, the National Institutes of Health, or elsewhere, where they will be in an ideal position to foster collaboration among interested research workers in similar areas.

Centers for Preventive Medicine and Public Health.

The Centers for Preventive Medicine and Public Health (CPM/PH) are an entity within the USU SOM Department of Preventive Medicine and Biometrics. The eight Centers, under the direction of **Kenneth E. Kinnamon, D.V.M., Ph.D., Professor, USU SOM Department of Preventive Medicine and Biometrics,** operate under terms of a Memorandum of Understanding with the Henry M. Jackson Foundation for the Advancement of Military Medicine. The Centers combine broad expertise in research, consultation, education, training, and clinical preventive medicine and public health; this expertise is used to develop data bases and analytic methodologies, prepare innovative curricula, and evaluate processes and outcomes in clinical practices. The following eight Centers provided consultative, research, and educational services to the TriServices during 2002:

1) The Center for Application of Remote Sensing and Geographic Information Systems (GIS) in Public Health (Landscape Epidemiology);
2) The Center for Environmental and Occupational Health;
3) The Center for Ergonomics and Workplace Health;
4) The Center for Force Health Protection Studies;
5) The Center for Foreign Area Medical Studies;
6) The Center for Military Medical Analysis and Projection;
7) The Center for Oral Health Studies; and,
8) The Center for Population Health.



The Center for Application of Remote Sensing and Geographic Information Systems in Public Health (Landscape Epidemiology).

Background. Remote sensing has an increasingly prominent role in the improvement of public health programs; therefore, a significant number of graduate students in public health are seeking formal training and experience in remote sensing technology. The Center's earlier National Aeronautics and Space Administration (NASA)-supported research equipment, along with additional equipment provided by a recent NASA grant for the purchase of hardware and software, have both been used to establish a Center in which remote sensing technology is applied to emerging and re-emerging infectious diseases and environmental health.

Mission. The Center provides faculty expertise and the software and hardware necessary for students and faculty to engage in basic landscape epidemiological research utilizing remote sensing (RS), geographic information systems (GIS), and other technologies to protect the environment and improve public health. The Center compiles satellite and earth-based data to identify relationships between environmental parameters and human health. This information is used to predict the temporal and spatial distribution of diseases, as well as the impact of environmental perturbations on health. **Donald R. Roberts, Ph.D., Professor, USU SOM Department of Preventive Medicine and Biometrics, served as the Director for the Center during 2002, specializing in remote sensing and geographic information systems.** Doctor Roberts is a member of: the American Society of Tropical Medicine and Hygiene; the Society of Vector Ecology; and, the American Mosquito Control Association. He is interested in developing new and innovative models for malaria control and in applied research for testing different approaches to controlling malaria. For many years, he has studied the behavioral responses of malaria vectors to insecticide residues and this research has culminated in a new conceptual model for actions of insecticides in malaria control programs; these efforts have resulted in numerous scientific publications and extensive press coverage. Doctor Roberts also serves as the Office of the Army Surgeon General representative (alternate) to the Armed Forces Pest Management Board. And, he serves as the DoD representative on the Department of the Interior's National Invasive Species Council Interagency Subcommittee on Early Detection and Rapid Response.

Educational Activities. The Center offers a four-hour credit course entitled, *Remote Sensing and GIS Methods in Public Health*, and non-credit training classes in remote sensing and GIS to students and faculty. Both credit and non-credit courses cover the basic elements of remote sensing and geographic information systems (GIS) with emphasis on the areas most relevant to public health (such as classification, raster GIS modeling, and integrating field maps with remotely sensed images). The credit course, first presented during the Winter Quarter of 1998-1999, has been offered in the Fall Quarters of 1999, 2000, 2001, and 2002, as part of the MPH curriculum and has been enthusiastically received by the students. The course covers remote sensing, image processing, GIS, and spatial analysis methods as applied to the field of public health. The goal of the course is to provide students with a combination of theoretical background, example applications in the published literature, and hands-on experience in using hardware and software to enable them to use the techniques discussed in class in a knowledgeable way in their research and future work in public health. The lectures cover types of remote sensing imagery, image processing, photointerpretation of various imagery types, application of remote sensing to public health, the overview and history of GIS, GIS data structures, entering data into a GIS, geographic analysis, cartographic presentation, and applications of GIS to public health. The laboratory provides students with hands-on experience in the public health uses of image processing and GIS software. The next presentation of the course is scheduled for the Fall Quarter of 2003.

The Center computers are being used to support research activities for several projects including malaria research in Belize and Thailand, as well as for a Bartonellosis project in Peru. The computers are utilized to create maps and analyze the spatial data of the project sites; these maps can be printed and used in the field.

Malaria Research in Belize. Since 1995, the Center has conducted research in Belize to apply remote sensing and geographic information systems to the National Malaria Control Program with funding provided by NASA in direct support of the Belize Ministry of Health. The Center has received a five-year grant from the National Institutes of Health (NIH) along with the University of California, Davis, to continue its work in Belize. Research under the NIH grant is focused on studying human-induced change, such as deforestation along streams and changes in marsh vegetation due to agricultural runoff, and the effect these changing environments have on the distribution of malaria in Belize. One DrPH student is currently using the historical malaria data collected during the earlier Belize research in her dissertation project. In addition, another PhD student in Medical Zoology is contributing to the mapping of deforestation along rivers under the Belize grant and will use this study as part of her dissertation. Thus, graduate research has been supported to study the spatial distribution of Bartonellosis in several local villages in Belize and the environmental variables that effect the distribution of malaria in Belize.

Malaria Research in Thailand. During 2001, work began on remote sensing and geographic information systems to define spatial relationships between mosquitoes, humans, and malaria incidence in Thailand. This study is a collaboration among investigators with the Division of Tropical Public Health in the USU SOM and Army researchers at the Armed Forces Research Institute of Medical Sciences (AFRIMS), at Bangkok, Thailand; it is funded by the United States Army Medical Research and Material Command. The principal investigator, Doctor Leon Roberts, presented the collaborative research at the Annual Meeting of the American Society of Tropical Medicine and Hygiene in November of 2002. During Fiscal Year 2004, this research project will be expanded to study the spatial relationships of scrub typhus in Thailand.

Bartonellosis Research in Peru. During 2002, work was continued on applications of remote sensing to study bartonellosis in Peru. Initiated during 1997, the work in Peru is a collaboration among investigators within the Division of Tropical Public Health in the USU SOM and the Navy researchers at the Navy Research Laboratory in Lima, Peru. During 2000, a three-year grant was received from the National Oceanographic and Atmospheric Administration (NOAA) to study climate variables and the incidence of bartonellosis. This work is currently being conducted with two climatologists at NASA's Goddard Space Flight Center.

The Center for Environmental and Occupational Health.

Mission. The Center for Environmental and Occupational Health promotes excellence in programs focusing on environmental and occupational health by providing research, consultation, education, and training support to government entities and educational institutions. Areas of interest pertaining to environmental and occupational health include: policy, education, and training; health risk and hazard assessment standards setting; resource management; regulatory compliance; pollution prevention; and, environmental restoration. **David J. Louis, M.D., M.S., Col, USAF, MC, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics, served as the Director of this PMB Center during 2002.**

Research Activities.

Pareto Analysis of Injuries of New York City 9/11 Emergency Responders. During 2002, a comprehensive analysis of injury and illness data of policemen, firefighters, emergency medical technicians and rescue construction workers in the aftermath of the World Trade Center Disaster of September 11, 2001, was undertaken by the Center with Doctor Louis serving as a co-investigator. Key hazard control issues were identified in the use (and misuse) of a wide variety of personal protective equipment. New areas for further investigation were also identified regarding group-specific injury rates. The work from this analysis was recently cited at the State-of-the-Art Conference of the American College of Occupational and Environmental Medicine held in Baltimore, Maryland, in October of 2002.

Indian Health Service Education and Training Support Program. At first, the principal output of this program was the administration of a one-year Environmental Health Post-Graduate Fellowship on behalf of the Indian Health Service of the United States Public Health Service. In July of 2001, two students from the Indian Health Service (IHS) began their studies at USU in the one-year Master in Public Health (MPH) Program; the two students received their MPH Degrees in June of 2002. Throughout the Fall of 2001, and the Spring of 2002, **Colonel Robert Lipnick, MS, USA, Division of Environmental and Occupational Health, PMB,** coordinated with the IHS in the development of a variety of rotations/courses that would compose a second year of Environmental Health Post-Graduate training. Due to that effort, the two initial students have successfully experienced a second year of study, which will conclude in 2003. The IHS is currently seeking nominations for two additional personnel to begin the above-described two-year program beginning in July of 2003. A Memorandum of Agreement between USU and IHS is being formalized for this program.

Enhancement Through Operational Research of the United States Army's Global Preventive Medicine Program. This project is a follow-on to an original grant initiated in July of 1995, which terminated on March 31, 2001. The original grant consisted of nine separate research initiatives: Health Risk Assessment; Health Promotion; Health Hazard Assessment; Occupational and Environmental Medicine; Environmental Compliance and Pollution Prevention; Medical Entomology; Radiation Protection; Preventive Medicine Readiness Planning; and, Preventive Medicine Planning and Integration. Five research tasks were identified: conduct a program assessment; develop alternative program change methodologies; develop measures of merit to evaluate alternative methodologies;

implement and evaluate the selected methodology; and, publish results. The total funding level was set at $21.362 million. The research took place at the United States Army Center for Health Promotion and Preventive Medicine (CHPPM). During the five and one-half years of the original project, over 500 publications were produced, including technical reports and assessments, peer-reviewed and other publications, training session materials, studies, and professional meeting presentations. Because of the success of the original grant project, CHPPM reinitiated a follow-on project with USU and the Henry M. Jackson Foundation (HJF) that began on April 1, 2001, as a contract effort. Funding in the amount of $4.2 million for the first year (April 2001 through March 2002) of the follow-on project was received. The project entitled, *Enhancement Through Operational Research of the United States Army's Global Preventive Medicine Program*, is divided into ten study areas: 1) Health Risk Assessment; 2) Health Promotion; 3) Health Hazard Assessment; 4) Epidemiology and Medical Surveillance; 5) Environmental Health and Compliance; 6) Medical Entomology; 7) Radiation Protection; 8) Ergonomics; 9) Clinical Preventive Medicine; and, 10) Informatics. A total of 58 personnel were employed through the HJF for this project. At the completion of the first year, the project was re-established as a new one-year contract effort on April 1, 2002, with four follow-on option years built in. Funding in the amount of $3.2 million was received for the first year of the new contract (April 2002 through March 2003). As of September 30, 2002, 47 personnel, employed through the HJF, were working on the project.

The other research activities carried out by the Center include the following: 1) *the Development of Environmental Organic Contaminant Sampling and Analysis Methods*, which focused on three areas: field detection methods for military relevant compounds; the legislative mail task force; and, training for field chemical detection; 2) *the USU Laser Tissue Interaction Team*, which focused on three areas: the Health Effects of the Pulsed Energy Projectile; the Epidemiology of Laser Injuries in the United States Air Force and the DoD; and, the Triage and Treatment of Laser Eye Injury on the Modern Battlefield; 3) *Performance Characteristics of Toxic Chemical Exposure Biomarkers in Deployed DoD Personnel and the Application to Health Risk Assessment*, which involves analyzing blood and urine samples from 50 service members taken before, during, and after a military deployment to see if changes occur in metals, volatiles or other agents. A DrPH student has successfully defended this research proposal before the USU Institutional Review Board (IRB), the Armed Forces Institute of Pathology IRB, and the Center for Disease Control IRB; and, 4) *Detection of Chemical Warfare Agents in Drinking Water Using Solid Phase Microextraction Technology*, which involves working with the United States Army Center for Health Promotion and Preventive Medicine on the detection of chemical agents using solid phase microextraction.

The Center for Ergonomics and Workplace Health.

Mission. The Center for Ergonomics and Workplace Health focuses on an integrated approach to ergonomics and occupational health, targeting both the civilian and military workplace. Research in the Center is directed at understanding the interactive roles of medical, biomechanical, organizational, workplace and individual psychosocial factors in the etiology, prevention, and management of prevalent occupational health problems. Currently, the Center conducts research on the mechanisms and management of workplace musculoskeletal disorders and is also involved in education, public policy, and consultation. The Center is a joint effort between the USU SOM Departments of Preventive Medicine and Biometrics *and* Medical and Clinical Psychology. **Michael Feuerstein, Ph.D., Professor, USU SOM Department of Medical and Clinical Psychology, served as the Director of the Center during 2002.**

Predictors of Health Care and Limited Duty in United States Army Soldiers. During 2002, the Center continued its research on the mechanisms and the management of workplace musculoskeletal disorders. For example, a study of the Predictors of Health Care and Limited Duty in United States Army Soldiers was conducted to identify the differential contribution of a diverse set of risk factors for lost time in duty status among Army soldiers due to low back pain. A prospective study was conducted on the role of ergonomic and psychosocial stressors on physical exertion, back symptoms, health care utilization, and lost work time/limited duty status in active duty personnel working in jobs associated with increased disability for back-related issues. Results can subsequently lead to the development of empirically based interventions that directly address identified relationships and to the refinement of existing secondary prevention efforts for reducing the impact of low back pain on soldier readiness. The findings support the importance of early evaluation of ergonomic, workplace, and individual psychosocial variables that can affect the recovery process. The findings also suggest that effective interventions should be directed at reducing or eliminating ergonomic stressors, improving the work climate through supervisor training, as well as training directed toward employees to reduce or eliminate the sources of both job and life stressors. Such an approach should positively impact a range of outcome measures and reduce the burden of low back pain, on both the worker and the employer. Two manuscripts were generated from this research; the first paper was based on the cross-sectional analyses and identified risk factors for individuals who had low back pain but were still working. The second paper examined the association between problem solving orientation and physical and mental health outcomes in soldiers reporting a history of low back pain in the past year. This project was supported by funds from the United States Army Center for Health Promotion and Preventive Medicine (CHPPM).

Self-Report Index for Upper Extremity-Related Ergonomic Exposure. This Ergonomics Demonstration Project seeks to evaluate the effectiveness of an ergonomic intervention for high risk and non-high risk active-duty soldiers in reducing the occurrence and severity of self-reported musculoskeletal symptoms, perceived level of physical exertion, clinic utilization, lost work time, limited duty status, and self-reported exposure to ergonomic stressors. Ninety-two symptomatic office workers completed a web-based questionnaire measuring demographic variables, ergonomic exposures, pain, job stress, and functional limitations. Comparisons of internal consistency, construct validity, and discriminative and predictive abilities were made between the self-report index and an observational exposure assessment checklist. Results indicated that the self-report index had acceptable measurement properties. Furthermore, higher levels of self-reported ergonomic exposures were associated with

upper extremity pain, symptom severity, and functional limitations. In contrast, higher levels of observed exposure were only related to lower levels of general physical function. The self-report measure has potential for use in occupational health surveillance programs for office work environments and as an outcome measure of ergonomic exposure in intervention trials. These results also suggest the need for utilizing multiple methods when assessing ergonomic exposures. This project was funded by a grant from the Occupational Ergonomics Research Committee. Articles have been published in Military Medicine (2001), The American Journal of Industrial Medicine (2002), The Journal of Occupational and Environmental Medicine (2002), and the Annals of Behavioral Medicine (2002).

Predictors of Recovery in Occupational Low Back Pain in Primary Care. The Predictors of Recovery in Occupational Low Back Pain in Primary Care is an on-going investigation designed to develop a screening tool for predicting functional and health outcomes in a military primary care setting. Military personnel and civilians between the ages of 18 and 55 who present with a new onset of back pain (no back pain over the past year) and seeking medical care at the military primary care clinics at Fort Hood and Fort Bliss were invited to participate in the study. Study participants were given a baseline survey that assessed ergonomic exposure, function, general physical health, and general mental health in addition to demographic, individual psychosocial, job stress, work organization, and medical history information. Follow-up data regarding the presence of health care visits for low back pain and limited duty status will be collected for three months following the initial clinic visit using the Ambulatory Data System database. The study will also develop a screening tool to identify those individuals who may be at an increased risk for delayed recovery. This tool should assist primary care practitioners to identify problem areas that are likely to impact recovery from low back pain and institute appropriate triage procedures and early intervention. This, in turn, may result in improved functional status and reduce the impact of low back pain on military readiness. 450 patients enrolled to participate in the study. Using the Ambulatory Data System (ADS) administrative database, 368 cases did not have a prior medical visit according to the ADS administrative database. According to self-report and confirmation by the ADS database, 304 cases did not have a previous low back pain-related medical visit. Path analysis of data including a three-month post-baseline survey; job stress factors including innovation, involvement, and supervisor support at work; mental health; previous visits; and, ergonomic exposure were components of a model that significantly predicted the occurrence of a clinic visit for low back pain. A 12-month follow-up is planned. This investigation is supported by funds from the United States Army Center for Health Promotion and Preventive Medicine. Articles have been published in Pain (2001) and New Avenues for the Prevention of Chronic Musculoskeletal Pain and Disability (2002).

The Center for Force Health Protection Studies.

Mission. The Center for Force Health Protection Studies promotes the use of a systematic process to prospectively evaluate disease and non-battle injuries in military and veteran populations for guiding health policy development. The Center's goal is to enhance the scientific knowledge base for military deployment health and to develop recommendations for preventive health interventions. The Center develops databases, analytic methodologies, and models for predicting health outcomes, as well as for identifying and evaluating or designing specific interventions for preventing injury and illness. The Center disseminates information to promote force health protection and participates in interagency research and development programs. It also provides consultation to program managers and executives in the health-related components of the DoD, the Department of Veterans' Affairs, other Federal agencies, local governments, and private organizations. **Tomoko I. Hooper, M.D., MPH, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics, served as the Director of the Center during 2002.**

Research Activities. The focus of the Center's research is on studies that collect, manage, and integrate health-related data for purposes of risk assessment and risk communication to protect individuals who serve our Nation during peacetime and war. The Center conducts a comprehensive research program on the short-term and long-term health outcomes and experiences associated with training, deployment, combat, and humanitarian/ disaster relief operations. For example, current efforts are underway to distill the findings of research across disciplines on the health outcomes associated with service in the Gulf War. Articles have been published in The Journal of Occupational and Environmental Medicine (2002) and The American Journal of Epidemiology (2002) and accepted at Military Medicine (2003).

Medical Events During Periods of Isolation: The U.S. Navy Submarine Force Experience. A NASA-funded study, *Medical Events During Periods of Isolation: The U.S. Navy Submarine Force Experience*, characterized medical conditions occurring among enlisted personnel and officers assigned to United States Navy submarines between January 1, 1997 and September 30, 2000. Medical encounter data from the Navy's Shipboard Non-Tactical ADP Program Automated Medical System (SAMS) was downloaded onto floppy disks by submarine Independent Duty Corpsmen (IDCs) following each underway period of ten days or greater. Medical and demographic data was extracted from SAMS using a download process designed for health studies. These data, along with an official Sailing List, were sent to study investigators for processing and analyses. SAMS data collection continued through September of 2000; data was received from a total of 249 submarine patrols. Four were excluded from analyses because patrol dates were outside of the study period and nineteen because of insufficient data. Data from the remaining 226 patrols were processed and included in the master database. Incidence density rates were calculated for specific medical conditions occurring during underway periods; the total number of person-days underway was used as the denominator for these rates. Results from the overall study were presented at the USU Research Day. Further analysis of the data continued throughout 2002; and, articles were submitted to the Undersea and Hyperbaric Medicine Journal and Aerospace and Environmental Medicine (following review by the United States Navy).

Epidemiologic Support of Health-Related Research Pertaining to Military, Veteran, and Dependent Populations. Collaborative research and consultative activities also continue under a working agreement with the Naval Health Research Center (NHRC) in San Diego, California. The program, *Epidemiologic Support of Health-Related Research Pertaining to Military, Veteran, and Dependent Populations*, is in its sixth year. USU faculty provide administrative and consultative support to the NHRC Research Program. The original protocol was amended in August of 2000, to reflect the evolution in the scope of the research program from the initial seven epidemiologic studies of Gulf War veterans to a more broad-based, public health-related research program involving active duty military and veteran populations. New research protocols have been developed in the following areas: 1) emerging illness research; 2) deployment health research; and, 3) other research involving military personnel, such as studies of anthrax and pneumococcal vaccines, complementary and alternative therapies, and pregnancy outcomes. Beginning in 2001 throughout 2002, 31 studies were in various stages of completion. These studies will add to the scientific knowledge base on a wide range of public health related topics, including epidemiologic methodology for population-based studies, reproductive outcomes, vaccination policy, predictors of social and family dysfunction, and tobacco cessation programs.

Numerous poster presentations resulting from these studies were presented by the Center faculty during 2002 at: the American College of Epidemiology Annual Conference in Albuquerque, New Mexico; the 130th Annual Meeting of the American Public Health Association in Philadelphia, Pennsylvania; and, the Eighth Annual Maternal & Child Health Epidemiology Conference held in Clearwater Beach, Florida.

The Center for Foreign Area Medical Studies.

Mission. The Center for Foreign Area Medical Studies advances the tenets of preventive medicine and public health in the tropics and in developing regions, with specific reference to health-related operations and interests of the DoD, other Federal agencies, local governments, and private organizations. The Center promotes, facilitates, and implements programs of research, consultation, education, and training in the related disciplines of tropical public health, tropical medicine, and environmental health in the developing world. **Center leadership during 2002 was provided by Larry W. Laughlin, M.D., Ph.D., Dean and Professor, USU School of Medicine.**

Education and Training. During 2002, the sixth presentation of the *Tropical Medicine and Traveler's Health Course* was a resounding success; the course is accredited by the American Society of Tropical Medicine and Hygiene (ASTM&H). All members of the class planned to take the ASTM&H Certificate of Knowledge Examination. Although there is a great deal of interest in next year's course, the greatest impediment to larger classes is the amount of time required to complete the course (12 weeks). The required density of the curriculum precludes any significant reduction in time; the PMB Director of Tropical Public Health recently reviewed the curriculum of the 12-week course with a view toward combing for efficiency, while maintaining standards for accreditation. The sponsorship of this course by USU developed through the Interservice Training Review Organization (ITRO) consolidation of the Army and Navy Tropical Medicine Training Programs. The course will continue to be housed and sponsored by USU; but, it remains an official function of the TriService System, with the Navy as the lead agent. During the past year, a major effort has been initiated to transition the USU courses on tropical medicine into a distance learning format; a grant submission is pending to fund this effort.

Malaria Research. The major thrust of this program has turned toward DNA vaccine development, in conjunction with major new fundings from the Office of Naval Research. A new five-year grant has been implemented to meet this change in focus. A significant genomics effort has been expanded under recent leadership.

Bartonellosis Research. A major new expansion effort has been initiated in the *Epidemiology of Bartonellosis*, including a consortium of USU grant submissions to study human, animal and vector population of areas endemic for Bartonellosis in Peru. A new area of study (epidemic site - Cusco, Peru) has been added in association with an epidemic documented in late 1998. Preliminary data was presented at a meeting on Bartonellosis in Montana during August of 2001, and an article was published in The Journal of Infectious Diseases during 2002.

Climate and Health. The relationship of climate and vector-borne infectious diseases has been suggested, but little supporting data is available. As climatic activity can be predicted by remotely sensed satellite images, the Center hypothesizes that predictive climatology can lead to the optimum use of insecticides in vector-borne disease control programs. Funding from a new grant will allow the association of current clinical disease activity with predictable climate changes.

The Center for Military Medical Analysis and Projection.

Mission. The Center for Military Medical Analysis and Projection provides a focus of expertise and experience in military medical data analysis and projection for research, consultation, validation, and education relating to the incorporation of available data into decision-making processes. The Center conducts epidemiologic research in military health, particularly relating to the hazards of military training and deployment, medical and health surveillance, and health data quality, coherence, and relevance to disease prevention and medical readiness evaluation. Most of this research focuses on the consolidation and evaluation of existing health, medical, and personnel information, rather than on generating new data. The Center provides opportunities for students and others to participate in specific projects, analyses, and evaluations. The Center works closely with the Center for Force Health Protection Studies. **David H. Trump, M.D., MPH, CAPT, MC, USN, Associate Professor, USU SOM Department of Preventive Medicine and Biometrics, served as the Director of the Center during 2002.** Doctor Trump published six articles during 2002, to include a manuscript in Military Medicine in 2002. In addition, CAPT Trump presented a poster at the Fourth Annual Army Force Health Protection Conference, held in Albuquerque, New Mexico.

Center Activities. Nine areas of study were continued during 2002:

The Assessment of Field Exposure to CS Gas (ortho-chlorobenzalamalonitrile) in United States Marine Amphibious Reconnaissance Training. Although funding ended in September of 2000, a study of the United States Marine Amphibious Reconnaissance Training was completed to provide an estimate of the levels of CS gas to which the trainees were actually exposed and a manuscript was submitted to the Journal of Applied Occupational and Environmental Hygiene (2001); in addition, the case report of the original CS exposure in United States Marine trainees was published in Military Medicine (2002).

A Review of Syphilis Data, 1987-1999, in Navy and Marine Corps Personnel. This was an unfunded project; the Center authors completed their analysis of syphilis cases reported among Navy and Marine Corps personnel and submitted a manuscript to Military Medicine, which was published in 2002.

Alcohol Use in Military Personnel and Military Readiness. This was an unfunded project; the Center investigators and their collaborators completed a study and prepared a manuscript entitled, *Mission Readiness and Alcohol Consumption among U.S. Navy Shipboard Sailors*. Also, a USU MPH student completed a secondary analysis of the 1998 DoD worldwide survey of health behaviors to explore the relationship between alcohol use and risk-taking sexual behaviors; this manuscript awaits clearance from Navy Public Affairs.

Post-Deployment Self-Assessment of Health. The Center investigators initiated a research project to examine military members' self-assessment of health at the conclusion of a deployment and their subsequent health outcomes and health care use; they have analyzed data from over 17,000 military members who returned from deployments in 1999. The DoD Medical Surveillance System (DMSS) provided person-level data from the DD Form 2796 Post-Deployment Health Assessments, military personnel systems, and military in-patient and out-patient data reports.

Collaboration with the Veterans Affairs Medical Center (VAMC), Washington, D.C., Center for the Study of War-Related Illnesses (CSWRI). The VAMC proposal to establish a center of excellence for research, education, risk communication, and clinical care in deployment/war-related illnesses was approved by the Department of Veterans Affairs. Initial funding of the VAMC CSWRI is for approximately $5 million over three years. USU collaboration will be in the areas of epidemiologic research and the development of clinical education experiences for medical students and residents at VAMC and through clinical simulations.

Toxicological Assay Methods and Chemical Exposures among Marines in the Gulf War. CAPT Trump is a co-investigator on this Naval Medical Research Center/Centers for Disease Control and Prevention study. Pre- and post-deployment sera collected from a cohort of United States Marines during the Gulf War will be analyzed for selected toxic chemicals and mixtures using newly developed biomonitoring/biomarker methods and models. The United States Army Medical Research and Materiel Command funded the study through 2002.

Navy Occupational Lung Disease Assessment Project. Two Center investigators are members of the DoD advisory committee for the Congressionally-mandated Navy Occupational Lung Disease Assessment Project. This study is being conducted by the Naval Health Research Center (NHRC) and the Armed Forces Institute of Pathology (AFIP). USU hosted the initial meeting of the NHRC and AFIP investigators, the civilian scientific and public policy advisory committees, and the DoD advisory committee on September 10-11, 2001. This study was funded through 2002.

Exertional Heat Illness in Marine Corps Basic Training. During 2001, an article entitled, *Long-Term Follow-Up after Exertional Health Illness During Recruit Training*, was published in Medicine & Science in Sports & Exercise, Volume 33, pages 1443-1448. This work was the product of projects funded in prior years. Numerous other manuscripts related to exertional heat illness in Marine Corps recruit training have also been produced. For example, Center investigators completed a book chapter, *Clinical Diagnosis, Management, and Surveillance of Exertional Heat Illness*, for the Textbook of Military Medicine volume entitled Medical Aspects of Harsh Environments. Analysis continued throughout 2002.

Preventability of Exercise-Related and Infectious Disease Deaths. This grant from the Global Emerging Infections Systems, Walter Reed Army Institute of Research, provided starter funds for the collection of medical information on all deaths of military members on active duty. Funding through USU and the Center ended in September of 2001. The project continued during 2002, under the auspice of the MoD Medical Mortality Registry at the Armed Forces Institute of Pathology.

The Center for Oral Health Studies.

Mission. The Center for Oral Health Studies provides oral health care services information and dental public health education to the DoD, the TriService Dental Corps Chiefs, and other interested organizations. The Center gathers, synthesizes, and distributes management information needed to develop oral health care policies and programs necessary to optimize the oral health of DoD beneficiaries and the dental readiness of service members. **Andrew K. York, DMD, MPH, CAPT, USN, DC, served as the Director of the Center for Oral Health Studies during 2002.**

Center Activities. The Center has continued to be very active in two major areas: 1) the DoD Dental Patient Satisfaction Survey; and, 2) the 2000 TriService Recruit Comprehensive Oral Health Survey. The Center is responsible for the administration, analysis, and reporting of data from the DoD Dental Patient Satisfaction Surveys that are administered at 260 Dental Treatment Facilities (DTFs) worldwide. Each DTF returns approximately 100 completed surveys each month; and, over 415,000 surveys have been analyzed since September of 1999. The survey instrument takes advantage of optical scanner (bubble sheet) technology to facilitate data collection and analysis. Each of the 260 DTFs has a designated local survey administrator who is responsible for the distribution and collection of the 100 surveys each month. The Center developed and deployed a PC-based software tool for the survey administrators to use to ensure that a random sample of patients is selected each week to complete the survey immediately following their dental appointments.

The DoD Dental Patient Satisfaction Survey is currently an integral part of the measurement of overall Military Health System (MHS) performance. The quarterly results for each DTF, regional commands, services, and the MHS are reported on the TRICARE Operational Performance Statement (TOPS). The web site is <*www.tricare.osd.mil/reptcard/tops/topsrept.html*>. TOPS allows each organizational level to benchmark against other facilities, both military and civilian; and, TOPS also identifies trends from one quarter to the next. TOPS and the DoD Dental Patient Satisfaction Survey are effective in assisting the MHS in its continual efforts to improve performance in the delivery of dental care and services.

The 2000 TriService Recruit Comprehensive Oral Health Survey was conducted from January through July of 2000. The Calibration Course for the dental examiners was held in Bethesda, Maryland, during December of 1999; and, it was conducted by the USU Center. Over 4,300 Recruits were examined during this time frame at seven different sites. The sites were Lackland Air Force Base, Texas (Air Force); Fort Knox, Kentucky (Army); Fort Leonard Wood, Missouri (Army); Fort Jackson, South Carolina (Army); Great Lakes Naval Training Center, Great Lakes, Michigan (Navy); Marine Corps Recruit Depot, Parris Island, South Carolina (Marines); and, the Marine Corps Recruit Depot, San Diego, California (Marines). This survey allows for a direct comparison of the 1994 Survey of Recruits to determine if there are differences in oral health levels, prevalence of tobacco use, level of education, and dental readiness. In its summary of 2001, the Center reported that the overall DMTF Index for 2000 Recruits was 5.4 and for the 1994 Recruits it was 6.6. This indicates that overall, the 2000 Recruits had less (**D**)ecayed, (**M**)issing, or (**F**)illed (**T**)eeth than the 1994 Recruits.

During 2002, the Center faculty submitted *Dental Emergencies During Stabilization Force 8 in Bosnia*, which was accepted by Military Medicine; and, *Dental Readiness Classification Patterns During the First Four Years of Military Service* was also submitted to Military Medicine for publication. Also, presentations were made at the DoD Force Health Protection Conference in Baltimore, Maryland; the DoD Recruit Health Symposium in Baltimore, Maryland; the American Association of Public Health Dentistry Annual Meeting held in Boston, Massachusetts; and, the Dental Division of the Navy Bureau of Medicine and Surgery in Washington, D.C.

The Center for Population Health.

Mission. The Center for Population Health (formerly the Center for Health Care Quality Assessment) is an integral part of the research, service, and educational activities of the PMB Division of Health Services Administration. The Center's functions are carried out through two primary activities: a focus on patient safety; and, a focus on clinical performance analysis and improvement. The Center also develops innovative educational curricula and provides training to Federal health care executives and managers to create, manage, and improve high quality health systems. Through these activities, the Center provides expertise, experience, and insight for the assessment of large health care databases to determine trends in population health and care delivery and the efficiency and effectiveness of care delivery processes. This performance analysis includes the linkage of practice patterns and support structure and policy to health outcomes. The analysis also focuses on the major issue of patient safety in the health care system and its processes and the identification of appropriate actions to limit risk and to improve the system. Both primary activities lead to the development of educational material for medical students, active practitioners, and policy makers to improve the safety and effectiveness of the Federal Health Care System. The Center for Population Health is currently sponsored by projects with the Agency for Healthcare Quality and Research, California State, the United States Military Cancer Institute, and HRSA. **Galen Barbour, M.D., FACP, FACHE, Professor, USU SOM Department of Preventive Medicine and Biometrics, served as the Director for the Center during 2002.**

Center Activities. The Center is specifically *designed to enable Federal health care providers and administrators to access comprehensive, integrated, population-based performance information to facilitate quality improvement and cost reduction and demonstrate the value and power of the combined Federal health care systems to the American Public*. The following was included in the Center's summary report for 2001-2002:

Integrating Clinical Managerial Decisions to Improve Population Health. This five-day training course is held five times each year; it responds to a Congressional mandate that current and prospective DoD health care leaders receive training in health care management and administration. To date, 29 sessions have been held in the TRICARE Regions; and, approximately 850 senior officers have been trained for the Military Health System. During 2002, the faculty extended their expertise to five additional TRICARE Regions.

The Medical Executive Skills Distance Learning Program. The Medical Executive Skills Distance Learning Program continues to be presented four to five times a year throughout the MHS. Several of the previous presentations have been developed into distance/distributed learning formats and are presented prior to the formal on-site class via web-based mechanisms. Learning accomplishments of the presentations are measured and reflected in the changes seen from a pre-test and post-test analysis using qualitative questions derived from the material in the on-site and web-based presentations. Future years' plans call for the full implementation and evaluation of the Medical Executive Skills Distance Learning Program to include 10 to 14 on-line modules. Additional studies, which will follow on-going research on workforce modeling and quality assurances, are expected. Complete on-line registration and student pre-tests were incorporated into two traditional courses this past year and are now routine procedures. It is anticipated that a total of six to eight distance learning modules will be up and running in the near future.

Application of the Tools of Clinical Epidemiology in Health Services Management. The Center sponsors training programs for senior DoD physicians in the application of the tools of clinical epidemiology in health services management. This program has expanded to include mid-level military health care professionals. Additionally, the Center plans to pursue research in small area analysis regarding visit intervals for chronic diseases; the relationship of costs to visits in the MHS will also be examined.

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The USU School of Medicine Department of Military and Emergency Medicine and the Casualty Care Research Center.

The CCRC Mission is to serve as a unique national resource by providing quality research, education, and expertise in the delivery of good medicine in bad places.

- Mission Statement Approved by the President, USU, 1995.

Establishment and Mission. The Casualty Care Research Center (CCRC) was established in July of 1989, under the USU SOM Department of Military and Emergency Medicine as a center of excellence for injury control and casualty care research.

In keeping with the overall mission of USU, the scope of the CCRC activities includes the following: 1) conducting research and investigations on issues relating to injury control, casualty care, operational, and disaster medicine; 2) providing a disciplined, educational, research experience in combat casualty care, injury epidemiology, trauma management, and related areas to medical students, graduate physicians, and other uniformed medical personnel; 3) serving as a repository of resources and information relating to injury control, injury epidemiology, and operational medicine for the Uniformed Services; and, 5) providing research, resource and educational support, technical assistance, and other community service to USU, the Uniformed Services, and other Federal, state, and local elements. The Center operates entirely on extramural funding; it employs nine full-time personnel and is supplemented by ten part-time civilian volunteers and military officers loaned on an intermittent basis by their parent commands. Personnel within the USU Department of Military and Emergency Medicine participate in various activities of the CCRC based on their professional interests and as their teaching and clinical responsibilities permit. The Center's efforts fall into three categories: research, training, and consultative/operational support. **Mr. Joshua Vayer, Research Assistant Professor, USU SOM Department of Military and Emergency Medicine, serves as the Director for the Center.**

Core Military Competency. The location of the CCRC within the multi-Service environment of USU, with its emphasis on education and development, scientific studies, research, and on-going clinical and operational practice, is critical to the development and sustainment of the CCRC's ability to maintain its core competency - *the capability to provide military-unique, medical expertise and experience required by both uniformed and civilian emergency/health care responders to weapons of mass destruction (WMD)-related and other national security contingencies*. Only DoD has a self-renewing source of physicians and other medical personnel with interest and experience in these areas. USU, through its students in the School of Medicine and the Graduate Education Programs and its career-focused faculty and staff, plays a vital role for the DoD in the renewal process of militarily-focused and experienced health care providers. The University ensures continuity and leadership for the MHS; and, the CCRC's core competency plays an essential role in that equation.

First responders suffer from shifting federal priorities, bureaucratic rivalries, and poorly designed training programs.

- Government Executive, *Emergency Assistance*, November 2002, pages 18-27.

Contributions to Homeland Security - The Integrated Force Health Protection Program. Since 1989, the CCRC has successfully served as a bridge between DoD and Civilian Emergency Responders for the coordination and sharing of critical, military-unique medical knowledge, technology, and expertise. Initially, the CCRC Program was a cooperative effort between USU, the Department of Defense Office of Drug Enforcement Policy and Support, the Henry M. Jackson Foundation for the Advancement of Military Medicine, and the Department of Interior, United States Park Police Special Forces Branch. From 1990 through 2001, the CCRC Program was continuously funded by the Office of Drug Enforcement Policy and Support, which reported through the Assistant Secretary of Defense for Special Operations/Low Intensity Conflict. Currently, the Program has been supported through special congressional funding for Chemical/Biological/Radiation/Nuclear/Explosive (CBRNE) Training. The Program's policies are governed by a Board of Directors representing military medicine, law enforcement, and pre-hospital care communities.

The Integrated Force Health Protection Program focus is on crisis management response to: *weapons of mass destruction (WMD); counter terrorism; protective operations; hostage rescue; explosive ordnance disposal; maritime operations; civil disorder; and, major national security events*. To date, the CCRC Program has trained over 6,000 civilian emergency personnel from 750 agencies through collaborative support agreements with law enforcement organizations from all 50 States, the District of Columbia, Guam, Puerto Rico, the United States Virgin Islands, England, Denmark, and Canada. Forty local, state, and Federal law enforcement agencies mandate this CCRC certification-based training as a condition of employment for their SWAT medics. It teaches skills that reduce the risk of death or serious injury during counter terrorist operations, drug raids, hostage situations, and other high risk operations for DoD personnel and, on a reimbursable basis, for personnel from other Federal, state, and local agencies. In October of 2002, the Secretary of Defense recognized the exemplary response by CCRC to the terrorist attacks on September 11th, when he awarded the Exceptional Civilian Service Award and the Secretary of Defense Meritorious Civilian Service Award to several CCRC personnel. The superb support of the CCRC was also recognized on February 28, 2003, when the Honorable Gail Norton, Secretary of the Interior, presented a Unit Citation Award to the CCRC in recognition of support provided to the United States Park Police on September 11, 2001.

The Program provides *military-unique, national standard, assessment-driven curricula; certification; and, a quality assessment process* that exist nowhere else. Its unique Special Operations Injury Epidemiology Database, the only database of its kind, ensures both effectiveness and relevance during the generation of assessment-driven curricula; and, it provides information/data for research on injuries incurred during the crisis management of domestic contingency operations. *The data derived through this CCRC Program is utilized by DoD to explore the epidemiology of injury and the impact of various medical interventions.*

The Integrated Force Health Protection Program has received the endorsement of, and/or continuing medical education credit from: The National Tactical Officers Association; the National Association of Emergency Medical Technicians; and, the Continuing Education Coordinating Board for Emergency Medical Service. The CCRC's maturing relationship with the law enforcement community as a principal consultant for medical support for Federal law enforcement special operations in the United States has resulted in the transfer of valuable knowledge, experience, and technology for military medical application. This information is used to guide the educational components of the CCRC Programs and to explore similarities and differences between the experiences of the civilian law enforcement communities and the military special operations forces; thus, it contributes to medical readiness. *For example, during 1996, these collaborative efforts led to a significant change/enhancement*

in the training programs for the Navy SEALS. The CCRC has received multiple testimonials from faculty and students who attribute their success in planning medical support for the deployment of military units in the field directly to knowledge gained at the CCRC. Medical readiness/mission support was also provided by CCRC following the bombing of the United States Embassies in East Africa, to include preventive medicine, field sanitation and hygiene, medical intelligence, acute care, and clinical forensic medicine. Critical medical coverage of security forces and protectees, following 9/ll, was provided by CCRC for several weeks, which supported efforts for the continuity of government.

As the CCRC's largest training program, the Integrated Force Health Protection Program, offers the following medical/evidence-based courses: *EMT-Tactical; the Advanced School; the Commander's Course; the Medical Director's Course; and, the Instructor Development School*. These CCRC courses receive maximum attendance. For example, the Medical Director's Course, presented at the 2002 Annual Meeting of the National Association of EMS Physicians, once again received unprecedented attendance. Participants in these courses also include medical students, graduate physicians, special operations medics from all of the Services, and selected Federal law enforcement medics. In addition, the CCRC can provide training with an array of hand-held PC-based knowledge management tools and guides, such as the *ChemBio Toolkit*, currently being adapted for the Navy and the National Institutes of Justice, which guides a commander through the steps of handling a suspicious mailroom package or an abandoned briefcase and provides a probability based threat assessment and agent identification. *The location of this CCRC Program within the University ensures academic oversight and credibility for the Congressionally mandated collaboration between DoD and the civilian emergency personnel community*.

WMD Scientific Training Programs. The CCRC provides a family of seven WMD medical educational programs to meet the needs of a variety of communities. These include *Responding to WMD for Health Care Facilities, Responding to WMD for Health Care Providers*, and *WMD Awareness: What Everyone Needs to Know*. These programs have been highly acclaimed because of their effectiveness and efficiency; and, they are being reviewed as a model for Military Treatment Facility (MTF)-based training. The CCRC continues to receive requests from health care facilities and their staffs for this training. In 2002, the CCRC, at the request of the Maryland Health Education Institute, conducted several courses for local and regional medical personnel. Those individuals returned to their facilities and have subsequently generated a considerable volume of requests for further training and guidance on weapons of mass destruction (WMD) issues.

The Wound Data and Munitions Effectiveness Team (Vietnam) Database (WDMET) - A Unique Resource. The Wound Data and Munitions Effectiveness Team (Vietnam) database (WDMET) is maintained by the CCRC. It contains information on the tactical engagement, weapons employed, resulting injuries, and treatment in the pre-hospital and hospital environments on approximately 8,000 combat casualties. It is the only collection of its kind in the world. Photographs, medical records, X-rays, recovered bullets and fragments make this a unique resource, which has been studied extensively, resulting in numerous scholarly publications since the establishment of the Center. Most recently, the WDMET data has been used to support the *Persistence in Combat Project*, which is sponsored by the Defense Advanced Research Project Agency (DARPA).

CCRC Mission Support Center and Operational Medical Support. In agreement with the philosophy that teachers and scholars must maintain an active practice in their areas of expertise to ensure competency, the

Operational Medical Support Programs of the CCRC provide consultation and support to multiple organizations, including the White House Medical Unit, the Federal law enforcement community, and numerous national security contingencies. These activities are carried out under appropriate Memoranda of Understanding. On the average, the CCRC Mission Support Center responds to at least one request for support each day; it is staffed by uniquely trained personnel who provide medical informatics, consultation, planning, and threat assessment support on a round-the-clock basis. These support-related activities serve as a suitable vehicle for USU faculty, both billeted and off-site, to develop and maintain their expertise in operational medicine. *Participation in actual missions lends important credibility to teaching and research and provides a living laboratory where concepts, techniques, and technology can be evaluated.* The Secretary of Defense has commended the CCRC for its contingency support for the Republican National Convention and the Presidential Inaugural and the direct service support to the Departments of State, Treasury, Interior, and Justice. Based upon the similarities between military medicine and selected types of civilian emergency medical support, lessons learned can be applied from one to the other. The increasing frequency of military operations other than war, including responses to terrorist activities, makes the law enforcement special operations experience critically relevant to military medicine.

CCRC Emergency Medicine Resident Rotation. The CCRC's Emergency Medicine Resident Rotation in Operational Medicine Course, initiated in 1992, is a five-week elective for military emergency medicine residents. Eighty active duty emergency medicine residents, six active duty staff physicians, and three physician assistants have completed the course. It consists of successful performance in the one-week Integrated Force Health Protection Program EMT-Tactical (IFHP/EMT-T) School and four weeks of temporary duty at the CCRC. While assigned to the CCRC, the emergency medicine residents deploy on actual support missions, complete short research projects, and generate *white papers* on topics such as antibiotic selection, malaria prophylaxis in high risk special operations, and field laboratory diagnostics for chemical, biological, and radiological incidents. In 1998, the three Surgeons General suggested that the elective be made a required rotation for all military emergency medicine residents. This year, the CCRC signed an agreement to train, during every month, residents from the Joint Service (Army/Air Force) Emergency Medicine Residency Program in San Antonio, Texas.

CCRC Military Medical Field Studies Rotation. The Military Medical Field Studies Rotation at the CCRC accommodates up to twenty first-year medical students with prior service for the required military experience between the first and second years of medical school; if required by the Services, this number could be increased. Up to six fourth-year medical students complete an elective rotation in operational medicine research at the CCRC each year; again, the number of students could be increased if required by the Services. The operational experiences of the CCRC Medical Support Teams are integrated throughout the medical school curriculum as tangible demonstrations of the medical science being taught. For example, a large part of the USU SOM curriculum on blast injury uses the first-hand experiences of the CCRC faculty acquired during their response to the embassy bombings in East Africa.

During 2002, approximately 18 students, between their first and second year of medical school, selected an area of interest and worked with CCRC faculty members on individualized courses of research and study. The students were also divided into groups; each group was responsible for completing a research effort and for a presentation of findings. Students attended one or more of the following CCRC training opportunities: *the Emergency Medical Technician Tactical (EMT-T) Course*; the *Emergency Medical Technician - Tactical Advanced Course*; or, the *Weapons of Mass Destruction (WMD) Training Program*.

The Sixth International Conference on Tactical Emergency Medical Support. The USU CCRC hosted the Sixth International Conference on Tactical Emergency Medical Support, which was held from June 7-9, 2002, in Las Vegas, Nevada. Once again, the CCRC was proud to sponsor a conference that is consistently well attended and offers significant integration with the law enforcement and public safety communities. This year's conference was entitled, *Protecting the Protectors*, and included a Keynote Address by Lieutenant General Frank Libutti, USMC (Retired), Deputy Commissioner for Counter-Terrorism, New York City Police Department. Presentations provided by personnel involved directly with the World Trade Center and Pentagon catastrophes were well received, as were presentations from several other clinicians and operators in the fields of Tactical EMS and Special Operations Medicine. The 2002 David Rasumoff Memorial Award for Heroism was presented to John Busching of the New York City Police Department Emergency Services Unit for his selfless acts of bravery following the terrorist attacks at the World Trade Center.

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USU School of Medicine Department of Military and Emergency Medicine and the Center for Disaster and Humanitarian Assistance Medicine.

Establishment. The Center for Disaster and Humanitarian Assistance Medicine (CDHAM) was established in September of 1998, under the USU SOM Department of Military and Emergency Medicine to advance the understanding and global delivery of disaster medical care and humanitarian assistance. The Center ensures specialized expertise, consultation, training, education, and research for medical support activities that impact homeland defense, terrorism and disaster response, and humanitarian assistance. Personnel within the USU Department of Military and Emergency Medicine participate in various activities of the CDHAM based on their professional interests and as their teaching and clinical responsibilities permit. **Craig H. Llewellyn, M.D., Professor and Former Chair, USU SOM Department of Military and Emergency Medicine, serves as the Director for the Center.**

Mission. The mission of CDHAM is to advance the understanding and delivery of disaster medical care and humanitarian assistance on a worldwide basis. Uniquely positioned as an academic center within the USU, the CDHAM has served as a focal point in the Military Health System to: 1) develop relationships between various governmental, non-governmental, and private volunteer organizations; 2) assist in the critical management of relief efforts in the medical response to weapons of mass destruction, terrorism, natural disasters, and humanitarian assistance contingencies through new developments in the areas of disaster and humanitarian assistance medicine (such as ultrasound imaging training for disaster response or the use of PDA/handheld computer software platforms for disaster needs and assessment); and, 3) augment the training of military medical officers through specialized expertise, consultation, training in the field of Telemedicine and medical informatics in relation to the austere environment, education, and research capabilities.

Center Activities. The CDHAM uses training, technology, and best management practices to improve military medical capabilities and readiness during disaster and humanitarian contingencies, especially through collaboration with the inter-agency process, the international medical community, and the host nation medical infrastructure and beneficiary populations. The CDHAM works closely with the Unified Combatant Commands to meet its primary mission. Such efforts generally involve direct liaison with other DoD humanitarian assistance centers such as: the Center of Excellence (COE) for Disaster Management and Humanitarian Assistance under the United States Pacific Command (USPACOM) located in Honolulu, Hawaii; and, the Center for Disaster Management and Humanitarian Assistance (CDMHA) under the United States Southern Command (USSOUTHCOM), located in Miami, Florida.

In conducting studies and operations concerning local and global relief efforts, the CDHAM also works to expand relationships with other United States government agencies such as the Office of Foreign Disaster Assistance (OFDA) and the United States Agency for International Development (USAID), as well as international organizations such as the Pan American Health Organization (PAHO) and the World Health Organization (WHO). During 2002, CDHAM was actively engaged in various studies supported by the Department of Defense (DoD), the Unified Combatant Commanders, and other Federal agencies. A summary of the CDHAM's activities during 2002 follows.

Research and Operations.

Measures of Effectiveness. The DoD has the World's finest deployable medical system, and as such, it is routinely engaged in providing international medical humanitarian assistance. Scenarios in which military personnel provide medical humanitarian assistance range from deliberately planned theater engagement activities, to contingency operations, and complex human emergencies and military operations other than war. *A series of reports examining the training value of medical humanitarian assistance projects and their effectiveness for beneficiaries was completed by CDHAM during 2002.* Additionally, a study on the positive and negative effects of humanitarian assistance projects on the recruitment and retention of uniformed medical personnel was also conducted. Many uniformed offices have had prior humanitarian experience within DoD and with private volunteer organizations (PVOs) or non-government organizations (NGSs); a majority of those interviewed indicated that the opportunity to provide humanitarian health care was indeed a factor in their consideration to join the Uniformed Services.

A total of nine reports in the series on ***Measures of Effectiveness*** have been approved for public release by the sponsoring organization, the Office of the Assistant Secretary of Defense for Stability Operations (ASD/SO), formerly titled Special Operations and Low Intensity Conflict (SO/LIC). When printed, the reports will support USU Military Medical Humanitarian Assistance Courses and the Unified Combatant Commands, which annually conduct over 200 planned humanitarian missions; over half of those missions are health-related. Although international media coverage of complex humanitarian emergencies has been extensive, comparatively few academic investigations of such missions have been conducted. The ***Measures of Effectiveness Reports*** on military humanitarian assistance establish a model for conducting improved joint training for such missions and for providing effective relief. The nine reports in the series on ***Measures of Effectiveness*** are: 1) *Overview of Overseas Humanitarian Assistance, Humanitarian and Civic Assistance, and Excess Property Programs*; 2) *Humanitarian and Civic Assistance Projects and Military Training*; 3) *Measuring the Effectiveness of Department of Defense Humanitarian Assistance*; 4) *United States Participants Perspectives on Military Medical Humanitarian Assistance*; 5) *Host Nation Participants Perspectives on Military Medical Humanitarian Assistance*; 6) *Information Management for More Effective Humanitarian Assistance Projects & Programs*; 7) *Measuring the Effectiveness of Humanitarian Assistance other than Department of Defense Providers*; 8) *Humanitarian Service: Recruitment & Retention Effects Among Uniformed Services Medical Personnel*; and, 9) *Humanitarian Assistance Bibliography: with Some Annotations, After Action Reports, and Web Sites of Interest.*

Rapid Assessment. Efficient means for assessing the effects of a disaster event are essential for the direction of coordinated relief efforts. *Rapid assessments must identify and document:* the immediate needs of an effected population; the ability of local authorities to meet those needs; and, actions that should be taken by the international community to support the local authorities. *The priorities of rapid assessment are to:* determine what has to be accomplished in the immediate future to alleviate suffering; prevent loss of human life; and, establish a foundation for a cohesive and effective disaster response. However, while DoD assets can be tasked to conduct disaster assessments and can serve as an integral part of international disaster response efforts, there are strict guidelines governing the use of DoD personnel and assets in disaster relief operations, which must be observed. To address these requirements, an additional CDHAM study entitled, *An Analysis of the Involvement of United States Department of Defense Personnel in Rapid Assessment Surveys Following Natural and Man-Made Disasters*, was funded and approved for public release by the Office of the Assistant Secretary of Defense

for Stability Operations (ASD/SO) during 2002. This CDHAM report provides an analysis of DoD personnel involved in conducting rapid assessments following natural and man-made disasters and it also deals with the guidelines governing the use of DoD personnel and assets.

Gorgas Laboratory. In 2001, a collaborative study between the CDHAM and the Instituto Conmemorativo Gorgas de Estudios de la Salud (ICGES) was funded by the United States Southern Command (SOUTHCOM) to identify health research and capacity enhancements that would strengthen the local capacity for prevention and response before, during, and following man-made or natural disasters. *The goal of the study was to support the development of national and regional capabilities and cooperative training activities, as well as to strengthen the United States government programs in Panama* in areas such as: disease and injury surveillance; prevention of infectious diseases; humanitarian and disaster relief assistance; and, control of health threats associated with the accidental or incidental release of hazardous substances and toxic industrial compounds.

In accordance with one of the short-term recommendations identified in the initial USU-ICGES Study, *an integrative project was executed with the DoD-Global Emerging Infections System (DoD-GEIS) to increase the sub-regional expertise in laboratory-based epidemic outbreak surveillance*. A conference, co-sponsored and organized by CDHAM, served as the venue for this effort, during 2002. The *Phase II Course/Workshop on the Public Health Laboratory Information System (PHLIS) for Central America and the Dominican Republic* was held in Panama City, Panama, as requested by SOUTHCOM. The conference, hosted by the Gorgas Institute's Public Health Central Reference Laboratory in Panama City, Republic of Panama, included breakout sessions in disaster preparedness medicine and a two-day working meeting for the public health laboratory directors from the seven sub-regional countries in Central America, in addition to Panama and the Dominican Republic. The training at the Panama conference was collaboratively planned, organized and implemented by DoD-GEIS, CDHAM, the Pan American Health Organization (PAHO), and the Pan American Health and Education Foundation at the request of SOUTHCOM; it was funded by DoD Overseas Humanitarian, Disaster, and Civic Aid (OHDACA).

A synergistic, multi-agency approach for the implementation of the Centers for Disease Control (CDC) Public Health Laboratory Information System (PHLIS) was adopted to further expand and strengthen the national and sub-regional public health laboratory surveillance efforts in Panama, the six other Central American countries, and the Dominican Republic (PHLIS is an automated, standardized, computerized laboratory program for tracking, reporting, and communicating timely health surveillance information to decision-makers and first responders). *The objective of the integrative project was to improve and enhance human health resources capacity and health system capabilities for national public health authorities when providing humanitarian assistance to prevent and control emerging or re-emerging infectious diseases.* As a result, the main objective in the development of this public health intervention process was to ensure the fortification of early warning capabilities for disaster health information systems, *especially between the reference laboratories and the epidemiology departments*, to support contingency planning and the management of emergency situations resulting from natural or man-made disasters.

A multi-disciplinary group of 30 Ministry of Health professionals (epidemiologists, bio-informatics, and laboratory directors) from eight countries (El Salvador, Guatemala, Belize, Nicaragua, Honduras, Costa Rica, the Dominican Republic, and Panama) attended. The Panamanian Minister of Health was an active participant in the opening session of the workshop; and, 15 professionals from Panama participated as organizers, course facilitators, administrative support personnel, and course participants. *Specific outcomes of the training sessions reflected that the mutually reinforcing elements of the regional laboratory surveillance network were strengthened; and, advanced training in PHLIS configuration had been successfully delivered.*

Telemedicine Operations and Technology Cell.

Telemedicine Training for the Medical Department of the Mexican Army. The CDHAM serves as a clearinghouse for pertinent information related to all areas of disaster medicine and humanitarian assistance. The Center maintains access to expertise in the field of telemedicine and medical informatics as it relates to the austere environment. During Fiscal Year 2000, the CDHAM, under contract with the Joint Forces Command, prepared and conducted a wide range of activities. One offshoot was the evolution of a *Telemedicine Training Course/ Telemedicine Capabilities Overview* for select personnel within the Medical Department of the Mexican Army. In addition to its defense mission, the Mexican Army has the added responsibility of being a first-time responder to disasters and other catastrophic events; it was jointly determined that the Telemedicine technology currently used by CDHAM would lend itself well to the Mexican Army's requirement to provide humanitarian and disaster assistance. A further determination was also made that this technology would also be a viable tool for linking remote medical clinics with the central Mexican hospital.

Preparation by CDHAM began six months prior to deployment; a revision was made to the CDHAM Telemedicine Course Manual to reflect the needs of the Mexican Army (the complete translation of the Manual into Spanish is on-going). All presentations were finalized and then translated into Spanish. Approximately one month prior to deployment, all of the Telemedicine equipment was transported to Laredo, Texas, from where the equipment was relocated to Mexico City. An eight-member CDHAM team departed in November for Mexico City. Six Mexican military physicians were assigned to the CDHAM Training Team to assist in the preparation and implementation of the course. During this time, the Mexican physicians were exposed to the history and usage of Telemedicine, to include adequate time for hands-on training; the six Mexican physicians then served as Assistant Instructors during the training sessions; and, for the final training phase, they became the Primary Instructors for the Operators Course. The training courses consisted of a two-day, *Intensive Training Course*; two, one-day, *Austere Telemedicine Executive Overviews*; and, two, three-day, *Austere Deployable Telemedicine Operators Courses*.

Once the Intensive Training Course was completed, the CDHAM Team conducted a one-day, *Austere Telemedicine Executive Overview Briefing* for members of the Office of the Mexican Army Medical Chief of Staff. A total of 27 personnel were briefed, including one general officer. The following day, a three-day, *Austere Telemedicine Operators Course* was initiated with 16 personnel from the various branches of the Mexican Army medical community participating. Class composition was largely composed of primary care providers along with representatives from the Signal Services. During the following week, another *Telemedicine Executive Overview Briefing* was provided by CDHAM and attended by the staff of the Mexican Army General. A total of 57 personnel attended, of which, 13 were General Officers and 30 were at the rank of 0-6. The final class of 16 personnel was conducted by the Mexican personnel who had been assigned to the CDHAM team. Periodic refresher/sustainment (annual or biannual) training is being considered to reenforce the skills learned in the Telemedicine Courses. Also, the technology used in Telemedicine changes rapidly and necessitates the updating of previously trained personnel in current technologies and methodologies. Future missions will also include at least one set of Deployable Telemedicine Equipment that can either be given to, or hand-receipted to, the host nation for future training/contingency operations.

Training.

Combined Humanitarian Assistance Response Training (CHART) Course. The CDHAM hosted training for 60 attendees for the Combined Humanitarian Assistance Response Training (CHART) Course in May of 2002. The CDHAM staff, along with invited faculty, presented the *Day-4 Medical Training Lesson Plan*; this was the subject of an organizational meeting sponsored by the Office of the Assistant Secretary of Defense, Special Operations Low Intensity Conflict, in order to update CHART training by the Center of Excellence in Disaster Management and Humanitarian Assistance.

Medical Preparedness for Manmade Disasters. The CDHAM participated in a one-day, pre-conference workshop for community emergency/first responder civil authorities, border health workers, and military personnel of the United States and the Mexican Armed Forces as part of the 60th Annual Conference of the United States-Mexico Border Health Association (USMBHA). The workshop sponsors conducted a bioterrorism exercise simulated to occur along the United States-Mexican border; *the CDHAM provided real-time, hands-on demonstrations using commercial, off-the-shelf telemedicine equipment.*

Military Medical Humanitarian Assistance Courses (MMHAC). Using the model of a course developed by the USU SOM Department of Pediatrics, *the CDHAM continued the development of a family of specialty-specific, intensive Military Medical Humanitarian Assistance (MMHAC) Courses across the spectrum of medical, nursing, and veterinary medicine specialties.* The CDHAM plans to complete the development of the MMHAC Courses during 2003, and to provide on-line support for the education and training of personnel assigned to participate in humanitarian or disaster relief activities.

Kerkesner and Bushmaster. The CDHAM supports the education of USU medical students during the first-year of medical school (Kerkesner) and fourth-year (Bushmaster) operational training courses. Live demonstrations of telemedicine equipment and medical informatics in relation to the austere environment are presented under actual field operating conditions.

Public Service Recognition Week. The CDHAM staff provided an interactive display on Telemedicine for the general public during the annual Public Service Recognition Week hosted by DoD on the Mall in Washington, D.C.

CDHAM Consultative Support.

The CDHAM provides telephone and on-site consultation for organizations requiring timely expertise in all phases of disaster mitigation. Consultative support with response planning, vulnerability assessment, needs assessment, medical care, and epidemiological surveillance is available.

A Guide for Non-Government Organizations. A CDHAM project to facilitate the coordination of disaster relief and/or humanitarian assistance relief between DoD, non-government organizations (NGOs), and private volunteer organizations (PVOs), led to the completion of a draft, 240-page document, which was updated five times during 2002. When finalized, *A Guide to NGOs: A primer about private, voluntary, non-governmental organizations that operate in humanitarian emergencies globally* will be promulgated on the CDHAM web site for rapid access by anyone seeking information on organizations that support disaster relief/humanitarian assistance activities. Publication will take place during 2003.

The CDHAM Web Site. The CDHAM web link, on the USU Home Page Web Site, continues to be updated and enhanced to assist in the dissemination of quality information relevant to the medical management of injuries caused by chemical, biological, radiological, nuclear, and/or high explosive weapons used in warfare and terrorism. A *work in progress*, the functionality of the link is being modified to *mine data* across a wide range of international and national, government and private Internet resources to rapidly direct interested users toward critical information for use in planning and responding to humanitarian assistance and/or disaster relief needs on a worldwide basis. The CDHAM web link can be reached at *<http://www.usuhs.mil>*.

Other Activities and Relationships.

Humanitarian Training Program for the San Antonio Military Pediatric Center, Joint Pediatric Residency Program, Honduras. As part of United States Joint Task Force Bravo Deployment in Honduras for pediatric residency training, a team from the United States military worked with the local Honduran health staff and Joint Task Force Bravo Honduran Medical Liaisons to collect data and identify information to compliment the Honduran long-term health and nutrition objectives. The CDHAM provided consultation, training, and faculty support, as well as funding support, for a medical student to participate in the deployment exercise; this resulted in an exceptional training experience for the medical student relevant to nutrition assessment and medical support in an austere humanitarian assistance environment.

Medical Support to a Medical Readiness Training Exercise in Uganda. The CDHAM provided funding support for one USU SOM student to participate in a European Command (EUCOM)-sponsored Medical Readiness Training Exercise in Uganda, Africa. This resulted in another exceptional training experience for a medical student from the University.

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USU School of Medicine Department of Surgery and the Center for Prostate Disease Research - A TriService Effort.

> **The Department of Defense Center for Prostate Disease Research (CPDR) of the Uniformed Services University of the Health Sciences in Bethesda, Maryland, announces its 10th Anniversary Celebration on November 22, 2002. This all-day celebration will feature a keynote address by the Director of the National Cancer Institute, Dr. Andrew von Eschenback, as well as presentations by other nationally recognized experts in the prostate cancer field.**
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> - *USU E-News*, Winter Edition, 2002, page 10.

Background. The Center for Prostate Disease Research (CPDR) is a United States Department of Defense Program located in Rockville, Maryland, which integrates basic and clinical science to develop promising detection techniques and treatments for prostate cancer and disease. The CPDR was established in 1991, by the United States Congress in an effort to combat the increasing rate of occurrence of prostate cancer and celebrated its 10th Anniversary in 2002. Current figures released by the American Cancer Society reveal that over 189,000 American men will be diagnosed with prostate cancer each year and that approximately 30,000 of those men will die from the disease.

The CPDR is a program of the Uniformed Services University of the Health Sciences (USU) located in Bethesda, Maryland; it is affiliated with the Walter Reed Army Medical Center, the Armed Forces Institute of Pathology (AFIP) located in Washington, D.C., as well as nine, TriService (Army, Navy and Air Force) Military Medical Centers. The CPDR is administered by the Henry M. Jackson Foundation for the Advancement of Military Medicine. With over 80 researchers and team members, the CPDR is recognized as one of the prominent prostate cancer research programs in the Nation.

Mission. The CPDR is unique, in that it incorporates three distinct areas of prostate disease research into one comprehensive program. In particular, clinicians are working closely with basic scientists, pathologists, and other medical researchers to advance the field. **Colonel Judd W. Moul, MC, USA, Urologic Oncologist, Walter Reed Army Medical Center (WRAMC), Professor, USU SOM Department of Surgery,** and **Colonel David G. McLeod, MC, USA, Urologist, Walter Reed Army Medical Center (WRAMC), Professor, USU SOM Department of Surgery**, serve as the Directors of the Center for Prostate Disease Research.

Center Activities During 2002.

Clinical Research Center. The CPDR Clinical Research Center, located at the Walter Reed Army Medical Center (WRAMC) in Washington, D.C., combines prostate screening, data collection, clinical diagnosis, education and counseling, and, most importantly, prostate disease clinical trial research in a distinctly patient-oriented setting. In the Clinical Research Center, CPDR Directors, Colonel Judd W. Moul, MC, USA, and Colonel David G. McLeod, MC, USA, and their team provide state-of-the-art care to military beneficiary patients affected by prostate disease, particularly emphasizing enrolling military beneficiaries in clinical trials.

TriService, MultiCenter National Prostate Cancer Patient Database. The CPDR Patient Database is one of the largest, most comprehensive prostate cancer patient databases in the country. After informed consent, patients provide comprehensive data about their care, which is maintained in a state-of-the-art relational computer database. **Leon Sun, M.D., Ph.D., MultiCenter Database Administrator, Research Assistant Professor, USU SOM Department of Surgery,** and **Colonel Judd W. Moul, MC, USA,** direct this monumental project, which is administered, nation-wide, by principal investigators and database managers at nine TriService Military Medical Centers. *The CPDR database has evolved into a valuable research tool for both clinicians and scientists working in the prostate disease field. Currently, there are more than 500,000 records on over 17,000 patients in the database.* Recently, CPDR was awarded a 3-year (2002 through 2005) DoD Prostate Cancer Research Program (PCRP) Grant in the amount of $410,000 to add technological advancements to the CPDR TriService Multicenter Database. In addition, important studies are underway in multiple areas including: hormonal therapy for early disease recurrence; the efficacy of watchful waiting; the relationship of biochemical recurrence to mortality; and, the comparison of surgery to radiation for the treatment of localized disease.

Basic Science Research Program. In the Basic Science Research Program of CPDR, 2002 proved to be a great success for research productivity. Under the direction of **Shiv Srivastava, Ph.D., CPDR Scientific Director, USU SOM Research Associate Professor, Department of Surgery,** the Basic Research Program of the CPDR now includes more than twenty-five cancer researchers including the **Associate Director, Dr. Johng Rhim,** and the **Assistant Director, Dr. Zhiqiang Zou,** five Senior Investigators, a Laboratory Manager, Post-Doctoral Fellows, WRAMC Urology Residents, Research Assistants, and USU graduate medical students. The Basic Research Program Team has developed a vigorous long-term research program and unique bio-resources with a team of dedicated researchers to address molecular genetic alterations during the on-set, or the progression of, prostate cancers. *Collaborative efforts between Dr. Srivastava and Colonel Judd Moul, CPDR Director, have led to the integration of basic and clinical research activities at the CPDR.* This allows the rapid translation of basic research discoveries into the clinical arena (e.g., the evaluation of biomarkers for prostate cancer progression and the identification of new targets for therapy). Also, prostate cancer gene discovery efforts, using state-of-the-art global gene expression profiling and positional cloning strategies at the CPDR, are uncovering novel gene alterations in prostate cancer. During 2002, the Basic Research Program produced peer-reviewed papers that have been published in the leading cancer research journals, to include: Cancer Research, Oncogene, Clinical Cancer Research, Molecular Medicine, and the Journal of Biological Chemistry. In addition to CPDR funds, extramural grants from the National Institutes of Health, DoD, and private companies support the CPDR Basic Science Research Program.

Notable highlights during 2002, including unpublished findings, are summarized as follows:

PCGEM1, a novel prostate-specific and prostate cancer-associated gene originally identified by the CPDR researchers as a CaP-associated transcript, remains a continued research focus. CPDR now shows that *PCGEM1* expression is significantly higher in prostate cancer (CaP) cells of African-American men than in Caucasian-Americans, and its expression is also elevated in the high-risk group of patients with a CaP family history. Further, in both LNCaP and NIH3T3 cells, *PCGEM1* overexpression promotes cell proliferation and colony formation. To the knowledge of the CPDR researchers, this is the first observation of a prostate-specific gene with cell growth-promoting function showing elevated expression in African-American CaP patients, the population with the highest CaP incidence. What makes these findings significant outside of the cancer research field is that *PCGEM1* is a non-coding RNA gene.

In a recent report in Cancer Research 2002, CPDR researchers provided first insights into the function of *HEPSIN* in prostate cancer cells - one of the most common gene expression alterations reported in CaP. The CPDR laboratory has undertaken functional characterization of *HEPSIN* in prostate cancer cells to understand the biology and role of *HEPSIN* in prostate tumorigenesis. The CPDR demonstrated that *HEPSIN* inhibits prostate cancer cell growth and cell invasion and it may exert its function through cell cycle arrest and induction of cell apoptosis. Studies also provide molecular explanation underlying observations showing decreased or absent *HEPSIN* expression in prostate cancer progression.

PMEPA1, an androgen-regulated NEDD4 binding protein, exhibits cell growth inhibitory function and decreased expression during prostate cancer progression. Serial Analysis of Gene Expression in androgen-treated LNCaP prostate cancer cells has led to the discovery of a novel androgen-regulated gene, *PMEPA1*. CPDR demonstrated that expression of *PMEPA1* in prostate cancer cells resulted in significant cell growth inhibition. Expression of PMEPA decreased in human prostate cancer; and, decreased *PMEPA1* expression is significantly associated with a higher pathologic stage and higher levels of serum PSA, suggesting that decreased *PMEPA1* function may have some role in prostate tumorigenesis.

Scientists at the CPDR are also focusing on continuing work in the areas of definition of androgen signaling in CaP. Expression profiling of androgen-regulated genes by SAGE and Gene Chips has defined endoplasmic reticulum (ER) stress response pathways as a novel component of androgen signaling in CaP cells. This new discovery has the potential to define how male hormones may promote prostate cancer under certain physiologic functions. This report was recently published in the December 2002 issue of Oncogene.

In line with studies that have evaluated the molecular biology of androgen signaling in prostate cancer, CPDR researchers are evaluating the functional consequences of defects of the androgen receptor. Androgen receptor (AR), a member of the nuclear steroid receptor transcription factor, plays key roles in the proliferation as well as the differentiation of prostate glands. Mutations of the AR (mtAR) gene studied during androgen ablation therapy, or during the natural progression of prostate cancer (CaP), are believed to contribute to the progression of androgen refractory CaP. These, and subsequent findings, provide novel insights into the role of AR mutations in prostate cancer. In addition, a novel gene, *DERPC* (Decreased Expression in Renal and Prostate Cancer), was identified. Expression of *DERPC* has inhibitory potential on prostate cancer cell growth. Further, overexpression of *DERPC* in LNCaP cells caused alterations of nuclear morphology. This study suggests that decreased expression of *DERPC* may potentially be implicated in the tumorigenesis of renal and prostate cancers.

CPDR has also continued its groundbreaking research in developing molecular technologies aimed at better diagnosis and staging of prostate cancer of circulating prostate epithelial cells by quantitative analysis of PSA expression. This appears to have potential in prostate cancer diagnosis as well as prognosis. During 2002, CPDR researchers also launched an exciting project to use the newly developed SELDI technology (Surface Enhanced Laser Desorption/Ionization Time of Flight Mass Spectroscopy) for the early detection of prostate cancer by serum protein profiling. The initial study has obtained a sensitivity of 85 percent, specificity of 85 percent, and a positive predictive value of 93 percent for the detection of prostate cancer cells. These preliminary findings support recent and significant observations that complex protein profiles have promising potential in the early detection of prostate cancer and warrant future studies with streamlined technology.

Prostate Cell Center of the Basic Science Research Program. The Prostate Cell Center of the Basic Science Research Program is under the direction of **Dr. Johng S. Rhim, Associate Scientific Director, CPDR, and Research Professor, USU SOM Department of Surgery.** The Prostate Cell Center continues to facilitate studies of new prostate cell lines. Established in January of 2000, in the renovated CPDR laboratory at the USU SOM Department of Surgery, Dr. Rhim and his team continue working towards the Center's goal, which is the generation and characterization of cell lines from primary tumors of prostate cancer patients as well as from normal prostate tissues of the same patients. This also includes cell lines from familial prostate cancer patients. *The Prostate Cell Center also serves as a resource center to provide primary cell cultures of epithelial cells derived from normal and malignant prostatic tissues to the larger scientific research community*. The availability of these cell cultures, as well as derived materials such as RNA, DNA, proteins and conditioned media, facilitates research by other investigators who do not have the means to establish primary cultures themselves. During 2002, Dr. Rhim and his colleagues from the CPDR reported the discovery and characterization of two new prostate cancer cell lines in two leading cancer journals, Cancer Research and Oncogene.

Education and Training. The CPDR fosters training and educational programs to raise public awareness on prostate disease. It sponsors the *US TOO, Inc.*, a patient support group at WRAMC, which holds monthly meetings, small group, and individual counseling sessions where patients' concerns and questions about prostate disease are addressed. The US TOO, Inc. Quarterly Newsletter is also distributed to over 2000 individuals and is published on the CPDR web site, which can be found at <*www.cpdr.org*>. The newsletter lists information about medications and clinical trials as well as names and phone numbers of peer counselors who are willing to listen and tell about their own experiences.

In addition, CPDR is actively involved in the education and training of medical students, uniformed residents, and USU Ph.D. students. The CPDR also provides molecular biology education and training for military urology residents and medical and graduate students from USU. Various internships in the Basic Science Laboratory and the Multi-Center Database are also available to qualified local high school and university students who are interested in careers in the cancer research field.

The CPDR Administration and Staff. The CPDR administration and staff is currently comprised of over 80 researchers and support staff located at USU, AFIP, the Rockville, Maryland CPDR site, and nine participating military medical sites throughout the Nation. The synergism of this professional team of principal investigators, clinical and laboratory researchers, and administrative and scientific support staff has enabled the CPDR to produce cutting-edge quality prostate cancer research. This dynamic program will continue to focus on improving the treatment and detection methods for prostate disease in the military community. The ultimate goal is to improve the health care of all American men suffering from this *silent killer,* which affects one, out of every five men, at sometime in his lifetime. More information is available on the CPDR web site at <*www.cpdr.org*>.

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The United States Military Cancer Institute.

Background/Organization. The United States Military Cancer Institute (USMCI) is a component of USU; the Director of the Institute reports directly to the President of the University. In addition to the USU SOM, other components of the USMCI are the Walter Reed Army Medical Center, the National Naval Medical Center, the Malcolm Grow Air Force Medical Center, the Armed Forces Institute of Pathology, and the Armed Forces Radiobiology Research Institute. The Institute has, as its objective, the enhancement of multi-disciplinary cancer research under the USU aegis; the ultimate goals are to advance the science of cancer prevention, diagnosis, treatment, and research. **John F. Potter, MD, former Director of the Lombardi Cancer Center at Georgetown University, and Professor of Surgery at USU,** serves as the Director of the USMCI. Doctor Potter is also the Department of Defense Representative to the National Dialogue on Cancer, an entity that brings together leaders in the National Cancer Community from academia, government and industry.

Mission. The mission of the United States Military Cancer Institute is to promote collaborations among DoD basic and clinical scientists to augment cancer-related patient care and research activities. Significant numbers of DoD beneficiaries have been afflicted by cancer in the past 14 years. Basic scientists at USU are contributing significantly to translational cancer research with clinicians at the local military hospitals.

Benefits of the Cancer Institute. Cancer remains a very significant issue for the DoD beneficiaries in the Military Health System (MHS). Last year, more than 630,000 patients were treated for oncologic conditions; annual costs for cancer care in the MHS are estimated at $550 million.

There are a number of benefits that will result from the establishment of the USMCI. The USMCI will further enhance the academic prestige of USU and would position the University among the premier academic entities in the Nation. As a consequence, student applications to USU would be increased. Medical and nursing students will benefit from their involvement in multi-disciplinary patient care, which is the hallmark of state-of-the-art cancer treatment. The Institute will enhance the collaborative relationships among cancer scientists in both the basic and clinical areas. The increased public awareness of the high quality of care provided to cancer patients in military treatment facilities should increase the flow of patients to military treatment centers. Post-graduate education must also have large numbers of patients for teaching purposes. This level is being threatened in some hospitals. The USMCI will increase patient accessions to the military treatment facilities. Moreover, these cancer patients present extremely challenging surgical and medical conditions. Caring for such patients maintains and enhances the skills of staff physicians, residents, medical students, and nurses. A cancer institute will stimulate the submission of grant applications to the National Institute of Health and other such academic entities. An increase in grant awards would be a clear indication of the high quality of research being conducted at the University. The Institute could also serve as a model for TriService collaboration.

The United States Military Cancer Institute has been accepted as a member of the Association of American Cancer Institutes. This Association, to which all of the leading cancer centers in this country belong, has established rigid guidelines for admission. These include the performance of high quality basic, translational, and clinical research. The Association reviewed the extensive

documentation, which it requires, describing the USMCI research programs before voting for acceptance. This recognition is a tribute to the quality of USMCI research and patient care activities.

- The Weekly Activities Report, *Uniformed Services University Military Cancer Institute Recognized*, Health Affairs, Office of the Secretary of Defense, September 3-7, 2002.

Achievements of the Institute. Since its inception, the Institute has accepted 85 candidates as members. These basic and clinical scientists have formed TriService, multi-disciplinary research teams and programs. For example, the USMCI member programs now include the Center for Prostate Disease Research, the Clinical Breast Care Project, and the Cancer Vaccine Development Laboratory. Other programs focus on soft-tissue sarcoma and gynecologic oncology. A Committee of Scientific Advisors, composed of nationally distinguished cancer scientists, meets annually to review the progress of the Institute. At its most recent meeting, the Committee declared that it was impressed with the progress of the Institute and expressed renewed support for the focus of the Institute on cancer prevention and control. This theme was adopted because it will capitalize on the talents of the basic scientists of the USU SOM to conduct translational research with clinicians in the local military hospitals. Also, the wellness concept is important for DoD's strategic goal on medical readiness. To achieve these goals, a nationally prominent epidemiologist has been recruited as the Associate Director for Epidemiology, Prevention and Control.

Services Sign Memorandum to Combine Efforts in Cancer Research. The Commanders of four local military health care facilities signed a Memorandum of Understanding in February of 2002, to create the first TriService Institutional Review Board for the United States Military Cancer Institute. In the past, the necessity for an investigator to obtain Institutional Review Board (IRB) approval from each institution at which the investigator wished to perform research (which often amounted to the completion of approval processes with four or five entities) served as a substantial roadblock to collaborative research. However, the signing of an agreement by the Commanders from the Walter Reed Army Medical Center, the National Naval Medical Center, the Malcolm Grow Medical Center, and the President of USU will enable researchers to obtain the required reviews of their research protocols through a more streamlined process. Instead of being required to submit a protocol to the IRB sponsored by each individual institution, a researcher can now make one submission to one *integrated* Institutional Review Board. This will facilitate the work of the investigators and expedite cutting-edge discoveries and technology for the DoD communities.

Establishment of the USMCI Committee. A USMCI Committee has been established to support and advise the United States Military Cancer Institute. **The Honorable Frank Carlucci, former Secretary of Defense and National Security Advisor to the President of the United States,** serves as the Committee Chair. Other members include **The First Lady of the United States, Mrs. Laura Bush; Ms. Ellen Stoval, President and CEO of the National Coalition for Cancer Survivorship; Mrs. Marlene Malek, President of Friends of Cancer Research; Doctor Jeong Kim, Chairman of CIBERNET Corporation; General H. Norman Schwarzkopf, USA, Retired;** and, **Mr. Gerald S.J. Cassidy, President of Cassidy and Associates.**

Congressional Recognition. The Congress of the United States has both recognized the United States Military Cancer Institute and mandated substantial funding for its operations during Fiscal Years 2002 and 2003.

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The TriService Nursing Research Program - A Joint Program Under the Leadership of the Chief of the Army Nurse Corps and the Directors of the Navy and the Air Force Nurse Corps.

Background. The TriService Nursing Research Program (TSNRP) is a Congressionally authorized program targeted to support research conducted by military nurses (S.R. 107-732). In 1996, the TriService Nursing Research Program was authorized by Congress as part of the DoD Health Care Program and established at the Uniformed Services University of the Health Sciences (Chapter 104, Title 10, U.S. Code, as amended). The TSNRP is under the leadership of the Chief of the Army Nurse Corps and the Directors of the Navy and the Air Force Nurse Corps. The continuing investment of resources and support from the Congress for military nursing research has begun to yield valuable results as uniformed nurse investigators have begun to expand the scientific foundation for military nursing.

The TSNRP's first Director was appointed in 1997, to coordinate and implement all aspects of the program and to manage the day-to-day operations of the TSNRP. Also during 1997, the TSNRP established the Resource Center for Excellence in Military Nursing (Resource Center) to provide resources for nurse clinicians, nurse researchers, and policy makers in support of military nursing research. The major goals of the Resource Center, reestablished during 2001, include the following:

- Provide military nurse researchers with a repository of information for use in designing, implementing, and disseminating nursing research;

- Improve the quality and quantity of proposals submitted by military nurse clinicians;

- Facilitate the implementation of research findings into clinical practice; and,

- Promote the timely dissemination of TSNRP-funded research findings.

Mission. During 2001, the TriService Nursing Research Program re-defined its mission: to provide resources for the conduct and use of research to foster excellence in military nursing care. To achieve its mission, four goals were identified:

1) Increase the military nursing research capacity by providing opportunities for nurses to engage in military nursing research;

2) Expand the breadth and depth of the nursing research portfolio by encouraging and funding programs of research in TSNRP's focused areas of investigation: *deployment health*; *developing and sustaining competencies*; *recruitment and retention of the workforce*; *clinical resource management*; *military clinical practice*; and, *outcomes management*;

3) Develop partnerships for collaborative research among the Services, components, institutions, disciplines and agencies; and,

4) Build an infrastructure to stimulate and support military nursing research to provide resources for supporting the exploration of salient military nursing research issues.

The TSNRP has designated five areas of research: 1) Deployment Health; 2) Developing and Sustaining Competencies; 3) Recruitment and Retention of the Work Force; 4) Clinical Resource Management; and, 5) Military Clinical Practice and Outcomes Management. Each of these areas can provide valuable clinical outcomes to enhance the care delivery systems for soldiers, sailors, airmen, and their families.

With a redefined mission, identified goals and strategies, and the Resource Center for Excellence in Military Nursing firmly established, the TSNRP offers military nurse researchers a full spectrum of services that will ultimately improve the ability of military nurses to provide appropriate, high quality health care for the Armed Forces.

Highlights of TSNRP Activities During 2002.

General Program Activities.

United States Senator Recognized for Significant Support of Military Nursing. **United States Senator Daniel K. Inouye of Hawaii** has been instrumental in all Congressional appropriations for the TSNRP. In collaboration with the Army, Air Force, and Navy Nurse Corps, the TSNRP honored Senator Inouye for his support of military nursing and military nursing research during 2002. In a videotaped ceremony held in the Senator's office, **Brigadier General Barbara Brannon, USAF; Brigadier General William Bester, USA;** and, **Rear Admiral Nancy Lescavage, USN,** presented a crystal award etched with the three Nurse Corps insignias to the Senator. Senator Inouye's on-going support for nursing and nursing research was again recognized during the 2002 State of the Science Congress held on September 26-28, 2002, in Washington, D.C.; the event was attended by over 900 national and international nursing leaders and prominent nurse scientists. In the videotape, described above, which was shown during the opening ceremonies of the State of the Science Congress, Senator Inouye explained that the origin of his support for military nursing extended back to his hospitalization and recuperation from injuries he sustained during World War II. The Senator's words had a significant impact on the audience as one nurse researcher from Montana later stated that she finally understood why her father had carried a photo of his military nurse in his wallet for decades to show his sincere gratitude after he had recuperated from injuries received during World War II.

Professional Senate Staff Recognized for Support of Military Research. **Patrick DeLeon, Ph.D., J.D., Chief of Staff, Office of Senator Inouye, the United States Senate,** was recognized and honored for his support of military nursing research at the 2002 Phyllis J. Verhonick Nursing Research Course held in San Antonio, Texas. Doctor DeLeon was the keynote speaker at the research course; he spoke of the value of nursing research and its important contributions toward evidence-based nursing practice.

The TSNRP Strategic Refinement Conference. TSNRP sponsored a Strategic Refinement Conference in August of 2002, which was attended by nurse researchers, policy makers, clinicians, and research consultants from each of the Services, the TSNRP Advisory Council, and the TSNRP Director and staff. The goals of the conference were twofold: to obtain the participants' perspectives on current research issues and concerns; and, to

refine the TSNRP Strategic Plan based on current research issues. Through guided facilitation, the consensus of the participants reflected as follows:

- In the more than 18 months since the goals and specific strategies were first established for the program, the TSNRP has remained on target and has made significant progress in achieving its goals;

- The focus and quality of the TSNRP-funded research have been facilitated through the TSNRP's on-going discourse with investigators and diligent monitoring of research progress;

- The application review process, both scientific and programmatic, has been strengthened, resulting in rigorous research protocols; and,

- Open communication and collaboration between and among the TSNRP, the military nurse researchers, and the Nurse Corps leadership is resulting in a greater appreciation for, and utilization of, the research process.

Five initiatives were identified by the group as areas in which to concentrate military nursing research activities: the development of a strong and formal marketing campaign; the mentoring of novice researchers; the funding of small studies; *Grab and Go* operational research; and, continued focus on the TSNRP's deployment-specific research priority.

2002 Testimony Before the Senate Appropriations Committee, Subcommittee on Defense. During 2002, each Nurse Corps Chief and Director, in submitted written testimony for the Subcommittee on Defense, Senate Appropriations Committee, cited the value of the TriService Nursing Research Program to military nursing practice. In his testimony, the Army Nurse Corps Chief, Brigadier General William Bester stated: **support of the TriService Nursing Research Program has resulted in many advances in caring for our Nation's most precious commodity - our soldiers, their family members, and the deserving retiree population.** And, the Air Force Nurse Corps Director, Brigadier General Barbara Brannon testified that: **the continued financial support of the TSNRP enabled us to fund valuable studies on new technologies in the patient care environment and on military nursing practice models.**

Pre-Grant Award Activities.

Regional Research PODs Support the TSNRP. Regional Research PODs, initially created during 2001 through the TSNRP's Resource Center, are located across the United States, to include Hawaii. They are led by Ph.D.-prepared military nurse scientists. The Research PODs aim to: 1) facilitate military nursing research across the Services; 2) provide mentorship to masters-prepared nurse researchers; 3) support programs of nursing research within, and across, the Services and Military Medical Centers; 4) share research resources; 5) foster collegial support for military nurses interested in conducting research; and, 6) facilitate the utilization of research findings in practice. The Southern Research POD updated, and recently implemented, guidelines for ventilator-associated pneumonia in five ICUs at two Medical Treatment Facilities, one Army and one Air Force. The use of

these guidelines should result in a reduction in infection rates, length of stay, and associated costs. The Northwest POD has completed a systemic data collection before implementing evidence-based practice guidelines at four Military Treatment Facilities for maternal child care, which should ultimately result in improvements in patient and systems outcomes.

2002 Grant Writing Camp. The TSNRP Resource Center for Excellence in Military Nursing sponsored a two-phase summer workshop during 2002, to expand the grant-writing skills of military nurse researchers. Phase I included a five-day workshop that featured a balance between lectures, small group discussion, one-on-one sessions with faculty, and homework to support the improvement of the participants' draft proposals. Phase II offered a two-day workshop intended to increase the participants' understanding of the scientific review process through a peer review of the participants' research proposals, to include primary, secondary, and faculty proposal reviews. Comments from the 2002 Grant Writing workshop participants included: **Thank you for this opportunity... This is the most comprehensive information I have had since my doctoral program... The speakers were all wonderful...** and, **I think the program was perfect... I wish I could attend again for an intellectual *jump start*.** Four Grant Writing Camp participants subsequently submitted their proposals for Fiscal Year 2003 funding.

New Funding Award Categories. New funding award categories included: the *Research Fellow Award*. This award is intended to facilitate training of military nurses interested in research and the expansion of research skills of experienced military nurse researchers; the *Fast Track Award*. This award is intended to facilitate the rapid implementation of short-term research that responds to Service-specific questions or concerns.

Additional Call for Proposals. The TSNRP announced the addition of an annual late winter call for research proposals. This second call for proposals will extend the opportunities for funding to better meet the needs of the increasingly mobile military nurse researchers, whether through change of duty stations, or deployment.

Three-Tiered Proposal Review.

Review for Scientific Merit. All proposals submitted to the TSNRP for funding are subject to rigorous peer review designed to evaluate the scientific merit of the research proposals. Nurse scientists selected from the health care community for their research experience, publications, and work experience, comprise the review panel. Military reviewers evaluate the proposals for the feasibility of implementing the research in a military environment.

Review for Programmatic Merit. Following the scientific merit review, the TSNRP Advisory Council, comprised of one representative from both the Active Duty and Reserve Components from each branch of the military Services, conducts a programmatic review. Council members assess the likelihood that the proposed research will meet TSNRP goals and objectives.

Awarding of Grants. Final funding decisions are based on scientific and programmatic evaluations; grant awards are made by the TSNRP Executive Board of Directors, the Corps Chief, and Directors of the three Nurse Corps.

Grant Award Activities.

Grant Management Workshop. Since 1998, the TSNRP has provided a three-day grant management workshop for newly funded principal investigators; and, since 2001, project directors. The workshop is designed to provide education on Federal, DoD, and USU regulations and requirements, as well as practical information on managing a research grant. Presentations at the 2002 workshop included didactic sessions, case studies, and small group discussions in areas such as: grant agreement regulations and cost principles; Federal and local institutional review board (IRB) requirements; research integrity; copyright laws; ethics in research; the investigator's role and responsibilities; assistance visits; reporting requirements; and, budget management. The workshop provides an opportunity for investigators to meet the TSNRP staff and to establish a working relationship; it can also be a venue for the investigators to network with other military nurse researchers from their own and other Services. The response to the workshop, which was well received by the TSNRP investigators, was outstandingly enthusiastic.

A Total of 230 Research Proposals Have Been Funded by TSNRP. Since its establishment in 1992, a total of 230 research proposals have been funded by the TSNRP. During Fiscal Year 2002, 17 military nurse researchers received funding in areas including: nursing practice during operations other than war and air evacuation; development of a military nursing outcomes database; quality of life assessment; retention of military nurses; fitness among National Guard personnel; STIs and pregnancy prevention during deployment; psychosocial adaptation to pregnancy; competency skills identification; effect of dopamine on diaphragm fatigue; care coordination for profiled soldiers; military hospital outcomes; educational strategies for chemical warfare; and, musculoskeletal injuries among Army medical department personnel.

Grant Management. Two full-time grant managers provide routine monitoring and timely assistance for over 60 active research grants. Investigators receive assistance from TSNRP grant managers for a myriad of issues, including: requests for changes in research design and study personnel; additional funding and extensions to the study period; disposition of equipment; monitoring and tracking of regulatory compliance and human subject protection training; and, reviewing progress of the research.

The TSNRP Web Site. The TSNRP maintains an active web site, <*www.usuhs.mil/tsnrp*>, which provides the investigators with current information on opportunities for dissemination; application eligibility, requirements and forms; previously funded TSNRP research and findings; references and links to related web sites; and, Resource Center activities. More than 11,000 *hits* have been logged since a counter was placed on the site in early 2002.

Post-Grant Award Activities.

Publication Workshop. The TSNRP Resource Center sponsored a one-day publication workshop following the May 2002 Phyllis J. Verhonick Nursing Research Course in San Antonio, Texas. The workshop featured lectures by two nationally renowned authors and TSNRP-funded investigators and an editor from the *Critical Care Nurse Journal*. Workshop topics included: the importance of publishing; improving writing and editing skills; authorship issues; dealing with rejection; and, targeting the right journal for a manuscript. Participants with manuscript drafts also met with a workshop instructor for one-on-one review and assistance. Three manuscripts from the workshop are currently in review and/or in press with various publishers.

Dissemination of Research Findings.

Publications. During 2002, 15 publications from TSNRP-funded research appeared in peer-reviewed journals, which included: the *American Journal of Epidemiology*; *Biological Research for Nursing*; the *Journal of the American Psychiatric Nurses Association*; the *Journal of Clinical Psychology*; the *Journal of General Internal Medicine*; the *Journal of Social Behavior and Personality*; the *Journal of Nursing Administration*; the *Journal of Nursing Scholarship*; *Obstetrics and Gynecology*; *Oncology Nursing Forum*; *Nursing Administrative Quarterly*; and, the *Nursing Ethics Journal*.

Poster Presentations. More than 40 papers and posters of TSNRP-funded research were presented at major research and clinical conferences throughout the United States and abroad, to include: the *12th Biennial Phyllis J. Verhonick Nursing Research Course* held at San Antonio, Texas; the *108th Meeting of the Association of Military Surgeons of the United States (AMSUS)* held in Louisville, Kentucky; the *Karen Reider Poster Session, AMSUS,* in Louisville, Kentucky; the *State of the Science Congress* held in Washington, D.C.; the *Southern Nursing Research Society* in San Antonio, Texas; the *American Heart Association* in Chicago, Illinois; the *Aerospace Medical Association* in Toronto, Canada; the *15th Annual Pacific Nursing Research Conference* in Honolulu, Hawaii; the *Academy of Health Services Research* in Washington, D.C.; and, the *Uniformed Nurse Practitioner Association for Research Competition* held in Reno, Nevada.

Research Utilization/Evidence-Based Practice. The TSNRP, through the Resource Center's Regional PODs, supports the integration of research utilization and evidence-based practice into nursing practice. To that end, the Resource Center sponsored a one-day workshop, *A Model of Evidence-Based Practice in Clinical Practice Setting*, held in June of 2002, at the Naval Hospital in Portsmouth, Virginia, and again at the National Naval Medical Center in Bethesda, Maryland. The workshop was in collaboration with the Walter Reed Army Medical Center in Washington, D.C. Doctor Marita Titler, nationally and internationally recognized for her expertise in research utilization, provided participants with fundamental concepts of research utilization as well as practical tips for instituting Research Utilization Programs in Medical Treatment Facilities. Participants at both workshops represented clinicians, researchers, and nursing leaders from the Army, Navy and Air Force. These workshops, combined with the support of the Research PODs, have stimulated a grass roots movement among military clinicians, educators, and middle managers to reevaluate what ultimately results in the highest quality of nursing care for military beneficiaries.

Future Direction. The future of military nursing research is largely in the control of the military nursing community. ***Advancing the practice of military nursing and its response to the requirements of military readiness and deployment remains both the mission and the priority of military nursing research***. The TriService Nursing Research Program serves as a catalyst for stimulating the synergistic endeavors between the three military nursing Services in both the Active and Reserve Components, to advance the science of military nursing. For the Year 2003 and beyond, the TriService Nursing Research Program *stands ready* to support those endeavors.

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III. OPTIMIZATION

Four USUHS programs generated over $24.6 million of cost avoidance for the Department of Defense in Fiscal Year 2002: 153 USUHS faculty members provided 141,842 hours of *clinical and consultative services* at military treatment facilities (MTFs) for a documented cost avoidance of $10,254,109; USUHS Office of Continuing Education for Health Professionals (CHE) *sponsored continuing medical education* for 499 activities with an attendance of 4,072 physicians; provided continuing nursing education for 52 activities with an attendance of 2,458 nurses; and approved 17 Category II (non-ACHE) continuing education credit for 592 members of the American College of Healthcare Executives for a documented cost avoidance of $1,861,865; the USUHS Military Training Network (MTN) generated a documented total of $11,424,909 in cost avoidance by facilitating DoD's ability to *provide essential medical readiness training* for 179,150 defense personnel; the USUHS Graduate Education Programs generated $1,050,000 of cost avoidance when 35 *uniformed officers received advanced degrees* from the University.

- USU Cost Avoidance Fact Sheet, May 2002.

I wish to convey my congratulations to Dr. Abdellah and the entire staff of the Graduate School of Nursing of the Uniformed Services University of the Health Sciences. Your outstanding performance was recently recognized by the National League for Nursing Accrediting Commission (NLNAC), in the report granting continuing accreditation for an impressive eight additional years. I am particularly gratified by the following statement: "This program provides an outstanding model for preparing advanced practice nurses for military service and care of patients in crisis and disaster situations. This program is on the cutting edge of cost-effectively incorporating advanced technology into the curriculum and instruction process to produce a highly competent practitioner. This program can serve as a model to advance nursing education, practice and scholarship as nursing moves into care of the global community." The NLNAC conducted an exhaustive review before coming to the above conclusion, reviewing many documents, attending classes, and

interviewing numerous staff, students and other stakeholders. One of the latter groups, the Federal Nursing Chiefs, was particularly complementary: "We are excited to see the quality of the students who graduate from this program..they are exceptional leaders." This is a truly outstanding review of the school, which reflects great credit upon your entire staff and our Military Health System. Congratulations to all for a job exceptionally well-done!

- **The Honorable William Winkenwerder, Jr., M.D., The Assistant Secretary of Defense (Health Affairs)**, Letter to USU, January 24, 2002.

The General Accounting Office documented in a 1995 report that USUHS, when compared to other sources of military physicians, is an economical source of career medical leaders based on expected years of service and all federal costs; in addition, the Joint Meritorious Unit Award granted to USUHS by the Secretary of Defense on December 11, 2000, officially recognizes that USUHS annually generates over $22 million in documented cost avoidance for the Department of Defense through the provision of clinical services by the USUHS faculty in the military treatment facilities and the University's continuing education programs.

- Resolution Number 71, The Eighty-Fourth National Convention of **The American Legion**, August 27-29, 2002.

The USUHS Program Manager for the SmartPay Travel Card, participated in our Best Practices Joint Session. He shared the University's tools for success with Agency Program Coordinators from all components of the Department of Defense, military as well as civilian. Because of this leadership and unbiased focus on the responsible use of a convenient, cost effective and efficient travel management tool, USUHS enjoys an enviable "benchmark" setting reputation ahead of the other Department of Defense Agencies and military departments.

- **Christopher D. Slack, Government Card Executive, Bank of America**, Letter to USU, September 17, 2002.

As provided to congressional committees during 2002 by the Navy Surgeon General: the median length of non-obligated service for physician specialists in the Military Health System, not including USUHS graduates is 2.9 years, and the median length of non-obligated service for USUHS physician specialists is 9 years. Therefore, the Reserve Officers Association of the United States urges the Congress to retain USUHS to ensure the continued (cost-effective) availability of career-oriented military physicians for the Uniformed Services.

- Resolution Number 02-28, The National Convention of **The Reserve Officers Association of the United States**, June 22, 2002

The University has significantly expanded its academic offerings in graduate and post-graduate medical education, to include programs in tropical medicine, emergent infectious diseases, public health and weapons of mass destruction. The University has assumed increasing (cost-effective) roles in the oversight and administration of the Military Training Network, continuing health education, and the Tri-Service National Capital Area Consortium. The University also seeks to exploit new technologies in medical education and has created the Biomedical Informatics Department to serve as a focal point for distance education and other cutting-edge technologies.

- Fiscal Year 2006 Military Construction Project Data, **Defense Medical Facilities Office, Office of the Secretary of Defense**, December 2002, page 2.

In response to multiple requests, USUHS faculty have developed and delivered cost-effective training programs for other Federal agencies, medical institutions, and public safety organizations on terrorism response and WMD. For example, the Administrative Offices of the U.S. Courts and the U.S. Marshals Service requested that the USUHS CCRC (Casualty Care Research Center) design and execute a train-the-trainer program in Chemical/Biological Response. Today, this program continues to assure that there are well-trained WMD first responders in every Federal courthouse in the country. In addition, AFRRI regularly conducts the Medical Effects of Ionizing Radiation (MEIR) program for the military medical community. During the past year, 757 students from all Services completed the MEIR course.

- **USU Board of Regents**, Report to the Secretary of Defense, June 1, 2002, pages 1-2; Appendix A, page 8.

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Clinical and Consultative Services to the MHS

III. THE GRADUATE SCHOOL OF NURSING

The focus of the programs offered at the University is determined by the needs of the Uniformed Services during times of peace and war, as well as other contingencies. The unique component that is added to the programs is the element of operational readiness. There is a good reason why the school's motto is *Learning to Care for Those in Harm's Way*. A certified nurse anesthetist from USU can function not only under normal circumstances, but is also prepared to practice in more austere settings should deployment occur.

- "A Guide by their Side," Nursing Spectrum, Volume 12, No. 21DC, October 21, 2002, page 7.

ESTABLISHMENT

Legislative and DoD Direction. The establishing legislation of the University, the Uniformed Services Health Professions Revitalization Act of 1972 (Public Law 92-426), and DoD Directive 5105.45, both direct that USU must meet the requirements of medical readiness and expand to meet the future needs of the Uniformed Services. In accordance with those directives, the Graduate School of Nursing (GSN) was established at USU. During the Fall of 1992, the Department of Defense received the authority, along with an appropriation, to begin planning for the implementation of a nurse practitioner education program at USU. The intent of the legislation was to meet the needs for advanced practice nurses in the Uniformed Services (the Army, Navy, Air Force, and the United States Public Health Service (USPHS). The Federal Nursing Chiefs initially identified the need for advanced practice nurses in two areas: Family Nurse Practitioner and Nurse Anesthesia. In 1993, Congress directed the initiation of a demonstration program for the preparation of family nurse practitioners for the Uniformed Services. By February 26, 1996, the GSN had received official approval and recognition from the Office of the Assistant Secretary of Defense for Health Affairs.

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GSN Meets Legislative and DoD Mandates. In compliance with Congressional legislation and in direct response to the needs of the Federal Nursing Chiefs and the Uniformed Services, the GSN initially established a Master of Science in Nursing Degree Program with two options in Nurse Anesthesia and Family Nurse Practitioner. These two GSN options were implemented to alleviate shortages of health care providers in the Uniformed Services, as identified by the Federal Nursing Chiefs. Graduates receive the Master of Science in Nursing (MSN) Degree and are qualified to test for national certification in their specialties.

The first students were admitted into the GSN Family Nurse Practitioner option in August of 1993; and, the first students matriculated into Nurse Anesthesia in June of 1994. Family Nurse Practitioner has had eight graduating classes from 1995 through 2002, for a total of 82 graduates; Nurse Anesthesia has had seven graduating classes beginning with the Class of 1996 through the Class of 2002 for a total of 94 graduates. The

GSN Master Completion option has had a total of 7 graduates. Thus, from its first graduation in 1995 through March of 2003, a total of 183 MSN Degrees have been granted by the USU GSN. GSN alumni have excelled in achieving national certification, with greater than a 97 percent pass rate on the first attempt.

Today, the GSN is unique among the Nation's nursing programs as it educates students to support the health care mission of the Military Health System (MHS) during peace, war, disaster, and other contingencies. GSN students are prepared to contribute to the peacetime health care delivery systems of the Uniformed Services and to provide unique support during combat operations, civil disasters and humanitarian missions; they are prepared to serve under austere and harsh conditions in field hospitals, on ships, and during air evacuations. For example, GSN alumni continue to support operations in South East Asia, the Persian Gulf, and the Balkans. The GSN curricula include an increased focus on leadership; and, rotations with senior health care executives provide opportunities for increasing the students' understanding of health care policy and for networking with uniformed and professional leaders. GSN alumni have published articles, presented at national conferences, completed post-graduate courses, and are enrolled in doctoral studies. Along with the GSN faculty, GSN alumni are recognized leaders within their specialties and actively participate in national and international nursing organizations.

To meet its legislative and DoD directives, the GSN's *internal community of interest* extends throughout the University. It includes the executive staff at USU and the students, faculty, research, and administrative personnel within the GSN and the School of Medicine (SOM). The GSN faculty and students provide meaningful contributions to USU committees and collaborate on projects throughout the GSN and the University. The Federal Nursing Chiefs represent one of the GSN's *external communities of interest*. The Federal Nursing Chiefs, serving as a Board of Advisors to the GSN since 1993, meet at least twice a year to provide and receive information on the GSN's curricula and program effectiveness. Information provided by the Service Chiefs is incorporated into the planning of the GSN during continuous review and revision of its mission, philosophy, objectives and curricula. (**NOTE:** The Federal Nursing Chiefs include representatives from the Army, Navy, Air Force, Public Health Service, and the Department of Veterans Affairs. The American Red Cross, although not a Federal agency, is an honorary representative on the GSN Nursing Board of Advisors.) The GSN's external communities of interest also include USU alumni, uniformed supervisors of GSN alumni, and members of the uniformed and civilian nursing communities, the Departments of Defense and Veterans Affairs, and the United States Congress.

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MISSION

The Accrediting commission pointed out in its summary findings to the University that the mission and philosophy of the USUHS Graduate School of Nursing (GSN) is grounded in the University's mission and in the mission of the Uniformed Services. The GSN Curriculum is designed to be specific to the unique mission of military service nurses: to serve in times of war and peace.

- **The Honorable Daniel K. Inouye, the United States Senate**, Congressional Record, Tribute to Dr. Faye Glenn Abdellah, May 15, 2002, pages S4488-S4489.

Mission Direction. The Mission Statement for the GSN is derived from the overall Mission Statement of the University and is in compliance with DoD Directive 5105.45. The initial mission of the GSN included five major objectives: 1) the GSN is dedicated to providing quality education to prepare advanced practice nurses, at the graduate level, in the specialties of Nurse Practitioner and Nurse Anesthesia; 2) the GSN must produce graduates who are both qualified for, and dedicated to, the delivery of primary care (acute and chronic care), including anesthesia services, to active duty members of the Uniformed Services, their families, and all other eligible beneficiaries during peace, war and other contingencies; 3) the GSN is also directed to provide the Nation with graduate nursing professionals who are willing to commit themselves to a career of service in the Department of Defense and the United States Public Health Service; 4) the GSN must serve the Uniformed Services and the Nation as an innovative, responsive program with a world-wide perspective for leadership, education, research, and service; and, 5) the GSN must develop advanced practice nurses, with unique experience and skills, who can respond to the special requirements of the Uniformed Services for disaster relief, humanitarian intervention, and military readiness.

The mission of the GSN is in full compliance with the goals of the Assistant Secretary of Defense for Health Affairs. The GSN remains dedicated to providing a quality and unique education that prepares nurses to deliver care and services to all beneficiaries of the Uniformed Services during peace, war, and other contingencies. The GSN faculty and staff provide the Nation with graduate nursing professionals dedicated to a career of service for the Department of Defense, the USPHS and other Federal Health Systems.

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Mission Accomplishment. In the short time since 1993, and with the strong cooperation and support of the Federal Nursing Chiefs, the GSN has: 1) recruited a qualified faculty; 2) successfully established curricula for the Family Nurse Practitioner and Nurse Anesthesia options in its MSN Program; 3) identified accredited clinical practice sites and completed memoranda of understanding (MOUs) for those relationships with 21 military treatment facilities (MTFs) to include an additional 111 non-DoD, Federal, and civilian clinical sites; 4) developed and implemented an administrative structure that provides for faculty and student participation in the overall governance of the GSN; 5) submitted self-studies and received accreditation for its

MSN Degree Program from three professional accrediting entities (status of recent accreditations follows); 6) received approval from Health Affairs, Office of the Secretary of Defense, on February 26, 1996; 7) initiated, implemented, and continuously reviewed the outcomes evaluation process for its academic program; for example, on February 26, 2002, credentialing scoring information released by the American Nurse Credentialing Center's Commission on Certification showed that of the 15 GSN Family Nurse Practitioner graduates who took their certification examination, all 15 passed with a mean score of 123.3, the highest ever achieved; 8) initiated curricula and governance reviews; 9) collaborated with the Department of Veterans Affairs and utilized new technology to establish distance learning options, which resulted in the DoD's first virtual graduation at the advanced level; and, 10) granted Masters of Science in Nursing Degrees to 183 advanced practice nurses, with over 80 percent of its graduates remaining on active duty.

The Implementation of two Post-Master Options. In addition to the establishment of its two traditional MSN Program options of Family Nurse Practitioner and Nurse Anesthesia, the GSN has also implemented a Post-Master Family Nurse Practitioner option and the Department of Veterans Affairs (VA)/Department of Defense (DoD) Post-Master Adult Nurse Practitioner Distance Learning Program (ANP). The Post-Master Family Nurse Practitioner Certificate option began in 1999, primarily in response to, and in support of, the decision by the Army Nurse Corps to transition from a specialty nurse practitioner to a family nurse practitioner focus. During the transition, the number of students varied, resulting in the awarding of two to four certificates per year; as of March 2003, a total of 15 Post Master Certificates have been granted.

The VA/DoD ANP Program was initiated in collaboration with the Department of Veterans Affairs. The VA had identified a requirement to increase its number of adult nurse practitioners throughout its health care system, which includes approximately 173 Medical Centers and 771 ambulatory care and community-based clinics. The student body is composed of civilian VA employees who maintain their full-time responsibilities at the VA facilities while participating in the program. The curriculum incorporates video teleconferencing technology as the primary teaching tool, with faculty conducting GSN-designed lecture-based instruction. Students participate from VA medical centers located across the United States, Puerto Rico, and the United States Virgin Islands; following the third graduation, the GSN will have awarded 70 certificates (this program is covered in more detail at the end of this section of the Journal).

The Development of a Clinical Nurse Specialist Option.

Background. The first Clinical Nurse Specialist Program was established in 1954 at Rutgers University; it was designed to prepare nurses at the Master Degree level who would be dedicated to improving patient and family care in the face of significant technologic advances in cardiac and pulmonary surgery. Early Clinical Nurse Specialists were known by a variety of titles, including nurse clinician, clinical associate, liaison nurse, clinical supervisor, and clinical nurse specialist. By 1970, the core function of the role of the Clinical Nurse Specialist was identified as a graduate-prepared nurse who was able to: 1) assess the nursing needs of patients and develop nursing care plans based on the knowledge of nursing, medical, biological, and social sciences and generally direct the provision of nursing care in the patient unit; 2) consult with others, as needed, and make appropriate use of available administrative and organizational channels in support and maintenance of nursing performance; 3) establish and evaluate standards of clinical nursing practice in a unit; 4) teach

patients and nursing staff on a unit how to improve clinical outcomes; and, 5) introduce nursing practice innovations and refine nursing procedures and techniques and investigate specific nursing practice problems.

Today, there are approximately 58,000 clinical nurse specialists in the United States. They provide care in a variety of clinical specialties in both in-patient and out-patient settings. According to the Division of Nursing, National Sample Survey of Registered Nurses, Clinical Nurse Specialists employment breaks down as follows: *50.3 percent - Hospitals* (24.4 percent have no direct patient care and work primarily in staff development and administration; 46.6 percent work as part of in-patient units; 19.1 percent work as part of out-patient units; and, 9.8 percent work in 'other patient care areas'); *19.5 percent - Nursing Education*; *13.4 percent - Community Health*; *9.5 percent - Ambulatory Care*; and, *7.3 percent - Other* (Private Industry, Pharmaceuticals, etc.).

In June of 2001, a need for a Clinical Nurse Specialist (CNS) option in the GSN Master of Science in Nursing Program was identified by the Federal Nursing Chiefs. A feasibility study and the development of a pilot program were completed and accepted by the Federal Nursing Chiefs. In January of 2002, **Founding Dean Faye Glenn Abdellah** and the GSN Associate Dean presented the CNS option to the USU Executive Committee; that request was approved by the Surgeons General of the Army, Navy and Air Force. The CNS option was then approved by the USU Board of Regents during its meeting held on February 27, 2002. Significantly, the GSN will welcome its Charter Class of eight students in the GSN Perioperative CNS option in June of 2003.

The Development of a Doctoral Program in Nursing. To meet an evolving requirement for nursing research relevant to the MHS, the USPHS, and other Federal Health Systems, in March of 2002, with the support of the Federal Nursing Chiefs, the GSN began the process for the development of a Doctoral Program in Nursing. The GSN Doctoral Program will prepare nurses to be uniquely qualified as leaders in research, education, and clinical practice and serve in the MHS, USPHS, and other Federal Health Systems. In the context of concerns over patient safety, nursing research must be conducted to assess the linkages between nurse staffing, safety, and outcomes assessment throughout the TRICARE Management Activities. Additionally, with the well-recognized national shortage of both staff nurses and nursing faculty, GSN doctoral graduates will be prepared to augment faculty requirements in educational settings and to provide researchers for studying health care in the MHS, USPHS, and other Federal Health Systems.

In June of 2002, following the arrival of the new GSN Dean, **Patricia A. Hinton Walker, Ph.D., RN, FAAN**, parallel planning was initiated to review the existing curriculum to ensure the supportability of new programs. Following an analysis of capabilities, a curriculum was designed that would be responsive to the Federal Nursing Chiefs and flexible enough to easily adapt to the changing requirements of the Uniformed Services. The Doctoral Program in Nursing Science includes a common core of required courses and electives. The program consists of five areas of concentration: 1) *Nursing Knowledge*; 2) *Research Methods, Statistics, and Designs*; 3) *Cognates*; 4) *MHS and Federal Health Care Policy and Issues*; and, 5) the *Dissertation*. Dean Hinton Walker presented the GSN Doctoral Program to the USU Board of Regents and received formal approval for the establishment of the Doctoral Program at the BOR meeting on October 24, 2002. In addition, the GSN held inclusive focus sessions to determine both the interest and support for its proposed doctoral program, to include the initiation of steps for the enrollment of its Charter Class during 2003.

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GSN Nursing Philosophy.

I pledge myself to faithfully practice the profession of nursing. I recognize that with higher learning comes greater responsibility: first and foremost, to those placed in my care; to the advancement of nursing science; and to the promotion of the nursing profession. I will strive for personal and professional growth through empirical knowledge and within the highest moral and ethical standards of research. I will remember the long and prestigious traditions of nursing, dating from the early battlefields to the diverse professions of today; and upon this foundation I am called to build. Whether caring for those in my own country or in a foreign land, I will not compromise their safety or dignity, but instead will care for them within the highest standards and practices of my profession.

- From the Oath taken by each new class of students at the GSN; the oath, developed by the Student Advisory Committee with input from the Federal Nursing Chiefs, was revised during the 2002-2003 Academic Year.

The philosophy of the GSN conforms with the mission and goals of the USU Strategic Plan. The GSN philosophy is built on a foundation of nursing theory, research, and advanced practice, which fosters critical thinking and a vision for the future health care requirements of the Uniformed Services. The GSN community believes that graduate nursing education builds on the foundation of the undergraduate nursing education already completed by the uniformed students. With that in mind, the GSN provides the Nation with nurses prepared at the Master Degree level, who pursue learning experiences that will increase the breadth and depth of their knowledge base and enable them to specifically address the special needs of uniformed health care. The GSN prepares its students for collaborative and autonomous advanced practice roles with an emphasis on: health promotion and disease prevention (readiness); management and delivery of primary health care to families and individuals across the life span; case management for the chronically and stable acutely ill; anesthesia service; administration; and, unique expertise in emergency preparedness and military medical/nursing humanitarian assistance. Also, GSN students achieve an advanced level of knowledge to perform and provide leadership as uniformed officers in a joint service environment. And finally, GSN graduates are prepared to participate in research or studies that will advance the Uniformed Health Profession and improve the practice of nursing as well as the welfare of patients throughout the Uniformed Health Systems.

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ACCREDITATION

Accreditation Granted by the National League for Nursing Accrediting Commission.

The Uniformed Services University of the Health Sciences Graduate School of Nursing (GSN) has met and exceeds all criteria for continuing accreditation. This program provides an outstanding model for preparing advanced practice nurses for military service and care of patients in crises and disaster situations.

- Final Report of the National League for Nursing Accrediting Commission dated March 18, 2002, granting full accreditation to the GSN for the maximum term of eight years.

Background. The University is accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools. The GSN is accredited by the National League for Nursing Accrediting Commission (NLNAC) and the Commission on Collegiate Nursing Education (CCNE). In addition to accreditation from the NLNAC and the CCNE, the MSN option in Nurse Anesthesia is also accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs (COA); and, the MSN Family Nurse Practitioner option meets, or exceeds, all standards established by the National Organization of Nurse Practitioner Faculties (NONPF).

In December of 1996, the USU GSN Master of Science in Nursing Degree Program was evaluated for accreditation by the National League for Nursing (NLN) Board of Review for Baccalaureate and Higher Degree Programs. The NLN Board of Review voted to grant accreditation to the USU GSN Master Degree Program and scheduled its next visit for reaccreditation during 2001; during 2000, the GSN began the preparation for its required Self-Study and Site-Visits.

Site Visit and Final Report of the NLNAC Site Surveyors. On October 30 through November 1, 2001, Site Surveyors from the National League for Nursing Accrediting Commission (NLNAC) visited the USU GSN. The following excerpt is taken from the final report of the NLNAC:

The accreditation visit was announced directly to the Nursing Chiefs of the United States Army, Navy, Air Force, and Public Health Service, who disseminated this information through written memoranda and verbal comments to staff at respective hospitals and installation sites. The Federal Nursing Chiefs met with the program evaluators and gave testimony to their support of the GSN. Comments during the meeting with the Federal Chiefs included: 1) we are excited to see the quality of the students who graduate from this program... they are exceptional leaders; 2) we are directly involved in helping the School understand the type of skills graduates need and find them very responsive to our suggestions; and, 3) we are pleased to see that more faculty are completing doctoral degrees and support the actions taken by the Dean to give faculty release time to make it possible for them to accomplish this goal.

In addition to meeting with the Federal Nursing Chiefs, the NLNAC also interviewed 17 individuals who represented the senior leadership at the University. Group conferences were held with the GSN faculty, the GSN Dean's Council, the GSN students; and the Nursing Chiefs of the Branches of the Uniformed Services and their Deputies. Reviewers attended numerous GSN classes, which included Neuroscience II, Basic Principles of Nurse Anesthesia Practice, and Advanced Health Assessment. Six agencies and USU facilities were visited: the Walter Reed Army Medical Center; the National Naval Medical Center's Family Practice Clinics; the National Capital Area Medical Simulation Center (SIMCEN); the Anatomical Teaching Laboratory at USU; the USU Learning Resource Center; and, the Silver Spring Office Complex of the GSN.

A thorough review of documents included: Policy and Precedent Statements; the VA/DoD Post-Master Adult Nurse Practitioner Distance Learning Program: From Concept to Graduation; the 2000 Edition of the USU Journal,the Program for Design Notebook for the proposed construction at the USU campus; the alumni survey tool and data summaries; the GSN Strategic Plan; Dean Abdellah's Curriculum Vita; Curriculum Vita for the entire GSN faculty; course syllabi and random selections from both the Family Nurse Practitioner and Nurse Anesthesia options; examples of students' scholarly projects; clinical site information; the GSN budget; most recent accreditation and approval reports; minutes from the GSN Faculty Council and Corps Chiefs Meetings; committee reports from the GSN Evaluation, Student Promotion, Student Advisory, and Admissions Committees; and, extensive course materials.

In a letter to the USU President, dated January 24, 2002, **The Honorable William Winkenwerder, Jr., M.D., Assistant Secretary of Defense for Health Affairs**, noted:

> **I wish to convey my congratulations to you, Dr. Abdellah, and the entire staff of the Graduate School of Nursing of the Uniformed Services University of the Health Sciences. Your outstanding performance was recently recognized by the National League for Nursing Accrediting Commission (NLNAC) in its report granting continuing accreditation for an impressive eight additional years. I am particularly gratified by the following statement: This program provides an outstanding model for preparing advanced practice nurses for military service and care of patients in crisis and disaster situations. This program is on the cutting edge of effectively incorporating advanced technology into the curriculum and instruction process to produce a highly competent practitioner... This is a truly outstanding review of the school, which reflects great credit upon your entire staff and our Military Health System. Congratulations to all for a job exceptionally well done!**

Notification of Maximum Accreditation. On March 18, 2002, the Dean of the GSN was formally notified of the action taken by the National League for Nursing Accrediting Commission at its meeting on February 27, 2002: **"The Commission approved the Master Degree Program for continuing accreditation and scheduled the next evaluation visit for the Fall of 2009."** Patterns of strength affirmed by the Commission were identified as follows: the mission of the GSN; the Dean's exemplary leadership and expertise; and, the learning resources. The rationale for granting accreditation for the maximum of eight years was provided in the NLNAC final report:

The Uniformed Services University of the Health Sciences GSN has met and exceeds all criteria for continuing education. This program provides an outstanding model for preparing advanced practice nurses for military service and care of patients in crises and disaster situations. This program is on the cutting edge of effectively incorporating advanced technology into the curriculum and instruction process to produce a highly competent practitioner. This program can serve as a model to advance nursing education, practice and scholarship as nursing moves into care of the global community.

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Accreditation Granted by the Commission on Collegiate Nursing Education.

Background. An accreditation process for nursing programs has been implemented by the American Association of Colleges of Nursing (AACN) Commission on Collegiate Nursing Education (CCNE). The GSN prepared and submitted material to meet the CCNE requirements for preliminary accreditation (a special accreditation for programs that had already received recent national accreditation from other organizations such as the NLN). That material was accepted and the AACN/CCNE granted preliminary accreditation on February 27, 1998. A site visit was scheduled by the CCNE for November of 2001.

Site Visit and Final Report of the CCNE Evaluation Team. On November 14 through 16, 2001, the CCNE Evaluation Team visited the USU GSN. The following excerpts were taken from the final CCNE report:

The GSN faculty members are responsive to the needs of the Federal Nursing Chiefs of the Uniformed Services and are willing to work on program modifications suggested by this external community of interest... Communication between the GSN faculty and the Federal Nursing Chiefs is enhanced by monthly teleconferences and semi-annual meetings. In addition, the GSN has an accreditation committee that works to ensure that consistency and congruence between mission, philosophy, and goals/objectives occur within each program. Students described responsiveness of the faculty in assisting them to meet the objectives of the program and in making alterations as necessary in compliance with the mission of the school and university.

Faculty members have extensive opportunities to participate in the governance of the USU GSN. Faculty identified professional and collegial collaboration between all military and civilian GSN faculty, as well as other faculty at the University level... USU provides a supportive environment for teaching, research, service, and practice... Support is given to faculty for development in areas such as time for clinical practice, service to national organizations, and pursuit of doctoral education... All faculty interviewed articulated an overwhelming commitment to the GSN, the students, and their jobs. They describe a genuine happiness with coming to work each day and preparing the best nurses for military service that can possibly be accomplished.

Students reported participation in GSN program decisions and open communication patterns with all GSN faculty. Their feedback is utilized, and the students reported that they are notified of program changes. Students were very articulate in describing the process used to provide input into program development. The GSN has an excellent educational environment with many state-of-the-art laboratory simulation rooms, library and resource materials, and technological support services. Most classrooms are equipped with technology such as computers or LCD players for PowerPoint presentations and Internet access. A state-of-the-art simulation center is available to the GSN and is equipped with 12 fully-equipped patient treatment rooms with computer, video, and audio equipment. In addition, the simulation center has a distance education teleconference room, a computer laboratory, and an operating room simulation laboratory with manikin simulators and anesthesia equipment, which mimics that used in the military field. Virtual reality anatomy lectures are cutting edge and are available for approximately four anatomic systems. GSN students interviewed verbalized knowledge of the many resources available to them on campus and had overwhelmingly positive comments about the laboratories, libraries, simulation center, and virtual reality programs available to them for study.

The inclusion of an interdisciplinary approach to course implementation and content delivery was evident by interdisciplinary team teaching and collaboration across departments. Opportunities to participate in health care delivery on a global scale are consistent with the mission of the university and the professional standards. Clinical experiences are in a variety of sites, all of which are accredited by JCAHO and COA. All clinical sites support the curriculum and course objectives and provide a variety of learning opportunities for clients across the lifespan. Many of the clinical sites are military-related and further support the socialization of the student into the role of the military Advanced Nurse Practitioner.

CCNE Evaluation Team Process. While visiting the GSN campus, the CCNE Evaluation Team had an opportunity to interview school and university officials; program faculty, clinical preceptors, and students; and, other community representatives. During the site visit, the CCNE Evaluation Team also met with the Federal Nursing Chiefs in their capacity as the Board of Advisors to the GSN. As with the NLNAC evaluators, the Federal Nursing Chiefs once more expressed their strong endorsement and satisfaction with the graduates of the GSN. The Evaluation Team reviewed information provided in the self-study document, as well as other materials provided in the resource room, to include information requested by the Evaluation Team. In addition, the CCNE Team also observed classroom and clinical activities. The Evaluation Team reviewed and provided assessments on the following Standards for Accreditation: Mission and Governance; Program Quality - Institutional Commitment and Resources; Program Quality - Curriculum and Teaching-Learning Practices; and, Program Effectiveness - Student Performance and Faculty Accomplishments. The Evaluation Team's final report found that the GSN had met all Standards and all Key Elements of the Standards with no recommendations for improvement.

Notification of Maximum Accreditation. On May 16, 2002, the Dean of the GSN received official notification from the Commission on Collegiate Nursing Education that **"the CCNE Board of Commissioners acted at its meeting on April 20, 2002, to grant accreditation of the Master Degree Program in Nursing at the Uniformed Services University of the Health Sciences for a term of 10 years, extending to**

June 30, 2012." The next on-site evaluation is scheduled for the Fall of 2011. The following rationale was provided for the maximum accreditation of 10 years without recommendations:

> **At its meeting the CCNE Board determined that the program met all four accreditation standards. The Board additionally determined that there are no compliance concerns with respect to the key elements. The Commissioners express our best wishes as you proceed with tasks important to the future of your nursing program.**

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Accreditation Granted by the Council on Accreditation of Nurse Anesthesia Educational Programs. Of the two MSN Program options, only Nurse Anesthesia requires programmatic accreditation by a separate accrediting agency, the Council on Accreditation of Nurse Anesthesia Educational Programs (COA). In April of 1994, the MSN Program option in Nurse Anesthesia was granted initial accreditation by the COA, permitting the admission of students to Nurse Anesthesia at the GSN. Following an intensive review and site visit by the COA in May of 1997, Nurse Anesthesia at USU received full accreditation through September of 2003. Preparation took place throughout 2002 for the site survey scheduled for April 7-9, 2003. At the conclusion of the site visit, the USU President was informed that all of the NA Program standards were in compliance; formal notification will follow.

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Establishment of an Honor Society of Nursing at USU. The USU Graduate School of Nursing was informed during 1998, that it had been approved by Sigma Theta Tau to sponsor a Nursing Honor Society, with the intent of becoming a Member Chapter of Sigma Theta Tau International. The Honor Society was formally established during graduation exercises in 1999, to recognize the academic excellence of students, the clinical and educational acumen of preceptors, and the contributions of nursing leaders in the community. *Membership in Sigma Theta Tau is the hallmark of a committed nursing professional* and offers great rewards in terms of potential funding for nursing research, networking with professional colleagues, and professional advancement. The 139 members who have been inducted into the GSN Honor Society are representative of the GSN's diverse student body along with senior leaders in nursing from both the military and civilian sectors.

Over the past two years, the GSN Honor Society has co-sponsored a series of women's health programs at the Women in Military Service Memorial at the Arlington National Cemetery. In addition, the Honor Society sponsored a military nursing research colloquium. The application for approval as a Chapter of the Sigma Theta Tau International Honor Society of Nursing was forwarded in the Fall of 2002; and, a site visit from a member of Sigma Theta Tau was conducted in April of 2003. Following the site visit and extensive review of the GSN Honor Society, the Sigma Theta Tau site visitor indicated that her recommendation to the Sigma Theta Tau Board would be positive. Consequently, after review by the Sigma Theta Tau Board and recommendation to the Sigma Theta Tau House of Delegates next Fall, the GSN should be able to plan for a Sigma Theta Tau Charter Initiation Ceremony for a new Chapter in the Spring of 2004.

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MILITARY UNIQUE CURRICULA

The GSN Curricula Respond to the Special Needs of the Uniformed Services.

Background. The USU GSN is unique among the Nation's nursing programs because it educates students to treat and care for both civilian and uniformed personnel in peace, war, disaster, or other situations that occur under austere conditions. There is no other institution better positioned than the GSN to prepare nurses with research, education, and leadership expertise as required by the MHS, USPHS, and other Federal Health Systems. The GSN curricula have been driven by special requirements to meet the missions of the DoD and the USPHS. Common to the GSN academic curricula is subject matter relevant to military health care providers; for example, there are operational readiness components in each course. And, continuous consultation takes place with the Federal Nursing Chiefs during the on-going development and review of the GSN curricula in order to ensure that the special needs of the Uniformed Services are being met by the GSN graduates.

Based on the Federal Nursing Chiefs' initial indications that the career advancement of their officers would be enhanced through the completion of a Master Thesis, the GSN examined the feasibility of the completion of a thesis within the time constraints of its programs. Following an assessment of multiple program components, including a review of the graduating students' research projects and faculty expertise, a Master Thesis, which would become an extension of the charter students' research projects, was made a requirement for all graduating students, beginning with the graduating Class of 1996. However, during 1999, following consultation with the Federal Nursing Chiefs, it was determined that the GSN students could now choose among several types of scholarly projects which include: research culminating in either a written thesis or a publishable paper; a research practicum; and/or, a defined project. Whichever option is chosen, any scholarly project may be completed individually or as a group project. A GSN research committee ensures that each scholarly project meets the Uniformed Services University of the Health Sciences' requirements for a Master of Science Degree.

Another example of the GSN's continuous response to the Services occurred when the Class of 1995 GSN graduates and their uniformed supervisors recommended the inclusion of training for such requirements as suturing, basic laboratory testing, and triage. The GSN faculty agreed and incorporated those procedures into the appropriate GSN courses. The graduates from the Family Nurse Practitioner option also recommended the addition of Anatomy and Cell Biology into the curriculum, which occurred during 1999. And, with the recommendation of the GSN students and faculty, during 2000, objective clinical examinations using simulated patients were implemented throughout the core courses of the GSN MSN Program. Also, as discussed earlier, the GSN developed an MSN Degree option for a Clinical Nurse Specialist at the request of the Federal Nursing Chiefs.

The GSN also responds to the impact of the current nursing shortage across the Nation; its evolving programs at both the Master and Doctoral Degree levels serve as incentives for the retention of uniformed nurses in the MHS and USPHS to serve as practitioners, nurse educators, or researchers. A critical, nation-

wide nursing shortage is no longer predicted as a possibility; it has arrived. The following information from the American Association of Colleges of Nursing captures the impact of the current nursing shortages on health care delivery and medical readiness in both the civilian and uniformed sectors of our Nation:

> According to the latest projections from the United States Bureau of Labor Statistics published in the November 2001, Monthly Labor Review, more than one million new and replacement nurses will be needed by 2010. The U.S. Department of Labor projects a 21 percent increase in the need for nurses nation-wide from 1998 to 2008, compared with a 14 percent increase for all other occupations (<*www.bls.gov*>);
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> According to a survey by the American Association of Colleges of Nursing, *2000-2001 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing*, nursing schools turned away 5,823 qualified applicants across the United States due to insufficient number of faculty, clinical sites, classroom space, clinical preceptors, and budget constraints. More than a third (38.8 percent) of schools that responded pointed to faculty shortages as a reason for not accepting all qualified applicants into entry-level baccalaureate programs (<*www.aacn.nche.edu*>);
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> Graduations from Master and Doctoral Programs in Nursing are decreasing, which translates into a smaller pool of potential nurse educators. According to AACN's *2000-2001 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing*, graduations from Masters Degree Programs were down 3 percent; graduations from Doctoral Programs were down 11 percent (<*www.aacn.nche.edu*>); and,
>
> Higher Compensation in clinical and private sector settings is luring current and potential nurse educators away from teaching. According to the *2001 National Salary Survey of Nurse Practitioners* completed by ADVANCE for Nurse Practitioners magazine, the average salary of a master-prepared nurse practitioner working in his or her private practice was $78,217. In contrast, AACN reports that master-prepared nursing faculty across all ranks earned an average salary of $54,980 (<*www.aacn.nche.edu*> and <*www.advancefornp.com/npsalsurvey.html*>).

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Advanced Nursing Education in a Joint Service Environment. GSN Students are provided military unique education in the joint service environment of the University, which includes the Army, Navy, Air Force, and the United States Public Health Service (USPHS). Graduates are prepared to deliver care in a variety of settings and communities, both nationally and internationally. GSN graduates are equipped to contribute to the Uniformed Services' peacetime health care delivery systems and to provide military and public health support during combat operations, civil disasters, and humanitarian missions. They may serve in clinics or hospitals, the combat zones of theaters of operations under austere and harsh conditions, on Navy ships, or in isolated areas of the United States and other countries lacking health care providers. The GSN faculty and staff believe that the placement of the GSN within the interdisciplinary boundaries of the University is a distinct strength. The QuadService environment of the USU offers a unique blend of interactive didactic and

clinical experiences, which support the preparation of competent advanced practice nurses for service to the Nation during international conflict, in peacetime, and wherever humanitarian services and support for disaster relief are required. The multi-Service clinical practice sites of the GSN include: 21 military treatment centers (MTFs); and, 111 non-DoD, Federal, and civilian hospitals and primary care health care clinics generally located in the Washington, D.C. area.

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GSN Students Understand the Structure of a Joint Environment. To meet the readiness requirements of the Military Health System, it is essential that professional health care officers are familiar with the structure of a joint environment. Under the leadership of the USU Brigade Commander and the GSN Commandant, the uniformed students, faculty, and staff assigned and reporting to the GSN participate in all activities and events as they would in any other command of the Uniformed Services. Regular military formations are held; physical fitness exercises, standards, and testing are adhered to; performance evaluations are completed; and, uniformed personnel in the GSN are trained in the appropriate uniformed programs and customs. The students of the GSN participate in joint-service educational experiences throughout the MSN Degree Program and, as a result, they become familiar with the regulations, procedures, and vocabularies of the QuadServices' health care systems. The GSN Commandant provides mentorship and guidance related to leadership, military customs and traditions, administrative requirements, and protocols to all of the uniformed officers enrolled in the GSN.

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Medical Readiness Training.

Because of the unique practice requirements for USU graduates as uniformed officers, the GSN faculty has included an additional terminal objective heading, "Readiness," not included in the American Association of Colleges of Nursing (AACN) "Essentials" document. *Readiness* was added to focus on specialized competency objectives encompassing the ability of the USU graduates to function during deployment or humanitarian health care circumstances. GSN terminal objective 6, which refers to the readiness of graduates to function during deployments or humanitarian health care circumstances, states that graduates will "adapt readily to changes in individual and environmental health care demands." To accomplish this objective, the GSN developed a core course, Operational Readiness, to provide mobility and field training. Lectures address the setup of field hospitals, the function and utilization of Navy hospital ships, aeromedical evacuation, and the use of telemedicine in the field.

- *IX, Graduate Education in Nursing*, Subcommittee Report, Middle States Association of Colleges and Schools (MSA) Self-Study, submitted in October of 2002, pages 2 and 3.

As of April 2003, 54 uniformed officers are enrolled on campus in the GSN (21 in Family Nurse Practitioner; 4 in Post-Master Nurse Practitioner; and, 29 in Nurse Anesthesia). These 54 commissioned officers represent the Services as follows: Army - 27; Navy - 7; Air Force - 18; and, Public Health Service - 2. These GSN students receive operational medicine and military relevant material and training throughout the GSN curricula; as such, readiness is identified as one of the GSN's outcome goals. The GSN program of study is designed to: prepare students to adapt readily to changes in individual, system and environmental health care demands; provide safe care under austere conditions; and, be flexible in caring for patients with unusual clinical presentations through the use of available resources. The program of study for the students has evolved to include additional clinical hours to prepare the GSN graduates for an immediate transition to work settings in either fixed facilities or deployed environments. For example, beginning in April of 2001, GSN students complete a two-day course on Humanitarian Assistance; the Medical Humanitarian Assistance Course is designed to prepare advanced practice nurses for deployment in support of disaster relief and humanitarian missions. Emergency conditions, such as natural disasters, usually involve a humanitarian component and require the commitment of the Uniformed Services, often under austere conditions. The course includes guest speakers who present information on the Federal Emergency Management Agency, Non-Governmental Organizations, chemical-biological warfare, ethics, and epidemiology. The GSN continuously expands its educational programs to address the changing nature or threats caused by weapons of mass destruction. In addition, GSN faculty were represented and participated in an International Coalition of Nursing Leaders that focused on the development of nursing curricula concerned with addressing the aftermath of weapons of mass destruction.

Preparing for the Battle.

As Army Nurse Corps officers in the USU Master Degree Family Nurse Practitioner Program, our education further prepares us to live out our motto - *Ready, Caring, Proud.*

Operation Bushmaster provided a scenario portraying a hostile environment. The week-long exercise (conducted in San Antonio, Texas) **allowed for Advanced Practice Nursing and School of Medicine students to work together in a field environment under simulated battlefield conditions. Seven graduate nursing students, 60 USU medical students, and 11 additional medical students from Japan and the United Kingdom were responsible for triage, management and evacuation of casualties.**

We students found ourselves triaging and aggressively maintaining patient care as second nature. Biological and chemical agents played a much bigger part in our scenarios than we had experienced in previous training. The threat of these weapons was ever-present and a time consuming enemy tactic for all medical personnel that required proactive planning. At other times, both nurses and medical students racked their brains attempting to diagnose infrequently seen diseases, such as meningitis and malaria... Exotic diseases were present in our training scenarios as well. With the assistance of battlefield telemedicine and satellite communication

with stateside facilities, such as the Walter Reed Army Medical Center in Washington, D.C., we were able to describe afflictions and send photos of patients for consultation, diagnosis, and treatment.

- "Caring for Those in Harm's Way," Nursing Spectrum, Volume 13, No. 6DC, March 24, 2003, pages 8-9.

In January of 2003, the GSN faculty arranged an interdisciplinary experience in the ***Military Contingency Medicine Course***. This course, unique to the USU School of Medicine (SOM) curriculum, has focused for years on medicine in a deployed environment and in response to a terrorist attack. The first two weeks of the course are currently devoted to reviewing and expanding basic concepts and manual skills; an Advanced Trauma Life Support (ATLS) Course is also taught. Additional topics in the first two weeks include the management of combat trauma, chemical-biological-radiological (CBR) exposure, environmental injuries, and combat stress. Special sections focus on triage, care of blast injuries, the health care of women in military settings, altitude and diving accidents, pain management, and legal/ethical issues on the battlefield. Prior to the field exercise portion of the course, the GSN and SOM students learn and/or review interventions in a simulated lab setting with mannequins that could "bleed" and "breathe."

Next, the course includes an evaluated field exercise at a training site near San Antonio, Texas; this field experience has become internationally recognized as ***Operation Bushmaster***. The field exercise provides nuclear, biological and chemical training, ambulance loading and unloading procedures, and training on radio operations and land navigation. The exercise focuses on the support and leadership roles of the combat and civilian medics during battlefield and humanitarian missions. Students are evaluated on: health care provided to dozens of simulated casualties; leadership skills under demanding and stressful conditions; mission focus; and, overall teamwork.

During Operation Bushmaster, seven GSN students collaborated in a field environment with 60 USU SOM students and 11 medical students from Japan and the United Kingdom. Under simulated battlefield conditions, a war was fought in a mythical country of "Pandakar." All students served in a variety of roles to include the senior medical officer, commander, radio operator, litter bearer, security officer, and ambulance platoon leader. For a majority of the participating nurses, this served as a continuation of training under austere conditions. During their previous years of military service, several of the GSN students had been deployed on real world missions and had already completed courses in Trauma Nurse Critical Care and Combat Casualty Care. However, Operation Bushmaster provided unique clinical and leadership training opportunities for simulating the role of an Advanced Practice Nurse in a multi-disciplinary setting. On the first day, participants received their first front-line ambulance containing four casualties and applied the concept of tailgate medicine, "care first, tents later." The field scenario focused on the treatment of moulaged casualties requiring life-saving interventions. Challenges included locating and organizing critically required supplies, as well as determining how and when to begin interventions such as the insertion of chest tubes and needle decompression.

Challenges in the field environment arose when, three miles from the front line, the students were informed that the CT Scanner would not fit on their truck and alternatives had to be considered. Once adjusted to the battle situation, where simulated patients were presenting devastating wounds, the students found themselves triaging and aggressively managing their patients. Amid this activity was the constant threat of biological and chemical agents. All students were confronted with disease non-battle injuries (DNBI) such as menin-

gitis and malaria. Several of the scenarios provided moral, ethical, cultural, and geopolitical challenges, as in the medical treatment of a prisoner of war who, upon release from the patient area, was killed by "Pandakar" officials. On the final night of the field exercise, a mass casualty incident required students to triage, treat, stabilize, and evacuate 36 patients who were strewn across a 40 meter radius. Among the casualties were: a patient with a sucking chest wound; a pregnant woman ready to deliver; and, multiple burn patients.

Both GSN and SOM students gained a strengthened appreciation for the role of the senior medical officer on the battlefield. Their playing field was leveled as they came to understand the common goal of ***providing good medicine in bad places.*** As they boosted each other's morale during the exhausting exercise, the GSN and SOM students recognized the synergies and challenges shared by the entire team. Operation Bushmaster has added a new dimension to training of advanced practice nurses; ***Bushmaster embodies the spirit of the USU motto, Learning to Care for Those in Harm's Way.***

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STUDENT AFFAIRS

Students reported participation in GSN program decisions and open communication patterns with all GSN faculty. Their feedback is utilized, and the students reported that they are notified of program changes. Students were very articulate in describing the process used to provide input into program development. The GSN has an excellent educational environment with many state-of-the-art laboratory simulation rooms, library and resource materials, and technological support services. Most classrooms are equipped with technology such as computers or LCD players for PowerPoint presentations and Internet access. A state-of-the-art simulation center is available to the GSN and is equipped with 12 fully-equipped patient treatment rooms with computer, video, and audio equipment. In addition, the simulation center has a distance education teleconference room, a computer laboratory, and an operating room simulation laboratory with manikin simulators and anesthesia equipment, which mimics that used in the military field. Virtual reality anatomy lectures are cutting edge and are available for approximately four anatomic systems. GSN students interviewed verbalized knowledge of the many resources available to them on campus and had overwhelmingly positive comments about the laboratories, libraries, simulation center, and virtual reality programs available to them for study.

- Excerpt from the Final Report of the Evaluation Team from the Commission on Collegiate Nursing Education (CCNE), provided to the University during 2002.

The Selection Process. A commitment to the Nation must be evidenced in an applicant's decision to attend the GSN. The GSN Admissions Committee makes the final determination regarding admission to the GSN with the concurrence of the Dean. The membership of the Admissions Committee is different from those at other schools of nursing. In addition to members of the GSN faculty, the Committee has representatives from each of the Uniformed Services and faculty from the School of Medicine.

The applicant pool is unique. Applications to attend the GSN are submitted in accordance with the guidelines of the Services for Long Term Health Education and Training (Army), Duty Under Instruction (Navy), and Sponsored Graduate Education Programs (Air Force Institute of Technology). Officers from the Public Health Service are sponsored by their individual Agencies. The Admissions Committee of the GSN reviews the applicants' records on the basis of academic merit, which shows that the applicants can succeed in a graduate program. Academic aptitude is balanced against the evidence of future officership and continuing commitment to service in the Uniformed Services. The candidates nominated and selected by the Uniformed Services have had grade point averages of between 3.2 and 4.0 in their Baccalaureate Programs; most have had an average of between eight to twelve years of active duty experience in the Uniformed Services.

Annually, the GSN reviews approximately 75 applicants and admits between 25 to 37 students. GSN students are full-time and retain their rank as officers. To sustain the GSN's high graduation rate, incoming students receive instruction on time management and test taking skills. Committed faculty promote student retention with both didactic and lab review sessions.

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Class of 2004. The USU GSN welcomed the Class of 2004, 26 active duty officers, during June of 2002. Seven officers were enrolled in the Family Nurse Practitioner (FNP) Class of 2004, bringing the enrollment of the two FNP classes (First and Second Year) to a total of 21 students. Nineteen uniformed officers were enrolled in the Nurse Anesthesia Class of 2004, bringing the enrollment of the two Nurse Anesthesia classes (First and Second Year) to a total of 29 students.

Of the 26 uniformed officers enrolled as First-Year GSN students: eight are members of the Army; five are members of the Navy; 12 are members of the Air Force; and, one is a member of the Public Health Service. The GSN students range in grade from 0-2 to 0-6 with the majority at the 0-3 level. The student's service agreement following graduation is approximately two years of service for each year of education.

During June of 2002, the GSN also enrolled four commissioned Army officers into the resident, one-year, Post-Master Family Nurse Practitioner option. This option of the MSN Program prepares advanced practice nurses to broaden their scope of service to encompass care of the family, as required by their individual Service.

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Development and Functions of the Student Advisory Council - A Strong Avenue of Communication.

Background. Beginning in October of 1998 and continuing throughout 2002, the GSN students, faculty, and staff, in coordination with the Federal Nursing Chiefs and the Office of Student Affairs, School of Medicine, worked to develop and implement a Student Advisory Council. The Student Advisory Council was initially established during 1998 to: 1) advise the Dean, GSN, on matters of student interest and concern; 2) provide an active and visible means for the student body to communicate directly with the Dean; and, 3) serve as a process improvement mechanism and a forum for addressing student issues.

The Student Advisory Council (SAC) is an independent entity that exists to represent the GSN student body; it is not an element of the military rating chain, nor an extension of the administration. It serves as a line of communication between the student body and the administration of the GSN. The Council is designed to discuss student issues that arise across class boundaries and to provide a student body consensus, which may then be communicated to the Dean, GSN, and other responsible school officials.

Composition. The GSN Student Advisory Council consists of the student president, secretary, one representative from each MSN option area and class (thus two each from Nurse Anesthesia and Family Nurse Practitioner), and one representative from the Post-Master (PM) Nurse Practitioner Class. All members of the SAC are voting members. The president of the SAC is ordinarily the second-year class president.

The SAC Faculty Advisor assists and advises each class on the functions and responsibilities of the SAC, and works with the GSN Commandant to ensure that class elections of officers and academic representatives are completed on schedule each academic year.

Functions of the Council. The Student Advisory Council meets six times during the academic year, or more frequently as required. Decisions on any issue discussed at a meeting require a majority vote of the attending members. The student president prepares meeting agendas from input provided by other SAC members, conducts the meetings, and coordinates discussions and votes to establish a consensus of the student body. The student president also met regularly during 2002 with the GSN Dean to discuss matters of interest to the student body. The SAC representatives act as advocates for the students in academic matters. They also act as a liaison between students and academic program areas and serve as the communication link for the students on such matters as changes in the academic schedule, rooms, etc. SAC representatives are responsible for writing an After Action Report at the conclusion of each academic semester, which is also discussed with the Dean. This report is a summary of student comments and feedback about each course, including faculty, books, and materials within the MSN Program options. Based upon its activities during 2002, the Student Advisory Council is serving as an excellent forum to ensure faculty/student involvement, communication, and on-going curriculum improvements.

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GSN Class of 2002 Outstanding Student Awards. Annually, the GSN Students are recognized for excellence in academics and clinical practice. During 2002, the following awards were presented:

Family Nurse Practitioner - Outstanding Student Award. **Lieutenant Commander Dominic Weskamp, USPHS,** distinguished himself as a student in the graduating Family Nurse Practitioner Class. This award recognizes that LCDR Weskamp employed a sound scientific foundation, an inquiring mind, and a collaborative approach for the comprehensive care of his patients; and, he demonstrated personal initiative, perseverance, and outstanding characteristics throughout his academic endeavors at USU.

Family Nurse Practitioner - Academic Performance Award. **Captain Denise Lyons, AN, USA,** received the Distinguished Academic Performance Award, which recognizes the student having the most outstanding academic proficiency in the graduating Family Nurse Practitioner Class.

Family Nurse Practitioner - Distinguished Clinical Performance Award. **Captain Angelo Moore, AN, USA,** received the Distinguished Clinical Performance Award, which recognizes the student having the most outstanding clinical proficiency in the graduating Family Nurse Practitioner Class.

Family Nurse Practitioner - Esprit de Corps Award. **Captain Curtis Aberle, AN, USA,** was selected to receive the Esprit de Corps Award. The Esprit de Corps Award recognizes the graduating student from the graduating Family Nurse Practitioner Class who by thought, word, action, and deed, demonstrates sensitive humanistic qualities for the well being of all. By example, the recipient has inspired all of his classmates to enjoy their camaraderie, their profession, and their commitment to a life of service to mankind.

Nurse Anesthesia - Outstanding Student Award. **Captain Mary Jo Burleigh, USAF, NC,** distinguished herself as a student in the graduating Nurse Anesthesia Class. This award recognizes Captain Burleigh for achieving high levels of academic performance while simultaneously demonstrating outstanding leadership qualities at USU.

Nurse Anesthesia - Esprit de Corps Award. **Captain Ronald Wyatt, USAF, NC,** was selected to receive the Esprit de Corps Award for the graduating Nurse Anesthesia Class. The Esprit de Corps Award recognizes the graduating nurse anesthesia student who by thought, word, action, and deed, demonstrates sensitive humanistic qualities for the well being of all. By example, the recipient has inspired all of his classmates to enjoy their camaraderie, their profession, and their commitment to a life of service to mankind.

Nurse Anesthesia Presents the Agatha Hodgins Awards. **Captain Mary Jo Burleigh, USAF, NC,** was selected from the graduating Nurse Anesthesia Class to receive the Agatha Hodgins Award at the graduation

ceremonies in May of 2002. **Captain Annie Hall, USAF, NC,** received the award upon completing the 18-month clinical phase in December of 2002. The award, established in 1975, recognizes a graduating nurse anesthesia student for outstanding accomplishments in both the classroom and clinical arenas of nurse anesthesia education. The recipient's dedication to excellence has furthered the art and science of nurse anesthesia. *Background.* The award was established in honor of Agatha Cobourg Hodgins (1877-1945), founder and first president of the National Association of Nurse Anesthetists. This organization was later renamed the American Association of Nurse Anesthetists. Miss Hodgins and Dr. George Crile pioneered the first known nurse anesthesia school and hospital service at Lakeside Hospital in Cleveland, Ohio. During World War I, Miss Hodgins trained nurse anesthetists for military service. She also assisted with the development of the early anesthesia machines and later with the perfection of anesthesia techniques still in use today.

Dean's Awards for Research Excellence. **Major Richard Prior, AN, USA,** and **Lieutenant Commander Dominic Weskamp, USPHS**, received the Dean's Awards for Research Excellence, Family Nurse Practitioner. **Captain Annie Hall, USAF, NC,** received the Dean's Award for Research Excellence, Nurse Anesthesia. These awards recognized the graduating students demonstrating the most outstanding proficiency in nursing research.

First-Year Outstanding Student Awards. **Captain Ann Nayback, AN, USA,** Family Nurse Practitioner, was selected to receive the First-Year Outstanding Student Award. **Lieutenant Victor Auld, USN, NC,** Nurse Anesthesia, was selected as the recipient of the First-Year Outstanding Student Award for 2002.

Two GSN Graduates Are Recognized by Who's Who Among Students in American Universities and Colleges. **Captain Curtis Aberle, AN, USA,** Family Nurse Practitioner, and **Captain Mary Jo Burleigh, USAF, NC,** Nurse Anesthesia, were recognized by Who's Who Among Students in American Universities and Colleges upon their graduation from the GSN.

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GSN Students Participate at the American Association of Nurse Anesthetists (AANA) 69th Annual Meeting.

AANA Anesthesia College Bowl Runner Up. **Captain Annie Hall, USAF, NC,** was recognized as a member of the Runner-Up Team in the AANA Anesthesia College Bowl held at the 69th Annual Meeting of the American Association of Nurse Anesthetists. She received a plaque presented by Colonel Steve Janny, Nurse Anesthesia Consultant to the Surgeon General of the Army and Colonel Richardson, Office of Brigadier General William Bester, Director of the United States Army Nurse Corps.

Poster Presentations. Nurse Anesthesia students from the GSN also submitted poster presentations at the 69th Annual Meeting of the AANA. Of the total number of posters presented (56) at the meeting, GSN students represented 11 percent (6) of all posters presented. Twelve of the 13 GSN students in the Class of 2002 were involved in the projects that initiated these posters. Research topics are indicated below (presenter's name is underlined):

Use of the Personal Digital Assistant by Medical and Graduate Nursing Students - **GSN Student: Captain Bradley R. Richardson, AN, USA.**

Integrating Computerized Virtual Reality with Traditional Methods of Teaching - **GSN Students: Captain Lance S. Scott, AN, USA; Captain Michael A. Neal, AN, USA;** USU Faculty: Janet G. Agazio, Ph.D., RN; Howard J. Bryant, Ph.D.; Thomas S. Kaufman, Ph.D.; Leon Moore, Ph.D.; and, Donald D. Rigamonti, Ph.D.

The Effectiveness of the Human Patient Simulator in Teaching Anesthesia Pharmacology to First Year Nurse Anesthesia Students - **GSN Student: Captain Annie L. Hall, USAF, NC.**

Integrating Computerized Virtual Reality with Traditional Methods of Teaching Skull Anatomy - **GSN Students: Captain Bruce D. Todd, USAF, NC; and, Captain Karla M. Atchley, USAF, NC.**

What is the Effect of Fentanyl on the Bispectral Index (BIS) Values and Recall? - **GSN Students: Captain Ronald E. Wyatt, USAF, NC; Captain Toney Banks, USAF, NC; and, Captain Mary Jo Burleigh, USAF, NC;** with Major William J. Craig, USAF, NC; and, Major Lisa Petty, AN, USA.

Comparison of Levobupivacaine and Ropivacaine in Patients Undergoing Upper Extremity Surgery with Brachial Plexus Block - **GSN Students: Lieutenant Commander Dan Franz, USPHS; Lieutenant Robert D. Polley, NC, USN; and, Lieutenant Commander Erik C. Cline, NC, USN** (oral presentation); with Lieutenant Commander Joseph F. Burkard, NC, USN; Commander Joseph Pelligrini, NC, USN; and, Lieutenant Commander John P. Maye, NC, USN.

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GSN ALUMNI

> **I was the only anesthesia provider for about 900 people in the camp. We took care of military personnel from all Nations; they included Australians, French, Spanish, Dutch, Koreans, and many others. It was a wonderful experience to see the other cultures and to get to know them.**
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> - **Major Kelley Moore, USAF, NC, CRNA, GSN Class of 1998, Anesthesia Element Chief, McGuire Air Force Base,** deployed to Ganci Air Base, Kyrgyzstan, in support of Operation Enduring Freedom in 2002; currently preparing to deploy to Southwest Asia.

Graduate Profile. The GSN has 183 uniformed graduates who have received the Master of Science in Nursing (MSN) Degree: Army - 41 (which includes seven Post-Master Graduates); Navy - 15; Air Force - 113; and, Public Health Service - 14. Eighty-two uniformed officers have graduated as Family Nurse Practitioners; ninety-four uniformed officers have graduated in Nurse Anesthesia; and seven from the Post-Master Family Nurse Practitioner Certificate option. As of April 2003, well over 80 percent of the GSN graduates remain on active duty in their individual Services. The GSN alumni do not have a formal residency requirement so they go directly into clinical practice, consistent with the credentialing guidelines at the individual health care facilities. The GSN alumni can expect to serve at least one tour as practitioners or anesthetists before being considered for assignments in any other role. The GSN alumni have three career tracks: clinical, administrative, and research. There are a number of "nontraditional" and operational assignments available as well; only a limited number of alumni would be expected to pursue those assignments. New avenues for command and staff positions are continuously opening for advanced practice nurses. It is expected that the GSN alumni will continue to be recognized and rewarded for their outstanding performance with career assignments of ever-increasing responsibility.

GSN Alumni Receive Outstanding Results on National Certification Examinations. The immediate measurable standard of success for GSN alumni is the passing of the National Certification Examinations. Over 97 percent of the GSN graduates have passed the National Certification Examinations at the upper percentile, on their initial examination. For example, credentialing scoring information released on February 26, 2002, by the American Nurse Credentialing Center's Commission on Certification shows that of the 15 GSN Family Nurse Practitioner graduates who took the certification examination, all 15 passed with a mean score of 123.3, the highest ever achieved.

GSN Alumni and Supervisor Surveys Reflect Strengths of the GSN Program. Another short term measure is the graduate's successful performance as an advanced practice nurse, as determined by the graduate's immediate supervisor. One year after graduation, both GSN alumni and their supervisors are concurrently surveyed. Immediate supervisors, familiar with the day-to-day performance of the graduates, are queried regarding specific areas of GSN alumni strengths and weaknesses in clinical specialty performance. This information is collated and compared to the graduates' self-performance ratings. In addition, the GSN asks its graduates to complete an end-of-program evaluation, followed by one-year and three-year (Family Nurse

Practitioner only) post-graduation evaluations. Information from the surveys is tracked and trended to identify any needed revisions or additions to course or clinical content or experiences.

The GSN Uses a Systematic Approach for the Evaluation of Students, Alumni, and Supervisors. The GSN Master Plan for Program Evaluation provides a systematic approach for the evaluation of the GSN's structure, processes, and outcomes. The plan identifies the focus of the evaluation, the individuals responsible for conducting the evaluation, the reporting chain, and the method and frequency of the evaluation. The overall responsibility for implementing the evaluation plan resides with the GSN Evaluation Committee. All GSN faculty participate in the acquisition, interpretation, and application of the resulting data. The committee has a central focus geared to the outcomes of the GSN, both short and long range. The program administrator is responsible for administering the didactic evaluation program to include maintaining the databases, posting the course evaluations, downloading and evaluating the data, and disseminating the data to the department chairs for final action. Faculty within the GSN make curricular modifications and course changes incorporating student comments and suggestions. Major changes are referred to the curriculum committee for oversight and approval. After changes are implemented, courses are conducted and evaluated again. The evaluation process is on-going as courses continually improve and students graduate with ever-enhanced preparation.

GSN Has Designed and Implemented Evolving Tools for the Effective Measurement of Alumni Performance. Members of Nursing Research, the Evaluation Committee, and faculty representatives from Family Nurse Practitioner and Nurse Anesthesia have designed and implemented tools to effectively measure alumni performance and to provide reports on such to the Dean, GSN, and to the Federal Nursing Chiefs. These assessment activities resulted in the publication of the GSN Evaluation Manual, in November of 2000; use of the additional tools found in the manual enable the timely completion of course, end-of-first-year, and end-of-second-year evaluations. The GSN Evaluation Committee Policy and Precedent Statement #95-07 was also amended on November 21, 2000, to ensure that outcomes of the GSN, both short and long range, are included in the content of all evaluation tools. As national program standards and the GSN program objectives have evolved, the GSN's outcome data collection tools and methods have also changed in order to collect data consistent with current standards and objectives. New surveys were deployed by the GSN in 2001, to increase congruency between the FNP and NA accreditation standards and the GSN terminal objectives and survey items. More extensive tracking is now possible among respondents to the surveys for graduates, alumni, and employers. In addition to rating performance levels for terminal objectives, graduating students, employers, and alumni are also asked to rate their level of satisfaction with other aspects of the MSN Program. Accomplishments and employment following graduation are also tracked through the one-year and three-year alumni surveys mentioned above. Selected items on the alumni survey request the following information: uniformed service status; professional activities; continuing education; current job position and specialty; employer type; and, employment responsibilities. End-of-program, alumni, and employer evaluation data, along with course evaluation data, are tabulated by Nursing Research and forwarded to the Evaluation Committee for tracking and trending as well as to the Dean and Chairs. Reviews of these reports by the GSN and the Federal Nursing Chiefs ensure that the GSN curriculum is meeting the requirements of the Uniformed Services.

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USU GSN Graduates Hold Leadership Roles and Earn Special Recognition throughout the Uniformed Services - Selected Examples from the USU GSN Alumni.

GSN Class of 1999.

Major Brian Todd, USAF, NC, CRNA, GSN Class of 1999, Nurse Anesthesia, was deployed during 2002 to Southwest Asia, to include service in Oman. An expert in field equipment, he was one of the first USAF CRNAs to use specialized anesthesia equipment in an austere environment. Due to his expertise, he has been named to the prestigious *TriService Joint Readiness Clinical Advisory Board* (JRCAB) at Fort Detrick, Maryland. The JRCAB establishes equipment policy for the Services. Major Todd also serves as a staff CRNA at the United States Air Force Academy, Colorado.

Captain Wendy Aronson, USAF, NC, CRNA, GSN Class of 1999, Nurse Anesthesia, was deployed in 2002 to Southwest Asia from Elemendorf Air Force Base. Setting up operations at an austere location, Captain Aronson pioneered the modification of EMEDS supplies resulting in significant savings of compressed oxygen, a rare commodity in an austere environment. Her efforts led to Air Force-wide recognition; and, as a result, she has been appointed to the prestigious *TriService Joint Readiness Clinical Advisory Board* (JRCAB) at Fort Detrick, Maryland.

Major Adrienne Hartgerink, USAF, NC, CRNA, GSN Class of 1999, Nurse Anesthesia, was deployed in 2002 to the Philippine Islands in support of the War on Terror; Major Hartgerink cared for members of a TriService Task Force. While deployed, her anesthesia skills were tested during a mass casualty with her life-saving treatment contributing to the successful care of the casualties. She is currently a staff CRNA at Langley Air Force Base, Virginia.

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GSN Class of 2000.

Captain Brian Estavillo, USAF, NC, CRNA, GSN Class of 2000, Nurse Anesthesia, was deployed to Southwest Asia during 2002. Captain Estavillo was with the Air Force Special Operations Command and is currently a staff CRNA at Travis Air Force Base, California.

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Additional Deployments to Southwest Asia.

During 2002, GSN Alumni deployed to Southwest Asia also included **Major Maria Stanek, USAF, NC, CRNA, GSN Class of 1996, Nurse Anesthesia,** a staff CRNA at Travis Air Force Base, California; and, **Captain Geoffrey Kuzmich, USAF, NC, CRNA, GSN Class of 2001, Nurse Anesthesia,** a staff CRNA at the Wilford Hall Medical Center at Lackland Air Force Base, Texas.

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FACULTY

Composition. The Graduate School of Nursing, as reported in the November 2002 faculty survey, has 19 full time faculty: nine civilians and ten uniformed officers. There are 87 off-campus/adjunct faculty: 41 civilians and 46 uniformed officers who assist in the programs of the GSN.

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The GSN Faculty Develops a Signature Curriculum. To support the GSN mission and address changing societal and health care needs, the GSN is implementing a signature curriculum developed at the USU GSN Quarterly Retreat in August of 2002. The new curriculum is designed to support practice, research, and educational experiences relevant to both medical readiness, the MHS, the USPHS, and other Federal Health Systems. The GSN curriculum is positioned to prepare nurse scientists and leaders at the graduate level, with an emphasis on the Nation's Uniformed Health Systems. The signature curriculum has three focused research and practice areas: *Operational Readiness in Changing Environments*; *Population Health and Outcomes*; and, *Clinical Decision-Making in the MHS, USPHS, and other Federal Health Systems*, with cross cutting emphasis on patient safety, ethics, force protection, and international health.

Operational Readiness in Changing Environments. Graduates from the University often deploy to and provide care in support of geopolitical events including war, national and man-made disasters, peacekeeping missions, and humanitarian assistance. The ability to function effectively is dependent on the flexibility to adapt to changes in climate, culture, and mission. The operational readiness pillar of the GSN provides the necessary framework to prepare students to manage clinical, administrative and leadership demands specific to the mission during deployment.

Population Health and Outcomes. Population health refers to an approach to improve the health of a population and to reduce health inequities among population groups. The objective of population health is to examine and take action on a broad range of factors and conditions that influence health. The population health approach recognizes that health is a capacity or resource rather than a state, a definition, which corresponds more to the idea of being able to pursue one's goals, to acquire skills and education, and to grow. The broader notion of health recognizes the range of social, economic and physical environmental factors that contribute to health; the clear articulation of this concept of health is *the capacity of people to adapt to, respond to, or control life's challenges and changes*. Outcome evaluation is essential in a population health approach. It examines long-term changes in both health and the determinants of health. These include changes in knowledge, awareness and behavior, shifts in social, economic and environmental conditions, as well as changes in public policy and health infrastructure. Outcome evaluation seeks to measure reduction in health status inequities between population sub-groups. Longer-term outcome evaluation is essential for a comprehensive evaluation program, which also includes process evaluation (to determine whether a policy or program is meeting its goal and reaching its target population) and impact evaluation (to determine the affects of a program on the health of a population).

Clinical Decision-Making in the MHS, USPHS, and other Federal Health Systems. In the MHS, USPHS, and other Federal Health Systems, clinical decision-making includes the coordination of patient care services across the Nation to optimize the delivery of health care to its recipients. Ensuring seamless care across the health care continuum requires a unique understanding of health issues and the complexity of integrating services of the largest health care systems within the United States (the MHS and VA Medical Systems). The GSN curricula provide uniformed students with a framework to effectively function both clinically and administratively in the MHS, USPHS, and other Federal Health Systems.

Three Categories of Courses. Regardless of program specialty, all GSN students will graduate with an advanced understanding of Operational Readiness, Population Health and Outcomes, and Clinical Decision-Making in the MHS, USPHS, and other Federal Health Systems. Crosscutting emphasis will be placed on concepts related to *leadership*; *national and international political, cultural and environmental health care factors*; *safety*; and, *research*. At each nexus point (i.e., leadership and operational readiness; leadership and clinical decision-making; and, leadership and population health and outcomes) the content will be tailored to the level of the student. For example, when leadership and operational readiness concepts are first introduced, they will be offered at Level 1, forming a foundational knowledge base. Level 2 concepts will then be introduced, forming a more complex understanding of leadership and operational readiness; and, finally, highly advanced (Level 3) concepts will be introduced. Uniformed students will emerge from the GSN programs and return to the Uniformed Services workforce with a unique and highly complex understanding of: Operational Readiness; Population Health and Outcomes; and, Clinical Decision-Making in the MHS, USPHS, and other Federal Health Systems.

The process of integrating the GSN signature curriculum was made more complex with the concurrent addition of the MSN Degree in the Clinical Nurse Specialist track. Because the role of the clinical nurse specialist is different from the role of the family nurse practitioner and the nurse anesthetist, the GSN had to reconsider the focus and content of many of its existing core courses. Clinical nurse specialists differ in that their role is broader, spanning from the individual patient to the hospital system. Thus, the new GSN curriculum will focus on systems and population health *in addition to* the traditional care of the individual patient.

In order to address this new focus, the GSN curriculum task force first reviewed the AACN *Essentials of Master's Nursing Education* criterion. The following definitions were taken directly from the AACN *Essentials* document and have been adopted by the GSN as framing definitions for the three categories of courses taught within the GSN:

Graduate Nursing Core: Foundational curriculum content deemed essential for all students who pursue a Master of Science in Nursing Degree, regardless of specialty or functional focus, will be considered the Graduate Nursing Core. The Graduate Nursing Core Courses will include the following: Role, Role/Ethics/Public Policy, Research, and Healthcare in a Global Environment;

Advanced Practice Nursing Core: Essential content for providing direct patient/client services at an advanced level will be considered the Advanced Practice Nursing Core. The Advanced Practice Nursing Core Courses will include Health Assessment, Anatomy/Physiology, Pathophysiology, and Pharmacology; and,

Specialty Curriculum Content: Those clinical and didactic learning experiences identified and defined as essential by the specialty nursing organizations will be considered the Specialty Curriculum Content.

Using these criteria as a framework, all of the GSN courses currently being taught were critically examined. The GSN faculty determined that all master-prepared students should complete the courses identified within the Graduate Nursing Core. And, because the GSN graduates must be able to provide direct patient care in the MHS and USPHS, all GSN students are also required to take the courses identified within the Advanced Practice Nursing Core.

Over the next 12 months, all GSN (core and specialty) courses will be carefully reviewed, and revised as appropriate, in order to integrate the new GSN curriculum. The GSN faculty, in coordination with the Federal Nursing Chiefs, will gradually transition into providing the new core curriculum rather than implementing all of the required changes at once. It is anticipated that the new GSN curriculum will be completely in place during the Summer of 2004.

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Leadership of the GSN.

Faye Glenn Abdellah, Ed.D., Sc.D., RN, FAAN, Professor and Founding Dean Emerita. The Founding Dean of the Graduate School of Nursing, **Doctor Faye Glenn Abdellah** has long been recognized as a national pioneer in nursing, nursing research, long-term care policy, mental retardation, the developmentally disabled, home health services, aging, hospice and AIDS. She has been the recipient of 12 honorary degrees, over 90 major awards, authored or co-authored more than 152 publications, and authored six books, some translated into six languages, which have altered nursing theory and practice. Prior to assuming the post of Founding Dean, Rear Admiral Abdellah (0-8), United States Public Health Service, served as the Chief Nurse Officer and Deputy Surgeon General of the United States from 1981 until her retirement in 1989 (for more detail on Dean Abdellah's accomplishments, see Section I of the USU Journal, USU Honorary Degrees and the University Medal). On May 31, 2002, Dean Abdellah celebrated her retirement with distinguished participants including the University President, the Federal Nursing Chiefs, the Commanding Officer of the National Naval Medical Center, a former Surgeon General of the United States, senior Congressional staff, civilian nursing leaders, and over three hundred members of the USU community. Significantly, she also led the GSN in preparing for, and ultimately receiving full accreditation for, the maximum allowable terms from the National League for Nursing Accrediting Commission (NLNAC) and the Commission on Collegiate Nursing Education (CCNE). Before her retirement, she ensured that the preparation for reaccreditation by the American Association of Nurse Anesthetist Council on Nurse Anesthesia (COA) was well on track.

Patricia A. Hinton Walker, Ph.D., RN, FAAN, Professor and Dean. Following an extensive national search, **Doctor Patricia Hinton Walker** was selected, in June of 2002, to serve as the second Dean of the GSN. Dean Hinton Walker is nationally recognized as a leader in education and has been a strong advocate for health services research, specifically measuring cost and quality outcomes. After serving as the Dean of the Nursing School at the University of Colorado Health Sciences Center, Dr. Hinton Walker was selected as the American Academy of Nurses Senior Scholar in Research at the Agency for Healthcare Research and Quality (AHRQ) where she coordinated the extensive review of funded health sciences research used in determining health policy. During her distinguished career, Dean Hinton Walker served as an Associate Dean at two major research universities; a visiting professor in community based-care; a director of an entrepreneurial community-based practice organization; and, as a consultant on quality and cost-effective outcomes, faculty practice and community-based care, managed care, practice-based research, and organizational development in hospitals and schools of nursing. In addition to her more than 30-year teaching career, she has authored five books on nursing education and practice as well as 49 peer-reviewed professional articles. She has been recognized by the most prestigious organizations in the nursing profession. Her honors and awards include: the Distinguished Alumni of the Year by the University of Kansas Medical Center Nurses Alumni Association (1998); Who's Who in American Nursing (1993); Nurse of the Year for the Mississippi Nurses Association District #13 (1980); Member of the Board of Directors, Friends of National Institute for Nursing Research, from 1998 to the present; and, recipient of international invitations on educational consultation from the United Kingdom, Hong Kong, Thailand, Japan, Belgium, Poland, Spain, Sweden, and many others. Dean Hinton Walker's expertise in interdisciplinary practice, education, research, and health policy will ensure the continued progress of the GSN. She will continue her involvement in the nursing agenda at the AHRQ as a senior advisor with a focus on quality outcomes. Opportunities for research in the MHS, USPHS, and other Federal Health Systems will be utilized by the new GSN Dean for studying the areas of prevention, health promotion, and patient safety. Dean Hinton Walker understands the potential impact on policy that nursing research can have and will foster this through the development of a doctoral program. A dedicated believer in utilizing internal motivation, Dean Hinton Walker sees educators as people who guide learners toward missions or areas of interest rather than prescribing courses of action. She also advocates for exploring alternative means of learning, such as through the Internet. Following her arrival at the GSN in mid-2002, Dean Hinton Walker has carefully led the GSN faculty and staff through a transition period utilizing new initiatives and concepts to analyze systems, review curriculum, and enhance program development. Dean Hinton Walker's goal is a shared vision of the GSN that is flexible, responsive and on target with the needs of the Uniformed Services. Her vision is to continue to optimize the strengths and interests of the GSN faculty and staff, to enhance the research infrastructure, to continue the merging of technological advancements into the curriculum, and to support the provision of a flexible curriculum that addresses the educational requirements of the Uniformed Services, while ensuring that the infrastructure sufficiently supports both faculty and students.

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GSN Faculty Is Recognized for Integration of Technology throughout the GSN Curricula. Since its inception, the GSN has actively participated in educational and research activities at the National Capital Area Simulation Center (SIMCEN). Over the past year, the GSN faculty has collaborated with the SIMCEN faculty and staff to enhance the GSN programs through: the development of clinical cases utilizing the SIMCEN technology; presentations of the use of SIMCEN technology in education at the national level; and, SIMCEN-related research activities. This active participation has been widely recognized; for example, the Dean of the GSN and the GSN faculty were invited to participate in high-level planning sessions during 2002 as the University reviewed its use of resources and support for the SIMCEN. In addition, the GSN was invited to present its SIMCEN-related technology initiatives for both its curriculum and research to the Centre for Medical Education located at the University of Dundee, Scotland (the Centre's leader, Doctor Ron Harden, is recognized as an expert in international medical simulation). Finally, in December of 2002, GSN faculty were invited to meet at the SIMCEN with members of the University of Michigan Consortium to discuss collaborative activities and possibilities for the future forging of technology/SIMCEN links between the disciplines of medicine, nursing, veterinary science, and dentistry. As noted in 2002, by the Evaluation Team from the Commission on Collegiate Nursing Education:

> **A state-of-the-art simulation center is available to the GSN and is equipped with 12 fully equipped patient treatment rooms with computer, video, and audio equipment. In addition, the simulation center has a distance education teleconference room, a computer laboratory, and an operating room simulation laboratory with manikin simulators and anesthesia equipment, which mimics that used in the military field. Virtual reality anatomy lectures are cutting edge and are available for approximately four anatomic systems. GSN students interviewed verbalized knowledge of the many resources available to them on campus and had overwhelmingly positive comments about the laboratories, libraries, simulation center, and virtual reality programs available to them for study.**

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Selected Profiles of Graduate School of Nursing Faculty.

Outstanding Uniformed Faculty Award. Lieutenant Colonel Marjorie Graziano, USAF, NC, MSN, CRNP, Assistant Professor, Family Nurse Practitioner, was selected by the GSN students to receive the Outstanding Uniformed Faculty Award at the May 2002 Graduation. The GSN students chose Lieutenant Colonel Graziano as the uniformed faculty educator who exemplified the highest qualities of a graduate nursing educator by personal example and performance.

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Outstanding Civilian Faculty Award. Janice Agazio, DNSc, Assistant Professor, Nursing Research, was selected by the GSN students to receive the Civilian Faculty Award at the May 2002 Graduation. The GSN students selected Doctor Agazio as the civilian faculty educator who displayed the highest qualities of a graduate nursing educator by personal example and performance.

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GSN Associate Dean Serves as the Ethics Consultant to the Air Force Surgeon General. Throughout 2002, **Colonel Martha Turner, USAF, NC, RN, CNAA, BC, Ph.D., Associate Dean, Graduate School of Nursing**, continued her activities as the Ethics Consultant to the Air Force Surgeon General and as a member of the TriService Nursing Research Advisory Council. During 2002, she was recognized by the Secretary of Defense for her volunteer service at the Pentagon Family Support Center following the terrorist attacks on September 11, 2001. Colonel Turner continued her work with the Minnesota Nurses Association Ethics Committee through the development of position statements on the Ethical Perspectives of Clinical Practice and Workplace Issues. Colonel Turner's ethics consultation activities and lectures within the TriService Ethics Advisory Group have included workshops and conference calls on a wide range of policies for Military Treatment Facilities located in the United States and in deployment settings. This year, Colonel Turner's efforts resulted in research awards for two of her students, a field trip to the Holocaust Museum, USU Board of Regents' approval for the Nursing Doctoral Program, and the acceptance of the first students for the MSN Degree in the Perioperative Clinical Nurse Specialist track. In October of 2002, she was notified of her reassignment to the USAF International Health Specialist Program; during her farewell reception, she was recognized with the Defense Meritorious Service Medal and the USU Outstanding Service Medal for her accomplishments as Associate Dean of the GSN.

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Acting Associate Dean Co-Authors a Symptom-Based Telephone Triage Protocol Book. Patricia C. McMullen, DNSc, JD, CNS, CRNP, Associate Professor and Acting Associate Dean, GSN, continued during 2002 to direct her research and publication efforts on the major areas for the improvement of health care as recommended by a United States Public Health Service Task Force. This year, she co-authored, Triage Protocols for Obstetrics and Gynecology, Lippincott, 2003, a symptom-based telephone triage protocol book for providers of women's health care. This publication was developed in response to research that indicates approximately 20-28 percent of all primary health care is handled over the telephone (Studdiform, Panitch, Synderman & Phass, 1996). Additionally, Doctor McMullen authored a chapter entitled, "Legal Issues in Critical Care," for the 8th edition of Critical Care Nursing: A Holistic Approach. The chapter outlines fundamental legal principles in critical care and offers advice on how to both improve the quality of care and diminish legal liability. She was invited to speak on legal issues in nursing for the Regional Perinatal Nursing Conference in Bangor, Maine, and for the South Carolina Nephrology Nurses Association Conference in Charleston, South Carolina. In addition, Doctor McMullen, Doctor Seibert and Ms. Laurie Lemieux presented advanced case studies in women's health care at the National Nurse Practitioner Conference in Baltimore, Maryland. Doctor McMullen was an invited lecturer for the Nurse Practitioner Program at George Mason University in Fairfax, Virginia. Since the last edition of this publication, Doctor McMullen completed her multidisciplinary research on conflict among older adolescents hospitalized as a consequence of violent incidents at a regional shock trauma center. Results of her research findings will be published over the course of the next year.

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GSN Acting Chair Presents Research Findings to the National Organization for Nurse Practitioner Faculties. Diane Seibert, Ph.D., CRNP, Assistant Professor, Acting Chair, Family Nurse Practitioner, has research interests in Women's Health and in technology-assisted learning. She recently completed her Ph.D. from the University of Maryland, College Park; her dissertation examined the effect of an engagement intervention in a course conducted entirely via video teleconferencing. She presented her findings at the National Organization for Nurse Practitioner Faculties in the Spring of 2002. In addition to that presentation, she was invited to speak at the National Institutes of Health on Hormone Replacement Therapy shortly after the Women's Health Initiative results were released. Additionally, she was invited to speak on Pap Interpretation and co-lectured with Doctor McMullen on Advanced Case Studies in Women's Health at a regional Nurse Practitioner Conference. She and Doctor McMullen are also collaborating on a Cystic Fibrosis Project for the Department of Defense. Finally, Doctor Seibert has served as the Task Force Leader for the GSN Faculty Structure Task Force.

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Chair of Nursing Research Involved in Funded Research Projects. Barbara M. Sylvia, Ph.D., RN, Professor and Chair, Nursing Research, is currently involved in several funded research projects. As the principal investigator on a USU intramural funded project, she is extending her work on prenatal care for military women from an earlier project funded by the TriService Nursing Research Program on which she was a co-investigator. Doctor Sylvia is examining and comparing the prenatal care of uniformed women within the continental United States (CONUS) versus care provided Outside CONUS (OCONUS). Using both qualita-

tive and quantitative approaches, she is examining prenatal care from the perspective of both the recipient and the provider. In addition, Doctor Sylvia is currently a co-investigator on a project funded by the TriService Nursing Research Program to compare the effects of two methods of diabetes care on glycemic control. This past year, Dr. Sylvia has published two research articles: "Prenatal Care-Needs, Availability, Accessibility, Use and Satisfaction: A comparison of Military Women Within and Outside of the Continental United States," in Military Medicine; and, "Exploration of Facilitators and Barriers to Prenatal Care Among Military Women" in Nurse Practitioner Forum.

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Assistant Professor Is Principal Investigator in Funded Research Projects. Janice Agazio, D.N.Sc., Assistant Professor, Nursing Research, is currently involved in several funded research projects. She is the principal investigator on two new projects. The first, *Army Nursing Practice in Operations other than War*, was funded by the TriService Nursing Research Program and will describe needed competencies and skills for deployed nurses. The second, *Deployment of Military Mothers*, received intramural funding to describe the trajectory of the deployment experience (preparation through reunion and reintegration) for active duty women with children. Doctor Agazio continues as a co-investigator on a TriService Nursing Research Program funded study, *Ethical Issues in the Department of the Army Nursing Practice*, which will provide information about the ethical issues experienced in the workplace by military and civilian registered nurses and provide information regarding ethical education requirements. Doctor Agazio is completing an analysis on two unfunded studies, *Health Promotion in Military Women* and *Experiences of Medical Personnel in Operation Desert Shield/Storm*. This past year, Doctor Agazio had two research articles accepted for publication in Military Medicine: "Evaluation of a Virtual Reality Simulator in Sustainment Training" and "The Effects of Non-Local Geographically-Separated Hospitalizations Upon Families." Additionally, she presented her paper on the use of a VR Simulator in sustainment training at the national State of the Science Congress in September of 2002.

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Chief of the Operating Room and Central Material Supply at the Landstuhl Regional Medical Center Joins the GSN Faculty. Lieutenant Colonel (P) Linda J. Wanzer, AN, MSN, CNOR, Assistant Professor and Director, Perioperative Clinical Nurse Specialist Track, joined the GSN faculty in September of 2002. Prior to her arrival, LTC Wanzer served as the Chief of the Operating Room and Central Material Supply for the Landstuhl Regional Medical Center. While serving in Europe, LTC Wanzer stepped into the role of Perioperative Consultant for Readiness Issues in support of the 212th MASH contingency and training missions - certifying surgical readiness prior to receipt of surgical patients to ensure that the standard of care was met throughout the field environment. Additionally, LTC Wanzer has led the way in patient safety innovation and productivity at the unit, institution, and regional levels. Her efforts at the unit level spearheaded institution and region-wide standardization efforts focused on the creation of a non-punitive environment for reporting medical errors and the establishment of a process for improving "systems/processes." Numerous perioperative risk aversion/patient safety initiatives instituted by LTC Wanzer were highlighted during 2002 in the book written by Jean Reeder - Patient Safety: A Perioperative Competency Module; her work was also published as a guide on the Association of Operating Room Nurses (AORN) web-page. Since 2001, LTC Wanzer has served as an advisor to the Army's Perioperative Consultant to the Surgeon General. She has

blended theory with practice in her review of new initiatives from MEDCOM as well as using metrics formulation related to access-to-care standards and patient safety metrics for the perioperative field. LTC Wanzer was selected to be a member of the AORN Presidential Commission for Patient Safety, serving since 2002. As such, she interfaces with the entire perioperative community inclusive of the American College of Surgeons and the American Nursing Association to develop and standardize patient safety initiatives.

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Additional Faculty Research, Publications, and Presentations during 2002 are presented at Appendix C.

GSN GRADUATE PROGRAMS.

Beginning in the Summer of 2003, the GSN will offer two Graduate Programs at the Master and Doctoral Degree levels. The Master of Science Degree in Nursing Program will have three areas of focus: Family Nurse Practitioner, Nurse Anesthesia, and Perioperative Clinical Nurse Specialist. The Doctor of Philosophy in Nursing Program will prepare nurses in research, education, and leadership as required by the Military Health System, the United States Public Health Service, and other Federal Health Systems.

MSN Degree Program - Family Nurse Practitioner.

Background. The first formal training program to prepare advanced practice (pediatric) nurses was established in 1960. In 1967, public health nurses received advanced training to care for patients in their homes. Nurse practitioners were initially taught to take a full medical history, conduct a comprehensive physical examination, and oversee the use of medications. Eventually, nurse practitioners were performing those activities in the offices of the physicians with whom they worked.

In 1977, the Medicare statute was amended to allow nurse practitioners to provide primary care independently in underserved rural areas. Nurse practitioner programs grew quickly; and, advanced practice nurses found work in hospital-based clinics, providing care to underserved patients. In 1994, the National Advisory Council on Nurse Education and Practice for the Health Resources & Services Administration of the Department of Health and Human Services identified the need to upgrade the knowledge, skills, and abilities of the existing registered nurse work force to match the practice requirements within today's health care systems. Currently, every state gives nurse practitioners some level of pharmaceutical prescribing authority.

In 1995, the Institute of Medicine engaged in an inclusive study, *Primary Care: America's Health in a New Era*. The study provided the following definition: primary care is the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community. Today, through advanced education and training in the science of disease prevention, health promotion, health education, and community and home-based care, the advanced nurse practitioner is recognized as an essential member of the health care team.

The American Association of Colleges of Nursing continues to report that the demand for advanced practice nurses is increasing. Current demands across the country are for advanced practice nurses who can deliver a high complexity of care across the projected life-span of their patients within an integrated health care system. The current shortage of advanced practice nurses who are qualified to assess, diagnose, and manage patients in primary care settings has also been confirmed. In light of this, the nursing community is dedicated to ensuring that the existing nurse practitioner programs are of the highest quality and that they meet or exceed all educational standards and credentialing safeguards established by the National Organization of Nurse Practitioner Faculties and the credentialing entities of the National League for Nursing.

Program Assessment. The GSN curriculum is guided by the USU and GSN mission statements and the American Association of Colleges of Nursing's (AACN, 1996) *The Essentials of Master's Education for Advanced Practice Nursing*. Nineteen GSN terminal objectives are encompassed under six headings, applicable to both nurse anesthesia and nurse practitioner practice. The AACN *Essentials* document has identified core content areas for all Master Degree Programs as well as three additional areas specific to Master Degree Programs for advanced practice, direct-client clinical care. Because of the unique practice requirements for USU graduates as uniformed officers, the GSN faculty has included an additional terminal objective heading, "Readiness," not included in the AACN *Essentials* document. *The Essentials of Master's Education for Advanced Practice Nursing* articulates well with the *Domains and Competencies of Nurse Practitioner Practice*, as outlined by the National Organization of Nurse Practitioner Faculties (NONPF, 2000). The practice of the nurse practitioner is also reflected in a nationally accepted measure of quality of practice that is found in the NONPF, *Domains and Competencies of Nurse Practitioner Practice*. The GSN nurse practitioner curriculum is designed to prepare graduates to practice according to those specialty standards. Graduates from the GSN Master of Science in Nursing Program options of: Family Nurse Practitioner; Post-Master Family Nurse Practitioner; and, Post-Master VA/DoD Adult Nurse Practitioner are able to sit for all applicable nurse practitioner national certification examinations.

Family Nurse Practitioner - GSN MSN Program Option - One of the Nation's Best. The Family Nurse Practitioner (FNP) option within the GSN MSN Program has had eight graduating classes from 1995 through 2002, with a total of 82 graduates. FNP has grown in numbers of students, faculty, and clinical practice sites. The GSN FNP has established one of the strongest reputations in the country, as evidenced by the certification examination pass rate of its graduates. Over 98.9 percent of the GSN FNP graduates have passed the ANCC National Certification Examination on their first attempt, as compared to the national average of a 70 percent pass rate on the first attempt. FNP now has more than 90 clinical practice sites. The FNP option is currently 24 months in length and includes 58 academic credits and 945 hours of clinical experiences. (In June of 1999, FNP was increased from 21 to 24 months to allow for the integration of women's health competencies as recommended by the Federal Nursing Chiefs; initially, FNP was 21 months in length and included 720 hours of clinical experience.) There are currently 14 students in the Family Nurse Practitioner Class of 2003; and, 7 students in the Class of 2004. Of these 21 students, 19 student officers are from the Army; one student is from the Navy; and, one student represents the United States Public Health Service.

The GSN FNP Graduates are able to: assess, design and implement an appropriate plan for individualized patient and family care; collaborate within multi-disciplinary Federal health care environments; design and provide appropriate patient education; integrate research findings into clinical practice; utilize safe practices and ethical perspectives in their clinical practice; and, readily adapt to the changes and demands of individual and environmental health care. Students are able to pass certification examinations on their first attempt, as noted by the American Nurses Credentialing Center: "of the 15 Family Nurse Practitioners tested (in 2001), 15 passed with a mean score of 123. The national average for all tested reflects a mean score of 114.6; the passing score is set at 100."

Scholarly Project. Each graduate must complete an individual or group thesis or scholarly project before graduation from FNP. The student's research project generally has application to the practice of the nurse practitioner and includes both quantitative and qualitative research, surveys, and clinical studies. All topics must be relevant to the Uniformed Services and serve to enhance the clinical practice of the graduate; a

GSN research committee ensures that each scholarly project meets the USU requirements for a Master of Science Degree. All students are encouraged to publish their findings. During 2002, students were involved in a variety of scholarly projects; and, they were encouraged to publish in peer-reviewed journals or to give poster and oral presentations of their findings. An emphasis is being placed on outcomes and how they may be incorporated into future practice.

Simulated Patient Experiences. In addition to traditional classroom and clinical activities, FNP has partnered with the National Capital Simulation Center (SIMCEN) to integrate objective simulated clinical examinations into all major courses. These simulations have proven extremely beneficial on two fronts: they facilitate faculty evaluation of each student's mastery of critical clinical skills; and, they permit each student to develop and enhance necessary clinical skills in a non-threatening environment. The use of simulated patient experiences begins during the students' initial Health Assessment Course. In this course, students review foundational assessment skills, such as history-taking and the physical examination of all major body systems. Following didactic anatomy lectures and corresponding cadaver laboratories, students receive in-class instruction on the assessment of each of the body systems. They then proceed to the SIMCEN, where they practice their assessments in collaboration with specially trained patient-actors (simulated patients). During these experiences, faculty and peers use one-way mirrors and telemonitors to evaluate each student's performance. After each encounter, peers and faculty provide a critique resulting in immediate and valuable feedback. SIMCEN experiences are also videotaped so that students and faculty can review them and receive additional instruction and guidance. Over the course of the 24 months, students are exposed to additional simulation experiences in the form of Objective Simulated Clinical Evaluations (OSCEs) in their Adult Health, Pediatric, Women's Health and Practicum Courses. Over time, scenarios become increasingly more complex.

Clinical Sites at Military Treatment Facilities. Since its establishment, FNP has completed memoranda of understanding with 17 military treatment facilities: **(Army - 6)** DeWitt Army Community Hospital, Fort Belvoir, Virginia; Kimbrough Ambulatory Care Center, Fort Meade, Maryland; Walter Reed Army Medical Center, Washington, D.C.; Fort Carson Army Community Hospital, Fort Carson, Colorado; Womack Army Medical Center, Fort Bragg, North Carolina; Darnell Army Community Hospital, Fort Hood, Texas; **(Navy - 6)** Annapolis Naval Medical Clinic, Annapolis, Maryland; National Naval Medical Center, Bethesda, Maryland; Quantico Naval Medical Clinic, Quantico, Virginia; Naval Ambulatory Care Center, Groton, Connecticut; Portsmouth Naval Medical Center, Portsmouth, Virginia; Pensacola Naval Hospital, Pensacola, Florida; **(Air Force - 5)** Malcolm Grow Medical Center, Andrews Air Force Base, Maryland; 1st Medical Group, Langley Air Force Base, Virginia; 60th Medical Group, Travis Air Force Base, California; 10th Medical Group, Air Force Academy, Colorado Spring, Colorado; and, the 375th Medical Group, Scott Air Force Base, Illinois. Additionally, FNP has affiliations with 90 non-DoD, Federal and civilian treatment facilities. These facilities provide the backbone for the nurse practitioner student's clinical experiences.

Faculty Activities. FNP faculty maintain certification and clinical acumen by working one day each week in a clinical setting. By maintaining a clinical practice, FNP faculty remain current, expand their clinical skills and frequently have the opportunity to observe and mentor students. These faculty are also active within the GSN, the University, and their local communities. FNP faculty perform a myriad of services to outside

agencies by serving: on church advisory boards; in parent-teacher associations and Girl Scout Troops; as guest lecturers at local universities; and, as teachers of Lamaze Classes. In addition to their community service, FNP faculty maintain membership in many professional organizations, including the American College of Nurse Practitioners, the Commission on Collegiate Nursing Education (Site Evaluator), the Nurse Practitioner Association of Maryland, several State Bar Associations, the North American Menopause Society, the National Organization of Nurse Practitioners Faculties, and the Sigma Theta Tau Honor Society. For example, Lieutenant Colonel Margie Graziano, USAF (retired), serves in an elected position as the Air Force Director of the Uniformed Nurse Practitioner Association.

The Year 2002 was a "watershed" year for FNP as three faculty members completed their requirements for Doctoral Degrees. In May of 2002, Doctor Diane Seibert received a Ph.D. in Human Development from the University of Maryland, College Park. Doctor Patricia McMullen completed a DNSc from the Catholic University of America in November of 2002; and, Doctor Cindy Grandjean completed a Ph.D. in Human Development at the University of Maryland, College Park, in December of 2002.

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MSN Degree Program - Nurse Anesthesia.

Background. Nurse anesthetists have faithfully served their Nation during all of its wars and conflicts and during times of peace throughout the 20th Century. During the late 1800's, Dr. Charles Mayo appointed Alice Magaw, his nurse anesthetist at St. Mary's Hospital in Rochester, Minnesota, as the "Mother of Anesthesia." She was a talented anesthetist at a time when people from all over the world came to the Mayo Treatment Center to learn from its physicians and nurses about anesthesia. In fact, the United States Army sent nurses to Dr. Mayo to study anesthesia before the Nation entered World War I.

Nurse Anesthetists provided anesthesia during World War I and served in Combat Clearing Stations near the front lines in France; they taught French nurses and physicians to do anesthesia, and with the concurrence of British physicians, taught British nurses to provide anesthesia; thereby relieving over 100 physicians to do other medical and surgical work. During World War II, four nurse anesthetists were among the nurses captured in the Philippines, having provided anesthesia services in the jungles of Bataan and on Corregidor until the ether, other drugs, food, and ammunition ran out. Nurse Anesthetists served with distinction throughout every operational theater in WWII; they were at Anzio, Salerno, on board Navy ships, and went into Normandy with the first hospital.

Nurse anesthetists also served proudly during the Korean War, in Vietnam, Granada, Panama, Somalia, Desert Storm, Enduring Freedom, and other military missions requiring anesthesia capability. Throughout the past Century, physicians and nurse anesthetists have successfully worked together during times of war, humanitarian operations, and in civilian practice.

Nurse Anesthetists, among the first to incorporate the Harvard Monitoring Standards, consistently follow the philosophy that the nurse anesthetist has a duty to the patient he/she anesthetizes, to stay with the patient and to provide continuous care and monitoring. While most professional certifications for nurses were started in the 1970's, the Nurse Anesthesia Certification Program has existed since 1945. Specialty nursing

certification has grown significantly over the last two decades. A study conducted by the Nursing Credentialing Research Coalition and released in February of 2000, found that certification has a dramatic impact on the personal, professional, and practice outcomes of certified nurses. Specifically, the study stated that certification is a successful approach to improving patient safety and the overall quality of care. In addition, the practice of anesthesia is much safer today due to advancing knowledge and technology that allow every one in the operating room, from the surgeon to the nurse anesthetist, to the technician, to perform his, or her, job more efficiently.

Program Assessment. The Terminal Objectives of the Nurse Anesthesia (NA) option in the MSN Degree Program are consistent with the missions of the USU and the GSN and with the *Essentials of Master's Education for Advanced Practice Nursing*, as accepted by the American Association of Colleges of Nursing (AACN, 1996). Additionally, the NA Terminal Objectives are in accordance with the American Association of Nurse Anesthetists' (AANA, 1996) *Standards of Nurse Anesthesia Practice*. The GSN graduates of Nurse Anesthesia are able to perform the following: a thorough pre-anesthetic assessment; obtain informed consent; formulate and implement a patient-specific plan for anesthesia care; collaborate with other members of the health care team; and, transfer the responsibility for care.

The GSN Nurse Anesthesia option within the GSN MSN Degree Program has had seven graduating classes from 1996 through 2002, for a total of 94 graduates. Twenty-nine students are currently enrolled; Nurse Anesthesia is 30 months long with 55 academic credits. Nurse Anesthesia students average 65 clock hours at clinical sites each week; and they complete 850 anesthetic cases during their program of study. In December of 2002, 13 students graduated from Nurse Anesthesia. All have passed the national certification examination for nurse anesthetists and are credentialed to practice in their respective Services. Two alumni from this group deployed within two months of their graduation to support the Armed Forces in Iraq. The Nurse Anesthesia Class of 2003 has 10 students; and, the Class of 2004 has 19 students. Of the 29 students, four students are Army officers; six are Navy officers; eighteen student officers are from the Air Force; and, one student officer represents the Public Health Service. It is anticipated that the next class will have 19 students.

Upon completion of the Nurse Anesthesia option, the NA faculty are committed that, either through the oral examination process or actual demonstration on any patient or selected pieces of equipment, the nurse anesthesia graduate will have the ability to: comply with USU GSN requirements for graduation; meet, or exceed, Council on Certification of Nurse Anesthetists Case Requirements; satisfy eligibility requirements to write the Certification Examination; obtain the academic capability to pass the Certification Examination; successfully master the Terminal Objectives; and, be able to meet the mission of Nurse Anesthesia at USU.

Clinical training was restructured within Nurse Anesthesia to ensure that all students are assigned to a military hospital as their primary clinical training site. A clinical coordinator is assigned at each site whose primary responsibility is to oversee student scheduling and to evaluate their progress; this oversight responsibility has increased consistency in the evaluation and scheduling of the rotations. In addition, the site coordinators participate in all faculty meetings, maintain student records, and complete other administrative activities associated with running the clinical training.

Scholarly Project. Each graduate must complete an individual or group thesis or scholarly project before graduation from the GSN. The student's research project generally has application to anesthesia practice and includes bench studies, both quantitative and qualitative research, surveys, and clinical studies. All topics must be relevant to the Uniformed Services and serve to enhance the clinical practice of the graduate. Students are encouraged to publish in peer-reviewed journals or to give poster and oral presentations on their findings. During 2002, students were involved in a variety of scholarly projects, including both clinical and bench research studies; and, increased emphasis was being placed on conducting quantitative studies. A search for a faculty member dedicated solely to student research is underway. Nurse Anesthesia students returning to campus prior to entering the last six months of their clinical rotations are encouraged to submit posters for presentation; and, students are required to present an oral defense of their research to meet the course requirements.

Simulated Patient Experiences. The use of a patient simulator and the instructions for using regional anesthesia and central line placement have been incorporated wherever possible into the Nurse Anesthesia curriculum. This has resulted in providing a bridge between the academic and clinical phases of the educational experience. By 2002, the use of the SIMCEN had been expanded to incorporate: 1) the use of standardized patients in the Health Assessment Course; 2) the use of simulator bronchoscopic stations in teaching airway management; and, 3) the use of the human patient simulator for teaching Basic and Advanced Principles of Anesthesia and Anesthesia Pharmacology. Other resources have allowed the use of virtual reality in teaching the Anatomy Courses; and, research studies are being conducted by the students and faculty to determine the quality of education utilizing virtual reality and the desirability for its use in the future. A faculty member of Nurse Anesthesia, in collaboration with faculty at the Medical College of Georgia, worked on the use of the Anesthesia Simulator; and, a second laboratory section of the Patient Simulator Laboratory was instituted in conjunction with the Advanced Principles Course, which allows an increase of individualized instruction through the use of this state-of-the-art simulator.

Clinical Sites at Military Treatment Facilities. Nurse Anesthesia has four primary military clinical training sites: 1) the Air Force Medical Center at Wright Patterson Air Force Base, Ohio; 2) the Walter Reed Army Medical Center/National Naval Medical Center (a joint site as is the Anesthesiology Program) in Washington, D.C.; 3) the Naval Medical Center at San Diego, California; and, 4) the Air Force Medical Center at Keesler Air Force Base, Mississippi. Nurse Anesthesia students also rotate to 21 Federal, civilian, and non-DoD health centers to obtain additional experience and complete required cases. A full review of all primary and non-primary clinical sites was completed during 2002. A package updating all related information was submitted to the Council on Accreditation of Nurse Anesthesia Educational Programs (COA); the initial response from the COA indicates that all sites are approved and are in full compliance.

Faculty Activities. Continuous changes have occurred over the past year to enhance Nurse Anesthesia at the GSN. Communication has been enhanced by the creation of web-based bulletin boards, which allow for seamless communication between the students, faculty, and staff. In addition, password-protected educational materials are also posted, which allow the students to access a variety of material from any Internet-capable

computer. The research component of the program is evolving from a thesis-based product to one more easily disseminated to the CRNA community. Increased emphasis is being placed on conducting quantitative studies and on presenting results through poster and oral presentations and publication in professional journals. A search for a faculty member whose position will be dedicated solely to student research is underway.

While Nurse Anesthesia graduates do well on their certification examinations, there are areas identified for enhancement. Two anesthesia simulators have been successfully integrated into the Principles of Anesthesia Courses. Both of the simulators located in the USU School of Medicine Department of Anesthesiology and at the SIMCEN are used many times per week to enhance student learning; and, changes in the curriculum, specifically regarding Pharmacology, were integrated during the Fall 2002 Semester. Computerized testing is being developed and will provide an inclusive review of the required material for students in their clinical phase. Other testing venues, such as oral boards, are also being developed. The Student Evaluation Examination (SEE) is being purchased for all students for use at two separate times during their training for assistance in determining future areas of concentration and study. In addition, numerous testing strategies have been incorporated by the faculty into both the clinical and didactic phases of Nurse Anesthesia. In appropriate courses, examination questions were converted to a format similar to that found in the certification examination; and, an Internet-based testing system has been adopted. Although the new testing system does not have the capabilities of a computer-adaptive examination, it is formatted similar to that found in the certification examination. For example, once a question is answered and submitted, the student may not return to it to change the answer. Test statistics and examination grades are provided immediately upon the completion of each examination.

The Nurse Anesthesia Curriculum Committee meets on a yearly basis and reviews all courses, course evaluations, and course content. Changes were recommended to further integrate the basic sciences, primarily Pharmacology, with the Principles of Nurse Anesthesia. Anesthesia Pharmacology will now be introduced during the second semester, vice the third; this will allow more depth of knowledge to be presented in the Basic Principles of Anesthesia Course. The Medical Pharmacology Course, taken with the medical students, will also be modified to include topics more specific to the practice of anesthesia.

A new educational experience for senior students has also been developed. During the Spring of their final year, GSN students return to the University for a series of seminars and workshops. Classes on regional anesthesia are conducted on cadavers in the USU Anatomical Laboratory. Advanced techniques are presented and students discuss difficult or significant cases they encountered at the clinical sites. An advanced airway workshop is presented; various adjunct equipment used for the management of the difficult airway is made available for practice on the patient simulator and other mannequins, to include the fiberoptic, Bullard laryngoscope, retrograde intubation, tube changers, the Combitube, and the Fastrach/LMA. Another laboratory allows students to practice emergency surgical airways such as jet ventilation, cricothyrotomies and tracheostomies. Crisis management is practiced and tested on the patient simulator. Students are given a series of scenarios to study prior to the testing period such as bronchospasm, MH, total spinal, and anaphylaxis. Students are then brought into the simulation area and experience a realistic scenario, which they must manage; immediate feedback is given to each student upon completion of the exercise.

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MSN Degree Program - The Clinical Nurse Specialist.

Background. In June of 2001, a need for a Clinical Nurse Specialist (CNS) option in the GSN MSN Degree Program was identified by the Federal Nursing Chiefs; the groundwork was completed to begin the development of the first Clinical Nurse Specialist option with a focus on Perioperative Nursing. A feasibility study and development of a pilot program were completed and recognized by the Federal Nursing Chiefs. In January of 2002, Founding Dean Abdellah and the GSN Associate Dean presented the CNS option to the USU Executive Committee; that request was approved by the Surgeons General of the Army, Navy and Air Force. The CNS option was then approved by the USU Board of Regents during its meeting held on February 27, 2002. In the Spring of 2002, a selection process was initiated to identify the Clinical Nurse Specialist Director and supporting faculty from within the three Uniformed Services. The CNS Director arrived in the Fall of 2002. The program's curriculum and foundational structure was built around the American Academy for Colleges of Nursing publication on *Essentials of Masters Education for Advanced Practice Nursing*. The perioperative specialty content evolved from a comprehensive process of blending field research, program goals, and clinical expert interviews with the Federal Nursing Chiefs. Validation of the program's content/ curriculum was accomplished through the process of merging program content with the published *Association of Operating Room Nurses Perioperative Clinical Nurse Specialist (PCNS) Competencies*. After minor adjustments were made, the "content map" was presented to key senior leaders within the perioperative community, both in the uniformed and civilian sectors, to ensure that the CNS option is congruent with the needs of the Uniformed Services.

Teaching Across Programs. Key to the success of the CNS option is the *leveling of course content* to ensure consistency with the GSN terminal objectives. Dean Hinton Walker maximized the faculty resources of the GSN by *actualizing* the faculty in terms of course development, thus fostering an organizational climate supporting the theory of *teaching across programs*. All CNS students will be assigned to a military hospital as their primary clinical training site. There, in consultation with their clinical preceptors, they will receive focused, clinical experiences and complete projects within the five CNS domains. A clinical coordinator will oversee student scheduling and evaluate progress. The primary military clinical training sites will be: 1) the Malcolm Grow Medical Center, Andrews Air Force Base, Maryland; 2) the National Naval Medical Center, Bethesda, Maryland; 3) the Walter Reed Army Medical Center, Washington, D.C.; 4) the Dewitt Army Community Hospital, Fort Belvoir, Virginia; and, 5) the Kimbrough Ambulatory Care Center, Fort Meade, Maryland. Additionally, a clinical experience in perioperative trauma management is being negotiated with the R. Adams Cowley Shock Trauma Center in Baltimore, Maryland. Eight uniformed officers will join the USU GSN students when the CNS Program is launched in June of 2003.

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The Doctor of Philosophy Program.

Background. To meet an evolving requirement for nursing research relevant to the MHS, the USPHS, and other Federal Health Systems, in March of 2002, with the approval of the Federal Nursing Chiefs, the GSN Founding Dean began the process for the development of a Doctoral Program in Nursing. The GSN Doctoral Program will prepare nurses to be uniquely qualified as leaders in research, education, and clinical practice who will serve in the MHS, USPHS, and other Federal Health Systems. In the context of concerns over patient safety, nursing research must be conducted to assess the linkages between nurse staffing, safety, and outcomes assessment throughout the TRICARE Management Activities. Additionally, with the well-recognized national shortage of both staff nurses and nursing faculty, GSN doctoral graduates will be prepared to augment faculty requirements at educational organizations and to provide researchers for studying health care in the MHS, USPHS, and other Federal Health Systems. A doctoral program that has a focus on the MHS as well as the USPHS and other Federal Health Care Systems is not available at civilian universities; and, no other institution is better positioned than the USU GSN to provide a Doctoral Program with such a unique focus.

Dean Hinton Walker presented the GSN Doctoral Program to the USU Board of Regents (BOR) and received formal approval for the establishment of the Doctoral Program at the BOR meeting on October 24, 2002. In addition, the GSN held inclusive focus sessions to determine both the interest and support for its proposed doctoral program, to include the initiation of steps for the enrollment of its Charter Class during 2003. The Doctoral Program in Nursing will be open to DoD nurses (active duty, reserve, and civilian) and to nurses from other Federal Agencies who are nominated and supported by their Service or Agency. The new program will accommodate both full-time and part-time students and will incorporate aspects of both distance and alternative learning, as appropriate. The GSN will welcome its first doctoral students in the Fall of 2003, bringing to realization the vision of the Founding Dean.

The Doctoral Program in Nursing Science includes a common core of required courses and electives. The program consists of five areas of concentration: 1) *Nursing Knowledge*; 2) *Research Methods, Statistics, and Designs*; 3) *Cognate Courses*; 4) *MHS and Federal Health Care Policy and Issues*; and, 5) the *Dissertation*. The *Nursing Knowledge Core Content* consists of a sequence of courses focusing on the development and application of theory in nursing and related disciplines, and ethical conduct in nursing practice and research. *Research Methods, Statistics, and Designs Core Courses* will examine approaches in both qualitative and quantitative research. Advanced research methods core courses will address relevant issues of the MHS, the USPHS and other Federal Health Systems via existing large data sets, while assisting graduates to develop continuing programs of research. *Cognate Courses* will support and strengthen the selected research focus. *MHS and Federal Health Care Nursing Policy and Issues Core Courses* will focus on MHS-specific and Federal health care issues, thus preparing graduates to conduct research and to assume leadership roles in this area of study. These four components culminate in the fifth component, the *Dissertation*, which follows the successful completion of the qualifying and comprehensive examinations. A minimum of 96 semester hours is required to complete the program. The GSN doctoral program is comparable in structure and content hours to the existing USU School of Medicine Graduate Education Programs.

The curriculum has three focused research and practice areas. These include 1) Population Health and Outcomes; 2) Operational Readiness in a Changing Environment; and, 3) Clinical Decision-Making in the MHS, the USPHS, and other Federal Health Care Systems. There will be a strong cross-cutting emphasis on patient safety, ethics, force protection, and international health.

All doctoral students will participate in structured research assistantships to broaden and improve their research experience. Proposed practicum experiences include research-focused experiences in the National Capital Area at DoD, USPHS, or other Federal Agencies with uniformed nurse researchers or at civilian health care facilities. To address current and future nursing requirements, teaching assistantships will also be offered to prepare some GSN graduates as educators in response to the ever-increasing national shortage of doctorally-prepared faculty.

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MSN Degree Program - Post-Master Certificates.

The Post-Master FNP Certificate. The Post-Master Certificate (PM) was established in 1999, primarily in response to the Army Nurse Corps' decision to transition from a specialty nurse practitioner to a family nurse practitioner focus. As the transition progressed, the number of students in the PM option varied, with the GSN annually awarding certificates to between one and four FNPs since 1999. To date, the USU GSN has awarded Post-Master FNP Certificates to 15 uniformed officers. The PM option varies in length from 9 to 12 months, depending on the student's prior education and experience; there are 31 academic credits with 562 hours of clinical experience. In August of 2002, two Post-Master students completed the PM option and four new students were enrolled. It is anticipated that this group of students (the Class of 2003) will be the last, as most of the Army's Specialty Nurse Practitioners have by now become FNPs, retired from the Army, or transitioned into a nursing administration or leadership role.

The Adult Nurse Practitioner Post-Master Certificate - The Department of Veterans Affairs/Department of Defense Distance Learning Program.

Background. The restructuring of the Department of Veterans Affairs (VA) Health Care System in the mid-1990's called for a 200 percent increase in the number of primary care providers throughout 155 VA Medical Centers. To achieve this goal, the VA determined that one effective solution would be to assist currently employed, Master Degree-prepared VA nurses to obtain new knowledge and skills as nurse practitioners. *Nearly 750 VA Master Degree-prepared clinical nurse specialists indicated interest in a post-degree, nurse practitioner certificate program if it were offered via distance education.* The USU Graduate School of Nursing (GSN) was selected by the VA to coordinate this effort. The USU GSN curriculum was unique and a national first because it was built on the excellent resources of the VA to implement well-defined, closely-monitored, clinical practica offered concurrently with didactic content provided by the fully-accredited USU GSN.

Responsibilities of the USU GSN. Under the direction of **Founding Dean Faye Glenn Abdellah, Ed.D., Sc.D., RN, FAAN**, the USU GSN agreed to: 1) determine the length of the program; 2) establish the curriculum; 3) allocate credit for the courses; 4) assure that graduates were qualified for certification; 5) develop policies for the transfer of credit for prior courses; 6) adjust and modify institutional policies to accommodate the VA civilian registered nurse students; 7) validate appropriate faculty from the VA and the GSN to instruct ion the Distance Learning Program (each had to hold at least a Master Degree, preferably in Nursing, be prepared in a nurse practitioner specialty, and be currently certified); 8) provide support staff; and, 9) pro-

cure resources for the new post-master certificate. The classes were designed to parallel the on-campus GSN courses and would be held twice a week for two hours, with a third hour conducted as a laboratory activity by the lead preceptor at the individual VA sites.

***Responsibilities of the VA*. Charlotte Beason, Ed.D., RN, CNAA, Director, VA Nursing Strategic Healthcare Group of the Office of Patient Care**, was the Project Coordinator with responsibility for ensuring that the VA would: 1) utilize its national telecommunication network for the Distance Learning Program; 2) obtain the distance learning sites at the VA Medical Centers; 3) select the students and submit candidates to the GSN for evaluation of academic requirements; 4) provide educational resources for the students such as library books and computers; 5) approve the assignment of VA employees to serve as on-site preceptors who would coordinate with the GSN in the Distance Learning Program; and, 6) provide the VA portion of the funding for the Project.

Responsibilities of the VA Medical Centers with Distance Learning Sites. The VA Medical Centers with distance learning sites agreed to provide the following: 1) an educational coordinator to administer the certificate program; and, 2) a Master Degree-prepared nurse practitioner preceptor to arrange and supervise the clinical aspects of the distance learning program.

During Late 1996, the GSN and the VA Nursing Strategic Healthcare Group Entered into a Working Partnership and Agreed to Conduct a Two-Phase Project. Phase I would consist of one course to test the feasibility of the project. Phase I, The Pilot Project Test Class, was initiated in early 1997. Following extensive evaluation, it was found that it successfully met the didactic and clinical requirements of both the GSN and the VA. Phase II contained the remainder of the curriculum study. Phase II, the Twenty-Month VA/DoD Distance Learning Program, was initiated in the Fall of 1997. Phase II included 35 students located at eight VA Medical Centers from California to New York; the certificate program was conducted in conference rooms on the USU campus that were fully equipped for teleconferencing. The curriculum developed by the GSN emphasized: 1) comprehensive physical and psycho-social assessment; 2) decision-making processes in both acute and chronic health conditions; and, 3) health maintenance care. The distance learning program consisted of nine courses that stressed both health promotion and disease prevention. There were 29 credits of didactic content and a minimum of 560 hours of clinical experience over five semesters or 20 months.

Technology Used in the Distance Learning Program. The VA/DoD Distance Learning Program is composed of didactic course work delivered via state-of-the-art distance learning technology, including interactive video teleconferencing and the Internet. The GSN extended its network of high-speed, digital telephone lines from USU's compressed-video classroom to the VA Telecommunication Center in Martinsburg, West Virginia (the Hub), which in turn, is linked to the various distance learning sites at the VA Medical Centers. During the Twenty-Month Distance Learning Program, the VA was in the process of upgrading its technological capacity. As a result, most of the VA Medical Centers were equipped with video teleconferencing capabilities. Several computer and educational technologies were immediately required to ensure the success of the project. These included an upgrade of the file server at the Hub in Martinsburg, West Virginia, the establishment of a video teleconferencing unit at USU, and the confirmation of video conferencing capability at each site. All was accomplished.

The First Advanced-Level Virtual Graduation in the VA and the DoD. Twenty-six students graduated through a virtual commencement exercise from the VA/DoD Distance Learning Program on May 18, 1999. An additional student completed requirements during August of 1999, bringing the total to 27 graduates in the first class. Outcome data from present students, alumni, and employers reflect extremely high levels of satisfaction with the distance learning program. The second virtual graduation took place on May 15, 2001, with thirty-three graduates. A third class of ten students, located at four sites in the Continental United States, Puerto Rico, and the Virgin Islands, graduated on May 13, 2003. **To date, 70 individuals have successfully graduated from this exceptional distance learning program.**

Summary. The experience gained by both the GSN and the VA will allow future projects in distance learning to benefit from the lessons learned and the technologies tested during the twenty-month, VA/DoD Distance Learning Program. Outcome evaluations continue with the early graduates and their supervisors. The technology continues to evolve to reflect the rapid growth of the field. The difficulties faced by the project coordinators in creating a new distance learning program utilizing the latest technologies were numerous and challenging; the GSN and the VA Departments, faculty, staff, and students who succeeded in doing so, were well pleased with their initial results and continued to work to improve their educational efforts in distance learning. A report was also submitted to the Congress as the VA and DoD response to a legislative directive for a summary report on the VA/DoD Distance Learning Program. To ensure that other Federal entities could easily access the lessons learned during this Program, a joint report was issued by the GSN and the VA Nursing Strategic Healthcare Group in November of 2000. The report, The VA/DoD Post-Master Adult Nurse Practitioner Program: From Concept to Graduation, documents, in chronological order, the formulation of the partnership between the DoD and the VA, the conceptual stages and developmental processes, learning strategies, course evolvement, assessment methodologies, clinical experiences, and the transmission effectiveness (computer technology and video teleconferencing) for the entire program. In short, the report provides an inclusive roadmap for implementing a distance learning program - from concept to the matriculation of the second class. **Future initiatives between the GSN and the VA are being considered with an emphasis on improving nursing practice and health care for veterans.**

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The Establishment of a University Distant Education Policy. On November 6, 2001, following extensive coordination, the USU President approved a comprehensive Distant Education Policy, PPM-004-2001, for the University. The guidelines provided in the policy apply to courses and activities initially designed in the distance learning format as well as to courses and activities in which the method of delivery has changed significantly from that approved in the original curriculum proposal. These courses in distance learning may be either certificate courses or in conjunction with degree granting programs. Any department or faculty group offering distance education courses is expected to meet the recommendations of the Middle States Association of Colleges and Schools and five other accrediting groups for Distance Education Programs, dated March 23, 2001, and be guided by policies established by the University. The text of these guidelines is made available at <*http://www.wiche.edu/telecom/Article1.htm*> by the Chronicle of Higher Education. The current USU Distant Education Policy includes basic education principles, guidelines on the implementation of those principles, and identification of the responsibilities of all who are involved in distance education at the University.

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IV. GRADUATE EDUCATION PROGRAMS

Graduate student contributions to research in their mentors' laboratories form an important contribution to the overall productivity of research programs. We do not have complete statistics on the papers from USU faculty in which graduate students are listed as co-authors, but some information is available. Six Graduate Program Directors responded to a request to identify peer-reviewed papers with publication dates from 1996 to 2002 by faculty in their programs in which students were identified as co-authors. ***A total of 108 peer-reviewed publications were identified across the six programs, with 62 individual graduate students serving as co-authors.*** **Publication rates vary considerably among programs, reflecting the different search styles across biomedical research disciplines, and this is certainly an incomplete count of graduate student publications from USU.** ***The data support the contention that graduate students play an important role in maintaining and facilitating research productivity among USU faculty.***

The graduate programs at USU are important to the University for many reasons. They help to train a cadre of well qualified, experienced biomedical scientists and public health practitioners who will continue the tradition of scientific service to the Nation in the civilian and military worlds. Strong graduate programs are important because of the major effect active graduate programs have on the intellectual vitality of departments and programs. The presence of well-populated and thriving graduate programs is also an important factor in the recruitment of the best applicants for faculty positions at the University. USU graduate programs already serve these multiple needs.

- **VIII,** *Graduate Education in the Biomedical Sciences and Public Health***,** Subcommittee Report, Middle States Association of Colleges and Schools (MSA) Self Study, submitted in March, 2003, pages 6 and 9.

ESTABLISHMENT

The Uniformed Services Health Professions Revitalization Act (Public Law 92-426) Established the University in 1972 and Directed the Establishment of Graduate Education Programs. Following Congress' establishment of the University and the School of Medicine (SOM) in 1972, the early founders understood that in order to gain and sustain accreditation, Graduate Education Programs had to be structured within the School of Medicine. The Liaison Committee on Medical Education (LCME) accreditation process is designed to certify that a medical program meets prescribed standards. It is recognized by both the LCME and the USU Board of Regents that graduate programs in the basic medical sciences leading to the Doctor of Philosophy Degree or to appropriate degrees at the Master Degree level are essential components of a School of Medicine dedicated to excellence in medical education.

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The Establishment of the Office of the Associate Dean for Graduate Education. In accordance with the requirement to ensure the academic excellence of the newly established Graduate Education Programs, the Dean of the USU School of Medicine (SOM) appointed **Colonel John W. Bullard, Ph.D., USA, (Retired), as the Assistant Dean of Graduate and Continuing Education Programs**. Dr. Bullard was recognized as one of the Army's experts on educational affairs, and in particular, continuing education. He had been a Medical Service Corps officer who had served in Vietnam and had been previously assigned to the Army Academy of the Health Sciences, the Office of the Surgeon General of the Army, and the Office of the Assistant Secretary of Defense for Health Affairs. The SOM admitted its first graduate students in 1977. During the early 1980's, in an effort to highlight the contributions of the Graduate Education Programs, Dr. Bullard began a research symposium to showcase the research contributions of the graduate students. Following Dr. Bullard's death in November of 1990, the Office of the Dean, SOM, with the concurrence of the USU President and Board of Regents, and in recognition of the importance of the Graduate Education Programs, determined that the leadership position for the Graduate Education Programs should be separated from the Continuing Education Programs and a subsequent search was held for the position of Assistant Dean for Graduate Education. **Michael N. Sheridan, Ph.D., Professor, USU Department of Anatomy and Cell Biology**, was selected as the second Assistant Dean for Graduate Education in 1991. The Dean, SOM, elevated the position to Associate Dean for Graduate Education in 1993; Dr. Sheridan served in that position until August of 2001, when **Cinda J. Helke, Ph.D., Professor of Pharmacology and Neuroscience**, was appointed to the position.

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Graduate Education Programs Provided at USU. The Doctoral and Masters Degree Programs available at USU are:

Interdisciplinary Ph.D. Programs in Emerging Infectious Diseases, Molecular and Cell Biology, and Neuroscience;

Departmentally-Based Ph.D. Programs in Clinical Psychology, Environmental Health Sciences, Medical Psychology, Medical Zoology, Pathology, and Applied Human Biology (Undersea Medicine);

Doctor of Public Health Program (DrPH);

Physician/Scientist (M.D./Ph.D.) Program;

Masters of Science Programs in Public Health, Molecular and Cell Biology, and Applied Human Biology (Undersea Medicine and Aerospace Physiology);

Master of Comparative Medicine (MCM) Program;

Master of Public Health (MPH) Program;

Master of Tropical Medicine and Hygiene Program (MTM&H); and,

Master of Military Medical History.

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Graduate Education Programs Generate Cost Avoidance for DoD during 2002 - $1,300,000. Since the establishment of the USU SOM Graduate Education Programs in 1977, through April of 2003, a total of 727 advanced degrees have been granted by the University: 229 Doctors of Philosophy; 11 Doctors of Public Health; 69 Masters of Science; 386 Masters of Public Health; 4 Masters of Science in Public Health; 25 Masters of Tropical Medicine and Hygiene; and, 3 Masters of Military Medical History. During 2002, 35 uniformed officers received advanced degrees (30 Masters Degrees and 5 Doctoral Degrees); at an average cost of $30,000 per Master Degree (30 x $30,000 = $900,000) and $80,000 per Ph.D. or DrPH Degree (5 x $80,000 = $400,000), the USU SOM Graduate Education Programs generated $1,300,000 of cost-avoidance for the DoD during 2002. (Note: The average costs were estimated based on tuition and fees in biomedical graduate programs associated with medical schools in the National Capital Area (George Washington University, Georgetown University, University of Maryland at Baltimore, and John Hopkins University).

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MISSION

The USUHS shall: ....4.3. Grant applicable advanced academic degrees; establish postdoctoral and postgraduate programs, and technological institutes; conduct medical readiness training and continuing education for members of the Uniformed Services in the health professions; and prepare individuals for careers in the health professions in the Uniformed Services.

- DoD Directive 5105.45, dated March 9, 2000, page two.

Mission Direction Calls for the Development of Graduate Education Programs. The goal of graduate study at the School of Medicine is to develop independent scholarship, originality, and competence in research, teaching, and professional service in the biomedical sciences and public health. This goal has guided the development of the Graduate Education Programs, which are designed for outstanding students committed to careers in the basic medical sciences, public health, or tropical medicine. The purpose of the Graduate Education Programs and their relationship to the School of Medicine were defined in the founding documents, which recognized that superior Graduate Education Programs in the basic medical sciences are an essential component in the accreditation process for a school of medicine.

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Graduate Programs Benefit the Military Health System. Graduate Education Programs in the basic medical sciences benefit the USU and the Military Medical System (MHS) as follows: 1) the Graduate Education Programs provide training opportunities for qualified active duty personnel of the Uniformed Services who receive authorization to participate in the USU graduate training programs under the sponsorship of their parent Service; 2) graduate students have the opportunity to become aware of the outstanding investigative programs, which are on-going in the Department of Defense laboratories located throughout the Washington, D.C. area. It is anticipated that the research institutes within the Department of Defense will be assisted in their recruitment of well qualified graduates on the basis of the mutual knowledge and respect developed during the graduate students' interactions at USU; 3) the academic environment of the SOM is maintained at a high level exposing the uniformed physicians-in-training to the disciplined methods of critical scientific inquiry, which are the rational basis of problem solving in medical science; 4) graduate students participate as teaching assistants and assist in the performance of instructional and investigative efforts, which are essential to the mission of the SOM and significant to the MHS; and, 5) doctoral programs and students are essential to attract and retain outstanding research faculty at USU.

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Responsiveness to the Needs of the Services.

Master of Military Medical History. A specific example of the USU Graduate Education Programs' direct response to the needs of the Surgeons General is the creation of a new program for the Master of Military Medical History. This program is an outgrowth of the Fellowship in Military Medical History established at USU in 1983, to train instructors of history for the United States Army Academy of the Health Sciences. A request was received from the Medical Service Corps of the Army to establish a degree granting program so that officers could continue to be used for the preservation of lessons learned and history education assignments by teaching at the Army Academy. Thus, the program was designed to meet the needs of Army officers in the Medical Service Corps Military Occupational Specialty (MOS) 70H, to prepare the officer to be an instructor in professional military medical education programs and for utilization as a field historian for specific military medical issues. The program of study is currently limited to officers in the Medical Service Corps of the Army; three degrees were granted in 1997, 1998, and 2001. The Program Director can be contacted by e-mail at <*dcsmith@usuhs.mil*> or at <*www.usuhs.mil/meh/gradprog.html*>.

The Graduate Program in Clinical Psychology Trains Clinical Psychologists to Serve in the Uniformed Services. The Graduate Program in Clinical Psychology is designed to train clinical psychologists to serve in the Uniformed Services. Students earn Master of Science (with master thesis) and Doctor of Philosophy (with doctoral dissertation) Degrees. This program is open to individuals who currently are serving in, or who are eligible and willing to join, the Uniformed Services. A year-long, full-time clinical internship is also required for graduation; and, the program is fully accredited by the American Psychological Association (also discussed under the Accreditation section, which follows). This graduate program is designed to prepare broad-based Ph.D. clinical psychologists and to emphasize both an appreciation for, and an understanding of, the special needs of the Uniformed Services and public health. The program trains clinical psychologists to be: effective providers of mental health services; creative problem solvers; critical thinkers sensitive to organizational needs and constraints; effective managers and communicators; and, professionals with the ability to evaluate processes and outcomes designed to improve the quality of health care. To accomplish these goals, the Ph.D. Program in Clinical Psychology follows the scientist-practitioner model of training. The program strongly values the development of knowledge and skills in applied clinical psychology and trains students to apply critical thinking skills to real world patients and situations, particularly in military and public health settings. The Ph.D. Degree requires independent scholarly work, comprehensive clinical training, a strong base in the foundations of psychology, and specialty training in uniformed clinical, health, and organizational psychology. The Program Director can be contacted by e-mail at <*tsbrocco@usuhs.mil*> or at <*www.usuhs.mil/mps/Psychology/index.html*>.

Masters and Doctoral Programs in Operationally-Oriented Applied Human Biology. Another example of the University's response to the needs of military medicine has been addressed by the Department of Military and Emergency Medicine. The genesis of the new program came when the medical and operational communities across the Services expressed an operational need to train personnel in Undersea Medicine, Aviation Physiology, and other areas of Applied/Operational Physiology. These fields are unique to the military communities and demand specialized training. As such, the program will unify a diversity of disciplines requisite for exploring questions relevant to these operational activities and applied situational outcomes. In the area of Undersea Medicine, the driving force was derived from two specific concerns: a lack of adequately trained personnel (118 researchers in 1990 and less than 46 in 2000; of the 46 researchers, over 60 percent are 50 years or older); and,

operationally critical biomedical research requirements (i.e., CO2 detection and removal; hyperbaric oxygen toxicity; decompression; improved thermal protection; escape and rescue from a disabled submarine; physiological effects of underwater sound; fluid/hydration during operations; and, the psychological effects of submarine operations; etc.). In Aviation Physiology, the impetus behind the drive for the new program resulted from a requirement for the following: the provision of consistent and similar training for all uniformed aviation physiology communities; the preparation of graduates qualified to fill open aviation billets in any of the Services; and, the centralization of all aviation training. These requirements led to the development of a Graduate Program in the Department of Military and Emergency Medicine with emphases in Undersea Medicine and Aviation Physiology. The program of study was approved on June 20, 2001 by the Graduate Education Committee, received final approval from the Board of Regents (BOR) during August of 2001, completed curriculum development by mid-2002, and began requesting student training billets from the Services in September of 2002. In September of 2002, the Associate Dean for Graduate Education reported to the BOR that one student had matriculated into the new program in August of 2002. The program recognizes the broad range of techniques and disciplines spanned by operationally-oriented applied human biology that affect military missions, deployability, and the readiness of military personnel. Programs of study, available to Uniformed Service members, will lead to a Master of Science or a Doctor of Philosophy in Undersea Medicine, and a Master of Science in Aviation Physiology. The new program provides students with the unique opportunity to pursue an academic degree, which includes a core background in the basic sciences and other disciplines essential to applied research, coupled with experience in advanced laboratory and field studies. In sum, graduates will be prepared to understand, evaluate, and counter operational and environmental threats from the cell to the whole body level, all of which are critical to the foundations of operational medicine and applied physiology. The Program Director can be contacted by e-mail at <*pdeuster@usuhs.mil*> or at <*www.usuhs.mil/mim/gradprog.html*>.

The Physician Scientist Training Program (Medical Doctor/Doctor of Philosophy Program). The Medical Doctor/Doctor of Philosophy Program at USU was established during 2002, to train outstanding, dedicated, military officers as independent physician-scientists to carry out both clinical investigations and biomedical research in the basic sciences. There is currently one student in this program who matriculated in the Neuroscience Program in August of 2002. The program combines a rigorous basic science graduate curriculum with outstanding clinical training, and uniquely integrated Medical Doctor/Doctor of Philosophy activities that qualify students for careers in academic medicine, biomedical and clinical research, as well as clinical practice. The decision to enter this program is formidable and requires the student to dedicate seven to eight years toward completing this challenging combination of medical and scientific training. Entering students must demonstrate a high level of preparedness, outstanding academic credentials, motivation, and commitment to the goals of the program. Matriculants to the program must maintain all requirements necessary to be commissioned into the Uniformed Services throughout the Doctor of Philosophy portion of his or her training. The student will complete all required courses for the Doctor of Philosophy during the first and second years, to include many of the courses required for the first two years of the SOM curriculum. The qualifying examination for advancement to candidacy will be taken at the end of the second year and a doctoral thesis proposal must be subsequently submitted. The third year will be a research year. The transition phase begins after the third year and lasts two years. The student must complete all requirements to be commissioned in the Uniformed Services and attend Officer Basic Training; and, the student will complete the remaining requirements of the first and second years of SOM curriculum as a uniformed officer. The student will also continue to spend significant time on thesis research, finalizing the thesis project, and preparing and defending his/her doctoral dissertation. The Office of Student Affairs will share supervision of the student with the Graduate Education Office during this phase of training. The final component of the program is the clinical phase during the sixth and seventh years; the student will begin full-time participation

in the SOM curriculum under the guidance of the Office of Student Affairs and complete all required clinical rotations and clerkships. Subsequent to the completion of all requirements, the student will be awarded both the Medical Doctor and the Doctor of Philosophy Degrees and commissioned as an active duty officer (0-3) at commencement. Information can be accessed at <*admissions@usuhs.mil*> or <*graduateprogram@usuhs.mil*>.

The Master of Comparative Medicine (MCM) - An Interdisciplinary Program. This interdisciplinary graduate program, Comparative Medicine, offers a new degree, the Master of Comparative Medicine. The MCM Program falls within the scope of graduate programs defined as appropriate for the University, responds to a specified need of the Uniformed Services, and fosters a positive collaborative relationship with USU, the National Institutes of Health, the United States Public Health Service, and the Department of Army Medicine. The program will continue to fulfill the obligation undertaken by USU in 1993 to build a graduate degree program in support of Laboratory Animal Medicine (LAM) residency training. The new degree program was approved by the Graduate Education Committee on April 9, 2002, and submitted for approval to the Board of Regents in May of 2002; it received final approval from the BOR in August of 2002. This Master Degree Program is the redesignation of graduate courses approved by the Graduate Education Committee for the USU Master of Public Health Degree Program in the Department of Preventive Medicine and Biometrics. The Comparative Medicine faculty will consist largely of non-billeted LAM veterinarians and other USU faculty who qualify for secondary faculty appointments in the MCM Program under the terms of USU Instruction 1100, The Appointment, Promotion, and Tenure of the Faculty. The leadership of the program, pending adequate senior faculty in Comparative Medicine, will be provided by a committee of USU senior basic science faculty familiar with the issues of graduate education and the use of laboratory animals in medical schools. This committee, called the Academic Administrative Committee, will consist of at least three professorial faculty and will evaluate candidates for matriculation, approve graduate programs of study, counsel students in difficulty, and recommend students for the awarding of the degree on completion of an approved program of study. Until such time as the Comparative Medicine Program achieves mature status with a critical mass of senior faculty principally interested in the program, it will not have independent representation on SOM committees, but will report *ad hoc* as needed. Since the program is a redesignation of existing student programs and course work, no new space or faculty resources are required. While the primary motivation for establishing the Comparative Medicine Residency Program, of which this Master Degree is a part, is collaboration with other Federal health agencies, there are potential benefits to USU and its graduate programs. While working with the students from this program, USU faculty and graduate students will share their interests and scientific work. And, the alumni of this program will return to animal facilities in the Department of Defense, the National Institutes of Health, or elsewhere, where they will be in an ideal position to foster collaboration among interested research workers in similar areas.

Three Interdisciplinary Research Programs Relevant to the Needs of the Uniformed Services. The research and development goal of the USU Strategic Plan is to build, sustain, and publicize interdisciplinary research programs relevant to the needs of the Uniformed Services. Currently, there are three interdisciplinary research programs: 1) **Neuroscience.** The Interdisciplinary Program in Neuroscience and its Ph.D. Graduate Program are supported by faculty members whose primary appointments are established throughout the SOM departments. It provides a seminar series and a flexible program of courses and research areas for graduate students and postdoctoral fellows who have strong training in the biological, behavioral, and/or physical sciences. Research areas strongly represented by faculty include: development, regeneration, and plasticity in the nervous system; molecular neurobiology; and, adaptive responses of the nervous system to stress, injury, and a changing environment. Integrated interdisciplinary instruction in the development, structure, function, and pathology of

the nervous system and its interaction with the environment is also included. Three students entered the program, including one Medical Doctor/Doctor of Philosophy student, in the Fall of 2002; the Program Director can be contacted by e-mail at <*rarmstrong@usuhs.mil*> or at <*www.usuhs.mil/nes/home.html*>; 2) **Molecular and Cell Biology.** An Interdisciplinary Program in Molecular and Cell Biology (including Genetics) has been developed to contribute to cross-disciplinary interactions and to develop the critical skills needed for data presentation and analysis; the program also includes a seminar series and a journal club, all of which support the Ph.D. Degree Program. This interdisciplinary Ph.D. Degree Program offers training to address many of the fundamental questions of modern biology ranging from protein-nucleic acid interactions to cytokines, growth factors, and developmental recombination. Seven students entered the program in the Fall of 2002; the program consists of faculty mainly from six SOM departments. The Program Director can be contacted by e-mail at <*jharmon@usuhs.mil*> or at <*www.usuhs.mil/mcb/index.html*>; and, 3) **Emerging Infectious Diseases.** Initially, a special interest group from the USU SOM Departments of Microbiology and Immunology and Preventive Medicine and Biometrics, to include faculty from other departments who were interested in infectious diseases, began meeting and successfully submitted a proposal for an NIH training grant in this area. This effort led to the establishment of the Emerging Infectious Diseases (EID) Graduate Program in 2000. The EID Program has three academic tracks within the field of emerging infectious diseases: microbiology and immunology; pathology; and, preventive medicine/ parasitology, with primary interest in the pathogenesis, host response, pathology, and epidemiology of infectious diseases. The research training emphasizes modern methods in molecular biology, cell biology, and interdisciplinary approaches. Ten students entered the EID Program in the Fall of 2002 (a description of the program follows). The Program Director can be contacted by e-mail at <*emetcalf@usuhs.mil*> or at <*www.usuhs.mil/mic/eid.html*>.

Additional academic departments that contribute extensively to the teaching and research training of doctoral and master degree students through interdisciplinary programs include: Anatomy, Physiology and Genetics; Biochemistry; Microbiology and Immunology; Pharmacology; and, many clinical departments such as Medicine, Neurology, Pediatrics, and Psychiatry.

The Interdisciplinary Graduate Program in Emerging Infectious Diseases.

Background. In August of 1999, the USU Board of Regents gave its final approval to a Graduate Program in Emerging Infectious Diseases (EID). This program is designed for both military and civilian applicants who wish to pursue a program of study leading to the Ph.D. Degree in one of the academic tracks within the interdisciplinary field of Emerging Infectious Diseases. The EID Program includes training in the basic science areas of: microbial pathogenesis; host immune responses; and, the pathology and epidemiology of infectious diseases. In addition, this program provides an opportunity for military Pediatric and Adult Infectious Diseases Fellows to complete the research components of their Fellowships in Infectious Diseases. With the addition of this program, the SOM has increased its capacity and commitment to instruct students in the biology of infectious diseases, especially in the areas of interest to military medicine. The faculty of the EID Program are primarily full-time members of the Departments of Microbiology and Immunology, Pathology, Preventive Medicine and Biometrics, Pediatrics, and Medicine. In September of 1999, **Eleanor S. Metcalf, Ph.D., Professor of Microbiology and Immunology,** was selected as the Program Director; and, she continues to serve in that position.

Both Military and Civilian Students Are Matriculants in the EID Program. The inaugural graduate student class of 10 matriculated in the Fall of 2000. This class consisted of seven full-time and three part-time students; two of the three are in the Uniformed Services. This class took its Qualifying Exams in June of 2002. These students are now conducting their thesis research on a full-time basis. In the Fall of 2001, 10 new students entered the EID Program. Two of these students are in the Uniformed Services; one is in the Army Medical Corps and the other is in the United States Public Health Service. These students have now selected their academic track and thesis mentors and are taking advanced courses. They will take their Qualifying Exams in June of 2003. The 11 students, who entered the EID Program in the Fall of 2002, are in the process of completing the first year of their Core Curriculum and have begun to take track-specific courses and laboratory rotations. Two of these students are full-time uniformed officers serving in the Army and the Navy. Army Captain Tim Straight is a graduate of the USU SOM and he is also an Adult Infectious Disease Fellow at the Walter Reed Army Medical Center. The EID Program Director is enthusiastic over his participation and the potential precedent that this occasion will set. The EID program-unique course, "Models of Emerging Infectious Diseases," is underway, and both second and first-year EID students take this course together; a situation designed to promote both academic and informal interactions between the two classes. In addition, one military Pediatric Infectious Disease Fellow is attending. The number of applicants increased by 40 percent during the past year, and the EID Program now has more outstanding applicants than it has stipends.

The EID Program Recognizes the Extent to which Basic Science Advances in the Area of Infectious Diseases Can Affect the Current and Future Health of Individuals throughout the Military Health System. The Emerging Infectious Diseases Program also serves as an opportunity for the facilitation of educational and scientific interactions between students and faculty at USU who share common interests in the contemporary approaches to the study of molecular biology, pathogenesis, and host responses within the context of emerging infectious diseases. The establishment of this program at USU formally recognizes the breadth of disciplines spanned by emerging infectious diseases and the extent to which advances in these areas can affect the current and future health of individuals within the United States and also in the global arena. This situation is particularly critical and important given the recent events of bioterrorism. As part of the EID Program, courses on the agents and effects of bioterrorism are offered. To date, this program is one of the only graduate programs in the country to offer formal training in this critical area. The implementation of an interdisciplinary and interdepartmental Program in Emerging Infectious Diseases will also broaden and enhance the overall educational objectives of USU and bring together faculty and students in a scientific community designed to stimulate and promote collaborative interactions. Since USU has the only school of medicine that offers a formal program in EID, the University plans to be at the forefront of training broadly-based military and civilian infectious diseases scientists for the future. As indicated above, the Program Director can be contacted by e-mail at <*emetcalf@usuhs.mil*> or at <*www.usuhs.mil/mic/eid.html*>.

<u>Graduate Education Programs in Preventive Medicine and Public Health Address the Special Needs of the Military Health System.</u> The Department of Preventive Medicine and Biometrics (PMB) offers graduate education programs leading to the Degree of Master of Public Health (MPH), Master of Tropical Medicine and Hygiene (MTM&H), Master of Science in Public Health (MSPH), Doctor of Public Health (DrPH), and Doctor of Philosophy (PhD) in Medical Zoology and Environmental Health Sciences. Between 1983 and April of 2003, 436 individuals have graduated from these degree programs and earned the following degrees: 386 MPH, 4 MSPH, 25 MTM&H, 1 MS, 11 DrPH, and 9 PhD. During 2002, 36 Preventive Medicine and Biometrics students were awarded advanced degrees: 1 Doctor of Philosophy; 4 Doctors of Public Health; 29 Masters of Public

Health; and, 2 Masters of Science in Public Health. The PMB Graduate Programs have undergone considerable growth over the past several years and have approximately 60 students currently enrolled in the Master and Doctoral Programs. With its stated mission "to produce knowledgeable and highly skilled public health professionals in support of the health and global mission of the Uniformed Services," the PMB Department has sought to be responsive to the needs of its customers; and, this is reflected in the types of programs and training offered. During 2002, PMB continued its collaborative educational agreements with the Walter Reed Army Medical Center Preventive Medicine Residency Program and Internal Medicine Fellowship Program, the Army Program for Training in Health Services Administration, the United States Army and United States Public Health Service Laboratory Animal Medicine Program, the Navy Dental Research Institute Program in Dental Public Health, and the Indian Health Service Environmental Health Training Program. In addition, the PMB Department is affiliated with the United States Army and Navy Biomedical Research Laboratories located in: Bangkok, Thailand; Rio de Janeiro, Brazil; Nairobi, Kenya; Cairo, Egypt; Jakarta, Indonesia; and, Lima, Peru. The MTM&H Program includes a six-week overseas clinical experience in tropical medicine; the students find excellent opportunities at these overseas laboratories. A research program also exists under an agreement with the Ministry of Health in Belize. Several doctoral students have found opportunities to do research in these various locations.

Two new programs expanded the graduate education enterprise at USU. The Occupational Ergonomics Program was jointly developed by the PMB Department and the United States Army Center for Health Promotion and Preventive Medicine and brought one graduate student to this new area of concentration in the MPH Program. Additionally, four graduate students were the first to be enrolled in the Air Force-sponsored International Health Specialist Program.

The current Graduate Program in Public Health, as of March 2003, has 48 students at the Master Degree level (MPH, MTM&H, and MSPH); these programs are designed for students with at least three years of experience in a health-related field. Forty-four of these students are in the Uniformed Services and four are civilians. These students include 19 physicians, 12 veterinarians, 3 dentists (including a member of the Canadian Forces); 2 nurses; l physical therapist; 1 dietitian; 1 statistician; 1 engineer; 4 environmental science and industrial hygiene officers; 3 Air Force Biomedical Science Corps officers (health physics and international health specialist tracks); and, 1 health services administrator. First-year residents in General Preventive Medicine/Public Health and Occupational and Environmental Medicine take courses and meet all of the requirements for the MPH or MTM&H Degrees as part of their residency training. At the doctoral level, 8 individuals (3 uniformed officers; 5 civilians) are Doctor of Public Health students and four individuals (3 uniformed officers; 1 civilian) are Doctor of Philosophy candidates. The Doctorate in Public Health Program prepares individuals for leadership roles in research, teaching, or policy development in the field of public health. Two additional Ph.D. Programs are: Medical Zoology, for students with a Master Degree in Entomology or Parasitology who wish to pursue further study in field-oriented medical parasitology or vector biology; and, Environmental Health Sciences, which includes environmental health science research particularly in the area of military-relevant exposure assessment. Four individuals (3 uniformed officers; 1 civilian) are Doctor of Philosophy candidates. The Program Director can be contacted by e-mail at <*ggackstetter@usuhs.mil*> or at <*www.usuhs.mil/pmb/pmb.html*>.

The Department of Preventive Medicine and Biometrics Graduate Education Programs have an outstanding record of responding to the requirements of the Uniformed Services: 1) ***A new Ph.D. Program in Environmental Health Sciences*** was recently established in response to identified needs within the Uniformed Services; it currently

has two military students, both active duty Naval officers, enrolled in the program; 2) ***the Master of Science in Public Health (MSPH)*** has graduated four degree candidates between 2000 and 2002, with one other individual expected to complete the program in June of 2003. The two-year MSPH Program is designed for the non-physician public health practitioner planning a career in one of four specialty areas of public health: *environmental health*; *industrial hygiene*; *health physics*; or, *medical entomology*. Students have the opportunity to design and develop research protocols leading to a Master's Thesis. *Following the attack at the Pentagon on September 11, 2001, two MSPH students and one Ph.D. student, as well as their PMB Department staff, assisted the United States Army and the Environmental Protection Agency (EPA) to set up a command unit for chemical detection at the site of the disaster;* 3) ***the Occupational Ergonomics Concentration*** was recently established in response to the Army's request for specialty training in occupational ergonomics within the MPH Program. The first student entered this program in July of 2002 and will graduate in June of 2003; 4) ***the International Health Specialist Program*** was added as an additional area of concentration with the MPH Program in response to a request from the Surgeon General of the Air Force. Four students entered the program in July of 2002 and will receive their MPH Degrees in June of 2003; 5) ***the TriService Advanced Military Tropical Medicine Course*** has been offered at USU, beginning in 1996, through the Summer of 2002. During 2002, 75 military medical officer students were trained in operational military medicine, consisting of four weeks of lectures and laboratories in the advanced diagnosis and treatment of tropical diseases. Approximately 70 lecturers provided 106.5 hours of didactic instruction. *To date, approximately 375 students have completed the course;* 6) ***the Tropical Medicine and Travelers' Health Course*** is offered as a 12-week course during the Spring Quarter of the MPH Program. It includes a comprehensive lecture, seminar, laboratory and case-based curriculum approved by the American Society of Tropical Medicine and Hygiene and leads to eligibility for the qualifying examination in Tropical Medicine and Travelers' Health. To date, 27 medical officers have completed the course, including 16 who have subsequently taken and passed the certification examination; 7) ***the Diagnostic Parasitology Course*** is offered as a series of lectures and hands-on laboratory sessions for individuals wishing to study parasitic infections in humans. Military and civilian medical technologists and physicians from all parts of the world have completed this course. *Since 1988, over 263 individuals have taken the course, to include the 27 individuals who took the course during 2002;* and, 8) ***Medical Executive Skills Training -Integrating Clinical Managerial Decisions to Improve Population Health***, a five-day training course held four times each year, responds to the Congressional mandate that current and prospective DoD health care leaders receive training in health care management and administration. *To date, 24 sessions have been held in the TRICARE Regions and approximately 700 senior officers have been trained for the MHS.* (See Section II of this document, The USU SOM Department of Preventive Medicine and Biometrics and the Centers for Preventive Medicine and Public Health, for further discussion.)

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ACADEMIC REQUIREMENTS AND ACCREDITATION

Academic Excellence and Uniformity Ensure Accreditation. To ensure academic excellence within the Graduate Education Programs, in addition to the oversight and reviews provided by the GEC and the academic departments, a series of requirements for the Doctor of Philosophy Degree (Ph.D.) have been established. Some departments have established additional requirements. The minimum residency requirement for the Ph.D. is 36 months of full-time study; but, it may be less if a student holds an advanced degree. All requirements must be completed no later than seven years after matriculation. Formal course work, participation as teaching assistants in the SOM teaching programs, and directed research activities are all components of a student's predoctoral program. Full-time status is defined as 12 or more credit hours each quarter. The minimum course work requirement for the doctorate is 48 graded credit hours and the minimum for total academic credit is 144 credit hours. A qualifying examination (comprehensive examination) is conducted and graded by a committee of graduate faculty. A written dissertation based on the original experimental research, or an alternative thesis format, differentiated by the materials and methods section and results section, in the form of acceptable peer-reviewed publications is required. A total of 24 credit hours of graduate course work taken within the last 5 years at other academic institutions, either before admission to the SOM or during study at USU, may be transferred, provided such courses are equivalent to courses at the SOM and are approved by the graduate faculty of the specific program and the Graduate Education Committee. Some departments' Ph.D. Programs of Study encompass an independent project whereby the student will receive a Master Degree while pursuing the Ph.D. Requirements are designed to ensure academic excellence and uniformity in degree programs across the departments. An approved thesis is required of all candidates for the Master of Science Degree. A thesis is not required for the Master of Public Health or the Master of Tropical Medicine and Hygiene; but, an independent project paper must be completed to fulfill requirements for these degrees.

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The Graduate Education Committee and Department Reviews Ensure the Quality of the Programs. Each Graduate Education Program is managed by a Program Director. The Graduate Education Committee (GEC) is composed of the Graduate Program Directors, representatives from the Basic Science Departments, the Associate Dean for Graduate Education, the Vice President for Teaching and Research Support, two members of the faculty appointed by the Dean, SOM, and a Graduate Student Representative. The GEC is responsible for periodic reviews of the policies and procedures of each Graduate Education Program, reviews of academic records and other aspects of graduate student standing, and the monitoring of the overall quality of graduate student life at the University. In addition, all graduate courses must be submitted to the GEC for consideration and approval prior to offering (*over 350 individual graduate education courses have been established by the participating faculty*). Significant changes to previously approved courses must also be considered by the GEC prior to incorporation. Departmental faculty annually review and update the graduate course offerings for each program. Some departments rely upon SOM course offerings for their Graduate Education Program curricula, supplemented by graduate course offerings. Some SOM courses have been subdivided into individual graduate offerings, allowing graduate students to take appropriate parts of a larger course. The GEC makes recommendations on its areas of responsibility to the Dean, SOM, through the Associate Dean for Graduate Education. Following the 1999 SOM Self Study, no major revisions were recommended for the Graduate Education Programs. Currently, the Self-Study for the

Middles States Association points out that "the USU graduate programs have continued to mature and develop with new interdisciplinary programs (e.g., Emerging Infectious Diseases) and programs targeted toward military needs (Undersea Medicine, Aviation Physiology) being initiated in the past five years. These programs take advantage of unique faculty expertise and other resources and opportunities unique to a Federal health sciences university. In addition, the Office of Graduate Education implements a regular formal process of external review of its graduate programs to assure that high quality programs are fostered and maintained" (*VIII, Graduate Education in the Biomedical Sciences and Public Health***,** Subcommittee Report, Middle States Association of Colleges and Schools (MSA) Self Study, submitted in March, 2003, page 8).

Within the last two years, each of the established Graduate Degree Granting Programs, subsequent to the preparation of a detailed self-study, was site-visited and reviewed by an external team of graduate educators. During the initial review cycle, the Neuroscience Program, Programs in the Medical and Clinical Psychology Department, the Anatomy, Physiology and Genetics Department, and the Pharmacology Department were evaluated. In 2001, the Molecular and Cell Biology Program and the Programs of the Pathology Department and the Department of Microbiology and Immunology were externally reviewed. Constructive improvements to the Graduate Education Programs have resulted from these external reviews. Newer programs, including the Emerging Infectious Disease Program, the Applied Human Biology Program, and the Master of Comparative Medicine Program will be externally reviewed within the next few years. This external review process is intended to bring attention to the strengths and weaknesses of the programs and to appropriately focus institutional resources for graduate education.

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Accreditation of USU Graduate Programs in Public Health Is Extended through December 31, 2005. The Graduate Education Programs offered by the Department of Preventive Medicine and Biometrics (PMB), as an integral part of the SOM and the SOM Office of Graduate Education, are included in the full accreditation granted by the Commission on Higher Education of the Middle States Association of Colleges and Schools to the University. Given the mission of USU and the importance of prevention to military medicine, PMB is a large and vital part of the medical school and the University. In addition to accreditation by the Middle States Association as a Department within the SOM, the PMB graduate programs are nationally accredited by the Council on Education for Public Health (CEPH). CEPH is the recognized accrediting body for graduate schools of public health and graduate programs in community health education and community health/preventive medicine. The program was initially accredited in 1985 and was last reviewed in 1998. The CEPH report, following the June 1998 site visit by a team of external evaluators, noted that "the values of the institution and the philosophy of military medicine are an exceptionally 'good fit' with the values and philosophy which underlie public health and preventive medicine. The program has strong ties to the military community, both locally and worldwide, and the instructional programs have particular relevance to the needs of the Uniformed Services to which program graduates will return after their training. The curriculum is quantitatively-oriented and rigorous." The PMB Graduate Programs in Public Health are fully accredited through 2005.

Following the CEPH accreditation process in 1998, an *ad hoc* committee was established to articulate the mission, goals, and objectives of the Preventive Medicine and Biometrics Graduate Programs. The PMB Department has continued to use this document as part of a dynamic process of program review and evaluation for continuous quality improvement, including efforts to identify measurable program outcomes. In addition to

the rigorous, quantitatively focused curriculum (60 credit hours), students are required to complete a 108 hour practicum experience, as well as an independent project. Greater emphasis has been placed on basic research methodology, and students are encouraged to present their research results at scientific meetings and to submit manuscripts to peer-reviewed journals for publication. The Program Director can be contacted by e-mail at <*ggackstetter@usuhs.mil*> or at <*www.usuhs.mil/pmb/pmb.html*>.

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Clinical Psychology Program Receives Accreditation. The Department of Medical and Clinical Psychology's Clinical Psychology Ph.D. Program has received full accreditation from the American Psychology Association's Committee on Accreditation. The program received its accreditation in record time and will be listed annually among accredited programs of professional psychology in the American Psychologist. The site visit report stressed that "the curriculum is clearly articulated and appropriately sequenced, and the practicums are organized. Well-qualified and accessible, the faculty provides excellent role models for students. Also commendable is the program's commitment to systematic self-evaluation." Doctoral programs and research in this area emphasize the application of psychology to behavioral medicine and to clinical psychology. Study in applied areas on the interface of health, psychology, and behavior, and in the basic areas of psychology is offered. This American Psychological Association-accredited Clinical Psychology Ph.D. Program is offered to selected members of the Uniformed Services. The Program Director can be contacted by e-mail at <*tsbrocco@usuhs.mil*> or at <*www.usuhs.mil/mps/Psychology/index.html*>.

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ACADEMIC RESOURCE FOR THE UNIFORMED SERVICES

The Development of Independent Scholarship. The goal of graduate study in the biomedical sciences and public health at USU is to develop independent scholarship, originality, and competence in research, in teaching, and in professional service to the Nation. The Graduate Education Programs are designed for outstanding students with a strong commitment toward permanent careers in the basic medical sciences, and potentially, in the Federal Government. Within each Ph.D. Program, an individualized course of study is designed for each student to meet his or her specific needs **(***over 350 individual graduate education courses have been established by the participating faculty at USU*). The graduate programs are open to qualified civilian and uniformed personnel. Students accepted for graduate study are enrolled on a full-time basis. They assist in the performance of the instructional and investigative efforts that are carried out at the University. Active duty military and uniformed services personnel must obtain the approval and sponsorship of their parent Service; they also incur an obligation for additional service, in accordance with the regulations of the parent Service that govern sponsored graduate education. Most of these officers will complete careers in their parent Services and use their graduate education and training to fulfill specific assignments for their Surgeons General and the Military Health System.

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The Faculty of the Graduate Education Programs Ensures an Individualized Program Built on Quality Research and Instruction. All departments have sufficient full-time faculty to accommodate the present advising needs for the students in the Graduate Education Programs. Most academic departments reported in the 1999 SOM Self-Study that additional students are desired and could be accommodated without placing undue demand on existing faculty resources. All departments have a faculty/student ratio that provides excellent opportunities for continuous interaction; and, large numbers of both basic science and clinical science faculty members are involved in the didactic and research training of USU graduate students. *Currently, there are 200 civilian and 110 uniformed faculty members in the USU SOM and over 150 of those 310 SOM faculty members are actively supporting the Graduate Education Programs, which include approximately 160 graduate education students.* Formal occasions for faculty and graduate student interactions occur through seminars, journal clubs, research laboratory rotations, and courses; opportunities abound for students to interact with faculty on an informal and regular basis.

A faculty actively involved in research is critical to the success of the Graduate Education Programs. Through their research activities, high quality faculty members maintain themselves at the cutting edge of their various disciplines. Thus, they contribute to the research mission of the SOM by making advances in medically related research; and, they are also better equipped to function as "state-of-the-art" educators. The productivity of the USU SOM research faculty, the quality of their research, and their ability to successfully compete for extramural and intramural funding are all indications of the success of the USU research mission. The presence of strong Graduate Education Programs contributes to this success and is essential not only for the continued growth of the research activities at the University, but also for the future of medical research and education. The SOM Graduate Education Programs are clearly recognized by the institution as essential to achieving success in the University's research mission. Departments with active and vigorous graduate programs show high research productivity. USU graduate education students regularly present their research at professional meetings and publish their findings in peer-reviewed scientific journals, thus publicizing and promoting the University's reputation. The University's reputation is also enhanced by the success of the graduates to secure postdoctoral positions in highly

regarded public and private research laboratories, followed by faculty appointments or positions of responsibility in government research, regulatory agencies, and industry.

2002 School of Medicine Biomedical Graduate Educator Award. As part of the 2002 USU Graduation Ceremonies, **Regina Armstrong, Ph.D., Director of the Neuroscience Program,** received the Biomedical Graduate Educator Award. This award recognizes excellence in teaching, the mentorship of graduate students, the administration of graduate programs, and the promotion of the interests of graduate education. Doctor Armstrong was selected to receive this award because of her demonstrated commitment to graduate education through her extensive and outstanding contributions to the education of the graduate students at USU. Dr. Armstrong has provided outstanding leadership to the Graduate Education Programs of USU as the Director of the Neuroscience Program; and, she has served on multiple School of Medicine Committees in addition to providing on-going dedicated expertise to the Graduate Programs.

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Research Facilities Are Well Equipped and Support the Graduate Education Programs. The Graduate Education Programs are conducted in facilities on the campus of USU. Well-equipped, state-of-the-art laboratories are available to support the wide variety of research projects directed by the faculty in the basic medical sciences. Individual laboratories and core facilities are well-equipped with the instrumentation required for modern biomedical research. Special resources include the following: high resolution transmission and scanning electron microscopes; video-based computer graphics and confocal microscopy; a central resource facility providing custom synthesis of oligonucleotides and peptides; biohazard containment laboratories; a centralized animal resources facility; a medical library; computer support to include orientation to web sites and the Internet; and, a learning resources center. Students can enhance their educational experiences at USU through collaboration with the National Institutes of Health, the Library of Medicine, the Naval Medical Research Command, the Walter Reed Army Institute of Research, the Armed Forces Institute of Pathology, the Armed Forces Radiobiology Research Institute, the National Institute of Standards and Technology, numerous biotechnology companies, and other major institutions in the area.

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The Graduate Student Colloquium. The Graduate Student Research Colloquium was begun in 1980 to promote scholarly interchange between graduate students and the academic community at USU and to recognize the research achievements of USU graduate students. The 2002 Graduate Student Colloquium featured a career workshop organized by the students, platform and poster presentations given by students, and *the John W. Bullard Lecture*. The Career Development Workshop consisted of seven presentations by accomplished individuals working in various aspects of the scientific enterprise. These ranged from medical school faculty, to scientific review administrators, to patent lawyers involved with biotechnology, to a study director at the National Academy of Science. Nine scientific poster presentations by students were followed by a lunch, which included the Bullard Lecturer and six oral presentations by students. The 2002 Bullard Lecture was presented by **Marc K. Jenkins, Ph.D., Professor, Department of Microbiology, University of Minnesota,** on *Tracking the Generation of Memory CD4 T Cells in vivo.* Awards were given for the best poster and platform presentation.

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STUDENT AFFAIRS

Selection of Students. A formal application is required of all persons seeking admission to graduate study at USU. Applications and all supporting documentation must be received no later than January 15th for programs beginning in the following August. Applicants must have completed a Baccalaureate Degree Program from an accredited academic institution and have taken the Graduate Record Examination (GRE) before matriculation at USU. The GRE may be waived if the applicant possesses an advanced academic degree. All graduate students are admitted to a program of graduate study on a full-time, or part-time, basis and assist in the teaching and research programs that are integral components of the Graduate Education Programs in which they are enrolled.

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Demographics and Qualifications of the Student Body. Sixty-six new students matriculated into the Graduate Programs of the SOM during August of 2002. Of these, 28 were admitted to Ph.D. Degree Programs and 38 were admitted to Masters Degree Programs. Of the Ph.D. matriculants, the greatest number enrolled in the interdisciplinary programs: Emerging Infectious Disease Programs - 10 students; the Neuroscience Program - 3 students; and, the Molecular and Cell Biology Program - 7 students. Departmentally-based programs in Medical and Clinical Psychology enrolled 4 students; Preventive Medicine and Biometrics enrolled 2 students; and, Pathology and Military and Emergency Medicine each enrolled one student. The students in Masters Degree Programs are almost entirely enrolled in the graduate programs of the Department of Preventive Medicine and Biometrics Master of Public Health Program - 32 students; the Master of Science in Public Health - 5 students; and, the Master of Tropical Medicine and Hygiene - 1 student.

The 164 students currently enrolled in the Doctoral and Masters Degree Programs at USU come from all parts of the country, from all types of undergraduate academic institutions, and from many different career-paths. *Of these individuals, 108 are Ph.D. or DrPH students, while 56 are Master Degree candidates. Approximately 50 percent of the graduate students attend USU as active duty members of the Uniformed Services, to include the United States Army, Navy, Air Force, and Public Health Service (77 uniformed officers/87 civilians).* Most students are enrolled on a full-time status; however, a few exceptional students are accepted into degree-granting programs as part-time students. The MPH Program is generally completed in one year (as a full-time student); the Masters Degree Programs take approximately two years to complete; and, the Doctoral Programs take from three to seven years to complete (four to five years is the average time for the Ph.D. Program).

Active-duty military personnel accepted to study full-time must have the consent and sponsorship of their parent Services and incur a service obligation to the United States Government after the completion of their graduate training programs. The University offers USU-supported stipends on a competitive basis to civilian doctoral students who are United States Citizens or resident aliens. Forty-nine of the civilian Ph.D. students receive user-supported stipends; other civilian doctoral students receive stipend support from other sources. All but seven of the 164 students are United States Citizens or Permanent Residents.

Applicants must have completed a Bachelor Degree from an accredited academic institution prior to enrollment; they must arrange for: official transcripts of all prior college-level courses; GRE scores taken within the last two years; and, letters of recommendation from three individuals who are familiar with their academic

work. Information and application forms can be downloaded from <*http://www.usuhs.mil/geo/gradpgm/index.html*>. Completed applications must be received before January 15th for matriculation in late August; there is no application fee.

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23rd Commencement - May 18, 2002. Well over 2,000 family members and guests attended the 23rd Commencement Ceremony at The Daughters of the American Revolution Constitution Hall in Washington, D.C., on May 18, 2002. At the graduation ceremony, the following School of Medicine Graduate Education Programs were recognized in the commencement program: 11 Doctor of Philosophy Degrees; 4 Doctor of Public Health Degrees; 2 Masters of Science Degrees; 1 Master of Military Medical History; 2 Masters of Science in Public Health Degrees; and, 29 Masters of Public Health Degrees.

The USU Graduate Education Programs Have Granted a Total of 727 Degrees. Since the establishment of the USU SOM Graduate Education Programs in 1977, through April of 2003, the Graduate Education Programs have granted a total of 727 Doctoral and Master Degrees in the Biomedical Sciences and Public Health: 229 - Doctor of Philosophy; 11 - Doctor of Public Health; 69 - Masters of Science; 386 - Masters of Public Health; 4 - Masters of Science in Public Health; 25 - Masters of Tropical Medicine and Hygiene; and, 3 Masters of Military Medical History. During 2002, 35 uniformed officers received advanced degrees (30 Masters Degrees and 5 Doctoral Degrees).

The 2002 Graduate Student Award. The Graduate Student Award was presented to **Sara Newman, Dr.Ph.** This award was presented during the 2002 USU Graduation Ceremonies to recognize this graduating student for her outstanding and exceptional service rendered to the student body, medical school, and the University. During the graduation ceremonies, Ms. Newman received a Doctor of Public Health Degree for her work in a Department of Preventive Medicine and Biometrics Graduate Program. This award recognizes Doctor Newman's academic achievements, participation in the academic and intellectual life of the community, and contributions to the welfare and morale of other graduate and medical students. Doctor Newman also presented the Graduate Student Farewell remarks during the 2002 USU Commencement Ceremonies.

The Henry M. Jackson Foundation Fellowship in Medical Sciences Award. The Henry M. Jackson Foundation inaugurated a Foundation Fellowship to provide stipend and travel support for an outstanding graduate student during the terminal year of his/her program of study at the Uniformed Services University. This Fellowship is awarded annually to a USU graduate student who is expected to complete his/her research and defend his/her dissertation in sufficient time to participate in commencement activities. The 2002 Award was presented to **Sara Newman, DrPH**, **Department of Preventive Medicine and Biometrics.**

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ALUMNI AFFAIRS

Overview of the Preparation of Graduate Students for Appropriate Career Opportunities. (The following is taken from the *VIII, Graduate Education in the Biomedical Sciences and Public Health***,** Subcommittee Report, Middle States Association of Colleges and Schools (MSA) Self Study, submitted in March of 2003, pages 3-5.)

Graduates of USU Ph.D. Programs, as with Biomedical Ph.D. Programs everywhere, usually enter post-doctoral programs immediately after graduation, and many take a second post-doctoral position before finding a career level position. Program Directors and the major advisors of most USU graduates are generally aware of the first appointment obtained by graduates, but have much less complete information about the graduates' activities subsequent to their first postdoctoral appointment. Informal discussion with Program Directors suggests that USU graduates appear to have no difficulty in obtaining good post-doctoral appointments. Many of the post-doctoral appointments taken up by USU graduates are obtained in response to letters to USU faculty mentors from schools seeking USU graduates for position vacancies. These letters reflect the high standing in their professional field that many USU faculty mentors hold; they also indicate that USU SOM Graduate Education Programs are regarded as a source of productive post-doctoral fellows.

Following post-doctoral appointments, USU Program Directors are aware that graduates of USU Doctoral Programs enter a wide range of positions. The University's location in Bethesda, Maryland, leads to appointments in government research laboratories. Thus, of 25 Ph.D. graduates of the Microbiology and Immunology Program whose positions were known at five years after graduation, 32 percent (9) held career positions in Federal or state research laboratories or research regulatory and management agencies; and, 55 percent (11) of the graduates of the Medical Psychology Program held similar appointments. Graduates of the smaller graduate programs also held appointments in government research and regulatory agencies. These positions are held in a diverse range of research, research management, or regulatory affairs positions within Federal or state research organizations. They include the National Institutes of Health and the Virginia State Department of Agriculture and Consumer Services Disease Center located in Ames, Iowa, and the Virginia State Department of Agriculture and Consumer Services in Warrenton, Virginia. Others have positions with non-profit agencies, such as the American Red Cross in Rockville, Maryland; the Henry M. Jackson Foundation for the Advancement of Military Medicine (with graduates located as far afield as the United States Government HIV/AIDS Program in Uganda); and, with the Scripps Research Institute in La Jolla, California.

Several USU graduates hold appointments as civilians with DoD clinical and research organizations, including the Walter Reed Army Medical Center (WRAMC); the Walter Reed Institute of Research; the United States Army Medical Research Institute of Infectious Diseases located in Frederick, Maryland; the Aberdeen Proving Ground; the Army Medical Department Center and School at Fort Sam Houston, Texas; and, other DoD facilities. Military graduates of USU Graduate Programs have a commitment to continued service in their military Service, where they often hold a variety of positions with research, research management, teaching, or clinical responsibilities. A few hold educational positions in military establishments. Graduates of both the Pharmacology and Neuroscience Graduate Education Programs have held academic positions in the United States Army Nurse Anesthesia Training Programs at WRAMC; San Antonio, Texas; and, Hawaii. More than 90 percent of the graduates of the Master of Public Health Program (a program that largely accepts military applicants) return to their individual Services and continue to hold public health related positions.

A number of USU Ph.D. graduates have entered medical school. Some are still in training, with two or three currently holding internships at various hospitals. A few are already in career positions. A Pathology Ph.D. graduate, trained in medicine at Johns Hopkins, is now the Chief of Neurosurgery at the William Beaumont Army Medical Center located in El Paso, Texas; and, a Microbiology graduate is now a pediatrician at the Greater Dundalk Medical Center in Baltimore, Maryland.

A fairly high percentage of USU graduates have moved from post-doctoral appointments to academic positions; 43 percent of the Microbiology and Immunology Graduate Education Program graduates and 16 percent of Medical Psychology Graduate Education Program graduates hold appointments in academic departments at the level of research associate or higher, with many in tenure track positions. Graduates from the Clinical Psychology, Pathology and Pharmacology Graduate Education Programs also hold appointments in the professorial track. These academic appointments are held at well recognized institutions, including the Johns Hopkins University School of Medicine, the University of Maryland School of Medicine, the Yale University School of Medicine, the Albert Einstein School of Medicine in New York, the Mahindol University in Bangkok, as well as USU. Most of the academic appointments are in medical schools, but USU graduates are also represented on non-medical faculties such as the Department of Psychology at Ohio University, the Department of Zoology at Louisiana State University, and the Department of Biological Sciences at California State University located in Sacramento, California. And, a Microbiology graduate holds an assistant professorship at the Northwestern School of Law, at the Lewis and Clark College located in Portland, Oregon.

A smaller, but not insignificant, percentage of USU Graduate Program alumni have taken up positions with research organizations in the private sector of the economy, usually after having first completed at least one post-doctoral position in an academic department. Alumni of the Pharmacology and the Pathology Graduate Education Programs hold research positions at Abbott Laboratories; and, alumni of the Microbiology Graduate Education Program hold positions with the Pharmacia Corporation located in Kalamazoo, Michigan, and with SunModics, Inc., located in Eden Prairie, Minnesota. A Biochemistry Graduate Education Program graduate holds a position with Curragen, a biotech company; and, a Pharmacology Graduate Education Program graduate has just left a major drug company to join an, as yet unnamed, start-up drug development biotech company.

A few graduates have taken up positions outside of their area of initial training. A Neuroscience Graduate Education Program graduate is a Master Control Operator in Ontario, California, for a national radio station group; a Microbiology Graduate Education Program graduate is a partner in a law firm; and, a Biochemistry Graduate Education Program graduate is a consultant with Booz-Allen Hamilton, Inc., a law firm. A few graduates have indicated that they are self-employed or working in their homes.

While the USU Graduate Education Program Directors do not have complete statistics on the careers of their graduates, the brief survey described above suggests that alumni of all USU Graduate Programs are reasonably successful at obtaining and advancing in career level positions in their chosen disciplines. Since USU is a DoD institution, and part of its mission is to advance military medicine through research, it is particularly gratifying to note that a sizeable number of USU Graduate Program alumni hold career level appointments in DoD research, clinical, and educational agencies. Furthermore, a sizeable group of other graduates occupy responsible positions in other Federal government agencies concerned with the general maintenance of the Nation's health. The career successes of alumni of the USU Graduate Education Programs in public service and the military indicate that the University is moving forward in its goal of becoming a national health university dedicated to government service.

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V. GRADUATE MEDICAL EDUCATION

ESTABLISHMENT

Background - Graduate Medical Education Programs in the Military Health System. Graduate medical education (GME) comprises the second phase of the formal educational process that prepares physicians for medical practice. GME is required of all medical school graduates seeking full medical licensure and board certification in one of the specialties and/or subspecialties of medicine. This phase of medical education is, of necessity, conducted primarily in clinical settings, and requires direct participation by residents in the delivery of patient care services. Conducting high quality GME has always been a demanding undertaking. Ensuring an optimal learning environment and creating a proper balance between education and patient care activities have been the principal challenges to medical educators. In recent years, those challenges have become increasingly formidable due to the impact that the tremendous changes in the health care delivery system have had on the patient care environments in which GME is conducted. Certain of these changes have presented particularly difficult challenges for GME. Of special note, the shortened length of hospital stays, the increased emphasis on ambulatory care, the reductions in support staff, and the increased acuity of the average in-patient have placed increased demands on residency programs across the United States. The military GME programs in the National Capital Area have addressed many of these concerns through the use of simulated patients and virtual clinical experiences as discussed later in this section.

Following their graduation from the USU School of Medicine (SOM), the USU physician-graduates become active duty officers in the Military Health System (MHS) and are assigned to serve as residents in the MHS Graduate Medical Education Programs. The length of time served as a resident depends upon the individual specialty area. Residents in the MHS enjoy unique educational advantages. For example, the uniformed faculty members at the military teaching hospitals are present on a full-time basis, ensuring a level of involvement in student and resident (GME) education that is unmatched at other settings. The military GME system is second in size only to that of the Department of Veterans Affairs; and, it is committed to medical education at all levels over a broad range of disciplines. The National Capital Consortium (NCC) residents, as well as all other residents in the integrated GME programs throughout the Military Health System, significantly benefit from the dedicated uniformed faculty and staff who provide educational GME programs and training at the military medical centers. And, as mentioned above, the NCC resident also has the advantage of participating in state-of-the-art simulated education and training.

The military resident, in most programs, also serves as an educator or trainer of medical students and junior residents. This proves to be a unique growth opportunity; and, most often, the resident comes to understand that teaching is actually an advanced expression of learning. Preparation for student lectures and teaching rounds is a reiterative process that consolidates the resident's own base of medical knowledge. The USU medical students and the more junior NCC residents are the indirect beneficiaries of the senior residents' training as they observe and participate in conferences, activities and clinics directed toward their education.

Simulated Operating Rooms for Specific Specialties Are Available on the Main USU Campus. Advanced training is provided by the USU Clinical Simulator and Patient Simulation Laboratory (PSL), which is fully equipped with all of the functional equipment of an operating room, to include standard monitoring equipment, a

life support system (anesthesia machine and ventilator), a defibrillator, and instruments used in treatment. The PSL also includes complete audio/video recording and playback equipment. Training sessions are recorded; and, immediately following, the residents review their performance with their instructors. The simulated patient provides a unique opportunity to experience relatively rare cases, military relevant, and combat trauma scenarios. The residents gain experience in recognizing problems, developing decision-making skills, familiarizing themselves with instruments and equipment, and refining techniques and procedures. Residents are able to repeat the scenarios until they are performed correctly. Residents from the NCC GME Anesthesiology Program, receive intense training. Senarios are designed to present specific patients who provide complex clinical problems; thus, critical experience is acquired without putting human patients, or the residents, at risk.

The National Capital Area Medical Simulation Center Offers State-of-the-Art Simulated Training. Following collaborative efforts that began in 1995, USU and the Surgeons General of the Army, Navy and Air Force instituted a new teaching facility, the National Capital Area Medical Simulation Center (SIMCEN), in support of numerous and distinct medical education programs. The SIMCEN, a satellite facility located in Silver Spring, Maryland, began initial operations in the Fall of 1999, and remains one of the few places in the United States that combines multi-simulation techniques under one roof. This state-of-the-art teaching facility allows health professionals to augment their skills through patient simulations, virtual reality applications, and training with mannequin simulators. It uses technology and actors posing as patients to teach the NCC GME residents about situations that they may encounter as practitioners but might not otherwise experience while training in hospital wards. The SIMCEN also provides the instruction of readiness skills and focused pre-deployment training for wartime, peacekeeping, and humanitarian missions. During 2002, the SIMCEN supported over 14 GME educational activities (the SIMCEN is described at length in Section I of this report).

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The USU School of Medicine Office of Graduate Medical Education (GME). The USU SOM Office of Graduate Medical Education was established in 1986 to provide consultation on GME programs (internship, residency, and fellowship training for physicians) for Program Directors and the Office of the Assistant Secretary of Defense for Health Affairs (OASD/HA). From 1986 to present, USU GME, under the leadership of the Associate Dean for Graduate Medical Education, has provided DoD-wide consultation and oversight for numerous GME programs.

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MISSION

USU Office of GME Serves as a Significant Academic Component for Graduate Medical Education in the Military Health System. The University is directed to educate and train competent medical personnel qualified to serve the needs of the MHS through the provision of quality education programs in the health sciences. The Graduate Medical Education Programs of the MHS are of critical importance to both the University and to the entire network of Military Treatment Facilities. In light of this, the USU SOM Office of Graduate Medical Education serves as a significant academic component in the development of the medical expertise of the MHS residents in their assignments throughout the military GME programs. The following responsibilities are currently assigned to the USU GME program: 1) oversight for the National Capital Consortium; the USU SOM Associate Dean for Graduate Medical Education serves as the NCC Administrative Director; 2) collection and evaluation of data on the DoD GME programs to ensure academic and scientific excellence; 3) oversight for the integration of the DoD GME programs to ensure that accreditation is not jeopardized; and, 4) provision of consultation and advice for the Dean, School of Medicine, the President, USU, and others on military-unique medical curricula.

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POLICY FOR MILITARY UNIQUE TRAINING IN DOD-SPONSORED GRADUATE MEDICAL EDUCATION PROGRAMS

The USUHS shall coordinate efforts of the Services in developing the necessary curricula (for military unique training in DoD-sponsored Graduate Medical Education Programs) and shall establish a centralized repository of information on educational materials and courses to support the implementation of the curricula.

- Policy Memorandum, Office of the Assistant Secretary of Defense, Health Affairs, dated June 28, 1999, page one.

Graduate Medical Education Policy Is Issued by the Assistant Secretary of Defense for Health Affairs on June 28, 1999. In a memorandum dated June 28, 1999, the Assistant Secretary of Defense for Health Affairs (ASD/HA) stated that the Graduate Medical Education (GME) Programs conducted for military trainees in DoD facilities offer an opportunity to include military unique aspects to prepare physicians for the rigorous demands of practice in a wartime or contingency environment. The memorandum pointed out that it is essential for the military medical services to avail themselves of this opportunity in a comprehensive, yet efficient, manner; and, that new policies relative to DoD-sponsored GME programs are being established.

Army Graduate Medical Education (GME) Programs are the keystones to the quality of Army Medicine. Our GME Programs include military-unique aspects of a given specialty, which prepare physicians for the rigorous demands of practice in a wartime or contingency environment. Residents receive orientations and lectures concerning war zone injuries, trauma, and military deployments. Additionally, they attend formal training which includes a centralized combat casualty care course, advanced trauma life support, and medical management of chemical and biological casualties. After completing an Army Graduate Medical Education Program, a physician is uniquely qualified to deploy at all levels within the theater of operations to support the military medical mission. We now place board-certified physicians in our brigade and division surgeon positions to ensure that our divisional soldiers receive the highest levels of care regardless of where they are in the world.

- Testimony by **Lieutenant General James B. Peake, the Surgeon General of the Army**, before the House Committee on Armed Services, Subcommittee on Defense, April 10, 2002.

Each Program Must Include a Military Unique Curriculum that is Standardized and Specialty Specific. The GME Policy Memorandum of June 28, 1999, specified that at the entry level, each GME program must incorporate a standardized curriculum, which includes a core of those topics essential to every physician who will practice medicine in the military. This curriculum should be augmented by an orientation to field medicine such as the Combat Casualty Care Course (C4) or equivalent experience. The curriculum should be designed to complement, not replace, military training obtained through other means and only those elements that are both

necessary and appropriate to the GME education program should be included. Beyond the entry year, each program should also include a military unique curriculum that is standardized and specialty specific. For subspecialty training, the curriculum may be directed toward the projected utilization of the trainee, usually in his/her core specialty. An appropriate exposure to the practice of the specialty in an austere or contingent environment should be an essential element of each program.

USU School of Medicine Office of Graduate Medical Education Coordinates the Development of Curricula. The USU School of Medicine Office of Graduate Medical Education was tasked by the Assistant Secretary of Defense for Health Affairs to coordinate the efforts of the Services in developing the necessary curricula and to establish a centralized repository of information on educational materials and courses to support the implementation of a military unique curriculum that is both standardized and specialty specific.

The policy memorandum also directs that military unique training in GME programs must be documented on an annual basis and reported to the ASD(HA) by the Services by September 30 of the completed training year. Each program review must confirm that a military unique curriculum is in place and that it is being utilized; it should also confirm that appropriate opportunities to experience specialty practice in constrained environments exist and are being utilized.

Following the receipt of the June 28, 1999, Policy Memorandum, the military unique curriculum for each major specialty was developed and posted on the Graduate Medical Education Web Site <*http://cim.usuhs.mil/dodgme/*>. Subject matter expert panels are currently being reconstituted to accomplish the biennial revision.

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NATIONAL CAPITAL CONSORTIUM

Development of the National Capital Consortium. In 1993, the Assistant Secretary of Defense for Health Affairs directed that duplicative GME programs in the National Capital Area and San Antonio must be integrated or closed. This led to the establishment, in January of 1995, of the National Capital Military Medicine Education Consortium consisting of the Walter Reed Army Medical Center (and its subordinate command, the Dewitt Army Hospital located at Fort Belvoir, Virginia), the National Naval Medical Center, the Malcolm Grow Medical Center, and the USU School of Medicine. At that time, there were 86 programs located at five sites.

Ten GME programs were integrated into five during the first year of the Consortium's existence. In 1997, the Consortium was site surveyed by the Accreditation Council for Graduate Medical Education (ACGME) and received a "favorable decision" by the ACGME as an institutional sponsor. Later that year, the administrative headquarters was relocated to USU and the Associate Dean for Graduate Medical Education, **Dr. Howard E. Fauver, Jr., M.D.**, became the Administrative Director. Also during 1997, the name was changed to the National Capital Consortium (NCC). Growth of the NCC continued sporadically over the next few years; and, it was not until 2002, that the last of the GME programs in the National Capital Area came under the sponsorship of the NCC, bringing the current total to 65 programs. During 2001, the NCC was again approved by the ACGME as an institutional sponsor for the maximum period of five years.

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Mission of the National Capital Consortium. The National Capital Consortium (NCC) serves as the institutional sponsor for the GME programs offered by the three major Medical Treatment Facilities (MTFs) in the National Capital Region: the Walter Reed Army Medical Center, the National Naval Medical Center, and the Malcolm Grow Medical Center. The three MTFs comprise the NCC membership; and, the USUHS SOM serves as the fourth, and final, member of the NCC. The USU Office of GME also serves as the Administrative Office for the NCC.

The mission of the NCC is to educate physicians, dentists, and other health care professionals who provide care for the soldiers, sailors, airmen, and marines of all ages, throughout the Military Health System, to include their families. The NCC provides a scholarly environment and is dedicated to: excellence in both education and health care; and, the provision of ethical values and standards to all trainees, such as would be expected of those who devote their lives to careers in public service. Information about the NCC programs, governance, Bylaws, and NCC Administrative Handbook can be accessed via the NCC web site: *<http://www.usuhs/mil/gme/NCC.htm>*.

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Accreditation. The Accreditation Council for Graduate Medical Education (ACGME) is responsible for the accreditation of post-medical doctorate (M.D.) physician training programs within the United States. Accreditation is accomplished through a peer review process and is based upon established standards and guidelines. The mission of the ACGME is to improve the quality of health care in the United States by ensuring and improving the quality of graduate medical education experiences for physicians in training. The ACGME established national standards for graduate medical education by which it approves and continually assesses education programs under its aegis. It uses the most effective methods available to evaluate the quality of graduate medical education programs; and, it strives to improve evaluation methods and processes so that they are valid, fair, open, and ethical. In carrying out these activities, the ACGME is responsive to change and innovation in education and current practice; it promotes the use of effective measurement tools to assess resident physician competency; and, it encourages educational improvement.

The National Capital Consortium (NCC), by supplying leadership and resources, complies with the ACGME Institutional Requirements and ensures that Consortium-sponsored programs comply with ACGME program requirements. All Consortium-sponsored GME programs comply with ACGME program requirements; Consortium-sponsored GME programs operate under the authority and control of the Consortium. And, the Consortium regularly assesses the quality of the NCC educational programs.

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New Programs. In 2002, the NCC added a new program sponsored by the USU SOM Department of Psychiatry. The program, *Disaster/Preventive Psychiatry*, is an advanced fellowship designed to produce leaders in population-based psychiatry. The program combines a Master of Public Health (MPH) Degree with a second year of practical experience at the USU Center for the Study of Traumatic Stress. During the latter year, the fellow will be on call to respond to disasters worldwide with teams from the USU Center. Although not eligible for ACGME accreditation, the program is degree-producing and is well suited to the needs of the Military Health System.

This year also saw the creation of a fellowship program in *Female Reconstructive and Pelvic Surgery*, formerly Urogynecology, at the Walter Reed Army Medical Center. The program had previously been located at the Madigan Army Medical Center in Tacoma, Washington. A three-year program, the fellowship will be accredited by the American Board of Obstetrics and Gynecology.

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NCC/GME Awards and Distinctions (2001-2002). As in previous years, the residents, fellows and faculty in the NCC GME Education Programs garnered numerous distinctions and awards. The *American Academy of Dermatology Presidential Award* was given to **Lieutenant Colonel (P) Scott Norton, MC, USA,** Chief of Dermatology at the Walter Reed Army Medical Center (WRAMC) and member of the NCC faculty. And, again, three residents of the NCC WRAMC Internal Medicine Program had *presentations accepted at the National American College of Physicians Meeting*; all were in the Research Poster Sessions. An NCC fellow in the General Internal Medicine Program was also a finalist for the *Lipkin Research Award of the Society of General Internal Medicine*. **Lieutenant Colonel Andrew Satin, USAF, MC,** Director of the NCC Obstetrics and

Gynecology Program, was the *2001 ACOG Armed Forces District Professor of the Year*, topping his achievements by receiving a maximum five-year accreditation for his GME program. **Colonel Martin Ottolini, USAF, MC,** Program Director in the NCC Pediatric Infectious Disease Fellowship, was named the *Air Force Surgeon General's Consultant* and demonstrated his expertise in presentations at Mt. Sinai in New York and at the Virological Institute at the University of Wurzberg. The faculty and residents of the NCC's Psychiatry, Child and Adolescent Psychiatry, Forensic, and Geriatric Psychiatry Programs received military awards for the *post 9/11 support* they provided, and are still providing, at the Pentagon.

Scholarly Activity. The faculty of the NCC produced over 884 articles, 554 abstracts, and 227 book chapters. The residents and fellows have contributed, or co-authored, 373 articles, 387 abstracts, and 39 book chapters.

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VI. THE OFFICE OF CONTINUING EDUCATION FOR HEALTH PROFESSIONALS

Assess the continuing education activities of the school in the context of the institution's mission and objectives. Are programs adequate to meet the continuing educational needs of military health care professionals within the university?

SUMMARY: The Office of Continuing Education for Health Professionals *(CHE) fulfills its mission and strongly supports USU in sponsoring continuing education for members of the Federal health care delivery system. CHE continually fosters the educational quality of its offerings and promotes "state of the art" health care education*. Future endeavors will move toward broadening USU and CHE's scope to reach new communities of participants; strengthen and expand educational evaluation systems; and, explore electronic media as an alternate delivery mode to meet cust m, contributing to the quality of patient care delivery thereby enhancing performance outcomes.

- **XI. Continuing Health Professional Education**, Subcommittee Report, Middle States Association of Colleges and Schools (MSA) Self Study, October 29, 2002, page 11.

MISSION

USU is Mandated by Congress to Provide Continuing Education for Health Professionals. Under Title 10, U.S. Code (Section 2113), USU is mandated by Congress to "establish programs in continuing medical education for military members of the health professions to the end that high standards of health care may be maintained within the military medical services." The mission of the USU Office of Continuing Education for Health Professionals (CHE) is to sponsor, directly or jointly, activities in continuing education for members of the Federal health care delivery system to ensure that high standards of health care are maintained within the Federal health care services. This standard of excellence is achieved through a vigorous and creative evaluation process.

The Office of **CHE plays a central role in facilitating the continued professional growth of health care professionals in the Federal Services by providing live courses and conferences, enduring materials, and web-based continuing education (CE)**. In addition, the Office of CHE establishes activities for non-Federal civilian health professionals in disciplines where the body of knowledge is available primarily within the Federal Services medical domain and when that knowledge will contribute to the health of the Nation, other countries, or the global community.

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Six Factors Mandate CHE's Essential Role in Today's Military Health System. Continuing Education has always been recognized as an essential component of the continuum of education for health professionals. Current educational, social, and political factors that highlight the critical role of CE in the educational spectrum follow:

- Enhanced awareness of the role of health care providers during the threat of, or response to, a terrorist event;

- Incorporation of evidence-based medicine, clinical practice guidelines, and accountability into daily medical practice;

- Heightened patient safety concerns;

- Recognized CE value for provider skill level competency for readiness mobilization, re-licensure, privileging, credentialing, specialty re-certification, professional society membership, and selected other requirements;

- Increased demand to deliver cutting-edge CE and rapid advances in biomedical knowledge, clinical practice guidelines, and health care technology; and,

- Focused partnerships between military medicine, other Federal, and private sector medicine.

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CHE Must Ensure Academic Involvement in all Phases of Educational Activities Designated for Credit. The Office of Continuing Education for Health Professionals is under the leadership of the Senior Executive Director, who reports directly to the USU President, and is responsible for academic involvement in all phases of the educational activities designated for credit to include:

- Educational needs assessment, planning, implementation, and evaluation of continuing education activities for members of the health professions serving in the Uniformed and other Federal Services. The topics for continuing education activities are based on formal surveys, structured interviews, current professional topics, and those activities directed from higher authority. In every case, the particular interest and needs of a specific audience are considered during planning, preparation, delivery, and evaluation;

- Acquisition and maintenance of continuing education accreditation at USU; attendance at professional conferences and meetings conducted by the accrediting agencies or peer groups to ensure compliance for the University with all continuing education requirements of the Accreditation Council for Continuing Medical Education, the American Nurses Credentialing Center's Commission on Accreditation, the American Psychological Association, the American College of Healthcare Executives, and the State of Maryland Department of Health and Mental Hygiene Board of Social Work Examiners;

- Administrative and logistical support and determination of budgetary requirements for continuing education activities sponsored by the University;

- Maintenance of professional and educational liaisons with military and civilian professional organizations and academic institutions; and,

- Monitoring the quality of continuing education activities and using evaluative data and research findings to improve the quality of those activities at the University. (Annual total program evaluations identify areas where improvement could enhance the continuing education services provided by the University. Mechanisms, such as the evaluation of events by participants, by faculty, and by office staff, help to improve the quality of similar future events. A consistent focus on developing employee potential through cross-training within the office and additional training within the University and from outside sources also improves the provision of services. Continuous quality improvement is active in all areas of the Office of CHE.)

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NATIONALLY RECOGNIZED CONTINUING EDUCATION CREDIT

Unique Accreditation Within the Military Health System. The USU Office of Continuing Education for Health Professionals provides nationally recognized continuing education credit for physicians, nurses, psychologists, health care executives, and social workers through its accreditation by: 1) the Accreditation Council for Continuing Medical Education (accredited through July of 2005); 2) the American Nurses Credentialing Center's Commission on Accreditation as a Provider of Continuing Education in Nursing (accredited through August of 2007); 3) the American Psychological Association (accredited through March of 2003/currently awaiting notification of reaccreditation); 4) the American College of Healthcare Executives (ACHE) authorized USU to award pre-approved Category II (non-ACHE) continuing education credit through May of 2005; and, 5) the State of Maryland Department of Health and Mental Hygiene Board of Social Work Examiners (indefinitely). This inclusive provision of continuing education for multiple disciplines, from one office, is believed to be unique within the Military Health System (MHS)**.**

The Office of CHE, under the academic umbrella of the University, is exceptionally positioned to perform a significant role in facilitating the continued professional growth of health care professionals in the MHS. The principal responsibilities of the office are the identification of educational needs, planning, implementation, and the evaluation of continuing education activities and outcomes and resuscitative medicine programs for members of the health professions. CHE is also responsible for the acquisition and maintenance of the University's continuing education accreditations and for the trauma and resuscitative medicine training program affiliations.

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The Continuing Health Education Committee. The Continuing Health Education (CHE) Committee serves as an approving body and as an advisory committee to the USU President and to the Office of CHE. The CHE Committee members are appointed by the USU President. Other faculty members are invited to participate in the committee activities on an *ad hoc* basis. The committee membership, across all disciplines and departments, facilitates communication and provides a forum for planning education activities and for the discussion of issues and policies that affect continuing medical education. "Recently, the Accreditation Council on Continuing Medical Education (ACCME) sent out a request for feedback on validating continuing medical education and the American Academy of Family Physicians (AAFP) requested feedback on evidenced-based medicine requirements for continuing medical education. In both instances, reading materials were provided to the CHE Committee members. Lively topical discussions were held at CHE Committee meetings, where faculty expressed their opinions. This interchange provided a tool for valuable idea exchange. CHE Committee members were also encouraged to formulate and forward their individual responses to CHE. The Office of CHE collated all input and submitted formal USU responses to the respective accrediting agency. In both cases, the accrediting agency expressed thanks for USU's input. AAFP praised USU's depth of interest in their topic and requested permission to post USU's input on their web-site."

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INCREASED SUPPORT FOR THE MILITARY HEALTH SYSTEM

CHE Support for Graduate Medical Education Programs. In conjunction with the National Capital Consortium (the institutional entity for the National Capital Region's GME-integrated programs offered by the Walter Reed Army Medical Center, the National Naval Medical Center, and the Malcolm Grow Medical Center), the Office of CHE's involvement has greatly increased through the sponsoring of on-going continuing medical education (CME) activities such as Grand Rounds in Cardiothoracic Surgery, Faculty Development, General Thoracic Surgery, GYN Oncology Tumor Planning, Ophthalmology, Pediatrics, and Psychiatry.

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CHE Support for TRICARE/Health Affairs Initiatives. During Fiscal Year 2002, the USU Office of CHE supported the Office of the Secretary of Defense (OSD), Health Affairs (HA) with the following activities: DoD Patient Safety Program Training (six iterations); the DoD Ergonomics Conference; the TRICARE Winter Conference plus several other regional TRICARE conferences; the Health Information and Management Systems Society Conference; five Medical Executive Skills Courses; 25 Medical Effects of Ionizing Radiation (MEIR) Courses both within the continental United States and overseas; a videotaped MEIR Course; the Interagency Institute for Federal Health Care Executives (two iterations); and, the Women's Memorial Health Care Symposium.

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Specialty and Review Courses for the Military Health System. The Office of CHE sponsored continuing education for numerous specialty and review courses for the Military Health System during 2002.

Medical Readiness - The Military Medical Humanitarian Assistance Course. The Military Medical Humanitarian Assistance Course is a two-day interactive course designed to train United States military health care providers to deliver optimal medical care to civilian populations, primarily women and children, in the aftermath of humanitarian emergencies. Prior to this course, a void existed in preparing medical officers with the necessary skills, knowledge, and confidence to actively participate in such missions. Given the United States military's increasing involvement in Military Operations Other Than War (MOOTW), the focus of this course is centered on familiarizing clinicians with the unique aspects of humanitarian missions, so that they are best prepared to actively participate and lead future missions. Though the health issues are often predictable, the paradigm presents issues that rapidly progress to the severest degree. Resources are typically more limited than in other operations, complicating any attempt for immediate intervention. The course emphasizes practical skills and techniques, not often addressed in the curriculum of American medical education, which will be useful to the provider who is challenged to provide the best possible medical care in an austere environment. The faculty, who present this course, are committed to the quality and credibility

of this educational experience. All clinical instructors have had personal experience practicing medicine in an austere health environment. All of the clinical cases are derived from real experiences in operational medicine. This course was developed at USU under the sponsorship of the Dean, School of Medicine, and the Department of Pediatrics. During 2002, the course was held 13 times for 219 physicians, 19 nurses, and 25 others.

Scientific, Domestic and International Policy Challenges of Weapons of Mass Destruction and Terror, Part I and Part II. In 2002, CHE supported two courses, Scientific, Domestic and International Policy Challenges of Weapons of Mass Destruction and Terror: Part I and Part II, provided by the USU SOM Department of Pathology. Part I (first offered in the Spring of 2001 without CE credit) provides an understanding of the medical features and medical countermeasures for living agents or organic products that have potential use in warfare, terrorism, or criminal activities in the context of the political implications of such weapons of mass destruction. Also incorporated into the course is a hands-on training phase conducted in the USU Patient Simulation Laboratory (PSL). The PSL includes a mannequin, operated through computers and attached to standard clinical monitors; it is used as a teaching tool for medical, nursing, and graduate students, as well as for residents, physicians, and others. Scenarios of medical disasters can be scheduled and students can practice repetitively until they gain familiarity, competence, and poise with the unexpected. The PSL, in conjunction with these courses, has produced inhalational anthrax, pneumonic plague, and marine toxin exposure scenarios, with another featuring smallpox currently in development. Part II (first offered in the Fall of 2001) focuses on nuclear, radiological, high explosives, chemical agents, and unusual weapons; these scenarios are also acted out during hands-on training sessions through the PSL.

Other Courses/Activities Sponsored by CHE During 2002:

- The International Spine Workshops (Cervical, Peripheral Nerve, Thoraco-Lumbar);

- The Capital Conference Family Practice Review;

- Surgical Topics (Advanced Gynecological Laparoscopy and Hysteroscopy (two courses), Video-Assisted Thoracic Surgery, Hand-Assisted Laparoscopic Nephrectomy, the 29th Military Vascular Surgery Symposium, and the 16th Annual Pediatric/Pediatric Surgery Symposium);

- Three courses on TriService Video Endoscopy for Perioperative Nurses were held, two at the USU campus and one in San Antonio, Texas;

- The Toolbox for Ethics Program Development was held in Mississippi; and,

- The Sixteenth Conference on Military Medicine, *Enhancing Readiness: Implementing Change in Military Medical Education*.

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Association of Military Surgeons of the United States (AMSUS) Annual Meeting. Since the 99th Annual Meeting in 1992, CHE has worked with AMSUS to provide continuing education credit for their Annual Meetings. AMSUS was established in 1891, and incorporated by an Act of Congress in 1903, as the Society of the Federal Health Agencies. As such, it contributes to the improvement of all phases of the Federal Health Services. The constituent services of AMSUS include the medical departments of the United States Army, Navy, Air Force, and Public Health Service, and the Department of Veterans Affairs. For Fiscal Year 2001, the Department of Veterans Affairs hosted the 107th Annual Meeting, *Information Management: One Key to Healthcare Success* held on November 5 - 10, 2000, in Las Vegas, Nevada. The agenda emphasized Federal medicine and took full advantage of the unique forum offered by the meeting and the 6,710 attendees. During Fiscal Year 2001, the USU Office of CHE offered 206 sessions for continuing education credit in four disciplines (a significant increase from the 47 sessions offered in two disciplines during Fiscal Year 1993. Due to the aftermath of the events of September 11, 2001, the Annual Meeting for Fiscal Year 2002 was cancelled.

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Women's Memorial Health Symposium. Brigadier General Wilma L. Vaught, USAF (Ret.), President of the Women in Military Service for America Memorial Foundation, envisioned a series of seminars for a National Forum on Women's Health Issues at the Women's Memorial Education Center beginning in the Spring of 2000. The Assistant Secretary of Defense for Health Affairs and the USU President tasked the USU Graduate School of Nursing to coordinate the undertaking. There were seven seminars in Fiscal Year 2001. Sixty-eight certificates were presented to nurses, 16 to physicians, and 34 to others. In 2002, a research symposium was held to highlight the research achievements and challenges related to the health of military and veteran women. Twelve physicians, 52 nurses, and 12 others attended *Health Issues of Military and Veteran Women: A Research Symposium* at the Women's Memorial, on June 6-7, 2002.

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GENERATED COST AVOIDANCE FOR DOD BY CHE

CHE Generates Cost Avoidance for DoD - $2,653,448. In carrying out its principal responsibilities during Fiscal Year 2002, CHE sponsored continuing medical education for 719 activities with an attendance of 5,208 physicians; provided continuing nursing education for 62 activities with an attendance of 1,378 nurses; and, approved Category II (non-ACHE) continuing education credit for 25 programs for 480 members of the American College of Healthcare Executives, and one continuing education activity for 4 psychologists. Because the USU Office of CHE brings medical training to the medical health care professionals, an estimated cost avoidance of $2,653,448 was generated for the DoD by eliminating extensive travel expenses and time away from the hospitals and clinics (the total cost avoidance was calculated by subtracting all of the operating costs for the USU Office of CHE, to include civilian and military manpower, from the total of savings generated by the elimination of travel, per diem and significant commercial registration expenses ($3,506,670 - $853,222 = $2,653,448).

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SUPPORT FOR OTHER FEDERAL ORGANIZATIONS

Department of State Programs. Each year since 1998, USU has provided two iterations of a continuing education program for the Office of Medical Services of the Department of State. During Fiscal Year 2002, topics included mental health, surgical techniques, infectious diseases, pediatrics, orthopedics, and internal medicine. Seventy-eight physicians and 57 advanced practice nurses were able to earn up to 31.25 hours of CME or 36.3 nursing contact hours. Twenty-nine others also attended. A two-day course, *Health Care Response to Weapons of Mass Destruction*, was presented during each iteration.

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NASA Teleconference Continuing Education Series. Another example of service to other Federal agencies were the three NASA series on *Occupational and Environmental Health & Safety*, *Nuclear Terrorism*, and *Chemical Terrorism*. Video-teleconferencing systems connected live seminars to: the Institute for Biomedical Problems located in Moscow; the Institute of Telemedicine in Toulouse, France; the Medical Informatics Center at the Medical College of Virginia; the Robert Byrd Health Sciences Center at West Virginia University; the USU campus; and, the 14 NASA Centers. These seminars are part of the continual initiative of the NASA Office of Life and Microgravity Sciences and Applications to provide continuing education for the NASA employees and contractors and to promote international understanding and interactions among the international Space Station Project Partners. USU has provided CME, CNE, and ACHE continuing education support for the NASA seminar series since 1998. USU also provided CME, CNE, ACHE, and APA continuing education support for the NASA Occupational Health Conference held on July 7-12, 2002, in Washington, D.C. The conference provided attendees with the latest relevant information from acknowledged experts on health threats applicable to the NASA work environment and a forum for the interactive exchange of work experience. Twenty physicians, seven nurses, and four psychologists were awarded continuing education credit.

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MILITARY TRAINING NETWORK

Mission. The mission of the Military Training Network (MTN) is to develop and implement policy guidance and ensure compliance with curricular and administrative standards for resuscitative and trauma medicine training programs for the Uniformed Services and Department of Defense affiliates. The MTN supports medical readiness through continuing health professional resuscitative and trauma education for service members world-wide. The TriService MTN staff provides service-specific expertise, central record keeping, and world-wide coordination of training programs.

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Background. The MTN was established in 1982 by the DoD Health Council for the purpose of training, registration, coordination, and centralized record keeping for resuscitative medicine programs. The MTN falls under the purview of USU, and is organized under the Senior Executive Director, USU Office of Continuing Education for Health Professionals.

The MTN has been recognized as an American Heart Association (AHA) Regional Training Center since 1984 and as the American College of Surgeons (ACS) Region 13 Program Coordinator since 1996. Over the past six years, more than one million service members have attended MTN training programs.

The MTN is billeted and resourced equally by the Surgeons General of the United States Army, Navy, and Air Force. The operation of the MTN would not be possible without the additional resources provided by the University.

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Strategic Goals. The MTN has identified seven goals for its strategic focus:

- Promote quality resuscitative training programs to ensure optimal Medical Readiness for the DoD;

- Provide top-notch customer service by expanding on-line information and continuously providing resources 24 hours per day, all year long;

- Quantify MTN-affiliated training sites compliance with American Heart Association Guidelines through site visits and recorded audits;

- Enhance administrative operational processes by upgrading automation systems (during 2002, the MTN requested and received approval from the USU Executive Committee to recognize self-paced, interactive computer-based training for ACLS and BLS renewal and to provide cards for personnel who successfully completed the courses);

- Preserve fair cost structures from vendors and international and national organizations that support MTN training sites;

- Promote the benefits of an MTN affiliation to eligible DoD units including the Reserve and Guard Components (during 2002, the MTN requested and received approval from the USU Executive Committee to include the DoD Education Activity (DoDEA) in the Military Training Network. DoDEA will teach Heartsaver CPR to its DoD dependents in high school health classes; school nurses or staff from the local Medical Treatment Facility (MTN) will provide the instruction and evaluation; the MTN will provide course completion cards); and,

- Incorporate DoD Education Activity faculty and staff into the MTN training programs.

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World-Wide Capabilities Essential to Medical Readiness. The American Heart Association and the American College of Surgeons recognize the USU MTN as a Regional Training Center/Region Program Coordinator through written agreements. The resuscitative and trauma medical training programs administered by the MTN include: Advanced Cardiac Life Support (ACLS); Advanced Trauma Life Support (ATLS); Pediatric Advanced Life Support (PALS); and, Basic Life Support (BLS).

As an AHA Training Center and ACS Program Coordinator, the USU MTN provides transportable, world-wide training reciprocity for service members. In addition, the MTN structure provides training in strategically critical areas throughout the world (e.g., Bosnia, Korea, and Turkey), on operational platforms (e.g., aboard aircraft carriers), and at remote sites where civilian training would not be available. These capabilities are essential to military medical readiness. The USU MTN is the only American Heart Association affiliate with world-wide reciprocity for its health care providers.

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MTN Generates Estimated Savings for DoD - $13,007,208. Department of Defense sites affiliated with the MTN are approved to conduct self-sustained resuscitative and trauma medicine training. This continues to prove cost-effective for the Military Health System because it eliminates the need to pay premium training costs for civilian resuscitative and trauma medicine programs. For example, during Fiscal Year 2002, 223,735 defense personnel were trained through the USU MTN (an increase of 32% from 2001). The average commercial cost for providing this training is conservatively estimated at $13,655,590. The cost avoidance generated for the DoD during 2002, an estimated total of $13,007,208, was calculated by subtracting all of the operating costs, to include civilian and military manpower, provided by the three Services from the average commercial cost ($13,655,590 - $648,382 = $13,007,208).

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VII. THE ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE

I want to thank you personally for the help we at CIA have received from AFRRI. CIA has been committed to ensuring the safety of our mail and AFRRI has been absolutely essential in our efforts. The assessment of the effectiveness of our mail treatment processes would be impossible without your help. Specifically, I want to point out the following individuals for their superb effort: Gregory Knudson, Ph.D.; Mike Shoemaker, Ph.D.; and, Thomas Elliott, Ph.D. They have been most gracious and accommodating to our needs at the CIA. Without the help of these individuals, we at CIA would not have been able to achieve our goals as quickly. It has been and will continue to be a pleasure to work with these individuals. *(Prior to September 11, 2001, and the distribution of anthrax through several United States Post Offices, AFRRI researchers had studied the effects of irradiation on biological agents and had established a standard dosage of radiation necessary to eradicate anthrax spores. The researchers used a harmless surrogate spore that mimics the biological properties of live anthrax spores. This non-toxic spore can easily be placed in an envelope, and then tested after irradiation procedures at a specific mailing distribution area; the spore allows extensive testing for quality assurance to ensure the safety of those individuals who will handle the mail. Since September 11th, AFRRI scientists have provided relevant information and briefings to numerous entities such as the White House Medical Unit, the House Science Committee, Senate and House professional staff, the Department of Homeland Security, the Centers for Disease Control, the Armed Forces Institute of Pathology, the General Accounting Office, and the Federal Bureau of Investigation.)*

- Letter to **Colonel Robert Eng, Director, AFRRI,** from **Dr. Brian Hollibush, Environmental Health and Preventive Medicine Officer, Central Intelligence Agency,** dated May 8, 2002.

RELEVANCE

Background. The Armed Forces Radiobiology Research Institute (AFRRI), a TriService organization, is located in a 173,242 square foot complex on the campus of the National Naval Medical Center (NNMC) in Bethesda, Maryland. AFRRI was chartered in 1961, to conduct relevant applied radiobiological research in support of the military medical mission and to support accidental or premeditated events involving nuclear weapons, nuclear reactors, radiological dispersal devices, and other nuclear/ radiological situations. The AFRRI complex houses a 1 Megawatt TRIGA nuclear reactor, a cobalt-60 irradiation facility licensed for up to 400,000 Curies, a 54 Mev linear accelerator, a 100 Curie cobalt-60 chronic irradiation facility, a full-service veterinary facility accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International, and a full complement of laboratory and administrative spaces. Particularly unique features of the TRIGA nuclear reactor are its ability to simulate the high prompt doses of gamma and neutron radiation from the detonation of a nuclear weapon, and its two exposure rooms that can accommodate experimental work involving large-animal models and other large irradiation studies. Human resources consist of 160 professional, technical, and administrative personnel. About 60 percent are civilian; and, 40 percent are military personnel.

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Governance. On September 22, 1992, the Deputy Secretary of Defense approved a program decision memorandum and transferred the management of AFRRI from the Defense Nuclear Agency (DNA) to USU; the Director of AFRRI reports directly to the President of USU. An Administrative Plan for program execution and administrative support for the integration of AFRRI as an Institute within USU was coordinated by the USU Vice President for Administration and Management and the Director of AFRRI; the USU President approved the plan in October of 2000. The Office of the Director, Defense Research and Engineering (DDR&E) directly funded AFRRI's programs and provided management oversight of its research programs through the Director, Bio Systems.

On August 17, 2000, the DDR&E suggested that USU revise its DoD Directive 5105.45 to reflect the placement of AFRRI within USU. That suggestion was followed and on November 13, 2000, the USU President approved a draft revision of the USU Directive as coordinated by the USU Vice President for Administration and Management and the Director of AFRRI, with the executive staff of both USU and AFRRI. Upon further guidance from the Office of the Secretary of Defense (OSD), the submission of the draft DoD Directive for OSD approval was postponed pending the reprogramming of funding lines in a new Program Budget Decision (PBD). Once funding and governance issues have been resolved, USU will proceed to complete the coordination process (with Health Affairs, the Bureau of Medicine, the USU Executive Committee, the current AFRRI Board of Governors, the Graduate School of Nursing Executive Council, DDR&E, and others, as appropriate) to revise DoD Directive 5105.45.

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Mission. AFRRI must 1) conduct applied radiobiological research to develop militarily relevant medical countermeasures against radiation injuries; 2) maintain a Medical Radiobiology Advisory Team to support accidental or premeditated events involving nuclear weapons, nuclear reactors, radiological dispersal devices, and other nuclear/radiological situations; 3) advise the Joint Chiefs of Staff (J-4 Medical); the Deputy Assistant to the Secretary of Defense, Nuclear Matters; the Joint Forces Command; and, the Surgeons reporting to the Combatant Commanders on medical nuclear defense; and, 4) train DoD medical personnel on the management and treatment of radiation casualties (Medical Effects of Ionizing Radiation [MEIR] Course).

A Unique Program. There is no other comprehensive, militarily relevant radiobiological research program like AFRRI's. While several initiatives exist in universities and private industry to develop pharmacologic strategies to prevent collateral tissue damage in radiation therapy patients, no other program exists to address the spectrum of radiological injuries anticipated under combat situations involving the use of nuclear or radiological weapons. AFRRI does, however, leverage findings from private sector initiatives to develop countermeasures not only to prevent injuries but also to treat and assess radiological injuries under military operational scenarios. Only AFRRI offers a program dedicated to these special military requirements. And, no other program within the Department of Defense addresses medical radiological defense research requirements.

The AFRRI complex was designed and built to conduct radiobiology research and to develop medical radiological countermeasures in support of the military medical mission. The TRIGA nuclear reactor provides an ideal source to simulate the prompt radiation pulse from a nuclear weapon. The AFRRI reactor also provides a source of fission spectrum neutrons to conduct radiobiology experiments at very low doses and

dose rates to simulate chronic exposure scenarios. Although there are 49 of these small research reactors in the world, and 18 in the United States, only the AFRRI reactor is designed for, and is wholly dedicated to, applied medical radiobiology research for medical readiness. AFRRI's second major source is a cobalt-60 irradiation facility. It is designed to safely hold up to 500,000 Curies of cobalt-60, but is currently licensed for 400,000 Curies. Because this source can produce a high exposure rate with monoenergetic gamma-rays, it is ideally suited for the high-energy photons needed in applied military radiobiology research.

Documented Relevance. Following the terrorist attacks of September 11, 2001, it has become apparent that the risk of deliberate attacks involving the use of radiological or nuclear devices is on the rise. A growing threat exists from small-scale conflicts, terrorist incidents, accidents, and even peacekeeping missions in troubled areas around the world. Each of these scenarios involves real prospects for the use of nuclear or radiological devices, or the uncontrolled or intentional release of hazardous radioactive materials, posing a challenge on the battlefield and to homeland security. Unlike a strategic nuclear exchange, which would devastate infrastructure and all but eliminate prospects for the delivery of any remaining health care resources, casualties of nuclear/radiological incidents in today's threat environments will expect to have quick access to sophisticated medical care. It is essential to ensure that the best possible products of today's technology are available to the personnel of the health care delivery systems that must respond to such disaster scenarios. The military has a clear need for information on the sources and complicating effects of radiation during wartime, terrorist and accident scenarios.

Military planning, deployment and employment decisions in response to nuclear/radiological incidents depend on information available only from test (i.e., experimental), theoretical and/or empirical (event-generated) data. AFRRI has played a significant role in providing information to devise strategies for early response to high, acute doses of radiation. In addition, ...**"Needs have changed in response to the contemporary world's environment; low-dose, chronic exposures are more likely to occur. There is a growing concern to define accurately the consequences of a variety of such scenarios.... They (AFRRI) demonstrated dedication to, and focus on, the real and current need for information to deal with risk situations already being encountered, or likely to be encountered, by Armed Services Personnel. It was made clear that changing world conditions have posed new threats for which there are little or no data. The need for new data comes at a time when the scientific community's ability to respond has been severely restricted by worldwide closings of radiobiological research centers. AFRRI has value because it is designed and organized to generate these types of data, and because it is one of the very few places that can do so"** (American Institute for Biological Sciences (AIBS) Peer Review on AFRRI, Executive Summary, dated July 1996, pages 1 and 2).

Response Agreements with the Office of the Secretary of Defense Confirm AFRRI's Relevance to DoD. AFRRI's provision of direct support to the Office of the Secretary of Defense (OSD) and Joint Chiefs of Staff (JCS) validates its mission relevance and its value to national defense. Upon request during emergency situations, AFRRI deploys teams of technical and scientific experts as consultants to these offices within a three-hour response time.

March 2001 Technology Area Review and Assessment. The bi-annual Technology Area Review and Assessment (TARA), held during the week of February 26, 2001, in San Antonio, Texas, noted that advances in medical science and technology indeed portend the prospects that "radiation-induced injuries can be managed" and that major elements of AFRRI's program are "focused on an important problem, with potential impact on homeland defense."

In summary, the DoD's annual funding of the Medical Radiological Defense Research Program at the Armed Forces Radiobiology Research Institute is a timely investment that supports relevant medical requirements of the Services. A value-added benefit to DoD and national security is derived from AFRRI's pool of scientific and technical experts in government service, who are available on short notice to provide advice and guidance to high-level offices within DoD, during national emergencies. AFRRI is poised to continue paying dividends well into the future by ensuring an enhanced medical readiness posture that will save lives and reduce injuries in nuclear/radiological and combined NBC threat environments.

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TIMELINESS

Doctor Marburger, President Bush's Science Advisor, sent a six-person team, including two AFRRI scientists to the Lima, Ohio plant to evaluate the mail irradiation facility and process. AFRRI scientists, working with National Institutes of Standards and Technology personnel, assembled a container of mail with dosimeters and surrogate spores, took it to Lima, had it irradiated as a quality assessment check, and briefed Doctor Marburger on the results, which found no growth spores at the radiation dose recommended by AFRRI. Dr. Marburger will later brief several government agencies, including the Office of Homeland Defense, at the White House on the results.

- Weekly Activities Report, Health Affairs, Office of the Secretary of Defense, Uniformed Services University, November 5-9, 2001.

An Impressive Response. AFRRI routinely disseminates its research findings with the scientific community, within DoD, the private sector, and internationally. Its investigators' publications in peer-reviewed journals, presentations at professional conferences, and reports and recommendations to the TriServices and Surgeons of the Combatant Commands provide timely information on the mitigation of radiation hazards and optimization of medical treatment strategies for radiation casualties. Research findings are also integrated into the AFRRI-sponsored accredited course on the Medical Effects of Ionizing Radiation (MEIR), the only high level training medium available to the medical personnel of the Armed Forces for the management of radiological injuries. Attendance and presentations at national and international conferences ensures that AFRRI investigators stay abreast of the latest developments around the world. It provides an important source of critical feedback through direct peer interaction; and, it fosters recruitment of other scientists to contribute independently to solving problems in radiobiology common to both the military and private sectors. Past studies focused primarily on high radiation doses, because the military was then concerned with the high prompt dose effects from nuclear weapons detonations. Today, ... **"the AFRRI investigators have been able to use this knowledge, and the experimental approaches which allowed its development, to design reasonable and logical approaches to the extremely difficult problems of current interest that (in addition to on-going nuclear threats from terrorist activities) involve low doses and possible low dose rates.... AFRRI has always played a national and international role in solving radiobiological problems, interacting with NATO, sending response teams anywhere in the world where they are needed, and training physicians and military personnel to respond to radiation accidents. This role is expanding due to the default of other centers. Key to the ability to uphold this responsibility, and a major strength, is the combination of dedicated radiation sources, animal facilities, and the mixture of military and civilian personnel with expertise in many relevant fields. This allows a think tank approach to experimental design, rapid execution of experiments, and frugal use of resources, including experimental animals"** (AIBS Peer Review on AFRRI, dated July of 1996, page 2).

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AFRRI Fields Medical Training and Provides Rapid Response in Support of DoD Missions.

Medical Radiobiology Advisory Team. The AFRRI Medical Radiobiology Advisory Team (MRAT) provides medical and health physics consultation and dose assessment capabilities to the United States military and private sectors around the world for contending with a broad spectrum of nuclear or radiological accidents, incidents, or injuries. For example, the team was on full alert after the terrorist attacks at the World Trade Center and at the Pentagon and during the crisis between India and Pakistan. The AFRRI MRAT is a critical arm of the Defense Consequence Management Advisory Team, fielded by the Defense Threat Reduction Agency, and is called upon to deploy worldwide in response to incidents involving nuclear weapons, radiological devices, or nuclear power reactor emergencies (an article in U.S. News and World Report, during February of 2001, illustrated an example of the heightened risk for a radiological event by citing the prospects for nuclear accidents at several locations across the former Soviet Union).

October 2, 1999 Response to the Tokaimura Nuclear Criticality Accident in Japan. AFRRI was in consultation with Dr. Haraguichi at the Tokaimura Prefecture Emergency Operations Center addressing his questions on public health and methods to mitigate the adverse radiophobia and psychological effects of the nuclear incident on the public. AFRRI also provided guidance to the United States Army Japan on measures to reassure the United States military members and their families that they were not in harm's way, to include the monitoring of food sources for the United States community.

August 14, 2000 Response Capability to the Accident of the Russian Submarine Kursk. During the aftermath of the Russian submarine accident, AFRRI was asked by the Defense Threat Reduction Agency for medical capabilities that could be offered to the Russians in anticipation of an official Russian request. AFRRI immediately responded with radiation biodosimetry support to assess the radiation dose to the surviving Russian sailors.

January 8, 2001 Response to a Request from the German Ministry of Defense. The upheaval within the NATO alliance, stemming from claims by some allied forces and their governments that depleted uranium (DU) exposures during their operations in the Balkans were the cause of serious personal illness, prompted the German Ministry of Defense to seek AFRRI's support in dispelling such claims. The request recognized AFRRI's worldwide leadership role and scientific expertise in studies on the health effects of chronic exposures to DU. Through AFRRI's capacity as Chair of Technical Group-006 of the NATO Human Factors and Medicine Panel, information was provided that greatly helped to defuse the crisis.

Support to the Secretary of Defense. On January 10, 2001, AFRRI provided the Office of the Secretary of Defense with the most current scientific information on the human bioeffects of depleted uranium resulting from various sources of exposure (dermal, inhalation and wounding). The information was used later that day by the Secretary of Defense to address the National Press Club on European concerns over DU exposures among NATO forces in the Balkans.

Support to the President of the United States. On November 19, 2001, members of AFRRI's Military Medical Operations Department spent the morning at the White House training the President's medical unit personnel on the medical effects of ionizing radiation and the latest preventive, assessment and treatment measures that can be applied to mitigate radiation-induced injury.

Support to United States Forces Command. On February 12, 2002, the AFFRI Director briefed the principal flag officer staff and Command Surgeon of the United States Forces Command (USFORSCOM) on the radiological risks from potential attacks on, sabotage of, or accidents involving nuclear power plants in areas of operation. The briefing included a review of the Food and Drug Administration (FDA) and DoD policies on the stockpiling and use of potassium iodide for the emergency treatment of personnel exposed to radioactive iodine that can be released during events involving nuclear power reactors.

Training for National Guard Civil Support Teams. A Presidential Directive following the incidents of September 11, 2001, established National Guard Civil Support Teams to provide State Governors with cadres of first responders specifically trained and equipped to deal with terrorist incidents involving chemical, biological, radiological, nuclear or explosive (CBRNE) incidents. In March of 2002, AFRRI's Medical Radiological Advisory Team (MRAT) hosted a two-week conference to train personnel assigned as first responders to the newly established civil support teams. The training included lectures on operational health physics, Federal/DoD regulations, risk analysis, radiological instrumentation, DoD and non-DoD radiological assets, and design characteristics of nuclear power plants, radiological dispersal devices and nuclear weapons. Learning objectives focused on decision-making during the crucial first 12 hours following a nuclear/ radiological event. The conference was highly successful. As a consequence, the National Guard Bureau of Washington, D.C., has requested the AFRRI MRAT to provide training on an annual basis.

Support to the Combatant Commander, United States Southern Command, and the Department of State. On January 30, 2002, members of AFRRI's MRAT provided a briefing to the Acting Combatant Commander, United States Southern Command (USSOUTHCOM), and six other flag officers and representatives from the United States Department of State on the medical and psychological consequences of a radiological dispersal device (RDD) detonation in a foreign country. The DoD, in conjunction with the State Department, is using the information to develop emergency response plans for personnel assigned to United States embassies located around the world. On March 14, 2002, AFRRI personnel participated with the State Department in an exercise simulating the detonation of an RDD in a foreign embassy. The goal of the exercise was to educate participants on the threats and procedures for providing prompt medical assessment, triage and treatment. AFRRI continues to provide medical and health physics support to the Department of State by serving on its Weapons of Mass Destruction (WMD) Incident Planning and Coordination Committee and its WMD Response Operations Control Group.

Support to the President's Science Advisor and Office of Science and Technology Policy. On March 12, 2002, the AFRRI Director and the head of AFRRI's Military Medical Operations Department briefed the Radiological, Nuclear and Conventional Threats Detection and Response R&D Working Group of the Office of Science and Technology Policy (OSTP) on the capabilities of AFRRI's Medical Radiological Advisory Team.

Support to the Vice President of the United States. On February 7, 2002, the AFRRI Director and other AFRRI staff briefed the Vice President's Senior Advisor for Medicine and Public Health and the Senior Advisor for Biodefense on the medical consequences of terrorist use of improvised nuclear weapons and RDDs.

Support to the Centers for Disease Control and Prevention. On July 18, 2002, AFRRI staff provided senior representatives of the Centers for Disease Control and Prevention (CDC) with presentations covering the threats posed by RDDs, surreptitious planting of radiation sources, improvised nuclear weapons, and sabotage of nuclear power reactors. The presentations included discussions on the appropriate use of potassium iodide to mitigate risks of thyroid cancer from exposure to radioactive iodine and an overview of AFRRI's role in emergency response, medical training, and research and development.

Support to the European Union on Medical Preparedness for Nuclear/Radiological Events. As a result of AFRRI's participation in NATO's Research Technology Agency and its research and development programs for radiation medical defense, in October of 2002, AFRRI reported that it had been invited to participate in the European Union (EU) initiative entitled, *Medical Preparedness for Nuclear/Radiological Events*. The recently formed EBMT Nuclear Accident Subcommittee has three objectives: 1) assessments of EU medical resources to effectively manage radiation-associated mass casualties; 2) guidance to EU members concerning current capacities and the requirements for extended capacities; and, 3) development of a robust network of cooperating EU medical facilities and trained personnel in order to better deal with future nuclear/radiological contingencies.

Support Provided to the Interagency Working Group on Test Methods and Surrogates for *Bacillus anthracis*. Senior AFRRI investigators were key participants by invitation for an October 9-10, 2002 Interagency Workshop sponsored by the Environmental Protection Agency (EPA). The workshop's goals were to identify the best non-harmful surrogate bacterial organisms to mimic the biological characteristics of *B. anthracis*, the bacterial agent of anthrax, and to establish collaborative research activities needed to assist the EPA in developing scientifically-based guidance on test methods and performance standards for the inactivation of *B. anthracis* spores. Other noted agencies participating in the workshop included the Centers for Disease Control and Prevention, the Defense Threat Reduction Agency, the Naval Surface Warfare Center, the Department of State, the Department of Energy, the National Institutes of Health, the National Institute of Standards and Technology, the Department of Justice, the Federal Drug Administration, the Lawrence Livermore National Laboratory, the Argon National Laboratory, the Department of Homeland Security, the University of Ottowa, and the Dugway Proving Ground.

Support to the National Pharmaceutical Stockpile Program. An AFRRI physician serves as the co-chair of a joint Centers for Disease Control and Prevention/Department of Defense working group that is chartered to identify pharmaceutical agents for incorporation into the Nation's strategic stockpile to be available for emergency use in the event of nuclear or radiological disasters.

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SCIENTIFIC MERIT

Internal and External Review Mechanisms Ensure Standards of Scientific Excellence. USU and AFRRI have implemented internal and external review mechanisms for the systematic planning, review and analysis of AFRRI's programs to ensure the highest standards of scientific excellence.

Strategic Approach to Program Management. AFRRI management has implemented a three-tiered hierarchy of management controls to provide a clear picture of all funded work in the context of logical levels of effort. The system provides a road map showing how the over-arching goals and objectives of the two Program Elements are to be achieved. It serves as the basis for the planning, funding, review, and analysis of all work; and, it ensures that resources are appropriately allocated so that programmatically relevant goals are achieved within specified time frames and clearly defined metrics of acceptability. The three-tiered hierarchy consists of team-based Project Areas, Task Areas within each Project Area, and Studies within each Task Area.

Project Areas encompass major programmatic thrusts toward related product goals that are based on military requirements. A Team Leader who is responsible for managing, organizing, planning, and executing coordinated scientific investigations heads each Project Area.

Task Areas define subsets of related efforts within a Project Area. Studies within a Task Area are executed by a highly coordinated group of collaborating investigators, each pursuing a critical element of work needed to support a targeted product under development within the Project Area. Task Areas also serve as cost centers to better control the allocation and tracking of financial, capital, and human resources.

Studies are the basic unit of research and are defined by a detailed written protocol. The protocol contains a clearly stated objective, a tenable scientific hypothesis, an experimental approach, a statement of program relevancy, a table of milestones and metrics, and an assessment of resource requirements. Each Study protocol is reviewed and approved by AFRRI's Research Management Council (RCM) composed of the Institute's senior science managers and the Scientific Director; and, recommendations for funding are forwarded to the AFRRI Director before the start of work. The Study may last no more than three years, at which time, the RCM performs a formal assessment of progress. If warranted, a new protocol is written to continue the line of work.

The three management tiers of *Project Areas, Task Areas, and Studies* and accompanying documentation are the administrative tools by which key individuals, from investigators to the institute Director, execute the program. Overlaying this process is a three-part quality assurance mechanism to monitor program execution using the tiered management process as a basis for oversight review.

A Three-Part Approach for Quality Assurance. In response to a direction from the USU President, from April through October of 2000, the senior management of USU and AFRRI coordinated and developed an administrative operation plan for the integration of AFRRI within USU. On October 27, 2000, the USU President accepted the proposed operating plan. Section 16 of that plan includes the area of Research Administration. The executive leadership of both USU and AFRRI finalized a three-part process already initiated by AFRRI for quality assurance for the AFRRI research programs. The three-part process includes a planning phase for the review, approval, and funding of the proposed work, and a three-tiered phase for the review and analysis of progress, which is described in further detail below. The management process starts with the documentation, review, and approval of research plans, which includes a merit review of written protocols prior to the funding and initiation of new studies. All funded work must be approved in this manner as the basis for the rest of the management process. This up-front critical look ensures that the scientific merit and program relevancy of the work meet the program's needs. It serves to assess the work's risk in terms of the likelihood of achieving the stated goals relative to resource requirements and technical challenges. As such, the planning process is included as one of the fundamental tiers of program management.

Complementing the planning and funding is a follow-on process of structured review and analysis of progress. As previously mentioned, this takes the form of annual, in-house, self-examinations by an In-Process Review mechanism. Capping the In-Process Review is an independent extramural assessment of the kind that many DoD organizations commission the American Institute of Biological Sciences (AIBS) to do. Panels of subject matter experts are selected by the AIBS to provide an unbiased assessment of the program; such reviews are generally conducted every three to five years, or as deemed appropriate. Although the program management process as detailed below identifies the two major elements of planning and funding versus review and analysis, it should be understood that the AIBS program assessment, which focuses primarily on review and analysis, also takes into consideration how effectively AFRRI/USU management executes the planning and funding process.

Part I - Program Planning. Part I of the process is the planning and programming of Studies within the Task Areas. Investigators write detailed protocols for up to three years of effort. Prior to the funding and commencement of work, the protocols must be subjected to critical review as noted above. The purpose of this up-front critical look is to ensure that the scientific merit of the proposed work meets the program's needs. The review also assesses the work's risk in terms of the likelihood of achieving the stated goals relative to resource requirements and technical challenges. The Joint Technology Coordinating Group-7 (JTCG-7), under the auspices of the Armed Services Biomedical Research Evaluation Management (ASBREM) Committee, evaluates the program's military relevancy.

Part II - Internal Annual Reviews. In-process reviews of all outstanding studies are conducted annually. Investigators are required to provide short written summaries of progress in the context of the milestones and metrics of approved protocols. Written reviews give principal investigators the opportunity to critically assess their own progress and to justify the continuation of the effort. The reviews provide program managers, the Scientific Director, and the AFRRI Director assurances that Studies, Tasks, and Projects are on course and properly resourced. Reviews have also provided the basis for annual reporting requirements and budget submissions to DDR&E.

Part III - Independent Peer Review. Capping the three-part quality assurance review process is the independent periodic review by the American Institute for Biological Sciences (AIBS) on a three to five year time cycle. The AIBS review panel examines the entire program for relevance and scientific merit and provides a comprehensive written review that goes to the Bio Systems Director of DDR&E in addition to senior AFRRI and USU management. The next AIBS review is scheduled for the end of Fiscal Year 2004.

Department of Radiobiology, School of Medicine. The development of an academic Department of Radiobiology for placement within the USU School of Medicine will take place during the next few years, resources permitting. Both USU and AFRRI agree that, if possible, the AFRRI Scientific Director should also serve as the Chair of the new department. The SOM Department of Radiobiology would have a basic research foundation oriented to support AFRRI's Medical Radiological Defense Research Program mission. The Chairman of the Department of Radiobiology would directly report to the Dean of the School of Medicine.

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The Quality of AFRRI's Science Measures Well Against National Scientific Capabilities and Standards for Technical Merit.

March 2001 Technology Area Review and Assessment. The Technology Area Review and Assessment (TARA) panel noted that AFRRI's research thrusts are characterized by "quality, hypothesis-driven science" and that major elements of the program employ "novel methodology" and "logical approach" in executing studies that have the "potential for significant impact on treatment decisions."

AFRRI Publications in Peer-Reviewed Journals. The quality and productivity of AFRRI's science is reflected in its record of peer-reviewed publications and other printed materials. (A Record of AFRRI Publications, for 1999-2002, is provided at Appendix C.)

Recent Endorsements of the Quality of the AFRRI Research Programs. AFRRI's research programs are highly regarded throughout the scientific and medical communities, both nationally and internationally. The following selected accounts of recent activities and engagements testify to this fact:

- One of AFRRI's senior scientists was invited to deliver a keynote lecture at the "Advanced Research Workshop on Protracted, Intermittent or Chronic Irradiation: Biological Effects and Mechanisms of Tolerance." The workshop was an international meeting held at the University of Ulm, in Ulm, Germany, on May 14 -17, 2001; it was sponsored by the European Commission Directorate for General Research and Technical Development, the International Searle Foundation, and the University of Ulm;

- AFRRI's Radiation Casualty Management Team Leader holds the Chair of the NATO Research Task Group 006 for Radiation Injury and Medical Countermeasures. This task group falls under the Human Factors and Medicine Panel of NATO and its membership includes radiobiology experts from 13 NATO countries, with Australia as an observer nation;

- Upon invitation, another AFRRI senior scientist serves as the United States Representative to the International Standards Organization (ISO) Working Group #18, tasked to develop performance standards for specialized laboratories performing radiation dose assessments using cytogenetic procedures;

- AFRRI planned, organized and hosted a highly successful International Conference on Low-Level Radiation Injury and Medical Countermeasures. Held in November of 1999, the conference attracted over 147 participants and included several of the world's most preeminent radiobiologists. A combined total of 72 oral presentations and posters were given over the course of three days. The proceedings of the conference were published in a special issue of Military Medicine, the International Journal of AMSUS, Supplement to Military Medicine, Volume 167, No 2, in February of 2002;

- AFRRI scientists are invited members of the International Atomic Energy Agency's (IAEA) working group to review and update the agency's Biodosimetry Manual (IAEA Report No. 260). This manual serves as the current basis for the standardization of cytogenetic-based assays for radiation dose assessment. The updated manual, released in 2001, includes, for the first time, reference to the premature chromosome condensation assay pioneered and published by the AFRRI Biodosimetry Team;

- Members of the AFRRI Depleted Uranium (DU) Team were invited on June 14, 1999, to make formal presentations in Washington, D.C., on AFRRI's DU research findings to the National Academy of Sciences, Institute of Medicine, Committee on Health Effects Associated with Exposures during the Gulf War. Information presented by the DU Team was included in the published book summarizing the Committee's findings: Gulf War and Health, Volume 1. Depleted Uranium, Pyridostigmine Bromide, Sarin, Vaccines, (Fulco, C.E., C.T. Liverman, H.C. Sox, eds.), National Academy Press, Washington, D.C., 2000;

- An AFRRI senior scientist was an invited speaker at the 4th International Conference on the Medical Basis for Radiation Accident Preparedness sponsored by the Radiation Emergency Assistance Center/ Training Site (REAC/TS) of the Department of Energy. The conference was held in March of 2001 and addressed issues and current advances in the management of acutely irradiated or contaminated patients. The AFRRI Biodosimetry Team also organized and hosted a workshop, "Updates on the Current Dose Assessment Techniques: Biological," in conjunction with the REAC/TS Conference;

- AFRRI planned, organized, and hosted a highly successful International Conference on the Operational Impact of Psychological Casualties from Weapons of Mass Destruction in July of 2000. Keynote speakers included the Principal Deputy Under Secretary of Defense for Personnel and Readiness and the Deputy Assistant to the Secretary of Defense for Chemical and Biological Defense;

- An AFRRI senior scientist was invited to present an abstract entitled, "Radiation Biodosimetry: Applications for Space Flight," at The World Space Congress 2002/34th Committee on Space Research Scientific Assembly in Houston, Texas; and,

- Two AFRRI scientists were invited speakers at the 11th Annual Meeting of the Council on Ionizing Radiation Measurements and Standards at the National Institute of Standards and Technology held in October of 2002. The Council provides leadership and dissemination of information on a wide range of topics dealing with ionizing radiation measurements and standards.

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TECHNICAL QUALITY

The Transition of New and Improved Medical Technologies. AFRRI's Science and Technology Programs are soon expected to transition new and improved medical technologies into advanced development with Food and Drug Administration (FDA) approval and eventual fielding.

Four Defense Technology Objectives (DTOs) Guide the Thrust of AFRRI's Research. AFRRI's research programs present a strategic commitment that leans heavily toward moving products of basic and developmental research into definitive applied studies of safety and efficacy aimed at transitioning new and improved medical technologies into advanced development, with FDA approval, and eventual fielding.

Since 1998, AFRRI has been assigned four Defense Technology Objectives (DTOs). A DTO is a specifically recognized high priority element of technology advancement that will be developed or demonstrated and has an anticipated delivery date. The product of a DTO is expected not only to enhance military operational capability, but also to address other important issues such as affordability and dual-use application, both of which receive special emphasis in the Defense Science and Technology Strategy. Each of the four DTOs supports the Quadrennial Defense Review (QDR) transformation operational goal of *Project and Sustain U.S. Forces*.

Four Research Thrusts. There are four major AFRRI research thrusts, each carried out by a team of AFRRI investigators:

The Radiation Casualty Management Team. The Radiation Casualty Management Team investigates the full spectrum of medical countermeasures for an external exposure to ionizing radiation. Drug compounds are under development that can potentially elevate tolerable thresholds of ionizing radiation, leading to injury reduction and saved lives. The team investigates compounds that carry anti-oxidant or DNA damage surveillance and repair stimulating properties, or compounds that impart cell-cycle regulatory activities or immune system-enhancing characteristics that, when combined, provide important radioprotective qualities. The team also develops treatments for life-threatening injuries to the blood forming and gastrointestinal systems and the lungs. AFRRI investigators have demonstrated significant radioprotective qualities of a non-androgenic steroid, 5-androstenedial (5-AED). The drug has no measurable toxicity at the doses being used to achieve protection. On-going research includes attempts to deliver similar protective efficacy by the oral route of administration and should lead to a product that can be more easily managed logistically and used by deployed military troops. In October of 2001, AFRRI investigators and representatives from its corporate partner presented preliminary data and a research plan for clinical trials of 5-AED at a pre-investigational new drug meeting before the FDA. The plan was favorably received and the FDA provided valuable guidance on how to proceed with pre-clinical trials toward an IND application.

The Biological Dosimetry Team. The Biological Dosimetry Team has made important technical achievements, which significantly advance the science and medical application of cytogenetic-based methods of radiation dose assessment. The purpose of this research is to: develop rapid assays to measure radiation exposure to casualties; enhance both treatment and management; and, distinguish the "worried well" from those with radiation injuries. Development of a combined chemical and enzymatic treatment of peripheral blood lymphocytes makes it possible to assess radiation exposures across a very broad dose range not possible with conventional cytogenetic procedures. The new procedure allows testing of large sample numbers within a single day's time instead of the usual three days. Further enhancing this development, the team, in collaboration with private industry under a cooperative research and development agreement, has developed an automated microscopic imaging system that will facilitate the processing of even larger numbers of samples with higher precision and accuracy. This new procedure known as the Premature Chromosome Condensation (PCC) assay promises to supplant the current gold standard dicentric assay for cytogenetic-based biodosimetry. A recently published report on the procedure and abstract presentations at several national and international conferences has drawn considerable attention from around the world to AFRRI and its Biological Dosimetry Team. AFRRI is rapidly becoming recognized as a leader in experimental biological dosimetry. The team is also at the forefront of discovery involving the identification and development of novel DNA and RNA molecular markers of radiation exposure. These markers can be measured rapidly and accurately with high precision and sensitivity using hand-held battery-operated analytical platforms designed for field use. Success in this area will, for the first time, allow use of radiation dose assessment and diagnostic techniques to aid triage and medical management decisions during field operations. The PCC assay and a software package for biodosimetry assessment are expected to transition within the next three to five years. During 2001, the United States Joint Standing Committee on Nuclear Energy Cooperation (JSCNEC) requested discussions on training and consultation in the areas of emergency radiological medical response and biodosimetry. Dr. Chong-Won Cho, Director General of South Korea's Atomic Energy Bureau, Ministry of Science and Technology, and a principal participant in the United States discussions with North Korea on the construction of nuclear power plants in North Korea, made the request following AFRRI's presentations at the State Department's 22nd JSCNEC Meeting on May 16-18, 2001.

The Depleted Uranium Team. In partial response to concerns over Gulf War Illness, the Depleted Uranium Team was established to study the biological consequences and potential health risks from chronic exposure to tissue-embedded depleted uranium (DU). The team's research findings have resulted in a recent change to medical doctrine, which calls for a more aggressive removal of DU shrapnel fragments. The AFRRI team also works closely with the Office of the Special Assistant for Gulf War Illness as subject matter experts and consultants on DU issues, and collaborates with the Department of Veterans Affairs in its program to medically follow Gulf War veterans wounded by DU shrapnel. Team members have been called upon on several occasions to give testimony before Congress in this regard. The development and refinement of an inductively coupled mass spectrometry procedure that can differentiate DU from natural uranium in biological samples has become an integral part of this collaborative study and has contributed to AFRRI's being recognized as a center of excellence in DU studies. The development of a simple chemical assay for DU, which can be configured into a compact, rapid field test to aid triage and medical management decisions, is another achievement of the DU team. Together, these accomplishments and their validation in peer-reviewed publications have made the AFRRI DU Team a focal point of recognized expertise frequently consulted by DoD and other United States and NATO government policy-makers. The rapid field-based DU

detection assay has been patented and is expected to transition within the next two to three years. As discussed earlier, on January 8, 2001, AFRRI's consultation and expertise greatly helped to defuse the crisis within the NATO alliance, stemming from claims by some allied forces that DU exposures during operations in the Balkans were the cause of serious personal illness. In addition, on January 10, 2001, AFRRI provided the Office of the Secretary of Defense with the most current scientific information on the human bioeffects of DU resulting from various sources of exposure.

The Radiation Infection Treatment Team. Following the direction of the Director, BioSystems, Office of the Director, Defense Research and Engineering, the Nuclear, Biological and Chemical Interactions and Countermeasures Team's scope of effort was considerably narrowed and shifted to a new area of concentration. The newly named Radiation Infection Treatment Team now focuses on the problem of understanding and developing medical countermeasures against the radiation-induced translocation of intestinal bacteria into the bloodstream, and other naturally occurring infectious sequelae that accompany higher doses of ionizing radiation. Its staff of highly trained and experienced microbiologists extend the work of the Radiation Casualty Management Team by concentrating on studies to develop preventive and treatment measures for polymicrobial sepsis. Ionizing radiation damages the cellular components of the immune system and the epithelial linings of the intestinal track and respiratory system. The damage to epithelial tissues creates portals of entry into the circulatory system for microbial agents. This, combined with an impaired immune system leads to the polymicrobial sepsis that is the leading cause of death due to radiation injury. The team's initial objectives are to establish animal models, which appropriately represent radiation-induced microbial sepsis, and then to begin examining several proposed prophylactic and treatment measures that include the use of new-generation antimicrobial agents, biological response modifiers and probiotic agents. The awarding of a new Defense Technology Objective covering this area of efforts attests to its timeliness and relevance.

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RESPONSE TO THE SPECIAL REQUIREMENTS OF MEDICAL READINESS

AFRRI Projects Address Requirements of Military Operations and Homeland Security. AFRRI's portfolio of current and planned projects adequately addresses needs related to military operations and homeland security through an on-going review process by five entities.

> **The United States and its Allies have an obvious need for a source of reliable and relevant information on the complicating effects of irradiation on the health and safety of its military personnel and citizenry. The AFRRI expertise is intramural, dedicated, and performing original work of the highest quality in response to mission-driven questions.**
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> - AIBS Peer Review on AFRRI, dated July of 1996, page 29.

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Five Entities Guide Research Thrusts or Provide Oversight and Review. Five entities provide guidance on program objectives and product development based on specific military requirements or provide oversight and review of AFRRI's research programs.

The AFRRI Board of Governors. At least once each year, the AFRRI Board of Governors meets to assist in the oversight of AFRRI's radiobiology research, to advise and review program plans and accomplishments, and to ensure compliance with Service Requirements. The AFRRI Board of Governors consists of the Assistant Secretary of Defense for Health Affairs; the Surgeons General of the Army, Navy, and Air Force; the Deputy Chiefs of Staff for Operations of the Army, Navy, and Air Force, or their designated representatives; and, the President of USU.

On October 17, 2001, the AFRRI Board of Governors met and discussed four issues following an overview briefing by the Director of AFRRI. *The first issue* was the Service support needed for medical nuclear/radiological defense requirements. The Board recommended that the Joint Staff articulate Joint Service Operational Requirements; and, DDR&E would ascertain which OSD office would oversee the proposed transition to the P6.4 and P6.5 Advanced Development of AFRRI's products. *The second issue* was the Service policy for the Medical Effects of Ionizing Radiation (MEIR) Course; the Board recommended that AFRRI develop an Advanced Distance Learning interactive training module. *The third issue* was the replacement of the AFRRI Board of Governors with an AFRRI Board of Advisors; this concept was approved, together with a Council of Colonels/Captains; the DDMRD J-4 would chair the Board of Advisors. *The fourth issue* was the selection of the next Director of AFRRI; DDR&E noted that if a qualified candidate could not be identified, that the current Director should be extended for an additional year (the recommended extension took place). And, there was a new business discussion on the suitability of the use of AFRRI to sterilize mail.

The United States Army Nuclear Chemical Agency. Every two years, the United States Army Nuclear Chemical Agency (USANCA), with the assistance of AFRRI subject matter experts, publishes its Specific Military Requirements for Nuclear and Chemical Defense. Three of USANCA's top 20 requirements fall within the mandates of AFRRI's Medical Radiological Defense Research Program and were influential in the establishment of AFRRI's current Defense Technology Objectives.

The Medical Programs Sub-Panel of the Joint Service Integration Group under the Joint NBC Defense Board. Although not a voting member, AFRRI is an invited guest to meetings of the Medical Programs Sub Panel (MPSP) of the Joint Service Integration Group under the NBC Defense Board. An important function of the MPSP is to establish and prioritize joint service mission needs and operational requirements. The mission needs and requirements documents, thus developed, guide product acquisition and justify specific research efforts in the technology base. Participation in the MPSP process keeps the AFRRI Director closely informed on newly established requirements.

The Medical Force Protection Integrated Concept Team. AFRRI is a member of the Medical Force Protection (MFP) Integrated Concept Team (ICT). This team has the responsibility to identify futuristic medical requirements for addressing MFP for the total force under all combat and non-combat conditions; this includes protection of the service member on the battlefield, at the site of injury, through his/her time spent on active duty, and following the service member's departure into civilian life and retirement. It is well within the scope of the MFP/ICT to recommend that joint requirement documents be established for medical radiological defense products such as pretreatment and treatment pharmaceuticals and fieldable and rapid assessment biodosimetry techniques.

The Office of the Director, Defense Research and Engineering. The Office of the Director, Defense Research and Engineering (DDR&E) conducts a technology area review and assessment (TARA) every two years. The TARA process includes, but is not limited to, a comprehensive review of AFRRI's four DTO's (Defense Technology Objectives) relative to each DTO's stated milestones and metrics, and whether the DTO objectives adequately focus on requirements. A program overview sponsored by DDR&E was held on June 25-27, 2001. AFRRI presented each protocol related to four main program areas: Biological Dosimetry; Depleted Uranium; Radiation Casualty Management; and, NBC Combined Effects and Countermeasures. The main finding was the requirement to define a process to transition products from the Science and Technology P6.3 Program to the Advanced Development Programs, P6.4 and P6.5.

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OPTIMIZATION OF FUTURE OPERATIONS

Resource Sharing Continues Between USU and AFRRI.

Continuation and Expansion of On-Going Cost-Avoidance Measures by USU and AFRRI. In addition to AFRRI's significant reductions in staffing, which have taken place since 1992, both USU and AFRRI agree that on-going, cost-effective measures will continue and be expanded as appropriate. Some examples follow: 1) all contracts and maintenance agreements will be frequently reviewed for cost avoidance and savings; 2) the USU Security Division will continue to process security background investigations for the contracted employees assigned at AFRRI; 3) the USU Civilian Human Resources Directorate will continue to provide all personnel requirements for AFRRI in accordance with current agreements; 4) the USU Administrative Support Division will continue to provide support for AFRRI's visa/passport requirements; 5) the USU Contracting Directorate will continue to provide guidance and back-up support for the AFRRI contracting/support requirements; 6) the AFRRI and USU Directors of Laboratory Animal Medicine will continue to share equipment and use joint purchases for supplies; 7) the USU Learning Resources Center (Library) will continue to provide all related services for AFRRI in accordance with current agreements; 8) collaboration on occupational medicine training requirements will continue; 9) the USU Veterinary Pathology Division will continue its support for AFRRI's microbiology and electron microscopy requirements; the AFRRI Veterinarian Pathologist will continue to assist USU as required; 10) USU will continue to serve as the Internet Service Provider for AFRRI; the on-going sharing of Self-Help videos and distance learning expertise will continue; and, 11) the USU Military Personnel Office will continue to share its Equal Opportunity and mandatory training classes with the AFRRI military personnel.

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Necessary Steps Are Identified to Remedy Deficiencies in Resourcing.

Determination of Staffing/Funding Requirements. Generally, when an organization is integrated within another, there are anticipated savings in manpower and operating costs throughout the administrative and support areas. However, due to continuous and significant reductions in the AFRRI budget over the past years (beginning in 1992/3 when AFRRI's funding was reduced by over 40 percent), the manpower levels in the AFRRI administrative/support areas have been consistently reduced, at times below recommended manpower levels. At the same time, the USU administrative support staff has been maintained at the minimum level required to support the University's mission and to assure compliance with its controlling regulations. A joint recommendation by both USU and AFRRI has been documented in the Administration Plan of October 2000 for five additional administrative hires by AFRRI in the areas of Security, Facilities, and Research Administration. The inclusion of the funding for these additional five hires **($262,000)** was included in the estimated cost of staffing AFRRI during FY2002 and beyond.

One-Time Property Renovation Costs. AFRRI's urgent requirements for real property maintenance and repair and/or renovation projects have not been addressed due to consistent budget reductions since 1993. The Facilities Divisions of USU and AFRRI coordinated to provide an estimated total cost for addressing these concerns. The estimated one-time cost for renovations and/or repairs totals **$4,000,000**. These real property maintenance and renovation projects are urgently required for the continued use of AFRRI's 173,000 square foot complex; the costs have been discussed with the Office of the Director of Defense Research and Engineering. These projects include: the building of firewalls; the renovation of the heating, ventilation, and air conditioning systems; major laboratory upgrades; and, the renovation of elevators. All of these projects are five to ten years beyond the recommended timeframes for implementation. (The $4,000,000 total reflects DDR&E input on the original October 2000 submission of $4,500,000.)

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AFRRI's Internal Response to Budget Deficiencies.

AFRRI's Internal Program Management. Due to consistent budgetary reductions, in order to maintain a vibrant and productive program, AFRRI has re-engineered its strategic approach to program management and resource allocation. A system of planning, programming, budgeting, review and analysis rounds out a streamlined process that focuses on programmatic relevance, scientific merit, and monitored productivity. This system is structured so that professional and technical staff at all levels within the Institute become stakeholders in the program and are more fully committed to meeting the Institute's goals and objectives. The implementation of this comprehensive management strategy has had a profound impact on productivity and the quality enhancement of program output.

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Product Transition.

Efforts by AFRRI to Obtain Higher Level Programmed Funding Lines. To date, DoD supports AFRRI's Medical Radiological Defense Research Program (MRDRP) initiatives up to, and including, pre-clinical non-cGLP (current Good Laboratory Practices) studies for safety and efficacy in surrogate animal model systems (P6.2/P6.3 funding lines). Conducting pre-clinical safety trials under cGLP and transitioning products into advanced development involving clinical studies in humans requires higher level programmed funding lines (P6.4/P6.5), that currently do not exist for medical radiological defense. Also needed is a sophisticated project management process compliant with Food and Drug Administration (FDA) regulatory affairs, which AFRRI does not have. In order to partially meet this requirement, a memorandum of agreement between AFRRI and the United States Army Medical Research and Material Command (MRMC) was signed in 2000. The United States Army Medical Material Development Activity (USAMMDA) mission within MRMC is to provide project management and regulatory affairs support for moving new medical technologies through cGLP pre-clinical studies and human trials towards newly licensed medical products. Funding constraints at this level of effort are a serious detriment to the transitioning of medical products into advanced

development and the obtaining of FDA approval. One approach, though not the total solution, is to partner with pharmaceutical companies to develop products with dual military and civilian applications and to share in both the cost of obtaining FDA approval and intellectual property rights.

Products Identified for Transition. AFRRI has identified numerous candidate products for transition within the next ten years. With funding projections in hand, AFRRI has identified the unfunded requirements. Products include true radiation radioprotectant drugs to help prevent radiation injuries in service members and emergency response personnel, who may be called upon to operate in nuclear or radiological environments. They also include treatment drugs for radiation injuries that enhance immune system function and accelerate recovery of the blood-forming system and, drugs for treating radiation-induced infections. There are treatment strategies being developed to replace the trauma of bone marrow transplants and the complications of transplant rejection. In addition, procedures for the rapid biological assessment of radiation dose are being developed that will contribute to the delivery of more timely and effective triage and medical management of the radiation-injured, and that will help to distinguish between the truly physically injured and the "worried well." In the event of a serious incident, radiophobia and psychologically stressed populations would be significant and must be quickly dealt with in order to reassure the general public and to effectively manage the response. Operational requirements for these products are being promulgated through the Medical Programs Sub-Panel of the Joint Service Integration Group under the Joint NBC Defense Board and other requirements processes.

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Department of Defense

DIRECTIVE

NUMBER 5105.45

March 9, 2000

DA&M

SUBJECT: Uniformed Services University of the Health Sciences (USUHS)

(a) DoD Directive 5105.45, subject as above, May 17, 1999 (hereby canceled)
(b) Chapter 104 et seq. of title 10, United States Code
(c) Secretary of Defense Report, "Defense Reform Initiative," November 1997[1]
(d) Program Budget Decision 711R, "Defense Reform Initiative - Office of the Secretary of Defense and the Defense Agencies," December 17, 1997
(e) through (g), see enclosure 1

1. REISSUANCE AND PURPOSE

This Directive reissues reference (a) to:

1.1. Update the mission, policy, organization and management, responsibilities and functions, relationships, and authorities of the USUHS.

1.2. Provide for USUHS governance under reference (b).

1.3. Establish the USUHS Executive Committee, pursuant to the direction of reference (c).

1.4. Designate the Secretary of the Navy as the "DoD Executive Agent" for administrative support of the USUHS, in accordance with reference (d).

1 Availabile at http://www.defenselink.mil/pubs/dodreform/

2. APPLICABILITY

This Directive applies to the Office of the Secretary of Defense (OSD), the Military Departments, the Chairman of the Joint Chiefs of Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the Department of Defense (hereafter referred to collectively as "the DoD Components").

3. DEFINITIONS

3.1. Academic Affairs. Faculty appointments, promotions and organization, awarding of degrees, curriculum design and implementation, academic requirements for admission and graduation, and related matters vital to the academic well-being of the USUHS.

3.2. Uniformed Services. The Army, the Navy, the Air Force, the Marine Corps, the Coast Guard, the Commissioned Corps of the U.S. Public Health Service, and the Commissioned Corps of the National Oceanic and Atmospheric Administration.

4. MISSION

The USUHS shall:

4.1. Educate and train competent medical personnel qualified to serve the needs of the Uniformed Services through providing the highest quality education programs in the health sciences.

4.2. Place high priority on educating and training personnel to meet the combat and peacetime medical needs of the Armed Forces.

4.3. Grant applicable advanced academic degrees; establish postdoctoral and postgraduate programs, and technological institutes; conduct medical readiness training and continuing education for members of the Uniformed Services in the health professions; and prepare individuals for careers in the health professions in the Uniformed Services.

5. POLICY

It is DoD policy that:

5.1. Consistent with the performance of the DoD mission and with established practices covering academic independence and integrity in the fields of medical and health sciences education, the Department of Defense recognizes the unique role of the USUHS Board of Regents in advising the Secretary of Defense. Consistent with applicable law and accomplishment of the DoD mission, the Assistant Secretary of Defense for Health Affairs (ASD(HA)), the USUHS Executive Committee, and the President of the USUHS shall be guided by the advice of the USUHS Board of Regents on academic affairs.

5.2. USUHS funding shall be within the Defense Health Program.

6. ORGANIZATION AND MANAGEMENT

6.1. The USUHS is a joint entity of the three Military Departments, subject to the overall supervision of the ASD(HA) and the management direction of the USUHS Executive Committee, and shall consist of the following:

6.1.1. A Board of Regents that shall be established and operated, in accordance with 5 U.S.C. Appendix (Federal Advisory Committee Act) (reference (e)), and shall consist of members appointed under Section 2113(a), Chapter 104 of 10 U.S.C. (reference (b)).

6.1.2. A President of the USUHS, who shall be the chief executive officer of the USUHS, and who also is the Dean of the USUHS, as described in reference (b), and who shall report to the ASD(HA), through the USUHS Executive Committee.

6.1.3. A Dean of the F. Edward Hebert School of Medicine, who shall function as the chief academic officer of the F. Edward Hebert School of Medicine and report to the President of the USUHS.

6.1.4. A Dean of the Graduate School of Nursing, who shall function as the chief academic officer of the Graduate School of Nursing and report to the President of the USUHS.

6.1.5. Other subordinate positions and elements as are established by the President of the USUHS within authorized resources.

6.1.6. Students selected under procedures prescribed, in accordance with Chapter 104 of reference (b), and graduate students.

6.2. The USUHS Executive Committee is established to provide the supervision and management of the USUHS, pursuant to the Defense Reform Initiative (reference (c)), and consistent with the direction of the Secretary of Defense to reduce the operational and program management responsibilities of the OSD.

6.2.1. The USUHS Executive Committee shall consist of the Surgeons General of the three Military Departments and shall report to the ASD(HA) on USUHS matters.

6.2.2. A Chair shall be designated from among the membership, as mutually determined by the membership.

6.2.3. The President of the USUHS shall provide an Executive Secretary and associated staff support.

6.2.4. The DoD Executive Agent shall be represented on the USUHS Executive Committee by the Surgeon General of the Navy.

7. RESPONSIBILITIES AND FUNCTIONS

7.1. The Assistant Secretary of Defense for Health Affairs, under the Under Secretary of Defense for Personnel and Readiness, shall:

7.1.1. In accordance with DoD Directive 5136.1 (reference (f)), exercise authority, direction and control over the medical personnel, facilities, programs, funding, and associated resources in the Department of Defense as they relate to the USUHS.

7.1.2. Exercise the authorities over the USUHS vested in the Secretary of Defense by Chapter 104 of 10 U.S.C. (reference (b)), except that the authority to appoint the President of the USUHS is reserved to the Secretary of Defense.

7.1.3. Develop policies and issue policy guidelines to ensure the effective integration of USUHS programs and activities in the DoD Health Program. That includes, but is not limited to, the development of DoD Directives, the issuance of DoD Instructions, and OSD-level participation in the Planning, Programming, and Budgeting System process.

7.1.4. Ensure that the advice of the Board of Regents in matters of academic affairs is considered, in accordance with the policy in section 5.1., above.

7.1.5. Ensure that the Board of Regents shall participate in the governance of the USUHS by advising the Secretary of Defense, through the ASD(HA), on academic affairs and on the administration and management of the USUHS.

7.1.6. Ensure that the President of the USUHS shall:

7.1.6.1. Make certain that educational programs leading to a Doctor of Medicine or other advanced degrees in the health professions meet the standards of applicable and recognized, accrediting, licensing, and certifying Agencies.

7.1.6.2. Carry out those responsibilities and functions pertaining to the supervision and management of University programs, activities, personnel, and resources as the ASD(HA) and Executive Committee prescribe.

7.1.7. Ensure that the Dean of the F. Edward Hebert School of Medicine shall develop and administer policies and procedures on the academic affairs of the F. Edward Hebert School of Medicine.

7.1.8. Ensure that the Dean of the Graduate School of Nursing shall develop and administer policies and procedures on the academic affairs of the Graduate School of Nursing.

7.2. The Secretary of the Navy shall serve as the DoD Executive Agent for administrative support of the USUHS, to include budget, personnel, information, facilities, and other resource responsibilities required for the mission of the USUHS.

7.2.1. Civilian personnel authorizations shall be under the purview of the DoD Executive Agent and civilian employees shall be carried on the rolls of the Department of the Navy.

7.2.2. The USUHS funding and personnel requirements shall not be offset against the Navy Surgeon General budget or work-year allocations.

7.3. The Director, Defense Legal Services Agency, shall provide legal advice and services for the USUHS.

7.4. The USUHS Executive Committee, consistent with the policy guidance of the ASD(HA), shall:

7.4.1. Oversee the operation of the USUHS and provide management direction to the President of the USUHS on the day-to-day operation of the USUHS.

7.4.2. Provide guidance to the President of the USUHS and advice to the ASD(HA) on the annual USUHS program and budget submissions.

7.4.3. Provide advice to the ASD(HA) on health policy matters relating to the USUHS.

8. RELATIONSHIPS

8.1. In carrying out the responsibilities and functions of the chief executive officer of the USUHS, the President of the USUHS shall:

8.1.1. Obtain advice from the USUHS Executive Committee and the Board of Regents, as necessary, to assist the President of the USUHS in performing the President's duties.

8.1.2. Coordinate and exchange information and advice with elements of the OSD and the other DoD Components having collateral or related responsibilities.

8.1.3. Make use of established facilities and services in the Department of Defense and other Government Agencies, when practical, to avoid duplication and achieve maximum efficiency and economy.

8.1.4. Consult and coordinate with other Governmental Agencies and non-Governmental agencies on matters for the mission and programs of the USUHS.

8.2. The Heads of the DoD Components shall coordinate with the ASD(HA) on all matters relating to the mission and programs of the USUHS.

9. AUTHORITIES

The President of the USUHS is specifically delegated the authority to:

9.1. Obtain reports, information, advice, and assistance consistent with DoD Directive 8910.1 (reference (g)), as necessary, to carry out assigned responsibilities and functions.

9.2. Communicate directly with appropriate representatives of the DoD Components and other Executive Departments and Agencies, and members of the public, as appropriate, on matters related to the mission and programs of the USUHS.

9.3. Appoint civilian members of the faculty and staff under salary schedules and grant retirement and other related benefits prescribed by the Secretary of Defense so as to place the employees of the USUHS on a comparable basis with the employees of fully accredited schools of the health professions within the vicinity of the District of Columbia, as provided by law (reference (b)).

9.4. Exercise the administrative authorities contained in enclosure 2.

10. EFFECTIVE DATE

This Directive is effective immediately.

John J. Hamre
Deputy Secretary of Defense

Enclosures - 2
E1. References, continued
E2. Delegations of Authority

E1. ENCLOSURE 1

REFERENCES, continued

(e) Title 5, United States Code

(f) DoD Directive 5136.1, "Assistant Secretary of Defense for Health Affairs (ASD(HA))," May 27, 1994

(g) DoD Directive 8910.1, "Management and Control of Information Requirements," June 11, 1993

E2. ENCLOSURE 2

DELEGATIONS OF AUTHORITY

E2.1.1. Under the authority vested in the Secretary of Defense, and subject to the authority, direction, and control of the Secretary of Defense, the Under Secretary of Defense for Personnel and Readiness, and the ASD(HA), the President of the USUHS is hereby delegated authority, subject to paragraph E2.1.2., below, as required in the administration and operation of the USUHS, to:

E2.1.1.1. Exercise the powers vested in the Secretary of Defense by 5 U.S.C. 301, 302(b), 3101, and 5107 on the employment, direction, and general administration of USUHS civilian personnel.

E2.1.1.2. Fix rates of pay for wage-rate employees exempted from the "Classification Act of 1949" by 5 U.S.C. 5102 on the basis of rates established under the Federal Wage System. The fixing of such rates shall follow the wage schedule established by the DoD Wage Fixing Authority.

E2.1.1.3. Administer oaths of office to those entering the Executive Branch of the Federal Government, in accordance with 5 U.S.C. 2903, and designate in writing, as may be necessary, officers and employees of the USUHS to perform that function.

E2.1.1.4. Establish a USUHS Incentive Awards Board and pay cash awards to, and incur necessary expenses for the honorary recognition of, civilian employees of the Government whose suggestions, inventions, superior accomplishments, or other personal efforts, including special acts or services, benefit or affect the USUHS or its subordinate activities, in accordance with 5 U.S.C. 4503; Office of Personnel Management (OPM) regulations; and DoD 1400.25-M, "DoD Civilian Personnel Manual (CPM)," Chapter 400, Subchapter 451, "Awards," December 1996, authorized by DoD Directive 1400.25, November 25, 1996.

E2.1.1.5. Maintain an official seal and attest to the authenticity of official USUHS records under that seal.

E2.1.1.6. Establish advisory committees and employ part-time advisors, as approved by the Secretary of Defense, for the performance of USUHS functions,

consistent with the 10 U.S.C. 173, 5 U.S.C. 3109(b), and DoD Directive 5105.4, "Department of Defense Federal Advisory Committee Management Program," September 5, 1989.

E2.1.1.7. In accordance with Executive Order (E.O.) 10450, "Security Requirements for Government Employment," April 27, 1953; E.O. 12333, "United States Intelligence Activities," December 4, 1981; and E.O. 12968, "Access to Classified Information," August 4, 1995; and DoD Directive 5200.2, "DoD Personnel Security Program (DoDSP)," April 9, 1999, as appropriate:

E2.1.1.7.1. Designate any position in the USUHS as a "sensitive" position.

E2.1.1.7.2. Authorize, in case of an emergency, the appointment of a person to a sensitive position in the USUHS for a limited period of time and for whom a full field investigation or other applicable investigation, including the National Agency Check, has not been completed.

E2.1.1.7.3. Initiate personnel security investigations, and, if necessary, in the interest of national security, suspend a security clearance for personnel assigned, detailed to, or employed by the USUHS. Any action under this paragraph shall be taken, in accordance with procedures prescribed in DoD 5200.2-R, "DoD Personnel Security Program," January 1987, authorized by DoD Directive 5200.2, April 9, 1999.

E2.1.1.8. Act as the agent for the collection and payment of employment taxes imposed by Chapter 21 of the Internal Revenue Code of 1954, as amended; and, as such agent, make all determinations and certifications required or provided for under Section 3122 of the Internal Revenue Code of 1954, as amended, and Sections 205(p)(1) and 205(p)(2) of the "Social Security Act," as amended (42 U.S.C. 405(p)(1) and 405(p)(2)), about USUHS employees.

E2.1.1.9. Authorize and approve the following:

E2.1.1.9.1. Temporary duty travel for military personnel assigned or detailed to the USUHS, in accordance with the Joint Federal Travel Regulations (JFTR), Volume 1, "Uniformed Service Members," current edition.

E2.1.1.9.2. Travel for USUHS civilian personnel, in accordance with the Joint Travel Regulations (JTR), Volume 2, "DoD Civilian Personnel," current edition.

E2.1.1.9.3. Invitational travel to non-DoD employees whose

consultative, advisory, or other highly specialized technical services are required in a capacity that is directly related to, or with, USUHS activities, in accordance with the JTR, Volume 2, "DoD Civilian Personnel," current edition.

E2.1.1.9.4. Overtime work for the USUHS civilian personnel, in accordance with 5 U.S.C. Chapter 55, Subchapter V, and applicable OPM regulations.

E2.1.1.10. Approve the expenditure of funds available for travel by military personnel assigned or detailed to the USUHS for expenses incident to attendance at meetings of technical, scientific, professional, or other similar organizations in such instances when the approval of the Secretary of Defense, or designee, is required by 37 U.S.C. 412 and 5 U.S.C. 4110 and 4111.

E2.1.1.11. Develop, establish, and maintain an active and continuing Records Management Program under 44 U.S.C. 3102 and DoD Directive 5015.2, "DoD Records Management Program," April 11, 1997.

E2.1.1.12. Utilize the Government purchase card for making micro-purchases of material and services, other than personal services, for the USUHS, when it is determined more advantageous and consistent with the best interests of the Government.

E2.1.1.13. Authorize the publication of advertisements, notices, or proposals in newspapers, magazines, or other public periodicals, as required for the effective administration and operation of the USUHS, consistent with 44 U.S.C. 3702.

E2.1.1.14. Establish and maintain, for the functions assigned, an applicable publications system for the promulgation of common supply and service regulations, instructions, and reference documents, and changes thereto, under the policies and prescribed procedures in DoD 5025.1-M, "Department of Defense Directives System Procedures," August 1994, authorized by DoD Directive 5025.1, June 24, 1994.

E2.1.1.15. Enter into support and service agreements with the Military Departments, the other DoD Components, and the other Government Agencies, as required for the effective performance of USUHS functions and responsibilities.

E2.1.1.16. Enter into and administer contracts, directly or through a Military Department, a DoD contract administration services component, or other Federal Agency, as applicable for supplies, equipment, and services required to accomplish the mission of the USUHS. To the extent that any law or E.O. specifically limits the exercise of such authority to persons at the Secretariat level, such authority shall be

exercised by the applicable Under Secretary of Defense or Assistant Secretary of Defense.

E2.1.1.17. Establish and maintain appropriate property accounts for the USUHS, and appoint Boards of Survey, approve reports of survey, relieve personal liability, and drop accountability for USUHS property in the authorized property accounts that is lost, damaged, stolen, destroyed, or otherwise rendered unserviceable, in accordance with applicable laws and regulations.

E2.1.1.18. Promulgate the necessary security regulations for the protection of property and places under the jurisdiction of the President of the USUHS, under DoD Directive 5200.8, "Security of DoD Installations and Resources," April 25, 1991.

E2.1.1.19. Exercise the authority delegated to the Secretary of Defense by the Administrator of the General Services Administration for the disposal of surplus personal property.

E2.1.2. The delegations of authority provided by paragraph E2.1.1, above, are also subject to the following, in order of precedence:

E2.1.2.1. The authority, direction, and control of the ASD(HA).

E2.1.2.2. The management direction and control of the USUHS Executive Committee.

E2.1.2.3. Regulations and procedures of the DoD Executive Agent, applicable to the USUHS, under section 7.2. of this Directive, for administration of the USUHS.

E2.1.3. The President of the USUHS may redelegate those authorities, as applicable, and in writing, except as otherwise specifically indicated in paragraph E2.1.1. through subparagraph E2.1.2.3., above, or as otherwise provided by law or regulation.

CHARTER

THE BOARD OF REGENTS
OF THE
UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

A. **Official Designation:** The Advisory Committee shall be known as the Board of Regents of the Uniformed Services University of the Health Sciences (USUHS). As an advisory committee, the Board will be governed by the provisions of the Federal Advisory Committee Act (FACA), the GSA Final Rule (41 C.F.R. Part 101-6), and DoD Directive 5105.4, the "DoD Federal Advisory Committee Management Program."

B. **Objective and Scope of Activity:** To provide advice and guidance to the Secretary of Defense through the Assistant Secretary of Defense for Health Affairs for the operation of the Uniformed Services University of the Health Sciences. To assure that said operation is in the best tradition of academia and in compliance with the appropriate accreditation authorities.

C. **Period of Time Required:** This Committee is established pursuant to 10 U.S.C. 2112 et seq. and exists indefinitely.

D. **Official or Sponsoring Proponent to Whom the Committee Reports:** The Secretary of Defense through the Assistant Secretary of Defense for Health Affairs.

E. **Support Agency:** The Uniformed Services University of the Health Sciences.

F. **Duties and Responsibilities:**

1. The business of the University shall be conducted by the Secretary of Defense through the Assistant Secretary of Defense for Health Affairs and the USUHS Executive Committee with the advice of the Board of Regents (hereinafter referred to as the "Board") with funds appropriated for and provided by the Department of Defense within the Defense Health Program. The Board shall consist of

a. nine persons outstanding in the fields of health and health education who shall be appointed from civilian life by the President of the United States, by and with the advice and consent of the Senate;

b. the Secretary of Defense, or designee, who shall be an ex-officio member;

c. the Surgeons General of the Uniformed Services, who shall be ex-officio members; and

d. the person referred to in subsection (4).

2. The term of office for each member of the Board (other than an ex-officio member) shall be six years except that

a. any member appointed to fill a vacancy occurring before the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term;

b. any member whose term of office has expired shall continue to serve until his successor is appointed.

3. One of the members of the Board (other than an ex-officio member) shall be designated by the President as Chairman and shall be the presiding officer of the Board.

4. The Board shall provide advice regarding the appointment of a President of the University (hereinafter in this charter referred to as the "President") who shall also serve as a non-voting ex-officio member of the Board. The Board shall also provide advice regarding the appointment of a Dean of the Medical School and Dean of the Graduate School of Nursing.

5. Members of the Board (other than ex-officio members) while attending conferences or meetings or while otherwise performing their duties as members shall be entitled to receive compensation at a rate to be fixed by the Secretary of Defense, but not exceeding $100.00 per diem and shall also be entitled to receive an allowance for necessary travel expenses while so serving away from their place of residence.

6. The Board may recommend academic titles, as appropriate, upon military and civilian members of the faculty. The Board may recommend the awarding of appropriate academic degrees to successful candidates.

7. The Board is authorized to recommend negotiation of agreements with agencies of the Federal Government to utilize on a reimbursable basis appropriate existing Federal medical resources located in or near the District of Columbia. Under such agreements the facilities will retain their identities and basic missions. The Board is also authorized to recommend affiliation agreements with an accredited university or universities. Such agreements may include provisions for payments for educational services provided students participating in Department of Defense educational programs.

8. The Board may recommend establishment of postdoctoral, postgraduate, and technological institutes.

9. The Board may recommend establishment of programs in continuing medical education for military members of the health professions to the end that high standards of health care may be maintained within the military medical services.

10. The Board may recommend to the Assistant Secretary of Defense for Health Affairs that the University, upon approval of the Secretary of Defense, may enter into agreements with foreign military medical schools for reciprocal education programs under which students at the University receive specialized military medical instruction at the foreign military medical school and military medical personnel of the country of such medical school receive specialized military medical instruction at the University. Any such agreement may be made on a reimbursable basis or a nonreimbursable basis.

11. In carrying out the specific functions listed above and in performing other activities, the Board shall serve as the primary advisor to the Secretary of Defense, to the Assistant Secretary of Defense (Health Affairs), to the USUHS Executive Committee, and to the President of USUHS concerning academic affairs of the University.

G. Estimated Annual Operating Costs and Estimated Man-Years: $186,700.00; 2.2 FTE

H. Number of Meetings: This Committee is established by statute, 10 U.S.C. 2112 et seq., and shall meet at least four (4) times per year and as often as the Secretary or Chairperson of the Board shall deem necessary to conduct University business.

I. Termination Date: The Committee by statute has no termination date (Cf Sec. 8091, P.L. 101-511, DoD Appropriations Act, 1991).

J. Date Charter is Filed: April 4, 2003

Bylaws
of the
Uniformed Services University of the Health Sciences
Board of Regents

Article I

Name

The Advisory Committee shall be known as the Board of Regents of the Uniformed Services University of the Health Sciences (USUHS).

Official Designation

As a federal advisory committee, the Board will be governed by the provisions of the Federal Advisory Committee Act (FACA), the GSA Final Rule (41 C.F.R. Part 101-6), DoD Directive 5105.4, "Federal Advisory Committee Management Program," and DoD Directive 5105.45, "Uniformed Services University of the Health Sciences."

Article II

Purpose and Objective

A. The purpose of the Board of Regents shall be to provide advice and guidance to the Secretary of Defense through the Assistant Secretary of Defense for Health Affairs and also to the USUHS Executive Committee for the operation of the Uniformed Services University of the Health Sciences.

B. To assure that said operation is in the best tradition of academia and in compliance with the appropriate accreditation authorities.

C. Other specific purposes as identified in DoD Directive 5105.45.

Article III

Members
The Board shall consist of:

A. Nine persons, outstanding in the fields of health and health education, who shall be appointed from civilian life by the President of the United States, by and with the advice and consent of the Senate;

B. The Secretary of Defense, or designee, who shall be an ex-officio Member;

C. The Surgeons General of the Uniformed Services, or their designees, who shall be ex-officio Members; and

D. The President/Dean of the University who shall also serve as a non-voting ex-officio Member of the Board.

Term of Office
The term of office for each Member of the Board (other than an ex-officio Member) shall be six years except:

A. Any Member appointed to fill a vacancy, occurring before the expiration of the term for which his predecessor was appointed, shall be appointed for the remainder of such term;

B. Any Member whose term of office has expired shall continue to serve until a successor is appointed. These appointments will be renewed annually on the anniversary of the original appointment date.

Appointment of Chair
One of the Members of the Board (other than ex-officio Members) shall be designated by the President of the United States as Chair and shall be the Presiding Officer of the Board. The term of the Chair shall continue until a successor is appointed.

Selection of Vice-Chair
The Chair shall appoint a person to serve as Vice Chair.

Article IV

Duties and Responsibilities

A. The Board shall advise the Secretary of Defense, through the Assistant Secretary of Defense, regarding the appointment of the President of the University and the appointments of Deans to the School of Medicine and the Graduate School of Nursing, and approve the nomination from the Deans of the Schools of the Department Chairs. (See U.S. Code Title 10, Section 2113, attached.)

B. The Board shall be informed by the President of the University of appointments of associate deans and assistant deans.

C. The Board shall recommend the awarding of appropriate academic degrees to successful candidates.

D. The Board will ensure that the University maintains appropriate accreditation requirements.

E. The Board shall act upon recommendations made by the Committees on Appointments, Promotion, and Tenure.

F. The Board shall act upon recommendations made to establish new academic programs. A reading will occur when a proposal is presented; action will be taken at the next regularly scheduled subsequent meeting.

G. The Board shall perform other duties as deemed appropriate and within its charter.

Article V

Advisors

A. The Deans of the Schools are advisors to the Board.

B. The Commanders of affiliated teaching hospitals are advisors to the Board.

C. A military advisor to the Board will provide guidance from an operational perspective.

D. The Board may invite other individuals to be advisors.

Article VI

Committees

A. Executive Committee of the Board of Regents

Designation

The Board shall designate a body as the Executive Committee. The Executive Committee shall report to the Board.

Purpose

The Committee shall be responsible for conducting Board business between Board meetings. Actions taken by the Committee shall be submitted for ratification at the next regularly scheduled meeting.

Membership

The Committee will be composed of:

a. Chair, Board of Regents
b. Vice Chair, Board of Regents
c. Chair, USU Executive Committee
d. Two members selected by the Board
e. President, USU

Meetings

The Executive Committee of the Board of Regents will meet either at the call of the Chair or at the request of any two members other than the Chair. Meetings may be held in person or via conference call.

B. Ad Hoc Committees

Designation

The Board, as a body, shall designate ad hoc committees as necessary.

Purpose

Each such ad hoc committee shall be responsible for in-depth consideration of assigned Board agenda items and/or special projects between scheduled meetings.

Membership

The Chair of the Board of Regents will appoint ad hoc committee members.

Meetings

Each ad hoc committee will meet either at the call of its Chair, or at the request of any two members other than the Chair of the committee. Meetings may be held in person or via conference call.

Article VII

General Procedures

A. Regular Meetings

(1) The Board will hold at least four (4) meetings in an annual period from October 1 to September 30, or as often as the Secretary of Defense or Chair of the Board shall deem necessary to conduct University business.

(2) Unless otherwise determined by the Board, meetings will be held in the Board of Regents conference room at the University, 4301 Jones Bridge Road, Bethesda, MD 20814.

B. Additional Meetings

(1) Additional meetings will be called by the Executive Secretary upon the direction of the Chair, the President of the University, or written request of three or more Regents.

(2) Additional meetings of the Board will be held at such times and places as will be specified in the notice of the meeting.

C. Notice of Meetings

(1) Notice of all meetings of the Board shall be sent by the Secretary to each Regent by mail, fax, electronic mail (e-mail), or telephone.

(2) The Secretary shall mail a notice not less than fifteen (15) days before any regular meeting. Faxing, e-mailing, or telephoning a notice shall be done not less than seven (7) days before a regular meeting.

(3) The recital by the Secretary in the minutes that notice was given shall be sufficient evidence of the fact.

(4) Public Announcement of the meetings of the full Board will appear in the Federal Register as provided in the Government in the Sunshine Act. (5 U.S.C. 552b(e)(3))

D. Quorum

A majority of all Members will constitute a quorum of the Board. As currently constituted, a quorum means at least eight (8) members must be present in person or via electronic means.

E. Voting

(1) During a meeting, if a quorum is called for by a member and found not to be present, no further business may be transacted.

(2) During a meeting, issues will be determined by voice balloting, unless an individual Member requires a written ballot.

(3) The Chair of the Board is a Member of the voting assembly and has the right to vote as any other Member when the vote is by ballot.

(4) Unless otherwise specified, a simple majority vote will determine matters of issue before the Board. In the event of a tie vote, the proposed resolution is lost.

(5) At the direction of the Chair, action may also be taken by a majority of the Members by notation voting (that is to say by voting on material circulated to the Members individually or serially, or by polling of Members individually or collectively by mail, telephone, fax, e-mail or similar procedure). Such action will be reported by the Secretary at the next Board Meeting.

(6) The Secretary of Defense, or the Secretary's designee, is authorized to vote.

(7) The Surgeons General of the Uniformed Services, or their duly appointed designees, are authorized to vote. The President/Dean of the University is precluded by DoD Directive 5105.45 from voting.

F. Order of Business

The order of business will be at the discretion of the Chair unless otherwise specified by the Board.

G. Rules of Order

In the determination of all questions of parliamentary usage, the decision of the Chair or presiding officer will be based upon the latest available revision of "Robert's Rules of Order."

Article VIII

Amendment of Bylaws

A. Amendments

These Bylaws may be amended at any meeting of the Board of Regents as long as each proposed amendment has been provided to Members at least 60 days before the next scheduled meeting. Amendments will take effect by the affirmative vote of two-thirds (2/3) of the Members present.

Effective Date:

These Bylaws are effective February 6, 2001.

Lonnie R. Bristow, M.D., Chair, Board of Regents

CHARTER

THE EXECUTIVE COMMITTEE OF THE UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

A. Official Designation: The committee shall be known as the Executive Committee of the Uniformed Services University of the Health Sciences. The committee shall be governed by the provisions of Department of Defense Directive 5105.18, "DoD Committee Management Program," February 8, 1999.

B. Objective and Scope of Activity: To provide for the management and supervision of the Uniformed Services University of the Health Sciences. To assure that the operation of the University is in compliance with appropriate Department of Defense Directives, Instructions and Regulations. To ensure the President of the University shall have execution authority direction and control of USUHS and report to the Executive Committee. To facilitate accomplishment of the function's of the ASD(HA), the Surgeons General, and the Executive Agent as described in DoD Directive 5105.45, "Uniformed Services University of the Health Sciences."

C. Period of Time Required: This Committee is established pursuant to Program Budget Decision 711 of December 17, 1997 and will exist until rescinded by the Secretary of Defense.

D. Official of Sponsoring Proponent to Whom the Board Reports: Assistant Secretary of Defense (Health Affairs).

E. Duties and Responsibilities:

1. The business of the University shall be conducted under the management and supervision of the Executive Committee with Defense Health Program and other funds appropriated for and provided by the Department of Defense through the Department of the Navy as the Executive Agent.

2. The Executive Committee shall consist of the Surgeons General of the Military Services. The membership will determine the Chair.

3. The Executive Committee will be guided by the advice of the USUHS Board of Regents on academic affairs.

4. The Executive Committee will oversee matters involving programming, budgeting and funding execution. In this regard, budgets approved by the Executive Committee will be presented by the Executive Agent to the Defense Health Program as a part of its responsibility for the planning, programming and budgeting execution system of the USUHS.

F. Signature Authority: The Chair has authority to transmit decisions upon which the Executive Committee has reached unanimity. In the absence of a member of the Executive Committee, the representative of a Surgeon General is authorized to participate in the decision-making process.

G. Number of Meetings: The Executive Committee shall meet at the call of the Chair but not less than quarterly.

Charter Approved, December 18, 2000:

VADM Richard A. Nelson
Surgeon General of the Navy
Chair

LtGen Paul K. Carlton Jr.
Surgeon General of the Air Force
Member

LTG James B. Peake
Surgeon General of the Army
Member

Uniformed Services University

Strategic Plan

A Message from the President

The University Strategic Plan has become the core document with which the University is formulating its future. In accordance with good management practices, we have aligned our plan with the Department of Defense Medical Health System (MHS) Business Plan.

In April 2001, the University senior staff, teaching hospital representatives, Chair of the Board of Regents, and representatives of the Surgeons General held a very productive three-day retreat to review our strategic plan. We examined our strengths, weaknesses, opportunities, and threats. As a result, we identified seven new goals and over forty objectives, of which 28 were selected to be worked on in FY 2002. Since last year, over 200 people have been working on these objectives to meet our mission of "Learning to care for those in harm's way."

Listed below are the University's seven goals with their respective goal champions. I invite you to click on each goal to view the objectives and strategies that are being worked on in FY 2002.

***Goal 1:* We will enhance the reputation of USU as a premier health sciences academic institution with a unique global and military perspective.**

Goal Champions:
Mr. Peter Esker, pesker@usuhs.mil
Lt Col Carolyn Miller, cmiller@usuhs.mil

***Goal 2:* We will anticipate changes in society, medicine and the military to meet the academic and unique needs of health care delivery in the MHS.**

Goal Champions:
Dr. Emmanuel Cassimatis, ecassimatis@usuhs.mil
Col Martha Turner, mturner@usuhs.mil

***Goal 3:* We will optimize resources to efficiently and effectively implement USU core capabilities.**

Goal Champions:
Mr. Steve Rice, srice@usuhs.mil

***Goal 4:* We will build a sustaining financial base.**

Goal Champions:
Mr. Charlie Mannix, cmannix@usuhs.mil

***Goal 5:* We will optimize our role in military and federal medical education and research.**

Goal Champions:
Dr. Val Hemming, vhemming@usuhs.mil
Dr. Steve Kaminsky, skaminsky@usuhs.mil

***Goal 6:* We will create a powerful, committed and energized University family.**

Goal Champions:
Mrs. Mary Dix, mdix@usuhs.mil
Dr. Richard MacDonald, rmacdonald@usuhs.mil

***Goal 7:* We will effectively communicate the right information to the right people at the right time.**

Goal Champions:
Dr. Vernon Schinski, vschinski@usuhs.mil
COL Charles Serio, cserio@usuhs.mil

I believe that a useful plan is always a work-in-progress. We will constantly refer to the strategic plan as our beacon, but will adjust a few points of the compass as the University deals with the changing environment.

I invite you to read this plan, coming back occasionally as new objectives and strategies are added. I also encourage you to engage in discussions with the Goal Champions--a link is located at the bottom of each goal that will connect you with their email address. Please feel free to share your thoughtful comments.

This is our strategic plan to guide the University in the 21st century. This strategic plan has no value if it is filed or posted and ignored; it becomes an effective and

dynamic plan directed towards the University's vision when we are all involved in its creation and maintenance. Your input is important, welcomed, and appreciated.

James A. Zimble, M.D.
President

Uniformed Services University

Strategic Plan

GOAL 1

We will enhance the reputation of USU as a premier health sciences academic institution with a unique global and military perspective.

Goal Champions:
Mr. Peter Esker, pesker@usuhs.mil, 301-295-1219
Lt Col Carolyn Miller, cmiller@usuhs.mil, 301-295-9560

*1.1: Public understands the unique roles and values of the Uniformed Services University.

1.1.1 Public relations and other announcements and press releases have USU and its success stories.

Integrated Action Team Leader: *Mr. John Frankenburg, jfrankenburg@usuhs.mil, 301-295-3665*

*1.2: Military and civilian leadership recognize the University's role in military medicine and preparation for operational missions.

1.2.1 Military and civilian leadership recognize the University's role in military medicine and preparation for operation missions.

Integrated Action Team Leader: *Dr. James Smirinotopolus, jsmirnio@usuhs.mil, 301-295-3145*

***1.3: The University is a prized and career-enhancing assignment for both military and civilian health care professionals.**

1.3.1 The University is a prized and career-enhancing assignment for both military and civilian health care professionals.

Integrated Action Team Leader: *CDR Barry Wayne, bwayne@usuhs.mil, 301-295-3019*

***1.4: The University actively recruits under-represented minorities in order to attain a diverse faculty and student body in proportion to the population of the MHS.**

1.4.1 Active recruiting efforts to raise the total applicant pool: target under-represented minorities, women, military personnel, and all prospective applicants.

Integrated Action Team Leader: *Mr. Peter Stavish, pstavish@usuhs.mil, 301-295-3198*

***1.5: Alumni are proud to serve as University ambassadors for recruitment and public relations.**

1.5.1 Contact alumni; donations increased by 10% per year for three years.

Integrated Action Team Leader: *Mrs. Helaine Ahern, hahern@usuhs.mil, 301-295-3094*

1.5.2 Contact alumni to attend recruitment fairs in their local area, and to coordinate presentations at local military installations.

Integrated Action Team Leader: *Dr. J Mauri Hamilton, hamilton@usuhs.mil, 301-295-9561* and
Mrs. Sharon Willis, swillis@usuhs.mil, 301-295-3578

** These objectives will be worked in FY 2002*

Uniformed Services University

Strategic Plan

GOAL 2

We will anticipate changes in society, medicine and the military to meet the academic and unique needs of health care delivery in the MHS.

Goal Champions:
Dr. Emmanuel Cassimatis, ecassimatis@usuhs.mil, 301-295-1917
Col Martha Turner, mturner@usuhs.mil, 301-295-1009

*2.1: The University is an active and valued participant in professional, academic and military organizations.

2.1.1 The USU is an active and valued participant in professional, academic and military organizations.

Integrated Action Team Leader: *Lt Col Paul Austin, paustin@usuhs.mil, 301-295-1206*

*2.2: The University strongly advocates for the direct care component of the MHS.

2.2.1 Education - and knowledge - of USU students and faculty about the direct care systems.

Integrated Action Team Leader: *Dr. Galen Barbour, gbarbour@usuhs.mil, 301-295-3832*

*2.3: The University serves as a think tank to address new issues as they emerge.

2.3.1 The University serves as a "think tank," or intellectual resource.

Integrated Action Team Leader: *Dr. Geoff Ling, gling@usuhs.mil, 301-295-3683*

2.4: The University is fully integrated into the MHS.

* *These objectives will be worked in FY 2002*

Uniformed Services University

Strategic Plan

GOAL 3

We will optimize resources to efficiently and effectively implement USU core capabilities.

Goal Champion:
Mr. Steve Rice, srice@usuhs.mil, 301-295-3896

*3.1: Best business practices are implemented.

3.1.1 Consolidation of University Space Committee's.

Integrated Action Team Leader: *Dr. Richrd Andre, randre@usuhs.mil, 301-295-3024*

3.1.2 Implement the use of a business plan for all University projects.

Integrated Action Team Leader: *Dr. Vernon Schinski, vschinski@usuhs.mil, 301-295-3700*

3.1.3 Increase ordering ceiling on IMPAC card for certain departments, e.g. LRC, UIS.

Integrated Action Team Leader: *LTC James Swearengen, jswearengen@usuhs.mil, 301-295-1910*

3.1.4 Indirect Funds/Support Cost Recovery distribution.

Integrated Action Team Leader: *Mr. Norman Qualtrough, nqualtrough@usuhs.mil, 301-295-3443*

3.1.5 Improve civilian personnel hiring process within USU by improving/modifying the SF-52 tracking system.

Integrated Action Team Leader: *Mr. Joe Piemontese, jpiemontese@usuhs.mil, 301-295-3412*

3.1.6 Improve the USU Instruction Review process.

Integrated Action Team Leader: *Mrs. Patricia Burke, pburke@usuhs.mil, 301-295-3032*

3.1.7 Obtain the most up-to-date financial/purchasing/logistical software to replace or update the CUFS software.

Integrated Action Team Leader: *Mr. Robert Parker, rparker@usuhs.mil, 301-295-3287*

*3.2: Facilities and infrastructure are state-of-the-art.

3.3: Salaries, benefits and compensation plans are competitive.

*** These objectives will be worked in FY 2002***

Uniformed Services University

Strategic Plan

GOAL 4

We will build a sustaining financial base.

Goal Champion:

Mr. Charlie Mannix, cmannix@usuhs.mil, 301-295-3981

***4.1: Research and resource funding is increased.**

***4.2: Endowments are developed in concert with strategic plan objectives.**

4.3: All cost centers are actively engaged in POM process.

4.4: Synergy between USUHS and HJF is increased.

4.5: Tech transfer/CRADA is used to fullest extent.

4.6: Directed entrepreneurial activity is fostered.

4.7: Flexible long term funding is secured.

4.8: The University receives significant external private financial support including alumni contributions.

4.1.1 - 4.4.1 Increase research and resource funding is predicated on the growth of its components.

Integrated Action Team Leader: *Mrs. Helaine Ahern, hahern@usuhs.mil, 301-295-3094*

** These objectives will be worked in FY 2002*

Uniformed Services University

Strategic Plan

GOAL 5

We will optimize our role in military and federal medical education and research.

Goal Champions:

Dr. Val Hemming, vhemming@usuhs.mil, 301-295-3017
Dr. Steve Kaminsky, skaminsky@usuhs.mil, 301-295-9440

*5.1: Educational programs promote military medial readiness, public health, and force protection.

5.1.1 Educational programs promote military medical readiness, public health, and force protection.

Integrated Action Team Leader: *CDR Barry Wayne, bwayne@usuhs.mil, 301-295-3019*

5.2: Educational programs meet accreditation standards.

5.3: Educational and research programs set new standards for knowledge and skills in contingency medicine.

5.4: Programs teach professional values and behavior including culture and heritage.

5.5: Educational processes develop leadership professional and administrative skills for medical professionals.

*5.6: Research and development focuses on military relevant outcomes.

5.6.1 Research and development focuses on military relevant outcomes.

Integrated Action Team Leader: *CAPT Larry Laughlin, llaughlin@usuhs.mil, 301-295-3170*

5.7: Partnerships are established to enhance collaborative research, education and tech transfer.

***5.8: Compliance in research is assured.**

5.8.1 Define policy/process for University wide research compliance.

Integrated Action Team Leader: *Dr. Steve Kaminsky, skaminsky@usuhs.mil, 301-295-9440*

5.9: Education and research in patient safety are carried out.

5.10: University graduates exceed our customer's expectations.

5.11: Our graduates serve as a continuous source of career medical officers.

**** These objectives will be worked in FY 2002***

Uniformed Services University

Strategic Plan

GOAL 6

We will create a powerful, committed and energized University family.

Goal Champion:
Mrs. Mary Dix, mdix@usuhs.mil, 301-295-1958
Dr. Richard MacDonald, rmacdonald@usuhs.mil, 301-295-3185

*6.1: Staff and faculty are satisfied and productive.

6.1.1 Faculty, staff, and student welfare and satisfaction are continuously monitored within the University.

Integrated Action Team Leader: *CAPT Jane Mead, jmead@usuhs.mil, 301-295-0962*

*6.2: Strategic thinking is imbedded in the organizational culture of the University.

6.2.4 All of the USUHS community must share a vision that all employees, working as one team, can accomplish.

Integrated Action Team Leader: *Chaplain Evans, jevans@usuhs.mil, 301-295-9193*

*6.3: Alumni are active and engaged in the University.

6.3.1 Information will be provided to USUHS Alumni that will promote the development of academic, clinical, and management skills.

Integrated Action Team Leader: *COL George Fuller, gfuller@usuhs.mil, 301-295-3632*

*6.4: Communication will be enhanced throughout the University community both on-site and off-site.

6.4.2 USUHS faculty, staff, students, and alumni, both on-site and off-site, will be provided information relevant to their career enhancement, mission, and interests.

Integrated Action Team Leader: *Dr. Neil Grunberg, ngrunberg@usuhs.mil, 301-295-3270*

**** These objectives will be worked in FY 2002***

Uniformed Services University

Strategic Plan

GOAL 7

We will effectively communicate the right information to the right people at the right time.

Goal Champions:

Dr. Vernon Schinski, vschinski@usuhs.mil, 301-295-3700
COL Charles Serio, cserio@usuhs.mil, 301-295-2690

7.1: Every user is educated and trained in appropriate use of information media.

7.2: "Push technology" is provided for critical information.

7.3: Every user has a valid e-mail address.

***7.4: Tools are available and utilized for off-site communications.**

7.4.1 Improve off-site communication.

Integrated Action Team Leader: *Ms. Emma Ford, eford@usuhs.mil, 301-295-9800*

7.4.2 Revise mail codes for distribution of correspondence at the University and its associated activities, including AFRRI.

Integrated Action Team Leader: *Mrs. Jane Bradley, jbradley@usuhs.mil, 301-295-3701*

*7.5: A robust array of communication mechanisms is maintained.

7.5.1 Establish an electronic communication policy for all of the University and its subordinate activities.

Integrated Action Team Leader: *Mr. Pete Esker, pesker@usuhs.mil, 301-295-1219*

7.5.2 Establish policies/procedures for the use of voice mail as a communication mechanism at the University and its activities.

Integrated Action Team Leader: *Mr. Dennis Stutz, dstutz@usuhs.mil, 301-295-3301*

7.5.3 Provide a flexible means for electronic distribution of official communication at the University.

Integrated Action Team Leader: *Mrs. Royce Lewis, rlewis@usuhs.mil, 301-295-9800*

*** These objectives will be worked in FY 2002***

May 2003

USU STRATEGIC PLAN

New Goals for USU

- Education
- Military Service
- Research
- Leadership
- Stewardship

Education

To meet the Nation's needs as the preferred source for uniformed healthcare education and training.

- USU programs will meet or exceed national standards and will earn the maximum duration of accreditation at each accreditation cycle.
- USU will develop a center of excellence for the study of Emerging Infectious Disease (EID) in conjunction with USAMRIID and WRAIR.
- USU will partner with senior service colleges to create a School of Leadership and Professional Development.
- USU will develop and deploy Continuing Health Education and distance learning programs to enhance the competency of Military Healthcare professionals in areas of the Military Unique Curriculum.

Military Service

To provide graduates and faculty, who are expert in responding to threats from Weapons of Mass Destruction (WMD); disaster and humanitarian relief; traumatic and post-traumatic stress; and all aspects of preventive healthcare.

- USU will train professionals to the highest levels of skill with special orientation to those aspects of Medicine, Science, and Nursing important to the needs of the military and federal services.
- USU will coordinate with other agencies to develop and conduct training for health care professionals in disaster and humanitarian relief; weapons of mass destruction; traumatic and post-traumatic stress; and preventive medicine for mission readiness

Research

To be a leader in basic and clinical research to improve healthcare, to protect, sustain and enhance the fighting force and to secure the public's health.

- USU research and development will emphasize issues relevant to military, federal, and homeland security.
- USU will develop interdisciplinary programs focused on outcomes research.
- USU will develop a repository for collecting and analyzing combat casualty data.
- USU will emphasize research objectives established by service and Joint Service medical requirement documents.
- USU will ensure regulatory compliance in all aspects of healthcare and basic science research.

Leadership

To develop and provide uniformed and federal leaders for national healthcare service focused on mission readiness and homeland security.

- USU will mentor and train our students to become military and federal healthcare leaders.
- USU Faculty and Alumni will achieve positions of leadership in professional and scientific organizations.
- USU Alumni will achieve positions of Leadership in the Department of Defense and in the Federal Government.

Stewardship

To protect and enhance the human and physical resources of the University and optimize productivity while promoting a sense of family and community.

- USU will recruit, reward, and retain outstanding Faculty and Staff.
- USU will have a comprehensive faculty mentoring program
- USU will work to ensure that everything that we do is characterized by the principles of ethics and accountability.
- USU will aggressively seek to secure financial and institutional support to achieve the goals and objectives of this strategic plan as outlined in the above sections on education; military service; research; and leadership

APPENDIX C

Selected Examples of Billeted and Off-Campus Members of the USU Departments, Programs and Activities Receiving Special Recognition During 2002.

Anatomy, Physiology and Genetics - School of Medicine.

Rosemary C. Borke, Vice Chair for Instruction, Professor, USU SOM Department of Anatomy, Physiology and Genetics. Professor Borke's Course, *Clinical Head and Neck and Functional Neuroscience*, has been a perennial favorite of the first-year medical students. In the past year, she has made further improvements by the inclusion of additional educational materials that stress clinical correlations, demonstrating the importance of a firm grounding in basic science. Professor Borke has also produced compact disks (CDs) for instructional purposes in the classroom as well as for home study. A second, interactive CD was distributed to all first-year medical students during 2002. Produced by Doctor Borke and the Class of 2005 SOM student, **Justin Wells**, neuroanatomical images are presented and allow the students to quiz themselves for anatomical identification. The CD also serves as an atlas, where the user can search for images that contain a particular anatomical structure. In May of 2002, Doctor Borke was the co-recipient (with Dean Emeritus Val Hemming) of the prestigious Carol J. Johns, M.D., Medal for Outstanding USU Faculty.

Harvey B. Pollard, M.D., Ph.D., Professor and Chair, USU SOM Department of Anatomy, Physiology and Genetics (APG), has established the USU Center for Medical Genomics and Proteomics in the Department of APG. By his doing so, APG has become one of ten academic organizations in the United States to win substantial support (12.5 million dollars) from the National Institutes of Health (NIH) for the establishment of a Proteomics Center. The NIH contract has allowed the University to acquire a world-class set of mass spectrometers, as well as support personnel, to form the absolutely necessary technical basis for proteomic research in the 21st Century. In terms of NIH funding, this moves APG into the ranks of the top twenty equivalent Departments in United States Medical Schools, and provides this crucial research resource to the entire University; USU researchers will all benefit from this valuable asset. The focus of the Center is on lung disease, with a special focus on the inflammatory flagship genetic disease of cystic fibrosis. One citizen in 20 carries one copy of the mutant gene for cystic fibrosis, and it is the most common autosomal recessive fatal disease in the United States. Information derived from this research promises to impact the understanding of more challenging, but less understood, inflammatory diseases of the lung such as asthma, as well as inflammatory processes in many other parts of the body.

Ignacio Provencio, Ph.D., Assistant Professor, USU SOM Department of Anatomy, Physiology and Genetics (APG); Mark D. Rollag, Ph.D., Professor, USU SOM Department of APG; and, **Maria Castrucci, Ph.D., USU SOM Department of APG,** had their research featured in the journal, Science, during 2002. Our internal daily biological clock ticks with a period of 24 hours and 10 minutes. This means that over time, we will slowly come *out of sync* with the 24-hour solar day. Jet lag is an extreme example of what happens when our daily biological clock is not synchronized to local time.

Light perceived through the eyes is the primary mechanism by which the internal clock is reset. Identification of the photoreceptors in the eye that are responsible for this resetting have remained elusive for the past 20 years. In 2000, Doctors Provencio, Rollag and Castrucci, in collaboration with colleagues in The Scripps Research Institute, the Genomic Institute of the Novartis Research Foundation, and the University of Nijmegen in The Netherlands were able to show that mice lacking melanopsin showed profound deficiencies in their ability to reset their clocks by light. These data indicate that melanopsin-containing cells are likely to be the long-sought photoreceptors. The eye has been extensively studied for over 150 years. The identification of a previously overlooked photoreceptive apparatus within the eye has been recognized as a significant accomplishment. ***This past year, the prestigious journal, Science, recognized the identification and characterization of the melanopsin photoreceptors as one of the Top Ten Scientific Breakthroughs of 2002.***

(*See pages 23, 24, 94, 111, 174, 201, 202, 206, 209, and 210 in the 2002 Edition of the USU Journal for additional information on the Department of Anatomy, Physiology and Genetics*)

Biochemistry and Molecular Biology - School of Medicine.

Peter D'Arpa, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, studies *topoisomerase I*, an enzyme that is the molecular target of a widely used class of anti-cancer drugs. His laboratory studies how anti-cancer drugs affect *topoisomerase I* and lead to the elimination of cancer cells. Other research explores the molecular cell biology of *topoisomerase I* and *topoisomerase I-interacting proteins*. The goal of his research is to characterize the cellular functions of *topoisomerase I* and proteins that interact with it to ultimately improve therapies utilizing *topoisomerase I-targeting* anti-cancer drugs. Doctor D'Arpa co-authored the following publications, which were published in peer-reviewed journals during 2002: *Sumoylation of topoisomerase I is involved in its partitioning between nucleoli and nucleoplasm and its clearing from nucleoli in response to camptothecin*, and *Characterization of BTBD1 and BTBD2, two similar BTB-domain-containing kelch-like proteins that interact with Topoisomerase I.* Doctor D'Arpa was also invited to speak at an American Society for Cell Biology conference and presented, *Nontraditional Functions of Ubiquitin and Ubiquitin-like Proteins*, in Colorado Springs, Colorado, during August of 2002. He receives extramural research support from the National Cancer Institute at the National Institutes of Health (NIH).

Saibal Dey, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, works on a human protein (P-glycoprotein) found in the cell membranes of cancerous as well as normal cells. This protein removes structurally unrelated hydrophobic compounds from cells by acting as a pump. Since most of the anti-cancer and anti-microbial drugs are hydrophobic in nature, this protein prevents them from reaching their targets. Doctor Dey has been working on the mode of action of this protein and on the molecular mechanism by which this protein can be inactivated using pharmacological agents. The outcome of his study could improve the availability of chemotherapeutic drugs at their site of action and aid in the treatment of cancer and microbial diseases. Doctor Dey and colleagues published: *Functional Characterization of Glycosylation deficient human P-glycoprotein using a vaccinia virus expression system* in the Journal of Membrane Biology, Volume 173, pages 203-214; and, he also wrote a review on *Biricodar* in Current Opinion in Investigational Drugs, Volume 3, pages 818-

823. Doctor Dey was recently awarded a five-year RO1 grant from the National Institutes of Health for his studies on P-glycoprotein.

Teresa M. Dunn, Ph.D., Professor, USU SOM Department of Biochemistry and Molecular Biology, studies complex lipid molecules in yeast that are found in cell membranes. Similar compounds in humans are found in the membranes of the brain and nerves. The human brain has several hundred varieties of these compounds. Several gene products (both enzymes and regulatory proteins) are required to synthesize these complex molecules. The discovery of these genes and their function in producing these molecules in yeast is made possible by genetic methods developed in Doctor Dunn's laboratory. This work will likely suggest what processes in the nerves or brain are affected or regulated by these molecules. Using a powerful genetic screen devised in her laboratory, many of the genes encoding the sphingolipid biosynthetic enzymes have been identified. During 2002, her laboratory published five publications in peer-reviewed journals. A grant to characterize the microsomal fatty acid elongating enzymes was awarded to Doctor Dunn by the National Science Foundation. Doctor Dunn continues to serve as a member of the Metabolic Biochemistry Review Panel for the National Science Foundation.

David A. Grahame, Ph.D., Associate Professor, USU SOM Department of Biochemistry and Molecular Biology, studies metal-containing enzymes in the Archaea, a genetically distinct group of microorganisms that provide insight into the early evolution of life on Earth. Doctor Grahame studies fundamental problems of how metals such as cobalt, iron and nickel function in several highly unusual enzyme systems. These processes are closely related to how cobalt acts in the anti-anemia vitamin B-12, and how iron functions in the body. These studies advance our understanding of metal-containing enzymes in metabolic, ecological, and environmental processes, and contribute to the use of microorganisms for bioremediation, agricultural, and biomedical applications. Doctor Grahame published two articles in peer-reviewed journals during 2002. He presented at the Gordon Research Conference, *Molecular Basis of Microbial One-Carbon Metabolism*, in New London, Connecticut, and also at the Laboratory of Biochemistry, NHLBI, National Institutes of Health. Doctor Grahame receives extramural research support from the Department of Energy and from the National Science Foundation. Recently, Doctor Grahame received research support from the United States Army Soldier and Biological Chemical Command (SBCCOM) for a new project on Biological Threat Agent Simulants.

Susan Haynes, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, has identified proteins that regulate the production of gametes (eggs and sperm) in fruit flies. A major cause of human infertility is impaired sperm production. Because sperm develop similarly in flies and humans, these studies in fruit flies could lead to novel treatments to correct human male infertility and to the development of novel pharmacological agents for male contraception. Similarly, the protein that regulates egg production is conserved in humans, and understanding its role could have similar applications to human health. Doctor Haynes published during 2002 in a peer-reviewed journal; she also served as the co-chair of two Washington area regional scientific groups: the RNA Club and the Drosophila Interest Group. She is a member of the Executive Committee of the Molecular and Cell Biology Graduate Program, and serves on the thesis committees for two students in the graduate program. Doctor Haynes presented at the RNA 2002 Meeting held in Madison, Wisconsin, and at the 43rd Annual Drosophila Research Conference in San Diego, California. Her research is funded by an extramural grant from the National Institutes of Health and an intramural grant from USU.

David S. Horowitz, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, works on the molecular processes involved in the production of messenger RNA, which carries information from the cell's genes to form the blueprint for the synthesis of cellular proteins. When initially synthesized, the genetic information is encoded in a large linear polymer containing segments of information separated by non-information-bearing segments. Processing the RNA for the protein synthesis machinery of the cell requires the removal of the non-information segments and the joining of the information-containing segments. How the many cellular macromolecules that participate in this fundamental process work together is necessary to understand protein production in cells. Doctor Horowitz published in two peer-reviewed journals during 2002; and, he presented at the Seventh Annual Meeting of the RNA Society in Madison, Wisconsin, and at the meeting held in Banff, Canada. Doctor Horowitz receives extramural research support from the National Institutes of Health.

Paul D. Rick, Ph.D., Professor and Chair, USU SOM Department of Biochemistry and Molecular Biology, directed his long-term research interests at determining the mechanisms involved in the biogenesis and assembly of the outer membrane of Gram-negative bacteria. More specifically, he is interested in defining the genes and enzymes involved in the assembly of enterobacterial common antigen (ECA), a cell-surface glycolipid that is present in the outer membrane of all bacteria belonging to the family, *Enterobacteriaceae* (Gram-negative enteric bacteria). Using a combined genetic and biochemical approach, Doctor Rick has succeeded in defining many of the genes and enzymes involved in ECA assembly. Although the ECA was discovered in 1962, its function has not been defined despite the efforts of many investigators. However, the occurrence of ECA only in Gram-negative enteric bacteria suggests that it serves an important function for these organisms. Indeed, recent data obtained in Doctor Rick's laboratory strongly suggests that it is required for the growth and survival of these organisms in their normal ecological niche; i.e., the gastrointestinal tract of animals and man. Doctor Rick published in the Journal of Bacteriology during 2002; his research is funded by a grant from the National Institutes of Health. Doctor Rick continues to serve on the Editorial Boards of several scientific journals. (*See page 209 in the 2002 Edition of the USU Journal for more information on Doctor Rick.*)

Daniel R. TerBush, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, studies exocytosis in yeast. Exocytosis is the process whereby vesicles containing lipid and protein cargo bud off the trans Golgi and are targeted to, and fuse with, the plasma membrane. Exocytosis is highly regulated and exocytic vesicles only fuse at specific, localized domains on the plasma membrane. A multiprotein complex, termed the Exocyst, serves as a specific targeting patch for the exocytic vesicles and is required for their fusion at these specialized domains in yeast and in higher eukaryotes. The research has focused on understanding the role of a protein, Exo70p, in vesicular trafficking. Understanding the biochemical mechanism of how exocytic vesicles are specifically targeted to certain areas will help understand such basic processes as cellular differentiation, neurotransmission, and axon pathfinding. Doctor TerBush's research is funded by the National Science Foundation.

Xin Xiang, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, studies how intracellular transport works. Cells move material from areas of assembly to areas of destination like a monorail on intracellular networks composed of protein tubules. A virus that infects a cell can use this pathway to transport its genes to the nucleus. Neuronal function requires movement of material produced in the nucleus to the nerve endings and back. A molecular motor composed of several proteins attaches to the transportable material, and moves it to its destination. The understanding

of which proteins are used to regulate the motor; attach cargo to it; and, transport and release the cargo area could lead to antiviral drugs or enhanced neuronal function. Doctor Xiang published in a peer-reviewed Journal during 2002; his extramural research is funded by the National Science Foundation.

Dermatology - School of Medicine.

Tom Darling, M.D., Ph.D., USU SOM Department of Dermatology, Director of the Sulzberger Laboratory for Dermatologic Research, co-authored the following book chapter in a new dermatology textbook, first presented at the American Academy of Dermatology Meeting in March of 2003: *Application of Molecular Biology to the Study of Skin*, Dermatology, 1st Edition, Harcourt Health Sciences, London, 2003.

Lieutenant Colonel (promotable) Scott A. Norton, Associate Professor, USU SOM Department of Dermatology, has been recognized as an authority on the use of smallpox vaccination. He is working closely with the Centers for Disease Control and the American Academy of Dermatology to develop guidelines for the administration of this vaccine.

Leonard C. Sperling, M.D., COL, MC, USA, Chair, USU SOM Department of Dermatology, has authored a textbook entitled, Atlas of Hair Pathology with Clinical Correlations. This textbook will be available for purchase in March of 2003 and will debut at the American Academy of Dermatology Meeting. The book contains 365 illustrations and is the first comprehensive review of the microscopic pathology of hair disease. It will be published by Parthenon Publications.

(*See pages 93-95 in the 2002 Edition of the USU Journal for additional references to the Department of Dermatology.*)

Family Medicine - School of Medicine.

Department Activities.

The USU SOM Department of Family Medicine hosted two important conferences attended by hundreds of physicians from across the Nation: the week-long 11th Annual Capital Conference Board Review Course was held in June of 2002 at Andrews Air Force Base; and, the three-day Fourth Annual American Society of Sports Medicine Marine Corps Marathon Conference was held at the Virginia Hospital Center.

The Department of Family Medicine's Sports Medicine Fellowship Program headed by **Lieutenant Colonel Francis O'Connor, MC, USA, Associate Professor, USU SOM Department of Family Medicine,** helped to organize and provide medical support for the more than 20,000 participants of the

Annual Marine Corps Marathon held in Washington, D.C., during 2002, as well as the Army 10-Mile Marathon Course.

The Department of Family Medicine continued to sponsor the *Tar Wars* smoking prevention programs at six local elementary schools for hundreds of students. The department uses the skills of its faculty members and the enthusiasm of the USU medical students to deliver this program to the local schools.

Selected Personal Accomplishments.

Simon L. Auster, M.D., Associate Professor, USU SOM Department of Family Medicine, and **Lieutenant Colonel Deborah J. Bostock, USU SOM Department of Family Medicine,** co-authored a 70-page Monograph for the American Academy of Family Physicians on the topic of *Family Violence.* This monograph is used for the education of thousands of physicians across the United States on this critical area of concern.

Captain Nicole Frazer, Ph.D., BSC, USAF, Assistant Professor, USU SOM Department of Family Medicine, had her cutting edge research, *Cardiovascular Reactivity in the Offspring of Hypertensives,* published in Health Psychology. In addition, she was contacted by the *BBC Health Scout News* and *PBS* to provide interviews and a synopsis of her research. Doctor Frazier was nominated by the American Psychological Association for a special achievement award for her work.

Commander Evelyn Lewis, MC, USN, Assistant Professor, USU SOM Department of Family Medicine, was invited to present her research on the psychosocial and cultural barriers to diabetes care at two international conferences in India. She was also invited to present at the American Public Health Association 130th Annual Meeting in Philadelphia on the *Prevalence and Determinants of Disordered Eating Among Military Personnel.* Doctor Lewis was also the sole Uniformed Physician selected by the American Academy of Family Physicians (AAFP) to participate in the AAFP World Congress of Family Doctors.

Lieutenant Colonel Francis G. O'Connor, MC, USA, Associate Professor, USU SOM Department of Family Medicine, was selected as a Board member for the American Medical Athletic Association. In addition, Doctor O'Connor, and the Sports Medicine Fellowship Training Program he directs, also continued to expand the voluntary health care they provide to teams throughout the Washington, D.C. area to include medical support for the Northern Virginia Special Olympics and the teams of Georgetown University, George Mason University, Marymount University, Montgomery College, the United States Naval Academy, American University, and several local high schools. (*See page 211 in the 2002 Edition of the USU Journal for further information on Doctor O'Connor.*)

Lieutenant Colonel Brian V. Reamy, USAF, MC, Associate Professor and Chair, USU SOM Department of Family Medicine, was an invited Speaker to the American Academy of Family Physicians Annual Scientific Assembly on the topic of cholesterol reduction to help prevent heart disease. He was also an invited speaker at the 17th Annual Primary Care Update Conference held in Spokane, Washington, on the increasingly relevant topic of the *Recognition of Bioterrorism in Primary Care.*

Lieutenant Commander Mark B. Stephens, MC, USN, USU SOM Department of Family Medicine, was the First Place winner for his research presentation at the 2002 American Academy of Family Physicians Scientific Assembly entitled, *Physical Fitness: Are Military Kids at Risk?* Doctor Stephens also achieved an additional distinction by successfully passing his certifying specialty examinations in Adolescent Medicine. He was also the co-author with **LTC Francis O'Connor, MC, USA, Associate Professor, USU SOM Department of Family Medicine,** and **Doctor Patricia Deuster, Ph.D., Professor, USU SOM Department of Military and Emergency Medicine,** of a Monograph on Exercise and Nutrition for the American Academy of Family Physicians.

Colonel William Sykora, USAF, MC, Assistant Professor, USU SOM Department of Family Medicine, was invited to present his research on curricular innovations in Family Medicine Education at the Annual Society of Teachers of Family Medicine Annual Meeting.

CAPT Cynthia Williams, D.O., USN, Assistant Professor, USU SOM Department of Family Medicine, was selected to be the Specialty Leader in Family Medicine for the United States Navy Surgeon General. In this role, she serves as the principal adviser on all matters related to Family Medicine in the United States Navy. She also authored an article in the journal, American Family Physician, on *Using Medications Appropriately in Older Adults.*

Cindy C. Wilson, Ph.D., C.H.E.S., Professor, USU SOM Department of Family Medicine, coordinated 12 Faculty Development Grand Rounds for military and civilian attendees from 19 different USU SOM Departments and four local military institutions.

Laboratory Animal Medicine.

Lieutenant Colonel (P) James R. Swearengen, Director, USU Laboratory Animal Medicine, was an invited speaker at the **USA-Russia Workshop on International Research Ethics, Institutional Review Boards and Laboratory Animal Welfare** held at the Shemyakin and Ovchinnikov Institute of Bioorganic Chemistry in Pushchino, Russia. This workshop was held during January 20-24, 2002, and was sponsored by the Biotechnology Engagement Program of the Department of Health and Human Services. Doctor Swearengen was invited by the Department of Health and Human Services to present three lectures that included: 1) *The International Animal Research Community, Resources and Considerations*; 2) *Ending the Confusion of Animal Research Requirements, DoD Policy, PHS Animal Welfare Assurances, AAALAC Accreditation, and Good Laboratory Practices (GLP)*; and, 3) a *Panel Discussion on Physical Plant Requirements for DoD-Sponsored Animal Research.* Lectures were presented by both United States and Russian experts in the areas of human and animal use in research to

help establish a common ground for collaborative research efforts. The workshop was attended by 80 Russian participants from over 30 different institutes.

Medical History - School of Medicine.

Dale C. Smith, Ph.D., Professor and Chair, USU SOM Department of Medical History, participated in strategic discussions at the University of Birmingham (England). The University of Birmingham is planning to establish an MSc Degree for the British Forces in the History of Military Medicine that will be patterned on the USU Masters of Military History. (*See page 76 in the 2002 Edition of the USU Journal for further information on Doctor Smith.*)

Medical and Clinical Psychology - School of Medicine.

Martha Faraday, Ph.D., Assistant Professor, USU SOM Department of Medical and Clinical Psychology, was the recipient of the Ove Ferno Award for Innovative Research, which is given by the Society for Research on Nicotine and Tobacco. The award is intended to support innovative ideas in nicotine and tobacco research. In particular, the award is designed to attract "high risk/high impact" proposals that might lead to large changes in nicotine and tobacco research or intervention. The award consists of $25,000 per year for two years. Doctor Faraday won the award for a proposal to examine the putative anti-depressant properties of nicotine in an animal model of stress- and depression-sensitive female rats and stress and depression-resistant female rats. This work is relevant to understanding smoking-depression comorbidity that has been documented in humans.

Neil E. Grunberg, Ph.D., Professor, USU SOM Department of Medical and Clinical Psychology, spearheaded efforts to establish a relationship between USU and the National Rehabilitation Hospital (NRH) for training, research, and communication; and, Doctor Grunberg serves as the USU liaison with the NRH. This relationship has already allowed: USU medical students to obtain valuable training in head injury and Neurology; NRH neuropsychologists to train at USU; and, resulted in a USU/NRH collaborative research project on recovery from polio. Doctor Grunberg was also appointed as a Member of the National Institutes of Health Study Section on Brain Disorders and Clinical Neuroscience (BDCN-6) Review Committee, Center for Scientific Review, National Institutes of Health.

Willem J. Kop, Ph.D., Assistant Professor, USU SOM Department of Medical and Clinical Psychology, was awarded the Annual Award for Outstanding Contributions to Health Psychology from the American Psychological Association Division of Health Psychology for his contributions to knowledge in behavioral cardiology. Doctor Kop's investigations suggest important pathways by which mental stress may act as a trigger for heart attack and sudden cardiac death in vulnerable patients. This work has also set the stage for a promising new research area, examining relationships among psychosocial factors, immune system parameters, and cardiovascular disease progression.

Kelly Rohan, Ph.D., Assistant Professor, USU SOM Department of Medical and Clinical Psychology, received a Behavioral Science Track Award for Rapid Transition (B/START) from the National Institute of Mental Health. Since she joined USU in 2000, Doctor Rohan has been seeking to develop novel treatments for seasonal affective disorder (SAD) - Major Depression with onset in the Fall/Winter and remission in the Spring/Summer. This grant will allow Doctor Rohan to conduct a randomized clinical trial comparing a SAD-tailored group cognitive-behavioral psychotherapy, light therapy, and their combination relative to a minimal contact/delayed treatment control for SAD.

Richard Tanenbaum, Ph.D., Assistant Professor, USU SOM Department of Medical and Clinical Psychology, and **Commander Evelyn Lewis, MC, USN, Assistant Professor, USU SOM Department of Family Medicine,** are the co-directors of the USU Center for Enhancement of Healthcare Training Outcomes (CEHTO). CEHTO is a collaborative effort between the two USU SOM Departments of Family Medicine and Medical and Clinical Psychology. It is a biopsychosocial training program for medical students and residents, nursing students, clinical/medical psychologists, prospective health care professionals, and faculty. CEHTO infuses concepts and processes into existing curricula and uses the National Capital Area Medical Simulation Center to provide opportunities for students to practice new skills with standardized patients and to improve cultural proficiency and professionalism. The program's aim is to improve health care provider-patient relationships, increase patient satisfaction, improve adherence, and maximize health care outcomes. During the past year, **Ms. Kimberly Rattley** was hired as a new half-time Associate Director/Program Development.

(*See page 317 in the 2002 Edition of the USU Journal for additional information on departmental activities.*)

Medicine - School of Medicine.

Colonel Naomi E. Aronson, MC, USA, Associate Professor and Director, Division of Infectious Diseases, USU SOM Department of Medicine, successfully competed for the Pfizer Visiting Professorship in Infectious Diseases to bring Doctor Anthony Bryceson from the London School for Tropical Medicine and Hygiene, to USU during April of 2002. COL Aronson was also selected to serve as the Chair of the Institutional Review Board for the Sequelae Global Tuberculosis Foundation. Her scientific works were published in a variety of journals including Nature Medicine and Clinical Infectious Diseases. She was invited to write a book chapter on Botulism and to speak at the 51st Annual Meeting of the American Society of Tropical Medicine and Hygiene. COL Aronson also serves as advisor to the Surgeon General of the Army for Leishmania Policy for the military returning from the Southwest Asia theatre.

Colonel Stephen Brietzke, USAF, MC, Assistant Professor of Medicine, gave a presentation at the 4th Annual National Veterans Affairs (VA) Conference on Diabetes Mellitus, on the topic, *Angiotensin Converting Enzyme Inhibitors and Angiotensin Receptor Blockers in Diabetes Mellitus*. Additionally, he presented the *ABC's of Diabetic Complications* at a live satellite continuing education broadcast for physicians, nurses, and allied health specialists. The program was broadcast world-wide to all VA and DoD facilities.

Major Victor Bernet, MC, USA, Assistant Professor of Medicine, serves as Acting Chairman of the Public Health Committee for the American Thyroid Association; and, he has been elected President of the Society of Uniformed Endocrinologists.

Colonel Henry Burch, MC, USA, Associate Professor of Medicine and Director, Division of Endocrinology, has served as the Guest Editor for the upcoming Endocrinology and Metabolism Clinics of North America issue entitled, *Consultative Endocrinology*. He has also published several articles this year in JAMA and Archives of Internal Medicine.

Louis Cantilena, M.D., Ph.D., Professor of Medicine and Director, Division of Clinical Pharmacology, was elected President of the Association of Clinical Pharmacology Units (ACPU), an international organization of clinical research professionals who primarily conduct early phase human drug studies. He also chairs the Non-Prescription Drug Advisory Committee for the Food and Drug Administration. Doctor Cantilena is a reviewer for the Internet Journal of Medical Toxicology; and, he was selected to be a member of the Patient Safety Subcommittee of the American College of Medical Toxicology.

Captain Chad DeMott, USAF, MC, has prepared two Case Reports for presentation at the next Annual Meeting of the Society of Air Force Physicians. He is also working on a project (in collaboration with Doctor Louis Pangaro) regarding student performance on the National Board of Medical Examiners (NBME) examination.

Commander Gerald Dodd Denton, MC, USN, Assistant Professor of Medicine, coordinated the expansion and transition, from paper to CD-ROM, of the ambulatory reading packet for the third-year clerkship students. He re-instituted the journal club for internal medicine house staff at the National Naval Medical Center (NNMC); and, Doctor Denton instituted and taught the small group Epidemiology for Internists Course at NNMC.

Sonia Doi, Ph.D., Research Associate Professor of Medicine, was a Guest Lecturer at the University of Brazil (Graduate Program, School of Pharmaceutical Sciences), Sao Paulo. Her lectures focused on *Protein Synthesis and Applications* and *Effect of Glutamine Supplementation on Kidney Cells*. Additionally, Doctor Doi was a featured guest and spoke on *Protein and Amino Acids Supplementation: Possible Risks* at a conference organized by the Brazilian Society of Nutrition.

Colonel William Duncan, MC, USA, Professor of Medicine, has been elected Chairman, Board of Directors, of the Washington Bone Club.

Major Steven Durning, USAF, MC, Assistant Professor of Medicine, was promoted to Fellow, American College of Physicians; received the Meritorious Service Medal from the Command at the Wright-Patterson Air Force Base; and, was selected to be a member of the Evaluation and Research

Committee of the Clerkship Directors of Internal Medicine. Major Durning is a popular speaker at state and national meetings of medical educators as well as clinicians. He recently published articles on medical resident performance on ABIM certifying examinations in Military Medicine and in Academic Medicine. Additionally, Major Durning published articles on thyroid cancer in Thyroid and Clinical Infectious Diseases; and, he was also invited to submit manuscripts for Medical Education on the educational value of humanitarian assistance missions in internal medicine training.

Colonel Arn Eliasson, MC, USA, Associate Professor of Medicine and Director, Division of Pulmonary Medicine, has written in various publications such as Chest and the American Journal of Respiratory Critical Care Medicine. He also serves as reviewer for those journals and is a member of the National Heart, Lung, and Blood Advisory Council of the National Institutes of Health (NIH).

Margaret Gaglione, M.D., Assistant Professor of Medicine, submitted a paper, *Assessment of Patient Management Skills and Clinical Skills of Practicing Physicians Using Computer-Based Case Simulations and Standardized Patients*, which was accepted for publication in Medical Education. Her paper entitled, *Role Modeling*, has been accepted for publication in Academic Medicine.

Lieutenant Colonel William Gilliland, MC, USA, Associate Professor of Medicine, serves as reviewer for three peer-reviewed journals: Annals of Rheumatic Diseases; Clinical and Experimental Rheumatology; and, the Journal of Clinical Rheumatology. He has published four articles in Military Medicine, Arthritis Rheumatism, and Clinical Immunology; and, he has written three chapters for a rheumatology textbook, Rheumatology Secrets. Doctor Gilliland was awarded the prestigious Army "A" Proficiency Designator in 2002.

Robert E. Goldstein, M.D., Professor and Chair, Department of Medicine, was inducted to Mastership in the American College of Physicians - American Society of Internal Medicine. Doctor Goldstein was a Visiting Professor at the Tripler Army Medical Center in Honolulu, Hawaii, where he made a presentation on rheumatic heart disease, participated in a teleconference with the Royal Thai Military Hospital on the subject of dengue fever, and gave a cardiology conference for housestaff. Doctor Goldstein continues to review frequently for the Annals of Internal Medicine, JAMA and multiple cardiology journals. In 2002, he also served as Chair, Board of Academic Councilors of the Henry M. Jackson Foundation.

Mark Haigney, M.D., Associate Professor of Medicine and Director, Division of Cardiology, has published in the American Journal of Cardiology, Cardiovascular Research, and the Journal of Cardiovascular Electrophysiology. He currently has a paper in press with the Annals of the New York Academy of Science. He serves on the National Institutes of Health (NIH) NCCAM Study Section, and the NIH Office of Pharmacologic and Alternative Therapies, Center for Substance Abuse Treatment. In addition, Doctor Haigney is a consultant to the Food and Drug Administration (FDA) Center for Devices and Radiological Health Committee on New Devices for the Treatment of Congestive Heart Failure.

Lieutenant Colonel Paul Hemmer, USAF, MC, Assistant Professor of Medicine, was awarded the Master in Public Health Degree from USU. Doctor Hemmer's research in the field of medical education, specifically student evaluation, assessment, and professionalism, has been well received in numerous poster presentations, lectures and publications such as Teaching and Learning in Medicine and Academic Medicine. Additionally, Doctor Hemmer serves as reviewer for Academic Medicine and for the Annual Research in Medical Education Conference, Group on Educational Affairs, Association of American Medical Colleges (AAMC). Doctor Hemmer was a featured speaker at the 5th Annual CDIM Review of Medical Education Conference, presented Medical Rounds at SUNY Upstate Medical Campus, and presented at several workshops including the Association for Medical Education in Europe, the Clerkship Directors in Internal Medicine, and the American College of Physicians, Army Chapter. He continues to serve as the Treasurer of the Clerkship Directors in Internal Medicine organization.

Przemyslaw Hirszel, M.D., Professor of Medicine, Director, Division of Nephrology, continues to serve as a valued member of the Department of Medicine's Executive Committee and as a mentor to junior faculty members, whom he guides in their research endeavors. He also served on several University and School of Medicine committees, including the position of Chair for the Search Committee for the new Department Chair in Biochemistry and Molecular Biology.

Lieutenant Colonel Jeffrey Jackson, MC, USA, Associate Professor of Medicine and Director, Division of General Internal Medicine, served as Program Chair for the Society of General Internal Medicine's 2002 National Meeting; he was also appointed to serve as Chair for the Communications Committee, Society of General Internal Medicine. He served as Chair of an *ad hoc* committee to investigate the launch of a new journal for the Society of General Internal Medicine; and, he was appointed to serve as Chair, Workshops Selection Committee, Mid-Atlantic Regional Meeting, for the Society of General Internal Medicine. Doctor Jackson has successfully mentored several Fellows in the General Internal Medicine Fellowship Program; and, he has presented papers and posters at several scientific programs. He is a prolific writer with eleven publications during 2002, and nine papers currently in review in the fields of medical outcomes, patient satisfaction, faculty development and alternative health practices. His papers have been published in the American Journal of Medicine, the Annals of Internal Medicine, the Archives of Internal Medicine, and JAMA. Significantly, his papers were selected by the Journal of General Internal Medicine as among their best, with one in the top ten articles published by that journal; and, one of his papers was selected as the best review article during 2002. His mentored project was a finalist for the 2002 Hamolsky Award by the Society of General Internal Medicine. He was an invited speaker at: Grand Rounds at the Tripler Army Medical Center in Honolulu, Hawaii; the International Regenstrief Symposium; the National Meeting of Social Security Administrators; and, the American College of Chest Physicians.

Lieutenant Colonel Lisa Moores, MC, USA, Associate Professor of Medicine, successfully developed a new Medicine Clerkship Web Site for use by students and faculty. Additionally, she developed a Clerkship CD-ROM with all of the clerkship information, forms, site information, and educational resources. Doctor Moores also developed a CD-ROM with 60 full text core reading articles for use in ambulatory medicine. She has presented extensively at national CDIM meetings. Highly regarded by students for her teaching skills, Doctor Moores is often named *Most Valuable Teacher* by students during their clerkship rotations. She assumed the responsibility of Chair of the Affiliate Network and is a member of the Credentials Committee of the American College of Chest Physicians (ACCP).

Doctor Moores co-founded *CHEST Challenge*, a competition for Pulmonary and Critical Care Medicine Fellows in the United States and Canada. She served on the scientific program for the CHEST 2002 Annual Meeting and is the Chair of a new post-graduate course to be given in conjunction with the ACCP Annual Meeting. She has published two abstracts and submitted three manuscripts for publication. Doctor Moores serves as a reviewer for two American and one European respiratory journals.

Louis Pangaro, M.D., Professor of Medicine, Vice Chair, Educational Programs, serves on the Research Advisory Committee of Academic Medicine and on the Internal Research Review Committee, National Board of Medical Examiners. He also serves as the Co-Director, Course for Residency and Fellowships Program Directors, for the National Capital Consortium; and, he is a member of the Research in Education Committee of the GEA/AAMC. He is highly sought after on the evaluation of students, having presented at various medical schools in North America and the National Board of Medical Examiners. In addition, he has lectured to clerkship directors at the annual CDIM meeting as well as to staff at USU's affiliated hospitals. Doctor Pangaro presented at several workshops, including the Association for Medical Education in Europe. He has written numerous publications this year for Academic Medicine, CDIM News, and Teach and Learn Medicine.

Matthew Pollack, M.D., Professor of Medicine and Director, Division of Infectious Diseases, published extensively in the fields of bacterial diseases, P. aeruginosa, endotoxin, sepsis, hemorrhagic shock and cytokines. His research in cytokines and hemorrhagic shock has significant implications for military medicine since shock continues to be one of the most common and serious consequences of battlefield injury and one of the most frequent causes of death.

CAPT Kevin Porter, MC, USN, Associate Professor of Medicine, has established a new Dengue Fever Vaccine Laboratory within the Department of Medicine and has contributed significantly to the literature in this field in the Journal of Medical Virology. Doctor Porter was awarded a patent for *Dengue Nucleic Acid Vaccines that Induce Neutralizing Antibodies* and lectures widely on this topic of military significance.

Lieutenant Colonel Michael Roy, MC, USA, Associate Professor of Medicine and Director, Division of Military Internal Medicine, has had his work in the area of operational medicine and humanitarian assistance published in the Special Operations Forces Medical Handbook and Military Medicine. He has presented poster sessions and lectured extensively on these subjects at conferences and grand rounds. Additionally, he presented on his study of *DEET and Permethrin Under Stress Conditions* at the Annual Meeting of the Army American College of Physicians, American Society of Internal Medicine Meeting; and, he presented on the subject of *Bioterrorism - What Every Internist Should Know* at the DC Chapter, Scientific Meeting, ACP-ASIM. Doctor Roy chaired the USU 16th Annual Conference on Military Medicine bringing together the medical educational leadership of the Office of the Assistant Secretary of Defense (Health Affairs) and of the Army, Navy, and Air Force to develop a strategy for teaching military medicine at all levels. (*See page 12 of the 2002 Edition of the USU Journal for more information on the 16th Annual Conference on Military Medicine.*) He has also been involved in developing training materials for a military medical response to bioterrorism.

Donald Sellitti, Ph.D., Research Associate Professor of Medicine, received a Certificate of Recognition from the USU SOM Department of Anatomy, Physiology and Genetics for his "outstanding contribution to its teaching program." Doctor Sellitti continues to serve as a peer reviewer for articles in the field of endocrinology and metabolism.

Lieutenant Commander John Tourtelot, MC, USN, serves as an Advisory Member of the Board of Directors for the American Association of Clinical Endocrinologists.

Colonel George Tsokos, MC, USA, Professor of Medicine, Vice Chair for Research Programs, and Director, Division of Immunology and Rheumatology, is well known in his field of expertise. He continues to serve as a member of the NIH Immunological Sciences Study Section; and, he was elected Councilor/President for 2001-2006 of the Clinical Immunology Society. Doctor Tsokos is also a member of: the Board of Directors of the Lupus Foundation of America; the Arthritis Foundation Immunology Study Section; and, the Abstract Selection Committee, National American College of Rheumatology. Colonel Tsokos serves as editor, or guest editor, of numerous publications such as International Reviews in Immunology, Trends in Molecular Medicine, Journal of Immunology, Clinical and Diagnostic Laboratory Immunology, Lupus, Journal of Investigative Medicine,and Clinical Immunology. He is the Chair of the Editorial Board of Lupus News; and, he is the Editor-in-Chief of Modern Therapeutics in Rheumatic Diseases. Doctor Tsokos has contributed chapters in several books. He is a much sought after speaker on the topic of Lupus and other immunological diseases and currently holds three NIH RO1 grants and one grant from the Medical Research Materiel Command.

Colonel Robert Vigersky, MC, USA, Associate Professor of Medicine, serves as the Endocrine Society Representative to the American Medical Association.

Captain Alan Wimmer, USAF, MC, Assistant Professor of Medicine, recently published an article in the Journal of Interventional Cardiac Electrophysiology; and, he presented at the 10th Ottawa Conference on Medical Education, at the Annual Meeting of Air Force Physicians.

Colonel Roy K.H. Wong, MC, USA, Professor of Medicine and Director, Division of Gastroenterology, was elected to the Organisation Mondiale d'Etudes Specialiseees sur les Maladies de Oesophage (OESO). Doctor Wong conducts ongoing research with several grants from professional societies and the NIH. He is an active leader and serves in many professional societies as: the Chair of the Board of Governors of the American College of Gastroenterology; the Chairman, Abstracts Selection Committee, ASGE/DDW; the Chairman of the Credentials Committee for the ACG; and, a member of the Permanent Scientific, OESO. Colonel Wong has presented numerous scientific papers and has published articles on the topics of colonic Neoplasia, achalasia, Barrett's Esophagus, and other diseases of the gastrointestinal tract. These articles appeared in peer-reviewed journals such as: Gastroenterology; Gastrointestinal Endoscopy; and, Gastrointestinal Endoscopy Clinics of North America. Doctor Wong is a much sought after reviewer by national and international publications on a variety of gastrointestinal illnesses.

(See Pages 93, 111, and 207 in the 2002 Edition of the USU Journal for additional information on the Department of Medicine.)

Microbiology and Immunology - School of Medicine.

Submission from the Department of Microbiology and Immunology immediately follows page 40.

Military and Emergency Medicine - School of Medicine.

(See Section I, Military Unique Curriculum, pages 155, 156, 158, 165, 168, 169, and, 170; and, Section IV, Graduate Education Programs, pages 317 and 318 of the USU Journal for information on the Department of Military and Emergency Medicine.)

Neurology - School of Medicine.

Department Activities: The Department of Neurology has oversight for three Congressionally mandated programs:

The Defense Brain and Spinal Cord Injury Program. This program, established in 1992, continues to provide care and research for patients with brain and spinal cord injury throughout the DoD and VA hospitals. Funding has been received for the program in 2003 in the amount of $10 million.

The Post-Polio Syndrome Program. Established in 2000, this program provides patient care and research in the area of Post-Polio Syndrome (PPS). A large multi-center protocol began during 2002, to include the following collaborators: USU; the Conemaugh Health Program in Johnstown, Pennsylvania; the Walter Reed Army Medical Center; the National Institutes of Health; and, the National Rehabilitation Center. This protocol investigates the cause of PPS and researches treatment effectiveness against symptoms; additional treatment and investigative protocols are being developed. Funding has been received for the program in 2003 in the amount of $3.2 million.

The Neuroscience Program. This program was established during 2001; it investigates the cause and researches preventive and treatment options for neurological patients suffering from stroke, spinal column issues, headaches, epilepsy, and pain. The collaborative institutions include: USU; the Conemaugh Health Program in Johnstown, Pennsylvania; the National Naval Medical Center (NNMC); and, the Walter Reed Army Medical Center. Ongoing protocols focus on headache and stroke. Future protocols are being developed for studying epilepsy, spine problems, and pain. The Navy plains to establish a Spine Center at the NNMC. Funding received for the program for 2003 was $5.4 million.

Individual Contributions.

COL Bahman Jabbari, MC, USA, Professor and Chair, USU SOM Department of Neurology, presented the Department of Defense's Epilepsy Medical and Surgical Program results for the past 20 years during a lecture at the University of Bologna, Italy. Doctor Jabbari and colleagues presented the paper, *Spinal Cord Metastasis from Breast Cancer*, at the annual meeting of the American Academy of Neurology; and COL Jabbari and colleagues also published the paper, *Efficacy of Botulinum Toxin A in Chronic Low Back Pain*, in Neurology (2001: Volume 56, Pages 1290-1293). The American Academy of Neurology designated this study, which received press coverage on *CNN*, *Canadian Television*, and Time magazine, as being of significant public interest. Colonel Jabbari also established a Clinical Neuroscience Center. The Center has board certified specialists (Neurology, Sleep Medicine), generalist physicians, registered nurses, and data collection personnel. The Center also houses state-of-the-art EEG, EP, Sleep and Epilepsy Monitoring Equipment. The Center has been established to support the Department's Congressionally mandated programs (spinal cord injury, stroke, headache, epilepsy, pain, and post-polio syndrome research). In addition, Colonel Jabbari participated in the United States-Neurotoxin Institute Meeting as an advisor during December of 2002, in San Juan, Puerto Rico.

Lieutenant Colonel Geoffrey Ling, MC, USA, Professor, USU SOM Department of Neurology, was appointed to the National Institutes of Health's PULSE (Post-Resuscitation and Utility of Life Saving Measures) Committee. He was also named Chair of the PULSE Subcommittee on Central Nervous System Trauma. Doctor Ling was the senior author and co-author on three papers: *Quantitative Model of Intracerebral Hemmorrhage*, Critical Care Medicine (2001: Volume 29, Pages 152-158); *Rituximab Using a Thrice-Daily Weekly Dosing Schedule in B-Cell Chronic Lymphocytic Leukemia and Small Lymphocytic Lymphoma Demonstrates Significant Clinical Activity*, Clinical Oncology (2001: Volume 19, Pages 2153-2164); and, *Absence of Early Proinflammatory Cytokine Expression in Experimental Intracerebral Hemorrhage*, Neurosurgery, (2001: Volume 49, Pages 416-421). Doctor Ling has been the organizer of the first Brain Injury Symposium held at USU on June 3, 2002; and, he has been the guest speaker and expert advisor at five major military meetings, to include one held in Russia, during 2002.

Ann M. Marini, M.D., Ph.D., Associate Professor, USU SOM Department of Neurology, spoke on the issue of neuroprotection at the 5th International Congress on Amino Acids and Analogues in Vienna, Austria. Her Published papers include: *Synaptic Deprivation and Age-Related Vulnerability to Hypoxic-Ischemic Neuronal Damage*, Annals of the New York Academy of Sciences, (2001: Volume 939, Pages 238-253); and, *NF-kB Is a Critical Determinant for NMDA Receptor-Mediated Neuroprotection*, Neurochemistry, (2002: Volume 78, Pages 254-264). Another military relevant paper, *Cyclooxygenase-2 inhibition protects cultured cerebellar granule neurons from glutamate-mediated cell death*, was also published by Doctor Marini in the May 2002 issue of Neurotrauma.

Ajay Verma, M.D., Ph.D., Associate Professor, USU SOM Department of Neurology, published two papers: *Low Tech Neuroprotection for Brain Injury*, Head Trauma Rehabilitation, (2001: Volume 16, Pages 206-209); and *Erythropoietin and Erythropoietin Receptor Expression in Human Cancer*, Cancer Research, (2001: Volume 61, Pages 3561-3565). Another military relevant paper by

Doctor Verma was published in the September 2002 issue of Cancer, *Immunohistochemical expression of erythropoietin and erythropoietin receptor in breast carcinoma.*

Obstetrics and Gynecology - School of Medicine.

William H.J. Haffner, M.D., CAPT, USPHS (Retired), Professor and Chair, USU SOM Department of Obstetrics and Gynecology, received the Distinguished Service Award from the American College of Obstetricians and Gynecologists (ACOG) at its Annual Clinical Meeting in Los Angeles, California, on May 8, 2002. The ACOG Distinguished Service Award was created in 1968 and is presented to outstanding individuals in Obstetrics and Gynecology who have made significant contributions within ACOG, in government, in research, in teaching, or in direct patient care. Doctor Haffner maintains his clinical practice at the National Naval Medical Center. He began his Public Health Service career with the Indian Health Service (IHS) in 1971, when he served in leadership roles in the Department of Obstetrics and Gynecology in Gallup, New Mexico. He served as Obstetrics and Gynecology Consultant for the IHS until 1994. Doctor Haffner was transferred to the National Capital Area in 1981 and has served in a variety of consultative roles, to include Chief Professional Officer, Medical Category, United States Public Health Service, a position he held for four years. Doctor Haffner received the ACOG/Wyeth-Ayerst President's Community Service Award in 1994. He is active in the Armed Forces District; and, he has served, or is currently serving, on several ACOG committees, including the Committee on American Indian Affairs, the Committee on Practice Bulletins - Gynecology, and the Committee on Health Care for Underserved Women. Doctor Haffner is currently the Secretary-Treasurer-elect of the Association of Professors of Gynecology and Obstetrics.

Lieutenant Colonel Andrew J. Satin, USAF, MC, Professor and Vice Chair, USU SOM Department of Obstetrics and Gynecology, USU SOM Class of 1984, continued to serve the University, the National Naval Medical Center, and the Walter Reed Army Medical Center with extraordinary leadership and expertise in 2002. During the past four years, he has been the Program Director of the Uniformed Services Residency in Obstetrics and Gynecology at the National Capital Consortium; he has taken this new program from Provisional Accreditation status to Full Accreditation for the maximum possible length of five years. Only eight programs in the United States have earned five-year accreditation and none have catapulted from provisional to five-year accreditation in only a single step. In addition to his duties at the University, Doctor Satin is a member of the Editorial Board of Obstetrics and Gynecology, the most prestigious journal in the specialty. He is certified by the American Board of Obstetrics and Gynecology and its sub-specialty division of Maternal-Fetal Medicine; and, he is an oral examiner for the American Board.

Pathology - School of Medicine.

Colonel Richard M. Conran, MC, USA, Professor, USU SOM Department of Pathology, is a consulting Pathologist to the National Naval Medical Center (NNMC) and the Department of Pediatric Pathology at the Armed Forces Institute of Pathology (AFIP). Doctor Conran is the Course Director for the Pathology MSII Course; and, he serves as an Instructor in the Pathology Laboratory Course and the Pathology MSII Small Group Case Studies. As part of his collaborative efforts, he is a Lecturer in the

EID Graduate Education Program on *Fundamentals of Infectious Diseases*; and, he is a Lecturer in BioChemistry on *Clinical Correlation in Histology*. Doctor Conran is a Co-Investigator on DNA Identification Protocols at AFIP.

Sara Contente, Ph.D., Research Assistant Professor, USU SOM Department of Pathology, is a member of the IACUC Committee; she is currently working on the mechanism of action of an important tumor suppressor gene. This work has received wide and favorable notoriety. As a part of her collaborative efforts, Doctor Contente serves as a Lecturer on *Techniques in Cellular and Molecular Biology* (MCB0801) and *Nucleic Acid Probes and Hybridization and DNA Sequencing and Transfection.*

Mary Lou Cutler, Ph.D., Associate Professor, USU SOM Department of Pathology, taught courses for the Molecular and Cell Biology (MCB) and Pathology Graduate Education Programs. She is a member of the USU Merit Review Committee and the USU Biohazard Committee. In addition, she is the co-director of the MCB Cell Biology Courses for graduate students. Her research program focuses on the regulation of mammary epithelial cell differentiation. In particular, she is interested in the mechanism by which activation of the Ras pathway disrupts mammary epithelial differentiation. The Ras pathway is frequently activated by signaling from the ErbB receptors in breast tumors, and activation of this pathway is characteristic of more aggressive tumors. Doctor Cutler and her staff are interested in determining which of the effector pathways activated by Ras is responsible for the block in differentiation. Her recent findings have demonstrated that activation of the Raf-Mek-Erk signal transduction pathway by the epidermal growth factor family of mitogenic peptides results in the inhibition of mammary differentiation by inhibiting Stat5, an obligate transcription factor for the expression of genes involved in lactogenesis. In addition, the activation of the Ras pathway prevents the normal down-regulation of the expression of Mek-1 and other kinases and scaffolding proteins that constitute the Raf-Mek-Erk signaling complex. The research in her laboratory is currently supported by two grants. In addition to the graduate students, there are two post-doctoral fellows and a technician working in her laboratory. The laboratory has published one paper and has submitted three manuscripts for publication in the last six months. Doctor Cutler was in the process of preparing three grant applications for submission in May and June of 2003, to include a new NIH Ro1 application. Her duties as the Associate Director for Basic Science of the United States Military Cancer Institute (USMCI) involve promoting basic science in cancer research at USU and at the other USMCI institutions. This year, the USMCI is initiating a small funding program for collaborative cancer research. She prepared the funding announcement and arranged for the review of applications for collaborative grants in breast and prostate research. These grants will be available to researchers at USU. In addition, Doctor Cutler arranged seminars for invited speakers and arranged the scientific program for the USMCI annual meeting. As the Associate Director for Basic Science, she serves on the USMCI Executive Committee and reports to the USMCI Committee of Scientific Advisors on basic science research. Doctor Cutler serves on two grant review committees. One is the USU Merit Review Committee and the other is a study section for the Congressionally Mandated Medical Research Breast Cancer Program. In addition, Doctor Cutler serves on the Molecular Biology Advisory Committee to the American Type Culture Collection. During 2002, Doctor Cutler was the Co-Course Director of MCB 507-508, Cell Biology I and II; she was also a Lecturer in MCB 508, Cell Biology II; and, she presented lectures on *Techniques in Cell and Molecular Biology* and *Advanced Virology.*

Michael J. Daly, Ph.D., Associate Professor, USU SOM Department of Pathology, has successfully submitted a Patent Application to the United States Patent and Trademark Office, sponsored

by USU on *Radioactive Waste Detoxification*. Doctor Daly was appointed to serve on the Committee on the Origins and Evolution of Life, National Academy of Sciences, from 2003 through 2005; and, from 2000 through 2002, he served as a member of the Committee on Planetary and Lunar Exploration, National Academy of Sciences. Between 1999 and 2001, Doctor Daly served as a member of the Planetary Task Group for the National Academy of Sciences; and, from 1997 to present, he has served on Peer Review Panels for the Department of Energy. From 2002 to the present, he has supported the efforts of Doctor Aileen Marty, USU Homeland Defense Committee, through the Broadcasting of Education Programs to the Armed Forces. From 2001 through 2004, Doctor Daly continues to serve as a member of the USU Radiation Safety Committee. In addition to these activities, Doctor Daly obtained $40,000 from the Department of Energy to service and recharge the USU Co-irradiator. On February 4, 2003, Doctor Daly was featured on Swedish Television, *National Public Radio*, in a two-part documentary, *Life at Stake*. And, Doctor Daly's *Genome Informatics: Deinococcus* was published in GEO MAGAZINE in Germany on September 8, 2002. Beginning in 2000 throughout 2002, Doctor Daly served as a Lecturer and presented *Laboratory Aspects of Biowarfare* (PA0530); and, since 2001, he has lectured on *Techniques in Cellular and Molecular Biology* (MCB08-01).

Gabriela S. Dveksler, Ph.D., Associate Professor, USU SOM Department of Pathology, serves as the Chair of the USU Biosafety Committee; she also serves as the Chair of the MCB Program Admissions Committee. Doctor Dveksler was selected by the National Institutes of Health (NIH) to serve as a member of HED-1 Study Section, NIH, Institute of Child Health and Human Development. She also serves as the Editor, PCR Primer: A Laboratory Manual, Cold Spring Harbor Laboratory Press, 2nd Edition, Released in May of 2003. Doctor Dveksler is a Course Director for Techniques in Molecular and Cellular Biology.

Philip M. Grimley, M.D. Professor, USU SOM Department of Pathology, serves as a Pathology Core Course Lecturer on anemias and lymphomas. He is the Primary Instructor for the Pathology Laboratory sessions with 24 students; and, he serves as an Instructor in small group cases with 8 students. In Histology for Pathologists, he lectures on (1) *blood* and (2) *cardiovascular system*; in the Pathology for EID Program, he lectures on *Tissue Pathology of Virus Infections* (with clinical correlations); in the Biowarfare Course, he presents a lecture on *Insect Borne Virus Pathogens*. In the Pathology Graduate Courses, he lectures on *Pathogenesis* (CML) and, in the Interferon Course he lectures on *IFN Antiproliferative Mechanisms* (molecular signals). In the Molecular and Cell Biology Course (MCB508 Core Course), he lectures on (1) *Cell Cycle* and (2) *Apoptosis*. Doctor Grimley is a member of the College of American Pathologists, Laboratory Accreditation Program and serves as a Commissioner for the State of Maryland. His participation contributes to the accreditation of four military laboratories, which would otherwise need to supply personal and time to maintain accreditation. Doctor Grimley is also a member of the Study Section, of the DoD Breast Cancer Program. He is an Adjunct Professor at the University of Maryland; and, he participates in seminars, works with graduate students in the development of a Biowarfare Training Initiative. He is also a member of the United States Military Cancer Institute (USMCI) and serves on the USMCI Tissue Committee and participates in USMCI symposia. As a member of the USU Merit Review Committee, he bi-annually reviews grants for the University. Doctor Grimley has focused research on Therapeutic Modulation of Apoptosis.

Elliott Kagen, M.D., Professor, USU SOM Department of Pathology, provides three lectures and 36 laboratory instruction sessions in the MSII General and Systemic Pathology Course with approximately 75 student contact hours. Doctor Kagen provides extensive lectures during the school year: 1) Lecture to Pathology Graduate Student Program on *Oxidants and Acute Respiratory Distress Syndrome* (Topics in Pathogenesis Graduate Course); 2) Lecture to Pathology Graduate Student Program on *Mitogen-Activated Protein Kinases in Lung Injury* (Topics in Pathogenesis Graduate Course); 3) Lecture and Microscope Session to Emerging Infectious Disease Graduate Program on *Lung Infections*; 4) Lecture on Bioregulators as Putative Bioterrorism Agents to Johns Hopkins University Graduate Course, entitled: *BioTerrorism, Science and Policy: The International Scientific and Diplomatic Challenge of the 21st Century*; and, 5) Lecture to Clinical and Occupational and Environmental Medicine Program (PM0546) on *Occupational Lung Diseases and Occupational Carcinogenesis*. Doctor Kagen served as an *ad hoc* Reviewer for the National Institutes of Health (NIH) Chemical Pathology Study Section, Oncological Sciences Integrated Review Group in Washington D.C.; and as an *ad hoc* Member of the NIH Lung Biology and Pathology Study Section in Washington, D.C. since May of 2002. Since February of 2002, Doctor Kagen has been a member of the External Advisory Committee, Xavier University/Tulane University NIEHS-funded ARCH Research Program; and, he has served as an ad hoc Reviewer for the Cooperative Grants Program of the United States Civilian Research and Development Foundation (CRDF) since July of 2001. In addition, Doctor Kagen has served as an *ad hoc* Reviewer for the Veterans Administration Merit Review Board since March of 1987. Doctor Kagen is the Principal Investigator on a DoD research grant, *A Pathogenesis of Filovirus Infection by Aerosol Challenge*, with a project period from October 1, 2002 through September 30, 2003.

Colonel Morton H. Levitt, USAF, MC, USU SOM Department of Pathology, serves as a Laboratory Instructor for 24 students in Pathology2010. He is also a Small Group Instructor and teaches 16 cases to eight students over four sessions. In the course of his instruction, Doctor Levitt prepares and delivers three lectures on Male GU, Bladder, and Nutrition. Doctor Levitt is the Chief of Clinical Pathology Education; and, he is the Director of Clinical Clerkships and the Webmaster for the Department Web Site. In addition, Doctor Levitt is the Course Director for Pathology 520, for which he revised the syllabus, recruited and scheduled faculty, prepared a 60-page syllabus, prepared lectures and was responsible for the administration of the Course. He is the Co-Director of Pathology 531, which required that he revise the syllabus, recruit and schedule faculty, and provide administrative oversight. At the Walter Reed Army Medical Center, Doctor Levitt teaches residents in Surgical Pathology. Doctor Levitt serves as the Senior Officer Advisor for the Air Force and reviews all Air Force performance/fitness reports and advises the USU President and USU Brigade Commander on all promotion activities for the active duty officers assigned to the University. Doctor Levitt also serves as the Chair of the USU Controlled Substances and Alcohol Inventory Board; as such, he develops policy recommendations, conducts annual surveys of all USU Departments, and prepares an annual report to the USU President. During each year, Doctor Levitt performs surgical Pathology, cytopathology and quality assurance service for the Walter Reed Army Medical Center (WRAMC). As a Member and Vice Chair of the College of American Pathologists (CAP) Information Committee, he develops medical informatics courses, distance learning materials, and the CAP WWW Home Page; he also sets national policy standards for laboratory accreditation and coordinates, directs, and recruits faculty and teaches eight-hour Computer Roundtable Courses at the CAP national meetings. As a member of the CAP House of Delegates, he represents the State of Maryland and attends local briefings and legislative updates/training, as required. Doctor Levitt conducts on-site laboratory accreditation inspections at the request of the Regional CAP Commissioner or other CAP LAP Commissioners; he serves as either a team leader or team member. As a team leader,

he is responsible for the recruitment of inspectors, all administrative matters, and the conduct of the inspection as well as leading inbriefs/outbriefs at the facility being inspected. He is also a member of the Duke University Medical Alumni Council; and, as such, he develops policy for medical alumni CME and other activities; he plans and coordinates a regional CME activity once each year as a Council Member. And, Doctor Levitt is an active member of the Maryland Society of Pathologists.

Radha K. Maheshwari, Ph.D., Professor, USU SOM Department of Pathology, actively serves as: a member of an NIH Study Section; a member the USU Graduate Education Committee; a Program Director in the USU Graduate Education Program; as a member of the Henry M. Jackson Foundation Committee for Graduate Fellowship; a member of the University BSL-3 Committee; a member of the United States Military Cancer Research Institute (USMCI); a faculty member in the USU SOM MCB and EID Graduate Education Programs; a member of the Graduate Students Thesis Committee; a mentor to area high school students; a coordinator of the Indo-US Activities at USU; and, as an Adjunct Professor at the Birla Institute of Technology and Science located in Pilani, India. During 2002, Doctor Maheshwari organized and lectured in two courses on *Interferons* and topics in *Pathogenesis*. He also lectured in the EID Course and lectured and participated in the Bioterrorism and BioDefense Course; and, during 2002, he mentored both Graduate Education Students and Post-Doctoral Fellows. Doctor Maheshwari was an Invited Speaker at an INDO-US Colloquium on *Molecular Targets of Xenobiotic Exposure: Role in Susceptibility of Diseases*, held at the Industrial Toxicology Research Center in Lucknow, India, in January of 2003. He also was an Invited Speaker at an International Symposium and presented *Emerging Trends in Genomics and Proteomics, Education and Research* at the Birla Institute of Technology and Science in Ilani, India, in January of 2003. Also during January of 2003, Doctor Maheshwari chaired the Session on Bioremediation of Toxicants at the Birla Institute of Technology and Science; and, he was an Invited Speaker at a symposium held at the Army Hospital in New Delhi, India, which was organized by the Armed Forces Medical Services, New Delhi, India. On June 9, 2002, he was an invited member to the International Federation of Shock Societies Council Meeting held in Big Sky, Montana. And, on March 15-16, 2002, Doctor Maheshwari was an Invited Speaker and presented *Overview on 20 Years of Indo-USU Programs: Present, Past and Future* at the International Conference on Population, Development and Environment held at the Birla Institute of Technology and Science in Pilani, India.

Commander Aileen M. Marty, MC, USN, Associate Professor, USU SOM Department of Pathology, received a Meritorious Service Medal for Contributions following the Events of September 11, 2001, in June of 2002. She also received the Edward Rhodes Stitt Award as the Outstanding Laboratory Pathologist in the field of laboratory medicine from the Association of Military Surgeons of the United States; the award was presented during proceedings held on November 12-13, 2002. Doctor Marty presented 17 Invited Lectures during 2002; some examples follow: 1) Visiting Professor at the Bernhard Nocht Institute for Tropical Medicine, on January 7-9, 2002. Doctor Marty presented *The Clinical Course and Pathology of Anthrax and What Could Be Next*, at the Lecture Theater, Hamburg, Bernhard Nocht Strazza, Germany, on January 8, 2002; 2) *Spectrum of Biological, Chemical & Radiation Threat Agents - Individual and Combined Efforts as Concerns the US Navy... and Your Navy* and *Update on Navy Detection, Diagnostics, Confirmation, Prevention, & Protection from NBC Weapons with an Emphasis on Biological and Chemical Weapons* at the Deutsche Marine, Kopperpahler Allee, in Kronshagen and Kiel, Germany, on February 7, 2002; she also served as the Special Military Advisor for the Deutshe Marine, in Kiel, Germany; and, 3) *Colon Cancer in a Young Woman - The Role of Infectious Agents in Oncogenesis* was presented at the Binford-Dammin Society of Infectious Disease Pathologists

91st Annual Meeting held on February 23 through March 1, 2002, at the Sheraton Chicago Hotel in Chicago, Illinois, and, the United States-Canadian Division of the International Academy of Pathology on February 24, 2002, also in Chicago, Illinois. Doctor Marty also presented community service lectures during 2002 for: the American Bar Association International Law Section, Bioterrorism Subcommittee of the International Health Law Committee on April 16, 2002; and, the 2002 National Youth Leadership Forum on Medicine held at Georgetown University on June 26, 2002. Doctor Marty published six articles during 2002, in Parasitology, the Journal of Infectious Disease, and the New England Journal of Medicine. She also had three additional publications during 2002.

Clifford M. Snapper, M.D., Professor, USU SOM Department of Pathology, established, and serves as the Director of, the Institute for Vaccine Research (IVR) at USU during 2002. He was able to do so with the support of the USU SOM Research and Education Endowment Fund. The IVR, centered in the Department of Pathology, is an interdepartmental effort, including the Department of Pediatrics, for the development of novel, universal strategies for enhancing antibody production to poorly immunogenic proteins, peptides, and polysaccharides. **These antigens serve as vaccine targets for many bacterial and viral pathogens of clinical relevance to both military and civilian populations.** In order to facilitate commercial development of any promising approaches and/or products arising from the basic and pre-clinical studies conducted at the IVR, a Cooperative Research and Development Agreement (CRADA) was established between USU, Biosynexus, Inc., a Rockville, Maryland-based biotechnology company specializing in anti-bacterial immunity, and the Henry M. Jackson Foundation for the Advancement of Military Medicine (HMJF). Through design of novel vaccination approaches, the IVR also hopes to foster interactions with military vaccinologists in order to define clinically relevant target antigens that could be tested using the Vaccine Institute's universal adjuvanting systems. In this regard, two major projects have been initiated at the IVR on the gp350 Protein and Hybrid DNA-RNA Molecules. In addition, Doctor Snapper's laboratory has been conducting basic immunologic studies in the mouse on the mechanisms that induce *in vivo* protein- and polysaccharide-specific antibody responses to the bacterial pathogen, *Streptococcus pneumoniae*. Three separate NIH R01 grants have funded studies involving the role of dendritic cells, both helper and suppressor T cells, cytokines and chemokines, Toll-like receptors, and costimulatory molecules. These studies will help in the design of new immunotherapies and vaccines against this widespread pathogen. Some of these studies were published in The Journal of Experimental Medicine, The Journal of Immunology, and Infection and Immunity over the past year. This work has also been presented at the 2002 Midwest Immunology Conference and in seminars at the NIH, the University of West Virginia, the Fox Chase Cancer Center, and Merck.

Colonel J. Thomas Stocker, MC, USA, Professor, USU SOM Department of Pathology, serves as a Lecturer in the MSII Pathology Course; he also is an Instructor in both the MSII Laboratory Course and the MSII Small Group sessions. As further examples of his collaborative support, Doctor Stocker was a Lecturer in the following: the Histology Course; the Pediatric Seminars; the CPC Conferences at both the Walter Reed Army Medical Center (WRAMC) and the National Naval Medical Center (NNMC); the Pathology Seminars at WRAMC and NNMC; the Public Health Course at USU; and, Autopsy at NNMC. During 2002, Doctor Stocker also served as a consultant for Pediatric and Pulmonary Pathology at the Armed Forces Institute of Pathology (AFIP); and, as a consultant for the Department of Defense on Legal Issues and Pediatric Pathology.

(See Pages 160, 92, 94, and 98 in the 2002 Edition of the USU Journal for additional information on the Department of Pathology.)

Pediatrics - School of Medicine.

Lieutenant Commander Robert Englert, MC, USN, Teaching Fellow, USU SOM Department of Pediatrics, published an article, *Distinct Modes of Cell Death Induced by Different Reactive Oxygen Species*, in The Journal of Biological Chemistry during 2002. He also published an abstract, *Effects on Mode of Cell Death in B Lymphoma Cells Induced by Different Oxidants*, in Pediatric Research during May of 2002. This abstract was also presented in a poster symposium session at the spring Society for Pediatric Research Meeting in Baltimore, Maryland.

Janice L. Hanson, Ph.D., Research Assistant Professor, USU SOM Department of Pediatrics, worked in collaboration with **Elizabeth S. Jeppson, Ph.D., Adjunct Assistant Professor of Pediatrics; Colonel William S. Sykora, USAF, MC, Assistant Professor of Family Medicine**; and the USU National Capital Area Simulation Center to evaluate medical students' acquisition of skills in communicating with patients and advocating for patients and families in health care settings. Doctor Hanson presented this work at: the Council On Medical Student Education in Pediatrics (COMSEP) meeting in March of 2002; the Region IV Ambulatory Pediatrics Association meeting in Norfolk, Virginia, in January of 2002; and, during the breakfast session at the Pediatric Academic Societies meeting in Baltimore, Maryland in May of 2002. Along with **Doctor Beth Lown, Mt. Auburn Hospital and Harvard Medical School,** Doctor Hanson also presented a workshop entitled, *Shared Medical Decision-Making*, at the American Academy on Physician and Patient Research Forum in Linthicum, Maryland, in March of 2002.

Lieutenant Commander Christine L. Johnson, MC, USN, Assistant Professor, USU SOM Department of Pediatrics, NCA Site Coordinator for the Third-Year Pediatric Clerkship, Fourth-Year Pediatric Programs Director, American Academy of Pediatrics Committee on Environmental Health, Education Subcommittee Member, and Liaison with the Agency for Toxic Substances and Disease Registry (ATSDR), Department of Health and Human Services, has initiated a proposal to establish a Pediatric Environmental Health Specialty Unit (PEHSU) at USU. Children and fetuses are at extremely high risk from certain toxic exposures because of their unique physiological and developmental vulnerability. A DoD PEHSU at USU would provide critical education and consultation services to uniformed health care providers worldwide. This unit would augment the existing units across the United States, Canada, and Mexico utilizing its unique role to address issues specific to military populations. A military PEHSU would add specialized knowledge of the many complex defense-related exposures not found in the civilian sector. The USU PEHSU would become an essential component of the military unique curriculum of military residency training programs providing education in the area of environmental health.

Lieutenant Colonel Woodson Scott Jones, USAF, MC, Assistant Professor, USU SOM Department of Pediatrics, and Associate Director of the Third-Year Pediatric Clerkship, was elected Vice President of the American Academy of Pediatrics, Uniformed Services Chapter East, representing over

300 Fellows in the Academy's affairs. He also has continued his collaborative efforts with the Dartmouth Medical School and the Council on Medical Student Education in Pediatrics (COMSEP), serving on the Computer-Assisted Instruction (CAI) Advisory Group for the Development of the Computer-Assisted Learning Project in Pediatrics (CLIPP), a program of Internet-based, self-directed learning materials to be used by medical students internationally.

CAPT Ildy M. Katona, MC, USN, Professor of Pediatrics and Medicine, Chair, USU SOM Department of Pediatrics, was elected to the American Pediatric Society (APS). Membership in the APS has been accorded to individuals who have distinguished themselves in leadership, teaching, research, and contributions to Pediatrics at the national and international levels. APS had 988 active members nationally during the Spring of 2002.

Major William Leftkowitz, MC, USA, Teaching Fellow, USU SOM Department of Pediatrics, published the article, *Oxygen and Resuscitation: Beyond the Myth*, in Pediatrics during 2002. He also published the abstract, *Where does the developing brain get its docosahexaenoic acid?* in Pediatric Research during May of 2002. This abstract was presented in a platform session at the spring Society for Pediatric Research Meeting held in Baltimore, Maryland.

Lieutenant Colonel (promotable) Jeffrey Longacre, MC, USA, Assistant Professor, USU SOM Department of Pediatrics, was invited and presented a seminar titled, *Mercury Toxicity, A Clinical Perspective*, at the Russian Academy of Sciences 7th International Symposium on Metal Ions in Biology and Medicine, at St. Petersburg, Russia. As part of a multi-disciplinary team of experts from the Armed Forces Institute of Pathology (AFIP), the Environmental Protection Agency (EPA), and the United States Geological Survey (USGS), Doctor Longacre conducted a short course for symposium attendees titled, *Environmental Pathology and Exposure to Toxic Metals*. He also published the article, *Lead as a Threat to the Health of Children from the City of Vladivostok*, in the May 2002 edition of Trace Elements in Medicine, following several site visits to Vladivostok, Russia, at the invitation of the Primorsky Krai Department of Public Health. The site visits were conducted as part of a multi-disciplinary medical ecology team sponsored by the United States Pacific Air Force/Pacific Command (PACAF/PACOM). And, he was selected to the United States Army Pediatrics Board of Directors, serving as the USU advisor and liaison to the Pediatric Consultant of the Surgeon General of the United States Army. Doctor Longacre and **Lieutenant Colonel Woodson Scott Jones, USAF, MC, Assistant Professor of Pediatrics,** were recognized as the authors of the only English language on-line interactive case used by CASUS CURAE (Germany) that was awarded the European software development prize, *Multimedia in Healthcare 2001*, for excellence and innovation in multimedia software. The Computer-Assisted Learning in Pediatrics Project (CLIPP) is a cooperative effort by the Council on Medical Student Education in Pediatrics (COMSEP) and the Dartmouth Medical School; and, it is funded by the Bureau of Health Professions, United States Department of Health and Human Services.

Kathleen B. Madden, Ph.D., Research Assistant Professor, is a co-investigator on a five-year, $1.25 million National Institutes of Health (NIH) grant, *GI Nematodes and Gut Functional Responses to Inflammation*. Doctor Madden's primary research interests are in the field of immuno-parasitology, with special emphasis on cytokine regulation of the host's response to infection with gastrointestinal nematodes.

Doctor Madden works in collaboration with **Captain Ildy M. Katona, MC, USN, Professor of Pediatrics and Medicine, and Chair, USU SOM Department of Pediatrics**, delineating cytokine regulation of mucosal mast cell hyperplasia; and, with **Terez Shea-Donohue, Ph.D., Research Professor of Medicine, USU, and Research Physiologist, USDA,** investigating neuroimmune regulation of gut epithelial cell function. Doctor Madden presented this research at the annual meeting of the American Gastroenterological Association in San Francisco, California, during May of 2002.

Major Janice Nicklay-Catalan, MC, USA, Teaching Fellow, USU SOM Department of Pediatrics, published work she completed as a Neonatal Fellow from 1997 to 2000; *Cognitive Deficits in Docosahexaenoic Acid-Deficient Rats* was published in Behavioral Neuroscience during 2002.

Felipe E. Vizcarrondo, M.D., Assistant Professor of Pediatrics, and **Lieutenant Commander Jeffrey R. Lukish, MC, USN, Assistant Professor of Surgery and Pediatrics,** co-hosted the **16th Annual Pediatric/Pediatric Surgery Symposium** on June 13, 2002. The topic was *Current Concepts in Pediatric Renal Disease.*

Other Department of Pediatrics Programs and Achievements.

The **3rd Annual C. Everett Koop Distinguished Lecture** was delivered by **James A. O'Neill, Jr., M.D., J.C. Foshee Distinguished Professor of Surgery and Chairman, Section of Surgical Sciences of the Vanderbilt School of Medicine**. Doctor O'Neill's presentation was entitled, *Renovascular Hypertension in Childhood.*

Under the leadership of **Lieutenant Colonel (promotable) Jeffrey Longacre, MC, USA, Director of Pediatric Medical Education,**
the Ambulatory Pediatric Association (APA) recognized the USU Third-Year Pediatric Clerkship with the Outstanding Teaching Award for 2002. This coveted award recognizes excellence in the teaching of ambulatory pediatrics by giving national recognition to an outstanding ambulatory pediatric program. Competition includes military and civilian undergraduate, graduate, and postgraduate pediatric training programs form across the United States. Programs must demonstrate excellence in educational teaching methods and the program innovations and adaptability. ***The USU Pediatric Education Section was previously awarded this national recognition in 1991, making it the only program to have ever been recognized twice in the history of the award.*** The current Pediatric Education Section includes **Lieutenant Commander Christine Johnson, MC, USN, Assistant Professor, USU SOM Department of Pediatrics; Lieutenant Colonel Woodson Scott Jones, USAF, MC, Assistant Professor, USU SOM Department of Pediatrics; Colonel Virginia Randall, MC, USA, Associate Professor, USU SOM Department of Pediatrics; Janice L. Hanson, Ph.D., Research Assistant Professor, USU SOM Department of Pediatrics;** and, **Felipe Vizcarrondo, M.D.** All previous Pediatric Education Section members were duly recognized as well for their contributions over the years leading to this recognition. The USU Pediatric Education Section was invited and conducted a medical education workshop titled, *Structured Clinical Observations*, at the annual American Academy of Pediatrics/Uniformed Services Pediatric Seminar 2002 in San Diego, California, which included pediatricians and primary care providers from all of the Uniformed Services stationed around the globe.

The Department of Pediatrics Education Section continues to offer the Uniformed Services Faculty Development Course (USFDC) under the direction of its Executive Director, **Lieutenant Colonel (promotable) Jeffrey Longacre, MC, USA**. The course involves USU faculty experts in medical education who provide seminars, workshops, and consultation on a broad range of medical education topics. Following the inaugural course at the Uniformed Services Pediatric Seminar in 2001, the course has since conducted on-site seminars and workshops at the Tripler Army Medical Center in Hawaii, the Naval Medical Center in Portsmouth, Virginia, and the Keesler Air Force Medical Center in Biloxi, Mississippi. It is scheduled for several additional military teaching sites during 2003.

The Military Medical Humanitarian Assistance Course (MMHAC), administered by the Education Section of the Department of Pediatrics, under the direction of its **Executive Director, Lieutenant Colonel (promotable) Jeffrey Longacre, MC, USA,** has now graduated over 500 participants. This course provides military healthcare workers with the knowledge and skills essential for the care of civilian populations in complex humanitarian crises. The content of this two-day course focuses on understanding the unique health environment, emphasizing population health approaches, and recognizing and managing those conditions often associated with high mortality among the most vulnerable populations in these settings. Interactive scenarios, taken from actual experiences of the instructors, focus on the role that United States military medical assets would likely play as early responders to a humanitarian emergency with limited medical resources. On average, the course is provided monthly throughout the United States, sponsored by the USU Department of Pediatrics and accredited for Continuing Medical Education credit by the USU Office of Continuing Education for Health Professionals.

Pharmacology - School of Medicine.

Departmental Activities.

Importance and Significance of Research Programs in the Department of Pharmacology. The Department of Pharmacology's areas of research are important in the development of the discipline of pharmacology and for biomedical education. The Department's research strengths are in the major areas of molecular and cellular neuropharmacology and signal transduction mechanisms. The Department expects these areas will produce many valuable insights and are most likely to prove to be fruitful topics for continued research concentration. **These areas also have implications for military medicine.** Extreme and rapid changes in the environment are a frequent feature on the battlefield. Department studies explore the molecular, cellular, and systems implications of changes in the chemical or physical environment of an organism. These basic studies on the mechanisms underlying cellular adaptations may lead to ways of reducing the negative consequences of such adaptations while retaining the valuable features of adaptations enhancing survival.

Individual Research in the areas of Molecular and Cellular Neuropharmacology and Signal Transduction Mechanisms.

Suzanne B. Bausch, Ph.D., Assistant Professor, USU SOM Department of Pharmacology, continues her studies on *Synaptic Alterations in Epilepsy*. Doctor Bausch's research is made possible by funding from the National Institutes of Health (NIH), *Axonal Sprouting of GABAergic Neurons in Epileptogenesis*, the Epilepsy Foundation, *Activity and NMDA Receptor Activation in Epileptogenesis*, and the Department of Defense Brain and Spinal Cord Injury Program (DBSCIP), *Glutamate Receptors in Epileptogenesis*.

Beata Buzas, Ph.D., Research Assistant Professor, along with Doctor Brian Cox, addresses studies on the *Regulation of Opioid Systems in Pain, Injury, and Drug Tolerance*. Doctor Buzas research is made possible by funding from the Department of Defense Brain and Spinal Cord Injury Program (DBSCIP), *Neurochemical m/Medicatiors in Penetrating Brain Injury*, and the Defense/Veterans Head Injury Program, *Opioid Peptides and Oxidative Stress*.

Thomas E. Cote, Ph.D., Associate Professor, USU SOM Department of Pharmacology, focuses his studies on *RGS Proteins and Regulation of Opioid Receptor Signaling*. In the area of Signal Transduction Mechanisms, Doctor Cote studies *RGS Proteins and Regulation of Opioid Receptor Signaling*.

Brian M. Cox, Ph.D., Professor and Chair, USU SOM Department of Pharmacology, along with Doctor Buzas, addresses studies on the *Regulation of Opioid Systems in Pain, Injury, and Drug Tolerance*. Doctor Cox's research is made possible through funding from the National Institutes of Health (NIH).

Jeffrey M. Harmon, Ph.D., Professor, USU SOM Department of Pharmacology, continues his studies on *Regulation of Glucocorticoid Receptor Expression*.

Cinda J. Helke, Ph.D., Professor, USU SOM Department of Pharmacology, and Associate Dean for Graduate Education, addresses *Diabetic Autonomic Neuropathy*.

J. Brian McCarthy, Ph.D., Assistant Professor, USU SOM Department of Pharmacology, focuses on both the *Mechanism of Structural Plasticity in the Brain* and the *Regulation of Synaptic Receptor Targeting*. Doctor McCarthy's research on the *Development of Dendritic Protein Synthetic Components*, is made possible through funding from the National Institutes of Health.

John M. Sarvey, Ph.D., Professor, USU SOM Department of Pharmacology, continued his research on the *Signaling in the LTP Model of Learning and Memory* until his death in 2003.

Aviva J. Symes, Ph.D., Associate Professor, USU SOM Department of Pharmacology, focuses his research on *Cytokine Regulation of Neuronal Gene Expression*. The Department of Defense Brain and Spinal Cord Injury Program (DBSCIP) funds Doctor Symes's research on *Molecular Mechanisms of TGF-beta Signaling in Glial Scar Formation after CNS Injury*. The National Institutes of Health (NIH) funds his research on *Cytokine Regulation of VIP Gene Expression*; and, the Christopher Reeves Paralysis Foundation funds his study on *The Role of Smad3 in Glial Scar Formation After Spinal Cord Injury*.

The research programs of **Doctors Bausch, Cote, Cox, Harmon, Helke, McCarthy, Sarvey** and **Symes** address issues relating to adaptations of the nervous system following changes in activity associated with an altered cellular environment or with application of external stimuli, injury, or other stresses. Doctor Bausch's and Doctor Sarvey's electrophysiology laboratories examine various aspects of synaptic adaptation following seizures (Bausch) or after high-frequency electrical stimulation inducing long-term potentiation (Sarvey). Doctor Bausch's laboratory is examining structural adaptations in GABA and Glutamate synapses in the hippocampus following repeated episodes of seizure activity. Doctor Sarvey's work on long-term potentiation led to studying the role of endogenous zinc in synaptic function as a facilitator of long-term potentiation and as a neurotoxic factor liberated during ischemic injury to the brain. Doctor J. Brian McCarthy's laboratory investigates the targeting of metabotropic glutamate receptors, identifies sorting signals, investigates the hormonal regulation of structural modification in the nervous system, and explores the role of local protein synthesis in dendrites toward synaptogenesis in the hippocampus.

The molecular mechanisms underlying neural injury are also studied in the laboratories of Doctors Aviva Symes, Brian Cox, and Cinda Helke. The Symes and Cox laboratories examine the release of cytokines in response to neural injury and their roles in the regulation of expression of neuropeptides. Doctor Symes's laboratory explores factors regulating the expression of vaso-active intestinal polypeptide (VIP) in the brain resulting from neural injury. Doctor Cox's laboratory studies the expression of endogenous opioids and their relevance to the control of pain and inflammation following injury to the nervous system. The Cox and Cote laboratories are also studying adaptations in opioid peptide and receptor function related to chronic drug exposure. Doctor Helke's laboratory studies the mechanisms underlying disruption of autonomic nervous system function in diabetes. Her studies have demonstrated metabolic, oxidative, neurochemical, and functional deficits in the vagus nerve and other autonomic nerves following sustained hyperglycemia.

Impaired function of neurotrophins and oxidative injury associated with hyperglycemia have been demonstrated. Doctor Harmon is studying the function of glucocorticoid receptors in the central nervous system. Doctor Reid examines factors controlling differentiation of neural precursor cells during neural development. Diseases that affect nerve cells often result in permanent, life-altering disabilities. More than 5,000,000 Americans are currently afflicted by a neurodegenerative disorder. In peacetime, over 8,000 Americans with traumatic brain injury (TBI) are admitted to military and veterans hospitals. **In combat, traumatic brain injury accounts for at least 14 percent of surviving casualties and a disproportionate amount of acute and long-term combat casualty care resources. Understanding the genes that control neuronal generation and specification in the central nervous system would likely figure prominently in treatments aimed at replacing damaged nerve cells.**

These research programs relate to issues of critical importance to health care in a military environment. Seizure generation, impairment of learning and/or memory, and neurodegeneration

are frequent consequences of accidental and battlefield neural injuries. Improved understanding of these events should lead to more effective therapies. These studies can be of great benefit to military personnel who are at increased risk of sustaining a brain injury during the performance of their duties. Defining the mechanisms, that control brain development and brain formation, is critical to our understanding of normal developmental processes and may be a key to treating Alzheimer's and Parkinson's Disease. Collectively, these studies of adaptations of the nervous system following changes in the neuronal environment indicate the wide range of adaptive processes, that can occur in the nervous system, and point the way to potential novel therapies.

Doctors Harmon, Symes, and Cote are actively involved in addressing aspects of the function of critical cellular transduction systems. Doctor Harmon's laboratory is exploring the role of abnormalities in glucocorticoid receptor expression and/or function in impaired function of the hypothalamic-pituitary adrenal axis and in resistance to steroid therapy in cancer.

Doctor Symes is exploring the control of gene transcription in the nervous system by cytokines. These studies are beginning to elucidate fundamental changes in neural function that are induced by enhanced cytokine expression in neural injury.

Doctor Cote studies the role of GTP-binding proteins (G proteins) that mediate the actions of a very large number of neurotransmitters and hormones utilizing G protein coupled receptors (GPCR). Understanding the role of a novel family of G protein regulator molecules may lead to new understanding of the regulation of cell function by GPCR in general. **These studies also have specific application to studies of tolerance and dependence to opiate drugs** being studied in a collaboration between the laboratories of Doctors Cote and Cox. The research programs of Doctors Helke and Sarvey also involve analysis of signal transduction systems activated by transmitters, neurotrophins or oxidative stress, and their adaptations in response to a changing cellular environment.

These studies have important implication for the understanding of regulators of biologic functions at the molecular, cellular, and biological systems levels. **Individual projects provide insight into the adaptive responses of the nervous system, the roles of glucocorticoids in post-traumatic stress disorders, and on cell communication and cell death in relation to the treatment of some cancers.**

During 2002, the faculty members of Pharmacology published in peer-reviewed journals, were invited speakers at national and international meetings, and contributed substantial professional service at area High Schools, on boards of professional associations and societies, and as mentors and consultants in Summer Research Internship in Biological Sciences Programs.

Preventive Medicine and Biometrics - School of Medicine.

Doctor Leonelo E. Bautista, M.D., MPH, DrPH, Assistant Professor, ***the Division of Epidemiology and Biostatistics,*** continues at the forefront of cardiovascular disease research, namely the role of inflammatory disease and biochemical markers of inflammatory disease in the genesis of heart disease. With six published papers during 2002, several invitations to speak at international meetings, and new funding, Doctor Bautista continues to be regarded as one of the brightest new researchers at the University.

Heidi B. Friedman English, Ph.D., Assistant Professor of Epidemiology, Department of Preventive Medicine and Biometrics, led an international team of health scientists and administrators in competing for, and receiving, a National Institutes of Health (NIH) grant to develop a medical research ethics curriculum in Peru and the United States. The three-year, $500,000 NIH grant will establish a bi-lingual, multi-cultural training program in research ethics for Ministry of Health personnel in charge of Peru's health research programs and facilitate an enhanced research ethics review capacity throughout the country. The grant team includes faculty and staff from USU, the Walter Reed Army Medical Center, the Pan American Health Organization's Regional Program on Bioethics, and the Peruvian Ministry of Health. Faculty of San Marcos University and the Cayetano University of Lima, both long-term research collaborators with USU School of Medicine Dean Larry W. Laughlin, will also participate in the project.

Deborah C. Girasek, MPH, Ph.D., Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics, in conjunction with teaching her Health Promotion Course, oversaw a needs assessment/service project at the request of professionals at the National Naval Medical Center who sought to improve their Headache Self-Care Course. Doctor Girasek was also invited to attend a meeting of experts who had been asked to consult on the National Center for Child Health and Development (NICHD's) ground-breaking study, *Behavioral and Environmental Risk Factors for Childhood Drowning*. In addition, Doctor Girasek provided input to the TRICARE Management Activities Office in support of a survey instrument being developed for retirees. Her research, published in Pediatrics, found that child safety seat instructions are written at the 10th grade reading level on average. This is problematic because 46 percent of adults in the United States read at, or below, the 8th grade level, according to the United States Department of Education. Motor vehicle crashes are the leading cause of death for children in America and prior studies have shown that child safety seats are incorrectly installed at least 80 percent of the time.

Grant D. Huang, Ph.D., MPH, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics, and Director, Occupational Ergonomics Program, was involved in the planning, designing, training, and management of the integrated case management component of the *DoD Work Safety Demonstration Project*, a Congressionally mandated project. In addition, Doctor Huang is part of an advisory panel for the *DoD Workers Compensation Best Practices Initiative*, a DoD-wide effort to address significant problems with the DoD Workers' Compensation Program in relation to worker injury and workplace safety. Also, Doctor Huang received a Pilot Project Research Training Award from the Johns Hopkins National Institute for Occupational Safety and Health Education and Research Center; his research will focus on predictors of clinic visits for musculoskeletal-related injuries/illnesses in the United States Marine Corps. He was a primary and co-author on two publications on work-related musculoskeletal disorders in peer-reviewed journals, one book chapter; and, he provided ten presentations at national or international scientific conferences during 2002.

CAPT Gerald Quinnan, M.D., USPHS, Professor and Chair, USU SOM Department of Preventive Medicine and Biometrics, was highlighted in the Health Affairs Weekly Activities Report upon his selection as Chair of the Department of Preventive Medicine and Biometrics (PMB) during the week of October 14, 2002. Doctor Quinnan is an internist/infectious disease specialist who had a distinguished career at the Food and Drug Administration (FDA), which included senior leadership positions, before his arrival at USU in 1994. His USU career began in PMB, where he has established a public health vaccine research program.

CAPT Richard J. Thomas, MC, USN, Director, USU National Capital Consortium Occupational and Environmental Medicine Residency, was elected President of the Virginia College of Occupational and Environmental Medicine (VCOEM) for a two-year term. The American College is composed of 31 Occupational and Environmental Medicine component societies (including VCOEM) located in the United States, Canada, and Mexico; the physician members hold scientific meetings and network on a regular basis. VCOEM has 125 members and represents the professional development of Occupational Medicine physicians for the Medical Society of Virginia. CAPT Thomas was also elected Chairperson of the Military Occupational Medicine Special Interest Group, American College of Occupational and Environmental Medicine (ACOEM) for a two-year term; the ACOEM represents more than 6,000 physicians specializing in the field of Occupational and Environmental Medicine. The Military Occupational Medicine Special Interest Group provides educational forums for military and civilian members to learn more about advances in the field of military occupational medicine.

CAPT David H. Trump, MC, USN, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics, continues his research into the health effects of military deployments. Post-deployment medical syndromes are not new to the military experience, but recent experiences following Desert Storm/Desert Shield have once again highlighted the importance of this field of study. With six new articles published during 2002, CAPT Trump continues to provide significant findings in this area of concern.

Department Activities.

The Division of Aerospace Medicine has been providing course work in the area of applied Aviation Physiology for the past three years as a specialty track in the Master of Public Health Program offered by the Department of Preventive Medicine and Biometrics. This track consists of five courses: Aviation Operational Physiology I and II; Aviation Human Factors; Aviation Exercise Physiology; and, Special Topics in Aviation Physiology. This course of study prepares students for a career in the military as an Aviation Physiologist. Since its beginning in 1999, six students have completed the program and three additional students have audited the course. The program has expanded with each year; a flight familiarization aspect was recently added through a memorandum of understanding with NAS Pax River.

The First Canadian Graduate of the USU National Capital Consortium Occupational and Environmental Medicine Residency Program. The Canadian Forces received the first Canadian Physician trained in the USU/National Capital Consortium Occupational and Environmental Medicine Residency Program in June of 2003. **Lieutenant Ian Torrie** joined the residency program in July of 2001, after his undergraduate years at the University of New Brunswick, Medical School at the University of Newfound and Family Practice Residency at the University of British Columbia. He has extensive operational experience in a variety of assignments with the Canadian Forces including a deployment with NATO Forces in Bosnia. The USU/NCC two-year residency program combines academic training in a Master of Public Health Degree and a series of clinical, field, and administrative rotations of one to two months each.

Donald R. Roberts, Ph.D., Professor, PMB Division of Tropical Public Health; **Richard G. Andre, Ph.D., Professor, PMB Division of Tropical Public Health**; and, **Lieutenant Colonel Leon Robert, MS, USA, Associate Professor, PMB Division of Tropical Public Health**, undertook an investigation of a malaria outbreak in Northern Virginia on behalf of Montgomery County, Maryland. Through established agreements, this activity represented a major undertaking for the Division of Tropical Public Health during the months of October and November, 2002. The University received considerable attention in the press and in local government as a result. Doctor Roberts presented the results of that outbreak investigation to the Council of Governments for the National Capital Region. In addition, Doctor Leon Robert coordinated a meeting that included local governments, the CDC, and USU to review the outbreak. Doctor Roberts made a formal presentation at the meeting; he also published a letter in the OP-ED section of the Washington Post on the merits of spraying insecticides for disease control; and, he was an invited contributor to a book being published by the Institute of Medicine on pathogen resistance to drugs and vector resistance to insecticides.

(*See Pages 170, 222-240, 321-323, and 325-326 in the 2002 Edition of the USU Journal for additional information on the Department of Preventive Medicine and Biometrics.*)

Psychiatry - School of Medicine.

Departmental Activities.

In conjunction with the USU National Capital Area Medical Simulation Center (SIMCEN) faculty, **Colonel Molly J. Hall, USAF, MC, Associate Professor, USU SOM Department of Psychiatry**; **Lieutenant Commander Lisa J. McCurry, MC, USN, Assistant Professor, USU SOM Department of Psychiatry**; and, **Doctor Tim Lacy** conducted and presented pilot work in the use of simulated patients to teach psychiatry. They discussed their preliminary findings at the Annual Meeting of the American Psychiatric Association in Philadelphia, Pennsylvania. **Technical Sergeant Keira Jones, USAF,** aided this project through data collection and data entry.

Consistent with the Department of Defense's requirement to provide behavioral health expertise for mass casualty responses, population oriented behavioral health programs and behavioral health epidemiology, the Department of Psychiatry developed, and the United States Army approved, ***a new two-year Disaster/Preventive Psychiatry Fellowship sponsored by the National Capital Consortium***. The program matriculated its first Fellow in the Summer of 2003. In addition to applying through the established Graduate Medical Education route, candidates must also apply to the School of Medicine Graduate Education Programs and be accepted by the USU Master of Public Health Program for the first year. The second year of the Fellowship is spent with the Department of Psychiatry's Center for the Study of Traumatic Stress (CSTS) and includes didactics, research, and rotations at other institutions.

Emmanuel G. Cassimatis, M.D., Professor of Psychiatry, Associate Dean for Clinical Affairs, was elected to the Executive Committee of the Accreditation Council for Graduate Medical Education (ACGME). During 2002, Doctor Cassimatis was also the Chair-elect of the American Medical Association (AMA) Council on Medical Education and the Immediate Past Chair of the AMA Specialty and Service Society (the caucus of all of the Specialties and Services represented in the AMA House of Delegates).

Doctor Cassimates also presented the keynote address, Terrorism our World and Our Way of Life, during the 2002 annual meeting of the American Academy of Psychoanalysis (AAPsal) in Philadelphia, Pennsylvania; he was also selected to co-chair the next AAPsal annual meeting to be held in San Francisco, California, during May of 2003.

CAPT Thomas Grieger, MC, USN, Associate Professor, USU SOM Department of Psychiatry, served as a senior faculty member during a joint service humanitarian mission to provide mental health education and consultation to the Republic of South Africa Defense Forces; and, he spoke at several national meetings regarding the principles of the psychiatric response to disaster and terrorism and Navy Medicine's response to the September 11, 2001 attack on the Pentagon. ***CAPT Grieger continues to serve as the Residency Director for the National Capital Consortium Psychiatry Program.*** With fifty-six positions, it is the largest graduate medical education program in the Department of Defense. Rotation sites for residents include the Walter Reed Army Medical Center, the National Naval Medical Center, the Malcolm Grow Air Force Medical Center, and the Northern Virginia Mental Health Institute.

Edmund G. Howe, III, M.D., J.D., Professor, USU SOM Department of Psychiatry, continues to serve as the Editor-in-Chief of the highly regarded Journal of Clinical Ethics.

E. Fuller Torrey, M.D., Co-Director of the Stanley Laboratory of Brain Research and Professor, USU SOM Department of Psychiatry, was interviewed by *Nightline* and highlighted in the Health Affairs Weekly Activities Report during March of 2002. *Nightline* visited the Stanley Brain Research Institute to shoot *"B-Roll"* which served as a background for an interview segment with Doctor Torrey. Doctor Torrey is a world-recognized expert on schizophrenia, an illness that received renewed interest due to the hit movie, *A Beautiful Mind.* During 2002, the Stanley Brain Research Laboratory received an additional 68 donor brains, bringing the total to 507; the laboratory shipped a total of 14,785 brain sections and blocks to research laboratories around the world, thus enabling research in schizophrenia and other illnesses. Doctor Torrey received the William C. Porter Lecture Award at the annual meeting of the Association of Military Surgeons of the United States (AMSUS) and the Irving Blumberg Human Rights Award from the World Association of Psychosocial Rehabilition. In addition, Doctor Torrey was profiled on *60 Minutes*, *American Medical News* and *Stanford Magazine*. He also co-authored the book, Surviving Manic Depression: A Manual on Bipolar Disorder for Patients, Families and Providers (Basic Books, 2002).

Robert J. Ursano, M.D., Professor and Chair, USU SOM Department of Psychiatry, and an internationally recognized expert on Post Traumatic Stress Disorder (PTSD), was asked to serve on the planning committee for the annual Rosalynn Carter Symposium on Mental Health Policy. The 2002 theme was *Status Report - Meeting the Mental Health Needs of the Country in the Wake of September 11th.* Also highlighted in the Health Affairs Weekly Activities Report during the week of October 14, 2002, was an invitation to Doctor Ursano from the National Academy of Sciences (NAS) to be the keynote speaker at a NAS workshop on the psychological consequences of terrorism and systems for response. Doctor Ursano is a member of the Institute of Medicine, National Committee on Responding to the Psychological Consequences of Terrorism. In December of 2002, Doctor Ursano was notified that he had been elected to the Academy of Medicine, Washington, D.C.; and, he was also asked to speak in March of 2003 by the American Society for Industrial Security, the world's largest and most prestigious association of

security professionals. The Society recognized Doctor Ursano as "a world renowned subject matter expert on the psychological consequences of a terrorist attack." In addition, Doctor Ursano continues to serve as Editor of the journal, Psychiatry: Interpersonal and Biological Processes, which was founded by Harry Stack Sullivan in 1938.

(*See pages 47, 116, 117, and 214-221 in the 2002 Edition of the USU Journal for additional information on the Department of Psychiatry.*)

Radiology and Radiological Sciences - School of Medicine.

Background.

In October of 2002, the Board of Regents approved the request to ***change the name of the Department of Radiology and Nuclear Medicine to the Department of Radiology and Radiological Sciences***. The name change was requested by the faculty of the Department to better reflect their diverse interests, talents, and research efforts in the Radiological Sciences.

Lorraine G. Shapeero, M.D., Associate Professor, USU SOM Department of Radiology and Radiological Sciences, was an invited speaker at the International Skeletal Society in Geneva, Switzerland, where she discussed her research on *Dynamic MRI and Total Body MRI for evaluating musculoskeletal metastases and recurrences and their response to treatment.* This past year, Doctor Shapeero served as Secretary of the Musculoskeletal Study Group of the International Society of Magnetic Resonance in Medicine. In addition, Doctor Shapeero was re-elected to the Board of Directors of the Association of University Radiologists; and, she served on the Executive Committee of the Association of Medical Student Educators in Radiology.

(*See pages 92, 93, 94, 171, and 208 in the 2002 Edition of the USU Journal for additional information on the Department of Radiology and Radiological Sciences.*)

Surgery - School of Medicine.

Background.

Undoubtedly, the highlight in the Year 2002 for the Chairman and Faculty was the 25th Anniversary Celebration on October 11-12, 2002. Beginning in 1977, Professor Norman M. Rich, M.D., established a non-traditional Department of Surgery at USU. During times of resource constraints and repeated threats of closure for the University and the School of Medicine, he attracted faculty, developed a military medical surgical curriculum, and began a fledgling research program. For the past 25 years, the mission of the USU Department of Surgery has been to support USU as the Nation's Federal Health

Science University, committed to excellence in medicine and public health during peace and war. This includes providing the Nation with surgeons dedicated to career-service in the Department of Defense and the United States Public Health Service and also scientists who serve the common good. The efforts and accomplishments of its faculty have made the USU SOM Department of Surgery nationally and internationally recognized.

One of Doctor Rich's successful innovative ideas was to start a bi-monthly Distinguished Visiting Professor Program, which not only benefitted students, but introduced nationally and internationally known surgeons to the school and to the outstanding student body of USU. A second unique effort was to establish the USU Surgical Associates, which served as a model for the founding of the Henry M. Jackson Foundation for the support of medical education and research.

All of this was accomplished through the dedicated efforts of **Norman M. Rich, M.D., Professor and Chair, USU SOM Department of Surgery; Charles Rob, M.D., Professor Emeritus, USU SOM Department of Surgery; Harris Shumacker, M.D., Professor Emeritus, USU SOM Department of Surgery; Leonel Villavicencio, M.D., Professor, USU SOM Department of Surgery; William R. Drucker, M.D., Professor, USU SOM Department of Surgery; Carl Hughes, M.D., Professor Emeritus, USU SOM Department of Surgery;** and, **David C. Wherry, M.D., Professor, USU, SOM Department of Surgery,** all of whom joined the faculty early on following the Department's establishment in 1977. Following their retirement from active duty, Senior Surgeons **John E. Hutton, Jr., M.D., BG, USA (Retired), Professor, USU SOM Department of Surgery; Frederick Plugge, M.D., Professor Emeritus, USU SOM Department of Surgery,** and **Donald Sturtz, RADM, USN (Retired), Professor, USU SOM Department of Surgery,** joined the Department.

A series of outstanding young surgeons, representing all of the Uniformed Services and surgical specialties, have also made their own contributions to the Department's well-defined Strategic Plan for ***Learning to Care for Those in Harm's Way.*** Notable among this group are **COL David Burris, Associate Professor and Interim Chair, USU SOM Class of 1982**; and, **COL Christoph Kaufmann, Associate Professor, USU SOM Class of 1982.**

The distinguished list of nationally recognized surgical leaders who lent their wisdom, counsel, and insight to the Department reads like a *Who's Who of Surgery*; included are names such as **Michael DeBakey, Francis Moore, David Sabiston, John Connally, Ben Eiseman, Oliver Beahrs, George Sheldon, John Mannick, John Potter, C. Everett Koop**, and many more. International supporters have included **Doctor Daniel Rignault of France; Doctor James Ryan of the United Kingdom**; and, other renowned surgeons from every major nation in the world.

Since the Department's establishment, the Chairs of Surgery at the Malcolm Grow Medical Center, the Walter Reed Army Medical Center, the Portsmouth Naval Hospital, the San Diego Naval Hospital, and others and their staffs have enthusiastically accepted and taught the third and fourth-year Medical Students the art and science of surgery.

Current Departmental Activities.

The scientific and historical talks of October 11-12, 2002, documented the growth of robust teaching, research, and academic accomplishments during the Department's first 25 years. During the

meeting, **USU President, James A. Zimble, M.D., VADM, USN (Retired),** announced that henceforth, the Department would be known as the *Norman M.Rich Department of Surgery*. More recently, **Stanley L. Minken, M.D., Professor, USU SOM Department of Surgery,** was named Head of the Division of Academic Surgery; and, new programs and policies are being developed to standardize the surgical subject matter being taught at the training/teaching hospitals. A mentoring program has also been developed to attract and train the surgical specialists needed by the Military Health System. **Doctor Hasan Alam** received a grant from the National Institutes of Health (NIH) for the *Forward Treatment of Hemorrhagic Shock*. Doctor Alam is the first author on six publications in peer-reviewed journals overseeing $6 million in grants primarily related to hemorrhagic shock and resuscitation. All of his research is directly related to combat casualties and methods to improve survival in cases of acute blood loss. Under the leadership of **Interim Chairman COL David Burris, MC, USA,** it is anticipated that the next 25 years will be as exciting and productive as the first 25.

International Exchange Program.

Major M.C. Humberto Carrasco Vargas, Instructor in Neurology, USU SOM, International Scholar, Walter Reed Army Medical Center, was an excellent example of a successful international exchange program between USU and the University of the Army and Air Force of Mexico. As the **Director of the International Relations Committee of the USU SOM Department of Surgery, J. Leonel Villavicencio, M.D., FACS,** was able to report that Major Vargas, on March 3, 2002, presented the American Academy of Neurology Residency in-Service Training Examination and obtained the highest scores in the Neurology Department at the Walter Reed Army Medical Center; he finished the examination in the 95th percentile among all of the National examinees (more than 1,000 in the United States).

Collaboration with the United States Military Cancer Institute.

The United States Military Cancer Institute (USMCI) is a TriService entity with a mission to coordinate cancer patient care, education and research across Services and Specialties. There are over 70 members in the USMCI who are organized into a number of programs. These programs include: prostate cancer, which is conducted by the Center for Prostate Disease Research (CPDR); breast cancer research, conducted by the Clinical Breast Care Project; and, research in the Immunology Program, which is on-going in the Cancer Vaccine Development Laboratory. Other programs focus on soft-tissue sarcoma and gynecologic oncology. The members of these teams are basic and clinical scientists from a number of specialty areas. A significant number of the key leaders in the USMCI are also members of the Department of Surgery at USU. For example, **John F. Potter, M.D., Professor of Surgery, is the Director of the USMCI and a member of the USU SOM Department of Surgery**. **Colonel David Burris, MC, USA, Associate Professor and Interim Chair, USU SOM Department of Surgery,** is an active participant with the USMCI. And, **Colonels David McLeod and David Jones, the Co-Directors of the Center for Prostate Disease Research (CPDR), are also Professors in the USU SOM Department of Surgery**. In addition, **Colonel Craig Shriver, Director of the Clinical Breast Care Project (CBCP)** and **Lieutenant Colonel George Peoples, Director of the Immunology Program, are members of the USU SOM Department of Surgery**. Other members of the USMCI who also **belong to the USU SOM Department of Surgery are: Commander Ralph Jones; Colonel Michael Marohn, USAF, MC, Associate Professor of Surgery; Colonel (Retired) David Wherry, M.D., Professor of**

Surgery; Colonel John Casler; CAPT Peter Soballe, MC, USN, Assistant Professor of Surgery; and, Major Alexander Stojadinovic. Thus, the Department of Surgery plays a significant collaborative role with the USMCI.

(*See pages 98, 104,105, 160, 166, and 167 in the 2002 Edition of the USU Journal for additional information on the Department of Surgery.*)

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The Graduate School of Nursing.

Faye Glenn Abdellah, Ed.D., Sc.D., RN, FAAN, Professor and Founding Dean Emerita, was inducted into the Douglass Society of Douglass College on April 10, 2002. The Society is the college's highest honor for its most distinguished graduates. Douglas College, the women's college for Rutgers University located in New Brunswick, New Jersey, recognized Doctor Abdellah for her pioneering work in nursing research, long-term care policies, home health and hospice services, as well as for her leadership as the Founding Dean of the USU Graduate School of Nursing.

Lieutenant Colonel Paul Austin, Ph.D., CRNA, USAF, NC, Assistant Professor, USU GSN, was named as the Chief Consultant to the United States Air Force Surgeon General for Nurse Anesthesia during August of 2002.

CAPT Cynthia Cappello, MS, CRNA, NC, USN, Assistant Professor, USU GSN, was the invited Keynote Speaker for the 2002 Graduation Ceremony, Navy Nurse Corps Nurse Anesthesia Program.

Christine Engstrom, MS, APRN, BC, AOCN, Assistant Professor, VA/DoD Distance Learning Program for Adult Nurse Practitioners, is both a Nurse Practitioner and a Clinical Nurse Specialist in Primary Care and Oncology. Her areas of interest are primarily in prostate cancer treatments and the quality of life of cancer patients. Her most recent publications include: *Clinical and Cost Outcomes Using an Algorithm for the Management of Chemotherapy Induced Nausea and Vomiting*, Measuring Patient Outcomes: A Primer, (2000) Chapter 14, In Eds. Nolan & Mock, Sage Publications, Inc., pages 197-206; and, *Docetaxel Followed by Hormone Therapy after Failure of Definitive Treatments for Clinically Localized/Locally Advanced Prostate Cancer: Preliminary Results*, Seminars in Oncology, (2001) (28), 4, pages 22-31. She maintains a clinical practice with prostate cancer patients.

Lieutenant Colonel Karen Gausman, MSN, AN, USA, Assistant Professor and Commandant, USU GSN, is Board Certified by the American Nurses Credentialing Center in Nursing Administration, Advanced. LTC Gausman was honored with the Order of Military Medical Merit in 2002, selected for promotion to Colonel (0-6), and was designated as eligible to apply for the United States Army War College Distance Education Program. In addition to her military accomplishments, she completed the

Marine Corps Marathon during 2002.

Cynthia Grandjean, Ph.D., CRNP, Assistant Professor, USU GSN, focuses her research on health issues of particular relevance to geriatric patients. She just completed her doctoral studies at the University of Maryland, College Park, investigating the impact of religious coping on the psychological well-being of older individuals. One of her main research interests is on the importance of spirituality with regard to health promotion. The Army has developed a conceptual model for soldier and family wellness, which includes spirituality as a key element. Doctor Grandjean was a Co-Investigator on a research project conducted at The Catholic University of America, investigating spiritual well-being and the quality of life in persons with chronic illnesses. Doctor Grandjean also has an interest in the impact of sleep disturbances on the health of older individuals. This is of particular importance to the Military Health System following the institution of TRICARE for Life. More than 50 million people suffer from one of 80 sleep disorders and two-thirds of all Americans complain of sleep deprivation. Sleep disturbances afflict more than 50 percent of adults over the age of 65 who live at home and approximately two-thirds of those who live in institutions. The topic of assessment and management of sleep disorders in geriatrics was addressed in an article published in The Nurse Practitioner by Doctor Grandjean and Ms. Susanne Gibbons.

Lieutenant Colonel Marjorie Graziano, MSN, CRNP, USAF, NC (Retired), Assistant Professor, USU GSN, retired in September of 2002 and smoothly transitioned into the civilian role as a full time faculty member. In addition to her teaching responsibilities, she coordinates the Post Masters student experiences in the GSN.

Debra G. Howes, RN, MSN, ANP, Assistant Professor, VA/DoD Distance Learning Program for Adult Nurse Practitioners, joined the GSN faculty in 2002. She was in the first class to graduate from the VA/DoD Distance Learning Program for Adult Nurse Practitioners at USU. She graduated from Catholic University with a Master Degree in Nursing as a Cardiovascular Clinical Specialist. In addition to her faculty position at USU, she maintains her clinical practice at the Baltimore Veterans Administration Medical Center as a Cardiology Nurse Practitioner in the Cardiology, Pacemaker and ICD Clinics. Her interests include cardiovascular disease and women, women with depression and cardiovascular disease, quality of life of spouses with ICDs and lipid management.

Lieutenant Colonel Douglas G. Jackson, USA, MN, MS Health Administration, CRNP, Assistant Professor, USU GSN, joined the GSN faculty in February of 2002, transitioning to USU from a senior fellowship position in the office of United States Senator Daniel K. Inouye of Hawaii. LTC Jackson brought with him an understanding of the political forces influencing health care and has offered the GSN invaluable insights into the future of Nurse Practitioners and Federal Healthcare Systems. He has directed his efforts for improvements in curriculum and clinical experiences for the GSN during this past year. He played a critical role in developing a curriculum structure that will serve to provide guidance for faculty to plan and organize their programs of instruction and research. He was also invited to review a new publication on Disaster Nursing and Emergency Preparedness by the Springer Publishing Company.

Major (Promotable) Reynold Mosier, MSN, CRNP, AN, USA, Assistant Professor, USU GSN, arrived in June of 2002. Major Mosier has over 12 years of Nurse Practitioner experience, having practiced both as an Adult Nurse Practitioner and as a Family Nurse Practitioner (FNP). Major Mosier co-coordinated the foundational *Primary Care of the Adult Course* and has been actively engaged in restructuring FNP student experiences in operational environments. Through his collaborative efforts with the USU SOM Department of Military and Emergency Medicine during 2002, for the first time, GSN students joined the USU SOM students and completed the *Military Contingency Medicine Course*, to include attending *Bushmaster*, a week-long medical training field exercise unique to USU graduates.

Angela C. Martin, MSN, FNP, CS-P, Assistant Professor and Associate Director of the VA/DoD Distance Learning Program for Adult Nurse Practitioners, joined the USU faculty in 1998. Her area of expertise includes past experience as the Director of a Family Nurse Practitioner Program and the Director of a state-wide distance-learning program for Family Nurse Practitioners. Her areas of interest include: integrating mental health prevention programs into primary care settings and understanding the role of parenting and children's mental health. This past year (2002), Ms. Martin published an article, *It's Never Too Late to Start: Seven Steps to Promote Patients' Health*, in Topics in Advanced Nursing Practice, a peer-reviewed electronic journal. In addition, she authored a book chapter, *Psychosocial Health Concerns*, in E.Q. Youngkin & M.S. Davis (Eds.), Women's Health: A Primary Care Clinical Guide, New Jersey, Prentice Hall - due to be published in 2003. She is prepared clinically as a Psychiatric Clinical Nurse Specialist and as a Family Nurse Practitioner; her background in primary care assists in her understanding the interaction between biology and psychosocial issues in patient care. She has been accepted in a Ph.D. program at the Hattie R. Rosenthal College of Psychoanalysis and plans to complete her degree over the next several years. She is also an Advanced Candidate at the Washington Psychoanalytic Institute in Washington, D.C.

Diane Padden, MSN, CRNP, Assistant Professor, USU GSN, continues to focus her studies on the use of standardized patients in educating advanced practice nurses in collaboration with the National Capital Area Simulation Center. In April of 2002, Ms. Padden, along with **Diane Seibert, Ph.D.**, and **Graceanne Adamo, MA, CMA,** presented a workshop at the 28th Annual Meeting of the National Organization for Nurse Practitioners entitled, *Resolving Ambiguity in the Assessment of Clinical Skills*. Subsequently, they were invited to contribute to a monograph entitled, *Advancing New Paradigms in Nurse Practitioner Education*. An article entitled, *Using Standardized Patients to Resolve Ambiguity in Clinical Assessment Skills*, was accepted for publication in the monograph to be released in February of 2003. Ms. Padden will present a poster on *Comparing Methods for Clinical Evaluation of Advanced Practice Nursing Students* at the National Organization for Nurse Practitioner Faculties Annual Meeting in April of 2003 in Philadelphia, Pennsylvania. This year, Ms. Padden was a contributing author to a book entitled, Telephone Triage Protocols in Obstetrics and Gynecology.

Lieutenant Colonel Cheryl A. Reilly, MSN, CNOR, CNA, BC, USAF, NC, Assistant Professor, USU GSN, Perioperative Clinical Nurse Specialist Program, recently joined the GSN faculty in November of 2002. Prior to joining the USU nursing faculty, LtCol Reilly taught Nursing Service Management at the 882nd Training Group, Sheppard Air Force Base, Texas. LtCol Reilly mentored and taught over 100 Air Force Nurse Corps officers leadership and management skills necessary for success in their first supervisory positions. In addition to teaching leadership and management skills,

she taught over 200 students basic computer skills and authored a computer guide for Jet Form's Form Flow and Microsoft Word, Excel, and PowerPoint. LtCol Reilly also brings with her over 21 years of perioperative nursing experience. Along with LTC (promotable) Wanzer, LtCol Reilly is actively involved in developing the new Perioperative Clinical Nurse Specialist Program, which will provide unique and exciting experiences for the GSN students.

Lieutenant Colonel Richard Ricciardi, MSN, AN, USA, was reassigned from the GSN in June of 2002, to the Kimbrough Ambulatory Care Center at Fort Meade, Maryland. He was appointed to serve as Director of Outpatient Clinical Services. LTC Ricciardi was recently selected for promotion to Colonel (0-6) and will be returning to USU in the Fall of 2003 as a Ph.D. candidate in the GSN.

Donald D. Rigamonti, Ph.D., Associate Professor, USU GSN, was one of three finalists for the American Association of Nurse Anesthetists' Golden Apple Award for Education, presented at the Assembly of School Faculty Meeting during the Spring of 2002.

Colonel Sarah Wrenn, Ph.D., CRNP, USAF, NC, Assistant Professor, USU GSN, recently joined the GSN faculty in the Fall of 2002. Prior to her arrival, Colonel Wrenn served as a pediatric nurse practitioner and nurse researcher at the Wilford Hall Medical Center, where her research was directed toward children with chronic diseases. Colonel Wrenn was the Study Coordinator and Associate Investigator on a multi-site study entitled, *An Open Label Randomized Trial with Tobramycin Solution for Inhalation (TOBI) in Cystic Fibrosis Patients with Mild Lung Disease*, sponsored by the CHIRON Corporation. And, she was the Co-Principal Investigator on an epidemiology study on children with Type 2 Diabetes entitled, *Prevalence of Type 2 Diabetes Mellitus in At- Risk Children and Adolescents in a Military Population*. Colonel Wrenn served as a Foundation Board Member of the National Association of Pediatric Nurse Associates and Practitioners (NAPNAP) and as a member of the Research Committee, responsible for reviewing NAPNAP-sponsored grants.

RESEARCH AREAS AND INTERESTS

Alison O'Brien, Ph.D.
Professor and Chair / Department of Microbiology and Immunology

I. Description of projects, how areas impact public health, military medical relevance, key words

A. Overview: Dr. O'Brien's major interest is in the pathogenesis of bacterial infections. Specifically, her laboratory investigates the virulence mechanisms of *E. coli* O157:H7 and other Shiga toxin-producing *E. coli* and the contribution of the Rho-modifying Cytotoxic Necrotizing Factor (CNF) to urinary tract infections and prostatitis caused by uropathogenic *E. coli*. Her most recently awarded a grant for the development of immunoprotective monoclonal antibodies (MAbs) against *Bacillus anthracis* spores.

B. Pathogenicity of Shiga toxin-producing *E. coli*: Shiga toxin-producing *E. coli* (STEC) cause food- and water-borne outbreaks and sporadic cases of intestinal disease manifest as diarrhea, and/or bloody diarrhea (hemorrhagic colitis, HC). About 5-10% of children infected with STEC can subsequently develop a life-threatening kidney dysfunction called the hemolytic uremic syndrome (HUS). Two important virulence factors associated with many STEC strains are the Shiga toxins (Stxs) and the adhesin, intimin. The long-term objectives of this project are to define the pathogenic mechanisms by which STEC cause disease and to develop strategies for the prevention and treatment of STEC-mediated hemolytic uremic syndrome (HUS). *E. coli* O157:H7 has the potential to simultaneously infect large numbers of people who ingest as few as 100 organisms in common source food- or water-borne outbreaks (example, the July 1996 outbreak in Japan that affected ~10,000 people). In addition, the rate of secondary transmission of *E. coli* O157:H7 is high. Therefore, large-scale infection of soldiers with *E. coli* O157:H7 or another Shiga-toxin producing *E. coli* isolate would likely result in an incapacitating illness among troops. Furthermore, Shiga toxin and other Stx family members are considered potential biological warfare/terrorist threats as indicated by the CDC-mandated restrictions on shipment of Stxs and Stx-expressing clones

C. Cytotoxic necrotizing factor type 1: (CNF1) is a member of a family of bacterial toxins that target the Rho family of small GTP-binding proteins in mammalian cells. CNF1 deamidates a single glutamine residue in RhoA, Cdc42, and Rac1, but not in Ras. This deamidation results in the constitutive activation of these GTPases, which can trigger actin stress fiber formation, multinucleation, or cell death, depending on the target cell and dose of toxin. CNF1 is frequently produced by *Escherichia coli* strains that cause urinary tract infections (UTIs) such as cystitis, prostatitis, and pyelonephritis. In support of this epidemiological connection, Dr. O'Brien's group recently showed that CNF1 not only induces apoptosis in human uroepithelial cells but also provides a growth advantage to uropathogenic *E. coli* (UPEC) in a mouse model of ascending UTI when compared to CNF1-negative isogenic mutants. Additionally, Dr. O'Brien and colleagues found that CNF1 enhances the degree of inflammation and resulting tissue damage in bladders of infected mice and in prostates of rats challenged intraurethrally with CNF1-producing UPEC and that CNF1-producing UPEC survive better than CNF1-negative isogenic mutants in the presence of human polymorphonuclear leukocytes (PMNs). Taken together, these findings led to the following hypothesis. CNF1 enhances the pathogenicity of UPEC by: i.) promoting uroepithelial cell shedding; ii.) evoking a large influx of PMNs while providing toxin-producing *E. coli* protection against PMN-mediated killing, and; iii.) facilitating deeper invasion of the bladder or prostate by the infecting strain. The long-term objectives of this project are to test this theory. Urinary tract

infections (UTIs), of which more than 80% are caused by *E. coli*, are among the most common types of bacterial disease in adults. Women are much more likely to have UTIs than are men, a gender disparity that is believed to result from the shorter female urethra. Indeed, as many as 20% of all women have at least one episode of a UTI in their lifetime, and recurrent UTIs affect approximately 1 in 10 women in the United States. Thus, UTIs, which include infections of the bladder (cystitis) and kidney (pyelonephritis), are a significant source of morbidity among women in the military.

D. Immunoprotective monoclonals to *B. anthracis* spores: *Bacillus anthracis* spores were recently used as agents of bioterrorism. Among the many negative consequences of these deliberate instances of microbiological sabotage was one positive outcome: not all of the 11 victims with the typically lethal inhalational form of anthrax died. Indeed, the aggressive use of quinolones and other antibiotics coupled with the early recognition of disease resulted in the survival of 6 of the 11 patients. Unfortunately, hundreds of other individuals potentially exposed to the anthrax spores required an extended course of antibiotic therapy. A remaining health concern is that the people who received antibiotic prophylaxis may still present with inhalational anthrax after conclusion of their therapy as dormant viable spores germinate. One way to increase the likelihood that patients with disease will survive and that those exposed will have a higher probability of remaining healthy is to prevent the infectious dormant spores from germinating and subsequently transforming to vegetative cells. Recent evidence that antibodies against the protective antigen (PA; the shared B subunit for the two A subunit toxins of *B. anthracis,* edema factor and lethal factor) actually bind to the surface of spores and decrease the level of spore germination, taken with the fact that formaldehyde-inactivated spores can serve as a protective vaccine against anthrax in guinea pigs, led us to the following hypothesis. Monoclonal antibodies (MAbs) against PA and/or other spore-surface-expressed antigens can block spore germination or render spores more susceptible to phagocytosis and ultimately killing by macrophages. Based on this theory, our goals are to develop immunoprotective MAbs against *B. anthracis* spores that confer protection against anthrax in animal models. Ultimately, we intend to humanize those MAbs for use as short-term preventative agents or therapeutic modalities.

II. Publications (and manuscripts in press) within last 24 months

Peer-reviewed primary publications

1. Kokai-Kun, J.F., A.R. Melton-Celsa, and A.D. O'Brien. 2000. Elastase in intestinal mucus enhances the cytotoxicity of Shiga toxin type 2d. J. Biol. Chem. 275: 3713-3721.

2. Dean-Nystrom, E.A., J.F.L. Pohlenz, H.W. Moon, and A.D. O'Brien. 2000. *Escherichia coli* O157:H7 causes more severe systemic disease in suckling piglets than in colostrum-deprived neonatal piglets. Infect. Immun. 68: 2356-2358.

3. Mills, M., K. C. Meysick, and A. D. O'Brien. 2000. Cytotoxic Necrotizing Factor Type 1 of Uropathogenic *Escherichia coli* Kills Cultured Human Uroepithelial 5637 Cells by an Apoptotic Mechanism. Infect. Immun. 68: 5869-5880.

4. Ikeda, J. S., C. K. Schmitt, S.C. Darnell, P. R. Watson, J. Bispham, T.S. Wallis, D. L. Weinstein, E. S. Metcalf, P. Adams, C. D. O'Connor, and A. D. O'Brien. 2001. Flagellar phase variation of *Salmonella enterica* ser. Typhimurium contributes to virulence in the

murine typhoid infection but does not influence *Salmonella*-induced enteropathogenesis. Infect. Immun. 69: 3021-3030.

5. Gewirtz, A.T., P.O. Simon, Jr., C.K. Schmitt, L.J. Taylor, C.H. Hagedorn, A.D. O'Brien., A.S. Neish, and J.L. Madara. 2001. Salmonella typhimurium translocates flagellin across intestinal epithelia, inducing a proinflammatory response. J. Clin. Invest. 107: 99-109.

6. Meysick, K. C., M. Mills and A. D. O'Brien. 2001. Epitope mapping of monoclonal antibodies capable of neutralizing Cytotoxic Necrotizing Factor Type 1 of uropathogenic *Escherichia coli*. Infect. Immun. 69: 2066-2074.

7. Rippere-Lampe, Karen E., Alison D. O'Brien, Richard Conran, and Hank A. Lockman. 2001. Mutation of the gene encoding Cytotoxic Necrotizing Factor type 1 (*cnf1*) attenuates the virulence of uropathogenic *E. coli*. Infect. Immun. 69: 3954-3964

8. Schmitt, C.K, J.S. Ikeda, S.C. Darnell, P.R. Watson, J. Bispham, T.S. Wallis, D.L. Weinstein, E.S. Metcalf, and A.D. O'Brien. 2001. Absence of all components of the flagella export and synthesis machinery differentially alters virulence of *Salmonella enterica* serovar Typhimurium in models of typhoid fever, survival in macrophages, tissue culture invasiveness, and calf enterocolitis. Infect. Immun. 69: 5619-5625

9. Rippere-Lampe, K.E., M.Lang, H. Ceri, M. Olson, H.A. Lockman, and A.D. O'Brien. 2001. Cytotoxic necrotizing factor type 1-positive*Escherichai coli* cause increased inflammation and tissue damage to the prostate in a rat prostatitis model. Infect. Immun. 69: 6515-6519

10. Melton-Celsa, A.R., J.F. Kokai-Kun, and A.D. O'Brien. 2002. Activation of Shiga-toxin type 2d (Stx2d) by elastase involves cleavage of C-terminal two amino acids of the Stx2d A_2 peptide in the context of the appropriate B pentamer. Mol. Micro. 43:207-215.

11. Woods, J.B., C.K. Schmitt, and A.D. O'Brien. 2002. Ferrets as a model system for renal disease secondary to intestinal infection with *Escherichia coli* O157:H7 and other Shiga-toxin producing *Escherichia coli*. J. Infect. Dis. 185: 550-554.

12. Sinclair, J.F., and A.D. O'Brien. 2002. Cell-surface localized nucleolin is a eucaryotic receptor for the adhesin intimin-γ of Enterohemorrhagic *Escherichia coli* O157:H7. J. Biol. Chem. 277:2876-2885.

13. Karpman, D., Z.D. Békássy, A. C Sjörgen, M. S. Dubois, M.A. Karmali, M. Mascarenhas, K.G. Jarvis, L.J. Gansheroff, A.D. O'Brien, G. S. Arbus, and J.B. Kaper. 2002. Antibodies to intimin and *E. coli* secreted proteins A and B in patients with EHEC infections. Pediatric Nephrology. 17:201-211.

14. Dean-Nystrom, E.A., L.J. Gansheroff, M. Mills, H.W. Moon, and A.D. O'Brien. 2002. Vaccination of pregnant dams with $intimin_{0157}$ protects suckling piglets from *Escherichia coli* O157:H7 infection. Infect. Immun.70: 2704-2707.

15. Teel, L.D., A.R. Melton-Celsa, C.K. Schmitt, and A.D. O'Brien. 2002. One of the two copies of the gene for the activatable Shiga toxin type 2d (Stx2d) in *Escherichia coli* O91:H21 strain B2F1 is associated with an inducible bacteriophage. 2002. Infection and Immunity 70: 4282-91.

16. Scott, M.E, A.R. Melton-Celsa, and A.D. O'Brien. Mutations in hns reduce adherence of Shiga-toxin-producing *E.coli* O91:H21 strain B2F1 to human colonic epithelial cells and increase production of hemolysin. 2003. Microbial Pathogenesis. In press.

17. Teel, L.D., B.R. Steinberg, N.E. Aronson, and A.D. O'Brien. Shiga toxin-producing *Escherichia coli*-associated kidney failure in a 40-year-old and late diagnosis by novel bacteriologic and toxin detection methods. 2003. Journal of Clinical Microbiology. Submitted.

Reviews and invited papers and chapters

18. Gansheroff, L.J., and **A.D. O'Brien**. 2000. *Escherichia coli* in beef cattle presented for slaughter in the U.S.: higher prevalence rates than previously estimated. Proc. Natl. Acad. Sci. 97:2959-2961.

19. Melton-Celsa, A.R., and **A.D. O'Brien**. 2000. Shiga toxins of *Shigella dysenteriae* and *Escherichia coli*. p. 385-406. *In* K. Aktories (ed.), Bacterial Protein Toxins Handbook of Experimental Pharmacology, Vol. 145. Springer-Verlag Berlin.

20. Melton-Celsa, A.R., and **A.D. O'Brien.** 2001. RNA N-glycosidases. In J. Barbieri, R. Rippuoli, B. Iglewski, and D. Burns (eds.), Bacterial Protein Toxins. In press, ASM, Washington, DC.

21. Melton-Celsa, A. and **A.D. O'Brien.** 2002. RNA N-glycosidases, pX-X.In J. Barbieri, R. Rappuoli, B. Iglewski, and D. Burns (eds.), Bacterial Protein Toxins. American Society for Microbiology Press , Washington D.C.

RESEARCH AREAS AND INTERESTS

Christopher C. Broder, Ph.D.
Associate Professor / Department of Microbiology and Immunology

I. Description of projects, how areas impact public health, military medical relevance, key words

A. Overview: The major focus of Dr. Broder's research is the structural and functional analyses on the interactions between enveloped viruses and their cellular receptors. Human immunodeficiency virus (HIV) and new emerging paramyxovirus agents are the two main areas of Dr. Broder's present research work. He, with Dr. Gerald Quinnan as the PI, received funding for a coveted program project grant from NIH, a first for this University.

B. HIV entry: The goals of his work are to identify the steps and requirements of viral envelope glycoprotein (Env)-mediated membrane fusion, the determinants of viral tropism, the discovery of new viral receptors, and the mechanism of Env-mediated fusion. A detailed understanding of these processes will lead to the discovery of new methods of intervention. Current work on HIV-1 includes the Env-mediated fusion mechanism and its interaction with CD4 and coreceptors. The HIV-1 Env serves two functions that are critical in the replication cycle of the virus: binding to host cells and mediating membrane fusion through what is believed to be receptor induced conformational alterations in its structure. In earlier work he identified two distinct cofactors (CXCR4/CCR5) for HIV-1 Env-mediated fusion and virus infection. These molecules are members of the chemokine receptor superfamily, and are now recognized as actual coreceptors for HIV-1 and they influence both the species and cell-type tropism of the virus. His laboratory is engaged in an extensive analysis of the roles these coreceptors play in the fusion process on the molecular level, and what role they may play in HIV-1 pathogenesis. In addition, his group is interested in the structure of these viral envelope glycoproteins with particular emphasis on the immunological characteristics of the native glycoproteins. His laboratory has carried out an extensive analysis of the antigenic structure of native oligomeric Env and use of oligomeric Env preparations as a vaccine immunogen, otherwise known as gp140. Ongoing research work includes the analysis of HIV-1 primary isolate-derived oligomeric gp140 preparations from a host of alternate HIV-1 clades, including a variety of genetically modified versions of the proteins with the goal of enhancing a neutralizing antibody response when used in small animals. In addition, in collaboration with other laboratories at USUHS they are pursuing novel prime-boost HIV-1 vaccination strategies, with particular HIV-1 isolate Env proteins, using Venezuelan Equine Encephalitis (VEE) replicons and soluble oligomeric gp140 immunogen preparations in small animals and non-human primates.

C. Hendra virus and Nipah viruses: The second area of work is the investigation Hendra virus and Nipah virus, which are newly emerging and highly lethal zoonotic agents. These studies are in collaboration with several scientists located at the Australian Animal Health Laboratory, Geelong, Australia. Both viruses are new members of the *Paramyxoviridae* and are now the prototypic members of a new Genus, Henipahvirus. They are related to the Morbilliviruses, of which Human Measles virus is a member, yet they are uniquely distinct from all other known Paramyxoviruses, both on the genomic molecular level as well as their biological, species tropism characteristics. Both viruses are classified as zoonotic BSL-4 agents. Hendra virus emerged in 1994, and was isolated from fatal cases of respiratory disease in horses and humans. Later in 1998-1999, an outbreak of severe encephalitis in people with close contact exposure to pigs in Malaysia and Singapore occurred. In all, more than 276 cases of encephalitis, including 106 deaths, had been

reported a near 40% fatality rate upon infection. Pigs appeared to be an amplifier of the Nipah virus, and these viruses can also be economically devastating: over 1.2 million pigs were slaughtered to stem the Nipah virus outbreak. They appear to infect through the respiratory system initially and are capable of causing viremia. Hendra and Nipah both have broad species tropism, which is unusual because most paramyxoviruses are species restricted and do not have other reservoirs in nature. The potential to be weaponized and used as biological warfare agents is clearly possible. They may be amplified in cell culture or embryonated chicken eggs, and could be used as a terror weapon targeting humans as well as livestock, the later which would serve as virus amplifiers. Recent evidence has also indicated that nosocomial transmissibility of Nipah virus from patients with encephalitis to healthcare workers is also possible. There are no existing antiviral therapies effective against these viruses, and the only therapies in existence to any viruses in the paramyxovirus family are live-attenuated vaccines. Dr. Broder's group has developed recombinant systems to study the attachment and membrane fusion-entry mechanisms of these viruses, and have developed novel reagents which may serve as potential vaccines as well as those that can specifically block virus infection and spread. He is also engaged in recombinant virus-like particle formation and assembly for reagent development and to understand the requirements of particle formation in these novel viral agents.

II. Publications (and manuscripts in press) within last 24 months

1. Lee, S., C.K. Lapham, H. Chen, L. King, J. Manischewitz, T. Romantseva, H. Mostowski, T.S. Stantchev, **C.C. Broder**, and H. Golding. Coreceptor Competition for Association with CD4 May Change the Susceptibility of Human Cells to Infection with T-tropic and M-tropic Isolates of HIV-1. J. Virol. 74:5016-5023, 2000.

2. Xiao, X., D. Norwood, Y-R. Feng, M. Moriuchi, H. Moriuchi, A. Jones-Trower, T.S. Stantchev, **C.C. Broder**, and D.S. Dimitrov. Inefficient Formation of a Complex between CXCR4, CD4 and gp120 in U937 Clones Resistant to X4 gp120-gp41-Mediated Fusion. Exp. Mol. Path. 68:139-146, 2000.

3. Chabot, D.J., H. Chen, D.S. Dimitrov, and **C.C. Broder**. N-linked Glycosylations in CXCR4 Masks Coreceptor Function for CCR5-Dependent Viruses. J. Virol. 74:4404-4413, 2000.

4. Xiao, X., A. Kinter, **C.C. Broder**, and D.S. Dimitrov. Interactions of CCR5 and CXCR4 with CD4 and gp120 in Human Blood Monocyte-Derived Dendritic Cells. Exp. Mol. Path. 68:133-138. 2000.

5. Stantchev, T.S. and **C.C. Broder**. Consistent and Significant Beta-chemokine Inhibition of HIV-1 Envelope-mediated Membrane Fusion in Primary Macrophages. J Infect Dis. 182:68-78. 2000.

6. Chabot, D.J. and **C.C. Broder**. Substitutions in a Homologous Region in the Extracellular Loop-2 of CXCR4 and CCR5 Alter Coreceptor Activities for HIV-1 Fusion and Entry. J. Biol. Chem. 275:23774-23782. 2000.

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8. Stantchev, T.S. and **C.C. Broder.** Human Immunodeficiency Virus Type-1 and Chemokines: Beyond Competition for Common Cellular Receptors. Cytokine and Growth Factor Reviews. 12:219-43. 2001.

9. Bossart, K.N., L.F. Wang, B.T. Eaton, and **C.C. Broder**. Functional Expression and Membrane Fusion Tropism of the Envelope Glycoproteins of Hendra Virus. Virology. 290:121-135. 2001.

10. Moulard, M., Phogat, S., Shu, Y., Labrijn, A.F., Xiao, X., Binley, J.M., Zhang, M.-Y., Sidorov, I.A., **Broder, C.C.**, Robinson, J., Parren, P., Burton, D.R. and Dimitrov, D.S. Novel Broadly Cross-Reactive HIV-1 Neutralizing Human Monoclonal Fab Selected for Binding to gp120-CD4-CCR5 Complexes. Proc. Natl. Acad. Sci. 99:6913-6918, 2002.

11. Chow, Y-H. , Wei, O.L., Phogat, S., Sidorov, I.A., Fouts, T.R, **Broder, C.C.**, Dimitrov, D.S. Conserved Structures Exposed in HIV-1 Envelope Glycoproteins Stabilized by Flexible Linkers as Potent Entry Inhibitors and Potential Immunogens. Biochemistry. 41:7176-82. 2002.

12. Gallina, A., Mandel, R., Trahey, M., **Broder, C.C.** and Ryser, H.J. Inhibitors of protein disulfide isomerase (PDI) prevent cleavage of disulfide bonds in receptor-bound gp120 and prevent HIV-1 entry. J Biol Chem. Sep 5, in press, 2002.

13. Bossart, K.N., L.F. Wang, B.T. Eaton, K.B. Chua, S.K. Lam, and C.C. Broder. Membrane Fusion Tropism and Heterotypic Functional Activities of the Nipah Virus and Hendra Virus Envelope Glycoproteins. J. Virol. Nov, 76(22), 22):11186-98. 2002.

RESEARCH AREAS AND INTERESTS

William C. Gause, Ph.D.,
Professor and Vice Chair / Department of Microbiology and Immunology

I. Description of projects, how areas impact public health, military medical relevance, key words

Overview: Dr. Gause's research involves the study of T cell differentiation during infectious disease. His work focuses on the T cell immune response triggered by infection with parasites, particularly intestinal nematode parasites. Chronic malnutrition induced by infection with gastrointestinal parasites causes great morbidity and increased susceptibility to infectious agents. With over 1 billion people currently infected with intestinal nematode parasites, this is a major world health problem. Immunological intervention may promote control in situations where gastrointestinal parasitism is endemic and intractable. The T cell response that develops following intestinal nematode infection (the T helper 2 response) is qualitatively different than T cell responses that occur to many bacteria and viruses (the T helper 1 response). In fact cytokines associated with the T helper 2 (Th2) response can downregulate the Th1 response and vice versa. Dr. Gause's research examines the mechanisms that lead to the development of the Th2 versus the Th1 immune response at the initiation of infection when naïve T cells develop into effector and memory T helper cells. Understanding these mechanisms should provide information required to manipulate the development of the immune response so that a protective response is favored against particular infectious agents. Such knowledge can be used to develop novel immunotherapies and for the creation of the next generation of vaccines. Also, Dr. Gause is characterizing the conserved microbial structures produced by certain nematode parasites that trigger a potent Th2 immune response. The host has evolved to use these parasite structures to rapidly recognize invading parasites and to respond with an appropriate host-protective Th2 response. These microbial structures have the potential for use in immunotherapies to promote host protective Th2 responses and also to act as anti-inflammatory agents during Th1 responses to bacteria and viruses: some of the most harmful effects elicited by bacteria and viruses result from a pathologic inflammatory response. The study and elucidation of the early events that lead to a Th2 response is of obvious medical significance to both military and civilian sectors.

II. Publications (and manuscripts in press) within last 24 months

1. Urban, J., H. Fang, Q. Liu, M.J. Ekkens, S.J. Chen, D. Nguyen, V. Mitro, D.D. Donaldson, C. Byrd, R. Peach, S.C. Morris, F.D. Finkelman, L. Schopf, and **W.C. Gause**. 2000. IL-13-mediated worm expulsion is B7 independent and IFN-gamma sensitive. J. Immunol 15:164: 4250-4256.

2. Morris, S.C., **W.C. Gause**, and F.D. Finkelman. 2000. IL-4 suppression of in vivo T cell activation and antibody production. J. Immunol. 164:1734-40, 2000.

3. Wu, Z.Q., A.Q. Khan, Y. Shen, J. Schartman, R. Peach, A. Lees, J.J. Mond, **W.C. Gause**, and C.M. Snapper. 2000. B7 requirements for primary and secondary protein- and polysaccharide-specific Ig isotype responses to streptococcus pneumoniae. J. Immunol. 165: 6840-6848.

4. Mansfield, L.S., **W.C. Gause**, F.D. Finkelman, and J.F. Urban, Jr. 2001. Gastrointestinal nematodes and the immune system. In: Effects of Microbes on the Immune System (in press).

5. **Gause, W.C.**, V. Mitro, and M. Ekkens. 2000. Regulation of the development of the type 2 immune response. Recent Research Developments in Immunology 2:131-140.

6. Snapper, C.M., Y. Shen, A.Q. Khan, J. Colino, P. Zelazowski, J.J. Mond, W.C. Gause, and Z-Q. Wu. 2001. Distinct types of T-cell help for the induction of a humoral immune response to Streptococcus pneumoniae. Trends in Immunology (formerly Immunology Today). 22: 308.

7. Hanson, S.J., **W. Gause**, and B. Natelson. 2001. Detection of Immunologically Significant Factors for Chronic Fatigue Syndrome Using Neural-Network Classifiers. Clin. Diagn. Lab. Immunol. 8: 658-662.

8. Jankovic, D., Z. Liu, and **W.C. Gause**. 2001. Th1- and Th2-cell commitment during infectious disease: asymmetry in divergent pathways. Trends Immunol. 22(8): 450.

9. Ekkens, MJ, Z. Liu, Q. Liu, A. Foster, J. Whitmire, J. Pesce, AH Sharpe, JF Urban and **W.C. Gause.** Memory Th2 effector cells can develop in the absence of B7-1/B7-2, CD28 interactions, and effector T helper cells after priming with an intestinal nematode parasite. J. Immunol. 168:6344-51, 2002.

10. Lang, TJ, P. Nguyen, R. Peach, **W.C. Gause,** and C.S. Via. In vivo CD86 blockade inhibits CD4+ T Cell activation, Whereas CD80 blockade potentiates CD8+ T cell activation and CTL effector function. J Immunol 168: 3786-3792, 2002.

11. Madden, K.B., L. Whitman, C. Sullivan, **W.C. Gause**, J.F. Urban, Jr., I.M. Katona, F.D. Finkelman, and T. Shea-Donohue. Role of Stat6 and mast cells in IL-4- and IL-13-induced alterations in murine intestinal epithelial cell function. J. Immunol. 169:4417-4422, 2002.

12. Liu, Z., Q. Liu, J. Pesce, J. Whitmire, M.J. Ekkens, A. Foster, J. VanNoy, A.H. Sharpe, J.F. Urban, Jr, and **W.C. Gause.** N. brasiliensis can induce B7-independent Ag-specific development of IL-4-producing T cells from naïve CD4 T cells in vivo J. Immunol.(in press)

13. Ekkens, M.J., Z. Liu, Q. Liu, J. Whitmire, S. Xiao, A. Foster, J. Pesce, J. VanNoy, A.H. Sharpe, J.F. Urban, and **W.C. Gause**. The role of OX40L interactions in the development of the Th2 response to the gastrointestinal nematode parasite Heligmosomoides polygyrus. J. Immunol. (in press).

14. **Gause, W.C.,** J.F. Urban, Jr., and M. Staedecker. The spectrum of the immune response to infection with parasitic helminths., Trends in Immunol., Commissioned Review.

RESEARCH AREAS AND INTERESTS

Chou-Zen Giam, Ph.D.
Professor / Department of Microbiology and Immunology

I. Description of projects, how areas impact public health, military medical relevance, key words

Overview: Dr. Giam's research concerns the molecular biology of human retroviruses: HTLV-I and HIV, and the Kaposi's sarcoma associated herpesvirus (KSHV/HHV8), with a special focus on viral regulatory proteins and their interaction with cellular transcription factors or signaling molecules. The diseases caused by the human T-lymphotropic virus type I (HTLV-I): adult T-cell leukemia (ATL) and tropical spastic paraparesis/HTLV-I associated myelopathy (HAM/TSP), have their etiologies in the dysregulated proliferation of T-cells. HTLV-I encodes a critical trans-activator, Tax, which augments HTLV-I viral mRNA transcription greatly and usurps regulatory mechanisms critical for cell activation and division to facilitate viral replication. The ability of Tax to interact with a multitude of cellular factors to effect potent activation of NF-κB, cell cycle perturbation, and cell transformation is thought to be responsible for the clinical outcomes of HTLV-I infection. Research in Dr. Giam's lab focuses on the elucidation of the mechanisms of HTLV-I Tax action.

Research results from Dr. Giam's laboratory indicate that Tax, in essence, functions as a virus-specific adaptor protein that connects the transcriptional co-activators, phospho-CREB binding protein (CBP) or its homologue, p300, and another co-activator called p300-CBP associated factor, P/CAF, to cellular transcription factors, CREB/ATF-1, assembled on the HTLV-I viral transcriptional enhancer. This allows potent HTLV-I viral mRNA transcription to occur. Most recently, Dr. Giam's lab has demonstrated that Tax interacts directly with the Ser/Thr protein phosphatase 2A (PP2A) and inhibits its enzymatic activity. PP2A is a major Ser/Thr protein phosphatase in cells of all eukaryotes, including those of human and yeast. It plays a crucial role in the negative regulation of multiple cellular processes, including the mitogen activated protein (MAP) kinase cascade, the I-κB kinase signaling pathway, the TOR (target of rapamycin) kinase signaling pathway, DNA replication, transcription, cell cycle progression, spindle checkpoint control, and others. The allosteric inhibition of PP2A and/or the alteration of its functions by Tax is likely to play a significant role in the ability of Tax to impact on multiple cellular regulatory processes. Current efforts in Dr. Giam's lab are directed towards elucidating the role of Tax-PP2A interaction/inhibition in the activation of cellular signal transduction pathways, cell cycle perturbations, and T-cell leukemogenesis.

Finally, the association of a newly discovered human herpesvirus, KSHV/HHV8, with Kaposi's sarcoma is also being investigated by analyzing a series of AIDS-related and endemic KS samples including tumor biopsies and patient sera recruited from Uganda. The major emphasis for this project is on genes important for KSHV/HHV8 transcription, viral re-activation from latency, and KS tumorigenesis.

The discovery that Tax is a non-competitive inhibitor of the major serine/threonine protein phosphatase 2A is likely to yield fundamental insights into the following three areas—(1) mechanisms via which HTLV-I usurps cellular signaling processes for viral replication; (2) the control of cell cycle progression and its perturbation by Tax; and (3) the molecular events that lead to T-cell transormation/leukemogenesis.

II. Publications (and manuscripts in press) within last 24 months

1. Harrod, R., Kuo, Y.-L., Tang, Y., Yao, Y., Vassilev, A., Nakatani, Y., and Giam, C.-Z p300 and p300/cAMP-responsive Element-binding Protein Associated Factor Interact with Human T-cell Lymphotropic Virus Type-1 Tax in a Multi-histone Acetyltransferase/Activator-Enhancer Complex. J Biol Chem, 275: 11852-11857, 2000

2. Remick, S.C., Patnaik, M. Ziran, N. M., Liegmann, K. R., Dong, J., Dowlati, A, Yao, Y., Chandran, B., Abdul-Karim, F. W., Giam, C.-Z. Human herpesvirus-8-associated disseminated angiosarcoma in an HIV-seronegative woman: report of a case and limited case-control virologic study in vascular tumors. Am J Med. 2000 Jun 1;108(8):660-4.

3. Kuo, Y.-L., Tang, Y., Harrod, R., Cai, P., and Giam, C.-Z. Kinase-inducible domain-like region of HTLV type 1 tax is important for NF-kappaB activation. AIDS Res Hum Retroviruses. 2000 Nov 1;16(16):1607-12.

4. Mori N, Morishita M, Tsukazaki T, Giam C-Z, Kumatori A, Tanaka Y, Yamamoto N. Human T-cell leukemia virus type I oncoprotein Tax represses Smad-dependent transforming growth factor beta signaling through interaction with CREB-binding protein/p300. Blood 2001; 97(7):2137-44

5. Liang, M., Geisbert, T., Yao, Y., Hinrichs, S. H., & Giam, C. Z. Human T-lymphotropic Virus Type I Onco-protein, Tax, Promotes S-phase Entry, but Blocks Mitosis. J.Virol, 2002; 76, 4022-4033.

6. Fu, D., Kuo Y-L., Jeang, K-T., and Giam, C-Z. Human T-lymphotropic Virus Type I Transactivator Tax activates I-kB Kinase by Inhibiting I-kB Kinase γ Subunit-Associated Serine/Threonine Protein Phosphatase 2A (JBC, in press)

7. Liao W., Tang Y., Lin S-F., Kung H-J., and Giam C-Z., K-bZIP of Kaposi's Sarcoma-Associated Herpesvirus/Human Herpesvirus type 8 (KSHV/HHV-8) Binds KSHV/HHV-8 Rta and Represses Rta-Mediated Trans-activation (J.Virol, in revision).

8. Kuo, Y-L., Wang, L-C., Tang, Y., Fu, D., Harrod, R., Kung, H-J., Shih, H-M., and Giam, C-Z. Human T-lymphotropic Virus Type I Transactivator Tax is a Noncompetitive Inhibitor of Serine/Threonine Protein Phosphatase 2A (submitted)

9. Liu, B., Liang, M., Kuo, Y-L, Liao, W., Boros, I., Kleinberger, T., Blancato, J., and Giam, C-Z HTLV-1 Oncoprotein Tax Promotes Aberrant Degradation of Pds1p/Securin and Clb2p/Cyclin B1, Causing Chromosomal Instability (submitted)

10. Liao, W., Liao W., Tang Y., Xu C-J., and Giam C-Z., Kaposi's Sarcoma-asociated Virus /Human Herpes Virus Type 8 Immediate Early Transcriptional Activator, Rta, is an Oligomeric Sequence-Specific DNA Binding Protein (in preparation).

RESEARCH AREAS AND INTERESTS

Ann Jerse, Ph.D.
Assistant Professor / Department of Microbiology and Immunology

I. Description of projects, how areas impact public health, military medical relevance, key words

Overview: The major research interest of Dr. Jerse's laboratory centers on the mechanisms by which *Neisseria gonorrhoeae* adapts to the female genital tract. The primary research tool that Dr. Jerse and her staff utilize to address this question is a female mouse model of gonococcal genital tract infection that was developed in Dr. Jerse's laboratory. Dr. Jerse's research group currently uses this model to study the role of selected gonococcal virulence factors in infection, including catalase, nitrite reductase, sialyltransferase, the hemoglobin receptor, and phase variable outer membrane proteins. Dr. Jerse also utilizes this model to study interactions between *N. gonorrhoeae* and certain commensal flora that have been proposed to protect against gonorrhea. A second research area in Dr. Jerse's laboratory is the development of vaccines and topical microbicides to prevent gonorrhea. Historically, pre-clinical testing of such prophylactic agents was hindered by the absence of a small animal model of infection. Utilizing the mouse model developed in her laboratory, Dr. Jerse and collaborators demonstrated that intranasal immunization of mice with gonococcal outer membranes results in reduced recovery of *N. gonorrhoeae*. Dr. Jerse is currently evaluating other antigens for the capacity to prevent murine genital tract infection. With regard to topical agents designed to prevent gonorrhea, Dr. Jerse and her staff recently showed that transmission of *N. gonorrhoeae* to mice can be blocked by sulfonated and sulfated polymers. Dr. Jerse is currently testing other microbicides for the capacity to prevent gonorrhea in collaboration with Dr. Richard Cone at Johns Hopkins University.

Over 400,000 cases of gonorrhea are reported in the U.S., and an estimated 67 million cases occur world-wide annually. Public health efforts to reduce the incidence of gonorrhea are challenged by the high rate of asymptomatic infection, and the emergence of antibiotic resistant strains. The major morbidity and mortality of gonorrhea is associated with upper reproductive tract infection in females. Over 2 million cases of pelvic inflammatory disease (PID) occur in the U.S. each year, approximately 50% of which is due to *N. gonorrhoeae*. PID is a serious condition that often requires hospitalization. Post-infection complications of PID include ectopic pregnancy, involuntary infertility, and chronic pelvic pain, all of which further contribute to the enormous public health costs of gonorrhea.

Gonorrhea ranks high among infections important to the military, second only to chlamydia among reportable infections. Over 1,500 cases of gonorrhea were reported in the U.S. Army in 1997. Upper reproductive tract infection is a serious form of gonorrhea in both men and women. In one study of a military population, 16% of acute epididymitis was due to *N. gonorrhoeae*. In another study, the rate of ectopic pregnancy (a serious complication of gonococcal and chlamydial salpingitis), was higher among military women than in the U.S. population at large, and equal to the highest recorded rates in the world. The occurrence of ectopic pregnancy among women in remote posts or aboard ships is of special concern in that emergency care might be delayed. Pathogenesis studies performed in Dr. Jerse's laboratory will enhance our understanding of how *N. gonorrhoeae* persists in the genital tract to create a reservoir of infection in the community, and will potentially lead to the identification of virulence factors that could be used in a vaccine. Dr. Jerse's work towards developing a vaccine and topical microbicides against gonorrhea is directly relevant to

reducing the incidence and costs associated with gonorrhea in military personnel and their dependents.

II. Publications (and manuscripts in press) within last 24 months

1. Plante, M. , A.E. Jerse, J. Hamel, F. Coutre, C.R. Rioux, B.R. Brodeur, and D. Martin. 2000. Intranasal immunization with gonococcal outer membrane preparations reduces the duration of vaginal colonization of mice by Neisseria gonorrhoeae. J. Infect. Dis. 182:848-855.

2. Dalal, S.J., J.S. Estep, I.E. Valentin-Bon, and A.E. Jerse. Standardization of the Whitten effect to induce susceptibility to Neisseria gonorrhoeae in female mice. 2001. Contemp. Topics in Lab. Anim. Sci. 40(2):12-16.

3. Zeitlin, L., Hoen, T.E., Achilles S.L., Hegarty, T.A., Jerse, A.E., Kreider J.W., Olmsted S.S., Whaley, K.J., Cone, R.A., and T.R. Moench. 2001. Tests of BufferGel for contraception and prevention of sexually transmitted diseases in animal models. Sex. Transm. Dis. 28:417-423.

4. Ronpirin, C., A.E. Jerse, and C.N. Cornelissen. 2001. Gonococcal genes encoding transferrin-binding proteins A and B are arranged in a bicistronic operon but are subject to differential expression. Infect. Immun. 69:6336-6347.

5. Jerse, A.E., E.T. Crow, A.N. Bordner, I. Rahman, C.N. Cornelissen, T.R. Moench, and K. Mehrazar. 2002. Growth of Neisseria gonorrhoeae in the female mouse genital tract does not require the gonococcal transferrin or hemoglobin receptors and may be enhanced by commensal lactobacilli.Infect. Immun. 70:2549-2558.

RESEARCH AREAS AND INTERESTS

Guangyong Ji, Ph.D.,
Assistant Professor, Department of Microbiology and Immunology

I. Description of projects, how areas impact public health, military medical relevance, key words

Overview: The major research interest in Dr. Guangyong Ji's laboratory is to define the molecular mechanism of staphylococcal pathogenesis. Currently, they focus on the study of peptide-determined autoinduction of virulence gene expression in *Staphylococcus aureus* and the elucidation of the role of this regulation in the pathogenesis of *S. aureus* diseases.

S. aureus is among the most prominent of nosocomial bacterial pathogens, causing a variety of human diseases ranging from superficial abscesses to life-threatening deep infections, such as endocarditis and pneumonia. The problem has become alarming within the last few years due to the increasing resistance of *S. aureus* to all currently available antibiotics, including vancomycin, an antibiotic that is the last effective drug to treat multidrug-resistant *S. aureus* infections. *S. aureus* pathogenicity is multifactorial and involves the production of secreted toxins, enzymes, and cell wall-associated proteins. The expression of most of these virulence factors is regulated by a global regulator which consists of a two-component signal transduction system, a modified autoinducing peptide, and an RNA molecule which is the actual effector of the virulence response. The studies in Dr. Ji's laboratory on the understanding of staphylococcal virulence regulation may lead to the development of new antibacterial drugs that target this regulatory system.

II. Publications (and manuscripts in press) within last 24 months

None

RESEARCH AREAS AND INTERESTS

Susan G. Langreth, Ph.D.
Associate Professor / Department of Microbiology and Immunology

I. Description of projects, how areas impact public health, military medical relevance, key words

Overview: The major focus of Dr. Langreth's research is Unicellular Parasite Pathogenesis. The long term objectives are to understand mechanisms of pathogenesis and immunity in *Plasmodium* and *Pneumocystis* parasites and to identify critical host parasite interactions which may contribute to the development of vaccines or more effective chemotherapy.

The emphasis of the approach is to locate and characterize, by immunocytochemistry and electron microscopy, particular antigens/peptides/expressed gene products in the human malaria parasite *Plasmodium falciparum* and its host erythrocyte. Of particular interest are antigens on the infected erythrocyte surface that may be mediators of cytoadherence and sequestration. Parasite isolates or clones with altered expression of surface components (knob structures, in vitro cytoadherence) are being compared with wild type parasites. Malarial antigens associated with infected erythrocyte cytoplasmic structures (Maurer's clefts, parasitophorous vacuoles, etc.) are also being characterized.

Pneumocystis carinii (Pc) is an opportunistic unicellular pathogen and a major cause of morbidity and mortality in AIDS patients. Dr. Langreth is studying Pc pathogenesis in an immunosuppressed rat model and is engaged in collaborative projects to develop axenic long term culture methods for *Pneumocystis*, using organisms harvested from infected immunosuppressed rats as a source. She is generating methods to harvest and purify the pathogen from rat lung, for cultivation and for biochemical and immunocytochemical analysis. Establishment of a culture for Pc will provide basic information about the parasite's life cycle and nutritional requirements, as well as provide a reliable source of the organisms for chemotherapy and molecular studies.

II. Publications (and manuscripts in press) within last 24 months

None

RESEARCH AREAS AND INTERESTS

Anthony Maurelli, Ph.D.,
Professor / Department of Microbiology and Immunology

I. Description of projects, how areas impact public health, military medical relevance, key words

Overview: The major focus of research in the laboratory of **Dr. Anthony T. Maurelli** is understanding the genetics of bacterial pathogenesis, that is, determining what genes are important for making a bacteria a pathogen and how expression of these genes enables the bacteria to cause disease. Research focuses on two groups of bacteria: *Shigella* spp. and *Chlamydia* spp. Bacteria of the genus *Shigella* are the causative agents of bacillary dysentery (shigellosis). Dysentery is an acute diarrheal disease that has a major impact on public health in developing countries particularly among young children. Even in developed countries, dysentery due to *Shigella* causes significant morbidity each year. For military planners, diarrheal diseases such as dysentery have historically been of particular concern during large-scale deployments. Experience during World War II, the Vietnam War, and the Gulf War demonstrated that outbreaks of diarrhea and dysentery among troops seriously degrade combat readiness. The development of vaccines to protect against dysentery as well as better methods of treatment depends on a better understanding of the bacteria responsible for the disease.

Bacteria of the genus *Chlamydia* are responsible for a wide range of diseases in man. *Chlamydia trachomatis* is the number one bacterial cause of sexually transmitted disease in the United States. It is also the major cause of preventable blindness in developing countries. Other bacteria of the genus *Chlamydia* are responsible for diseases including pneumonia and ocular disease in neonates and adults. *Chlamydia pneumoniae* is suspected to be a cofactor in a variety of chronic diseases including atherosclerosis. A major barrier to understanding how *Chlamydia* can cause such a broad range of diseases is the absence of genetic tools for studying the organism. A major focus of Dr. Maurelli's research is to develop these tools so that the power of molecular genetics can be applied to understanding *Chlamydia* pathogenesis. The potential impact of such research is in better diagnostic tools and improved prevention and treatment methods.

II. Publications (and manuscripts in press) within last 24 months

1. 1. Day, Jr., W. A., and **A. T. Maurelli**. 2001. *Shigella flexneri* LuxS quorum-sensing system modulates *virB* expression but is not essential for virulence. Infect. Immun. 69:15-23.
2. Schuch, R., and **A. T. Maurelli**. 2001. Spa33, a cell surface-associated subunit of the Mxi-Spa type III secretory pathway of Shigella flexneri, regulates Ipa protein traffic. Infect. Immun. 69:2180-2189.
3. Fernandez, I. M., M. Silva, R. Schuch, W. A. Walker, A. M. Siber, **A. T. Maurelli,** and B. A. McCormick. 2001. Cadaverine prevents the escape of *Shigella flexneri* from the phagolysosome: A connection between bacterial dissemination and neutrophil transepithelial signaling. J. Infect. Dis. 184:743-753.
4. Day, Jr., W. A., R. E. Fernández, and **A. T. Maurelli.** 2001. Pathoadaptive mutations that enhance virulence: Genetic organization of the *cadA* regions of *Shigella* spp. Infect. Immun. 69:7471-7480.
5. Schuch, R., and **A. T. Maurelli.** 2001. MxiM and MxiJ, base elements of the Mxi-Spa type III secretion system of *Shigella,* interact with and stabilize the MxiD secretin in the cell envelope. J. Bacteriol. 183:6991-6198.

6. Kane, C.D., Schuch, R., Day, W.A., and **A.T. Maurelli.** 2002. MxiE regulates intracellular expression of factors secreted by the *Shigella flexneri* 2a type III secretion system. J. Bacteriol. 184:4409-4419.

RESEARCH AREAS AND INTERESTS

Eleanor S. Metcalf, Ph.D.
Professor / Department of Microbiology and Immunology

I. Description of projects, how areas impact public health, military medical relevance, key words

Overview: There are three major focus of research in the laboratory of Dr. Metcalf, the first being Typhoid Fever, the long range goal of this component of our research program is to understand the virulence mechanisms of *S. typhi* in the context of the host environment, with the overall objective of reducing the morbidity and mortality to enteric fevers such as typhoid. Recent studies show that more than 16.6 million people currently have typhoid fever world-wide and at east 600,000 of these individuals will die. The majority of typhoid fever cases occur in children ages 3-19, and mortality rates range from 5-12%, depending on the country. Moreover, many isolates of *Salmonella enterica* serovar Typhi *(S. typhi),* the etiologic agent of typhoid fever, have become resistant to multiple antibiotics, and resistance to first-line antibiotics is wide-spread in countries where typhoid fever is endemic. These factors underline the importance of and necessity to develop inexpensive and readily administered vaccines as one important control strategy for combating this disease. *S. typhi*, as well as other enteric bacterial infections, are and have been responsible for morbidity and mortality of troops stationed in countries with underdeveloped health and hygiene practices. The results of these studies will provide new information on the infectious processes of *S. typhi* and increase our knowledge about typhoid fever. In addition, these studies will increase our knowledge of *S. typhi* that could be important in the development of new *S. typhi* vaccines.

The second focus in the laboratory is Food Poisoning. the long range goal of these studies is to understand the role of T cells in *Salmonella typhimurium* pathogenesis. The objective of these studies is to analyze the contribution of $CD8^+$ CTLs in the host response to *Salmonella*. In the United States, *Salmonella spp.* cause an estimated 2-4 million cases of salmonellosis every year which results in approximately 500 deaths. These organisms are the principal etiologic agents of gastroenteritis and enteric fever. It as been estimated that salmonellosis costs up to $50 million per year in the U.S. as a result of medical costs and work absences. One resolution to this problem is vaccination. While one strategy for the generation of efficacious vaccines is to identify virulence factors on the bacterium, another approach to treatment is to understand the host response to this pathogen. If the role of cytotoxic T lymphocytes in the host response can be identified and the antigens that these T cell recognize can be characterized, we may be able to manipulate the outcome of exposure to these pathogens. Our current studies address the role of cytotoxic T cells in *Salmonella* Infections. *Salmonella typhimurium* as well as other enteric bacterial infections, are, and have been responsible for morbidity and mortality of troops stationed in countries with underdeveloped health and hygiene practices. The results of this proposal will provide new information on the infectious processes of *S. typhimurium* and increase our knowledge about the generation of protective immune responses and the pathogenesis of this organism. Perhaps more importantly it will provide data on *Salmonella* antigens that may be useful in the preparation of efficacious vaccines.

The third focus is Alcoholic Liver Disease (ALD), the long range goal of this research endeavor is to understand mechanisms of the host response that contribute to the pathophysiology of ALD and the inflammatory syndrome associated with alcohol-induced liver damage. ALD is a significant problem in the United States. Over 50% of adults consume alcoholic beverages on a

regular basis. Of these individuals, at least 14 million people either depend on or abuse alcohol. Studies show that alcoholism accounts for greater than 120,000 deaths annually, and in 1998, the economic burden of alcohol-related issues was greater than 184.6 billion dollars. This cost is approximately 12% of the GNP and represents an expenditure of approximately $638 dollars for every man, woman, and child in the U.S. ALD is a significant problem in the U.S. and in the Uniformed Services. Over 50% of the adults consume alcoholic beverages on a regular basis, and of these individuals, at least 15 million people either depend on or abuse alcohol. Studies show that alcoholism accounts for greater than 100,000 deaths annually, and that the economic burden of alcohol-related issues reaches $100 billion dollars/year. Recent evidence indicates that military and civilian populations have similar incidences of alcohol abuse. Since studies also show that the rate of alcohol abuse for both men and women within the military is similar, alcohol-related health problems are clearly a significant problem for the Uniformed Services. To date, treatment regimens have been generally ineffective, in part, due to a lack of understanding of the mechanisms that underlie ALD. Since interventions that focus on early steps in the development of ALD would be the most desirable, our studies of the effects of alcohol on the initial cell types involved in this complex set of reactions should provide crucial data applicable to the development of successful interventions.

II. Publications (and manuscripts in press) within last 24 months

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Publications Summary
1999-2002

Journal Supplements

2002

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