2007 FLC Awards

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May 17, 2007

Fort Worth, Texas

Adding value to the federal agencies, laboratories, and their partners
to accomplish the rapid integration of research and development
resources into the mainstream of the U.S. economy.

Welcome to the 2007 FLC Awards

Tara Weaver-Missick
Awards Committee Chair

This evening we are honoring people who have made outstanding achievements in federal technology transfer. I am extremely pleased to be a part of this momentous event, and to welcome you in helping me salute the notable efforts of the men and women here tonight.

This year's theme, "Making the Connection," captures the essence of what the FLC technology transfer awards represent. It's about people working together. It's about federal laboratories partnering with others to ultimately achieve our technology transfer goals. This year's award winners have made the connection and have taken those connections a step further.

The men and women you will meet tonight have worked industriously with others to move a vision from the laboratory to the marketplace—so that others may benefit and enjoy.

These scientists worked tirelessly to find the right partner to move the vision forward and help it become a reality. Teamwork is the heart of technology transfer. Technology transfer members have a synergistic relationship that sparks innovation and partnership. The FLC strives to encourage connections among government, industry, and academia that one day will lead to technology transfer.

As the technology transfer efforts within the FLC are diverse in their scope and large in number, we present awards in the following areas:

• Awards for Excellence in Technology Transfer – Presented to FLC member laboratories and their partners for successfully transferring federally developed technologies.

• Laboratory Director of the Year – Recognizes directors of FLC member laboratories for their contributions to the overall enhancement of technology transfer for economic development and their support of the FLC and its activities.

• FLC Service Awards – Presented to individuals, inside or outside the FLC, who have provided significant support to the technology transfer process, furthering the FLC's mission.

• Outstanding Technology Transfer Professional Award – Recognizes the efforts of a technology transfer professional (or team) who has demonstrated outstanding work in transferring a technology.

• Interagency Partnership Award – Honors the efforts of agency and/or laboratory employees from at least two different agencies who have collaboratively accomplished outstanding work in the process of transferring a technology.

The FLC awards are a prestigious honor in the technology transfer world, with dozens of federal laboratories submitting nominations each year. These awards have become a source of great pride for both the laboratories and their government agencies.

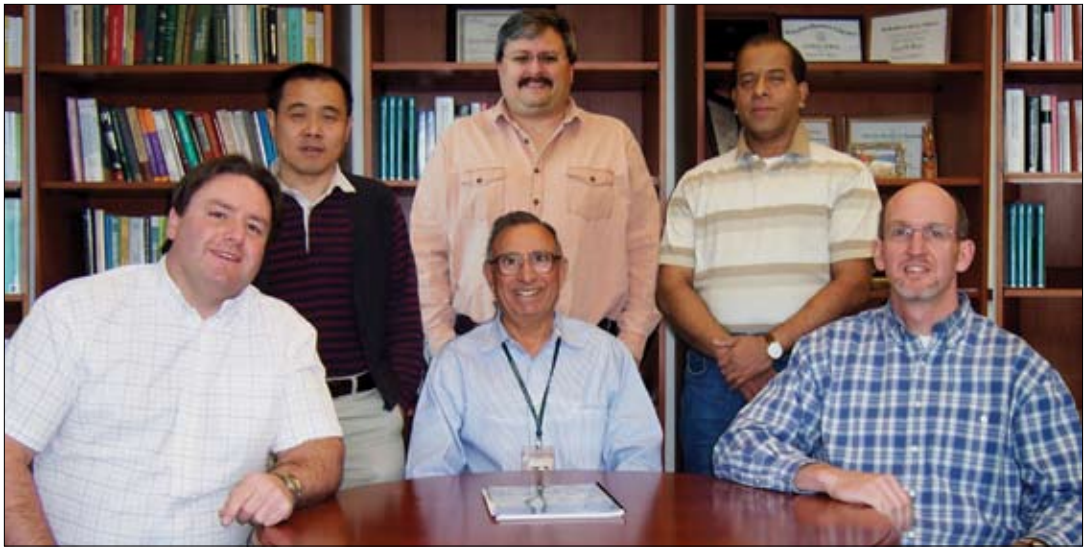
As you read this booklet, you will be impressed with the experience, expertise, and resources these award winners used to take their technologies from the drawing board to the real world. I am extremely proud and pleased to present the recipients of the 2007 FLC awards.

2007 FLC Awards

Awards for Excellence in Technology Transfer

RZWQM2 for Evaluating, Managing, and Improving Water Quality from Agriculture

Department of Agriculture
Agricultural Research Service–Agricultural Systems Research Unit



From left, seated: Dr. James Ascough, Dr. Lajpat Ahuja, Dr. Tim Green
From left, standing: Dr. Liwang Ma, Ken Rojas, Dr. Saseendran Anapalli
Not pictured: Robert Malone

The enhanced Root Zone Water Quality Model (RZWQM2) can evaluate, manage, and improve water quality impacts of agricultural chemicals and other management practices; develop sustainable agricultural systems; and optimize limited resources.

The RZWQM2 is an advanced, but practical, model of root zone processes that influence water quality, soil water storage, efficient water use, and crop production.

The benefits of RZWQM2 are that it provides users with a comprehensive, state-of-the-science, whole-system approach to evaluating management effects on water (and soil) quality and production compared with simpler models that look at potential leaching of chemicals in isolation. It is unique in its emphasis on accurately simulating the effects of agricultural management practices on physical-chemical processes and plant growth, including the movement of water, nutrients, and pesticides through the crop-root zone to groundwater. The model allows the evaluation of management practices, such as no-tillage and residue cover vs. conventional tillage; rates, methods, and timings of application of water, fertilizers, manures, and various pesticides; and up to 100 years of different crop rotations. It also contains exclusive features of tile drainage and rapid transport of surface-applied chemicals through soil macropores to groundwater and tile flow.

RZWQM2 was transferred to users through personal discussions, training sessions, and collaborative testing/applications; updated versions were delivered through the web. At users' request, an international workshop was held in April 2004 to share experiences and discuss future collaborations to advance the applications. During the past three years, the team has provided training to more than 40 users from the Environmental Protection Agency, the U.S. Geological Survey, and scientists internationally, and provided support to hundreds more. During this period, there have been 500+ downloads of the model. RZWQM2 is now being used by federal agencies, industry, and numerous scientists in the U.S. and worldwide.

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New Antibiotic to Control American Foulbrood Disease of Honey Bees

Department of Agriculture
Agricultural Research Service–Bee Research Laboratory

From left: Dr. Jan Kochansky, Dr. Mark Feldlaufer, and Dr. Jeffery Pettis

Dr. Matthew Kramer

Dr. Margaret Oeller

A team of scientists from the Agricultural Research Service demonstrated that the antibiotic tylosin was safe and effective in controlling the American foulbrood disease of honeybees, and their technology transfer efforts resulted in Food & Drug Administration (FDA) approval and commercialization of tylosin to control this devastating bacterial disease.

In addition to producing a unique food product—honey—the honeybee is our most important agricultural pollinator. The commercial production of more than 90 crops, including almond, apple, citrus, blueberry and squash, as well as numerous seed crops, is accomplished through bee pollination. Crop growers rent more than two million honeybee colonies every year to assist with the pollination of crops with an added market value exceeding $15 billion.

American foulbrood disease is a highly contagious disease of young honeybee larvae caused by the bacterium Paenibacillus larvae. Only one antibiotic was approved for the treatment of foulbrood disease and, in recent years, widespread bacterial resistance across the United States put all of our country's nearly three million bee colonies at risk. The team initiated, designed and conducted research to identify a suitable antibiotic alternative, and coordinated the research with scientists from the FDA to ensure that their efforts would satisfy the stringent standards set by the FDA for antibiotic approval in a food-producing animal. The scope and quality of the team's research was such that on August 3, 2004, the FDA published "Tylosin Tartrate for Foulbrood in Honeybees: Availability of Data" in the Federal Register (Vol. 69, No. 148). The team then collaborated with the Regulatory Affairs Division of Elanco Animal Health, which resulted in the submission of a New Animal Drug Application (NADA). On October 20, 2005, the FDA approved Tylan® Soluble for the control of American foulbrood disease in honeybees.

While the value of the honeybee colonies protected from this disease can be modestly estimated at about $1 billion, the impact of this technology transfer effort is far broader and wider ranging.

From apples in Washington to blueberries in Michigan and Maine to Florida citrus and numerous other fruit, vegetable and seed crops, the team's effort has contributed to protecting a $15 billion industry based on honeybee pollination and to maintaining the vitality of American agriculture.

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Soybean Protein-based Foamed Plywood Glue

Department of Agriculture
Agricultural Research Service–Midwest Area

Scientists at the Agricultural Research Service (ARS) Midwest Area have developed a soybean protein–based foamed plywood adhesive that is now being used commercially by a major plywood manufacturer. The technology transfer was made possible by a Trust Agreement between the Department of Agriculture, ARS, and the United Soybean Board, with the Board serving as an intermediary that facilitated the cooperative research efforts between ARS and industry collaborators.

The glue is designed for foam extrusion, a method of applying glue to plywood whereby glue is foamed with air and then extruded into long strands of such diameter as to cover the entire wood surface when pressed. Soybean flour, an inexpensive and readily available protein source, was used to replace spray-dried animal blood, the industry's current protein extender in the glue mix. Soybean flour does not pose a health threat to mill workers, unlike animal blood, which may harbor disease-causing agents.

The soy flour–based glue had mixing performance, foaming quality, and adhesive strength that equaled those of the plywood industry's current foamed glue. More importantly, the cost of the soy-based glue was cheaper by $0.84/100 kg of glue mix compared to the blood-based glue, which means considerable annual savings in production costs to the plywood-making industry. Using soybean flour as protein extender in foamed plywood glues will consume up to half a million bushels of soybeans per year, which would translate into added value for soybeans and higher income for U.S. soybean growers.

Dr. Milagros Hojilla-Evangelista

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Humane Device for Bleeding Mice

Department of Agriculture
Agricultural Research Service–North Atlantic Area, Plum Island Animal Disease Center

Dr. William Golde, Peter Gollobin, Dr. Luis Rodriguez

Each year thousands of researchers worldwide use more than 20 million mice in scientific projects. The vast majority of the experiments require blood to be drawn as part of the research project, and the primary method used in the United States to draw blood is retro-orbital (eye) bleeding. While this is a rapid and efficient bleeding method, it is extremely inhumane to the mouse. In fact, many countries have banned this procedure.

Alternatively, bleeding by clipping off the end of the tail is simple and slightly more humane; but this yields a very limited amount of blood and neither method can be used when multiple samples are required from the same animal in the same day. Mice can be bled from the submandibular region (at the rear of the jawbone) using an expensive scalpel or hypodermic needle to puncture a vein; however, a great deal of practice and a fine touch are required because the scalpel or needle must be inserted deeply enough to puncture the vein but not so deep that it goes through the cheek.

Drs. William Golde and Luis Rodriquez wanted to design a device that could only be inserted to a specific depth and would be a simple method for bleeding mice that could be easily taught and mastered. They were unsuccessful in their attempt to modify the finger-stick lancets used by diabetics, so they designed a prototype lancet they believed would work.

They contacted Peter Gollobin, the owner of a small Long Island company that designs and manufactures medical products, to discuss the design and manufacture of a prototype, and a Cooperative Research and Development Agreement (CRADA) was established. Gollobin designed and produced several lancets. Additional modifications and improvements established a design that was easy to use and worked every time.

The final design is a 2" strip of surgical steel with a triangular blade that controls the penetration depth. Different point lengths accommodate different size mice. The technique has increased the accuracy of experiments that require multiple samples from the same animal. This simple method of drawing blood has reduced the suffering of laboratory mice. Internationally, researchers are rapidly adopting this technology and have purchased over a million lancets in less than a year.

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Novel Technology to Reduce Human Food-borne Pathogens in Poultry

Department of Agriculture
Poultry Production and Product Safety Research Unit
University of Arkansas

Food-borne illness is a significant worldwide public health problem. The Council for Agricultural Science and Technology estimates that as many as 9,000 deaths and 6.5 to 33 million illnesses in the U.S. each year are caused by the ingestion of contaminated foods. Salmonella and Campylobacter are by far the principal pathogens derived from poultry that infect humans through food.

Newly hatched chicks are susceptible to infection by very low numbers of pathogens, with increasing resistance as birds and, presumably, normal enteric microflora mature. Competitive exclusion relies on administering beneficial bacteria to chicks to accelerate intestinal maturity and reduce the prevalence of Salmonella and Campylobacter infections. A team at the Agricultural Research Service (ARS) led the way in developing these products for the U.S. poultry industry.

The team's technology is set apart from earlier products/discoveries in several ways. Defined bacterial cultures were developed after screening more than eight million individual enteric bacteria; the developed cultures consist of organisms identified as "generally recognized as safe," and therefore meet regulatory requirements for immediate use; and selection criteria were developed with production cost-efficiency in mind.

This technology led to the formation of an Arkansas-based startup company that has licensed the product. The company employs 12 people and, with a subcontractor, accounts for more than 80 sales and technical support staff distributing the technology worldwide.

Product developed from this research has been field tested in millions of birds—resulting in notable reductions in pathogen contamination and mortality, and improved chick health. First made available in 2004, the technology made a profit the first year (approximately 100 million birds treated). In 2005, 1-billion doses were sold, and in 2006 the company expects a 50% increase in total usage. The product is being marketed in South Korea, Japan and Mexico, and six additional countries are in the final stages of acquiring import permits.

An extrapolation of current data indicates poultry treated with this probiotic translates to a greater than $6 million increase in production yields for every 300 million birds treated per year in the U.S.

Dr. Ann Donoghue
Not pictured: Dr. Dan Donoghue,
Dr. Billy Hargis, Dr. Guermillo Tellez

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Intermediate-temperature and Hot Lime Clarification Processes for Sugar Processing

Department of Agriculture
Agricultural Research Service–Mid South Area

Dr. Gillian Eggleston

This technology consists of two improved processes for clarifying sugar cane juice during the production of raw sugar—an intermediate-temperature lime clarification process and a hot lime clarification process.

Introduced into sugar factories in Louisiana, Texas and Florida, the technology replaces the traditional and inefficient cold lime clarification process currently used to process sugar. In intermediate-temperature lime clarification, mixed juice from sugar cane is heated to an "intermediate" temperature of 150°F, then incubated and limed for 12 to 15 minutes. With hot lime clarification, the juice is heated first to 150°F and incubated, and then limed at 215°F for only 30 seconds. Both the intermediate-temperature and hot lime clarification processes perform much better than cold-temperature lime clarification, removing impurities from the juice more effectively, requiring less lime, and making it easier to heat when the water in the juice is later boiled away to make raw sugar. The processes also save money by reducing expensive losses of sucrose, and reducing the amount of bacteria that sometimes grow in the juice and destroy the sugar.

The technology, which has been adopted by 100% of the sugar factories in Louisiana and Texas, was transferred by working closely with three sugar factories and demonstrating all the steps in the process and the monetary benefits of shifting to one of the new processes.

After these three factories converted and numerous other technology transfer efforts were made, such as presentations at sugar technologists' meetings and at individual factories, the other factories recognized the benefits and also adopted the new processes.

All but two Florida sugar factories have converted to one of the new processes, and international companies are showing interest. It has been conservatively estimated that the new processing methods are saving the U.S. sugar industry in Louisiana, Texas, and Florida over $3,103,000 per year.

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ARMS™ – A Handheld Device and Software System for the Rapid Capture and Management of Data

Department of Defense
U.S. Army
Army Engineer Research and Development Center
Construction Engineering Laboratory

Acquiring and integrating geospatial and feature intelligence into a rapid decision-making process is a challenge that faces engineers and other professionals at all levels. Conventional methods are labor-intensive, involve multiple technologies that are not well integrated, and require numerous steps to produce a map or report. As a solution, Tad Britt of the U.S. Army Corps of Engineers, Construction Engineering Research Laboratory (CERL), designed and developed the Automated Resource Management System (ARMS™ – patent pending).

ARMS™ is a handheld instrument that can collect high-resolution digital data in a logical, consistent manner and organize them into a database. Managers can access the data through preprogrammed queries or automatically generate reports that can include geo-referenced maps and photos embedded within the text.

This technology allows engineering and resource management professionals (like those working in the aftermath of Hurricane Katrina) to collect and analyze data in order to rank and prioritize projects. The information can be used to monitor changes, implement methodological improvements, increase efficiency, and engage effectively in project decisions. Britt's initial development and testing for this system were significantly advanced under collaboration with Surveylab Group, Ltd., a young company located in New Zealand with a distribution affiliate in the United States. Under a Cooperative Research and Development Agreement (CRADA), Surveylab enhanced its handheld data collection hardware with CERL's ARMS™ innovations, creating the ike304™ for field data collection and reporting. Over 150 units have been sold and deployed during the U.S. Army's Operation Iraqi Freedom and the U.S. Army Corps of Engineers' civil works program.

Since product launch, Britt has continued to drive the technology toward a next-generation release designed to meet the most challenging field requirements. Under a 2006 CRADA, CERL and commercial partner Compass Systems, Inc., are developing a new version of ARMS™ focused on engineering field applications. The HAMMER™ will join the ike304™ in meeting future demand from federal projects, including natural and cultural resource studies, environmental baseline studies, humanitarian demining, disaster response, and homeland security assessments. Commercial applications may include construction, real estate, municipality management, fish and wildlife management, forestry, highways, and manufacturing.

Tad Britt

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Portable Chemical Sterilizer: Electricity-free Microbial Decontamination Using Green Chemistry

Department of Defense
U.S. Army
Army Research Development and Engineering Command
Natick Soldier Center

Florence Feeherry, Dr. Christopher Doona. Not pictured: Dr. Irwin Taub, Dr. Albert McManus, Dr. Dave Baer

Picture this scenario—an Army medic is repairing wounds in a far-forward field station where not only are power generators unavailable, but their use is undesirable because of the noise and heat they emit. With a good supply of sterile medical equipment, the surgeon can patch wounds and save limbs and lives, even in such a remote location. Clean but nonsterile instruments are useless for saving lives—even in the hands of the most skilled surgeon—because they risk spreading life-threatening infections. To maintain a steady supply of sterile instruments, medics need a lightweight, durable, and reusable apparatus that can easily be transported and that conveniently sterilizes contaminated medical equipment without requiring electricity. This device must be truly portable for rapid mobility: it should weigh 15-20 pounds and have compact dimensions. The sterilization process should be completed within 30 minutes.

U.S. Army RDECOM-Natick Soldier Center-Combat Feeding Directorate researchers collaborated with scientists from the Medical Research and Materiel Command Institute of Surgical Research and academia to invent, patent and transfer to commercial industry the Portable Chemical Sterilizer (PCS), a revolutionary medical sterilization technology that fills a critical capability gap for the Army while concomitantly advancing the frontiers of basic science. With the transfer of the PCS to private industry for commercialization, the PCS also benefits other federal agencies (Departments of Homeland Security and Defense), state and local governments (emergency first responders), and private industry by creating new markets in community hospitals for emergency backup sterilizer units, and new global markets for equipment to support worldwide disaster relief efforts (tsunamis) and humanitarian aid in third-world countries (UNICEF, Doctors Without Borders).

The PCS technology constitutes breakthrough innovative research that won a 2005 Department of the Army Research and Development Achievement Award for Technical Excellence and contributed to Natick Soldier Center's winning the 2006 Army Small R&D Lab of the Year Award. More importantly, through the technology transfer process, the PCS technology is available to fulfill the missions of the military and other government agencies, and to meet the needs of the public in cross-cutting applications such as medical sterilization, decontaminating fresh fruits and vegetables, or sanitizing food handling equipment.

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Compact Portable, Reduced Oxygen Breathing Device (ROBD) for Hypoxia Training

Department of Defense
U.S. Navy
Naval Aerospace Medical Research Laboratory

The Reduced Oxygen Breathing Device (ROBD) represents the first significant innovation in hypoxia training since Charles Lindbergh used the Mayo Clinic's original high altitude chamber to test "bail-out bottles" for WWII pilots. The safe, portable, and relatively economical ROBD helps save lives and prevents the loss of aircraft, and is fundamentally changing the way the Navy provides survival training to jet pilots. The ROBD is being transitioned back to the military through an exclusive licensing agreement between the Naval Aerospace Medical Research Laboratory (NAMRL) and Environics, Inc.

Hypoxia, lack of oxygen to the brain, can result from a loss in cabin pressure or a malfunctioning oxygen supply, and the pilot has only seconds to recognize what is happening and respond to this life-or-death situation. Until now, altitude pressure chambers have been the only way to train aviators to recognize the symptoms. While the training has been reasonably effective, it is expensive, inconvenient, and carries remote health risks such as decompression sickness and ruptured eardrums. With the ROBD, trainees can be exposed to hypoxia outside the chamber using a standard aviation mask, gas reservoir system, and a unique software program that adds nitrogen to breathing air. With no external change in air pressure, there is no risk of barotrauma.

Studies at NAMRL have shown that test subjects using the ROBD experience the same responses to hypoxia as they do in the altitude chamber. At about $25,000 per portable unit, as opposed to as much as $1.5 million for a fixed chamber, training is much more economical and accessible.

The second critical advantage of the ROBD is its ability to be integrated into flight simulators. This allows pilots to receive hypoxia training according to the simulator-physiology (SIMPHYS) concept, which takes training normally conducted in a classroom and brings it to the simulator in order to present realistic scenarios. In the chamber, aviators are given writing assignments and puzzles to monitor their cognitive responses. But with the ROBD, according to aeromedical safety officer Lt. Ellis Gayles, pilots are "engaged in something that they would be doing during a mission, and then we sneak the hypoxia in, just like it happens in the aircraft."

NAVAIR PMA-205 has committed approximately $1 million to purchase units from Environics for use at all eight of the Naval Survival Training Institute's Aviation Survival Training Centers. The device also has possible applications and significant commercial potential beyond the military. Alaska Airlines is exploring incorporating the device into its training regimen, and recently put 32 pilots and flight attendants through a successful hypoxia training program using the ROBD. Eclipse Aviation, manufacturer of the latest generation of very light jets, has purchased an ROBD system and is including hypoxia training in the purchase price of its jets; Eclipse currently has about 700 orders for light jets from private owners/operators.

LCDR Merrill Rice and Dr. Charles Vacchiano

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Blue Rose Fiber Optic Perimeter Security and Detection System

Department of Defense
U.S. Navy
Naval Undersea Warfare Center Division, Newport

From left: Dr. Fletcher Blackmon, Jim Pollock, Hugh Murphy, Roger Howlett, and Gerard Poirier

The passive acoustics expertise developed by the U.S. Navy to detect, localize and classify targets in an undersea environment to win the Cold War is now being used to detect and localize the sounds of intruders near a perimeter or border. The Naval Undersea Warfare Center Division, Newport invented and patented an in-ground, cost-effective fiber optic perimeter security and detection system known as Blue Rose.

Under multiple Cooperative Research and Development Agreements (CRADAs) and patent license agreements, Blue Rose is being made available as a commercial product for perimeter security at airports, power plants, oil and gas refineries, commercial and domestic buildings, pipelines and international borders. Blue Rose detects an intruder via changes in the buried optical fiber caused by sound waves in the ground. Actual audio sounds of people walking or running and vehicle noises are captured. The system alerts the operator with an audio alarm as well as a visual display of the location of the intrusion along the perimeter. An integrated camera system utilizes GPS information relayed by Blue Rose to tilt, pan and zoom to the precise location for further visual identification of the intruder. As a buried system, Blue Rose is more covert than perimeter security systems currently on the market and is not easily tampered with. The system is more economical and reduces the size of the security staff required. Near-instantaneous reconfiguration of perimeter zone sizes and locations increases the system's flexibility.

The commercialization of Blue Rose results in improved security at all sites. Terrorist targets such as nuclear power plants and oil and gas refineries will be better protected due to this cost-effective system. Intruders will not be able to enter grounds undetected and cause harm to the nation's infrastructure. Protection of U.S. military personnel at bases around the world will improve, while the number of security personnel at those bases will be reduced due to the enhanced capabilities of the Blue Rose system.

The commercial availability of the system will ensure cost economies for the U.S. military and a competitive environment in which more capabilities will be integrated with the system.

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Powertrain System Analysis Toolkit (PSAT)

Department of Energy
Argonne National Laboratory

Developed at Argonne National Laboratory, the Powertrain System Analysis Toolkit (PSAT) is a state-of-the-art flexible and reusable simulation package used to facilitate advanced vehicle (i.e., hybrid, hydrogen, and fuel cell) development. PSAT was designed to serve as a single tool that can meet the requirements of automotive engineering throughout the development process—from modeling to control.

PSAT allows users to accurately model advanced vehicle components, their control strategies, and component interactions in a systems context, thereby enabling users to conduct detailed laboratory benchmark testing of advanced components as they are being developed. PSAT provides accurate performance and fuel economy simulations, permitting automotive and truck manufacturers and their suppliers to quickly select the advanced technologies that will best meet their needs, and helping them bring their advanced vehicles to market as quickly and cost effectively as possible. Thus far, PSAT has been transferred, through licensing agreements, to more than 200 users worldwide. Among licensed PSAT users are major automakers—including General Motors, Ford, DaimlerChrysler, and Hyundai—automotive suppliers, energy companies, research institutions, and universities.

From left: Sylvain Pagerit, Aymeric Rousseau, Phillip Sharer and Bob Larsen. Not pictured: Don Hillebrand, Mike Duoba, Lee Slezak, and Max Pasquier

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Compact High Efficiency Natural Gas Liquefier

Department of Energy
Idaho National Laboratory

From left: Kerry Klingler, Dr. Mike McKellar, Dr. Dennis Bingham, Bruce Wilding, Frank Carney and Terry Turner. Not pictured: Douglas Stacy and David Anderson

Affordable energy is a key concern in the 21st century. Since the late 1980s, natural gas has become more widely available and more popular, as well as environmentally friendly. As a result, gas demand is outrunning the current supply system, causing both high prices and price volatility. According to the Department of Energy, the demand for natural gas is expected to increase 25% over the next decade.

Although most natural gas is carried from well to user as gas in pipelines, the use of liquefied natural gas (LNG) is increasing because of new applications and changing market forces in the energy industry. A typical modern, large liquefaction plant costs billions of dollars, produces 150,000+ gallons/day, uses 20-30% of its throughput to power it, and has substantial operating and maintenance costs. Consequently, there is a clear need for small, reliable, inexpensive liquefaction processes that work efficiently with untreated natural gas and that can be located close to LNG markets.

Researchers at Idaho National Laboratory (INL) have developed for the first time a liquefaction technology that is very compact, yet able to use natural gas directly from transmission lines without costly pretreatment to remove water and carbon dioxide contaminants. The INL technology produces LNG that is competitive with that produced in some of the largest facilities worldwide. The secret of INL's highly efficient technology is that it uses "free" energy from pipeline pressure letdown to liquefy the natural gas, and it incorporates a patented centrifugal solids separation step to remove frozen carbon dioxide that could clog the system.

INL recognized the far-reaching applications of this technology when it was first disclosed in 1997. In 2000, a Cooperative Research and Development Agreement (CRADA) with Pacific Gas and Electric (PG&E) and Southern California Gas Company led to the construction of a 10,000-gallon/day plant in Sacramento. Its compact size and automated operation allowed the liquefaction facility to be located within Sacramento's historic district.

In 2004 INL licensed the technology in a particular field of use to Hanover Compression LP. The INL compact high-efficiency natural gas liquefier has generated worldwide licensing interest, with inquiries from 36 countries. Representatives from many of these countries—which include Canada, Mexico, Argentina, Brazil, Peru, Chile, Kazakhstan, Thailand and Bangladesh—have visited INL or the Sacramento liquefaction facility. In 2006, the technology was honored with an R&D 100 Award recognizing the 100 most technologically significant products and advancements in the world; and it also received an FLC Far West Region Award for Outstanding Technology Development.

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MESA: Measuring Enzyme-Substrate Affinities

Department of Energy
Los Alamos National Laboratory

Today's high drug-development failure rate—the primary cause of the high cost of new drugs—is driven by the industry's inability to measure more than an infinitesimal number of drug-protein interactions at one time. Now, MESA (measuring enzyme-substrate affinities) technology, developed at Los Alamos National Laboratory (LANL), makes it possible to measure a very large number of these interactions very quickly. The resulting early detection of toxicity will save hundreds of millions of dollars in drug development costs.

MESA enables researchers to screen drugs for binding to proteins without the need for any fluorescent labels, which are as large as most drug molecules. Adding fluorescent labels leads to drugs with poor performance and many side effects. MESA images drug-protein binding using the natural X-ray fluorescence intrinsic to unlabeled drug molecules.

To commercialize the technology, Dr. Benjamin Warner, co-inventor of MESA, took an entrepreneurial leave of absence from LANL to found Caldera Pharmaceuticals, which acquired $7 million in private financing and licensed the MESA technology. Using MESA, Caldera is striving to save the $40-billion-a-year drug discovery industry billions of dollars by shortening the testing process and weeding out potentially dangerous drugs before they reach expensive clinical trials. To meet market demand, Caldera is currently developing a relatively inexpensive XRFlow machine that combines MESA with solution measurement for use by the pharmaceutical and biomedical research industry. Caldera has a working prototype of its new XRFlow device and plans to introduce XRFlow to the market in early 2008. Caldera is also developing its own pharmaceutical pipeline by finding new uses for existing drugs.

Every drug that successfully undergoes clinical trials costs $200 million or more in direct costs because so many trials fail. MESA will enable failure-prone drugs to be eliminated before costly animal and clinical trials begin. In addition, adverse drug reactions kill approximately 100,000 hospitalized patients annually and cause serious side effects in another 2.2 million people in the United States. MESA will enable physicians to prescribe the right drug from the start by screening patients for their likely response to specific drugs.

With the development of MESA, a 2005 R&D 100 Award winner for the lab, LANL has spun out a viable startup with a bright future based on its valuable contribution to the pharmaceutical industry.

Dr. Benjamin Warner
Not pictured: Dr. Anthony Burrell, Dr. George Havrilla, Dr. Cris Lewis, Dr. Cynthia Mahan, Dr. Grace Mann, Dr. Thomas McCleskey, Dr. Thomasin Miller, Dr. Edel Minogue, and Dr. Cyndi Wells

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Advanced Process Engineering Co-simulator

Department of Energy
National Energy Technology Laboratory

Dr. Stephen Zitney

The Advanced Process Engineering Co-Simulator (APECS), developed at the National Energy Technology Laboratory (NETL), is an innovative software tool that the process and energy industries are using to meet aggressive performance, economic, and environmental targets for some of the most sophisticated and expensive production plants in the world. APECS allows the industries to better understand and optimize overall plant performance with respect to complex thermal and fluid flow phenomena by combining best-in-class process simulation and computational fluid dynamics (CFD) software with high-performance computing and interactive, immersive, 3-D plant walk-through virtual engineering software. Using APECS, these industries can also address the challenge of designing next-generation plants to operate with unprecedented efficiency and near-zero emissions, while operating profitably amid cost fluctuations for raw materials, finished products, and energy.

The tools used by NETL to transfer the APECS technology to the private sector include a DOE-funded cooperative R&D project and agreement among NETL; Fluent, the world's leading supplier of CFD software and services; Aspen Technology, a major supplier of process simulation software; West Virginia University; and Alstom Power, a major worldwide industrial player in equipment and services for power generation.

To facilitate additional APECS R&D and technology transfer, NETL recently launched the Collaboratory for Process & Dynamic Systems Research (CPDSR). Organized by NETL in partnership with Carnegie Mellon University, the University of Pittsburgh and West Virginia University, the main objective of the CPDSR is to accelerate development of process systems engineering methods and tools for fossil energy applications. As a result of successful technology transfer efforts, APECS is used worldwide today by engineers and researchers in the process and energy industries, as well as academia, national laboratories, and other research entities. In the chemical industry, process engineers are using APECS to optimize the performance of chemical production plants by analyzing the impact of complex reactor mixing and fluid flow phenomena on overall plant product quality and yield.

In the U.S. and United Kingdom power industries, cycle engineers are routinely employing APECS technology to develop competitive power plant solutions with significantly reduced development costs and technical risk. At NETL, system analysts are applying APECS to reduce the time, cost, and technical risk of developing high-efficiency, near-zero emissions power plants such as the coal-fired, gasification-based plant in the $1 billion, 10-year DOE FutureGen R&D Initiative.

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Hybrid Solar Lighting

Hybrid solar lighting is a dramatic improvement over conventional approaches to bringing sunlight into buildings. The hybrid solar lighting system illuminates the interior spaces of buildings by means of tandem solar and electric lighting sources. The system uses a lightweight, roof-mounted collector to concentrate visible sunlight into a bundle of plastic optical fibers that are routed to multiple "hybrid" luminaires within the building. These luminaires blend the natural light with artificial light to maintain a constant level of room lighting. Hybrid solar lighting reduces the cost of lighting in commercial buildings and delivers other significant benefits associated with natural lighting.

Oak Ridge National Laboratory (ORNL) patented the technology in 2003 and licensed it in 2005 to Sunlight Direct, LLC, in Oak Ridge, Tennessee. A commercial product became available in 2005. Demonstration units were to be deployed at sites across the United States during 2006.

Sunlight Direct is a local startup company spun out from ORNL. The principal scientist, Dr. Duncan Earl, was granted part-time entrepreneurial leave status by UT-Battelle, the management and operating contractor for ORNL under contract to the Department of Energy (DOE), and accomplishing the entire transaction required significant coordination with, and cooperation from, DOE with respect to management and approval of processes relating to potential conflicts of interest.

From left, front:Wes Wysor, Jeff Muhs, Randall Lind, Art Clemons, Dr. Duncan Earl, Christina Ward, John Jordan. From left, back: John Morris, Curt Maxey, Melissa Lapsa, Dave Beshears. Not pictured: Larry Dickens

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Grid Friendly™ Appliance Controller for Grid Frequency Monitoring and Stabilization

Carl Imhoff, David Chassin, Donald Hammerstrom, Jeffrey Dagle, Robert Silva, Robert Pratt

The term "grid" refers to the North American power highways, which move and channel electricity via power lines and substations. If the grid suffers an imbalance and becomes unstable, it could lead to a blackout—similar to the summer 2003 East Coast power outage. PNNL researchers have developed an innovative technology, the Grid Friendly™ Appliance Controller (GFA), which senses grid conditions by monitoring the frequency of the system and provides an automatic response in times of disruption by reducing the demand with no apparent disruption visible to the consumer's everyday life.

This simple computer chip can be installed in household appliances, such as washers, dryers, refrigerators, air conditioners, water heaters, etc., and can turn them off for a short period of time—just a few seconds up to a few minutes—to allow the grid to stabilize. The GFA can be programmed to react autonomously within a fraction of a second when a disturbance is detected, whereas power plants take several minutes to come up to speed and provide the appropriate response. The GFA technology can even be programmed to delay the restart of appliances instead of allowing all of them to come on at once following a power disruption, easing the transition back into full demand on the grid.

The GFA was developed and tested at PNNL, and has been transferred into the homes of several hundred consumers in the Northwest as part of a demonstration project that is demonstrating the device's applicability to grid stabilization and assessing the resulting consumer response.

The capability of the technology to monitor the frequency of the power grid system and respond automatically will result in the grid's increased stability and reliability, making it less costly to operate and ultimately leading to lower costs for consumers. Using the GFA to control demand instead of supply to stabilize the grid also results in fewer power outages, as well as allowing power plants to operate more efficiently and cost-effectively by reducing the need for backup generators to remain constantly on standby.

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The Morning Report: Advanced Proactive Safety and System Monitoring

Department of Energy
Pacific Northwest National Laboratory

An R&D 100 Award–winning technology, The Morning Report is a data-intensive airline safety and information tool that gives aviation personnel more insight than ever before into overall flight patterns and subtle flight characteristics. Commercial airlines, along with the federal government, the Federal Aviation Administration (FAA) and the National Aeronautics and Space Administration (NASA), are focused on more proactive aviation safety efforts.

The Morning Report provides a new ability to gain insight into potentially unsafe flight practices and conditions. Using sophisticated multivariate statistical algorithms, the system analyzes gigabytes of data from thousands of airline flights overnight, generating an intuitively structured report every morning. The powerful algorithms that are the backbone of the analyses are combined with user-intuitive software to enable users to drill down, and understand, the details underlying any portion of any flight.

The transfer of The Morning Report technology culminated 10 years of research and development to create the automated capability to analyze huge amounts of data recorded during aircraft flights to improve the safety of flight operations. Tracking flight data is a voluntary effort for airlines and has, in the past, been prohibitively labor- and time-intensive. The Morning Report helped lower these hurdles for airlines to successfully track and make meaningful sense of flight data. This highly sophisticated computerized statistical analysis technology, coupled with user-friendly front-end software, can be readily used by aviation personnel without a high degree of statistics knowledge.

PNNL scientists were recruited by NASA because of their technical expertise in data mining and informatics. They developed the mathematical and statistical methodologies and algorithms to ingest data from a variety of flights of varying durations; to construct mathematical vectors that captured the essence and nuance of each flight in a manner that enabled efficient and automated analysis; to identify typical patterns and atypical events; and to present the results to users of The Morning Report, including nontechnical explanations of the major sources of the error. PNNL provided demonstrations of the power of The Morning Report and explanations of the scientific principles on which it is based to NASA, airline safety officers, and the FAA.

Dr. Thomas Ferryman and Brett Amidan
Not pictured: Dr. Tom Chidester, Capt. Robert Lawrence, Capt. Robert Lynch, Gary Prothero, Loren Rosenthal, Dr. Irving Statler

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Advent Solar's Breakthrough Back-contact Photovoltaic Cell Design and Fabrication Process

From left: David L. King, Paul M. Smith, James Gee, and Mark S. Allen
Not pictured: Jeffrey Nelson

Rising energy costs and instability in regions producing most of the world's fossil fuels have refocused attention on the need for alternative renewable energy sources.

While the cost of solar cells has dropped over the past several decades, the technology is still not cost-effective for on-grid applications (i.e., homes, businesses). The solar industry needs further process improvements so that photovoltaic cells are more efficient and less expensive to manufacture.

Researchers at Sandia National Laboratories (SNL) have developed a breakthrough photovoltaic cell design and fabrication process that eliminates current-collection grids from the front surface of the cell. The new process uses a laser to drill holes through the silicon substrate and form conductive channels from the front to the rear surface. This advance allows the electric power to flow to the back surface, where the backside wiring carries the current away. Unlike conventional cells with wiring on the front that blocks sunlight, these laser-drilled holes make the cells more efficient by exposing more of the top surface of the solar cells to sunlight. These back-contact cells also reduce assembly cost by eliminating the front-to-back connection step, and they offer a more aesthetically pleasing product for the consumer. Recognizing this need in the market, Russell Schmit—former president of Photowatt International, a photovoltaic manufacturer based in France—approached SNL to start a new company that would manufacture SNL's novel back-contact solar cell design. The startup, Advent Solar, is located in Albuquerque, New Mexico, and has licensed SNL's back-contact photovoltaic cell technology. The new solar cell design offers a more efficient and less expensive option than other cells currently available in the marketplace.

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Jess® - the Rule Engine for the Java™ Platform

Department of Energy
Sandia National Laboratories

Jess®, the Rule Engine for the Java™ Platform, is a tool for building a type of intelligent software called an Expert System. An Expert System is a set of rules that can be repeatedly applied to a collection of facts about the world. In traditional computer programming, the programmer tells the computer precisely what to do, one step at a time; the computer then solves the problem that is implicit in this description. Many problems are naturally algorithmic, meaning that a well-defined series of steps leads to a solution. Most computer applications fall into this category. However, some problems—such as "Is our network under attack?", "Is this document fraudulent?", and "How should we schedule resources?"—resist being reduced to rote computation. That's where Jess® comes in.

Jess® is a declarative programming environment that lets the programmer describe the problem explicitly; Jess® then decides what steps to follow to reach a solution. This makes Jess® an excellent tool for solving difficult or ill-defined problems. Jess® is portable to a wide range of computer systems. Users of Jess® can build Java™ software that has the capacity to "reason," using knowledge the user supplies in the form of declarative rules. Jess® is small, light, and one of the fastest rule engines available.

The first rule engine for the Java platform, Jess® now is the most mature and among the most advanced. Its problem-solving abilities have been applied to an extremely varied range of problems in the technology, insurance, and financial services industries and in academic artificial intelligence research. Logistics, planning, order processing, data mining, and optimization are just some of the areas in which Jess® has been used. Jess® has also been licensed to hundreds of academic institutions for use in artificial intelligence research laboratories and classrooms.

Craig Smith and Dr. Ernest Friedman-Hill

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Novint's 3-D Haptic Technology Software Adds Interactive Touch to Computing

Nathan Golden
Not pictuerd: Tom Anderson, Dr. William Camp, Dr. Arthur Hale, Dr. Mark Allen

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Typical human-computer interaction situations, such as in video games, lack realistic virtual touch capabilities. Novint Technologies, Inc., has changed that with its new technology that allows users to experience the interaction physically and emotionally. Novint has taken the three-dimensional (3-D) touch (haptic) software it licensed from Sandia National Laboratories (SNL) and paired it with the Novint Falcon 3-D touch controller to make interactive, 3-D touch possible and practical for consumer applications for the first time. With these products, users feel realistic weight, shape, texture, dimension, dynamics, and force effects. This revolutionary technology will be introduced in the global video game market in 2007.

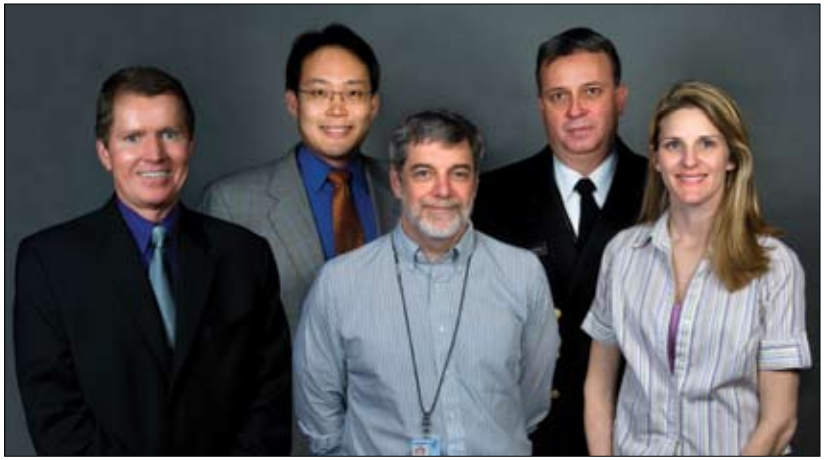
Haptic technology is one of the few technologies we will see in our lifetime that will fundamentally change computing, on par with the mouse, keyboard, monitor, and Internet. The technology is applicable to many different fields, such as video games, operating systems, the Internet, military applications, medical training and visualization, CAD/CAM, remote vehicle or telerobotic control, computer modeling and animation, scientific visualization, toys, design and layout, artistry, and uses for visually challenged users.

Aerosol Vaccination Device

The delivery of vaccines via the respiratory tract has been studied for many years and has been highly effective in clinical trials for many diseases. This delivery method is potentially safer and more effective, less painful, and less expensive than injectable vaccines. However, despite its many advantages, limitations in aerosol delivery device technology have kept the respiratory route of vaccination from common use. Specifically, previous aerosol devices have been cumbersome and required outlet electricity and crushed ice to keep the vaccine cold. These requirements made use in developing countries impractical. Also, devices for delivery of agents to the respiratory tract were typically designed for one patient to use repeatedly, instead of using a device for multiple patients.

To address these limitations in aerosol delivery devices, a team of scientists at the Centers for Disease Control and Prevention (CDC) and engineers at Creare, Inc., created an aerosol device capable of quickly vaccinating many patients in a mass vaccination setting or a local clinic without contaminating the device and spreading respiratory diseases.

This device is handheld and powered by a rechargeable battery, and has disposable patient interfaces and a disposable aerosol element to prevent contamination. The device can deliver vaccines or pharmaceuticals to the desired area of the respiratory tract through the nose or the mouth. This technology provides a customizable, dosage-controlled and environmentally friendly method of delivering a wide variety of vaccines and drugs. The device has been successful in animal studies of measles vaccination and will be included in human trials later this year.



From left: Tom O'Toole, Matthew Kim, Dr. Paul Rota, Dr. Mark Papania, Raydel Mair. Not pictured: Dr. Mark Bagley and Dr. James Barry

The improved aerosol delivery technology was transferred to AerovectRx Corporation. The result of this technology transfer process was the creation and funding of a new startup company based on this CDC technology, benefiting the economy by creating new jobs and introducing a new product to multiple markets.

In addition to providing a mechanism to commercialize CDC technology, the technology transfer process also raised awareness of CDC's research efforts to maximize its impact on global public health. More importantly, transfer of this technology makes it possible to move vaccination via the respiratory tract from the research and development phase to commercial use, where it can prvide safer, more effective, less painful and less expensive vaccines for millions of people.

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Assay for Detection of Avian Influenza Viruses

Department of Health and Human Services
Centers for Disease Control and Prevention

Since its emergence in 2003, a particularly highly pathogenic avian influenza A virus (H5N1) has reached endemic levels among poultry in several Asian, European, and African countries. As of September 28, 2006, there were 251 reported human infections with high mortality. Although most individuals infected with H5N1 have had extensive physical contact with infected birds, the virus has the potential to mutate into a strain capable of efficient human-to-human transmission. Because the virus does not commonly infect humans, the human population contains little or no immune protection against it. Genetic analysis of the H5N1 virus in humans shows resistance to existing antiviral medications. These developments have ignited global fears of an imminent influenza pandemic.

Faced with the rapid spread of avian influenza, the CDC worked quickly with state, national, and international authorities to develop a comprehensive pandemic preparedness response plan. CDC scientists developed a protocol for the rapid detection and identification of avian influenza, as well as other types and subtypes of influenza, by real-time reverse transcriptase polymerase chain reaction (RRT-PCR). This protocol allows for rapid typing and subtyping of influenza A viruses, and includes the only available primer probe sets to specifically and sensitively detect highly pathogenic H5N1 viruses currently circulating in southeast Asia and other parts of the world. The diagnostic test can provide results on suspected H5 influenza samples from both human and animal subjects within hours.

On February 3, 2006, the Food and Drug Administration (FDA) issued expedited approval of the primer and probe set for detection of the H5 strain. The RRT-PCR assay was the first laboratory method to be cleared by the FDA for avian influenza A/H5 testing and in vitro diagnostic medical device use in the United States. In order to facilitate pandemic preparedness, assay protocols and reagents were distributed by the CDC to Laboratory Response Network (LRN) laboratories in all 50 states within days of FDA approval. A patent application was also filed in February 2006.

Between April and September 2006, the CDC entered into 22 Material Transfer Agreements (MTAs) with public health laboratories on five continents and MTAs with three genetic diagnostic companies: Roche Diagnostics, Cepheid, and Biosearch Technologies, Inc. Additionally, the technology was licensed to a multinational biotechnology firm in April 2006. This technology transfer effort, which involved significant coordination among CDC and international, state, local, and private organizational partners, has significantly increased global avian influenza pandemic preparedness and response capabilities.

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Gardasil™: A New Era in Cancer Prevention

Human papilloma virus (HPV) is the most common sexually transmitted infection in the United States. The Centers for Disease Control and Prevention estimates that about 6.2 million Americans are infected with genital HPV each year and that over half of all sexually active men and women become infected at some time in their lives. While most HPV infections are cleared by the body's own defense system and do not lead to cancer, virtually all cases of cervical cancer are linked to HPV infection. On average, there are 9,700 new cases of cervical cancer and 3,700 deaths attributed to HPV in the United States each year. Worldwide, cervical cancer is the second most common cancer in women, and is estimated to cause over 470,000 new cases and 233,000 deaths each year.

Nearly two decades ago, researchers at the NCI, part of the National Institutes of Health (NIH), showed that a structural protein from the surface of an HPV serotype causally linked to the development of cervical cancer can self-assemble into virus-like particles (VLPs) that stimulate protective immune responses to HPV without causing infection. The NIH facilitated translation of this discovery into a commercial human vaccine by overseeing the patenting of the VLP technology and licensing it to Merck and GlaxoSmithKline (GSK).

The resulting vaccines trigger the immune system to produce protective antibodies that bind the virus, thereby thwarting viral infection of cervical cells and subsequent cancers. Clinical trials of Gardasil™, the Merck vaccine, demonstrated 100% protection against the development of precancerous cervical lesions and nearly complete protection against the development of genital warts. In June 2006, the Food and Drug Administration approved Gardasil™ for the prevention of cervical precancer, cancer, and genital warts. A GSK vaccine (Cervarix™) that is also based on NCI's VLP technology has been submitted for regulatory approval in Europe.

HPV vaccination is expected to translate into public health benefits in the U.S. by complementing existing cervical cancer screening, and reducing the medical care followup and invasive procedures associated with abnormal Pap smears as well as related health care costs. In poorly resourced regions of the world, HPV immunization may prevent several hundred thousand cancers annually, many of which affect relatively young women. The vaccine may offer far greater benefits in the developing world because the burden of disease is greatest and other preventive approaches to cervical cancer are limited or nonexistent.

Drs. John Schiller and Douglas Lowy
Not pictured: Reinhard Kimbauer

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Development of Crash Energy Management Passenger Rail Equipment

Department of Transportation
John A. Volpe National Transportation Systems Center

From left: Daniel Parent, Tom Tsai, Jo Strang

Front row, left to right: Michelle Priante, Karina Jacobsen, Prof. Benjamin Perlman
Back row, left to right: David Tyrell, Michael Carolan, Eloy Martinez, Kristine Severson, Daniel Parent
Not pictured: Cindy Gross and Charlie Bielitz

Gunars Spons

Grady Cothen

Cab car-led passenger trains present a particularly challenging situation in collisions with locomotive-led trains because the presence of passengers in the lead vehicle exposes them to risk. The John A. Volpe National Transportation Systems Center (Volpe Center), in support of the Federal Railroad Administration (FRA), has conducted research on strategies that improve the crashworthiness of cab cars.

One solution that better preserves occupied spaces in the trains is Crash Energy Management (CEM). CEM improves crashworthiness with crush zones designed to collapse in a controlled fashion during a collision, distributing the crush among the unoccupied areas of the train. Metrolink, a commuter rail authority in Los Angeles, was preparing to purchase new equipment at the time of an incident in Glendale, California. In this collision, a cab car-led train ran into a locomotive-led train, resulting in 11 occupant fatalities. As part of its response to the incident, Metrolink decided to apply recent results of the Volpe Center's passenger train crashworthiness research in its procurement. This research includes train-to-train impact tests that show a sizeable increase in crashworthiness with CEM. In coordination with the American Public Transportation Association (APTA), Metrolink approached FRA and the Federal Transit Administration (FTA). FRA, FTA, and APTA decided to form the ad hoc CEM Working Group in May 2005. The group included government engineers and participants from the rail industry, including passenger railroads, suppliers, labor organizations, and industry consultants. A detailed technical specification was developed in just over four months. This rapid development was possible because of the availability of well-developed technical information. Metrolink's commitment; the sustained existence of government/industry committees committed to increasing railroad safety; and the support of the FRA, Volpe Center, FTA, and APTA enabled Metrolink to release its specification in September 2005 as part of an invitation for bid. In May 2006, the award was made to Rotem, a division of Hyundai that manufactures rail equipment. The FRA and Volpe Center are continuing to work with Metrolink to ensure that the supplier meets the requirements. New equipment with the CEM features is expected to be in service in 2009.

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2007 FLC Awards

Evaluator Panel—Awards for Excellence in Technology Transfer

Representing a cross-section of federal laboratories, industry and academia, the members of the Evaluator Panel enthusiastically devoted their time and effort to judging the dozens of nominations submitted for the Awards for Excellence in Technology Transfer. Selecting the winning technologies was a difficult task, but these evaluators admirably rose to the challenge. The FLC recognizes their tireless efforts and expresses its gratitude.

Tom Anyos, Technology Ventures Corporation

Neil Chaudhry, Buy Castings

David Esry, Nuclear Security and Safety Administration, Kansas City Plant

Eric Froehlich, National Security Agency

Dale Hithon, NASA Goddard Space Flight Center

Eric Jurrus, Pacific Northwest National Laboratory

Mark Langguth, Argonne National Laboratory

Roger Lewis, Department of Energy

Andrew Loebl, Oak Ridge National Laboratory

Eric Lund, Pacific Northwest National Laboratory

J. Terry Lynch, National Institute of Standards and Technology

Robert Lynch, Jr., Naval Undersea Warfare Center, Division Newport

Christophe L. McCray, Office of Naval Research

Margaret McNamara, University of Buffalo

Susan McRae, Army Space and Missile Defense Command

Robert Morelli, National Security Agency

David Nicholson, USDA Agricultural Research Service, Pacific West Area

Curtis Powell, Nuclear Security and Safety Administration, Kansas City Plant

Ajoy Prabhu, National Institutes of Health

Maurice Smith, Nuclear Security and Safety Administration, Kansas City Plant

Herbert Spiegel, Applied Science and Technology Associates, Inc.

J. Susan Sprake, Los Alamos National Laboratory

Thomas Valco, USDA Agricultural Research Service

Renee Wagner, USDA Agricultural Research Service, Midwest Area

Tim Whelan, Nuclear Security and Safety Administration, Kansas City Plant

Interagency Partnership Award

Sandia National Laboratories (SNL) and the Federal Aviation Administration (FAA) worked together to develop a patented and licensed technology that will save lives. The Pulse Arrested Spark Discharge (PASD) is the world's first wiring diagnostic tool that can detect and locate a broad range of aircraft defects, such as breached insulation, chafing, and physically small insulation cracks.

When passengers board an airplane, the one thing they probably never think about is wiring. But there are miles of aging wiring, intertwined within complex wire bundles, located behind the side panels of an aircraft fuselage. Failure of these wires can potentially cause serious safety hazards. An intermittent electrical short due to frayed insulation can make lights blink and air-conditioning falter. In rare circumstances, wiring failures can contribute to fatal accidents, as happened with SwissAir 111 or TWA 800.

The PASD finds aircraft wiring faults, allowing mechanics to take corrective actions before the fault develops into a serious safety hazard. The technology is highly immune to line impedance variations, an important property in commercial aircraft, and does not harm electrical insulation materials on the aircraft. Due to the simplicity of the PASD concept, the low-energy PASD pulser and diagnostics technology is readily implemented into a portable diagnostic system and can be applied to a number of aviation and non-aviation wiring systems.

After concluding successful prototype testing, SNL and the FAA transferred the PASD technology to the private sector. It is now available as the ArcSafe® - AS1216 Arc Fault Detection System, developed and manufactured by Astronics Corporation, a Redmond, Washington-based company.

Dr. Theresa Baus

Department of Defense – Navy
Naval Undersea Warfare Center, Division Newport

Outstanding Technology Transfer Professional Award

As head of the Naval Undersea Warfare Center (NUWC), Division Newport's Technology Partnership Enterprise Office, Dr. Theresa Baus has used her vision, persistence, and barrier-breaking outreach efforts to develop and win approval of a new model used to forge relationships between the Navy and the private sector.

Also serving as head of NUWC's Office of Research and Technology Applications (ORTA), Dr. Baus has focused on finding partners that can further develop and push the commercialization of technologies coming out of Division labs. She has made a special effort to reach out to the medical community, feeling that many of the technologies under development at NUWC might have applications in health care and medical research. As a result, a groundbreaking technology has been successfully transferred and commercialized, and is poised to improve cancer detection through improved medical imaging.

The Digital Image Enhancement (DIE) system uses wavelets and mathematical functions to help physicians detect tissue anomalies and interpret digital mammograms. Originally used to help sailors identify mines in a cluttered underwater environment, DIE helps physicians look for microcalcifications in a mammogram of dense breast tissue. DIE software is slated to be integrated into commercial use by this summer, pending a sublicense agreement with a leading manufacturer of digital mammography equipment. With DIE in place at hospitals and clinics across the nation, doctors will be able to refine and enhance regions of interest or concern within mammography images to improve the detection of cancer in its early stages.

Dr. Baus has applied her extensive technical expertise, astute business acumen, formidable partnering talents, and considerable interpersonal skills to a significant expansion of the Division's technology transfer metrics. Cooperative Research and Development Agreements (CRADAs) totaling over $9 million have been signed since her original appointment in 1999, and NUWC has also won five FLC technology transfer awards under her watch. Since FY 2003, Dr. Baus has overseen the signing of 95 CRADAs worth $5.1 million, nine Patent License Agreements with royalties totaling nearly $2 million, and 25 Educational Partnership Agreements. In FY 2006, 81 Work for Private Parties agreements brought in over $8.6 million.

Dr. Baus' extraordinary efforts on behalf of DIE and other technologies, her consistently excellent transfer practices, her persistent outreach to industry, and her dedication to education make her a role model among technology transfer professionals.

2007 FLC Awards

Laboratory Director of the Year

Carl Bauer

Department of Energy
National Energy Technology Laboratory

Under Carl Bauer's leadership, the National Energy Technology Laboratory (NETL) executes a research, development, and demonstration program with a yearly budget of approximately $800 million aimed at resolving the environmental, supply, and reliability constraints of producing and using fossil fuel resources. To accomplish this, he leads an organization that implements and coordinates over 1,400 extramural activities in 47 states and more than 40 foreign countries, with a total value of nearly $8 billion. A large portion of NETL's funding is devoted to partnerships with corporations, small businesses, universities, nonprofit organizations, and other national laboratories and government entities.

Mr. Bauer has supported the rapid transfer of innovative technology developed by NETL and its stakeholders through NETL programs. His support has resulted in the early transfer and commercialization of technologies that enhance the efficiency of our nation's energy use and save taxpayer dollars. His support includes facilitating the transfer of technology through CRADAs and other cooperative agreements, facilitating the patent process at NETL to provide early licensing opportunities for innovative technologies, providing awareness to interested stakeholders through personal presentations, and providing incentives to NETL researchers and stakeholders to transfer technologies.

An exciting example of Mr. Bauer's current technology transfer campaign is his University Research Initiative (URI), a unique approach that encourages academic-governmental collaborations, advances NETL's in-house research efforts, and develops a future talent pool. This cooperative research program brings university researchers and students to NETL's facilities, where they collaborate with in-house scientists and researchers in planning, designing, and conducting research and development. To date, URI has produced 60 collaborative projects with an estimated total value of $14 million. The most recent round of proposals is bringing not one, but three, regional universities into collaboration: the University of Pittsburgh, West Virginia University, and Carnegie-Mellon University.

In addition to facilitating and publicizing NETL's technology advancements, Mr. Bauer encourages NETL scientists and managers to participate in the technology transfer process. Specifically, through the distribution of royalty payments, he provides a strong incentive for patents issued. Developers of innovative ideas receive up to 25 percent of the royalties on licensed patents that are picked up for commercialization by partners in industry. The success of this initiative is evident by its results. In FY05, NETL issued nine patents from which $55,000 in royalties were distributed.

Dr. David Swayne

Through his leadership and vision, Dr. David Swayne has refocused and transformed the Southeast Poultry Research Laboratory (SEPRL) from a general poultry disease research laboratory with national impact and limited technology transfer to an exotic poultry viral disease laboratory with national and international prominence, especially in the area of avian influenza (AI). Dr. Swayne has received several awards for his personal research and is sought by national and international organizations to serve on key policy committees related to research and the use of technology to solve problems.

Dr. Swayne has provided technology transfer both through his leadership and his personal research productivity within SEPRL. Examples of major technology transfer include:

• Through CRADAs with two companies, Dr. Swayne provided research data on AI vaccines that resulted in the first two fully licensed AI vaccines. One of these vaccines has been manufactured in the U.S. and over 2 billion doses have been exported to Latin America for use in chickens. This vaccine is also designated as part of the USDA AI vaccine bank.

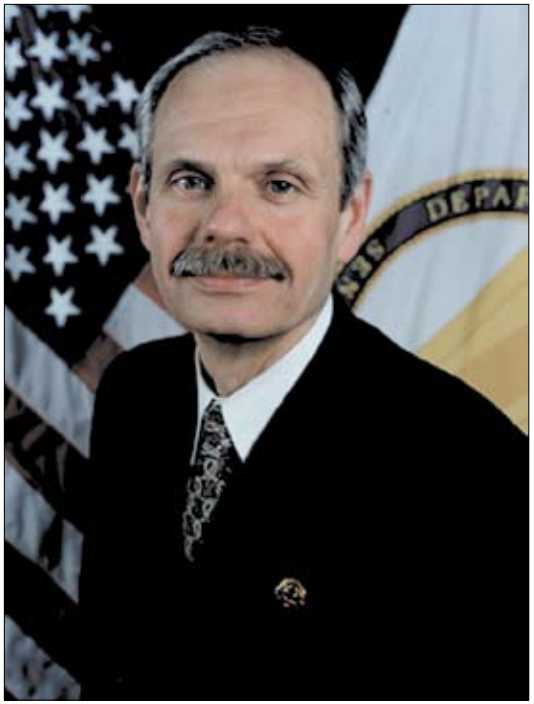
• Dr. Swayne developed and transferred research findings that have become the international standard for pasteurization and cooking to kill AI and the Newcastle disease virus in eggs and poultry meat. These data are used by the Food Safety and Inspection Service, the Food and Drug Administration, the World Organization for Animal Health, and the World Health Organization.

• Because of his international leadership and research productivity on AI, Dr. Swayne is highly sought by veterinary students to do research externships, develop cooperative research agreements with universities and institutions, and sponsor international foreign visitors for training in AI.

Dr. Swayne has provided technology transfer and leadership in research outside of SEPRL. He advises leaders in the poultry industries; and state, federal and international action/regulatory agencies on technical and practical matters related to AI, zoonotic infections, biocontainment of exotic pathogens, bioterrorism, and related problems concerning poultry and agriculture.

Joseph Zarzycki

Department of Defense
U.S. Army Edgewood Chemical Biological Center



The success of the Edgewood Chemical Biological Center's (ECBC) technology transfer program can be largely attributed to the leadership of Technical Director Joseph (Jim) Zarzycki. Under his leadership, ECBC has worked diligently to bring technologies to private industry and to the American public, facilitating the development of hundreds of technology transfer agreements.

Every year since 1998, Mr. Zarzycki has steadily developed ECBC's technology transfer mission and instituted metrics to track the impact of ECBC's technology transfer involvement. The value of the technology transfer program with private industry was $1.3 million in 2001 and $4.2 million in 2002; in 2006 it doubled to $8.7 million.

In FY06, under Mr. Zarzycki's direction, ECBC became a laboratory at which all employees are encouraged to help any organization or community—large or small—that seeks enhanced technologies for use in protecting the public against chemical/biological agents.

These technology transfer partners ranged from emerging companies with fewer than ten employees to Fortune 500 companies such as Genencor International, one of the largest enzyme manufacturers in the world. Some of the government partnerships fostered by Mr. Zarzycki include the Environmental Protection Agency, National Institute for Occupational Safety and Health, Food and Drug Administration, and Justice Department.

One of the best examples of technology transfer under Mr. Zarzycki involved the development of a means to accelerate the neutralization and destruction of chemical agent stockpiles. Immediately after 9/11, it became apparent to senior Army leadership that the presence of more than 1,800 bulk containers of chemical agent at Aberdeen Proving Ground posed a tempting target to would-be terrorists. Using a CRADA with Bechtel National, ECBC successfully transferred the design, operating procedures, specialized equipment, and access to experienced personnel needed by Bechtel to accelerate the safe destruction of blister/mustard agent at chemical agent storage facilities. This was an unprecedented technology transfer success for ECBC. The effort resulted in the largest CRADA revenue stream in ECBC's history—in excess of $10 million.

2007 FLC Awards

Service Awards

Larry Dickens

Harold Metcalf Award

Department of Energy
Y-12 National Security Complex

The late Larry Dickens exemplified the highest standards of dedication and service to the FLC, made significant contributions to the quality and capabilities of federal laboratory technology transfer professionals, and provided outstanding leadership to both the Southeast Region as Deputy Regional Coordinator (2001–2003) and the FLC as Vice-Chair (2003–2005). Among Mr. Dickens' accomplishments was leading an aggressive program to increase the active involvement of regional laboratories in FLC programs and initiatives. These initiatives included:

• Strengthening the Southeast Region awards program to expand the FLC's visibility in laboratories and communities.

• Meeting with Office of Research and Technology Applications (ORTA) personnel and laboratory management onsite to promote the benefits of the FLC to laboratory technology transfer activities and to participate in formal presentations of the Southeast Region Excellence in Technology Transfer Awards to laboratory scientists in the company of their peers, colleagues and laboratory management.

• Freely sharing his own expertise and experiences negotiating complex and challenging licenses and CRADAs as a sought-after speaker at regional and national FLC and other associations' meetings. His thoughtfully organized presentations were down to earth, even entertaining at times; yet they were delivered in a way that invited participation and fostered learning.

As a result of Mr. Dickens' commitment to the national FLC, the Southeast Region and both of his laboratories' (Oak Ridge National Laboratory and Y-12 National Security Complex) technology transfer and commercialization programs, the FLC was strengthened substantially. Attendance at the Southeast regional meeting jumped 30 percent, with some participants traveling from other regions to take advantage of the CEU-based professional development training in technology transfer offered. During his term of leadership, the number of national FLC Awards for Excellence in Technology Transfer received by Southeast Region laboratories increased substantially.

Through his leadership and personal attention, Mr. Dickens was instrumental in propelling the FLC into a much stronger leadership position nationally, in reestablishing the individual laboratory technology transfer professional as the primary customer of the FLC, and strengthening ORTA licensing and agreement negotiation skills—the fundamental business of technology transfer.

Donald Nordlund

Department of Agriculture
Agricultural Research Service, South Atlantic Area

Representative of the Year Award

Donald Nordlund, FLC Laboratory Representative for the South Atlantic Area, is the Technology Transfer Coordinator for two of the Agricultural Research Service's (ARS) eight research areas in the United States. These two geographic areas encompass 32 research locations with approximately 600 research scientists and engineers working on a diverse array of high-profile research issues related to agriculture, the environment, and the food supply.

Over the past year, Mr. Nordlund worked with ARS scientists and industry cooperators on more than 201 technology transfer transactions. Among these, he initiated, developed, and negotiated four Cooperative Research and Development Agreements (CRADAs) with a total research operating value of $1,530,724. He also managed 24 CRADAs that were active during this period. These agreements had a total research operating value of $20,179,930.

Mr. Nordlund's involvement in technology transfer transcends research and development interactions. He prepared six FLC 2006 Award for Excellence in Technology Transfer nominations, two of which ("Vaccines for the Prevention of the Two Major Disease of Catfish" and "A Fertilizer for Alleviation of Nickel Deficiencies") were selected as winners. He also prepared four nominations for the 2006 ARS Technology Transfer Awards, three of which received Superior Effort awards (50% of such awards presented). Mr. Nordlund received the 2005 FLC Southeast Region Laboratory Representative of the Year award.

With all of his activities and interactions, Mr. Nordlund never loses sight of his objective to encourage, facilitate, and guide technology transfer activities at the 32 ARS research locations he serves. He is an enthusiastic supporter of the FLC (on both national and regional levels), particularly the FLC's efforts to support and recognize technology transfer by federal labs and to provide training for technology transfer professionals representing those labs. Mr. Nordlund has also fostered greater ARS participation in FLC programs, which has contributed to an increase in the number and quality of Award for Excellence in Technology Transfer nominations submitted by ARS laboratories.

Roy Keller

Louisiana Business and Technology Center

Outstanding Service Award

Roy Keller is known for his long history of sustained support for the FLC, both nationally and regionally.

Mr. Keller has been a true friend of the FLC for the past 15 years. He has freely donated his time, energy and extensive connections in state and local government, university technology transfer professionals, and the business incubation and entrepreneur community. He is Associate Director of the Louisiana Business and Technology Center—an award-winning business incubator affiliated with Louisiana State University. In that capacity he works regularly with the technology transfer programs at NASA, the DOD, and other agencies.

Mr. Keller's numerous contributions to the FLC include:

• An active member of the FLC, representing Louisiana for 15 years

• Director of the Louisiana Technology Transfer Center located at NASA Stennis Space Center

• Speaker at multiple FLC national and regional conferences on the topic of state governments and universities working with federal laboratories

• Co-chair of the State and Local Government Committee for four years

• Active participant in the Underground Utility Locator Study sponsored by the FLC.

During the past 1 ½ years, Mr. Keller has worked tirelessly to help the business community recover from the catastrophic effects of Hurricane Katrina. He has assisted entrepreneurs and small business with acquiring critical resources, participating in federal grant and loan programs, and seeking technologies and technical assistance from federal laboratories where feasible and appropriate. In addition, he is a constant spokesperson for the FLC, bringing the message of the resources, talents and capabilities that reside in the nation's federal laboratories to policy makers, business leaders, industry associations, and the research community.

2007 FLC Awards

Regional Award Winners

The FLC congratulates the following FLC regional award winners who were recognized in 2006.

Far West Region

Outstanding Technology Development
Idaho National Laboratory
"Nano-Composite Arsenic Sorbent (N-CAS)"
"Compact Liquefier Technology" ***(Also a 2007 FLC national award winner)***
"INL Robot Intelligence Kernel (RIK)"

Excellence in Technology Transfer
Cheryl Cejka
Pacific Northwest National Laboratory

Outstanding Commercialization Success
Assure Controls, Inc., and Space and Naval Warfare Systems Center, San Diego
"QwikLite"

Pacific Northwest National Laboratory
"Millimeter Wave Holographic Body Scanner"

Outstanding Partnership Achievement
Naval Facilities Engineering Service Center
"Adjustable Depth Air Sparging (ADAS)"

Distinguished Service
Kurt Buehler
Naval Facilities Engineering Service Center

Award of Appreciation (presented jointly with the Mid-Continent Region)
Max Kidalov, Counsel, U.S. Senate Committee for Small Business and Entrepreneurship
Geoffrey Phillips, DOD Defense Microelectronics Activity

Mid-Atlantic Region

NASA Goddard Space Flight Center
"Computer Implemented Empirical Mode Decomposition Method (Hilbert-Huang Transform [HHT])"
"Cable-Compliant Joint and Compliant Walker"

National Energy Technology Laboratory
"Advanced Process Engineering Co-simulator (APECS)" ***(Also a 2007 FLC national award winner)***
"MFIX: Open-Source Software for Simulating Multiphase Flow Processes"

USDA, Agricultural Research Service, North Atlantic Area, New England Plant, Soil and Water Laboratory
"Potato Systems Planner Decision Support CD"

U.S. Army Medical Institute of Infectious Diseases
"Automated Inhalation Toxicology Exposure System"

Appreciation Award
Maryland Technology Development Corporation (TEDCO)

Mid-Continent Region

Overall Achievement Award
Air Force Research Laboratory
Ames Laboratory
Los Alamos National Laboratory
NASA Johnson Space Center
NNSA Kansas City Plant
National Renewable Energy Laboratory
Rocky Mountain Oilfield Testing Center
Sandia National Laboratories
USDA Northern Plains Area
USDA Southern Plains Area

Outstanding Technology Development Awards
Los Alamos National Laboratory
"Hands Off Sampler Gun"
"Underground Radio"

NNSA Kansas City Plant
"The Fiber Optics Hydrogen Sensor"
"Ultra-thin Solid Film Lubricant for GBU-15 Units"

Sandia National Laboratories
"Athena Radar-Responsive Tag Sensor"

Excellence in Technology Transfer
NASA Johnson Space Center
"Bioreactor for 3-D Tissue Culture"

USDA ARS Poultry Production and Product Safety Research Unit
"Poultry Probiotic Technology"

Outstanding Laboratory
NNSA Kansas City Plant

Outstanding Laboratory Representative
Dr. Bryan Kaphammer
USDA Agricultural Research Service

Outstanding Partnerships
Rocky Mountain Oilfield Testing Center and WellDog, LLC
"Methane Sniffer"

NNSA Kansas City Plant, Stolar Research Corporation, Measuring Systems Research Institute (Russia)
"New Drillstring Radar to Benefit Mining Industry and U.S. Economy"

Sandia National Laboratories
"The University Alliance Program"

Sandia National Laboratories, Technology Ventures Corporation, City of Albuquerque, New Mexico State Land Office, Albuquerque Public Schools, BUILD New Mexico
"The Sandia Science and Technology Park"

Midwest Region

Excellence in Technology Transfer Award
Argonne National Laboratory
"Borated Phosphate Cements-based Nuclear Shields and Casks"

NASA Glenn Research Center/MetroHealth Medical Center
"Heart Arrhythmia Monitoring System"

Partnership Award
ADICA Consulting, LLC and Argonne National Laboratory
"EMCAS Software"

Cold Core Therapeutics, LLC and Argonne National Laboratory
"Ice Slurry Medical Coolants"

Northeast Region

Excellence in Technology Transfer Award
FAA William J. Hughes Technical Center
"Microscale Combustion Calorimeter"

Regional Appreciation Award
Dr. Stanley H. Smith
S.H. Smith Associates

Southeast Region

Project of the Year
Centers for Disease Control and Prevention
"Assay for Detection of Avian Influenza Viruses"

Excellence in Technology Transfer Award
Oak Ridge National Laboratory
"SeizAlert: A Seizure Alerting Device" ***(also a 2007 FLC national award winner)***
"TMA® 6301 and TMA® 4701: Heat Resistant Alloys"
"Hybrid Solar Lighting" ***(also a 2007 FLC national award winner)***

Naval Aerospace Medical Research Laboratory
"Reduced Oxygen Breathing Device (ROBD)" ***(also a 2007 FLC national award winner)***

2007 FLC Awards

Honorable Mention

The FLC recognizes the following nominees for their commitment to technology transfer and support of our mission.

Department of Agriculture
Agricultural Research Service, Midwest Area
"Novel Low-Glycemic Index Sweetener"

Agricultural Research Service, Midwest Area
"Z-Trim, a High-Fiber, Non-caloric Fat Substitute"

Agricultural Research Service, North Atlantic Area, New England Plant, Soil, and Water Laboratory
"Potato Systems Planner Decision Support CD"

Agricultural Research Service, Pacific West Area, San Joaquin Valley Agricultural Sciences Center
"Development and Transfer of New Varieties of Table Grapes"

Agricultural Research Service, Pacific West Area, Tree Fruit Research Laboratory
"Transforming Apple-Storage Technology, Reducing Fungicide Use, and Improving Fruit Quality"

Forest Service, Forest Products Laboratory
"Modifying Yeast to Enhance Fermentation of Cellulosic Ethanol"

Research, Education & Economics, Agricultural Research Service, Mid South Area
"Conservation Agriculture Programs in the Southeast United States"

Research, Education & Economics, Agricultural Research Service, Mid South Area
"Improved Sugarcane Varieties for the Louisiana Sugarcane Industry"

Research, Education & Economics, Agricultural Research Service, South Atlantic Area
"Area-wide Integrated Management of Invasive Fire Ants"

Research, Education & Economics, Agricultural Research Service, South Atlantic Area
"Collaboration in Animal Health and Food Safety Epidemiology (CAHFSE)"

Department of Commerce/Department of Defense – Air Force
National Institute of Standards and Technology/Air Force Research Laboratory
"An Innovative Robotic Crane Improves Large Aircraft Maintenance Operations"

Department of Defense – Army
U.S. Army Edgewood Chemical Biological Center
"Modified Vaporized Hydrogen Peroxide (mVHP™) Decontamination Technology"
"Neutralization of Chemical Agent Stockpiles Using CHATS"
"Test Standards for Commercial Respirators and Protective Ensembles"

U.S. Army Engineer Research and Development Center, Environmental Laboratory
"Aquatic Herbicide Research for Control of Invasive Plants"

U.S. Army Medical Research Institute of Infectious Diseases
"Automated Inhalation Toxicology Exposure System"

U.S. Army Research, Development and Engineering Command, Natick Soldier Center
"Unitized Group Ration-Express Self-heated Group Meal Module"

U.S. Army Space and Missile Defense Command, U.S. Army Strategic Forces Command
"Tactical Emergency Asset Management (TEAM) Mobile Interoperable Command, Control and Communications System"

Department of Defense – Navy
Naval Surface Warfare Center, Carderock Division
"Threat Containment Unit"

Department of Defense – Air Force
Air Force Research Laboratory, Human Effectiveness Directorate
"The Civilian American and European Surface Anthropometry Resource (CAESAR™) Project"

Air Force Research Laboratory, Human Effectiveness Directorate, Warfighter Interface Division
"Spatial (3-D) Audio Processing Technology for Communications Applications"

Air Force Research Laboratory, Information Directorate
"Collaborative Enterprise Environment"

Air Force Research Laboratory, Propulsion Directorate
"Distributed Heterogeneous Simulation Software for Synchronized Interconnection of Multi-discipline Simulations"

Department of Energy
Argonne National Laboratory
"Borated Phosphate Cement-based Nuclear Shields and Casks"
"Undulator Production for the Linac Coherent Light Source (LCLS)"

Idaho National Laboratory
"NitroJet: Pioneering Cryogenic Jet Technology"

Los Alamos National Laboratory
"Alliance for Advanced Energy Solutions"
"Spectra Gases ICON Facility at Los Alamos National Laboratory"
"Underground Radio"

National Energy Technology Laboratory
"MFIX: Open-source Software for Simulating Multiphase Flow Processes"

National Renewable Energy Laboratory
"Fiber Optic Hydrogen Sensor"

Oak Ridge National Laboratory
"LandScan™ 2004 Global Population Dataset"
"SeizAlert: A Seizure Alerting Device"
"TMA® 6301 and TMA® 4701: Heat-resistant Alloys"

Pacific Northwest National Laboratory
"Secure Safe—Personnel Alerting Device"
"Thermoelectric Ambient Energy Harvester"

Princeton Plasma Physics Laboratory
"Miniature Integrated Nuclear Detection System (MINDS)"

Sandia National Laboratories
"Computational Analysis Tools for Goodyear Assurance Tires—Featuring TripleTred Technology"

Department of Health and Human Services
Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health
"Surface Wipe Sampling and Detection Method for Methamphetamines in Clandestine Laboratories"

Department of Transportation
Federal Aviation Administration, William J. Hughes Technical Center
"Microscale Combustion Calorimetric Analysis of Polymers and for Milligram Samples"

National Aeronautics and Space Administration
Glenn Research Center
"Secure Mobile Networking for Space Communication, National Security and Commercial Products"

Goddard Space Flight Center
"Cable-compliant Joint and Compliant Walker"
"Computer Implemented Empirical Mode Decomposition Method"

Kennedy Space Center
"Scaling Device for Photographic Images and Scaling Device Measurement Software"

Marshall Space Flight Center
"The TRACeR III-V [NASA-Enhanced X-ray Fluorescence (XRF) Scanner]"

Honorable Mention | Laboratory Director of the Year

The FLC recognizes the following nominees for their leadership and contributions to technology transfer.

Dr. Neal Martin, U.S. Dairy Forage Research Center

Dr. Terry Wallace, Jr., Los Alamos National Laboratory

Honorable Mention | Service Awards

The FLC recognizes the following nominees for their longstanding service and support.

Representative of the Year Award
Dr. Bryan Kaphammer, U.S. Department of Agriculture, Agricultural Research Service, Northern Plains Area

Outstanding Service Award
Sherman McCorkle, Technology Ventures Corporation

Dr. Stanley H. Smith, S.H. Smith Associates

FLC Awards Program Calendar

The calendar year for the FLC awards program runs from June to May.

Each year, awards are presented in the following categories:

- Awards for Excellence in Technology Transfer
- Laboratory Director of the Year
- FLC Service Awards
  - Harold Metcalf Award
  - Representative of the Year Award
  - Outstanding Service Award
- Outstanding Technology Transfer Professional Award
- Interagency Partnership Award

The following timeline reflects the awards program's activity as of press time. Please refer to the FLC website (www.federallabs.org) for updates.

June/July: Criteria for all awards are reviewed and revised as needed.

August/September: Nomination forms for all categories are distributed via e-mail, standard mail, FLC roundtables, and the FLC website.

October: Completed nominations for all categories are submitted to the Management Support Office for processing.

November/December: Judging period for submitted award nominations in all categories.

January: Notification of award winners and non-winners in all categories.

February/March/April: Award winners register for FLC national meeting; non-winners of the Awards for Excellence in Technology Transfer receive written feedback from award evaluators.

May: Awards presented at FLC national meeting.

2007 FLC Awards