

# THE POINT

A newsletter for and about the people of the  
U.S. Army Medical Research and Materiel Command



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## Course trains 'select few' on bio warfare agents

The four-week, hands-on “Field Identification of Biological Warfare Agents, or FIBWA, course offers training in the most advanced field technologies for confirmatory identification of biological warfare agents. Developed by the U.S. Army Medical Research Institute of Infectious Diseases, FIBWA is the only course of its kind in the entire Department of Defense.

According to Mark Wolcott, Ph.D., head of the Field Operations and Training branch within USAMRIID’s Diagnostic Systems Division, FIBWA grew out of the need for battlefield detection of BW agents. As field detectors were developed and deployed, the ability to confirm what the detectors were “seeing” was crucial to add confidence for battlefield, medical, and National Command Authority decisions. The requirement for a deployable BW agent confirmation laboratory was born.

Since the FIBWA course was first offered in 1999, nearly 200 students from all three services and other government agencies have attended. To ensure that the training stays on the cutting edge, concepts of operations and diagnostic materials, equipment and technology are continually evaluated and transitioned into the field.

Bill Dorman is the FIBWA training coordinator. Formerly “Sergeant Dorman,” he came on board as a civilian during the very first course in 1999. At that time, USAMRIID had put together a laboratory/training package at the request of U.S. Central Command, which wanted its own full-time lab capability. The demand grew, and there are now six laboratories under five major commands. CENTCOM, U.S. Pacific Command, U.S. Army Center for Health Promotion and Preventive Medicine and U.S.

Army Medical Command each have one laboratory; Forces Command has two.

“The course is unfunded,” said Dorman, “so everyone who comes has to pay their own way.” The cost—\$7,000 per student for the four-week course—means “we get a select few,” he added. His group keeps busy—six student courses are offered per year, along with three “manager” courses. The latter are designed for decision makers like laboratory officers and commanders, who would get the lab results and act upon them.

The first two days are spent largely in the classroom. Students receive an overview of the history of biological warfare, along with briefings on laboratory concepts, current techniques, and field laboratory operations. The fundamentals of biological safety are also introduced. Next, they will spend nine days learning how to extract genetic material—DNA and RNA—from multiple sample types, along with a technique called polymerase chain reaction, or PCR, which is used to identify the extracted DNA and RNA.

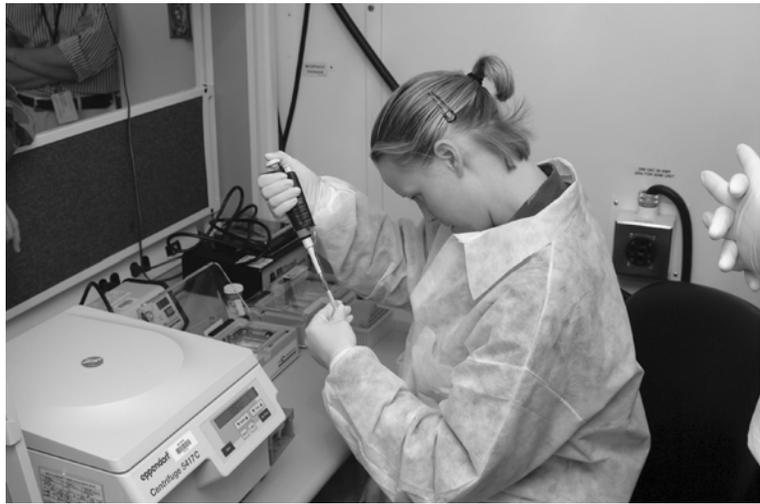
One component of the FIBWA training is “real time” PCR using an instrument called the R.A.P.I.D. (Ruggedized Advanced Pathogen Identification Device) that was specially designed for military field labs. This instrument integrates Idaho Technology’s LightCycler© Instrument technology into a portable, impact resistant package about the size of a briefcase. Distinctive software allows simple “push button” use of the R.A.P.I.D. by field personnel with minimal training. The technology offers rapid, safe and accurate field identification of potentially dangerous pathogens.

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See “Course,” page 2

*Spc. Kelly Miller runs a gel electrophoresis during the FIBWA course.*



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**“Course,” continued**

Sgt. Sean Brown from Fort Leonard Wood, Mo., is a microbiologist with clinical laboratory and blood bank experience.

“Pretty cool,” he said when asked to describe the FIBWA course. “I love the field work—it’s a lot of fun.”

Having a good grasp of molecular biology helped, said Brown, who had done PCR before but enjoyed being trained on the latest instruments. In January 2005 he will be assigned to the CENTCOM testing lab.

When asked about the most surprising aspect of the course, he said without hesitation, “Getting to work with the real agents.” Though he is quick to add that all bacteria and viruses are deactivated before students handle them, he said “it still gives you a new level of respect for what we’re doing.”

Upon completion of the PCR training, the students spend four days on an assay known as electrochemiluminescence, or ECL. ECL offers certain advantages over the widely used ELISA, or enzyme-linked immunosorbent assay. ELISA is a sensitive laboratory method used to detect the presence of antigens or antibodies of interest in a wide variety of biological samples. However, says Dorman, “a traditional ELISA could take 15 or 16 hours. The ECL

assay takes an hour to an hour and a half to run—so you get both speed and sensitivity without sacrificing specificity.” There’s another bonus: ECL training takes only a few days, while ELISA training can take a week or more.

Upon completion of the PCR and ECL units, the students take both a written and a practical exam. The true test, however, comes during the final week of the course when they perform a field training exercise. According to Dorman, this provides an opportunity to integrate the course material with real-world scenarios that challenge the students’ understanding and skills.

Participants are given five scenarios to respond to and must set up and operate a lab under field conditions. Working together as a team, they develop and implement a test plan based on the sample type and information received with each scenario. They are then expected to analyze the sample, troubleshoot any problems that may arise, and provide a final identification, if any, to the instructor. Evaluations are based on how well the students respond and solve problems throughout the exercise.

To learn more about the FIBWA course, visit [www.usamriid.army.mil](http://www.usamriid.army.mil) and click on “Education and Training.”

—Caree Vander Linden  
*U.S. Army Medical Research  
Institute of Infectious Diseases*

## Device to free up providers' hands, document care

Getting medical charts from the battlefield to a combat support hospital to a bricks-and-mortar hospital has long been a challenge for care providers.

“Paper goes thousands of miles and through dozens of hands, and it doesn’t always make it,” said Col. John Holcomb, the Army Surgeon General’s trauma consultant at a conference on combat casualty care in August 2004. “In Operation Iraqi Freedom, I’ve seen doctors resort to writing notes on patients’ dressings to let the next care provider know what was done. My personal opinion is they need to wear their record on their neck.”

Soldiers who deployed with the Stryker Brigade out of Fort Lewis, Wash., did just that.

On the chain they wear their dog tags, they also wore their medical records on a device called a PIC, which stands for Personal Information Carrier. The record can be updated after any medical encounter, if the provider had a PCMCIA adapter on a personal digital assistant or a laptop.

Getting rid of the need for an adapter—and getting rid of the need to touch the information carrier during a medical encounter—is what developers are now aiming for by developing a new wireless Electronic Information Carrier, or EIC.

The PIC “pretty much requires that we predict where all our evacuation routes are going to be and to have pre-positioned adapters everywhere, because if a patient shows up with a PIC and there’s no adapter, they’re not going to have the emergency data,” said Maj. Tim Rapp, the project manager for the EIC who works in the Army Surgeon General’s Office. “The



*Getting rid of the need to touch an information carrier during a medical encounter is what developers are now aiming for by developing a new wireless Electronic Information Carrier.*

EIC provides a patient-centered data flow so as the patient moves from node to node within the network, the EIC will have the latest information, so if a node fails or isn’t gathering data as fast, the EIC will be reliable source of patient encounter information

Having a wireless EIC will also solve one of the troubling problems medics have encountered with the PIC.

“On 95 percent of the Soldiers, they’re wearing the PIC next to the regulation dog tag so the medic needs to dig down to get it,” Rapp said. “Other Soldiers take it off and put it in their cargo pocket, so now the challenge becomes a full-blown POW search trying to figure out where the PIC is. Or, more likely, the medic just forgets it and goes back to pen and paper or chooses not to record the data out to the PIC.”

Not recording a medical encounter is precisely what the Army is trying

See “Wireless,” page 4

## Surgery Scheduling System a success

When an engineer named Kamal Pope at Tripler Army Medical Center, Hawaii, was contracted to develop a surgery scheduling system that would improve the overall operating room efficiency for his hospital, the Surgery Scheduling System, or

S3, was born.

In 2002, the Insertion General Officer Steering Committee learned about S3 and selected it as the tool of choice to meet the Army Medical

See "Surgery," page 5

### "Wireless," continued

to avoid. After learning of the military's sporadic medical recordkeeping during the 1991 Persian Gulf War, Congress mandated the services improve their process.

The PIC was one answer to that requirement, and the Battlefield Medical Information System-Telemedicine that electronically records every medical encounter on the PIC was another.

"It's our responsibility to take that a step further, and if we have the capability to take care of the Soldiers and collect this information at the point of injury, then we should do it," said Tommy Morris, the program manager for the BMIS-T at the Telemedicine and Advanced Technology Research Center. "Not just because it's public law, but because we have a responsibility to the Soldiers from boot camp to the end of their military careers."

A wireless EIC, Rapp said, will let a medic record what care was provided via BMIS-T, sign the document and save it wirelessly to a Soldier's EIC, no matter where the Soldier is wearing it.

"We've always had a need and a desire to capture what we do on the battlefield, disease and nonbattle injuries, medical surveillance and providing data to support medical command and control on the battlefield," Rapp said. "What the technology will do is it will actually help meet those requirements of data capture that are seamless to the user. It won't be asking physicians to 'Oh by the way, in between treating patients, we'd like you to fill out spreadsheet X, Y and Z.'"

Adding wireless capability as well as a uni-

versally available adapter were just two requirements the military wanted for the EIC.

"The new EIC will have a ubiquitous physical interface (like a USB port), meaning you will no longer need a proprietary PCMCIA adapter," Rapp said. "If you don't have wireless communication or for some reason there's interference, the handheld will have a port for you to simply plug it in. You're tethered to an 8- to 12-inch chain (if the EIC is around the neck with the dog tag), but at least you have that as a backup and there's no adapter."

Rapp, the wireless EIC program manager since 2001, said the new EIC will also offer automatic encryption as well as more memory than the PIC. The EIC should be able to offer anywhere from 16 megabytes to 2 to 4 gigabytes of data.

"That will allow us to store not only the encounters that take place in theater, but we also can store 20-year medical records, digital radiographic images, ultrasounds, you name it," he said. "It essentially can become a personal healthcare longitudinal record that could be taken to a VA (Veterans Administration) hospital so they don't start a new record with an empty file folder."

Four companies were each given \$100,000 in 2004 through the small business innovative research program to come up with prototypes of the wireless EIC. After the Department of Defense reviewed the designs in July 2004, two companies were given \$750,000 to continue their work.

Rapp hopes to see prototypes of the first wireless EICs on Soldiers in late 2005.

**“Surgery,” continued**

Department’s need to improve its surgery scheduling management process. Since then, the AMEDD has reaped a number of savings and benefits from the application. In only six months, S3 was deployed to 24 new sites with a fraction of the cost for deploying an alternative commercial product.

S3’s annual enterprise sustainment costs are also much lower than those needed to sustain other homegrown and commercially available products. For example, accurate end-of-month reports have reduced report processing time by as much as 16 to 24 hours. S3 also reduced scheduler workload by up to 50 percent and reduced over and under booking by allowing the clinics and surgeons to book their own surgeries.

Data entry time has been reduced tenfold to approximately one minute instead of up to 10 minutes for a previous commercially available product. S3 also enables the OR supply non-commissioned officer to plan ahead for specialty items, reducing patient cancellations by two percent. And S3’s anesthesia minutes service tracking feature enables patient administration divisions to recover more funds from insurance companies.

Perhaps S3’s biggest success story is its happy users.

“I was talking to our general surgeons a few weeks ago and asked them to list things that were going well, things they didn’t want to see changed. The number one answer was S3,” said Lt. Col. Irene Williford at the Fort Bragg’s Womack Army Medical Center.

News of S3’s success has also reached the Navy. Preparations are underway to bring the Bethesda Naval Hospital online with Walter Reed Army Medical Center’s S3 system. S3 will be deployed to the Navy’s Camp Pendleton, in San Diego, Calif., soon.

Although S3 is an interim scheduling solution until the MHS Enterprise



*Walter Reed’s operating room staff use the Surgery Scheduling System.*

Wide Scheduling and Registration system is deployed in 2007, S3 will play a major role in EWS-R. S3 has been chosen as the model system for the OR functional area. Other S3 initiatives include several version upgrades since the initial deployment, a state-of-the-art online help and demonstration capability available in the next release and an active community of practice user forum that meets monthly.

“We’ve received positive feedback on this meeting format and hope it will continue to benefit our users,” said Pamela Porch, the USAMITC S3 project director.

Overall, S3 continues to be a success story for the Army. The system has even made the Uniform Business Office’s “Best Practices” list.

“We are pleased with the success of S3 and its use throughout the AMEDD. You get a sense that during the COP meetings, the functional customers ‘have ownership’ of the product,” said Maj. Patrick Shannon of the Office of the Surgeon General.

## Research changing battlefield care

During World War II, tourniquets were frequently used, but fell out of favor with doctors who were treating



*A combat medic assigned to the 1-82 Field Artillery, 1st Brigade, 1st Cavalry Division in Iraq applies a tourniquet during training.*

evacuated patients, said Dr. Tom Walters, a muscle physiologist at the U.S. Army Institute of Surgical Research. “By the time they saw Soldiers with tourniquets, the tourniquets had been on for a long time” which usually led to the limb being amputated, he said. “They (the doctors) had a real bias against them.”

Two studies were key in changing attitudes about tourniquets when both came to the same conclusion: Seven to 10 percent of battlefield deaths in Vietnam and Somalia were caused by profusely bleeding arm or leg wounds, and if a tourniquet had been used, the servicemember would most likely have lived.

“This realization resulted in a real shift in people’s attitudes, so they decided tourniquets weren’t a bad thing at all and, in fact, everyone

should have one and be taught to use it,” Walters said.

Since hostilities began in Afghanistan and Iraq, Army researchers have tried to find the ultimate tourniquet for the warfighter. The cravat and stick tourniquet, which dates back to the late 1600s, is effective but takes precious minutes to apply.

“If you’re shot in the main artery in the thigh — the femoral artery — you can easily lose a liter of blood a minute,” Walters said. “It takes a trained medic about 4.4 minutes to apply the improvised tourniquet, and the human has about five liters of blood. That’s one liter a minute, 4.4 minutes, and you only have five liters. You can do the math and figure out what the problem is.”

Warfighters are buying tourniquets online and taking them into battle, which makes Walters anxious because they don’t all work.

“Some are effective and some aren’t, but nobody’s exactly sure,” said Walters, who regularly receives e-mail from surgeons in the field telling of the virtues and shortfalls of the commercial tourniquets they’ve seen in use. “We can’t do anything about people going and buying tourniquets off the Internet.”

What researchers can do is try to find the best tourniquet for the warfighter. This summer, 20 volunteers tested 10 commercial tourniquets sent in from companies around the country to the Institute of Surgical Research to see which work and which don’t. Researchers completed the study in late July and have forwarded their recommendations to the military com-

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**“Trauma,” continued**

munities so they can use the best tourniquets in the field.

1st Lt. Jerry DePold, a physician assistant who serves as the battalion surgeon for 1-82 Field Artillery, 1st Brigade, 1st Cavalry Division in Iraq says the study is important because servicemembers frequently come in wearing tourniquets after they’ve been injured by rocket-propelled grenades or improvised explosive devices.

“This study takes the guesswork out of which tourniquet to buy. It’s one more tool our combat medics and combat lifesavers will use to ensure our Soldiers receive the best care in the world,” he said. “I think it’s great that the ISR is conducting studies that improve casualty care at the point of injury. This study is truly ‘for the line.’”

Finding the perfect tourniquet is just part of the solution for controlling gushing arm and leg wounds. The other part is using improved wound dressings that stop bleeding and let tourniquets come off.

Conventional medical doctrine as it’s written right now says that once a tourniquet is used, only a medical officer can remove it. Because evacuations can take a while, the tourniquet could be left on for so long that the limb is permanently damaged.

Medical researchers want to see the doctrine change because capabilities have changed.

“Ideally, under fire or in the immediate situation, we will develop tourniquets and dressings to the point that a tourniquet can be applied as temporary vascular control, just to get the bleeding under control,” said Dr. Anthony Pusateri, who works with hemostatic — blood-stopping — dressings and powders at the Institute of Surgical Research. “Then an advanced hemostatic dressing of some kind ... gets placed on there and the tourniquet can come off.”

Research results on tourniquets and advanced dressings have already prompted changes in battlefield medicine and civilian medicine. For instance, Special Operations Forces have changed their doctrine to allow medics to use

them, especially in conjunction with hemostatic dressings, and the American College of Surgeons Committee on Trauma has validated their use in the military environment, publishing this concept in the Pre-Hospital Trauma Life Support manual.

“Because of the focused work in this arena by MRMC (U.S. Army Medical Research and Materiel Command) researchers and the DoD at large, the civilian EMS (emergency medical service) community is discussing the use of tourniquets as well,” said “The feedback from the field is very positive, especially for the speed at which this critical (tourniquet) study was performed,” said Col. John Holcomb, commander of the Institute of Surgical Research.

The Food and Drug Administration has approved two items that stop profuse bleeding. One is a dressing made from chitin found in shrimp shells; the other is a sand-like powder. Both are on today’s battlefield, and both stop bleeding.

“In the past, when a tourniquet went on, there was nothing else out there, there was no other opportunity. You couldn’t put a gauze dressing on there and hope that it would stop the bleeding,” Pusateri said. “If you have severe bleeding that won’t stop with standard direct pressure, or if you’re under fire and there’s nothing else you can do, a tourniquet can go on knowing that you’re not risking that limb. Once there’s an opportunity to provide care when you’re not under fire, a hemostatic dressing can be applied.”

Without the military’s work on dressings that could control deadly hemorrhage, this potential change in battlefield medicine wouldn’t be possible.

“Through the late 1990s, there weren’t companies coming up with ideas that could make the quantum leap in hemorrhage control. The products were really to stop oozing bleeding a little bit faster,” Pusateri said. “We don’t need to stop bleeding that will stop on its own. We need to rapidly stop otherwise lethal hemorrhage.”

## RESEARCH REWARDED

## Whole body vibration work receives Army award

Dr. Nabih M. Alem, a research biomedical engineer at the U.S. Army Aeromedical Research Laboratory, Fort Rucker, Ala., received a 2004 Army Research and Development Achievement Award at the 24th Army Science Conference.

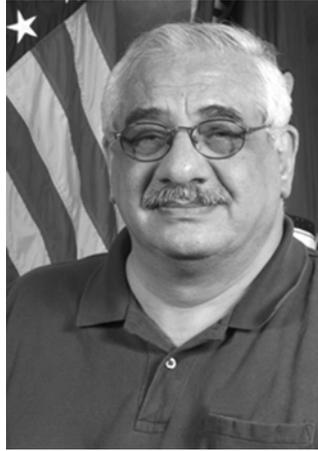
The award recognizes Alem for his leadership role in developing the international Standard entitled, “Mechanical Vibration and Shock—Evaluation of Human Exposure to Whole-Body Vibration—Part 5: Method for Evaluation of Vibration Containing Multiple Shocks,” and the associated health hazard assessment tool set.

Alem, a research biomedical engineer at USAARL since 1986, completed a highly successful program of research into the biomechanical and physiological responses of human volunteers to repeated-shock signatures, which are typically found in Army tactical ground vehicles. Because of the unique nature of these signatures, they have not been adequately addressed by current national or international standards on whole-body vibration.

Soldiers have been exposed to potentially dangerous levels of vibration and repeated shock as they perform their military jobs. In fact, up to 50 percent of tactical ground vehicle drivers in some units have reported blood in their urine.

Alem, recognizing the hazard of vibration and repeated shock and seeing the solution, embarked on a five-year research program with colleagues at the USAARL and the British Columbia Research Institute in Vancouver. The most significant outcome of the research was a dose-response model that Alem used for health hazard assessment of repeated shock.

Taking the HHA methodology to the next level, Alem convened a working group of experts in the field of human response to shock and vibration, under the American National Standard Institute S3 committee. Throughout the past three years, he played a leading role in drafting the ISO standard of evaluating multiple shocks and extended it to the development of a new methodology that meets Army Regulation 40-10 for health hazard assessment of repeated shocks in military vehicles.



*Dr. Nabih M. Alem*

This method incorporates dynamic response models for mechanical shock in the x, y, and z directions and a biomechanical model to estimate internal forces in the lumbar spine. It also includes a novel dose-response model to represent cumulative stress and an injury risk model to estimate the probability of injury based on strength of the spine. Further, a software tool was developed under Dr. Alem’s direction to assist in the assignment of risks from repeated mechanical shock in tactical ground vehicles.

The proposed ISO standard reached the final draft international standard stage in less than three years—an unusually fast time. The standard was approved in December 2003 and has since been published as ISO 2631-5.

Alem’s new, militarily relevant method augments the basic ISO 2631-1 that assesses whole-body vibration in Army tactical vehicles. The new HHA method is improving the validity of the HHA process and is applicable to a variety of vehicle scenarios. The methodology has now been successfully transitioned to the Center for Health Promotion and Preventive Medicine and has been a real success story.

This research has improved the Army’s technical capability for measuring repeated mechanical shock on humans in all classes of vehicles and has established a scientific basis for technical improvements in the rides of all military and civilian vehicles. The prevention of injury as a result of repeated mechanical shock as the result of this standard additionally supports the National Occupational Research Agenda of the National Institute for Occupational Safety and Health on low-back disorders and musculoskeletal disorders.

—Linda Burt, USAARL

## RESEARCH REWARDED

## Barrier skin cream wins R&amp;D achievement award

Four individuals from the U.S. Army Medical Research Institute of Chemical Defense—Dr. Ernest H. Braue Jr., Dr. John S. Graham, Bryce F. Doxzon and Horace L. Lumpkin—received a 2003 Army Research and Development Achievement award for the development of a second-generation barrier skin cream, known as Active Topical Skin Protectant. The RDA awards were presented Dec. 2 at the 24th Army Science Conference, in Orlando, Fla.

“This award is representative of the outstanding scientists and the overall research efforts that are produced at the Medical Research Institute of Chemical Defense,” said MRICD’s commander Col. Gennady E. Platoff. “I know I speak for the Medical Research and Materiel Command in congratulating these individuals for this most outstanding contribution and award.”

The successful completion of the aTSP research effort moves this product towards advanced development with the ultimate goal of providing U.S. warfighters and civilians with complete protection against chemical warfare agents. The aTSP dramatically improves the protection provided by the first generation product, SERPACWA (Skin Exposure Reduction Paste Against Chemical Warfare Agents), fielded in 2003, by neutralizing the chemical agents into less toxic products as they try to pass through the barrier coating. The concept for further improvement of the aTSP is to develop a reactive matrix that will neutralize and decontaminate chemical warfare agents on contact when applied before or after exposure to these toxic chemicals.



*Seen here with MRICD’s commander, the institute’s winners of a 2003 Army RDA award received their plaques at this year’s Army Science Conference. From left to right, Dr. Ernest Braue, Dr. John Graham, Col. Gennady Platoff, Mr. Horace Lumpkin, and Mr. Bryce Doxzon.*

“Our research group has spent the last 15 years working on developing barrier skin creams that will protect our warfighters and civilians from the harmful effects of chemical warfare agents,” said Braue, the research coordinator for the development of the barrier creams. “It is extremely gratifying to know that we have given our servicemembers, who are now in harm’s way, a product that has the potential to save their lives.”

Braue and his team identified more than 150 active moieties and tested these in 500 formulations. The optimum formulations display excellent resistance against nerve agents and blister agents. This research program produced 14 peer-reviewed journal articles, 20 government reports, and 10 patents.

“Military and civilian employees at the MRICD are dedicated to finding protective measures and treatments to combat the detrimental effects of these agents,” said Graham, acknowledging the contribution and support of the institute and its staff. “It has been my privilege to work for this esteemed research institute.”

—Cindy Kronman, USAMRICD

## RESEARCH REWARDED

# Scientists win RDA award for biomonitoring work

One of the toughest things Tom Shedd faces when he shows people his invention is the “laugh factor.”

Along with other scientists from the U.S. Army Center for Environmental Health Research, Shedd, a research aquatic biologist, found a way to let fish tell people when water is contaminated.



*Tommy Shedd demonstrates the Automated Fish Biomonitoring System at the Army Science Conference in December.*

“Folks just have a hard time understanding that you can use whole organisms as a monitoring strategy,” Shedd said. “So whenever you see somebody come by to see the fish, it’s usually met with

a ha-ha-ha. But, then if you talk about it, all of a sudden they shake their heads and say, “That’s a good idea.””

The invention, the Automated Fish Biomonitoring System, received one of the Army’s Research and Development Achievement Awards for 2004 Dec. 2.

“The fish live in a confined area with no stimulus—they just sit there and breathe—so when a stimulus from the water comes in, such as an intentional poisoning of a river, the fish change their behavior,” Shedd said. When six of the eight fish in the system change their breathing or movement patterns, they’re signaling that something is fishy with the water. A computer monitoring the fish then picks up on the changes and sends an alarm via an automated phone call or an e-mail to alert plant operators.

The system has several strengths when it’s used at the intake for water treatment plants, Shedd said. It serves as an early warning for developing hazards for drinking water systems and can prevent complete contamination of a

water treatment facility. It can also be deterrent for anyone harboring plans to contaminate a water supply.

The system is completely contained in a rugged box and can be up and running within an hour. Good data is available within four hours, though the scientists recommend giving the fish 24 to get used to their newest home.

The dual-sided system lets eight fish do their biomonitoring work for three weeks while eight others wait their turn. When the first group “completes their tour of duty,” Shedd said they get to retire while the others take over. The system also protects the fish from any non-toxic event, such as a power or pump failure.

Tom Shedd, Bill van der Schalie, and Mark Widder were recognized for bringing the system from concept to a commercially licensed product within five years.

“We didn’t really know what the award was about when we heard we won, but subsequently we learned it’s a pretty prestigious award,” Shedd said. “It took a lot of energy ... to evolve it to the final product we have. It’s really gratifying to see it making it out into the world.”

The team has now embarked on their next challenge: using cell based toxicity sensors—instead of an entire fish—to serve as biomonitors.

One example is a toxicity sensor that uses individual fish scales. “When fish scales change color, it signals stress,” Shedd said. “It will be exactly the same thing as the fish, but you’ll have (fish) scales and multiple sensors performing the same function as the fish.”

The fish scale sensor is one of about 40 technologies being evaluated as miniature toxicity sensors. The team’s goal with the new project is to give troops something they can use in a variety of field applications.

With the new project, “you won’t have a box full of fish and the logistical requirement of keeping fish alive,” Shedd said. “If you have cells in a cartridge or something that you just plug together on a chip type of electronic technology, you could very easily apply this miniature monitoring system in forward deployments to ensure water is pure and ready to drink.”

## RESEARCH REWARDED

## Biodefense vaccine garners R&D award

Since the bad old days when nations developed biological warfare agents to use against each others' militaries, Venezuelan equine encephalitis has seemed to be the weapon of choice to disable—but not kill—troops.

Though offensive biological weapons research ended in the United States in 1969, researchers in biological defense did not end their quest for a vaccine to combat it because of its virulence. Today, a new VEE vaccine is on the road to licensure because of fruitful research performed at the U.S. Army Medical Research Institute of Infectious Diseases.

The team that developed the vaccine was awarded a 2003 Army Research and Development Achievement Award that was presented Dec. 2 in Orlando, Fla.

"We're thrilled," said Dr. Doug Reed, the rookie on the team who's worked with VEE at USAMRIID since 2000. "We've had extensive collaboration and a lot of teamwork, so to see it rewarded is very exciting."

With a mild case of VEE, a victim will have a fever, muscle aches, and a headache that's so painful it's almost unbearable to move the head, said Dr. Mary Kate Hart, a member of USAMRIID's VEE vaccine team. Because the virus has a one-to-one infection case ratio, everyone who is exposed will get sick if they aren't vaccinated.

"For Soldiers on the battlefield exposed to an aerosol (of VEE virus), the effect would be devastating," she said. "Everyone who gets it is going to be feeling its effects at the same time, within 24 to 48 hours of exposure. And while the disease is not fatal to people in the military age group, it does place a huge demand on the medical system."

The current, unlicensed vaccine that most people who work with the VEE virus receive has its shortcomings. Called TC-83, the vaccine can



*At the award presentation for the Venezuelan equine encephalitis vaccine are Dr. John Parmentola, Dr. John F. Glenn, Dr. William Pratt, Dr. Doug Reed, Dr. Michael Parker, Dr. Mary Kate Hart, unknown male, and Dr. Thomas Killion.*

mutate because it is a mixture of viruses, said Dr. Michael Parker of the VEE vaccine team.

"It was made by an old classical technology that was successful in making vaccines for polio and yellow fever," he said. "In some instances it caused disease for some of the vaccine recipients, and some people just didn't develop an immune response so they needed an additional shot of the C-84," which supplements the TC-83 vaccine to produce an immune response.

The new vaccine, called V3526, is a live, attenuated vaccine like its predecessor, but it was derived by genetic engineering. In creating the vaccine, USAMRIID earned about half a dozen patents, including one for the vaccine and others for techniques and technologies involved in making it.

"We've been able to go in and specifically design mutations that knock out the ability of the virus to cause disease," Parker said. "With the old technology ... these vaccine strains were derived randomly, by chance, in cell culture. What the new technology allows us to do is to go in and specifically decide what we're going to do, so it's kind of like taking a designer virus approach."

## Program funds \$10 million consortium



Although more men are being diagnosed and treated earlier for prostate cancer, there remain some disturbing statistics. Among men over 65 years of age, African American men are twice as likely to die from prostate cancer as Caucasian Americans; they are three times more likely than Caucasian Americans to die if they are diagnosed with the disease when they're younger than 65.

Leaders in prostate cancer research point out that understanding why these differences occur could lead to lower mortality rates for all men.

Through the Prostate Cancer Research Program, managed by the U.S. Army Medical Research and Materiel Command, national experts have identified underfunded areas of research, including the issue of differences in mortality among racial groups.

Early studies funded were conducted by small research teams at in-

See "Cancer," page 13

### "Vaccine," continued

The team removed four amino acids in the virus which are critical to the ability of the virus to multiply, said USAMRIID's Dr. William Pratt.

"With this mutation the virus replicates so poorly that it does not cause disease but still replicates to sufficient levels to provide immunity," he said. "In addition, it can't revert to becoming a disease-causing virus, like the older one, and because it's a defined mutation, it can be easily tracked because there's only one version of the virus—unlike the other vaccine that had multiple versions."

Initially the Army charged the group with coming up with vaccines for three types of VEE: 1E, 3A and 1AB. In the end, the V3526 met the requirements for all three.

"Instead of having a trivalent vaccine, we have a monovalent vaccine that provides protection," Hart said.

The team transitioned the VEE vaccine to the Joint Vaccine Acquisition Program in 1999 and continues to monitor it. They meet with Kathy Berst, the vaccine manager for VEE at JVAP, and stay apprised of its progress now that it is in the hands of DVC LLC, the prime systems contractor that is responsible for developing the vaccine and licensing it.

"USAMRIID developed the V3526 construct, so having them work on the team with the DVC

vaccine development experts is really helpful," Berst said. "We rely on them as consultants."

This relationship with JVAP and DVC could offer long-term benefits for future vaccine work for eastern and western equine encephalitis.

"They know what we're striving for, so when they develop EEE (eastern equine encephalitis) and WEE (western equine encephalitis) vaccines, they're using the information that they have learned from the VEE transition," Berst said.

The entire process, Pratt said, has been a model of a successful program all the way from the basic research up to the clinical use.

"When a product transitions, it enters what the acquisition folks call the Valley of Death, because the tech base and the developers don't normally talk to each other before the handoff," he said. "We worked very hard to close this valley and try and make it seamless."

If all goes well with the FDA licensing and funding, VEE vaccine will be available for troops by 2013.

"The transition of VEE to JVAP and DVC was so successful because everyone involved wants to see this ultimately become a licensed product," said DVC President Terry Irgens. "We are very pleased with the quality of the vaccine candidate provided by USAMRIID's VEE team. We congratulate the team on their success and look forward to further collaboration."

**“Cancer,” continued**

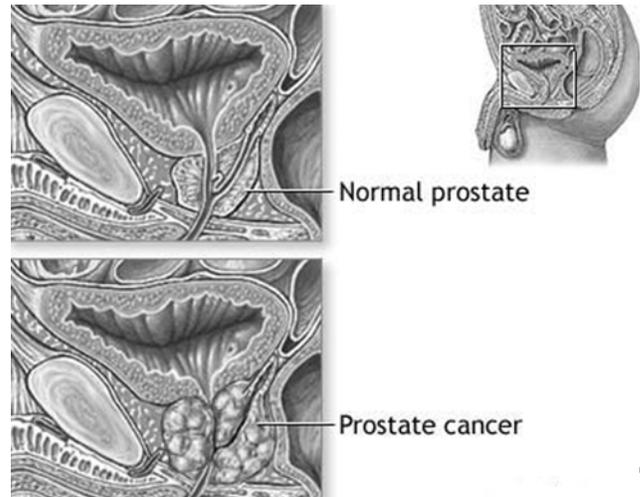
dividual research centers looking at factors such as diet, access to health care, biology of tumors, demography, etc. However, no single factor seemed to explain the differences in mortality rates between racial groups.

“It was time for another approach. PCRCP national scientists, prostate cancer survivors and Army managers met and considered the research needed. They asked, ‘What if we put aside all the issues of how this research has been funded and conducted in the past and put the best prostate cancer researchers in the United States on the same team, regardless of institution or where they live, and through the synergy of those efforts let the team find new answers to the over arching research questions in prostate cancer?’ We offered funding to develop prostate cancer consortiums to address these questions,” said Leo Giambarresi, the Prostate Cancer Research Program’s program manager.

Dr. James L. Mohler of Roswell Park Cancer Institute proposed such a team to look at prostate cancer health disparities and competed and received a consortium award. He remains a member of the University of North Carolina at Chapel Hill Lineberger Comprehensive Cancer Center and adjunct associate professor of surgery and pathology at UNC’s School of Medicine, where he led the prostate cancer research program for 16 years. His work placed him in the unique position of having conducted prostate cancer research in the state with the highest African American mortality rates due to prostate cancer.

Three reasons have been suggested for the disproportionate prostate cancer mortality between the races, Mohler said.

“First, African Americans may present more often with advanced, incurable prostate cancer because of limited access to health care, or they may be less likely than Caucasian Americans to choose effective treatments for potentially curable prostate cancer,” he said. “Secondly, biological differences between the races may cause the prostate cancer to develop at a younger age or spread more rapidly in African Americans. And finally, prostate cancers that occur



in African Americans may be inherently more aggressive.”

A national team of experts looking at comparable data in a scientific manner may provide some guidance about how best to allocate health care resources to reduce prostate cancer deaths, Mohler said.

Mohler’s consideration of these issues led to the proposal to combine the strengths of scientists from 13 institutions into a national Prostate Cancer Project and his collaboration with Dr. Elizabeth Fontham, dean of the School of Public Health at the Louisiana State University Health Science Center and associate director of the Stanley Scott Cancer Center.

The Prostate Cancer Project team designed a project using two parallel studies. Two thousand newly diagnosed prostate cancer patients will be enrolled in the studies: 1,000 patients—including 500 African Americans—from Louisiana and 1,000 patients—including 500 African Americans—from North Carolina will be identified and recruited to participate in the program. This phase of the Prostate Cancer Project began in September 2004.

“The patients will have in-home diet and health care interviews and blood and tissue sampling within 90 days of diagnosis.” Fontham said. “New techniques in analyzing these samples will provide information about underlying factors effecting tumor growth for use by the Prostate Cancer Project team.”

—Gail Whitehead, *Congressionally Directed Medical Research Program*

## People in the News



*Members of MRICD's championship soccer team pose with their trophies and U.S. Army Garrison Headquarters Command Sgt. Maj. Elvis Irby.*

### **Chemical defenders take intramural soccer championship**

The U.S. Army Medical Research Institute of Chemical Defense soccer team came from behind to win the 2004 Intramural Soccer Tournament at Aberdeen Proving Ground, Md., Nov. 2.

MRICD's team entered the tournament as the number-one seed, having won all seven of its regular season games.

Although the team suffered its first defeat during the playoffs, its record was still good enough to earn the team a place in the semifinal game against the undefeated team from B Company, 16th Ordnance Battalion, U.S. Army Ordnance Mechanical Maintenance School. MRICD won its semifinal game 2-1.

That same evening, the two teams—now with one loss each—

squared off again in the final match. Though MRICD was down 1 to 0 for much of the game, Pfc. Ardicio Galvao, standing just outside the 18-yard line with three defenders in front of him, scored the tying goal, sending the game into overtime. Then with less than one minute left, Sgt. Bryon Pieper scored the sudden death goal to win the game for MRICD.

In addition to the great offensive work of Pieper and Galvao, the team's victory can be attributed to the outstanding defense provided by Brandon Dusick, Spc. Jose Chavira, and goalie Patrick Carpenter, an employee of the U.S. Army Center for Health Promotion and Preventive Medicine, as well as to the hard work, dedication and motivation of the other team members: Maj. Aziz Qabar, Capt. Timothy Trimbruger (Technical Escort Unit), Staff Sgt. Edward Allen, Sgt. Nicole Washington, Sgt. Quirino Cardenas, Sgt. Paul Ebohon, Spc. Nicholas Kirschten, Spc. Elberth Vasquez (Headquarters and Headquarters Company 61st Ordnance Brigade), Dr. Gary Minsavage, Dr. Robert (Kwai) Kan, and Mike Callahan (Military Police). Cheering MRICD fans also spurred the team on to victory.

After the final match, Command Sgt. Maj. Elvis Irby from the U.S. Army Garrison Headquarters awarded MRICD the championship trophy as well as individual player trophies to each team member.

— *Maj. Aziz Qabar, USAMRICD*

## People in the News

### Achiever

After finishing her five weeks at the Advanced Non-Commissioned Officer Course Oct. 19, Sgt. 1st Class Katherine Negrón-Rodríguez of the Walter Reed Army Institute of Research made a name for herself. She received the Commandant's Physical Training Award for Excellence and placed with seven of her classmates on the Commandant's list for overall academic excellence.

"Being a female in the Army is a challenge every day. I love that challenge," she said.

To earn the PT award, she scored more than 90 percent on each event on her Army PT test, with an overall point total of 292 of a possible 300. Just eight others in her 73-person class got the award. Her academic achievements were noted because she graduated in the top 20 percent of her class, averaging more than a 90 percent on all of her tests.

"It was hard work so it paid off. My unit is proud of me, and it feels great," said the native of Puerto Rico who has been at WRAIR for four of her 11 years in the Army. "As leaders we have to set the example. I'm showing the Soldier that if I can do it, you can do it."

### Longevity

The U.S. Army Medical Research Acquisition Activity celebrated employee longevity during a quarterly staff meeting. Blossom Widder reached 15 years of government service; Denise Heck, Dolores King and Jamie Kiser have 25; and Dana Herndon has 30 years.



*USAMRAA employees sent deployed soldiers 12 boxes of gifts weighing a total of 370 pounds.*

### Goodies shipped

The employees of the United States Army Medical Research Acquisition Activity sent packages of goodies to troops overseas for the holidays. Pat Kreitz, Sherrie Walters, Peggi Lesnow, Vera Pollard and Melanie Harman took employees contributions, packaged them and shipped them to the Middle East. To name just a few, Sgt. Amos Atkinson, Capt. Bryan Shrank, Staff Sgt. Daniel Batt, Staff Sgt. Byron Cooper and Sgt. Troy Kreitz will have brighter holidays because of the efforts of the USAMRAA employees. The soldiers will receive 12 boxes of gifts that weighed 370 pounds and cost \$233.55 to ship.

## People in the News



*Alyce Bridges and Col. Erik Henchal  
of USAMRIID*

### Caring employee

Alyce Bridges, formerly chief of human resources at U.S. Army Medical Research Institute of Infectious Diseases received the Meritorious Civilian Service

Award in recognition of her exceptional performance over a 10-year period from USAMRIID Commander Col. Erik Henchal. According to Henchal, Bridges developed a customer-focused organization that provided outstanding personnel and manpower support to the institute. Her staff supported a workforce that has grown to more than 750 personnel, including Soldiers, civilians and contractors.

To better respond to frequent demands for information from her office, Bridges successfully helped to implement an Oracle human resources module that consolidates the data from several existing systems and allows employees to review it and update as necessary. The effort has proved extremely valuable for numerous data calls.

Most recently, Bridges played a key role in transforming the USAMRIID workforce to a model that will be better able to support the mission requirements of the future.

In addition to her technical accomplishments, she is described as selfless, hardworking and able to provide candid and common-sense solutions to even the most difficult problems. Above all, she

cares about the employees she serves.

Bridges left USAMRIID in May to take on new challenges as the business operations manager for the Office of Research and Development, Science and Technology Directorate at the Department of Homeland Security.

—Caree Vander Linden  
USAMRIID

### New leader

Col. Jerome “Jerry” Pierson took command of the U.S. Army Medical Materiel Development Activity Sept. 10. Pierson, an Ohio native, replaced Col. Jeffrey Gere who served as the seventh leader of USAMMDA since September 2000. Gere, Pierson said, encouraged him to take a leadership role at the organization that develops drugs, vaccines and medical devices to support U.S. military forces throughout the world.

“In a conversation he said, ‘I’m going to be leaving command next summer. You might want to consider throwing your name into the ring,’” Pierson said. “I’m not sure if I would even have considered it had Colonel Gere not said it directly like that.”

A pharmacist, Pierson comes to his new assignment after serving as chief of regulatory affairs for the U.S. Army Medical Research and Materiel Command.

“Developing medical products and solutions for the warfighter—what a great mission,” Pierson said in his remarks. “I’m deeply honored to have the opportunity to serve with this fine institution and the great people who work



*Col. Jerome “Jerry”  
Pierson*

## People in the News

here. I look forward over the next few years to bringing in the added mission of regulatory reports and medical affairs into the suite of USAMMDA products.”

After relinquishing command, Gere became the U.S. Medical Research and Materiel Command’s liaison to the Office of The Surgeon General of the Army.

### Testers on duty

Tom Endrusick and Julio Gonzalez of the Biophysics and Biomedical Modeling Division at the U.S Army Research Institute of Environmental Medicine participated in the American Society for Testing and Materials’ Interlaboratory Test headed by Dr. Elizabeth McCollough at Kansas State University.

All labs tested a custom-fitted clothing ensemble consisting of cotton underwear and Nomex shirt or trousers for thermal and water vapor resistance in accordance with the rewritten standard, entitled “Measuring the Thermal Insulation of Clothing Using a Heated Manikin,” and the proposed ASTM standard entitled “Measuring the Evaporative Resistance of Clothing using a Sweating Manikin.” Their testing results were right on the expected values for this ensemble and show USARIEM’s expertise in clothing evaluations.



*The U.S. Army Research Institute of Environmental Medicine’s Col. Paul Amoroso, Sgt. 1st Class Robert Stevens and Sgt. Dennis Rufolo participated with veterans and town officials Sept. 26 in memorializing Cushing Hospital in Framingham, Mass. The chronic disease hospital served an older adult population with an average age of eighty-five and closed in 1991.*

### Command awards

Fort Detrick Commanding General Maj. Gen. Lester Martinez-Lopez presented awards to the following individuals during an awards ceremony Oct. 18.

Patricia Modrow, Congressionally Directed Medical Research Programs, received a certificate recognizing her for 20 years of federal service.



*Modrow*

## People in the News



*Rapp*

Maj. Timothy J. Rapp, formerly of the Telemedicine and Advanced Technology Research Center and now of the U.S. Army Office of The Surgeon General, received the meritorious service medal for his work as the director of the integrated technology evaluation directorate from September 2001 to July 2004.

Col. Jack Skvorak of the U.S. Army Medical Research and Materiel Command received the meritorious service medal for serving as director of the Medical Biological Defense Research Program and the Capability Area Program Officer for Special Projects and Emerging Threats from May 2001 to May 2004.

Lt. Col. Chris Chambers, now with the U.S. Army Medical Research and Materiel Command's Medical Research Information Technology System, received the legion of merit for serving in various positions from September 1994 to August 2004, culminating as director of the Biometrics Division at the Walter Reed Army Institute of Research.

Dr. Carol Linden, now with the Department of Homeland Security, received the meritorious civilian service award for her dedication to military research for 25 years, culminating as research area coordinator for the Medical Chemical and Biological Defense Research Program at the U.S. Army Medical Research and Materiel Command.

### Awards trio

Capt. Ross A. Davidson received the joint service achievement medal Oct. 18 for serving as the chief of the Project Management Division for the Ministry of Health with the Coalition Provisional Authority from August to October 2003 from Fort Detrick Commanding General Maj. Gen. Lester Martinez-Lopez during an awards ceremony Oct. 18. Davidson also received the Army commendation medal for serving as the project manager for a \$2.1 million veterinary treatment facility's renewal project with the U.S. Army Health Facility Planning Agency.

Additionally, he received the meritorious service medal for his work as the deputy Health Facility Project Officer and chief of the Technical Branch with HFPA from November 2001 to November 2003 while working on the technical aspects of a \$215 million replacement hospital.

### Pharmacist lauded

Maj. Jorge D. Carrillo of the U.S. Army Medical Materiel Center Europe received the Army Pharmacy Leadership and Innovation Award Oct. 27 at the Ralph D. Arnold Army Pharmacy Awards Banquet during the DoD Combined Forces Pharmacy Seminar in Kansas City, Mo.

The award was established in 1994 for excellence in leadership



*Davidson*



*Carrillo*

## People in the News

through innovation in improving patient care, operational efficiency, cost effectiveness or other such worthy improvements in Army pharmacy practice.

Brig. Gen. Sheila Baxter, chief of the Medical Service Corps, and Col. Mike Heath, the Army pharmacy consultant, presented the award.

### 10-Milers

Twenty-four runners from the U.S. Army Medical Research Institute of Chemical Defense participated in the Army 10-miler Oct. 24 in Washington, including:

Col. Gennady Platoff  
 Lt. Col. Matthew Scholfield  
 Maj. Scot Estep  
 Maj. Joseph Novak  
 Capt. Suzanne DeFord  
 Capt. Claudia Henemyre-Harris  
 Master Sgt. Brian Oldham  
 Sgt. 1st Class Joel Marcrum  
 Staff Sgt. Jennifer Devorak  
 Staff Sgt. Jeffrey Dawson  
 Staff Sgt. Edward Allen  
 Staff Sgt. Mark Reynolds  
 Sgt. Mark Smith  
 Sgt. Quirino Cardenas  
 Sgt. Nicole Washington  
 Sgt. Bryon Pieper  
 Spc. Shuqunta Davis  
 Spc. Ashley Torrence  
 Spc. Nicholas Kirschten  
 Spc. Jonathan D'Ambrozio  
 Spc. Jose Chavira  
 Pvt. Ardicio Galvao  
 Rick Smith  
 Dr. Robert Kan



*Visiting Fort Detrick to hear about the National Interagency Biodefense Campus Dec. 15 are, from left to right, Dr. Andrew von Eschenbach, director, National Cancer Institute; The Honorable William Winkenwerder, Assistant Secretary of Defense for Health Affairs; The Honorable William Frist, Senate Majority Leader; Dr. Julie Gerberding, director, Center for Disease Control and Prevention; Dr. Tanja Popovich, CDC; Dr. Stephen Jones, Principal Deputy Assistant Secretary of Defense for Health Affairs; Dr. Gerry Parker, Department of Homeland Security; and Maj. Gen. Lester Martinez-Lopez, Commanding General, U.S. Army Medical Research and Materiel Command and Fort Detrick*

### Distinguished lecturer

Dr. Larry Berglund of the U.S. Army Research Institute of Environmental Medicine gave the “Professor Frederick Rohles Lecture” at Kansas State University last week. This lecture honors the contributions Berglund has made during his career. He was the first doctoral graduate from the KSU Bio-environmental Engineering Department led by Rohles which was the first graduate program that combined physiology and engineering. Another member of Berglund’s doctoral committee at KSU, Dr. Ralph Nevins, brought Berglund to the John B. Pierce Foundation at Yale University and eventually to USARIEM where Berglund is internationally recognized.



*Berglund*

## News Notes

### War surgery book available

The Emergency War Surgery handbook, a collaborative effort of the Borden Institute and the Army Medical Department Center and School, is now available on Army Knowledge Online and the Borden Institute Web site, [www.bordeninstitute.army.mil](http://www.bordeninstitute.army.mil). The Handbook has a bulleted manual style to optimize its use as a rapid reference. Drafted by subspecialty experts, it was then updated by surgeons returned from yearlong deployments in Iraq and Afghanistan. Illustrations are featured much more prominently than in the earlier edition. For more information, call Andy Szul at 202-782-7571 or e-mail him at [andy.szul@na.amedd.army.mil](mailto:andy.szul@na.amedd.army.mil).

### ORISE scholars

The U.S. Army Medical Research and Materiel Command signed a memorandum of agreement with the Department of Energy for the command to participate in the Oak Ridge Institute for Science and Education programs. The ORISE Research Participation Program is designed to bring postdoctoral fellows, postgraduates, students, and faculty into approved

laboratories or research area directorates to participate in current research and development activities.

The program will link the USAMRMC's technologies with the capabilities of the academic community. In supporting this program, USAMRMC will enhance the educational programs offered by academic institutions, strengthen the scientific and technical labor force, transfer its knowledge and technology to the academic community, and support a growing national commitment to science education.

The ORISE Maryland Office, located at the Edgewood area of Aberdeen Proving Ground, Maryland, has placed more than 300 undergraduate students, 1,300 postgraduates, 270 masters and 60 postdoctoral candidates in Army research projects at 50 installations around the world.

To learn more about using this opportunity for a research project, please call or e-mail :

- ◆ Michael Younkings at (301) 619-2503, [Michael.Younkins@us.army.mil](mailto:Michael.Younkins@us.army.mil); or
- ◆ Col. Nancy Vause at (301) 619-3451, [Nancy.Vause@us.army.mil](mailto:Nancy.Vause@us.army.mil).