FEDERAL LABORATORY CONSORTIUM™

FLC

FOR TECHNOLOGY TRANSFER

2011 FLC Awards

2011 FLC Awards

May 5, 2011

Nashville, Tennessee

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 2011 FLC Awards

Thank you for joining us in Nashville, the capital of country music, as we look back on another year of amazing technology transfer achievements and salute the people who made it happen. This year's theme, *You're in T2 Country*, is fitting in that the FLC serves as an important vehicle in bringing the best of this country's technologies from the federal laboratory to all aspects of our daily lives. The individuals you will meet this evening are diverse in their professional capabilities—scientists, administrators, technology transfer specialists, just to name a few—but they managed to bring their talents together to build something that will touch many people, just like musicians creating an unforgettable song.

Reflecting the diversity of technology transfer efforts within the FLC and the people who make it happen, we introduce 3 new awards in 2011 to join our traditional award categories:

- State and Local Economic Development Award—Recognizes successful initiatives that involve partnership between state or local economic development groups and federal laboratories for economic benefit.
- STEM Award—Recognizes the efforts of an FLC laboratory employee (or team) that has demonstrated outstanding work in support of science, technology, engineering, and mathematics (STEM) education during the past year.
- Rookie of the Year Award—Recognizes the efforts of an FLC laboratory technology transfer professional with three years (or less) experience who has demonstrated outstanding work in the field of technology transfer in a manner significantly over and above what was called for in the normal course of their work.
- Award for Excellence in Technology Transfer—Recognizes employees of FLC member laboratories and non-laboratory staff who have accomplished outstanding work in the process of transferring federally developed technology.
- Interagency Partnership Award—Recognizes agency and/or laboratory employees from at least two different agencies who have collaboratively accomplished outstanding work in transferring a technology.
- Outstanding Technology Transfer Professional Award—Recognizes the efforts of an FLC laboratory technology transfer professional (or team) who has demonstrated outstanding work in transferring a technology in a manner significantly over and above what was called for in the normal course of their work.
- Laboratory Director of the Year Award—Honors directors of FLC laboratories who have made maximum contributions to support technology transfer activities in their organizations.
- FLC Service Awards—Presented to individuals, inside or outside the FLC, who have provided significant support to the technology transfer process, thus furthering the FLC's mission: Outstanding Service Award, Representative of the Year Award, and the Harold Metcalf Award for lifetime achievement.

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 great source of 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 make their technologies "sing." I am extremely pleased and proud to present the recipients of the 2011 FLC awards.

Lorraine Flanders
Awards Committee Chair

2011 FLC Awards

Awards for Excellence in Technology Transfer

Comprehensive Application Technology and Strategy to Reduce Pesticide Use

Department of Agriculture
Agricultural Research Service
Midwest Area

The ornamental industry produces an abundance of flowers, nursery shrubs, and trees to beautify the environment and improve our lifestyle. This abundance is predicated on the use of pesticides to protect them from pests. However, the application efficiency of conventional pesticide spray technologies for crop protection is very low. Consequently, excessive pesticides are often applied to target and non-target areas, resulting in greater production costs, worker exposure to unnecessary pesticide risks, and environmental contamination.

The technology that was transferred to the ornamental industry is a comprehensive and simple strategic pesticide reduction technology that was achieved by adjusting nozzle size and integrating it with application modifications. To facilitate the use and to complement the instructions, a scanning device was developed and integrated to quickly evaluate the quality of pesticide delivery, a user-friendly program to estimate spray displacement, and an easily built portable instrument for testing pressure gauges to monitor the spray quantity.

The first process used for the technology transfer consisted of demonstrations of the technology in field trials. This was followed by actual grower trials in small acreages, which was then expanded to larger acreages when growers accepted the technology as a way to reduce pesticide use. The technology also was transferred to growers and extension educators through demonstration trials in on-farm research projects and workshops. Many nurseries in different states are now using the technology.

Since 2005, the primary benefits to the ornamental nursery and floral growers who use the technology are the reduction of pesticide and water use by half and annual savings of over $200-$500 per acre associated with pesticide application costs. Consequently, this technology transfer has reduced pesticide costs, reduced the health risk to applicators, and diminished the adverse impact on the environment.

Left to right: Dr. Heping Zhu, Dr. Charles Krause, and Randall Zondag

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Real-time RT-PCR for Pandemic H1N1 Influenza in Veterinary Medicine

Department of Agriculture
Agricultural Research Service
South Atlantic Area

When swine-origin pandemic H1N1 influenza (pH1N1) was first identified in 2009, the importance of the infection of livestock and poultry, which can be infected with many influenza strains, was unknown. Therefore, there was a critical need to have a rapid and accurate diagnostic test for veterinary specimens that could quickly identify and differentiate the pH1N1 from other influenza viruses. As soon as the genetic data and first isolates became available, a genetic test was developed that could identify the pH1N1 virus and also differentiate it from the classical H1N1 swine influenza viruses already circulating in U.S. swine and turkey populations. Additionally, analysis of the official USDA screening test (the "M gene test"), which detects all influenza A viruses, identified important gene sequence mismatches that required that the test be updated to assure acceptable sensitivity and specificity for pH1N1. The test protocol was first provided to the Diagnostic Virology Laboratory at the USDA-APHIS, National Veterinary Services Laboratories (NVSL). The ARS South Atlantic Area team worked with NVSL personnel to collect additional field validation data and further optimize the test so it could be implemented by state and regional veterinary diagnostic laboratories of the National Animal Health Laboratory Network (NAHLN).

In early June 2009, the tests were adopted by the NVSL as official USDA tests and subsequently implemented by the NAHLN. These are currently the official tests for pH1N1 in veterinary specimens and have been used to identify infection in swine, turkeys, ferrets and cheetahs, among other species. Equally important, these tests have allowed veterinary diagnostic laboratories to rule out the presence of pH1N1 in samples.

The tests were also made available without restriction through the OFFLU network (a collaboration on influenza between the World Organization for Animal Health [OIE] and UN Food and Agriculture Organization) to any interested veterinary laboratory and bilaterally with Canada and Mexico to support their surveillance and diagnostic efforts.

The diagnostic tests that were previously available took one to two weeks to provide results, cost at least $50 per sample, and could only be run in a few of the most well-equipped laboratories. The ARS South Atlantic team developed and validated new tests for pH1N1 that could provide results in 3-4 hours, cost $8-12 per sample, and be run in most veterinary diagnostic laboratories. These tests have been run with thousands of samples and have saved substantial amounts of time and money since their implementation.

Dr. Erica Spackman and Dr. David Suarez

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Instrument for Rapid Detection of Insect-Infested Grain

Department of Agriculture
Agricultural Research Service
Center for Grain and Animal Health Research

Each year in the United States, up to $500 million is lost to post-harvest insect infestations of grain. Furthermore, insect infestations have been linked to allergies and an increased risk for fungal infestation or food pathogen contamination, forcing millers to perform additional cleaning operations that destroy up to 3% of uninfested wheat. Stored grain insects are extremely difficult to detect and count in a sample of grain as immature insects are hidden inside the kernels.

Grain handlers and millers need to be able to rapidly detect the number of grain kernels with hidden insect infestations. If an accurate estimate of the number of insects can be made, grain managers can decide if the grain should be accepted or if it needs treatment to reduce the possibility of further insect damage.

Dr. Tom Pearson and Dan Brabec conceptualized and developed a novel system that enables rapid and accurate estimation of stored grain insects in wheat. The device operates on the basis of crushing wheat between two rotating rollers. An electrical circuit attached to the rollers monitors the electrical current traveling from one roller to the other as the wheat is crushed. If an insect is inside a kernel, it will be crushed and emit hemolymph (the circulatory fluid of certain invertebrates), which is highly conductive and causes a brief spike in the electrical current. Dr. Pearson then developed computer signal processing software to detect these spikes and count the number of live insects in a sample.

Technology for the device has been transferred to a large milling company, General Mills, and an instrument manufacturer, National Manufacturing, so that it is now widely available to other grain handlers, marketers and millers. The instrument is now part of National Manufacturing's product line and is being tested, under Dr. Pearson's supervision, for its applicability to rice, sorghum, barley and corn.

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Flash Pasteurization for Improving the Food Safety of Hot Dogs

Department of Agriculture
Agricultural Research Service
Eastern Regional Research Center

From left: Seth Pulsfus, Dr. David Geveke, Michael Kozempel, Dr. Christopher Sommers, and Neil Goldberg

Flash pasteurization is a method of using a pulse of steam to decontaminate the surface of foods immediately before packaging. The primary application of flash pasteurization is to kill the foodborne pathogen *Listeria monocytogenes*, which can quickly grow at refrigeration temperatures on the surfaces of hot dogs and other precooked sausages. Each year in the U.S., listeriosis causes an estimated 5000 hospitalizations and 500 deaths. Listeriosis has a mortality rate of 20-30%.

Flash pasteurization was developed as part of cooperative research between the Agricultural Research Service (ARS) and Alkar-RapidPak, Inc. (a U.S.-based equipment manufacturer) to improve the safety of foods, including hot dogs. This low-cost green technology was ultimately transferred to the meat processing industry.

Flash pasteurization, in combination with Food and Drug Administration (FDA) approved antimicrobial compounds to control *Listeria* in hot dogs, was ultimately adopted in 2006 by a major U.S. processed meat manufacturer. Flash pasteurization equipment was exported to Central and South America in 2007. An estimated $1 billion worth of hot dogs and other precooked sausages have been processed using flash pasteurization worldwide.

The advantages of flash pasteurization include low cost, ability to operate at commercial line speeds, ability to fit into existing packaging lines, and immediate approval from regulatory agencies because it is a steam-based green technology. If the use of flash pasteurization prevents even one product recall due to listeriosis, it will have saved an estimated $19 million, not to mention prevented untold pain and suffering. The research and technology transfer that resulted from the government and industry partnership has resulted in the creation of U.S. manufacturing jobs and, even more importantly, safer hot dogs that are available domestically and internationally.

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Lethal Mosquito Breeding Container

Department of Defense – Army
U.S. Army Public Health Command-Provisional
Walter Reed Army Institute of Research

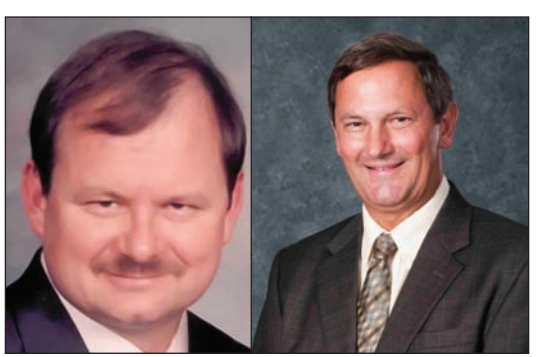
The World Health Organization considers dengue the most important mosquito-borne viral disease, with approximately 20 million cases a year and 100 countries affected. Dengue is a danger to not only those who live in tropical and subtropical climates, but also deployed U.S. military troops. A vaccine is not currently available, and mosquito control is a critical element of dengue disease prevention. There are reports that conventional ground and aerial applications of insecticides are not providing adequate control of the mosquitoes that transmit dengue. Dengue is primarily transmitted by the *Aedes* species of mosquito, which is a container breeder; the female *Aedes* mosquito will only lay eggs in a container holding water.

U.S. military research scientists Dr. Michael Perich of Walter Reed Army Institute of Research (WRAIR) and Brian Zeichner of the U.S. Army Public Health Command -Provisional (USAPHC) believed that they could use the "female mosquito's irrepressible urge to oviposit" to develop a trap that had advantages over conventional methods of controlling the population of container-breeding mosquitoes.

The result was the lethal mosquito ovitrap, which consists of a pint-sized container filled with water, with a strip treated with a small amount of pesticide material. By killing adult female container-breeding mosquitoes and their mosquito larvae, the population of biting mosquitoes is substantially lowered, thus reducing both the potential for disease transmission and the breeding stock for the next generation.

Protected by several patents, the technology was field tested at WRAIR, with results of up to 100% adult mosquito mortality. Under a Cooperative Research and Development Agreement between USAPHC and SpringStar, Inc., Zeichner worked with the small American company to design a commercial version of the lethal ovitrap that would be fit for mass production.

With a dengue outbreak in Florida in 2010, the state issued an emergency use permit; and SpringStar and Zeichner traveled to Key West to distribute lethal ovitraps to area residents. They worked in conjunction with the Florida Keys Mosquito Control District, Armed Forces Pest Management Board, U.S. Department of Agriculture, and Key West Naval Air Station.



Dr. Michael Perich and Brian Zeichner

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PAVER™, Field Inspector, and Image Inspector: Expanded User Base

Department of Defense – Army
U.S. Army Corps of Engineers, Engineer Research and Development Center, Construction Engineering Research Laboratory (ERDC-CERL)

The U.S. Army manages more than 557 million square yards of pavement. Successful pavement management requires, first and foremost, knowledge of the pavement inventory, condition, and maintenance and repair (M&R) budgets. In the late 1970s, ERDC-CERL developed the PAVER™ system to help the Department of Defense (DOD) document and manage pavement assets. Dr. Mohamed Y. Shahin, who developed the original PAVER™ concept and product, has advanced the vision and capabilities of pavement management to a new state of the art with PAVER™ 5.3.7 – 7.0.

With the development of two new companion programs, Field Inspector and Image Inspector, Dr. Shahin has expanded PAVER™ capabilities for data collection, networking, web access, and modeling for M&R budget optimization. This has transformed PAVER™ into a full life-cycle system that encompasses pavement management, structural evaluation, and pavement design. The software for airfield inspections, roadways and parking lots was also developed by Dr. Shahin. PAVER is now mandated by the DOD for managing the M&R of its vast pavement inventory.

Dr. Shahin's direct technology transfer efforts over the past five years include working with large government and non-government organizations to facilitate successful PAVER™ adoption, and technology presentations to the DOD annual Major Command meeting, Office of the Secretary of Defense (OSD), the Asphalt Institute, ASTM, Transportation Research Board, Air Force Academy, and others. His presentations have helped to greatly expand the adoption and implementation of PAVER™, as reflected in an OSD mandate to implement PAVER™ DOD-wide by 2012 and the adoption of PAVER™ as a standard technology by the North Atlantic Treaty Organization (NATO).

Thanks to these technology innovations, an accurate pavement asset inventory is in place to support the DOD. M&R funds are being used more effectively; pavement conditions and life are being extended; the DOD, NATO, and other entities share a common communication tool; and new business opportunities have been opened to Army Engineer Districts. The expected savings are in the millions of dollars, with mission readiness greatly improved.

Dr. Mohamed Y. Shahin

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Biopolymer Alternatives to Petroleum-based Polymers for Soil Modification

Department of Defense – Army
U.S. Army Engineer Research and Development Center-Environmental Laboratory

The U.S. Army Engineer Research and Development Center-Environmental Laboratory (ERDC-EL) recently concluded the successful transfer of a proprietary industrial process for producing the salt of the biopolymer created from the natural bacteria, *R. tropici*. This transfer to the private sector presents an opportunity to displace a broad range of petroleum-based products currently used as soil amendments, dust suppressants, erosion inhibitors, and more.

This technology transfer success story encompasses three major technological breakthroughs, all centered on broadening the applications of the *R. tropici* biopolymer. The first breakthrough is a novel means of producing the biopolymer in much larger quantities than previously possible. The second breakthrough is the ability to produce the biopolymer as a concentrated, stable salt, which facilitates and reduces the cost of transportation. The third breakthrough is the ability to chemically alter the biopolymer's structure to enhance its capabilities pertinent to different applications. Together, these three innovations are transforming this natural biopolymer from an interesting substance in the laboratory into a product capable of replacing its petroleum-based counterparts on a broad scale in a number of highly diverse applications.

The production process and the ability to alter the biopolymer's characteristics are covered under a pending patent. Through the efforts of the ERDC-EL team both in the laboratory and promoting the technology, the biopolymer and its production process have been licensed exclusively to UXB International for application on training grounds and firing ranges. A second company, Environment Research & Development, Inc., has two nonexclusive licenses for an array of applications, including soil and slope stabilization, dust suppression, water and wind erosion, chelation of heavy metals in soil and water, and some intriguing security applications. And a third company, Environmental Technology Solutions, LLC, has entered into a Cooperative Research and Development Agreement with ERDC-EL to explore the biopolymer's use in agriculture, ecological sustainability relating to land desertification resulting from energy-production activities, and several humanitarian applications.

From left: W. Andy Martin, Dr. J. Kent Newman, and Dr. Steven Larson
Not pictured: Dr. Victor Medina

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NoFoam System for Environmentally Safe Firefighting Foam Testing

Department of Defense – Navy
Naval Facilities Engineering Service Center

The universal NoFoam System has been developed by engineers at the Naval Facilities Engineering Service Center (NFESC). NoFoam provides an environmentally safe method for testing performance of fire-suppression foam distribution systems onboard aircraft rescue and firefighting (ARFF) vehicles. Firefighting guidelines and policies require quarterly and annual performance checks on ARFF vehicle firefighting systems. These involve discharging a significant volume of fire suppression foam to verify that the delivery system is functioning properly, thereby ensuring operational readiness when the equipment is called on to save lives and property.

Despite the widespread use of foam for its effectiveness extinguishing hydrocarbon fuel fires, the foam wastewater is associated with environmental concerns, including questions about its long-term impact. The foam has high biological and chemical oxygen demands and extreme foaming action. The Environmental Protection Agency identifies potential fish toxicity, a lack of biodegradability, poor treatability in wastewater treatment plants, and nutrient loading in natural or domestic water systems. These environmental issues result in high costs for disposal and treatment of foam-laden wastewater, prompting NFESC engineers to seek a solution. Their efforts yielded an environmentally safe testing method that also supports equipment training opportunities and builds firefighter confidence and readiness.

NFESC technology transfer specialists utilized an environmentally oriented Navy equipment program to promote the transition of units into Navy use, increasing awareness and interest in the technology. Presently, the NoFoam System technology has been implemented for firefighting vehicle testing at 28 Department of Defense locations, including Navy, Marine Corps, Air Force and Army installations. The Australian Department of Defence has purchased NoFoam Systems for its entire fleet of ARFF vehicles, which were scheduled for completion of the retrofitting process by the end of 2010.

Andrew Drucker, Kurt Buehler, and Rance Kudo

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Ultra-High Sensitivity Optical MEMS Displacement Sensor

Department of Defense – Navy
SPAWAR Systems Pacific

1/1000th the diameter of an atom is small—really small. However, measuring movement that slight has huge implications for American energy independence. A new technology invented at SPAWAR Systems Center Pacific (SSC Pacific) and licensed by Lumedyne Technologies, Inc., is being developed to vastly improve oil, gas, and geothermal energy exploration and potentially enable advanced greenhouse gas mitigation techniques such as carbon sequestration.

The technology is an ultra-high sensitivity optical microelectromechanical systems (MEMS) displacement sensor for use in high-end accelerometers to detect the magnitude and direction of movement. Many common consumer electronics, including the Nintendo® Wii™ and the Apple® iPhone™, contain accelerometers. The ultra-high sensitivity of the SSC Pacific sensor makes it ideal for the precision performance accelerometer market, including energy exploration and the precision guidance of aircraft and spacecraft.

Dr. Richard Waters and Brad Chisum saw the market potential of the SSC Pacific sensor and formed a startup company, Lumedyne, to license and commercialize the technology. Both were SSC Pacific employees when they decided to launch the company. Dr. Waters had invented the sensor and championed its initial development by securing $6 million from various government funding sources. He now serves as Lumedyne's Chief Technology Officer. Mr. Chisum has led external development efforts. His creative use of public relations has helped the company secure $11.6 million to further develop the technology in the fields of energy exploration, missile guidance, and next-generation spacecraft navigation. He is currently the company's CEO.

Lumedyne's commercial efforts have been recognized in a variety of ways, including having the honor of ringing the bell to open the NASDAQ stock market. The company recently entered into a partnership with The Planetary Society to supply accelerometers for use on the society's LightSail-1 spacecraft.

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From left: Matt Nicholson, Charles Tally, Alex Phipps, Brian Dick, Elicia Towers, Andrew Wang, Tim Russin, Paul Swanson, Hugo Jazo, Richard Waters, Max Kerber, Dung Phung, and Mike Wood

From left, front: Mark Derbyshire, Bahram Ghodsian, Dave Rines, Fedja Janzekovic, Greg Maurer, Steve Fanelli, and Ricardo Dao

From left, back: Chris Miller, Gary Abramov, Keith Easler, Jose Rodriguez, Brad Chisum, Dr. Richard Waters, Mark Fralick, Brian Suh, Dr. Steve Lieberman, and Crystal Hartland

X-Band MicroSatCom Terminal

Department of Defense – Air Force
Air Force Research Laboratory, Information Directorate

David Legare

A superior portable satellite communications terminal used by soldiers in the field is an Air Force technology transfer success story. This terminal is designed to access X-band and Ka-band radio frequencies through the Department of Defense's (DOD) high-capacity Wideband Global SATCOM satellites, in a portable package previously unavailable to the soldier.

The X-Band MicroSatCom Terminal comprises three state-of-the-art advancements in portable satellite communications systems, including: an advanced antenna reflector with segmented "petals" that quickly unfold to operate the terminal and just as quickly re-fold for compact stowage and easy transport; the application of advanced nanomaterials technologies to allow for the production of lightweight, rugged, highly efficient antenna reflectors; and a technique for integrating these nanomaterials into an inexpensive thermoplastic molding process.

David Legare was instrumental in coordinating the development of these three innovations, and he employed several different mechanisms to transfer the technology to his private sector partners. Initially, under the DOD's Special Operations Command (SOCOM), Legare oversaw and coordinated the efforts of other SOCOM awardees working on various aspects of the terminal. He also presented SOCOM with his own team's design ideas, which ultimately were selected as the model for the terminal.

Legare then worked closely with two of the other SOCOM awardees to integrate the new antenna technologies into their designs. He also worked with Eclipse Composites to make evolutionary improvements to the antenna system. This cooperation continues under Eclipse's license of Legare's patent-pending segmented reflector design, as well as through a 2010 Cooperative Research and Development Agreement enabling the two parties to develop additional enhancements to the application of these reflective nanomaterials.

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Environmental Sample Processor

Molecular probe technologies are commonly used in the ocean sciences to identify specific organisms and reveal their genomic potential; but such work generally requires returning samples to a laboratory for analysis. "Ecogenomic sensors" were conceptualized as devices that would obviate the strict requirement for sample return by allowing for biomolecular analyses to occur autonomously in situ. Researchers at the Monterey Bay Aquarium Research Institute (MBARI), Lawrence Livermore National Laboratory (LLNL), National Oceanic and Atmospheric Administration (NOAA)/ National Ocean Service Marine Biotoxins Laboratory, and partners comprising the Center for Microbial Oceanography Research and Education have given life to this concept through refinement and application of MBARI's Environmental Sample Processor (ESP).

The ESP consists of three major components: the core sample processor (or core ESP), external sampling module, and add-on analytical modules such as the PCR device developed by LLNL. Data produced by the PCR module enables researchers to better detect low copy number genes that are associated with harmful or toxic organisms, or that are important in modulating biogeochemical cycles relevant to how microbes may respond to climate change. Scientists estimate that the world ocean is absorbing about one-third of the carbon dioxide produced by burning fossil fuels, gradually causing seawater to become more acidic. As part of Earth's carbon cycle, species of microscopic marine algae take up large quantities of carbon dioxide and release oxygen. By studying the genetic makeup of these species, scientists can learn how microbes remove carbon from the atmosphere and cope with the increasing acidity of oceans.

Spyglass Biosecurity, Inc., was awarded licenses from MBARI and LLNL. The Environmental Protection Agency (EPA), the Woods Hole Oceanographic Institution (WHOI), and NOAA have ordered the first commercial units. The small business, founded in 2007, is a privately held corporation with headquarters in San Francisco, California, and an operations center in Marina, California.

There is worldwide interest in using ESPs to study ecological relationships among the thousands of marine microbe species, to detect harmful microbes and toxins for monitoring water quality and managing water resources, and to explore other areas of extreme environments. Data gained from ESP research will likely help scientists improve their understanding of Earth's oceanic processes, many of which are strongly influenced by microbial communities.

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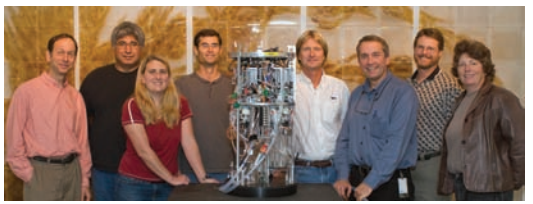
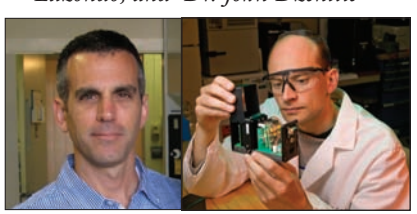


From left: Brent Roman, Roman Marin III, Christina Preston, Scott Jensen, Dr. Chris Scholin, Dr. James Birch, Doug Pargett, Cheri Everlove

From left: Bill Benett, Dean Hadley, Catherine Elizondo, and Dr. John Dzenitis

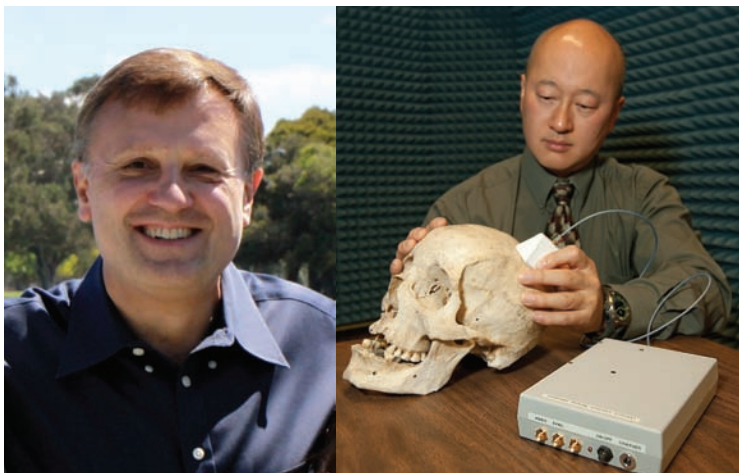


Chris Melancon and Vincent Riot

Luis Mejia and Dr. Judith Connor

UWB Intracranial Hematoma Detector

Department of Energy
Lawrence Livermore National Laboratory



Tony Lazar and Dr. John Chang
Not pictured: Genaro Mempin

Over 1.3 million people are treated in hospital emergency rooms each year for traumatic brain injury (TBI). Of these, 52,000 die and about 100,000 suffer long-term disability. With proper early detection and monitoring, many of these patients can be saved; but hospitals lack noninvasive real-time tools for monitoring TBI patients for delayed intracranial bleeding, which is difficult to detect and can kill a patient many hours after the initial trauma.

Expensive equipment like computed tomography (CT) and magnetic resonance imaging (MRI) is routinely used by hospital emergency and intensive-care physicians to detect regions of injured brain tissue. However, these tools are not suitable for continuous real-time monitoring of the injured brain because they either expose the patient to significant doses of ionizing radiation (in the case of the CT scan), or take a long time to complete a scan (in the case of MRI). Both tools also require significant expertise to operate and cannot run unattended.

An automated, unattended, portable, noninvasive, continuous, real-time monitoring device that detects the presence and expansion of intracranial hemorrhage as it develops would be a major advancement in the treatment of TBI patients. Lawrence Livermore National Laboratory (LLNL) has developed a technology, based on ultra-wide band (UWB) signals, that is capable of detecting these internal injuries based on the concept of using the bilateral symmetry of the brain to identify abnormalities. It is ideally suited for medical diagnostic and monitoring applications because the emitted electromagnetic radiation is non-ionizing and has both peak and average power levels that are orders of magnitude lower than those of a handheld cell phone.

The detector will be commercialized by NeuroSapient, Inc., through LLNL's Entrepreneurs in Readiness, an innovative program designed to increase the technology transfer's chance of success.

The benefit of this technology transfer effort is the improved standard of care that will be applied to the millions of TBI patients all over the world—an improved standard that reduces cost while maintaining high patient outcomes: no more drilling holes in the skull, no more ionizing radiation than necessary, no more waking the patients up every hour during the night, and no more second doubts after the patient has been sent home.

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Adaptive Radio Technology for Satellite Communications

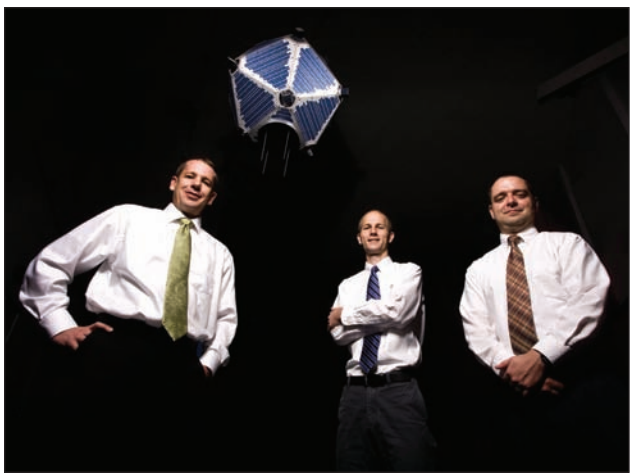
Department of Energy
Los Alamos National Laboratory

The satellite industry in the U.S. suffers from spiraling costs, out-of-control development cycles, and diminishing performance. The recent NASA Orbiting Carbon Observatory satellite took $280 million and 8 years to develop before it plunged into the Indian Ocean due to a launch vehicle malfunction in February 2009. High-risk satellite programs foster ever-increasing conservatism and technological risk-aversion, which stifles innovation.

CubeSats (10 cm^3 small satellites) are a disruptive technology, requiring a few million dollars and less than 2 years to develop, which allows greater tolerance for risk. Currently, 15% of the satellites launched are CubeSats; however, communications is a critical CubeSat deficiency. Current technology can only offer downlinks of tens of kilobits per second due to constrained power budgets and conventional radio design. Satellite-to-ground communication links are highly dynamic due to factors such as atmospheric thermal noise, propagation distance, Doppler effects, and antenna misalignment. These factors limit the amount of information the satellite can transmit and the ground station can receive.

In response to these problems, Los Alamos National Laboratory (LANL) developed a radio that varies the satellite's rate of data transmission based on commands from a modified ground station. Using LANL's Adaptive Radio Technology (ART), ground terminals continuously assess link conditions and automatically compensate with transmission change commands to the satellite (i.e., send more or less data as conditions warrant). The communication link achieves high energy efficiency and accuracy by maximizing the available channel capacity, which in turn enhances link robustness. This has the benefit of permitting compatibility with a variety of ground stations. LANL's innovation will allow CubeSats to be used in larger, more critical missions.

Adaptive Radio Technologies, LLC licensed the new waveform invented at LANL to incorporate it into a software-defined radio hardware platform that can be used on CubeSats by academia, industry and government.



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Genie Pro
(GENetic Imagery Exploitation)

Department of Energy
Los Alamos National Laboratory

From left, front: Jeffrey J. Bloch, Nancy A. David, John J. Szymanksi, Diana M. Esch-Mosher

From left, back: James P. Theiler, Steven P. Brumby, Reid B. Porter, Neal R. Harvey, Curtis Novak, and Simon J. Perkins

Not pictured: Damian R. Eads, Kimberley M. Eklund, and Mark C. Galassi

Los Alamos National Laboratory's (LANL) GeniePro software is a general purpose, interactive, adaptive tool for automatically finding and labeling areas of interest in image data. Rather than having to teach the program how to find areas of interest, the user has merely to provide examples of these areas; and Genie Pro then designs, tests, and perfects its algorithms to produce consistent and accurate image recognition. The software uses techniques from statistical machine learning theory and evolutionary computation theory to perform robust and customized automatic feature extraction in multispectral, hyperspectral, panchromatic, and multi-instrument fused imagery.

Originally developed to analyze multispectral satellite data, GeniePro works with satellite data, aerial imagery, and medical images. It has been applied to a variety of tasks, including crop and terrain mapping; road, railroad, river, and communications network mapping; broad-area search for vehicles and buildings; and cancer cell identification in histological images.

Genie was first used during the Cerro Grande fire in New Mexico to track the path of the wildfire for the Burned Area Emergency Rehabilitation team. It was used again just after the September 11 terrorist attacks in New York City to track the cloud of ash and soot from the collapse of the World Trade Center towers. In 2002, Genie received an R&D 100 Award and recently received the highest score in a government-sponsored competitive evaluation of imaging software.

GeniePro, the most recent version of the software, was transferred to two firms through exclusive, field-of-use licenses. Observera, Inc. licensed the technology from Los Alamos for remote-sensing and geographic information system applications. Observera's release of a commercial version of the software, Genie Pro 2.0, marks the beginning of a line of new geospatial products. Aperio Technologies Inc., a leader in digital pathology for the healthcare and life sciences industry, obtained a license for all digital pathology applications and has incorporated GeniePro into its Spectrum™ digital pathology information management software. This has enabled its use as a preprocessing engine for various tissue-scoring algorithms, such as finding tumor regions in digital immunohistochemistry slides.

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Basic Immobilized Amine Sorbent (BIAS) Process for CO2 Capture

Department of Energy
National Energy Technology Laboratory (NETL)

Carbon dioxide (CO2) is considered to be one of the major greenhouse gases responsible for global warming; consequently, it is critical to control the emission of CO2 into the Earth's atmosphere. The NETL BIAS Process utilizes low-cost, regenerable, solid CO2 sorbents in large-scale fossil fuel-burning power plants. The process entails the novel steps of treating an amine compound to make it more selective and reactive toward CO2; depositing the amine onto a porous solid support to formulate the sorbent; utilizing the sorbent to selectively react with CO2 to extract it from the flue gas; and regenerating the sorbent by heating it to release the CO2 for storage, thereby refreshing the sorbent for reuse.

Project Leader McMahan Gray is the primary inventor of this patented technology. He has developed contacts with organizations to which the technology has been transferred, such as the Tennessee Valley Authority (TVA) and ADA Environmental Solutions (ADA-ES). Mr. Gray has also transferred the technology to potential marketers of the porous solid support, such as Fuji Silysia Chemical, Ltd., and PQ, Inc. Henry Pennline, Research Group Leader for the CO2 Capture Group, assisted Mr. Gray at numerous meetings in explaining how the BIAS Process technology fits within DOE/NETL's Carbon Capture Program. Additionally, Mr. Pennline authored a technology transfer solicitation focusing on potential collaboration efforts and NETL patents/patent applications related to gaseous-component capture technologies, including the BIAS Process, and is coordinating the resulting CRADA and licensing efforts.

As a result of the technology transfer efforts, various parties are now ready to adopt the BIAS Process technology for capturing CO2 from power plants and are developing commercial applications. Pressure Chemicals Company has recently manufactured large batches of the sorbent for pilot-plant testing, and ADA-ES has successfully run this sorbent on a pilot-plant scale. TVA has tested the technology and is interested in using it in power plants. Industrial collaborators of the technology, such as Fuji Silysia and PQ, Inc. for the porous solid support, Pressure Chemicals Company for the bulk sorbent manufacture, and ADA-ES for actual environmental applications, are eager to commercialize the BIAS Process. Also, a Memorandum of Understanding has been signed with NASA to investigate the technology for controlling CO2 levels in enclosed habitats in space.

From left, front : Katie Klos, McMahan Gray, and Jessica Sosenko

From left, back: James Hoffman, Henry Pennline, Kevin Resnik, Kenneth Champagne, Daniel Fauth, and Yee Soong

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Laser-induced Fluorescence Fiber-Optic Measurement of Fuel in Oil

Department of Energy
Oak Ridge National Laboratory

From left: Dr. William Partridge, David Sims and Dr. James Parks

Not pictured: Dr. Kent Froelund

The laser-induced fluorescence fiber-optic measurement of fuel in oil technology enables a user to measure the accumulation of fuel in engine oil, which can occur as fuel-efficient engines are operated in advanced modes to meet increasingly lower emissions regulations. Fuel found in oil is also associated with the use of biodiesel and fuel injection system control for modern diesel particulate filters. The fuel thins the oil, lowers its lubricating ability, and can lead to higher engine wear, increased oil consumption and, in extreme cases, engine failure.

The technology uses a laser and fuel tagged with a fluorescent dye to detect the fuel that has mixed with the oil. When the laser illuminates the diluted oil, it excites the dye and, as the dye returns to its unexcited state, it fluoresces. The emitted light is transmitted to an instrument that determines and records the amount of fuel in the oil. Conventional techniques require sending a sample of the oil to an analytical laboratory, resulting in up to two days' delay for results. This new technology can take measurements at many different points in an engine system with a small fiber-optic probe; the technique is portable and provides real-time in situ feedback.

The technology was developed under a Cooperative Research and Development Agreement (CRADA) project with Cummins, Inc., which raised the need to measure the fuel dilution of oil. Commercialization of the technology began with a patent license agreement between UT-Battelle, LLC (the management and operations contractor for ORNL) and DaVinci Emissions Services, Ltd.

The benefit of the technology transfer effort is that a small niche market is now able to operate with significantly improved technology—faster, less expensive, and capable of detecting fuel contamination in lower amounts than other methods. As a result, monitoring oil dilution in an engine can be done in situ, which will enable faster improvements to engine efficiency and reduce emissions while reducing product development costs.

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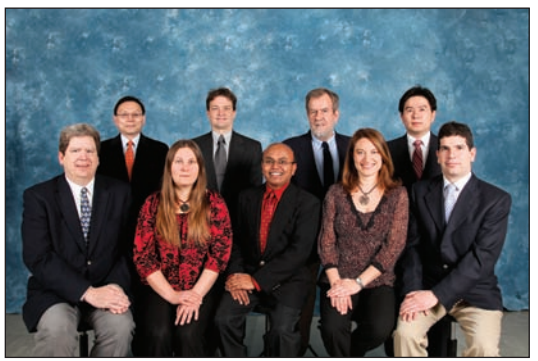
Flexible Thin-Film Crystalline-Silicon Photovoltaics on RABiTS™

Department of Energy
Oak Ridge National Laboratory
National Renewable Energy Laboratory

Flexible Thin-Film Solar Photovoltaics on RABiTS™ came about by combining the intellectual property from two Department of Energy (DOE) national laboratories: Oak Ridge National Laboratory (ORNL) and the National Renewable Energy Laboratory (NREL). The Rolling Assisted Biaxially Textured Substrate (RABiTS™) technology portfolio, developed at ORNL, is a flexible metal foil that provides a platform for an entire generation of today's high-temperature superconducting materials and products. NREL has developed a number of techniques and materials to deposit thin layers of crystalline silicon onto various substrates as extremely efficient light-harvesting layers for photovoltaic devices.

The combination of these two technologies offers the promise of flexible, highly efficient, low-cost, and durable photovoltaic materials to enable a whole new generation of devices for the solar market. ORNL and NREL teamed to license their technologies to Ampulse Corporation, a venture-backed startup in Golden, Colorado.

Silicon is the most heavily researched and best understood material system in the world. It is nontoxic, abundant, and ideal for use in photovoltaic power generation. However, present-day silicon solar materials, while high in energy conversion efficiency, involve production processes that are complex, wasteful, energy-intensive, and not well-suited to large-area applications such as solar panels. Ampulse's crystalline silicon thin film, a revolutionary photovoltaic technology, optimizes crystalline silicon energy conversion efficiency while lowering manufacturing costs dramatically. Hot-wire chemical vapor deposition, the NREL process for depositing the crystalline silicon thin film, minimizes energy input and eliminates several material-wasting steps, resulting in lower overall cost.



Sitting, from left: Dr. Mark Reeves, Dr. Daniela F. Bogorin, Dr. M. Parans Paranthaman, Dr. Claudia Cantoni, and Dr. Tolga Aytug

Standing, from left: Dr. Dominic F. Lee, Dr. Fred A. List, Lee Heatherly and Dr. Sung-Hun Wee

Not pictured: Dr. Howard Branz, Frank Damiano, William Farris, Dr. Amit Goyal, Steve Hane, Chris Harris, Dr. Kyunghoon Kim, Matthew Ringer, and Charles Teplin

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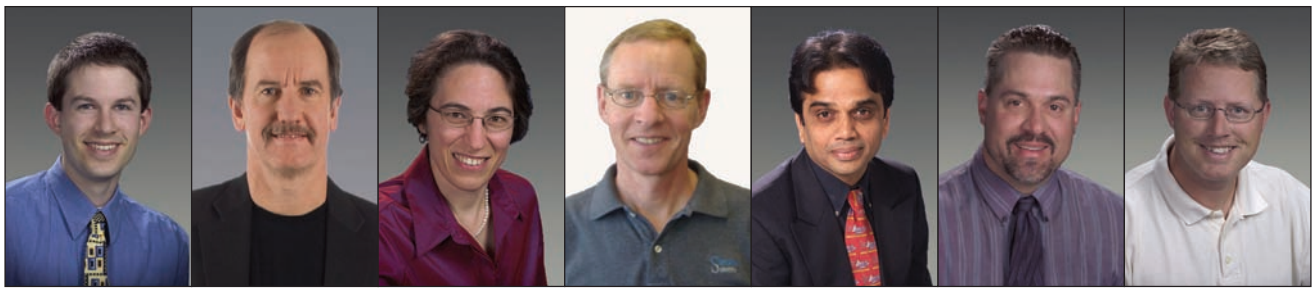
IncubATR™—the Live Cell Monitor



From left: Brian Riley, Bruce Harrer, Dr. Colette Sacksteder, John Peterman, Dr. S.K. Sundaram, Dr. Shane Addleman, and Dr. Thomas Weber

IncubATR™—the Live-Cell Monitor was developed as a tool to study cells in near-real time by utilizing and improving on existing attenuated total reflection (ATR)-Fourier transform infrared (FTIR) technology. It functions as a specialized containment device, creating an environment that is conducive to live-cell growth, propagation, and longevity. When an FTIR spectroscope is attached to this device, cell response to any stimuli (e.g., nanoparticles, growth-factor agent, or bioagent) can be monitored and recorded. Before the IncubATR, the technology did not exist to study live-cell responses using FTIR in a manner that was not based, in part, on some speculation. Because the cells could not be kept alive long enough to observe their "true" response, results were inevitably retrieved from studies performed on cells that were fixed, dead, or had limited longevity.

The ability to study living cells in near-real time removes the guesswork and captures the whole cell dynamic in the testing environment. Applications of the IncubATR cover a broad range, from pharmaceutical testing, to biomolecular studies, to environmental impact studies involving biological exposures, and include many other potential uses in between. In national defense, this technology can be used for bio-threat identification and mitigation. As a stand-alone technology, this device is capable of significantly increasing the extent of highly valuable research that the scientific community can produce. It can be coupled to any FTIR spectrometer and, at an affordable cost of $12,000, the device stays in the price range of competing products, though it offers critical capability those products cannot.

The research and development that resulted in the IncubATR were provided by a team at Pacific Northwest National Laboratory (PNNL). Initially, it existed only as a conceptual invention report authored by the PNNL team. The team identified Simplex Scientific, LLC, as the right fit to produce a prototype of PNNL's design. Through a partnership with Simplex and funding provided by Battelle (PNNL's operating contractor), the concept was converted into a commercial product in approximately 20 months. Once a near-final prototype was ready, Battelle/PNNL applied for a patent on the technology on July 29, 2009. An exclusive license between Simplex and Battelle for the pending patents covering the technology was executed on October 1, 2009, just over two months later.

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Low Noise Quantum Cascade Laser Current Controller

Department of Energy
Pacific Northwest National Laboratory

Developed over several years, the Pacific Northwest National Laboratory's (PNNL) Low Noise Quantum Cascade Laser Current Controller is a laser power source that when used in laser-based gas sensors enables scientists to more accurately detect smaller levels of trace gases than would otherwise be possible. It has the lowest noise of any other controller known and is designed specifically for use with quantum cascade lasers (QCLs) that emit light in a wavelength region that many trace gases strongly absorb. When QCL-based sensors are powered with devices such as the PNNL Controller, their sensitivity increases, allowing the analysis of a wider range of gases or chemicals.

After obtaining several patents and trying a number of approaches to transfer the PNNL Controller to commercial application, PNNL scientist Dr. Matthew Taubman approached Wavelength Electronics, Inc. (WEI), a small company that develops controllers and related components for lasers.

The first approach to assisting WEI with evaluating the controller was for PNNL to loan WEI one of its controllers to test. However, WEI did not have the capability to measure current noise at very low levels. Despite this setback, the PNNL team did not give up. WEI applied for and obtained funding from PNNL's Technology Assistance Program (TAP) for Dr. Taubman to characterize the relative noise performance of WEI's existing laser diode power supplies and suggest noise reduction strategies. In parallel, PNNL and WEI initiated licensing negotiations for the PNNL Controller's design. After Dr. Taubman was able to show the superior low-noise characteristics of the PNNL Controller, WEI requested a final evaluation in one of its customer's QCL systems. The PNNL team traveled to Billerica, Mass., and the Controller's performance was evaluated in Aerodyne Research's QCL system. The success of this evaluation convinced WEI to move forward with commercialization.

In October 2009, WEI's CEO and entire engineering staff visited PNNL to gain a detailed understanding of the PNNL Controller's design. During this visit, the license agreement was executed. In November, Aerodyne ordered seven prototypes of the PNNL Controller from WEI.

Bruce Harrer, Mary Johnson, Dr. Matthew Taubman, and Dana Hinckley

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Propylene Glycol From Renewable Sources

From left: John Frye, Dr. John Holladay, Dr. Eric Lund, Dennis Stiles, Dr. Todd Werpy, Alan Zacher, and Dr. James White

Approximately 2 to 2.5 billion pounds of petroleum are consumed each year to meet the current U.S. demand for propylene glycol (PG), which is used to manufacture chemicals needed to produce industrial and consumer products that can be found in every household in America. PG has historically only been produced using this nonrenewable resource. Now the Propylene Glycol from Renewable Sources (PGRS) process developed at Pacific Northwest National Laboratory (PNNL) offers a commercially proven, cost-effective way to make PGRS, and a full-scale production facility was constructed in 2009 to bring it to market in 2010.

Development of the process began nearly a decade ago with a Cooperative Research and Development Agreement (CRADA) between PNNL and the National Corn Growers Association (NCGA). The collaboration, which was intended to explore a possible process to convert sorbitol to propylene glycol and ethylene glycol, resulted in scientists at PNNL developing a new set of catalysts to screen for such a process. In doing so, they discovered they were able to convert glycerol to PG—an exciting result that would enable production of PG entirely from renewable sources. Although NCGA exercised its option rights and executed a license for the process, it became clear that NCGA was not well-suited to bring products to market and that a commercial partner was needed.

One of the PNNL scientists had an existing relationship with Archer Daniels Midland Company (ADM) and introduced the chemical giant to the collaboration, with ADM agreeing to get involved. After a large-scale collaborative effort to optimize the catalyst, PNNL technology transfer staff reached an agreement with NCGA to regain rights to the intellectual property they had licensed, so that work with ADM could continue toward a more commercially promising end. Around this same time, direct funding from the Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy was obtained to accelerate the research with an intensified focus on technology transfer and commercialization.

After successfully regaining license rights from NCGA, PNNL entered into another CRADA with ADM in 2006 to explore viable ways to bring the process to market. During that same year, ADM licensed the process from Battelle, which operates PNNL for the DOE. The company constructed and operated a pilot plant in 2009, and recently completed construction of a full-scale production facility for the sole purpose of commercially producing PGRS. The manufacturing facility is expected to achieve full operational status in 2011.

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Stingray

Left to right: Todd Miner, Mark Anderson, Bob Sachs, Paul Reynolds, Matthew Heine, and Greg Scharrer

Not pictured: Dr. Steve Todd, Chance Hughs, Juan-Carlos Jakaboski, and Charlie Jensen

Explosive devices such as improvised explosive devices (IEDs) threaten the lives of emergency responders at home and claim the lives and limbs of American troops abroad. These threats may be addressed by making them unable to explode, taking them away from the scene, and exploding them in a safe place. Making a device unable to explode can be accomplished by a disablement tool. However, shortcomings in current disablement tools make them unable to defeat many devices being encountered.

Sandia researchers have addressed this problem by creating Stingray, the first coherent fluid blade disablement tool based on technology that forms water from the disablement tool into a single blade capable of actually cutting through one-quarter-inch steel. The efficient design enables greater penetration than other disablement tools while using the same explosive. Unlike other technologies, Stingray can be easily positioned at the most effective distance from its target. When Stingray is detonated, a wall of water shoots out the back and is capable of disabling not only munitions but also "soft targets" such as backpacks, where tearing, not cutting, is necessary.

TEAM Technologies, Inc., of Albuquerque, N.M., negotiated a license with Sandia to make and sell Stingray. Sandia worked closely with TEAM to transfer the information needed to improve and produce Stingray and sell it to the explosive ordnance disposal (EOD) community. TEAM enhanced Stingray's performance in battlefield situations by making it more durable, so it is easier to place in position using a common method of positioning disablement tools: a robot. The strong collaboration between TEAM and Sandia enabled rapid commercialization, requiring only seven months from the signing of the licensing agreement in January 2010 to delivery of the first products to soldiers in July 2010.

This commercialization effort has incredible benefits. America's military requested Stingray for the battlefield after discovering it while training at Sandia, and this commercialization satisfies that demand. Over 7,000 Stingray units have already been shipped and are saving lives in war zones. TEAM also has commitments to purchase approximately 500 Tactical Stingrays, the pocket-sized version, and is actively pursuing production; and it anticipated the ability to produce the Tactical Stingray by August 2010.

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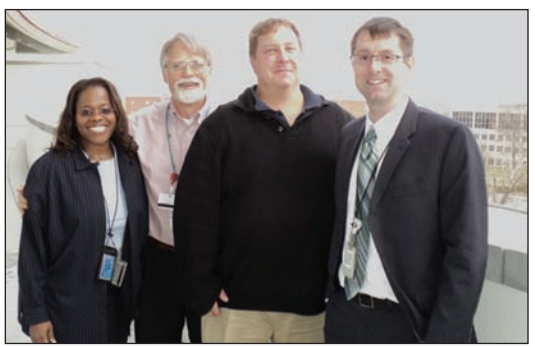
Therapeutic Antibodies for the Prevention and Treatment of Respiratory Syncytial Virus Infection

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

Respiratory syncytial virus (RSV) is the single most important cause of serious lower respiratory tract disease in the infant and young child. It is estimated that up to 125,000 hospitalizations each year in the United States are associated with pneumonia or bronchiolitis from RSV infection in children less than 1 year old. The importance of RSV as a cause of serious lower respiratory tract disease in children has made it a high priority for prevention and treatment.

Efforts to develop an RSV vaccine have so far failed, and no highly effective antiviral therapy has been found. The first candidate vaccine, formalin inactivated RSV, was associated with an increase in disease severity and several deaths when vaccinated children were later infected with RSV in the community. Multiple live virus vaccine candidates have been tried, but none has been found safe and effective. Because no vaccine is available, Centers for Disease Control and Prevention (CDC) scientists began to investigate the use of therapeutic antibodies for the prevention and treatment of RSV infection.

CDC scientists identified a partner for a Cooperative Research and Development Agreement, Trellis Bioscience, to collaborate on additional studies to prove the viability of the antibodies directed against the G protein as potential therapeutic antibodies against RSV. Together, scientists at CDC and Trellis identified high-affinity fully human antibodies that mimicked the mouse monoclonal antibodies in in vitro assays and mouse models. Based on the positive results obtained during the collaboration, Trellis obtained an exclusive patent license to take these RSV anti-G antibodies into human trials, and bring to market a commercial product that shows improved safety and efficacy over currently available antibodies. These RSV anti-G antibodies have the potential to dramatically decrease the number of hospitalizations and deaths of infants, children, and the elderly due to respiratory tract disease caused by RSV infection.



From left: Dr. Lia Haynes, Dr. Larry Anderson, Dr. Ralph Tripp, and Dr. Don Prather

Not pictured: Dr. Larry Kauvar

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A Lifesaving Diagnostic Test for Cancer Patients

Department of Health and Human Services – National Institutes of Health
National Cancer Institute

Most people are aware that anti-cancer treatments often have negative side effects, but patients are willing to tolerate these side effects for the potential lifesaving effects of the treatment. However, some patients treated with the anti-cancer drug 5-Fluorouracil (5-FU) will have fatal reactions typically caused by cardio-toxicity. Scientists at the National Cancer Institute (NCI) have developed a lifesaving diagnostic test to identify cancer patients that may experience 5-FU toxicity, thus making it possible to avoid 5-FU toxicity by using this diagnostic screening test prior to the administration of 5-FU.

The diagnostic test is based on screening for a mutation in the dihydropyrimidine dehydrogenase (DPD) gene. DPD is involved with the degradation of 5-FU, and it has been shown that patients exhibiting 5-FU toxicity have low DPD activity levels. In 1994, the NCI team determined the molecular basis (a splicing mutation) for the DPD deficiency observed in patients with 5-FU toxicity and developed a method to detect the mutation. Since then, this discovery has been translated into multiple commercial products that detect the mutation and allow health care providers to provide optimal anti-cancer treatment.

5-FU is used for the treatment of multiple cancers, including breast and colon. In the United States, approximately 275,000 cancer patients receive 5-FU annually. It is estimated that 3% of those patients develop some degree of toxic reaction, and approximately 15% of those will die as a result of exposure to 5-FU. In the United States alone, more than 1,300 patients die each year as a result of 5-FU toxicity. These deaths are all potentially avoidable if patients are screened prior to the administration of 5-FU using the diagnostic test developed by NCI.

This technology has been licensed nonexclusively to several licensees. The transfer of this technology through these nonexclusive licenses has enabled the wide dissemination of this test in the United States and Europe. As a result of these multiple licenses, many more people around the globe can forego being treated by a drug that may prove to do more harm than good. The wide dissemination of this lifesaving diagnostic test promotes the NIH mission of improving public health.

Dr. Frank Gonzalez and Dr. Betty Tong

Mojdeh Bahar

Not pictured: Dr. Pedro Fernandez-Salguero

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Commercialization of EPA Technology on Hydraulic Hybrid Refuse Trucks

Environmental Protection Agency (EPA)

From left: Paul Dekraker, Mark Stuhldreher, Kevin Newman, Charles L. Gray Jr., David Read, James Bryson, Mark Doorlag, Jim Yarosz, Sterling Imfeld, Dan Barba, David Wright, Arlene Smithson, Aaron Boehlke, Jim Martin, Mike Matthews, Steve Mayotte, Bill Tallaferro, and John Kargul. Not pictured: Tony Tesoriero

Refuse vehicles use a lot of fuel, which costs money and pollutes the air. However, hybrid vehicle technology has been considered too expensive to be practical for really heavy vehicles like garbage trucks. That is, until now, thanks to Charles Gray's team at the EPA's National Vehicle and Fuel Emissions Laboratory in Ann Arbor, Michigan. Gray's team invented and developed a new hybrid technology for heavy vehicles. "Hydraulic hybrid" technology uses hydraulic accumulators for energy capture and storage instead of batteries, and it's starting to hit the road now as a result of a truly impressive technology transfer effort by the EPA. Early commercial vehicles now in use in Michigan and Florida communities show fuel savings of 30-50%, along with significant savings in brake replacements, resulting in an attractive payback for fleet owners.

Creating an entirely new kind of powertrain for a vehicle is a big deal. And the EPA's hydraulic hybrid technology is complex, requiring the development and extensive redesign of numerous new components and vehicle controls software. So how did the EPA succeed in getting this technology commercialized? The answer is work, innovation, persistence, and partnerships.

To transfer the technology to industry, the EPA's nominated managers and technology transfer coordinators negotiated Cooperative Research and Development Agreements (CRADAs) with two large, global, U.S.-based suppliers of hydraulic components, Eaton Corporation and Parker-Hannifin Corporation, to build and evaluate novel prototype hydraulic components that could be used to create a viable hydraulic hybrid vehicle. Through these separate CRADAs, the EPA engineers worked tirelessly to transfer their knowledge to the industry partners, and both the EPA's and its partners' expertise in the technologies grew. The EPA's nominees further implemented innovative CRADA structures to incentivize and accelerate commercialization of the technology. All EPA inventions were licensed to the partners. This arrangement served to incentivize active and unfettered collaboration with the industry partners on the CRADA-specific technology efforts, while simultaneously allowing EPA engineers to pursue EPA-invented alternative technology choices that could further improve efficiency or otherwise be useful to commercialization later.

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Inflatable Radome Antenna System

The inflatable antenna system from GATR Technologies® is benefiting from an ongoing technology transfer relationship with NASA's Glenn Research Center and leading to faster on-the-ground communications support for disaster relief efforts and military operations. The technology can provide emergency Internet access, cell coverage, and phone lines over satellite networks via a compact package that can be inflated and deployed in less than an hour (a 2.4m satellite antenna system packed in as few as two airline checkable cases). Technology developed through a 1998 Small Business Innovation Research (SBIR) contract served as the basis for the technology, and the inflatable antenna was further developed through a license agreement between GATR and the SBIR contract holder. Additional refinements, characterization, and tests on the technology were made possible by a 2006 Space Act Agreement (SAA) that enabled GATR to collaborate with Glenn researchers, tapping into Glenn's antenna expertise and test facilities. This resulted in the first-ever Federal Communications Commission (FCC)-certified inflatable antenna.

Prototypes of the technology were used by GATR to assist with communications following Hurricane Katrina and helped support the Federal Emergency Management Agency's (FEMA) efforts during Hurricane Ike. The technology also has been used to help law enforcement with missing person rescue missions, and has provided communications support to the U.S. Navy and the U.S. Air Force. Outside the U.S. the antenna has been deployed in Afghanistan, South Africa, South America, Haiti, and South Korea. Most recently, the company deployed a system at a United Nations search and rescue site in Port-au-Prince, Haiti, in response to the earthquake there and a second unit at a special operations unit at the Port-au-Prince Airfield. Two additional units were also deployed at a makeshift hospital in the Dominican Republic.

Back at NASA, the technology transfer efforts increased the technology readiness to a level suitable for consideration for potential future missions and for NASA's next-generation Space Communication Architecture.

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Dr. Robert Romanofsky and Dr. Kevin Lambert

Paul Gierow

Robonaut2

National Aeronautics and Space Administration
Johnson Space Center

NASA's Dexterous Robotics Laboratory at Johnson Space Center (JSC) teamed with General Motors (GM) under a cooperative Space Act Agreement to design a humanoid robot for use in both the automotive and aerospace industries. The Robonaut2 (R2) is a state-of-the-art, highly dexterous robot that is capable of working side-by-side with people. The R2 and its component technologies will be used to improve vehicles and manufacturing on Earth and to define a new era of exploration in space. NASA and GM collaborated on every aspect of the design, development, and manufacturing process. Nearly 40 patents have been filed based on the R2 design.

The technology transfer effort provides numerous benefits to NASA, GM and the worldwide scientific community in various ways. The R2 enables NASA to extend its robot capabilities for future near-Earth and deep space missions. GM will use the technology to automate many ergonomically challenging manufacturing processes, pioneer new and improved vehicle safety systems, and work to enhance the safety of drivers on U.S. highways. Future versions of the R2 will one day service communications, weather, and reconnaissance satellites.

The R2 has drawn international attention as it is readied for flight to the International Space Station. It will make history as the first humanoid robot to work side-by-side with astronauts, and it will provide groundbreaking scientific data on the performance of robotics in zero gravity.

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Johnson Space Center Robonaut2 Team

Portable Infrasonic Detection System

Dr. Allan Zuckerwar and Dr. Qamar Shams

At any time, there is a rich spectrum of acoustic energy in the atmosphere at frequencies below our hearing range. These low-frequency sounds, known as infrasound, can propagate for distances of thousands of kilometers without substantial loss of energy. Their measurement can provide new insight in understanding atmospheric events like convective storms, shear-induced turbulence, acoustic gravity waves, microbursts, hurricanes, and clear air turbulence (CAT). The team at NASA Langley has developed a small and extremely sensitive infrasound detection system that has been tested in the field, successfully transferred to Department of Defense (DOD) and Department of Energy (DOE) agencies, and licensed to a manufacturer (PCB Piezotronics, Inc. of Depew, New York). This system has the advantage of portability, allowing for rapid deployment to warn against and track impending disasters like tornados.

Over the past four years, the Langley team not only successfully designed and developed the system "Extreme Low Frequency Acoustic Measurement System for Subterranean, Seismic, and Environmental Detection," but successfully engaged university experts, other federal agencies and industry through a concerted outreach program. During the design and development effort in 2007, representatives from Extreme Endeavors, Inc.; PCB Piezotronics; and Georgia Tech University were invited to visit Langley facilities to observe the performance of subcomponents. At that time, ideals were shared that led to the development of optimized portable system design in 2008.

Performance of the portable system in lab tests and field tests (performed by Extreme Endeavor's engineers in West Virginia) was presented at the 2008 Military Sensing Symposium, Laurel, Maryland. As a result, DOD personnel visited the infrasonic system development laboratory several times during 2009 to discuss their interests and to observe lab and field tests. This led to the signing of an interagency agreement in 2009, through which NASA delivered 16 systems to the DOD for its use. Four systems were delivered to Sandia National Laboratories for long-term testing there. In March 2010, another agreement between the DOD and NASA Langley allowed the installation of an infrasonic field array and the performance of numerous experiments at Langley, which continue to be in use now.

In 2010, PCB Piezotronics signed a license agreement with NASA Langley to acquire the technology and is now producing systems commercially.

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Safe Wireless Fluid-Level Measuring System

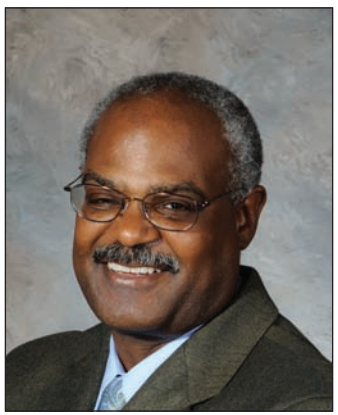
National Aeronautics and Space Administration
Langley Research Center

The Safe Wireless Fluid-Level Measuring System developed by NASA Langley has been licensed to two companies. Working through licensees, the technology has been transferred to Savannah River National Laboratory (DOE) and the Hampton, Virginia fire and police departments.

The Langley team developed a method of designing, interrogating, and powering sensors that became a major contribution to measurement science and is applicable to a large variety of measurement applications. They used their innovative technology to develop two novel, inexpensive, and safe wireless fluid-level measurement systems that alleviate many of the shortcomings inherent in fluid-level measurement methods. These systems are laid out in nine U.S./international-issued and pending patents. Other methods currently in widespread use have significant drawbacks, including the limited applicability of any one fluid-level sensor design; the necessity for power and measurement extraction to have a direct electrical connection results in the potential for electrical arcing. A key safety feature these systems have that does not exist with other fuel measurement systems is that the fuel level can be measured with neither the fuel nor combustible fuel vapors coming in contact with any electrical components of the systems—thus eliminating the potential for the combustible fuel vapors being ignited by arcing from damaged electrical components. Numerous lives have been lost as a result of these types of fuel explosions.

NASA Langley uses many standard marketing techniques such as web pages and brochures for technology transfer, but it also uses many novel methods such as having potential licensees and potential users meet with the inventors to understand their needs, with each tailored to the visitor.

Licensing Langley's technology has enabled Tidewater Sensors, a partner company, to offer a robust, easy-to-install, advanced fuel-management system for marine applications. The accurate fuel-level readings provided by Tidewater Sensors' product will make boating safer and save boaters time by eliminating returning to the dock for unnecessary refueling or water damage to the engine. A license to another company, Kelvin International, enables damage-resilient fluid-level sensors for cryogenic containers. The Kelvin license also enables industry, academia and research labs to purchase the commercial version of the wireless interrogation system used for fluid-level measures for other measurements.



Dr. Stanley Woodard

Douglas Taylor

Not pictured: Kathy Dezern and Robin Edwards

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2011 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

Lauren Culver, Department of Energy

Joshua Forbes, TechLink

Cathy Fore, Oak Ridge Associated Universities

Jay Fraser, Tracer Detection Technology Corp.

Suzanne Frisbie, National Institute of Allergy and Infectious Diseases

James Genovese, U.S. Army Edgewood Chemical Biological Center

Mark Langguth, Argonne National Laboratory

Landris Lee, U.S. Army Corps of Engineers

Andrew Loebl, Oak Ridge National Laboratory

Margaret McNamara, University of Buffalo

Susan McRae, Army Space & Missile Defense Command

Russ Miller, NNSA Kansas City Plant

Keith Quinn, Air Force Research Laboratory - Propulsion Directorate

Linda Schilling, National Cancer Institute

Gross Scruggs, Facchina Global Services

Jessica Sosenko, National Energy Technology Laboratory

Dr. Herbert Spiegel, Applied Science & Technology Associates, Inc.

Susan Sprake, Los Alamos National Laboratory

Larry Steele, Skymetrics Inc.

Erik Stenehjem, Lawrence Livermore National Laboratory

Janet Stockhausen, Forest Products Laboratory

Brian Suh, SPAWAR Systems Center Pacific

Mark Surina, U.S. Transportation Command

Alex Tang, Invention Bridge

Gary Traylor, Honeywell FM&T Kansas City Plant

Roger Werne, Lawrence Livermore National Laboratory

Tim Wittig, Technology Management Advisors - SAIC

2011 FLC Awards

Interagency Partnership Award

Department of Homeland Security

Federal Law Enforcement Training Center

Department of Defense – Navy

Naval Air Warfare Center Training Systems Division

With its computer-generated imagery (CGI), simulated weapon tracking, speech recognition and scenario-generation capabilities, the patent-pending Advanced Use of Force Training System (AUFTS) offers law enforcement an innovative use-of-force training solution unlike anything else on the market. Not only does it give instructors unparalleled flexibility in creating realistic, interactive training scenarios, AUFTS' advanced review capabilities reinforce trainee decision-making skills, thus improving their performance in the field.

AUFTS was developed through the collaborative efforts of the Naval Air Warfare Center Training Systems Division (NAWCTSD) and the Federal Law Enforcement Training Center (FLETC). The NAWCTSD team includes experts in weapons simulation and tracking, speech recognition, software development, CGI simulation, and training systems. For their part, FLETC's subject-matter experts brought a crucial viewpoint to the development of AUFTS, which needed to be designed to serve across jurisdictions regardless of size or location.

In 2010, NAWCTSD signed a Cooperative Research and Development Agreement with the Massachusetts State Police (MSP) to make AUFTS available to the MSP academy. The system is also slated to be used by the North Carolina Justice Academy for its law enforcement training. Novonics Corp., which specializes in developing training systems for the Department of Defense, entered into a patent license agreement with NAWCTSD to use the technology to commercialize its own brand of CGI simulation training.

From left: Kevin Geib, Lisa Ouakil, Rocco Portoghese, Bob McCormack, Courtney McNamara, Paul Barber, and Tyson Griffin

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Brian Panebouef and Aaron (Dexter) Young

Larry Welch and Tom Flanagan

From left: Carl Milazzo, Valerie Atkins, Brad Lawrence, Elwin Collins, Joey Mink, and Rodney Burnett

Not pictured: Henry Marshall and Michael Robbs

Department of Energy

Princeton Plasma Physics Laboratory

Department of Defense – Army

U.S. Army Armament Research, Development and Engineering Center

Lewis Meixler of the Princeton Plasma Physics Laboratory (PPPL) is the chair of the New Jersey Regional Homeland Security Technology Committee (NJRHSTC), which is chartered by the State of New Jersey and reports to the N.J. Domestic Security Planning Group. The function of the NJRHSTC is to be a resource to the Planning Group on technologies that may be useful for homeland security applications, which include both antiterrorism and natural disaster events. Through the focused application of technology, processes and services, the Committee seeks to reduce the potential for loss of life, limit the impact of any incident, enhance the ability of the response community, and expedite the return of essential functions.

Charles Gentile and his PPPL team developed software for the identification of specific sources of radiation that may be associated with the threat of nuclear terrorism. Dr. Floyd Ribe of the U.S. Army Armament Research, Development and Engineering Center (ARDEC) immediately saw the value of the technology and arranged for the support of its early development. Without ARDEC support, the technology would have never been developed. PPPL initiated an effort to find a suitable partner to commercialize the technology. PPPL and ARDEC jointly decided that the most promising course was to license to InSitech, a new partnership intermediary established at ARDEC, and to commercialize the technology, which came to be known as the Miniature Integrated Nuclear Detection System (MINDS).

MINDS is an antiterrorism technology that detects the radiation emitted from a nuclear threat, such as a dirty bomb or other nuclear device. MINDS technology employs a conventional off-the-shelf hardware approach to detecting the nuclear radiation spectrum, coupled with an innovative detection scheme. To date, it has been deployed by N.J. Transit, the Department of Homeland Security, McGuire Air Force Base, and at container handling locations in Long Beach, California and Singapore.

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Lewis Meixler

Charles Gentile

Not pictured: Dr. Floyd Ribe

Department of Energy

Sandia National Laboratories

Environmental Protection Agency

Left to right: Dr. Terranna Haxton, Katherine Klise, John Hall, Dr. Sean McKenna, Dr. Mark Koch, Dr. Regan Murray, and David Hart

Not pictured: Katie Umberg, Dr. Eric Vugrin, Dr. Shawn Martin, and Dr. William Hart

Rapid and accurate detection of drinking water contamination incidents is critical to notifying consumers of threats and risks to public health, as well as making remediation and recovery decisions. Sandia National Laboratories and the U. S. Environmental Protection Agency (EPA) developed the CANARY software system to enable online event detection and time-critical decision making in both routine and emergency water quality assessments. CANARY is available under an open-source license to drinking water utilities of all sizes worldwide that are striving to provide the best quality water to their customers. In 2010, *R&D Magazine* selected CANARY as one of the winners of its prestigious R&D 100 Award.

Sandia has long been focused on national security objectives and, since the introduction of the Risk Assessment Methodology for Water in 1999, has been leading the Department of Energy's research efforts in water security. The EPA and Sandia began working together in 2003 through an Interagency Agreement to focus the combined skill sets and experiences of both organizations on addressing critical water security knowledge gaps. Sandia developed software with experimental data developed at the EPA's test and evaluation facility. The EPA managed the interface with pilot utilities and user groups, and distilled those interactions into direct feedback to Sandia to drive capability development and further improvements in the software. This partnership has been truly collaborative—involving expertise and resources from both agencies.

CANARY is being used today in a number of large utilities around the U.S., including Cincinnati, Philadelphia and the Metropolitan Water District of Southern California, the world's largest water utility. CANARY is also running on the Singapore national water distribution system. Other metropolitan water utilities in the U.S. are evaluating CANARY as part of the EPA's Water Security Initiative, which is being rolled out to utilities nationwide. There are more than 50,000 community water systems in the U.S., all of which are potential CANARY users. Additionally, multiple software vendors, both U.S. and foreign, are interested in extending their existing products to integrate CANARY capability.

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2011 FLC Awards

State and Local Economic Development Award

Department of Energy

Sandia National Laboratories

Los Alamos National Laboratory

The New Mexico Small Business Assistance (NMSBA) program is a catalyst for the transfer of cutting-edge technology from two of our nation's leading laboratories—Los Alamos National Laboratory (LANL) and Sandia National Laboratories—to a wide range of small businesses across New Mexico. The program, made possible through legislation passed by the State of New Mexico, is a public-private partnership involving the State of New Mexico, LANL, Sandia, and small New Mexico businesses for the purpose of strengthening the state's economy.

In 2009, the NMSBA Program achieved record levels, with the two laboratories providing $4.3 million in assistance to 320 companies throughout New Mexico. These projects provided cutting-edge scientific and engineering expertise, helping the businesses bring new products to market, troubleshoot existing processes, maintain or expand their workforces, reduce operating costs, and increase profitability. Since its inception 10 years ago, the NMSBA Program has assisted 1597 small businesses in all corners of the state for a total value of $20,645,590. Most of these projects were in rural areas and include counties that normally would not have had access to the services of New Mexico's two national laboratories.

An independent company, Research and Polling, Inc., conducts annual surveys of NMSBA Program participants after completion of the projects. From 2001 through 2009, NMSBA has helped companies create and retain over 1500 jobs at an average annual salary of more than $38,000; increase revenues by more than $82 million; reduce operating costs by more than $45 million; and invest in other New Mexico goods and services by more than $19 million.

From left, front: Jackie Kerby Moore, Kimberly Sherwood, Susan Sprake, Leigh Schutzberger, and Sharon Evans

From left, back: Belinda Snyder, Shandra Clow, Mariann Johnston, Genaro Montoya, Lisa Henne, and Jenniffer Degreeff

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Department of Defense – Navy

Naval Surface Warfare Center, Indian Head Division

The Naval Surface Warfare Center, Indian Head Division (NSWC-IH) and the Maryland Technology Development Corporation (TEDCO) are closing in on a decade of trailblazing economic development cooperation. They continue to collaborate today on one of the longest running and most successful economic development partnerships.

The partnership began when Dr. J. Scott Deiter of the NSWC-IH Office of Research and Technology Applications (ORTA) was looking for a way to facilitate the marketing of laboratory technologies available for commercial licensing. TEDCO had just sponsored its first technology showcase with a federal laboratory at nearby Aberdeen Proving Ground. The TEDCO showcase concept was just what Dr. Deiter was looking for, and TEDCO was eager to work with more federal research laboratories.

The lab's role in the economic development partnership is that of intellectual property and technical resource. TEDCO's role in the partnership is that of relationship and resource matchmaker. The first step in the NSWC-IH/TEDCO relationship was a technology showcase held on July 24, 2001. The event title, "An Explosion of Technology," paid homage to the lab's expertise in energetic materials technologies. Lab researchers presented overviews of their technologies to the audience, and lab tours were conducted. The showcase was deemed a success, and subsequent NSWC-IH/TEDCO events were held in 2003, 2006, and 2009. The showcases have generated approximately $1 million in funding for the lab, a patent license agreement, and a Cooperative Research and Development Agreement (CRADA). The 2009 showcase also featured the signing of a license between the lab and NexGen Containers, LLC. This partially exclusive license covered the Joint Modular Intermodal Container technology developed at Indian Head.

The technology showcases are not the only activity in the partnership between TEDCO and NSWC-IH. TEDCO maintains a series of funds to assist companies in technology transfer efforts with federal laboratories in Maryland. Three companies have leveraged TEDCO funding in support of technology transfer with Indian Head, including Baltimore Shipping Technologies, LLC; H-Scientific; and Blue Spots, a flash grenade research and manufacturing company.

Dr. J. Scott Deiter

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2011 FLC Awards

STEM Award

2010 STEM Postdoc Conference Committee

The annual STEM Postdoc Conference and Career Fair matches Washington, D.C., area postdoctoral fellows with local companies looking for highly qualified science, technology, engineering or mathematics (STEM) talent. The conference provides a content-rich agenda, including keynote addresses by technology leaders and entrepreneurs, panels highlighting traditional and nontraditional career opportunities, and resume consultants to provide feedback on effective resume writing. The centerpiece of the event is always the career fair. At the 2010 conference, attendees met with over 40 companies, and a number of the attendees scored interviews for possible employment.

The Conference Planning Committee is composed of representatives from federal agencies, economic development organizations, and private industry. A number of the committee members have served for multiple years because they believe strongly that the conference serves the valuable educational and economic development function of building strong relationships between the region's federal laboratories and its private companies, and in sustaining a highly educated and trained workforce through this enrichment and networking opportunity.

In its 5-year history, the conference has attracted 2,250 postdoctoral fellows and 151 recruiting companies. A number of companies have derived enough value from the conference that they have participated in subsequent ones.

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2011 FLC Awards

Rookie of the Year Award

Joshua Forbes

Department of Defense – Air Force
Air Force Research Laboratory

Joshua Forbes was a busy man in 2010. He was the administrator of the United States Air Force (USAF) Community of Practice (CoP) online technology transfer (T2) resource system, creator of two online training modules for his colleagues, administrator of the USAF technology transfer database system, co-author of the revision of USAF instructions governing the service's entire technology transfer program, and acting Office of Research and Technology Applications (ORTA) representative for seven USAF organizations that needed to consummate technology transfer agreements but did not have the T2 authority to do so.

That is probably enough "exceptional service" to merit a Rookie of the Year Award, but for this application, it is only the beginning. In addition to everything already cited, Forbes also established a technology transfer program at the Wilford Hall Medical Center (WHMC) in San Antonio, Texas. Forbes achieved all of that success while working from his location at Wright-Patterson Air Force Base in Ohio.

A major responsibility for Forbes heading into 2010 was that of acting ORTA representative for Air Force organizations that did not have formal technology transfer programs. During the course of the year, Forbes drafted and executed technology transfer agreements through the Air Force Research Laboratory headquarters on behalf of the Air Force Nuclear Weapons Center, Defense Cyber Crime Center, 81st Medical Group, 60th Medical Group, Air Armament Center, and the 91st Missile Wing. His contributions have been prolific, resulting in 14 Cooperative Research and Development Agreements (CRADAs), three Material Transfer Agreements, a Joint Ownership Agreement, and five Non-Disclosure Agreements—for a total of 22 agreements drafted, negotiated, and coordinated in 2010.

2011 FLC Awards

Outstanding Technology Transfer Professional Award

Innovative Partnerships Program Office Team

National Aeronautics and Space Administration
Goddard Space Flight Center

Darryl Mitchell, Nona Cheeks, Bryan Geurts, Dean Becker, and Connie Chang

The Innovative Partnerships Program (IPP) Office at Goddard Space Flight Center (GSFC) is charged with managing GSFC's patent portfolio and identifying innovative new business practices. ICAP Ocean Tomo is the global leader in intellectual property brokerage and a division of ICAP, the world's premier interdealer broker and provider of post-trade services. In 2008, a team comprised of representatives from the GSFC IPP Office and Ocean Tomo established a groundbreaking partnership to commercialize NASA patented technologies through a live public auction format.

Until GSFC's successful participation in Ocean Tomo's auction on October 30, 2008, no federal laboratory had ever participated in the live public auction transaction format to license its intellectual property (IP). By executing an exclusive license with Ocean Tomo Federal Services prior to the auction, and then allowing Ocean Tomo to auction the opportunity for a winning bidder to assume the license with NASA from Ocean Tomo, GSFC was able to comply with federal regulations and still operate within the live auction format. The licensing opportunity that NASA sold at the October 30, 2008, auction was a portfolio of eight patents involving a novel algorithm originally developed for modeling ocean waves, called the Hilbert-Huang Transform (HHT).

Licensing government-owned patents through a live auction process is a novel approach that has not been attempted previously, making Goddard's arrangement with Ocean Tomo unique and innovative. The partnership with Ocean Tomo allows NASA to expand its channels for licensing NASA's patented technologies, leveraging Ocean Tomo's network, expertise, and tools such as the live IP auction. The GSFC/Ocean Tomo team's clear dedication to creative and strategic thinking surrounding technology transfer has led to partnering opportunities that expand the use of NASA technologies in the public sector and created a new paradigm for licensing government-owned IP.

2011 FLC Awards

Laboratory Director of the Year

Dr. Patrick Hunt

Department of Agriculture
Coastal Plains Soil and Water Conservation Research Center

The mission of the Coastal Plains Soil and Water Conservation Center in Florence, South Carolina, is to anticipate, identify, and solve agricultural natural resource problems that are important to the United States in general and the Southeastern Coastal Plain in particular. Dr. Patrick Hunt has been Center Director since 1976, and throughout his tenure his vision and contributions to research projects have ensured progress and mission impact.

Dr. Hunt contributed to and transferred technology for improved agricultural productivity and enhanced resource-sustainability in the U.S. and worldwide. His extensive accomplishments have been obtained through leadership of coordinated team research that involved synergistic cooperation among scientists, engineers, policymakers, and agribusiness. For more than 30 years, he and his colleagues have developed and transferred new concepts, theories, and technologies. He has been engaged in numerous tasks that involved advice and consultation based on his research and outreach throughout the U.S. and in countries such as Brazil, Canada, China, France, India, Italy, Ireland, Japan, Spain, and Russia.

Most recently under Dr. Hunt's leadership, a team of scientists at the Center and business cooperators developed a new wastewater treatment system that is a cost-effective alternative to swine lagoons. The development was a successful part of an agreement between the Attorney General of North Carolina and Smithfield Foods to replace current lagoons with environmentally superior technology (EST). An EST simultaneously addresses problems of ammonia emissions, excess nutrients, pathogens and food safety, odors, heavy metals, and affordability of treatment. Development of the lower-cost EST was well-received by the public, swine producers, environmentalists, and policymakers. The technology is being recognized worldwide for its impact on engineering, biotechnology, animal science, food safety, and climate change. It is currently being licensed and commercialized by Terra Blue, LLC, which acquired foreign rights for China, the European Union, Brazil, Canada and Mexico in 2010.

Dr. David Pittman

Department of Defense – Army
U.S. Army Engineer Research and Development Center
Geotechnical and Structures Laboratory

The Geotechnical and Structures Laboratory (GSL) conducts research in the areas of soil mechanics, engineering geology and rock mechanics, earthquake engineering, geophysics, concrete and materials, and centrifuge modeling. As GSL Director since 2002, Dr. David W. Pittman's impact on the culture of the laboratory with respect to technology transfer and outreach is clearly evidenced not only by the number of agreements signed, but by numerous national and international awards earned by GSL researchers, and the feedback received from industry partners and end-users on the technologies transferred.

During his tenure, Dr. Pittman changed the culture of GSL research from that of an organization with a territorial attitude toward its research activities to one that reaches out and partners with others to deliver the best possible solutions to end-users. Under his leadership, GSL has embraced the high-performance organization (HPO) concept, which emphasizes corporate culture, business models, shared values, and organizational agility. For example, Dr. Pittman continuously emphasizes to GSL leadership the importance of teamwork and a corporate outlook in program execution, encouraging external partnerships with federal and state agencies, universities, and private industry. GSL had 9 patent licenses in place before Dr. Pittman became Director; since then, 22 more have been added. From 1986 to 2002, GSL had signed 29 Cooperative Research and Development Agreements (CRADAs); since 2002, they have signed 46. More and more researchers are reaching out to meet with and involve industry partners in their R&D efforts.

Recognizing the accomplishments of GSL staffers, both internally and externally, has also been an important priority for Dr. Pittman. He established a recognition wall in GSL's headquarters that recognizes all of the laboratory's patent winners, the authors of journal articles and technical publications, and prominent technology transfer success stories. He has also been active in ensuring that GSL is considered for recognition in the annual FLC awards program. Prior to Dr. Pittman's becoming Director, GSL had won a single FLC Award for Excellence in Technology Transfer since the award was initiated in 1984; since 2002, the laboratory has won four.

2011 FLC Awards

Service Awards

David McFeeters-Krone

Intellectual Assets, Corp.

Outstanding Service Award

David McFeeters-Krone has been exemplary in his service to the FLC over the past three years. During this time he has introduced firms to FLC laboratories and other federal facilities from coast to coast, including closed deals at Space and Naval Warfare Systems Center – San Diego, Naval Medical Research Center, Naval Medical Center – San Diego, Rome Labs, Naval Undersea Warfare Center, and the Air Force Academy; as well as several other metrics counted by the Department of Defense (DOD) Office of Technology Transfer and Department of Homeland Security. These agreements have spanned many technical disciplines, including alternative energy, medical devices, robotic power systems, and simulation software.

McFeeters-Krone has been a staunch advocate of the advantages of partnering with the FLC. He was passionate about selecting Portland as the location for the 2007 FLC annual meeting as a way to introduce the Portland metro area to the federal laboratory system. On his own time he contacted nearly all of the major professional organizations in the tri-county area to gather as much publicity as possible for an industry-focused event designed to spur FLC interactions. He also presented and moderated two sessions at the meeting. The final session attracted over 60 local attendees, including representatives for Senator Ron Wyden and Congressmen David Wu and Earl Blumenauer. Since Portland, McFeeters-Krone has institutionalized the concept of an industry day at the FLC annual meeting, which has provided a forum for business (mostly local) to learn about the FLC, introduced Office of Research and Technology Applications (ORTA) representatives from around the country, and reviewed award-winning technology posters.

McFeeters-Krone continues to seek innovative ways to help private clients while serving the laboratories' missions. Last year he kicked off a fundraising effort for FedLab Investment Partners, a seed fund that seeks federally funded innovations and advances them with an eye to acquisition. In addition, he also sought and received funding for two new Cooperative Research and Development Agreement (CRADA) focused programs. The first stemmed from his recognition that some of the best federal laboratory assets may be facilities and capabilities rather than patents. He will be working with the Naval Surface Warfare Center to review previous revenue-yielding CRADAs to remarket these capabilities to industry. The second is an extension of his work with the DOD Partnership intermediary network. Dubbed CRADA Harbor Pilot, this program connects new potential CRADA partners with McFeeters-Krone, with him helping the process to completion.

Deborah Germak

Department of Transportation
FAA William J. Hughes Technical Center

Representative of the Year

Prior to her retirement earlier this year, Deborah Germak was manager of the Federal Aviation Administration's (FAA) Technology Transfer Program at the William J. Hughes Technical Center. The Technical Center is the FAA's premier research, development, testing and evaluation federal laboratory. Germak was an active FLC participant, most recently serving as chair of the Program Committee, which organizes all of the events at the annual national meeting. The last national meeting under Germak's tenure, held in Albuquerque in 2010, broke all attendance records for training sessions, first-time attendees, and overall meeting attendance. This was due, in part, to her implementation of innovative ideas and activities that brought in and recognized the area's local flavor. For instance, knowing that the first day of the meeting coincided with World Intellectual Property Day, she coordinated with local FLC laboratory representatives, and several local entrepreneurs were able to demonstrate their new technologies to the FLC members at that evening's reception.

In addition to her Program Committee responsibilities, Germak participated in and presented at a number of state and local outreach activities to promote the values and opportunities of technology transfer. These included the FAA's Worldwide Airport Technology Transfer Conference and Exposition, the Air Traffic Controllers Association Technical Symposium, and the FAA's National Small Business Procurement Opportunities Training Conference and Trade Show. One special event included the "Day with the SBA," co-hosted with the Small Business Development Center at Richard Stockton College of New Jersey and William J. Hughes Technical Center. This was an opportunity to introduce local small businesses to resources and lenders. This also was the first time many of the local businesses heard about the FAA laboratory and technology transfer opportunities.

Germak has numerous years of experience as a government contracting officer and in related positions, and many years of management experience. She has won several prestigious awards, including Vice President Al Gore's Hammer Award, Special Congressional Recognition, and the DOT's Distinguished Service Award. Most recently, she received the FLC Northeast Regional Coordinator's Excellence Award.

Lewis Meixler

Department of Energy
Princeton Plasma Physics Laboratory

Harold Metcalf Award

Lewis Meixler has been a dedicated supporter of the FLC Northeast Region for many years in several capacities, including Deputy Regional Coordinator and his current position as Regional Coordinator. He has been especially committed to taking steps to reengage laboratories in the region—which covers Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Vermont, and Puerto Rico—that had become inactive and to personally reach out to other laboratories that were not involved in the FLC.

One important change Meixler implemented was the format of the biannual regional meeting. Rather than trying to attract members to the meetings with glitzy locations and spa-like facilities, he changed the meeting locations to FLC laboratories. This setup made it possible to include onsite tours of the hosting labs, thereby allowing members to see firsthand examples of technology transfer best practices and successes. This change also had the advantage of reducing the cost of the meetings significantly, which in turn made it less costly for members to attend. An additional advantage of the compact nature of the Northeast Region was to hold meetings at central locations that would allow members to attend without extra travel expenses. Diligence in minimizing the costs has allowed the Region to hold meetings with registration costs under $80—and several at no cost.

To reactivate dormant laboratories, Meixler personally visited them. This took a considerable amount of effort, and was accomplished over a long period of time. The initial labs he visited were in the New Jersey area, but eventually his outreach expanded to the entire Northeast Region. This "missionary trip" was quite successful: lab participation in the Region has increased significantly, with high-level lab representatives participating in the regional meetings. The results are in the numbers: from a minimal laboratory representative (and alternate representative) attendance of 13 at the 2004 meeting to 36 in 2010 (which is more than the 28 labs in the Region).

2011 FLC Awards

Regional Award Winners

The FLC congratulates the following FLC regional award winners who were recognized in 2010.

Far West Region

Outstanding Technology Development Award

Idaho National Laboratory
"Supercritical Solid Catalyst (SSC)"

Lawrence Livermore National Laboratory
"Lawrence Livermore Microbial Detection Array"

NASA Ames Research Center
"Fully Implicit Ablation and Thermal Response Program"

NASA Ames Research Center
San Jose State University Foundation
Dell Perot Systems
Lawton Software
UC Santa Cruz
Stringer Ghaffarian Technologies
"Multi-Aircraft Control System (MACS)"

National Energy Technology Laboratory
"Cerium Oxide Coating for Oxidation Rate Reduction in Stainless Steels and Nickel Superalloys"

SPAWAR Systems Center Pacific
"RAPid Image Exploitation Resource (RAPIER)"
"The Solar Powered System for Generation and Storage of Hydrogen Using Substrate Microstructures"

Outstanding Partnership Award

Lawrence Livermore National Laboratory
Monterey Bay Aquarium Research Institute
Spyglass Biosecurity Inc.
"Environmental Sample Processor"*

*Also a 2011 national award winner

USDA ARS Pacific West Area
Tri-State Potato Breeding Program
Potato Variety Management Institute

Outstanding Commercialization Success Award
Idaho National Laboratory
"Centrifugal Contactor Separation Technology"

National Energy Technology Laboratory
"Aurex® 95"

Pacific Northwest National Laboratory
"High-Pressure Enzymatic Digestion System"

USDA ARS Western Regional Research Center, Processed Foods Research Unit
"For Developing and Facilitating Commercialization of Fruit and Vegetable Films"

USDA Agricultural Research Service, Food Contaminants Research Unit
"For Commercialization of Monoclonal Antibodies Used in the Detection of the Antibiotic Ceftiofur and Its Metabolites in Milk"

Laboratory Representative of the Year
Cheryl Cejka
Pacific Northwest National Laboratory

Mid-Atlantic Region

Awards for Excellence in Technology Transfer

USDA ARS Beltsville Area
"Commercialization of 'Superlure' for Pest Control in Organic Farming"

USDA ARS Eastern Regional Research Center
"Flash Pasteurization for Improving the Food Safety of Hot Dogs"*

USDA ARS Eastern Regional Research Center
"Instant Emergency Aid Foods"

*Also a 2011 national award winner

USDA ARS Eastern Regional Research Center
"Predictive Microbiology Information Portal to Enhance Food Safety"

USDA ARS Eastern Regional Research Center
"Winter Barley Ethanol Initiative for Improving Energy Independence of the Mid-Atlantic"

U.S. Army Public Health Command (Provisional)
Walter Reed Army Institute of Research
"Lethal Mosquito Breeding Container"

NSWC Indian Head Division
"Joint Modular Intermodal Container (JMIC)"

National Energy Technology Laboratory
"Basic Immobilized Amine Sorbent (BIAS) Process for CO2 Capture"*

National Cancer Institute, National Institutes of Health
"Novel Protein-like Therapeutics for the Treatment of Cancer"

National Cancer Institute, National Institutes of Health
"A Life Saving Diagnostic Test for Cancer Patients"*

National Cancer Institute, National Institutes of Health
"Therapeutic Antibodies for the Treatment of Cancer"

National Heart, Lung and Blood Institute, National Institutes of Health
"High Speed Counter Current Chromatography"

Laboratory of Molecular Biology, National Institute of Mental Health
"Therapeutic Immunotoxins for the Treatment of T Cell Malignancies"

National Institute of Neurological Disorders and Stroke, National Institutes of Health
"Identification and Development of Agents to Treat Glioblastoma and Other Tumors Over-expressing Nuclear Receptor CoReceptor"

Interagency Partnership Award

U.S. Transportation Command, U.S. Joint Forces Command, and Department of Transportation

*Also a 2011 national award winner

Outstanding Technology Transfer Professional Award

Innovative Partnerships Program Office Team
NASA Goddard Space Flight Center

Mid-Continent Region

Outstanding Partnership Award

NASA Johnson Space Center
General Motors
"Robonaut2"*

Outstanding STEM Award

NASA Johnson Space Center
"High School Aerospace Scholars"

Sandia National Laboratories
"NINE: National Institute for Nano Engineering"

Excellence in Technology Transfer Award

Air Force Research Laboratory, Space Vehicles Directorate
"Single-upset Event Immune Reconfigurable (SIRF) FPGA Chip"

Ames Laboratory
The Eaton Corporation
Greenleaf Corporation
"BAM-TB: Ultra-low Friction Ceramic Composite Material"

Los Alamos National Laboratory
Biomagnetics Diagnostics Corp.
"Reagent-less Optical Biosensor (ROB)"

*Also a 2011 national award winner

National Renewable Energy Laboratory
Ampulse Corporation
"Thin Film Silicon Commercialization"

Sandia National Laboratories
Team Technologies, Inc.
"Stingray: Bomb Disablement Tool"*

USDA Agricultural Research Service
"A Rapid Insect Detection Technology for Commercially-stored Grains"*

USDA ARS Stuttgart National Aquaculture Research Center
"Using Copper Sulfate to Control Catfish Egg Mortality from Fungal Infections"

Notable Technology Development Award

Air Force Research Laboratory, Directed Energy Directorate
"Locking of Optical Coherence by Single-detector Electronic-frequency Tagging (LOCSET)"

Los Alamos National Laboratory
"Superluminal RADAR System"

Sandia National Laboratories
"Fuel Cell Mobile Light"

USDA Agricultural Research Service
"A New Paradigm to Predict Genetic Merit of Angus Cattle for Characteristics Indicative of Carcass Value"

USDA Agricultural Research Service
Texas AgriLife Research
West Texas A&M University
"Database of Emission Levels in Cattle Feedyards for EPA Compliance"

Mid-Continent Regional Service Award

Kathleen McDonald
Los Alamos National Laboratory

*Also a 2011 national award winner

Midwest Region

Excellence in Technology Transfer Award

NASA Glenn Research Center
"Large Inflatable Thin Film Antenna with Rigidized Support Structure"*

USDA Agricultural Research Service, Midwest Area
"Comprehensive Application Technology and Strategy to Reduce Pesticide Use"*

USDA Agricultural Research Service, Midwest Area
"Development of Antibodies Essential to the Manufacture of Improved Toxin Detection Assays"

Regional Coordinator's Excellence Award

John Dement
Naval Surface Warfare Center, Crane Division

Regional Laboratory Award

Naval Surface Warfare Center, Crane Division

Northeast Region

Regional Coordinator's Excellence Award

Deborah Germak
FAA William J. Hughes Technical Center*

Excellence in Technology Transfer Award

Air Force Research Laboratory, Information Directorate
"Tactical X-Band MicroSatcom Terminal"*

FAA William J. Hughes Technical Center
"Flammability Tester for Small Samples of Plastics and Combustible Solids"

*Also a 2011 national award winner

Southeast Region

2010 Excellence in Technology Transfer Project of the Year

Centers for Disease Control and Prevention
"Therapeutic Antibodies for the Prevention and Treatment of Respiratory Syncytial Virus (RSV) Infection"*

2010 Excellence in Technology Transfer Award

Centers for Disease Control and Prevention
"Reverse Genetics System for Attenuated Rabies Vaccines"

Oak Ridge National Laboratory
"Flexible Thin-Film Solar Photovoltaics on RABiTS™"*

Oak Ridge National Laboratory
"TRIAD (Telemedical Retinal Image Analysis and Diagnosis)"

ARS Mid-South Area
"Enhanced Application of Dextranases in Sugarcane and Sugar Beet Processing"*

*Also a 2011 national award winner

2011 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, Eastern Regional Research Center
"Food Safety Enhanced by PMIP/PMP Applications"
"Ready-to-Eat Emergency Aid Foods"
"Winter Barley Ethanol Initiative for Promoting U.S. Energy Independence"

Agricultural Research Service, Invasive Insects Biocontrol and Behavior Laboratory
"Commercialization of 'Superlure' for Pest Control in Organic Farming"

Agricultural Research Service, Mid South Area
"Bilingual (English/Spanish) CD-ROM Reference Manual on Tilapia Diseases"
"Chinese Adoption of USDA Cotton Processing and Classification Techniques"
"Cotton Nectariless Trait for Pest Management and Higher Yield"
"Enhanced Application of Dextranases in Sugarcane and Sugar Beet Processing"

Agricultural Research Service, Midwest Area
"Development of Antibodies Essential to Improved Toxin Detection Assays"
"'Snap-shots' of Nutrient Use Efficiency on Dairy Farms"

Agricultural Research Service, Pacific West Area
"Development and Transfer of New Pacific Northwest Potato Varieties"

Agricultural Research Service, South Atlantic Area
"Tifguard, a Peanut with Resistance to Both Nematodes and Viruses"

Agricultural Research Service, Western Regional Research Center
"Detection of the Antibiotic Ceftiofur and Its Metabolites in Milk"
"Fruit and Vegetable Food Wraps for Enhanced Nutrition"

The Forage and Range Research Laboratory
"Plant Materials Development for Sustainable Rangeland Landscapes"

Harry K. Dupree Stuttgart National Aquaculture Research Center
"Catfish Egg Fungus Prevention"

Department of Commerce

National Institute of Standards and Technology
"Advanced Combinatorial Test Suites (ACTS) for Testing Software"
"Integrated Colony-Counting Software Solution to Pneumonia Vaccine Testing Problems"
"NIST Software Security Patent to Improve Health IT Privacy"
"RoboCrane® Erects New Safe Confinement Structure for Chernobyl Nuclear Plant"

Department of Defense – Army

U.S. Army Edgewood Chemical Biological Center
"Tactical Biological Detector (TAC-BIO)"

Department of Defense – Navy

Naval Air Warfare Center Aircraft Division, Patuxent River
"Navsolve™ Environmentally Friendly Cleaning Solvent"

Naval Surface Warfare Center, Indian Head Division
"Joint Modular Intermodal Container (JMIC)"

Department of Defense – Air Force

Air Force Research Laboratory, Directed Energy Directorate
"Locking of Optical Coherence by Single-Detector Electronic-Frequency Tagging"

Air Force Research Laboratory, Information Directorate
"RAPT-R Automated Audio Transcription and Reporting System"

Air Force Research Laboratory, Space Vehicles Directorate
"Single-Upset Event Immune Reconfigurable (SIRF) FPGA"

USAF School of Aerospace Medicine, 711th Human Performance Wing
"Cone Contrast Test (CCT) for Color Vision Deficiency"

Department of Energy

The Ames Laboratory
“BAM-TB: Ultra-Low Friction Ceramic Composite Material”
“osgBullet”

Argonne National Laboratory
“Carbon Fiber Reclamation from Polymer Matrix Composites”
“PETSc – the Portable Extensible Toolkit for Scientific Computation (version 3)”

Idaho National Laboratory
“MicroSight”

Lawrence Livermore National Laboratory
“Electrical Resistance Tomography Using Steel Case Boreholes as Electrodes”
“GeMini: Hand-Held, Mechanically Cooled, Germanium-Based, Gamma-Ray Spectrometer”

Los Alamos National Laboratory
“AVANTI and NNDS ‘Science Video Footage’ CRADA”
“Integrated Optical Biosensor System (IOBS)”

National Energy Technology Laboratory
“Development of AUREX® 95P Gasifier Refractory”
“High Speed Particle Imaging Velocimetry”

National Renewable Energy Laboratory
“Black Silicon and Desiccant-enhanced Evaporative Air Conditioner”

Oak Ridge National Laboratory
“TRIAD: Telemedical Retinal Image Analysis and Diagnosis”

Pacific Northwest National Laboratory
“ISO 180000-7 Active RFID Reference Design System”

Sandia National Laboratories
“Entrepreneurial Separation to Transfer Technology (ESTT) Program”
“Fuel Cell Mobile Light”

Savannah River National Laboratory
“Porous-Walled Hollow Glass Microspheres”

Department of Health and Human Services – National Institutes of Health

National Cancer Institute
"Novel Protein-Like Therapeutics for the Treatment of Cancer"
"Therapeutic Antibodies for the Treatment of Cancer"

National Heart, Lung and Blood Institute
"High Speed Counter Current Chromatography for Enhanced Drug Discovery"

National Institute of Mental Health
"Therapeutic Immunotoxins for the Treatment of T Cell Malignancies"

Environmental Protection Agency

"Removing Mercury, Arsenic and Other Metals from Contaminated Water Streams"
"Sustainable Approach to Nanomaterials and Their Applications in Green Remediation"

National Aeronautics and Space Administration

Ames Research Center
"Biochemical Sensors Using Carbon Nanotube Arrays"

Marshall Space Flight Center
"WARP-75® High-Emissivity Aluminiferous Luminescent Substrate (HEALS®) Technology"

Honorable Mention

Interagency Partnership Award

The FLC recognizes the following nominees for their joint efforts in technology transfer.

Ames Laboratory, Idaho National Laboratory, National Energy Technology Laboratory, and U.S. Army Armament Research, Development and Engineering Center

U.S. Army Tank Automotive Research, Development and Engineering Center; Army Research Laboratory; Joint Program Office MRAP; and Rapid Equipping Force

U.S. Army Tank Automotive Research, Development and Engineering Center and Red River Army Depot

U.S. Army Tank Automotive Research, Development and Engineering Center; U.S. Army Communication-Electronics Research, Development and Engineering Center; and U.S. Navy Space and Naval Warfare Systems Command-Systems Center Atlantic

U.S. Transportation Command and U.S. Joint Forces Command

Honorable Mention

State and Local Economic Development Award

The FLC recognizes the following nominees for their successful partnerships between state and local economic development groups, and federal laboratories for economic benefit.

Environmental Protection Agency

Naval Surface Warfare Center, Crane Division

Princeton Plasma Physics Laboratory

Honorable Mention

STEM Award

The FLC recognizes the following nominees for their outstanding work in support of science, technology, engineering, and mathematics (STEM) education during the past year.

Air Force Research Laboratory-Directed Energy Directorate

Air Force Research Laboratory-Wright-Patterson Air Force Base

FAA William J. Hughes Technical Center

Johnson Space Center

National Institute of Standards and Technology

Naval Surface Warfare Center, Crane Division

Naval Undersea Warfare Center Keyport Division

Naval Undersea Warfare Center Division Newport

Pacific Northwest National Laboratory

Princeton Plasma Physics Laboratory, FAA William J. Hughes Technical Center, and U.S. Army Natick Soldier Research, Development & Engineering Center

Sandia National Laboratories

SPAWAR Systems Center Pacific

Honorable Mention

Rookie of the Year Award

The FLC recognizes the following nominees for their outstanding efforts in the field of technology transfer in a manner significantly over and above what was called for in the normal course of their work.

Department of Defense – Air Force

John Schutte
Bell Aerospace & Technologies Corp. (in support of AFRL 711th Human Performance Wing)

Department of Energy

Marcus Lucero
Los Alamos National Laboratory

Honorable Mention

Outstanding Technology Transfer Professional Award

The FLC recognizes the following nominees for their efforts advancing technology transfer at their facilities.

Department of Defense – Navy

Paul Fritz, Mark Glut, Mark Kelly, Michelle Meidzinski
Naval Air Warfare Center Aircraft Division

John Dement
Naval Surface Warfare Center, Crane Division

David Acton, John Dement, Joe Gaines, Chris Monsey, Mary Motyka, Alison Smith, Brian Thomas, Rex Williams
Naval Surface Warfare Center, Crane Division

Department of Energy

John Russell
Los Alamos National Laboratory

Cheryl Cejka
Pacific Northwest National Laboratory

Department of Health and Human Services – National Institutes of Health

Karen Maurey
National Cancer Institute

Environmental Protection Agency

Valarie Anderson, Sarah Bauer, Valerie Blank, Geoffrey Cooper, Beverly McKenna, Laura Scalise

Honorable Mention

Laboratory Director of the Year Award

The FLC recognizes the following nominees for their efforts in making maximum contributions to the overall enhancement of technology transfer for economic development.

Department of Defense – Army

Joseph Wienand
U.S. Army Edgewood Chemical Biological Center

Department of Defense – Navy

Duane Embree
Naval Surface Warfare Center, Crane Division

Captain Todd Cramer, Dr. Paul Lefebvre, Donald Aker
Naval Undersea Warfare Center Division Newport

Department of Defense – Air Force

Jack Blackhurst
Air Force Research Laboratory, 711th Human Performance Wing, Human Effectiveness Directorate

Department of Energy

Dr. Alexander King
Ames Laboratory

Dr. Adam Cohen
Princeton Plasma Physics Laboratory

Honorable Mention

Service Awards – Harold Metcalf Award

The FLC recognizes the following nominees for their noteworthy support in furthering the mission of the FLC.

Department of Defense – Navy

Dr. Stephen Lieberman
SPAWAR Systems Center Pacific

Department of Transportation

Deborah Germak
FAA William J. Hughes Technical Center

2011 FLC Awards

FLC Awards Committee 2010-2011

The FLC expresses its gratitude to the members of the Awards Committee for their tireless efforts in making the 2011 awards program a success.

Lorraine Flanders, Naval Surface Warfare Center Dahlgren Division (Committee Chair)

Mark Allen, Sandia National Laboratories

Tom Anyos, Technology Ventures Corporation

Mojdeh Bahar, National Institutes of Health

Cheryl Cejka, Pacific Northwest National Laboratory

Dale Clarke, Goddard Space Flight Center

Chris Currens, National Institute of Standards and Technology

Joshua Forbes, Air Force Research Laboratory

Ann Kerksieck, FLC Mid-Continent Regional Support

Terry Lynch, National Institute of Standards and Technology

Carolyn McMillan, Marshall Space Flight Center

Melissa Ortiz, Air Force Research Laboratory - Space Vehicles Directorate

James Poulos, USDA Agricultural Research Service - Beltsville Area

Keith Quinn, Air Force Research Laboratory - Propulsion Directorate

David Sikora, Air Force Research Laboratory

Asuncion Simmonds, Naval Air Warfare Center - Training Systems Division

Susan Sprake, Los Alamos National Laboratory

Dr. Thomas Stackhouse, National Cancer Institute

Kathryn Townsend, Naval Meteorology and Oceanography Command

Suzanne Winfield, National Institute of Mental Health

Paul Zielinski, National Institute of Standards and Technology

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
- Interagency Partnership Award
- State and Local Economic Development Award
- STEM Award
- Rookie of the Year Award
- Outstanding Technology Transfer Professional Award
- Laboratory Director of the Year
- FLC Service Awards
  - Harold Metcalf Award
  - Representative of the Year Award
  - Outstanding Service 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.

2011 FLC Awards