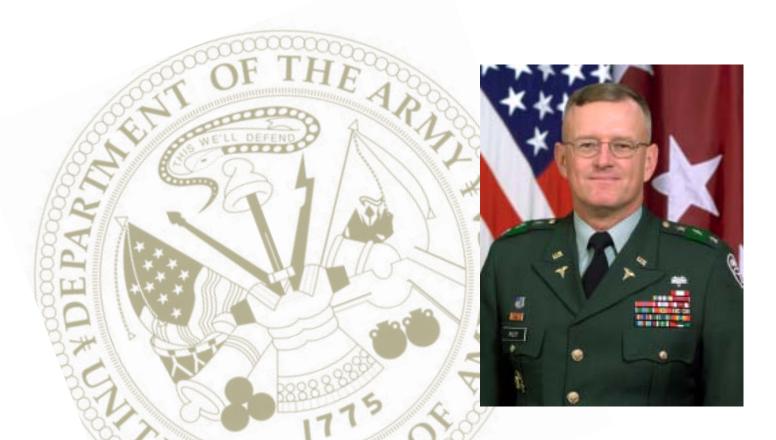


In the Lab,
... the Field,
... the Front Lines





Armed Forces Institute of Pathology
ANNUAL REPORT
2004



From the Army Surgeon General

he Armed Forces Institute of Pathology plays a critical supporting role in maintaining the health readiness of our forces deployed in the Global War on Terror. For soldiers, sailors, airmen, and marines, a rapid, accurate diagnosis from the experts at the AFIP means better medical treatment and a faster, safer return to duty.

The AFIP's multidisciplinary approach to diagnosis helps to ensure that our service members, and their families here at home, receive the finest health care available. In 2004, AFIP's world-class staff made the initial diagnosis in over 8,700 cases contributed by military treatment facilities, and made a major diagnostic change in 196 others, directly impacting patient treatment options.

The AFIP is poised to address future military challenges with the world's largest repository of tissue and tumor specimens, molecular and genetic techniques to combat disease, case-based education offerings for military health care providers, and scientific laboratories that provide a full range of new and evolving diagnostic and therapeutic aids to DoD hospital laboratories.

The AFIP has time and again proven to be an essential resource for military medical programs—for the US Army Center for Health Promotion and Preventive Medicine, the US Army Medical Research and Materiel Command, the Defense Threat Reduction Agency, and the DoD Global Emerging Infections System, to name just a few. I look forward to the Institute's continued development of technology and resources in support of military medical operations around the globe.

LTG Kevin C. Kiley, MD US Army Surgeon General Commander, US Army Medical Command

The Director's Message

n 2004, the AFIP continued the dynamic challenge of transforming services and realigning resources to meet the requirements of present and future missions. How will we support military medicine in 2005, 2010, and even 2020? I expect that 3 very promising initiatives currently under development at the Institute will play a crucial role in the future of military and civilian medicine.

The first, tissue microarrays (TMA), utilizes our vast repository of 50 million paraffin-embedded blocks and 10 million formalin-fixed tissue specimens. The creation of one unique slide from multiple pathology cases will provide significant opportunities to enhance research and education.

The second initiative is the AFIP Telepathology Program in direct support of the Army Telemedicine Program. In the last year alone, with 26 real-time systems deployed around the world, military cases increased from 268 to 373. Telemedicine offers a practical, cost-saving alternative for military pathologists and physicians in need of our services, and has tremendous potential for biodefense and homeland security.

Our third initiative is Ask AFIPTM, a Web-based program that premieres in the summer of 2005. Ask AFIPTM will link several of the Institute's unique assets, including case materials, authoritative publications by AFIP staff, and museum collections, to provide an innovative educational experience to military and civilian pathologists, radiologists, and related specialists.

These initiatives, and a strong foundation of world-class pathology expertise, ensure that the AFIP will have a critical role in support of military missions over the next 15 years.

This annual report gives an overview of the critical support the AFIP provided to deployed military personnel around the globe during 2004, including forensic investigations, identifying and treating infectious disease and environmental threats, offering advanced telemedicine, courses, and distance learning for military medical personnel, and collaborating on almost 200 pathology research protocols. Next year, we will continue to focus on restructuring and realigning.

Whatever the mission, wherever the need, the AFIP will use the newest advances in technology, communication, and diagnostics to provide the world's finest pathology and related services to our military personnel and the civilian medical community.

Renata B. Greenspan COL, MC, USA The Director





Dover Port Mortuary

The AFIP in Action: Expert, Effective, Essential

OAFME: Serving the Troops, Supporting Their Families

he Office of the Armed Forces Medical Examiner is the Institute's most direct link to our military troops. Through comprehensive forensic services, DNA identifications, and mortality surveillance programs, the OAFME provides unique and invaluable support to the DoD, our service members, and their families.

Our staff is committed to giving a full account of every military member who dies in service to their country. In 2004, the most challenging year in the history of the Armed Forces Medical Examiner System, our MEs deployed to the Dover Port Mortuary more than 200 days and undertook almost 1,100 death investigations.

Contributing to Force Protection

Our autopsy examinations and consultations provide realtime protection against battlefield threats, especially for troops deployed to Iraq. Through onsite investigations, our MEs have correlated tourniquet use with reduced mortality, and pattern injuries with enemy weaponry and personnel configurations in armored vehicles.

Our Ballistics Research Range plays a major role in testing and developing new-generation body armor, such as a new land mine boot, and in conducting research on battlefield injuries, including a new penetrating wound sensor. In 2004 we received a \$3.9M grant from the Defense Advanced Research Program Agency to develop new imaging technologies as part of the Joint Combat Trauma Registry.





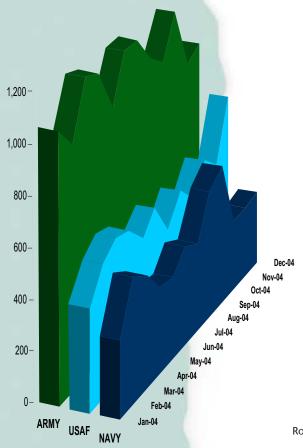
Investigating Space Crew Safety

ur office is collaborating with the AFIP's Department of Scientific Laboratories as part of NASA's Space Crew Integrated Investigation Team in an ongoing effort to provide a multidisciplinary approach to forensic examination of crew remains and debris from the space shuttle Columbia. A slide-scanning initiative is underway to establish a registry of remains from Columbia, centralized at the AFIP, as the basis for future studies of space physiology and crew safety issues.



Space Shuttle Columbia Crew

Military Consultation Cases CY 2004





Robert Veasey, OAFME

Pathology Departments Play Essential Role in Forensic Investigations

he Department of Oral and Maxillofacial Pathology supports the OAFME by providing forensic dental identification, along with training in forensic odontology for the Army, Navy, and Air Force. Members of the department are ready to deploy within 4 hours of notification. Using state-of-the-art digital technology, they can complete rapid, accurate dental identification within hours of a postmortem examination, facilitating the timely return of remains to the family.

The OAFME's forensic work is further enhanced by the **Department of Radiologic Pathology**, whose DARPA-supported Virtual Autopsy is the only CT autopsy program in the United States. Using digital technology, the Virtual Autopsy can extract previously inaccessible information, document the paths of bullets and other projectiles in 3D, and correlate this information with the use and design of protective body armor.



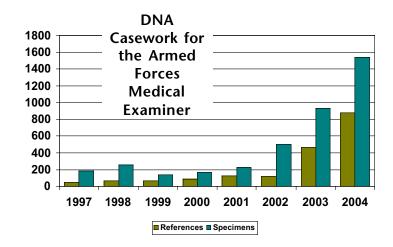


DoD DNA Registry: The Critical Component in the Quest to Identify the Fallen

he DoD DNA Registry plays a vital role in managing mass casualties and identifying fallen US service members and the victims of war crimes. We maintain a growing collection of DNA specimen cards, currently representing 96% of the total US military population. In 2004, our world-class facility processed over 17,400 DNA samples, 1,700 of which supported the identification of fallen troops in Afghanistan and Iraq.

The Armed Forces DNA Identification Laboratory (AFDIL) is the military's exclusive resource for forensic identification of fallen American service members, and the world leader in employing mitochondrial DNA typing methods to identify long-missing human remains. In 2004, AFDIL used DNA technology to provide genetic leads in dozens of forensic investigations for the Joint POW/MIA Accounting Command, providing certainty for countless family members.







Blood specimen cards

Scientific Laboratories Provide State-of-the-Art Support to Military and Civilian Medicine

he Department of Scientific Laboratories comprises 12 separate labs that provide histotechnical support for all of the case consultations and research projects conducted by the Institute's expert pathologists, ensuring the highest standards in medical and investigative science. In 2004 our technologists completed over 30,000 work orders requiring numerous procedures and special stains, including immunostaining for diagnostic and prognostic markers. All military histotechnologists routinely deploy to the Dover Port Mortuary in support of the OAFME.

The department's Tri-Service School of Histotechnology is the military's sole resource for basic and advanced training in histology techniques and assistance in postmortem examination.

Telemedicine and Distance Learning Keep Military Doctors Connected

he AFIP's electronic consultation program is the largest and most comprehensive in the world. The **Department of Telemedicine and Distance Learning** partners with WRAMC in managing the Army Telepathology Program, which currently operates 26 dynamic robotic

microscopes at Army medical treatment facilities around the world. Our staff is responsible for the installation and maintenance of these systems, and provides full consultative services and training to users.

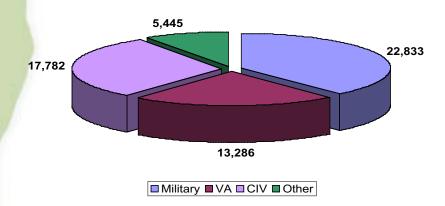
This technology allows AFIP consultants to operate microscopes at remote sites and to visualize any field on a slide at any magnification. These real-time consultations keep deployed military doctors connected to pathology resources unavailable in the field, speeding diagnoses and delivery of treatment, and reducing the number of medical evacuations. Opportunities for distance learning, including videoteleconferences originating

from our new VTC suite, mean that deployed military doctors can maintain their credentials from anywhere in the world.



Leslie H. Sobin, MD, Gastrointestinal Pathology, in the new VTC suite.

Total Consultation Cases CY 2004



We are taking better care of the troops by transforming our business practices while maintaining our scientific excellence.

—Principal Deputy Director, AFIP

World-Renowned Educational Offerings for Military and Civilian Practitioners

n 2004, the AFIP and ARP offered 42 live courses, 5 conferences, 23 Ground Rounds videoteleconferences, and 7 virtual conferences to 7,459 pathologists, clinicians, legal medicine professionals, veterinary pathologists, radiologists, dentists, forensic scientists, military and civilian residents, and professionals in related disciplines.

The **Department of Medical Education** grants CME credits in pathology, radiology, and related medical disciplines, and coordinates all hands-on training and study visits to the Institute. For example, DOME coordinates the Sexual Assault Response Team Training Program, presented by staff of the OAFME. The program includes laboratory sessions on sexual assault forensic examination, forensic photography, and collection and documentation of physical evidence for military and civilian personnel involved in victim care and medicolegal examination.

Attendance at Live Courses 2000—2004

Attendees Military	2000 288	2001 444	2002 389	2003 356	2004 592
DoD	40	56	11	22	50
VA Civilian	61 3,218	55 2,938	37 2,548	38 2,012	24 2,094
TOTALS	3,607	3,493	2,985	2,428	2,760



