

1972

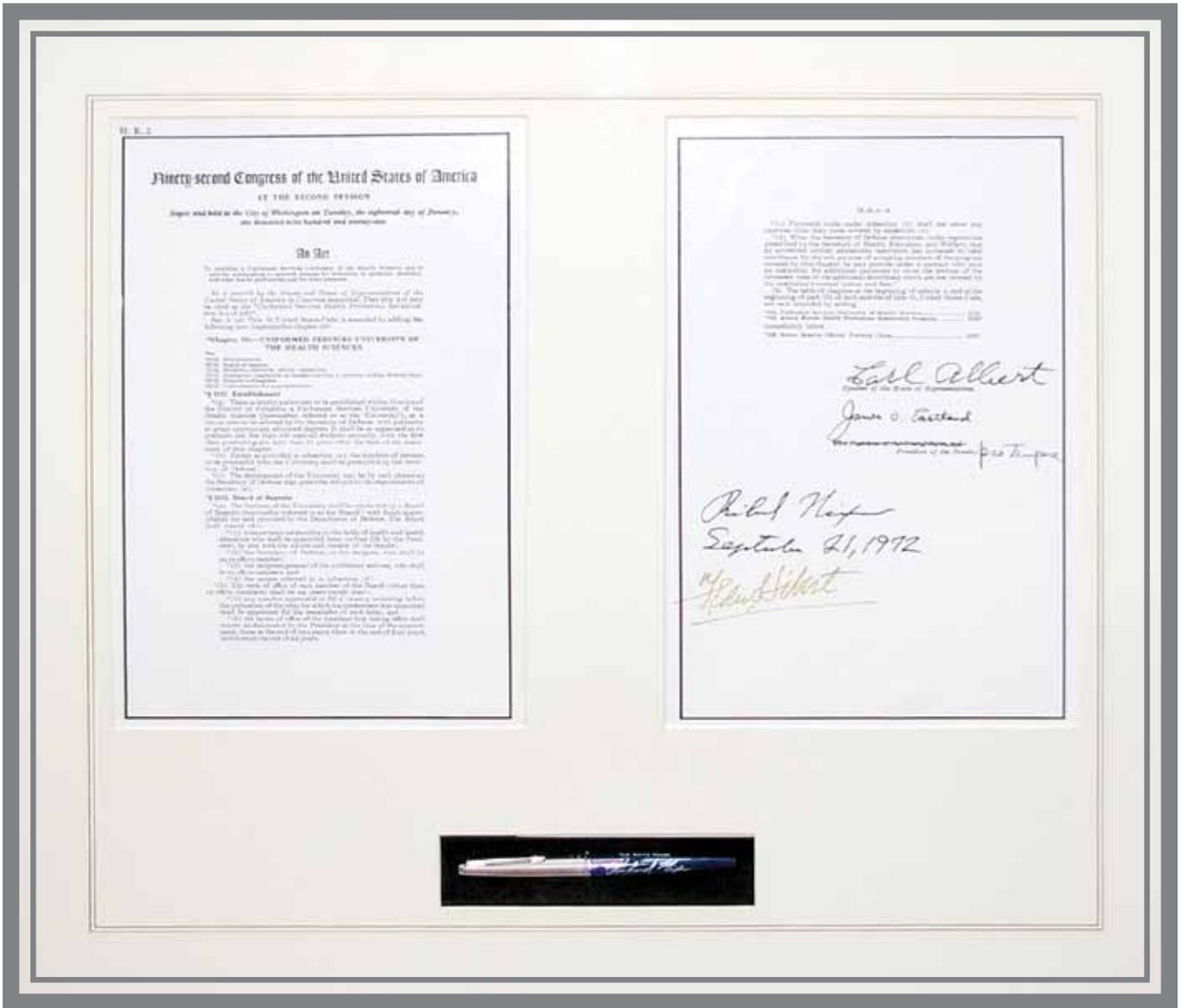


2012

Uniformed Services University of the Health Sciences Learning to Care for Those in Harm's Way

2012 Report • 40th Anniversary Edition

USU's Founding Legislation



The Uniformed Services University of the Health Sciences was established by Congress in 1972 as part of the Uniformed Services Health Professions Revitalization Act. The charter, signed by Speaker of the House of Representatives Carl Albert, President of Senate Pro Tempore James O. Eastland and Congressman F. Edward Hébert, was signed into law by President Richard M. Nixon on September 21, 1972.

Table of Contents

Message from the President	4
Leadership	5
A Global University	6
Board of Regents	7
The Faculty Senate	8
A Military-Unique Curriculum	9-11
Curriculum Reform	12
Expanding the Curriculum	13
An Evolving Curriculum	14
Leadership Legends	15
USU's Newest College	16
Advancing Graduate Education	17
Leading Scientific Growth	18-21
National Capital Area Medical Simulation Center	22
Center for Neuroscience and Regenerative Medicine	23
Advancing the Rehabilitation of Wounded Warriors	24
John P. Murtha Comprehensive Cancer Center	25
Building the Next Generation of Leaders	26

Cover Captions. *Photo One:* President Richard Nixon signed the charter that created USU in 1972. *Photo Two:* USU has Schools of Medicine and Graduate Nursing as well as Graduate Programs in the Biomedical Sciences and a Postgraduate Dental College. Most students in these programs are commissioned officers, including Army Major Rick Larango (Graduate School of Nursing), left, Public Health Service Ensign Jaren Meldrum (School of Medicine), Air Force Major Katherine Ware (Graduate Education) and Navy Lieutenant Gregory Gittleman (Postgraduate Dental College).



1974
Anthony R. Curreri, M.D., is sworn in as the first president of USU.

Message From the President



The Uniformed Services University of the Health Sciences (USU) was created 40 years ago to fill a void that existed in hospitals and clinics, on bases and battlefields, and other places where servicemembers needed—and deserved—specially trained physicians to care for their wounds.

Four decades later, USU is still the only American university that teaches the art and science of military medicine. Our scope, however, has broadened significantly over time. Now, we have a Graduate School of Nursing with nationally recognized programs, including a brand-new Doctor of Nursing Practice degree. We also have a Postgraduate Dental College with master's programs that reach across many disciplines of oral health.

We are not content, however, to rest on our laurels. We plan to expand our already considerable research portfolio to pursue solutions to challenges faced by our men and women in uniform—from traumatic brain injury to emerging infectious diseases, from radiation injury to psychological health, from basic mechanisms of cellular injury to new approaches for cancer diagnosis and treatment.

We continue to recruit rising young scientists to work with our already talent-laden faculty to carry out our missions in the classroom, laboratory and bedside. At USU, we want the very best for America's troops. That was the fundamental reason for establishing the University and it is the key focus of the celebration of our 40th anniversary.

I was privileged to serve as a Navy surgeon and I am the father of a Naval aviator. So making sure that the best and brightest are there to deliver safe, reliable and effective care, anytime, anywhere, has a personal resonance for me.

This publication brings some of USU's traditions and its promise to the forefront. It is a capsule of the inspiring history, incredible people and compelling mission that makes USU such a unique institution.

Charles L. Rice, M.D.



1975

Administrative offices are established over Peoples Drug Store on Arlington Road in downtown Bethesda, Md.

Leadership

F. Edward Hébert



F. Edward Hébert, a congressman from Louisiana, spent years tirelessly lobbying for a federally run medical school or “West Point of Military Medicine,” as he called it. He reasoned that the government spent billions of dollars training military troops each year so it should also invest in a place that taught people how to care for servicemembers and their families.

Hébert’s novel idea gained little traction on Capitol Hill at first, but he eventually won over many powerful allies, including President Richard Nixon, who signed the bill that created the Uniformed Services University of the Health Sciences in 1972.

Hébert was proud to be a part of USU’s early history. “When my service ends, and I look back over the milestones of my career, I want most of all to be remembered for the military medical school,” he said.

In recognition of his vision and influence, USU named its School of Medicine after Hébert, the longest-serving member of the United States House of Representatives, in 1983.

Charles L. Rice, M.D.



The University had already established a strong reputation as the academic home of military medicine when Charles L. Rice, M.D., took the leadership reins in 2005 as USU’s fifth president. Still, his goals for the University were ambitious.

After his swearing in, Rice began systematically expanding USU’s catalog and research portfolio. Programs in the School of Medicine and Graduate School of Nursing have grown significantly under his leadership, and so has their research funding. USU also entered brand-new academic territory when the Postgraduate Dental College was formed in 2010. Now, Army, Navy and Air Force master’s-level dental programs fall under USU auspices.

Seven years after joining USU, Rice continues to seek ways in which USU can contribute to the strength of the Military Health System (MHS). Strategic relationships with other federal educational institutions, such as the Navy Postgraduate School and the National Defense University, are two such affiliations. Emphasis on ensuring that the lessons learned in a decade of conflict—particularly advances in trauma care, developing strong leadership skills among MHS officers, and increasing diversity in the medical corps of the three military services—are also areas of his focus.



1976

The charter class, 32 medical students, begin their coursework at the Armed Forces Institute of Pathology in Washington, D.C.

A Global University

Although USU's educational reach extends to many different places around the world, the Bethesda, Md., campus is home to most faculty, students and staff members. Here, they have many valuable resources right at their fingertips, including state-of-the-art classrooms, sophisticated labs and an expansive Learning Resource Center with thousands of journals, books and other publications.

But today's sprawling, high-tech campus represents decades of expansion and evolution. USU's first administrators and students worked and learned in humble spaces and borrowed labs. Early leaders like Anthony Curreri, the first president, carved USU's path from rented offices above the Peoples Drugstore and State National Bank in downtown Bethesda. The space was too small for teaching, so students attended class three miles away at the Armed Forces Institute of Pathology and Walter Reed Army Medical Center.

These temporary sites could not sufficiently support USU's rapidly growing mission for long, so the first Board of Regents organized a site-selection committee to find USU a permanent home. In the end, they chose a 100-acre parcel of land on the grounds of the National Naval Medical Center, just a few miles from Washington, D.C., and across the street from the National Institutes of Health.

Construction on Building A began right away. In fact, the charter class was able to begin their second year on the new flagship campus in 1978. A year later, Buildings B, C and D were approved, which greatly expanded classroom, administrative and research facilities. Building E, the newest addition occupied largely by Graduate School of Nursing faculty and staff, was constructed in 2008 to meet the needs of USU's continually growing scope.

With recent supplementary missions, the University has developed a branch campus in San Antonio and has acquired necessary space off-campus in the National Capital Area. Even more space proposals are being developed both on campus and off to cover the expanding missions.



1976

Deputy Secretary of Defense David Packard is named acting president.

Board of Regents



Founding Advisors

The members of the USU Board of Regents are a prestigious mix of the nation's top military, scientific, education, policy and business leaders. David Packard, former Deputy Secretary of Defense and co-founder of the Hewlett-Packard Co., was the first chairman of the board. Ambitious from the start, he and the other original regents met 15 times in 18 months. They made important decisions during these early meetings, including developing and fine-tuning a unique medical curriculum and forming a search committee to find the University's first president, dean of the medical school and other academic leaders to move USU's mission forward.

Today's Regents

Today, the Board of Regents continues meeting quarterly to discuss the University's most pressing issues. Their guidance has shaped nearly every aspect of scholarship, research and public service at USU.

Like regents before them, the current members bring exceptional leadership and counsel to USU.



Ronald Blanck, D.O.



Otis Brawley, M.D.



Sheila Burke, MPA



Haile Debas, M.D.



General Ronald Griffith,
USA (Ret.)



Michael Johns, M.D.



Kenneth Moritsugu, M.D.



Gail Wilensky, Ph.D.



Jonathan Woodson, M.D.



Charles Rice, M.D.



Lieutenant General
Patricia Horoho, USA



Vice Admiral Matthew
Nathan, USN



Lieutenant General
Thomas Travis, USAF



Vice Admiral Regina
Benjamin, USPHS



1981

Stephen Huot is the first student to be awarded a Ph.D. from USU.

The Faculty Senate

The first Faculty Senate was formed in 1978, one year after the charter class arrived at USU. Popular professors Kathryn Holmes, Ph.D., and Harry Holloway, M.D., were both named temporary chairs until Lucy Chang, Ph.D., took over as the first permanent president of the Faculty Senate less than a year later.

These leaders, with support from faculty members in each department, quickly became a powerful voice at USU. Each successive group has maintained the same influence while also bringing

many new traditions to USU, including Research Week, the Packard Lecture and Education Day. These annual events celebrate USU's broad accomplishments in medicine, nursing, dentistry and biomedical science.

Other leaders travel far and wide to attend these events, as well. In 2012, esteemed surgeon Murray Brennan, M.D., delivered the Senate Packard Lecture, and nurse pathfinder Geraldine "Polly" Bednash, Ph.D., gave the keynote address at Education Day. Both were invited by the Faculty Senate

to talk about today's most pressing health care needs.

"As we stand together on the shifting ground that is the landscape of health care, it is critical for USU to have good communication—both upstream and downstream—between our leadership and our faculty. The Senate strives to improve those essential connections," said James Smirniotopoulos, M.D., president of the 2012-2013 Faculty Senate.



1983

The Henry M. Jackson Foundation for the Advancement of Military Medicine is established by Congress to support the University's teaching and research programs.

A Military-Unique Curriculum

The University's earliest administrators began developing a unique medical curriculum soon after the legislation to create USU was passed. A Department of Military Medicine and History was an important piece of that framework, and a novel idea. Only four American medical schools had entire history departments, and USU's was—and still is—the only one with a military-centric focus.

Army Colonel Robert J.T. Joy, a Yale and Harvard trained physician, was the first chair of the department. He was chosen by USU's original Board of Regents because of his reputation as an exceptional military physician. He also developed a strong interest in military medical history over the years, an almost nonexistent genre back then.

Joy began publishing papers on the topic, which helped close the knowledge gap surrounding military medical history, and he quickly made a name for himself in various history circles.

When Joy retired from the Army, he and Jay Sanford, M.D., USU's third

president, recognized the need for additional expertise, so they recruited Dale Smith, Ph.D., a medical historian from the University of Minnesota. Together, they built an independent department with a unique curriculum from the ground up, that both researched and taught lessons about the general development of patient care, disease and society with specific lectures on the history of anatomy, physiology, microbiology, surgery and psychiatry. At the request of the Army Medical Department Center and School, Joy and Smith also established a graduate program at USU in military medical history for Army Medical Service Corps officers.

Joy and Smith, one of USU's most dynamic partnerships, worked together for more than two decades.

Their lectures were favorites among the student body, and both faculty



Army Colonel Robert J.T. Joy, M.D.

members have been asked to speak about military medical history at universities, on television and before organizations around the world.

Military medical history is still an important part of the USU program, with two newer faculty members, Drs. Kristin Heitman and Stephen Craig, taking the lead. Today, medical students must complete more than 30 hours of history coursework to graduate, and Smith, now the senior vice president of USU, still delivers some of the department's most vivid lectures.

Joy retired from USU in 1996, but his legacy continues to thrive with the department he created and a discipline he pioneered.



1987

President Ronald Reagan delivers the commencement address to USU's graduating class.

A Military-Unique Curriculum



The Department of Military and Emergency Medicine is unique among the nation's 138 medical schools. Its innovative curriculum is designed to develop students' expertise in clinical medicine as well as operational medicine and military medical leadership, and includes lessons based on real-life experiences in deployed and combat settings.

Field exercises have always been one of the most dynamic pieces of the curriculum. During this important training, students learn about military medicine on both real and simulated battlefields, and in austere environments, often under challenging conditions.

The first exercise is a seven-mile march across the Antietam National Battlefield, home to the bloodiest single-day fight in American history. Here, students receive a lesson on how Civil War medicine influenced modern military triage, especially the casualty management and evacuation system developed by Army surgeon Jonathan Letterman. A variation of these life-saving methods is still used by military doctors and nurses in deployment zones around the world today.



1993

More than 100 USU alumni serve in Operations Desert Shield and Desert Storm.

A Military-Unique Curriculum

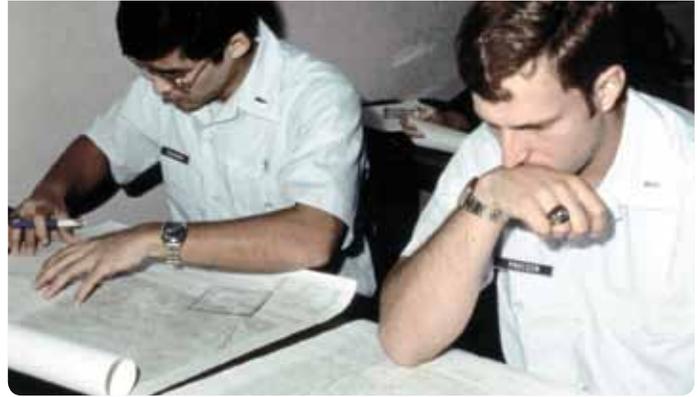


Jay P. Sanford, M.D.

Jay P. Sanford, M.D., the University's third president, was a hands-on leader with an adventurous side. Not only did Sanford teach courses and make hospital rounds regularly, he also rappelled down the sides of university buildings, parachuted from airplanes and completed field training with students at USU.

Sanford, who was also dean of the medical school for 15 years, was formally recognized by USU for his many contributions: the University's largest lecture hall was named the Jay P. Sanford Auditorium in honor of the legendary president.

Today, Sanford Hall is used for education, distinguished guest lectures and other academic events Sanford helped establish throughout his tenure at USU.



FTX 101, formerly called Operation Kerkesner, is the first-year medical student exercise. It takes place at a military training base in Pennsylvania and closely replicates actual field conditions. Students learn important military skills like hand-to-hand combat, search-and-rescue tactics, small squad movement, combat casualty care and basic field medical skills.

Operation Bushmaster is the last field exercise before graduation. The five-day final examination also takes place in Pennsylvania and replicates a combat environment, complete with different echelons of care and simulated injuries, which include chemical burns, impalements, gunshot wounds and harder to identify injuries like concussions and traumatic brain injuries. Students must diagnose and treat these wounds while also leading multidisciplinary medical teams in the field or at the forward operating bases they helped build. They also face ethical, moral and command decisions.



1995

USU welcomes its first second-generation student, Navy Ensign Nathaniel Almond. His father, Navy Captain Myron Almond, is a 1981 alumnus.

Curriculum Reform

Landmark reports over the past century have influenced change and evolution in medical education. The University has recently embraced this education reform.

After two years of detailed planning, USU rolled out a brand-new curriculum called “Molecules to Military Medicine” in August 2011. The completely overhauled program maintains USU’s signature military footprint and provides a much stronger link between classroom learning and clinical experience.

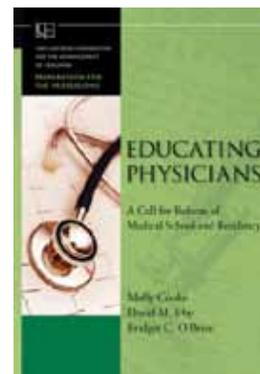
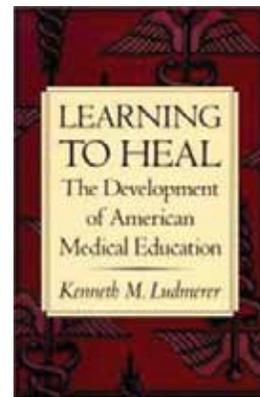
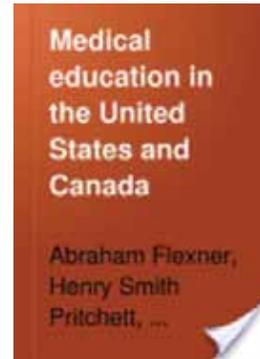
Now, students begin interacting with patients much sooner. In fact, they start learning how to conduct a medical interview and orchestrate a complete, head-to-toe physical examination during the first week of medical school. These activities, once reserved for more advanced students, help contextualize basic science in a more meaningful and personal way.

But earlier hands-on learning is just one of several large-scale transformations in the revised curriculum. Older, discipline-based courses have been replaced by integrated modules that combine

key concepts from different subject areas into more comprehensive units based on various organ systems. Coursework about the cardiovascular and renal systems, for example, includes benchmarks from several different fields in one streamlined, nine-week module.

This method, combined with advanced clinical training and state-of-the-art simulation education, helps students assimilate the science of medicine into everyday practice. It also gives them a more complete experience, starting the moment they step foot on campus.

“The expertise and teamwork of an exceptionally dedicated faculty and staff has allowed USU to accomplish in two years what has taken most U.S. medical schools three to seven years to achieve,” said Air Force Colonel Arnyce Pock, M.D., director of the Office of Curriculum Reform. “Our medical students are responding very positively to the new curriculum. It significantly enhances their learning experience.”





James Zimble, M.D.

James Zimble, M.D., USU's fourth president, was a popular leader with an impressive military record. Before coming to USU, he oversaw the development of an integrated worldwide master plan for military medicine. Afterward, Zimble was promoted to vice admiral and appointed Surgeon General of the Navy.

Zimble retired from the military after his four-year term in Washington, D.C., ended. He came to USU soon after, where he continued transforming military medicine through scholarship and research. Zimble also helped push USU's boundaries into brand-new academic disciplines. Under his leadership, the Graduate School of Nursing was created at USU.

In USU's medical and nursing schools, Zimble was known for his effective leadership and friendly manner. He took time out of every workday to visit with all levels of personnel. He also delivered impromptu lessons about life as a military physician that for him included experience in undersea medicine, several deployments, program development and countless leadership roles at bases around the world.

Expanding the Curriculum



In the fall of 1992, Congress mandated the establishment of a nurse practitioner program at USU. Soon after, a charter class of three students set the precedent for the new school.

The intent of the legislation was to meet the increasing needs for advanced practice nurses in the uniformed services. A task force was established to assist with program development, which included faculty members from both the School of Medicine, graduate programs and representatives from the Services.

“While we're known for our medical school, our stated mission is to provide the nation with health professionals dedicated to career service in the military and U.S. Public Health Service,” said James Zimble, M.D., president of USU when the Graduate School of Nursing (GSN) was created. “This new program expands the reach of USU in

supplying nurses with advanced skills and dedication to public service.”

Two years later, students from USU's newly created Nurse Anesthetist program arrived on campus. A year after they graduated, two new tracks were added, a Perioperative Clinical Nurse Specialist program and a Doctor of Philosophy in Nursing Science, followed by the Adult Psychiatric Mental Health Practitioner program in 2008.

These five programs complete GSN scholarship opportunities at USU today. However, many of the master's tracks have grown into Doctor of Nursing Practice degrees—an evolution that further leverages USU's important role in military health care. It also demonstrates how visionary thinking can expand a school into something much bigger and broader with enough diverse expertise to care for servicemembers and their families in many different environments.



2000

White House physician and Naval officer Eleanor Connie Mariano is the first USU alumnus to reach flag rank.

An Evolving Curriculum

The University's nursing graduates have taken on extraordinary roles at duty stations around the globe for nearly two decades now. They have knowledge that is not taught at civilian universities and harness unique skills when caring for patients in challenging situations or in state-of-the-art military treatment facilities. The decisions they make on battlefields, ravaged lands and hospitals closer to home can save a life or hundreds at once, because the GSN has always been focused on the needs of patients in peace and war, at all echelons of care.

This formula is guiding innovation in the GSN. A recent curriculum evolution builds on the traditional master's programs and provides graduates with additional skills and education for the 21st century.

In 2012, the first class of Doctor of Nursing Practice (DNP) students matriculated, and the program is already pushing students to new heights.

"Graduates will be prepared as advanced practice nurses and also receive advanced education in health policy, health economics, informatics, population health and systems



leadership," said Carol Romano, Ph.D., associate dean for Academic Affairs in the GSN. "The DNP curriculum is designed so the graduates are poised to improve entire systems of care and patient outcomes for America's fighting force."

Like all USU programs, the DNP is rigorous. Students must use critical thinking for assignments that demonstrate their ability to use evidence-based practice, make quality improvements and lead multidisciplinary health care teams effectively. Before graduation, students must also complete a final scholarly inquiry project, that demonstrates their aptitude for positively transforming health care in meaningful ways.

"The clinical doctorate is becoming a standard for advanced nursing practice preparation and the Graduate School of Nursing is on the forefront of implementing this standard," Romano said. "Our alumni will be positioned to lead and facilitate translation of the best science in federal health care systems for our warriors and their families today and tomorrow."



2001

USU alumni and faculty play key medical response roles in the aftermath of the terrorist attacks on Sept. 11.



Leadership Legends

Faye Abdellah



Faye Abdellah, Ed.D., was already a legend in the nursing world by the time she joined USU's faculty in 1993. A 40-year Public Health Service veteran, Abdellah was the first nurse to become a rear admiral and the Deputy Surgeon General of the United States. Her rise came on the heels of many groundbreaking accomplishments, including changing the way nursing theory is taught and practiced at universities and hospitals across the nation. Abdellah also developed the first federally tested coronary care unit and has authored many books that are still considered gold standards for education, including her seminal publication, "Patient Centered Approaches to Nursing." In June 2012, she was inducted into the American Nurses Association Hall of Fame.

Abdellah's impressive resume caught the attention of USU's leadership, who wanted to reach into new areas of scholarship. As a result, she was asked to chair a task force that studied the benefits of establishing a nursing school at USU in 1990.

Her recommendation—to create graduate programs that would prepare advanced practice nurses for leadership roles in the military—was heeded when USU's Graduate School of Nursing was established in 1993. She was appointed dean soon after and quickly began implementing signature curriculums for the first classes of Family Nurse Practitioner and Nurse Anesthesia students.

Ada Sue Hinshaw



Ada Sue Hinshaw, Ph.D., dean of USU's Graduate School of Nursing, has been moving nursing boundaries for several decades now. Over the course of her impressive career, Hinshaw's research has led to newer, better standards of patient safety and care at hospitals across the nation. Furthermore, her leadership has transformed higher education for nurses, especially at USU, where she is overseeing a large-scale curriculum evolution that is taking master's-level programs and turning them into more advanced Doctor of Nursing Practice degrees.

Hinshaw's work at USU combined with several additional trail-blazing accomplishments, including serving as the first director of the National Institute for Nursing Research at the National Institutes of Health, have been recognized by nearly every professional nursing organization in the United States.

In 2011 alone, she was named a "Living Legend" by the American Academy of Nursing and received the Pioneering Spirit Award from the American Association of Critical Care Nurses.

"Receiving awards from my peers is always a tremendous honor. But for me, the most satisfying part of my work is knowing I'm making a difference in the health care of people," Hinshaw said. "At USU, I'm helping others do the same, and I can't imagine anything more rewarding than that."



2002

The Center for Health Disparities is established at USU.

USU's Newest College

Military dentistry has many rewards, but nothing beats a warrior's smile, say all three deans of the Postgraduate Dental College (PDC), the newest large-scale academic expansion at USU that includes Army, Navy and Air Force schools.

The vision for a postgraduate dental college began in 2007 when then-Assistant Surgeon General of the Air Force and Chief of Dental Services Major General Gar Graham asked USU's President Charles L. Rice to explore the idea. After much discussion, the Board of Regents recommended the establishment of service-specific postgraduate dental schools, all aligned under the USU Postgraduate Dental College. The Middle States Commission on Higher Education, USU's accreditation authority, granted the substantial change request in February 2010 and the first class of Naval and Air Force students matriculated in July 2010. Since then, the Army Postgraduate Dental School has been added. Retired Army Major General Patrick Sculley was appointed as interim Executive Dean of the College in 2010 and Executive Dean the following year.

In June 2012, the PDC graduated its first class, consisting of 28 postgraduate dental residents from the Air Force and Navy programs. The College has now grown to include seven specialties spread over



*Army Colonel
Robert Manga*



*Navy Captain
Glenn Munro*



*Air Force Colonel
Thomas Schneid*

five locations and includes 132 faculty and 123 students with further expansions planned, including the Comprehensive Dentistry program at Keesler Air Force Base in summer 2013.

The deans of these dental schools—Army Colonel Robert Manga, Navy Captain Glenn Munro and Air Force Colonel Thomas Schneid—have brought a new kind of wisdom and experience to the University.

“Comprehensive dentists have special training that expands their scope of general practice,” Munro said. “Our versatility is really important, especially in operational settings, because the military can't afford to lose anyone on the front lines.”

“Our residencies are world class,” Schneid said. “They have strong didactic and clinical components as well as robust research programs.”

“My job is wonderful, because I help soldiers feel better. Restoring a person's smile is a priceless feeling. I can't imagine doing anything else,” Manga said. “Soldiers make incredible sacrifices to serve the greater good. Taking care of them is truly an honor.”

“I am very proud of the accomplishments of the students and faculty of USU's newest college,” Sculley said. “They are magnificent representatives of the excellence that is the University.”



*Retired Army Major General
Patrick Sculley*



2003

U.S. News & World Report ranks USU's community health program as sixth in the nation.



*Air Force Second Lieutenant
John Trentini*

Every academic program at USU is demanding and time intensive. Still, Air Force Second Lieutenant John Trentini is pursuing two degrees at once. He's part of USU's combined M.D./Ph.D. program, a track so rigorous only three other people have completed it.

Trentini began the program in 2006, and if everything goes according to plan, he will graduate in 2013 as both a physician and a neuroscientist. Trentini believes these complementary fields will inform both his medical practice and future research pursuits.

"I've learned to think about medicine and science in two totally different ways. Through my Ph.D. coursework, I was encouraged to look at complex medical problems and discover novel explanations and treatment strategies," he said. "I feel that my scientific curiosity is a great asset to patient care in that I will always pursue the most current therapeutic strategies."

Advancing Graduate Education

Graduate programs are an essential element of every medical school. In fact, they were part of the founding USU legislation, but Randall Holmes, M.D., Ph.D., a pioneer for early doctoral programs, helped bring real form to them.

Holmes authored the founding document that later established USU's rigorous graduate degree requirements. Soon after, all of USU's basic science departments used his framework to begin organizing doctoral programs.

Pharmacology and Physiology were the first departments at USU to create graduate programs with qualifying examinations and thesis defense compositions in 1977, requirements mandated by the Holmes document.

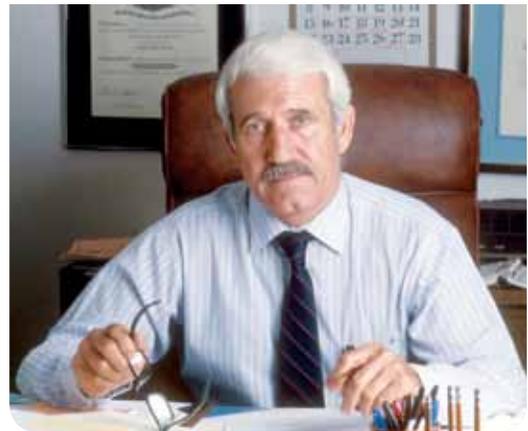
USU's other departments began systematically organizing their own graduate programs, too. John Bullard, Ph.D., another early trailblazer in USU's School of Medicine, oversaw much of this growth as the first assistant dean for Graduate Education and associate dean for Continuing Education.

Bullard, recognizing the importance of robust graduate

education opportunities, helped organize a colloquium to showcase USU's growing research portfolio. Over the years, it has developed into an annual event with presentations and distinguished guest speakers from the nation's leading universities and scientific institutions.

The University formally recognized Bullard's many contributions in 1990, shortly after his retirement and just as USU's first interdisciplinary programs were being formed, by naming the colloquium's keynote lecture after him.

Today, the event continues drawing bright minds in science, including Nora Volkow, M.D., director of the National Institute of Drug Abuse at the National Institutes of Health, who presented the 2012 Bullard Lecture.



John W. Bullard, Ph.D.

Leading Scientific Growth

Over the decades, numerous research labs at USU have been pioneers in cutting-edge research developments. One of those such labs is directed by Dr. Alison O'Brien.

Alison O'Brien, Ph.D., professor and chair of the Department of Microbiology and Immunology, has been leading scientific growth at USU for 34 years now. She arrived on campus soon after the first permanent buildings were completed in 1978 and has been pursuing research aimed at understanding the roles of Shiga toxins in the pathogenesis of *E. coli* infections ever since.

Her lab has yielded many significant breakthroughs over the past three decades, including discovering the toxins produced by certain emerging pathogenic *E. coli* were the same as Shiga toxin produced by *Shigella*. Her laboratory also showed that multiple types of Shiga toxin are made by *E. coli*. Furthermore, her team was first to produce monoclonal antibodies that neutralize the different Shiga toxin types.

These early discoveries catalyzed many new investigations. Since then, O'Brien has developed humanized antibodies for diagnosing, treating and preventing diseases caused by *E. coli*. She has several patents for this work, which have been licensed to major biotechnology

companies with worldwide reach. Her research is also widely published in leading microbiology journals.

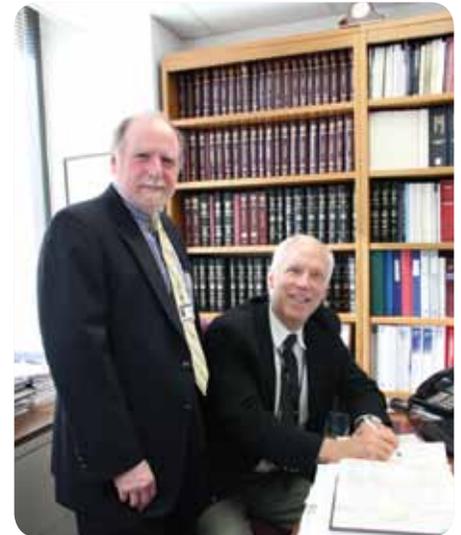
Today, O'Brien's lab continues investigating *E. coli* Shiga toxins with multiple foci on the pathogenesis of hemorrhagic colitis and hemolytic uremic syndrome, the roles of Rho-modifying cytotoxic necrotizing factor and hemolysin in the pathogenesis of *E. coli*-mediated urinary tract infections, and the use of spore-surface antigens of *Bacillus anthracis* as vaccine candidates.

As with many of USU's faculty, O'Brien is also sharing her knowledge with next-generation scientists at USU. She has mentored dozens of graduate students and postdoctoral fellows throughout her career.

"Mentorship is the chance to give back to the next generation what was so generously given to me: respect for the scientific method, the tools to be a good scientist, and encouragement to pursue the question rather than the technique," O'Brien said.



Alison O'Brien, Ph.D.



Mark Scher, Ph.D., and
John Baker, J.D.

The University and the Henry M. Jackson Foundation for the Advancement of Military Medicine (HJF) formed a Joint Office of Technology Transfer in 2000. This partnership, led by USU general counsel John Baker, J.D., and HJF Director of Technology Transfer and Commercialization Mark Scher, Ph.D., encourages collaboration between military and civilian medicine to move innovative technologies into the marketplace from "bench to bedside."

The office has successfully entered into license agreements for many products, including diagnostics for infections and vaccines for diseases, all with potential for worldwide use.

Leading Scientific Growth

University scientists have discovered a new way to render a microbe non-infectious while preserving its immune system-boosting properties after exposure to gamma radiation.

The discovery could have profound implications for the development of vaccines for deadly diseases like human immunodeficiency virus (HIV), explained USU Pathology Professor Michael Daly, Ph.D., whose research team led the study.

Daly has devoted more than 20 years to studying *Deinococcus radiodurans*, a microorganism that can withstand several thousand times the radiation levels that would kill a human being, and can be found nearly anywhere from your kitchen counter to the middle of a desert.

Deinococcus survives these extreme environments by accumulating high concentrations of manganese, a metal element similar to iron and peptides, which protect its proteins from destruction when exposed to high levels of radiation or extremely dry conditions.

Vaccines are usually made up of “bits and pieces” (epitopes) of disease-causing viruses or bacteria, he explained. When injected into a human or animal, these provoke an immune response that

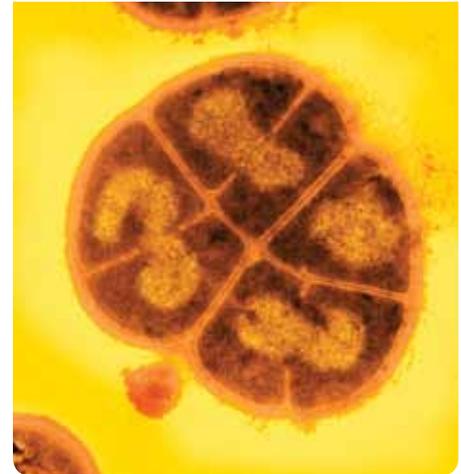
includes the production of antibodies, which can defend against future infection.

“However,” Daly explained, “the ‘bits and pieces’ sometimes aren’t enough, and vaccines against many deadly diseases haven’t worked.” He added that live vaccines using a weakened version of an intact virus or bacterium are most effective, but not an option when it comes to an otherwise untreatable disease like HIV, because they carry an unacceptable risk of infection.

Radiation renders a virus or bacterium non-infectious by destroying the organism’s genetic material, but can also damage its protein structures, which the immune system needs to recognize for a vaccine to be effective. Daly’s team was able to get around this problem by isolating the manganese complex from *Deinococcus* and using it to protect a different bacterium’s proteins from destruction by radiation.

But all the proteins and all the structures on their surfaces remain, so you then can take these lethally radiated pathogens and use them in making vaccines. As a result, the immune system thinks it is encountering the real bugs, which are now just lifeless shells, and mounts a full protective response.

USU researchers, led by Daly, teamed up with scientists from the National



Institutes of Health to test a vaccine for drug-resistant *Staphylococcus aureus* bacteria in mice. It worked. The breakthrough study was published in the July 2012 edition of the scientific journal, *Cell Host and Microbe*. Daly said it could take years to get approval for human trials, but he is optimistic this discovery will be a big help in fighting deadly diseases like HIV and influenza.

“This could speed up the whole process of producing vaccines. Instead of biochemists spending years trying to clone one aspect of a microbe’s protein structure, it could take only a matter of weeks to radiate all the different strains of a disease and create one vaccine to protect against all of them,” Daly said. “We’ve shown this approach can work on *Staphylococcus*, which kills about 18,000 people per year. Now it’s only a matter of time before we can apply it to other bugs.”



2008

The National Center for Disaster Medicine and Public Health is established.

Leading Scientific Growth

Forty years ago, the world watched in nervous anticipation as the United States and the Soviet Union stood on the brink of nuclear war following Soviet buildup of nuclear missiles off the coast of Cuba.

Long after the end of the Cold War, the threat of possible nuclear weapons use still exists, with more than 20 countries identified as possessing the capability, along with the fear that various terrorist groups have access to nuclear weapons.

As a result, scientists at the Armed Forces Radiobiology Research Institute (AFRRI) continued developing drugs to enhance survival of troops or civilians exposed to high doses of radiation, either by accident or through terrorist activity or war.

Mark Whitnall, Ph.D., a researcher at USU, was inspired by reports that an immune system-strengthening steroid hormone called 5-androstenediol (5-AED) increased resistance to bacterial and viral infections in rodents.

“Between 80 percent and 100 percent of mice treated with 5-AED survive after receiving radiation doses that are normally lethal,” Whitnall said.



The hormone stimulated proliferation and differentiation of bone marrow progenitors of infection-fighting white blood cells. Elevated levels of circulating platelets were also observed, which mitigates radiation-induced hemorrhage. Furthermore, 5-AED exhibited very few side effects, unlike many of the other radioprotectants being tested during the early 2000s.

“The aim was to administer the drug in advance to servicemembers who run the risk of radiation exposure, with the protective effects lasting a minimum of one day. If troops are exposed before receiving the drug, they could take it up

to several hours after exposure, and possibly later,” Whitnall said.

Today, 5-AED has been tested for safety in humans. It was found to have extremely low toxicity, and increased the number of white blood cells and platelets in blood. A paper published in 2012 by AFRRI showed the survival-enhancing effects of 5-AED were mediated by an immune system hormone, granulocyte colony-stimulating factor. The report also showed 5-AED stimulated immune cell function and induced genes that inhibit DNA injury.

Although AFRRI has continued to explore many other promising countermeasures against acute radiation syndrome, 5-AED was the first one to obtain Investigational New Drug status from the Food and Drug Administration.

“A radiation countermeasure like 5-AED could save tens of thousands of people if a small nuclear device were detonated in a medium-sized city,” Whitnall said. “5-AED is the prototype for a new generation of safe and effective radiation countermeasures being identified and developed at AFRRI and elsewhere.”

Leading Scientific Growth

A team of USU-led scientists recently reported a major breakthrough in the development of a highly effective vaccine against the deadly Nipah virus.

Nipah and Hendra viruses, found naturally in several species of Pteropid fruit bats (flying foxes), emerged in the 1990s causing serious disease outbreaks in humans and livestock in Australia, Bangladesh, India, Malaysia and Singapore. Recent Nipah outbreaks have resulted in acute respiratory distress syndrome and encephalitis, person-to-person transmission, and greater than 75 percent case fatality rates among humans. The NIH and Centers for Disease Control and Prevention have classified Nipah and Hendra as biothreat agents, and the U.S. Department of Agriculture has characterized them as agriculture threat agents.

Experiments carried out in African green monkeys demonstrated that immunizing monkeys with a vaccine based on the Hendra virus attachment G glycoprotein afforded complete protection against Nipah virus infection with no evidence of disease.

“These findings are really quite promising and appear to offer a real potential treatment for either Nipah or Hendra virus infection in people,” said

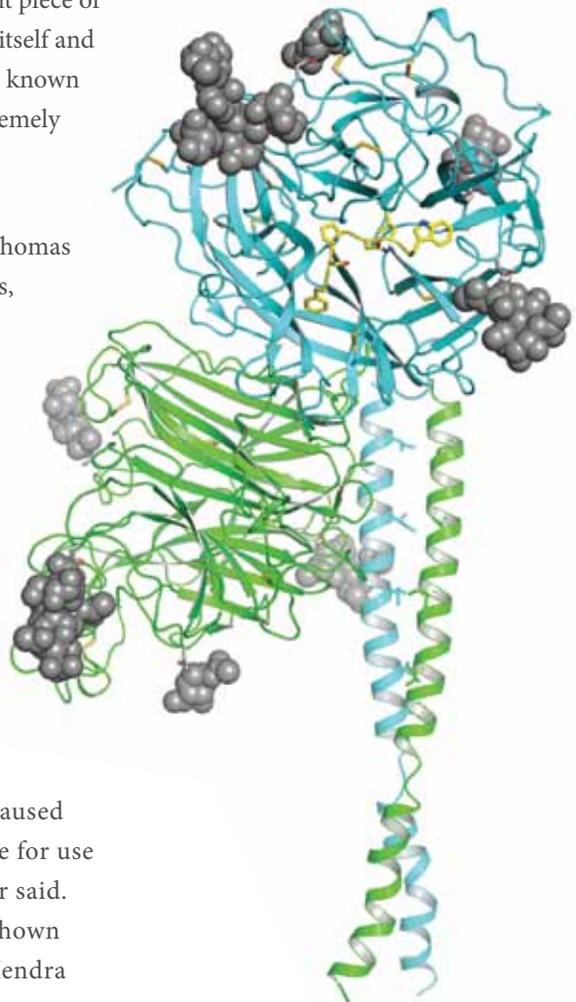
Christopher Broder, Ph.D., professor of Microbiology at USU and the study’s corresponding author.

Lead author, Katharine Bossart, Ph.D., a USU alumna and assistant professor in the Department of Microbiology, Boston University School of Medicine, developed the Hendra-sG vaccine while a student in Dr. Broder’s laboratory at USU. “Since the vaccine is only a recombinant piece of the virus, it can be produced by itself and purified, and is a type of vaccine known as a subunit, thus making it extremely safe to use,” Bossart said.

According to study co-author Thomas Geisbert, Ph.D., a USU alumnus, “This work now provides key evidence that a simple and safe recombinant vaccine against Nipah virus is possible. Demonstrating this in a nonhuman primate model is a major step forward in developing it for future therapeutic use in people.”

“There are currently no approved vaccines for prevention of infection and disease caused by Nipah and Hendra available for use on people or livestock,” Broder said. “The vaccine had previously shown protection in ferrets against Hendra

virus infection, and in cats against Nipah virus infection. In addition, the Hendra-sG vaccine has been trialed in horses against Hendra virus in Australia where it has demonstrated complete protection against illness and infection. Demonstrating its potential as a safe and effective vaccine in monkeys is an important step toward being licensed for possible use in people.”



2010

The Postgraduate Dental College is established at USU.

National Capital Area Medical Simulation Center

Students at USU have been getting hands-on experience at the National Capital Area Medical Simulation Center for more than 12 years. The high-tech environment is used by students and faculty for many purposes, from honing surgical skills and bedside manner to practicing frontline care in field hospitals or in the trenches.

This coursework, which has been a mandatory part of the Graduate School of Nursing and School of Medicine curriculums since 2000, gives students the confidence and experience they will need for life after graduation.

“The SimCenter is a place to learn from your mistakes, and simulation can provide learners with as many safe opportunities as needed,” said Gilbert Muniz, Ph.D., deputy director of the SimCenter.



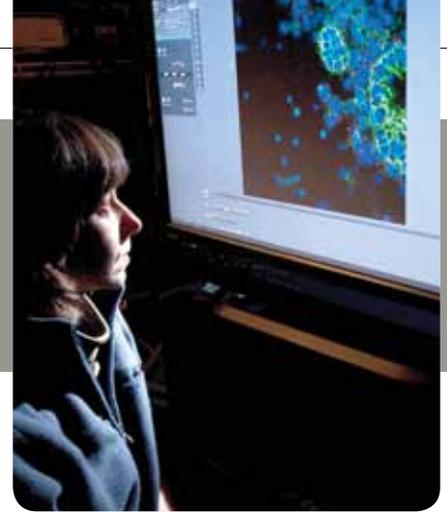
Val G. Hemming, M.D.
Dean of the School of Medicine, 1996-2002

Medical simulations may look and feel real, but there are no lasting consequences if things go wrong at the SimCenter. This kind of risk-free learning is one of the major benefits of simulation education, which is a rapidly growing trend at health science universities across the nation.

Still, the key to effective simulation is creating authentic, “real” experiences.

The center offers training in clinical skills using standardized patients to simulate specific challenges in outpatient, inpatient and critical care settings. It also offers surgical and medical skills training in a full-scale operating/emergency room mock-up where mannequins are also used to provide highly realistic scenarios.

Award-winning computer artists and programmers make up the Virtual Medical Environments (VME) Lab. These multitalented center staffers have done groundbreaking research in haptic (force feedback so the student can “feel” as well as see the patient) and visual perception designed to enhance the realism of the virtual experience. In addition to procedural skills, the VME lab focus now includes surgical, emergency room and field hospital simulations as well as medical gaming and large-scale simulations designed to train medical teams in battlefield and natural-disaster scenarios.



Research Gains

USU received the highest ranking on The Chronicle of Higher Education’s list of colleges making the largest gain in receiving federal funds for research and development in science and engineering during a 10-year period.

The report stated that federal science funds doubled at 28 colleges from 1999 to 2009. USU topped the list of 200 colleges, with an impressive 893.3 percent increase. In 1999, federal funds awarded to USU totaled \$12.5 million. That amount reached \$124.3 million in 2009.

The SimCenter, which was dedicated in late 2012 as the Val G. Hemming Medical Simulation Center after the former School of Medicine dean whose efforts led to its establishment, is one of the world’s most advanced centers for medical simulation education. It is currently undergoing a major renovation that will enhance the center’s technology by adding more than 10,000 square feet to the floor plan and completing the Wide Area Environment, which will be used to train students in mass casualty scenarios in immersive, virtual 3-D environments.



2011

Retired Navy Captain Peter Rhee leads the trauma team that saved Arizona Congresswoman Gabrielle Giffords’ life after she was shot outside a crowded Tucson grocery store.

Center for Neuroscience And Regenerative Medicine



results, including the National Institutes of Health. The CNRM recently partnered with NIH to purchase a high-tech, full-body scanner with unique, cutting-edge features. The Biograph mMR takes positron emission topography and magnetic resonance imaging simultaneously, which makes patient care swifter, safer and more comprehensive, since it provides a more complete picture of metabolic activity in a shorter time frame than separate MRI and PET scans.

“A major challenge in the diagnosis and treatment of both military and civilian brain injury patients is the lack of sufficient tools to evaluate the type and extent of injury in a given patient,” said Regina C. Armstrong, Ph.D., director of the CNRM. “We expect the NIH investigators have the expertise to take maximal advantage of this technology by designing novel neuroimaging protocols and molecular probes that can significantly improve how TBI research is performed.”

Improving the imaging technology used to diagnose TBI is one CNRM initiative that could lead to a major breakthrough. Other exciting CNRM TBI initiatives include clinical, neuropathology and biomarker research.

America has been at war for more than a decade now, and thousands of servicemembers have been wounded during this time. Traumatic brain injuries, however, have been some of the most prevalent wounds of Operation Iraqi and Enduring Freedom.

More than 200,000 servicemembers have been affected by TBIs worldwide. These injuries are hard to diagnose and treat. They also seem to affect each person differently, making the science to understand them a very difficult and slow-moving field. But, the Center for Neuroscience and Regenerative

Medicine (CNRM), established at USU in 2008, has taken on the challenge.

Scientists from many different disciplines have joined forces at the CNRM. Together, they are finding new approaches to understanding and treating TBI through biomarker identification, brain tissue neuroregeneration, rehabilitative medicine and many other full-spectrum research programs.

The CNRM is also reaching across campus boundaries and forming partnerships with other leading scientific organizations to catalyze TBI



2011

Army Lieutenant Colonel David E. Cabrera, a social worker in USU's Department of Family Medicine, is killed in the line of duty while deployed to Afghanistan—USU's only combat death.

Advancing the Rehabilitation Of Wounded Warriors



Military medicine has a long history of advancing medical, surgical and rehabilitative care, particularly for individuals who sustain traumatic injuries, such as amputation, traumatic brain injury, sensory loss and paralysis.

During Operation Enduring Freedom and Operation Iraqi Freedom, advances in medical evaluation techniques, forward medical and surgical support, and improved protective armament have resulted in numerous servicemembers surviving injuries that would have likely been fatal during previous conflicts. Today's military health care system has achieved an unprecedented 92 percent survivability rate from combat wounds. As a result, many servicemembers and their families face extraordinary challenges as they recover from these injuries and seek the highest level of functional independence and quality of life.

The Center for Rehabilitative Sciences Research (CRSR) was created to

advance medical knowledge and improve the military health care system's rehabilitation strategies in treating combat casualties with orthopedic and neurological trauma. The center provides a centralized organization to investigate, define and validate the most effective rehabilitation strategies and introduce the latest advances in technology, science, engineering and regenerative medicine to help improve the lives of injured servicemembers, especially those with complex battle injuries.

"The Uniformed Services University and HJF have been instrumental in the formation of the CRSR, helping to create a central core of academic and administrative leadership to allow the investigation of a wide range of rehabilitation challenges that our wounded warriors face," said Army Colonel Paul Pasquina, M.D., the center's director.

The center has already established coordinated inter-service research partnerships among Walter Reed National Military Medical Center, Center for the Intrepid in San Antonio, San Antonio Military Medical Center, Naval Medical Center Portsmouth in Virginia and Naval Medical Center San Diego. These five sites are the principal military treatment facilities caring for the majority of injured servicemembers

returning from military operations in Iraq and Afghanistan. In addition, significant partnerships have already been forged with industry partners and other academic institutions.

"Our goal with developing the center was to put together leading experts in a variety of disciplines to conduct clinically relevant research to advance the education and rehabilitative care of our servicemembers," Pasquina said. "Current projects range from developing advanced robotics for improved functional independence to better identifying the psychosocial and cultural barriers to successful rehabilitation and community reintegration."

"One of the greatest strengths of the CRSR is our diverse personnel and the expertise that they bring to help solve complex problems. Our team consists of experts in rehabilitation, physiology, anesthesiology, nursing, anthropology, physical and occupational therapy, neuropsychology, and engineering. These individuals work closely with one another, never losing focus on the mission of improving the lives of our injured servicemembers," Pasquina said.

Center researchers hope that their findings will also have a positive impact on the well-being of all individuals with disabilities.



2012

First class of Postgraduate Dental College students graduates.

John P. Murtha Comprehensive Cancer Center



The newly established John P. Murtha Comprehensive Cancer Center, a Defense Center of Excellence, is leading the fight against cancer through team science, cutting-edge medicine, personalized care and pioneering education, with USU serving as the center's academic arm.

The center's highly trained experts—which include researchers, physicians, nurses and other health care

providers—provide a continuum of multidisciplinary patient-focused care that tackles cancer from every angle, including identifying new prevention methods, developing better screening measures and discovering more effective treatments for many different forms of cancer.

Less than a year old, the Murtha center has already established a network of laboratories in Maryland, Pennsylvania and Virginia and formed partnerships with the University and the National

Cancer Institute to coalesce the area's best resources in the fight against cancer. This collaboration improves patient care at Walter Reed National Military Medical Center, the center's home base, and at other military and civilian hospitals around the world. Their gains improve and save lives by bringing the latest advancements in cancer treatment to military members and their families.



2012

Brigadier-General Jean-Robert Bernier, a 1997 graduate of USU's Master of Public Health degree program, is appointed Surgeon General of Canadian Forces.

Building the Next Generation of Leaders



Rear Adm. E. Connie Mariano,
U.S. Navy (ret.) (SoM '81)



Brig. Gen. C. William Fox, Jr.,
U.S. Army (ret.) (SoM '81)



Lt. Gen. Thomas W. Travis,
U.S. Air Force (SoM '86)



Brig. Gen. Donald Bradshaw,
U.S. Army (ret.) (SoM '81)



Brig. Gen. William Germann,
U.S. Air Force (ret.) (SoM '82)



Brig. Gen. Paul Casinelli,
U.S. Army (ret.) (SoM '80)



Rear Adm. Sandra Kweder,
U.S. Public Health Service
(SoM '84)



Maj. Gen. Byron Hepburn,
U.S. Air Force (SoM '87)



Brig. Gen. (P) Joseph Carvalho, Jr.,
U.S. Army (SoM '83)



Brig. Gen. Rhonda Cornum,
U.S. Army (ret.) (SoM '86)



Rear Adm. Michael Anderson,
U.S. Navy (SoM '81)



Rear Adm. C. Forrest Faison, III,
U.S. Navy (SoM '84)



Brig. Gen. Kory Cornum,
U.S. Air Force (SoM '86)



Brig. Gen. Timothy Jex,
U.S. Air Force (SoM '87)



Brig. Gen. Sean Murphy,
U.S. Air Force (SoM '85)



Colonel (P) John Cho,
U.S. Army (SoM '88)



Brig.-Gen. Jean-Robert Bernier,
Canadian Forces (MPH '97)

Right now, hundreds of students—most of them officers in the Army, Navy, Air Force and Public Health Service—are learning how to care for those in harm's way, a motto that has guided USU for the past 40 years. They are guided by innovative curriculums, experienced faculty members and a strong allegiance to USU's important mission.

This framework has been hugely successful for many decades now, and if history repeats itself—as it has done time and time again—today's students will become tomorrow's leaders, including flag and general officers and even Surgeons General for many generations to come.

Not pictured: Rear Admiral Kermit Smith, U.S. Public Health Service (ret.) (MPH '86), Rear Admiral Phillip Smith, U.S. Public Health Service (MPH '89), Rear Admiral Nathaniel Stinson, U.S. Public Health Service (ret.) (MPH '90), Rear Admiral Sarah Linde-Feucht, U.S. Public Health Service (SoM '92), and Brigadier General Christopher Knapp, U.S. Air Force Reserve (SoM '85).



2012

Lieutenant General Thomas Travis, a 1986 School of Medicine graduate, is appointed Surgeon General of the Air Force.

USU: A Unique Institution



The Uniformed Services University of the Health Sciences was designed by award-winning architect Norman K. Perttula, FAIA. Mr. Perttula, who worked for the Cleveland-based architectural firm of Dalton.Dalton.Little.Newport, received the prestigious Department of Defense “Blue Seal Award” for his outstanding design of USU.



Uniformed Services University of the Health Sciences
4301 Jones Bridge Road, Bethesda, Maryland 20814

www.usuhs.mil