

RECOGNIZING OUTSTANDING TECHNOLOGY
TRANSFER EFFORTS IN FEDERAL LABORATORIES



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FLC NATIONAL AWARDS





FLC Award
for Excellence in
Technology Transfer

Environmental Protection Agency

Commendation of EPA Technology for
Environmental Policy Studies

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2013 FLC AWARDS



Welcome to the 2013 edition of the FLC awards. Successful transfers of technology from the laboratory to the marketplace is what the FLC is all about. The key to those successes are the men and women who are committed to the work they do—from the scientist, to the entrepreneur, to the professionals who make the partnerships happen. As you will see in the following pages, these individuals represent the ideals of the FLC. Their work has impacted not just their laboratories, but communities worldwide. They have made a difference.

Technology transfer can take many forms. Reflecting this diversity, we present awards in eight categories:

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.

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.

Outstanding Technology Transfer Professional Award –

recognizes the efforts of an FLC laboratory technology transfer professional (or team) who has demonstrated outstanding work transferring a technology in a manner significantly over and above what was called for in the normal course of their work.

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.

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 source of great pride for both the laboratories and their government agencies. As you read this booklet, you will be impressed with the experience, expertise, and resources of these award winners. We are extremely pleased and proud to present the recipients of the 2013 FLC awards.

JAMES POULOS III
Awards Committee Chair

AWARDS FOR EXCELLENCE IN TECHNOLOGY TRANSFER

Department of Agriculture – Agricultural Research Service

ARS Appalachian Fruit Research Station – “Commercial Rotating Cross-Arm Trellis Technology for Blackberry Production”

ARS Mid South Area, Biological Control of Pests Research Unit – “In Vivo Production of Entomopathogenic Nematodes”

ARS Mid South Area, Biological Control of Pests Research Unit – “Method for Encapsulation of Microparticles”

Invasive Insect Biocontrol and Behavior Laboratory – “Novel Microbial Insecticide *Chromobacterium subtsugae*”

Department of Agriculture – Forest Service

Rocky Mountain Research Station, Wildland Fire Management Research, Development and Application Program – “Development and Application of the Wildland Fire Decision Support System”

Department of Defense – US Army

US Army Armaments Research, Development and Engineering Center – “Foamed Celluloid and Its Applications to Propellant Packaging”

Department of Defense – US Navy

Naval Medical Research Center – “Adhesin-based Vaccine against Enterotoxigenic *Escherichia coli* (ETEC) Travelers’ Diarrhea”

Department of Defense

Uniformed Services University of the Health Sciences – “Treatment and Prevention of Deadly Hendra and Nipah Virus Infections”

Department of Energy

Oak Ridge National Laboratory – “Pulse Thermal Processing”

Pacific Northwest National Laboratory – “Injectable Radiogel for High-Dose Interstitial Radiation Therapy”

Pacific Northwest National Laboratory – “Mixed-Acid Vanadium Redox Flow Battery Technology”

Pacific Northwest National Laboratory – “Next-Generation Microchip Ion Mobility Spectrometer”

Sandia National Laboratories – “Removal of Radioactive Cesium from Seawater Using Crystalline Silico-Titanates”

Department of Health and Human Services – National Institutes of Health

National Institute of Allergy and Infectious Diseases – “Novel Therapeutic for Tuberculosis – SQ109”

National Institute of Allergy and Infectious Diseases – “Sound Attenuation Canopy”

National Heart, Lung & Blood Institute – “Glybera®: First Gene Therapy Recommended for Approval in West”

National Aeronautics and Space Administration

Lyndon B. Johnson Space Center – “Endothelium Preserving Microwave Treatment for Atherosclerosis”

Lyndon B. Johnson Space Center – “Robotic Glove”

INTERAGENCY PARTNERSHIP AWARD

USDA Forest Service, Stennis Space Center, Oak Ridge National Laboratory, USGS Earth Research Observation Science Center

STATE AND LOCAL ECONOMIC DEVELOPMENT AWARD

John Dement

Naval Surface Warfare Center, Crane Division

STEM AWARD

Air Force Research Laboratory Directed Energy and Space Vehicles Directorates

Dr. Mary Satterfield

National Institute of Standards and Technology

OUTSTANDING TECHNOLOGY TRANSFER PROFESSIONAL AWARD

“Military 2 Market Team”

Naval Surface Warfare Center, Crane Division
Ball State University Entrepreneurship Center

ROOKIE OF THE YEAR AWARD

Michael Larkin

Naval Undersea Warfare Center Division Newport

LABORATORY DIRECTOR OF THE YEAR AWARD

Michael Coats

Lyndon B. Johnson Space Center

Duane Embree

Naval Surface Warfare Center, Crane Division

Dr. Paul Hommert

Sandia National Laboratories

FLC SERVICE AWARDS – REPRESENTATIVE OF THE YEAR

Brian Suh

SPAWAR Systems Center Pacific

“ One of the goals of my Administration’s ‘Startup America’ initiative, which supports high growth entrepreneurship, is to foster innovation by increasing the rate of technology transfer and the economic and societal impact from Federal research and development (R&D) investments. ”

– PRESIDENT BARACK OBAMA

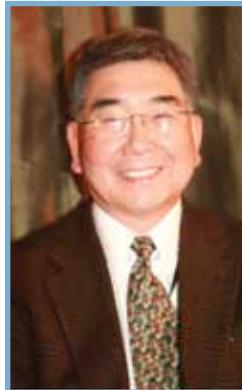


AWARDS FOR EXCELLENCE IN
TECHNOLOGY TRANSFER

COMMERCIAL ROTATING CROSS-ARM TRELLIS TECHNOLOGY FOR BLACKBERRY PRODUCTION

The rotating cross-arm (RCA) trellis and cane training method allows the entire canopy of the blackberry plant to be rotated, not break during rotation, and maintain high plant productivity. Traditionally, the blackberry plant canopy had been wide and not amenable to canopy manipulation. The innovative RCA trellis and cane training system, developed at the Agricultural Research Service's (ARS) Appalachian Fruit Research Station, allows the plant canopy to be brought close to the ground in winter and either vertical or slightly slanted during the growing season. Once the canes are positioned close to the ground, they can be covered with low-cost fabric to minimize winter injury. With the canes still oriented horizontally and the fabric removed in spring, the flowering shoots on the canes develop upward. When the cross-arms are lifted beyond vertical, the fruit is then positioned on one side of the row for efficient harvesting.

Trellis Growing Systems (TGS), a company based in Fort Wayne, Indiana, decided to commercialize the technology. TGS's manufacturing process for the RCA trellis involved the use of lightweight fiberglass components and ease of assembly. The technology transfer effort created an environment that facilitated the rapid evolution from a prototype to a commercially viable RCA trellis and cane training system, accelerated the use of the RCA trellis technology by the blackberry industry, and enabled establishment of over 200 acres of blackberries in areas where commercial blackberry production previously did not exist due to concerns with winter injury.



Dr. Fumiomi Takeda



Richard Barnes

As of May 2012, the TGS RCA trellis has been shipped to 31 states. In 2011 TGS received \$1.1 million in revenue from sales of the RCA trellis components, and in 2012 the company received orders for 100 additional acres. TGS has now delivered RCA trellis components to 28 commercial-size blackberry farms and another 55 farms with one acre or less in blackberries, mostly in the Midwest and the Northeast. The production system innovated by USDA-ARS and TGS has allowed the expansion of blackberries into these regions. Approximately \$10 million in annual revenue will be added to the local economies of the Midwest and Northeast when these acreages come into full fruit production in 2013. Dr. John Clark, a professor at the University of Arkansas, informed the audience at a recent national blackberry meeting that "This technology is the best thing to happen in the blackberry industry in many years and an incredible way to grow the industry."

IN VIVO PRODUCTION OF ENTOMOPATHOGENIC NEMATODES

Entomopathogenic nematodes (EPN) are environmentally friendly biological control organisms that are used to control insect pests, especially soil-dwelling insects, such as the larval stage of the small hive beetle, a serious pest of honey bee hives. The EPN invade the host larva to reproduce and ultimately kill the host, thus providing a pesticide-free control option. To improve EPN production for commercial use, Agricultural Research Service (ARS) researchers and Southeastern Insectaries, Inc. (SEI), a commercial EPN supplier, partnered to improve production efficiency using live insects as the host for *in vivo* production.

Production of EPN in live insect hosts has several advantages over *in vitro* production methods using fermentors. These advantages include a smaller initial investment in equipment; the ability to produce more nematode species; and a higher virulence of nematodes produced. Techniques were developed to lower the costs of *in vivo* nematode production by developing a mechanized process for insect host production and nematode inoculation. Mealworms (*Tenebrio molitor*) were chosen as the insect host for the EPN because there were existing commercial methods for their production. Nematode-infected mealworm larvae have a better structural integrity than other hosts. Another development was an automatic larval sorting system for nematode inoculation. A mass nematode inoculation system was created, which allowed the simultaneous inoculation of thousands of larvae.

The work covered by this project has significantly impacted the field of biological insect control through the development of several new methods of large-scale insect rearing. Furthermore, based on the technology developed, high-quality nematode biocontrol products are now being sold by SEI. Significant sales have been made to the beekeeper industry and for control of various turf pests. Moderate sales for the control of pests in other commodities have also been accomplished. SEI reports that as a result of the technology developed and transferred from this project, it has become a profitable business, with nematode sales increasing regularly. The estimated annual sales of nematodes are \$250,000, approximately 80% of total sales. Annual sales of mealworm larvae for feed are approximately \$100,000, and they continue to increase. This technology has benefited the public at large because there is no other efficacious way to control this honey bee pest.



Left to right: Dr. M. Guadalupe Rojas, Dr. Juan Morales-Ramos, Dr. David Shapiro-Ilan, W. Louis Tedders

METHOD FOR ENCAPSULATION OF MICROPARTICLES

Trichoderma-based products have been successfully commercialized for the management of soilborne plant diseases in the U.S. and worldwide for more than two decades. However, the density of viable conidia in these biocontrol products is low, and use of these products is limited to soil or amendments for soilless potting mix. Scientists at the Biological Control of Pests Research Unit (BCPRU) developed a technology that uses a method that produces a high density of viable conidia through microencapsulation and spray drying at elevated temperatures. This technology can be used in a variety of product development from seed coatings to sprayable formulations, which are critical issues for the development of a biological control business in plant disease management.

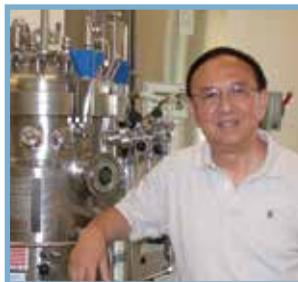
A Cooperative Research and Development Agreement (CRADA) was established in 2007 with Advanced Biological Marketing, Inc. (ABM), a Van Wert, Ohio-based company engaged in the commercialization of *Trichoderma*-based products. ABM used another Agricultural Research Service (ARS) microencapsulation

technology to develop a *Trichoderma* seed coating for corn and wheat. ABM commercialized these products, which are being sold nationally and internationally by such distributors as Wilbur-Ellis, Loveland/CPS, Winfield Solutions, and Southern States.

ABM values this technology as one of the cornerstones of its proprietary intellectual properties. Implementing this technology gave the company significant market advantages by adding more high-quality products to its product pipeline and increasing sales from \$4.4 million in 2010 to approximately \$7.6 million in 2012. ABM has hired seven new employees since the delivery of this technology. The company projected revenue and earnings to exceed \$13.8 and \$7.9 million, respectively, for fiscal year 2012. ABM recently signed a new CRADA with BCPRU to develop technology in large-scale solid fermentation to produce aerial conidia of *Trichoderma*. ABM now has the financial strength to build its own research and development group.



Robert Elliot



Dr. Xixuan Jin



Dan Custis

NOVEL MICROBIAL INSECTICIDE CHROMOBACTERIUM SUBTSUGAE

A team of from the Agricultural Research Service's Invasive Insect Biocontrol and Behavior Laboratory (IIBBL) discovered a new species of purple-pigmented bacterium named *Chromobacterium subtsugae* strain PRAA4-1T, which is the basis of a new broad-spectrum microbial insecticide. The IIBBL scientists showed it was toxic to a remarkable range of significant agricultural insect pests, even piercing, sucking and chewing insects such as the Colorado potato beetle, western and southern corn rootworm, diamondback moth, sweet potato whitefly, southern green stinkbug, and small hive beetle.

A patent was awarded for this strain in 2007, with industrial partners Natural Resources, Inc., and Marrone BioInnovations, Inc., obtaining co-exclusive licenses. Working with IIBBL, Marrone BioInnovations subsequently formulated an insecticide product from *C. subtsugae* and supervised field efficacy trials by leading universities and crop consultants that demonstrated its equivalence or superiority to current chemical pesticides.

In October 2011, the U.S. Environmental Protection Agency (EPA) registered *C. subtsugae* for use against a broad spectrum of insect pests, including psyllids, thrips, mealybugs, stinkbugs, lygus bugs, leaf beetles, turf grubs, and a variety of lepidopteran pests. Remarkably, *C. subtsugae* is not toxic to pollinators or other beneficial insects. This technology represents the first new registered microbial insecticide to reach the market in nearly 50 years.

Marrone BioInnovations has commercialized the *C. subtsugae* strain as the product Grandevo™, which was approved for use in greenhouses, gardens, and farms on agricultural and ornamental crops. Grandevo™ is a high performance product offering unique modes of action that will delay or stop the development of resistance in insects. Following EPA and state registrations, a liquid formulation of Grandevo™ was launched in Florida for use against Asian citrus psyllid, a vector of citrus greening disease. *Ag Professional* magazine chose a flowable dry formulation of Grandevo™ as an Editors' Choice Top 10 New Product of the Year for 2011.



Left to right: Dr. Phyllis Martin, Joe Spence (Beltsville Area director), Ashaki Mitchell, Dr. Dawn Gundersen-Rindal, Mike Blackburn

DEVELOPMENT AND APPLICATION OF THE WILDLAND FIRE DECISION SUPPORT SYSTEM

Federal, state, tribal, and local agencies and organizations responsible for wildland fire management in the U.S. have had increasing difficulty with larger and larger wildfires, associated escalations in suppression costs, firefighter exposure, and a decline in program efficiency. Agency policy requires a decision documentation process to record wildfire decisions, articulate rationale, and document outcomes. Over the past 10 years, three distinct reporting and management systems emerged, resulting in inefficiency, redundancy, confusion, and low-quality results.

In 2007, a new system to replace the three processes was developed—the Wildland Fire Decision Support System (WFDSS). It is a scalable system that incorporates economic principles, terrain, vegetation types, weather information, fire behavior modeling, and smoke dispersal modeling. The system helps fire managers create and publish a decision consistent with local land and resource management plans. It provides a foundation for decision documentation and access to decision support analysis tools, and facilitates long-term planning.

The Wildland Fire Management Research, Development, and Application Program (WFM RD&A) was established to sponsor and guide the development and application of WFDSS. WFM RD&A staff members worked closely with scientists from multiple agencies to consolidate previously separate fire management processes, fire modeling systems, data, and economic principles. Software was developed through a contract with a private company. The technology was made available to users via a website, with training and orientation delivered through webinars, video conferences, face-to-face presentation, and a comprehensive online help component.

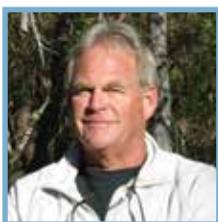
Authorized WFDSS users require only an Internet connection and a log-on for access. It allows cross-jurisdictional use, and supports multiple approvers in virtual environments. Thousands of interagency partners are currently using the system; since its initial delivery, over 40,000 wildfires in the United States have been entered into the system and the decisions recorded.



Dr. Tom Zimmerman



John Fiedler



John Syzmoniak



Marlena Hovorka



Robert Seli



FOAMED CELLULOSE AND ITS APPLICATIONS TO PROPELLANT PACKAGING

Nothing beats the excitement of fireworks on July 4th, an activity that relies heavily on spectator and handler safety precautions. Safety is also a major concern for military munitions handlers, which led the U.S. Army to develop a unique technology that improves the safety of armaments and fireworks.

For years, propellants have been packaged in paper-derived materials such as kraft board, pasteboard or paper, and plain celluloid (a plastic-like, moldable material used in ping-pong balls and photographic film). These materials leave debris behind when burned, and are subject to weather-caused moisture penetration and brittleness, making their operation sensitive and less predictable. This is especially serious for Army munitions, which are used in many climates and often stored for years with minimal weather protection. The U.S. Army Armament Research, Development and Engineering Center (ARDEC) has the principal responsibility in the Department of Defense for these munitions.

Through a series of research contracts, a new class of material technology, foamed celluloid, was developed by ARDEC and the Polymer Processing Institute (PPI) to address these shortcomings. Realizing the commercial

potential of this new material, ARDEC licensed the technology to PPI. This commercialization strategy includes a three-way Cooperative Research and Development Agreement (CRADA) among ARDEC (making use of the lab's specialized equipment), PPI (using PPI's foamed version of plain celluloid), and Pyrotechnique by Grucci (offering its expertise as a worldwide leading developer of products used in the fireworks industry).

The new casing technology provides more complete and predictable combustion, greater moisture resistance, and improved long-term stability, which result in better safety and performance. The manufacturing process is also simplified (through the use of commercially available equipment) and capable of increasing product uniformity, resulting in lower costs. The technology is also greener, replacing harmful wastewater related to paper processing with a reusable solvent.

The intellectual property is owned by the U.S. Government, which in February 2011 granted PPI an exclusive license to commercialize the technology.

Winners not pictured: Mohamed Elalem, Peter Bonnett, Elbert Caravaca, Henry Goldfine, Timothy Ryan, Dr. Ming-Wan Young, Phil Grucci



VACCINE AGAINST ENTEROTOXIGENIC ESCHERICHIA COLI (ETEC) TRAVELERS' DIARRHEA

“Montezuma’s Revenge” (Mexico), the “Kurtz Hurtz” (Uzbekistan), and “Beaver Fever” (Canada) are but a few of the many colorful monikers assigned to the bane of the world traveler — travelers’ diarrhea. For most of us, the “Aztec Two-Step” is an annoyance that keeps us from drinking the water in distant lands. However, for deployed military personnel and young children living in resource-limited regions of the world, diarrhea is a very serious concern. The course of history has been altered many times over when superior military forces succumbed to widespread gastrointestinal infection. Even today, more than 70% of American warfighters experience travelers’ diarrhea, with results ranging from reduced readiness to death by distraction. Sadly, the outcome of future generations is also greatly altered by the death of 1.6 million children each year due to acute gastroenteritis.

Medicine’s considerable advances over the centuries have barely dented the problem, until now. In a major coup in the war against gastroenteritis, Capt. Stephen Savarino and colleagues at the Naval Medical Research Center have created a vaccine against the diverse enterotoxigenic *Escherichia coli* (ETEC) bacteria, a leading cause of travelers’ and childhood diarrhea. With uncanny foresight in

the technology transfer process, Capt. Savarino developed a public, private, and nonprofit partnership comprised of six global signatory entities conducting work on three continents. An exemplary model for inventor involvement throughout the T2 process, Capt. Savarino spearheaded the effort from original scientific discovery to industry outreach, and he continues to shepherd the multimillion dollar process to further develop and commercialize the vaccine. Intellectual property resulting from the effort includes patents pending in the United States, Canada, Australia, Japan, and the European Patent Organization.

Capt. Savarino earned the admiration of his peers and credibility with industry through more than 20 years as an innovative researcher, a tireless advocate for vaccine development, and an evangelist promoting the cause of enteric disease research worldwide. The coalition he so expertly crafted now holds the key to a future where history does not hang in the balance of gastrointestinal distress, an American warfighter can focus on the enemy across the field and not the enemy within, and an additional 400,000 children each year will be given a chance at life that fate and circumstance would just as soon take away.



TREATMENT AND PREVENTION OF DEADLY HENDRA AND NIPAH VIRUS INFECTIONS

Research scientists at the Uniformed Services University of the Health Sciences (USU), along with collaborators from other institutions, have developed the first treatment for and the first vaccine against the deadly Hendra and Nipah viruses (respectively, a human monoclonal antibody and a recombinant soluble Hendra virus G glycoprotein [sG] vaccine).

The technology was successfully transferred to two laboratories in Australia (i.e., the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Australian Animal Health Laboratory (AAHL) in Geelong, Australia) and a multinational animal health company due to the efforts of the USU team. They successfully negotiated agreements related to the transfer due to their relationships with the other parties and their ability to develop innovative methods to ensure the successful transfer of the technology. The negotiations were an extended process; therefore, in order to keep the science moving forward and facilitate the vaccine development, a Material Transfer Agreement (MTA) was executed while

the subsequent Cooperative Research and Development Agreement (CRADA) and license agreement were negotiated. The transfer of the monoclonal antibody technology was time-sensitive since it was necessary to treat Hendra-exposed people during the treatment window of opportunity. The USU team worked with Queensland Health to develop a letter agreement to allow compassionate use of the antibody.

The monoclonal antibody has been successfully administered (through a compassionate use exception) to three individuals in Australia who had significant exposure to Hendra virus from contact with infected horses.

The Hendra-sG vaccine is protective in multiple animal species, including ferrets, felines, nonhuman primates, and horses (equines). An approved equine vaccine developed as part of the collaboration and transfer of the Hendra-sG technology will soon be commercially available in Australia.



Dr. Christopher Broder



Dr. Mark Scher



John Baker



PULSE THERMAL PROCESSING

Pulse Thermal Processing (PTP) is a revolutionary technology for thermally processing thin film structures, allowing high-temperature processing on low-cost and temperature-sensitive substrates such as plastics. PTP technology offers the ability to expose large areas of material to an extremely high energy flux during a very short period of time. Oak Ridge National Laboratory (ORNL) patented the PTP technology in May 2007.

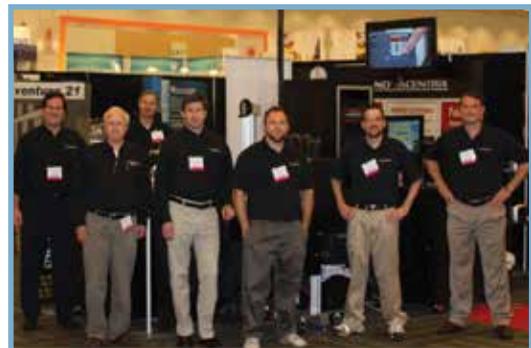
NovaCentrix obtained an exclusive license for the PTP technology in August 2008. Based in Austin, Texas, the company is a leader in printed electronics manufacturing technologies. NovaCentrix has utilized the PTP technology to sinter metallic nanoparticle inks on temperature-sensitive substrates such as paper and plastics—increasing the conductivity of printed circuits by orders of magnitude. NovaCentrix introduced the PTP technology as a commercial line of photonic curing equipment known as PulseForge systems. The most advanced model is the PulseForge 3300,

which is designed for roll-to-roll and conveyor-based material processing at full-volume production. The PulseForge 3300 can process materials used for printed logic, display, and photovoltaic applications, such as silicon, zinc oxide, and copper indium gallium diselenide.

In addition to licensing the PTP technology, NovaCentrix has collaborated with ORNL in a number of areas. NovaCentrix placed a PulseForge 3300 at ORNL at a significant cost-share, leveraging ORNL's extensive materials processing and characterization capabilities. The company has also actively engaged in numerous research projects with ORNL, exploring various applications for the PTP technology. NovaCentrix has also signed a Memorandum of Understanding with ORNL, committing to pursue advancement of the PTP technology. ORNL and NovaCentrix were jointly awarded an R&D 100 Award in 2009 for "PulseForge 3100 With Pulse Thermal Processing."



Left to right, back: David Harper, Dr. Chad Duty, Dr. Adrian Sabau, Art Clemons
Left to right, front: Dr. Alexander DeTrana, Dr. Ronald Ott, Dr. Craig Blue



Left to right: Charlie Munson, Doug Lind, Steve McCool, Stan Farnsworth, Ian Rawson, Scott Durham, Alex Rose
Not pictured: Dr. Nancy Dudley, Dr. John Rivard, Dr. Kurt Schroder

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INJECTABLE RADIOGEL FOR HIGH-DOSE INTERSTITIAL RADIATION THERAPY

A team from Pacific Northwest National Laboratory (PNNL) developed and transferred a new injectable radiogel for delivering insoluble yttrium-90 — a well-established medical radioisotope with many applications in cancer treatment—microspheres to a precise location for targeted radiation therapy. This safe, effective, low-cost brachytherapy treatment allows clinicians to deliver higher doses of radiation exactly where needed while minimizing exposure to surrounding healthy tissue. Radiogels are ideal for treating solid tumors that cannot be safely removed via surgical methods.

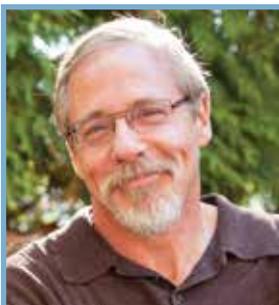
PNNL developed the technology prior to the initiation of a technology transfer partnership. Advanced Medical Isotope Corporation (AMIC) approached PNNL seeking novel resorbable brachytherapy technology to add to its product offerings, and this technology was identified during initial discussions as having high potential to be a fit. A strong relationship was formed as the partners conducted further analyses of the technology, with PNNL acting as technical and commercialization consultant, providing AMIC with access to Laboratory resources, capabilities, and analytical results, and negotiating access terms. AMIC became the technology licensee.

The transfer effort between PNNL and AMIC began after multiple internal technology maturation funding investments had already been leveraged to hone and confirm specific technology characteristics. In September 2010, AMIC signed an exclusive license for the fast-resorbable brachytherapy seed technology. Then, in February 2011 AMIC signed a one-year option agreement for the injectable radiogel delivery mechanism, followed by proposing and being approved for a PNNL Technology Assistance Program project (provides up to one week of PNNL researcher time at no charge) to receive additional guidance on making and delivering yttrium-90 microspheres for correct tumor dosing. In March 2012, AMIC signed another exclusive license for the radiogel delivery technology.

This transfer represents a significant business growth opportunity for AMIC which, upon successfully garnering FDA approval, will have a safe and effective new treatment option to offer its customers. The licensing of this technology also helped PNNL achieve its mission to deploy lab-developed technology for societal and economic benefit, and has resulted in a strong, ongoing partnership between PNNL and AMIC that could lead to additional transfers.



Dr. Darrell Fisher



James Katzaroff



Ron Thomas



MIXED-ACID VANADIUM REDOX FLOW BATTERY TECHNOLOGY

As renewable energy becomes more important to our future, the challenge of incorporating it onto the grid must be surmounted, in part, with large-scale energy storage solutions. Redox (reduction-oxidation) flow batteries are considered an advantageous alternative, but some technical improvements are needed for the technology to be viable. The mixed-acid vanadium redox flow battery, developed at Pacific Northwest National Laboratory (PNNL), is the first commercially viable redox flow battery capable of deployment at grid scale. This breakthrough battery uses a novel approach to the battery chemistry to overcome the limitations of current generation redox flow batteries — a new mixed-acid electrolyte with vastly higher energy density and operating range than the current state-of-the-art, all-vanadium redox flow batteries.

PNNL's role in this transfer was initially that of technology developer, but it shifted to that of careful and strategic planner and negotiator as multiple parties became interested in exclusively licensing the same technology. UniEnergy Technologies' (UET) role was as a potential licensee, with the objective and expectation of obtaining an exclusive license for the technology its founders had developed during their tenure as researchers at PNNL. An anonymous licensee's role was similar to that of UET, with the exception that it had not been involved in any way with the technology's development. Both parties interfaced with PNNL to carefully negotiate

license agreements that achieved their unique business goals, even without full exclusivity.

Because of the high degree of commercial interest in this technology, PNNL formed a Grid-Scale Energy Storage Commercialization Team comprised of appropriate staff in research and development (R&D), lab management, general counsel, and technology commercialization to develop an appropriate licensing strategy. The team determined that only three licenses would be offered to retain value for prospective licensees (often seeking exclusivity) while meeting PNNL's objective to secure more than one license. When two distinct parties expressed the intent to move forward with licensing, including a startup formed by two of the technology developers for this sole purpose, license agreements offering exclusivity to each party in certain countries and limited exclusivity elsewhere were carefully negotiated and drafted. In the end, both parties were satisfied with their respective agreements.

This transfer benefitted all parties in that all walked away having met their core objectives. PNNL was able to deploy a lab-developed technology more broadly than a single exclusive license would allow. Both licensees received exclusivity in their top priority geographic locations, with limited worldwide exclusivity in that they would share nonexclusive countries with up to only two other parties as guaranteed by PNNL's strategy to limit licensees to three.

***Winners not pictured:** Peter Christensen, Eddie Baker, Dr. Gordon Graff, Darrell Herling, Landis Kannberg, Dr. Soowhan Kim, Dale King, Derek Maughan, Dr. Liyu Li, Dr. Z. Gary Yang*



NEXT-GENERATION MICROCHIP ION MOBILITY SPECTROMETER

The need to characterize ever more complex and numerous samples, primarily of biomedical or environmental origin, has been driving continued innovation in separation science. The ongoing paradigm shift in the field is replacing or complementing condensed-phase separations such as chromatography or electrophoresis with rapid gas-phase approaches based on ion mobility spectrometry (IMS). The Ion Mobility Spectrometer on a Microchip is a breakthrough toward meeting that demand, as the much smaller size and stronger electric fields lead to unprecedented analytical speed, sensitivity, and dynamic range, and permit seamless coupling to mass spectrometry (MS) for detailed yet rapid measurements.

The transfer of this technology by Pacific Northwest National Laboratory (PNNL) to Owlstone Ltd. of Cambridge, England, has enabled the effective integration of ion mobility microchips with MS, and guided the engineering of next-generation chips with improved resolving power and sensitivity. Combined, the two advances have produced a fundamentally new, comprehensive, broadly useful analytical platform.

Owlstone scientists assembled the revolutionary microfabrication methods lying at the foundation of IMS microchips. The interface technology perfected at PNNL allowed

the efficient coupling of those chips to soft-ionization ion sources and MS, leading to the demonstration of general utility of microchip IMS/MS for high-throughput chemical and biological analyses. PNNL's complementary expertise in unique high-performance MS and IMS/MS instrumentation, and Owlstone's in microfabrication, enabled fast development of successive prototype chip IMS/MS systems. The performance evaluation at both PNNL and Owlstone demonstrated strong potential for a new analytical product with broad market reach, which has then attracted interest and deep involvement of a major MS instrument manufacturer—Agilent Technologies.

Although Owlstone had developed the chip, it had no expertise or capabilities in MS and interfacing with IMS. Together, PNNL and Owlstone developed a new product that will benefit Owlstone through increased product sales and the analytical community, including PNNL, through improved analysis capabilities. This product benefits numerous applications across a diversity of industries—from security and defense to automotive, environmental control, industrial process monitoring, pharmaceuticals, and healthcare—that depend on the rapid and accurate detection and measurement of chemicals.

Winners not pictured: Dr. Alexandre Shvartsburg, Dr. Keqi Tang, Dr. Danielle Toutoungi, Billy Boyle, Dr. Matthew Hart

REMOVAL OF RADIOACTIVE CESIUM FROM SEAWATER USING CRYSTALLINE SILICO-TITANATES

Crystalline silico-titanates (CSTs) are synthetic zeolites designed by Sandia National Laboratories (SNL) scientists to selectively capture radioactive cesium and other group I metals. They are particularly effective at capturing cesium from high salinity aqueous solutions, including seawater.

When the huge earthquake and tsunami struck Japan on March 11, 2011, leading to the Fukushima Daiichi nuclear power plant accident, it was quickly determined that CSTs would be an excellent material to be used for the removal of radioactive cesium from contaminated seawater that had been used to cool the plant's reactors. Quick action by SNL and its corporate partner UOP, a Honeywell company, led to licensing and deployment of the technology in Japan in just a few months. Today it continues to be used to clean up cesium-contaminated water at the Fukushima power plant.

The SNL team worked around the clock for 10 days to show that the technology worked in seawater. Their tests showed that CSTs

outperformed other materials for cesium removal from seawater under the conditions in Japan. These results were given to the Department of Energy (DOE), and then several interactions between Honeywell UOP and SNL took place that resulted in an exclusive license to Honeywell UOP for the use of CSTs in the field of radiation waste applications.

Honeywell UOP has put the CSTs in its IONSIV™ Selective Media product line, and is using them in the cleanup effort. To date, more than 60 million gallons of cesium-contaminated seawater used to cool the Daiichi reactors after the accident rendered the reactor cooling systems inoperable has been treated using CSTs manufactured by Honeywell UOP.

The technology transfer of the CST technology to Honeywell UOP has led to more collaboration with SNL on other materials. Honeywell UOP has also recently announced an investment of \$20 million to expand its production facility to produce adsorbents and catalysts, including CSTs.



Left to right: Dean Rende, Jim Gassen, Dr. Mark Rigali, Dr. Carlos Gutierrez, Dr. Yifeng Wang, Dr. May Nyman, Evgeny Kolev, Brooke Garcia, Bianca Thayer, Alan Greenberg, Dr. Tina Nenoff, Dr. Jim Krumhansl

NOVEL THERAPEUTIC FOR TUBERCULOSIS – SQ109

According to the World Health Organization, tuberculosis, or TB, causes approximately 1.5 million deaths worldwide each year. Over one-third of the world's population has tested positive for *Mycobacterium tuberculosis (Mtb)*, the bacterium that causes TB, but are not yet ill (latent infection); of these, approximately 10 percent are expected to progress to active TB infection.

Treatment is lengthy, and the drugs often come with serious side effects. This has led to poor treatment compliance and allowed for the rise of drug-resistant TB strains.

The National Institute of Allergy and Infectious Diseases (NIAID) and Sequella, Inc., began collaborating in 1999 to identify and develop new drugs against TB based on a current TB drug ethambutol (EMB), an ethylenediamine compound. Under a Cooperative Research and Development Agreement (CRADA), they synthesized and screened more than 100,000 second-generation ethambutol molecules, which led to the selection and early development of SQ109.

Sequella is conducting clinical trials with SQ109 as a drug for the treatment of TB, *Helicobacter pylori (H.pylori)* infections, and gastric carcinomas. The knowledge gained by NIAID during this collaboration contributes to the laboratory's understanding of EMB's mechanism of action, and may lead to the discovery and development of future therapeutics.

Sequella continues to advance the development of SQ109 as a therapeutic, and has filed two Investigational New Drug applications for its use against TB and *H. pylori*-related duodenal ulcers. Sequella was granted Orphan Drug status for SQ109 for use against drug-susceptible and drug-resistant TB by the FDA and the European Medicines Agency. Sequella also commenced Phase II trials using SQ109 to treat *H. pylori*-associated duodenal ulcers. In addition, NIAID and Sequella continue to collaborate to study the potential of SQ109 as a tracer to identify TB lesions. These technology transfer activities have resulted in the development of an exciting new drug that exceeds both parties' initial expectations.



Left to right: Dr. Clifton Barry III, Dr. Mugul Rajan, Tristian Mahyera, Megan Van Horn, Dr. Michael Mowatt

Not pictured: Edward Fenn

SOUND ATTENUATION CANOPY

High sound levels in work settings can have negative effects on worker concentration and productivity. Even offices separated by walls and doors transmit sound between them. As office buildings optimize space, the allotment for each person, office, or work area often decreases. With more office workers in a given area, localized noise levels are increasing beyond optimal levels for worker productivity.

Some gains in controlling unwanted sound transmission can be made either by addressing the composition or construction of the walls and doors that separate adjacent spaces, or by using insulation to seal voids or penetrations that could transfer sound. These conventional approaches still do not deliver the degree of sound attenuation often desired in a work setting since most noise travels from office to office through the space above the suspended interior ceiling, called a plenum, which is now common in modern office and laboratory buildings.

The National Institute of Allergy and Infectious Diseases (NIAID) Office of Research Operations (ORO) was confronted with this sound transmission problem while developing new office and laboratory space for its employees. The problem was solved by the invention of the Sound Attenuation Canopy (SAC), an inexpensive, green, simple, passive, low-cost invention that diffuses the transmission of sound from one office or laboratory to another. As an Institute within the National Institutes of Health (NIH), NIAID

supports NIH's mission to foster creative discoveries, innovative research strategies, and their applications as a basis for protecting and improving health. The SAC directly affects human health by improving workers' working conditions and productivity.

The NIAID Office of Technology Development advised ORO regarding the intellectual property protection process and, together with one of the inventors, identified a potential licensee. The NIH Office of Technology Transfer successfully negotiated a nonexclusive license with Transwall, a manufacturer of demountable architectural wall systems. The technology currently is used in an existing NIAID leased building, and will be installed in a NIAID facility currently under construction. Installation and use in other federal office and laboratory buildings is anticipated. The licensee is actively marketing the technology contemporaneously.



Left to right: Michael Piziali, Judit Quasney, Michael Shmilovich, Dr. Michael Mowatt

GLYBERA®: FIRST GENE THERAPY RECOMMENDED FOR APPROVAL IN THE WEST

On July 20, 2012, a committee of the European Medicines Agency recommended for regulatory approval the first gene therapy using an adeno-associated virus vector to treat lipoprotein lipase deficiency (LPLD), a very rare genetic disease. With a normal diet, patients lacking sufficient levels of lipoprotein lipase have abnormally high serum triglycerides and high levels of very low-density lipoprotein (VLDL), resulting in acute severe pancreatitis and chronic conditions associated with high levels of VLDL, such as cardiovascular diseases.

A team from the National Heart, Lung, and Blood Institute (NHLBI) discovered a means for producing recombinant adeno-associated virus (rAAV) in cultured insect cells. Based on these findings, NHLBI developed a robust and scalable process for producing large quantities of rAAV. Dutch biotechnology company uniQure adapted these methods to produce



Dr. Jay Chiorini



Dr. Mark Rohrbaugh

the therapeutic vector Glybera® for the treatment of LPLD. Glybera® expresses lipoprotein lipase in the patient's own tissue, restoring the body's ability to break down fat particles in the blood, thereby substantially reducing the incidence of pancreatitis.

The National Institutes of Health (NIH) Office of Technology Transfer executed a nonexclusive license to the rAAV baculoviral manufacturing technology with uniQure. The license provides uniQure with an added dimension to its manufacturing platform. Under a separate exclusive license executed in 2011, the company is also working on other gene therapy products using AAV5 vectors technology invented by Drs. Robert Kotin and John Chiorini of NHLBI.

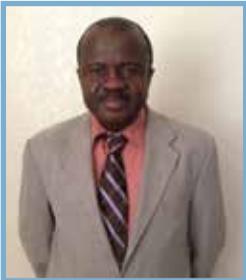
The combined effort of NIH and uniQure has the potential to greatly increase the therapeutic reach of gene therapies to benefit large patient groups. It would also enable the treatment of diseases that require the systemic (as opposed to local) expression of therapeutic genes in patients' tissues.



Front row from left: Dr. Vincent Kolesnitchenko,
Dr. Betty Tong, Dr. Robert Kotin
Back row from left: Mojdeh Bahar, Richard Rodriguez,
Dr. Alan Deutch, Jeffrey Walenta



ENDOTHELIUM-PRESERVING MICROWAVE TREATMENT FOR ATHEROSCLEROSIS



Dr. Anthony Dike

The Endothelium-Preserving Microwave Treatment for Atherosclerosis was first developed and patented by engineers at NASA's Johnson Space Center (JSC). The apparatus and method enable the

repair of diseased coronary arteries during cardiac catheterization by delivering microwave energy to precise arterial locations to selectively target and heat atherosclerotic lesions. The treatment preserves the most delicate endothelial cell layer, which is especially important for preventing restenosis due to thrombotic, inflammatory, and proliferative responses that complicate current treatment procedures.

In the 1990s, JSC engineers were investigating the use of millimeter waves to collect images of the human body. They rented an expensive experimental imaging system, but determined early on that the millimeter wave technology was not going to be useful for the original intent. They brainstormed other uses and theorized that it could be adapted for use in a miniaturized, directional antenna attached to a catheter. Inserted into a diseased artery, the millimeter wave transmissions could penetrate the artery wall and destroy atherosclerotic lesions without damaging healthy tissue and cells. The validity of this concept was subsequently confirmed by a local physician. They patented the apparatus and method in December 2002.

JSC met with Meridian Health Systems, P.C. of Los Angeles, California, to discuss the

technology's feasibility and effectiveness. In July 2011 the two organizations signed a Space Act Agreement (SAA) to conduct feasibility studies and further develop the technology collaboratively. After a successful technology demonstration in November 2011, NASA licensed the technology to Meridian through a partially exclusive patent license agreement. JSC and Meridian are currently negotiating a second, novel "umbrella SAA" that will include separate annexes for different technology areas to further speed testing and development.

Meridian intends to market the technology as the Endothelium Preserving Microwave Treatment for Atherosclerosis (EPMTA™) Angioplasty Device for the nonsurgical repair of diseased coronary arteries. The effort at Meridian is championed by Dr. Anthony C. Dike, President and CEO. "Cardiovascular disease has been the leading cause of death in the United States every year since 1918," Dike said. "My company believes that the need has never been greater for a minimal or noninvasive, low-cost tool such as this for the management of individuals at risk for coronary artery disease."



Left to right: Phong Ngo, Patrick Fink, G. Dickey Arndt, Diane Byerly, John Dusi, Greg Lin, Andrew Chu



ROBOTIC GLOVE

NASA Johnson Space Center (JSC) and General Motors (GM) have developed a human grasp assist device called the Robo-Glove. This innovation significantly increases the strength of a human's grasp, potentially allowing astronauts to work more effectively in space and reducing the risk of repetitive stress injuries for workers here on Earth. This powered human grasp assist augments the grasp of a human hand by means of linear actuators and high-strength polymer tendons. The actuators and tendons provide additional force to the user's fingers, thus reducing the total grasp effort needed to hold or manipulate an object in the user's hand.

NASA and GM collaborated on every aspect of the design, development, and manufacturing process for the human grasp assist device. Ron Diftler, Robonaut project manager at JSC, and Marty Linn, Robonaut project manager for GM, led a core team of NASA and GM engineers who worked together onsite within JSC's Software, Robotics and Simulation Division. In 2007, NASA and GM joined forces on Robonaut2 (R2), a state-of-the-art, highly dexterous robot capable of working side-by-side with people. The robotic glove, a spinoff from R2, builds on the partnership between government and industry.

NASA and GM developed the Robo-Glove under a collaborative Space Act Agreement. The partners have jointly submitted four patent applications for the human grasp assist device. One patent has been granted, and three additional ones are pending. Nearly every patent includes both GM and NASA personnel. In total, NASA and GM have submitted 46 patent applications for R2, including 16 for R2's hand.

The Robo-Glove benefits NASA by enabling astronauts to grip tools for longer periods of time without experiencing discomfort or strain. The Robo-Glove benefits GM by enabling auto workers to exert less force when operating a tool. More broadly, the Robo-Glove has the potential to benefit the hundreds of thousands of American workers whose jobs require operating tools for an extended time or with repetitive motions (e.g., construction workers, hazardous material workers, assembly line operators), reducing the risk of work-related injuries and absences while increasing manufacturing productivity. In addition, this technology can be used in prosthetics, rehabilitation, and for patients with impaired or limited muscle strength (as seen with multiple sclerosis or rheumatoid arthritis).



Chris Ihrke



Don Davis, Chris Ihrke



Kody Ensley

Winners not pictured: Myron Diftler, Lyndon Bridgwater, Evan Laske, Heather Bibby, Douglas Linn, Bryan Bergelin

“Any sufficiently advanced technology is indistinguishable from magic.”

– ARTHUR C. CLARKE
author and inventor



INDIVIDUAL AND TEAM AWARDS



INTERAGENCY PARTNERSHIP AWARD

ForWarn is a satellite-based monitoring and assessment tool that helps natural resource managers rapidly recognize and track potential forest disturbances, and intrusion by insects, diseases, wildfires, extreme weather, and other natural or manmade events across the contiguous United States. Initially developed through efforts led by the Department of Agriculture's Forest Service, the success of ForWarn is the result of significant and substantive ongoing contributions from the National Aeronautics and Space Administration's Stennis Space Center, the Department of Energy's Oak Ridge National

Laboratory, and the Department of the Interior's United States Geological Survey Earth Research Observation Science Center.

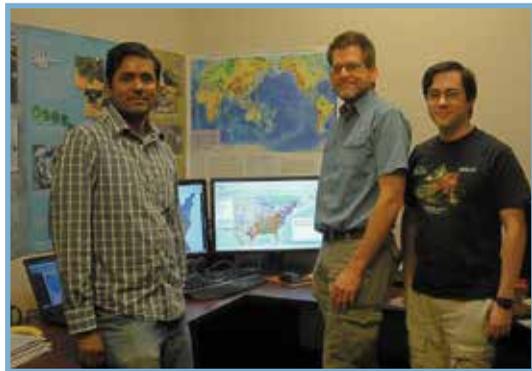
ForWarn utilizes satellite imaging to help society address national and regional forest health issues and their impacts. It employs a web-based mapping tool, the Forest Change Assessment Viewer, available online using any Internet browser, that allows users to view current and archived ForWarn satellite-based forest change products that are refreshed every 8 days, as well as other near real-time maps and tools that are used to



U.S. Forest Service Team

Top row from left: Dr. William Hargrove, Dr. Danny Lee, Perdita Spriggs, and Stephanie Worley-Firley

Top row from left: Dr. Nancy Grulke, William Christie, Dr. Steven Norman and Sean Schroeder



Oak Ridge National Laboratory Team

Left to right: Jitendra Kumar, Forrest Hoffman, Richard Tran Mills



help interpret new forest disturbances and to create and share custom maps. The forest health management community can freely access both current and historical ForWarn national forest disturbance maps online to assess potential forest disturbances for any particular location across the country, and can check the latest ForWarn products as soon as they become available. This diverse community is responsible for forest health monitoring and protection, and includes employees of multiple federal, state, and local government agencies, as well as members of academia, private forest owners, and the general public.

ForWarn forest disturbance maps have already been used effectively to detect and track a variety of abiotic disturbances, such as damage from river flooding, severe hurricanes, drought, wind, ice, hail, and frost; to detect and track disturbances in agricultural crops and rangeland forage; and to identify and monitor defoliation and mortality caused by a variety of insects. As climate change and extreme weather continue to affect and increase forest disturbances, the value and significance of ForWarn will grow as it improves and extends to meet science, research, and management needs.



U.S. Geological Survey Earth Research Observation Science Center Team

Left to right: Dave Meyer, Jesslyn Brown, Calli Jenkerson, Ryan Longhenry



John C. Stennis Space Center Team

Left to right, back: William Graham, Joseph Spruce, Gerald Gasser

Left to right, front: James Smoot, Philip Kuper



John Dement

STATE AND LOCAL ECONOMIC DEVELOPMENT AWARD



Since taking on the job of heading the Office of Research and Technology Applications (ORTA) at the Naval Surface Warfare Center, Crane Division

(NSWC Crane), John Dement has completely rebuilt technology transfer at the lab. Home to the Department of Defense's (DOD) Centers of Excellence for electronics, microcircuits and power systems, and with scientists and engineers constituting 70 percent of the 3,000 base employees, NSWC Crane holds a high concentration of technical expertise and resources that is rare in its home state of Indiana. Dement took that potential and ran with it, setting the goal of making his lab an important driver of technology-based economic development for the state.

Two of NSWC Crane's notable partnerships illustrate particularly well the success of Dement's leadership and approach to technology transfer in bringing about economic development. The Growth Alliance for Greater Evansville (GAGE) was created in early 2007 out of the need for a comprehensive, focused approach to economic development pursuits between government and business. Teaming with NSWC Crane and the University of Southern Indiana (USI), the three entities have developed innovative processes that have had an impact on both regional and federal technology transfer programs. Examples

include the USI's Business Translation Process, Crane's Partnership Intermediary Agreement (PIA)/University T2 Network, the Technology Commercialization Academy (TCA), and the award-winning Innovation Discovery Process (IDP).

The Radio Frequency (RF) Alliance is another example of a very successful economic development relationship that Dement helped spark and support. In 2009, NSWC Crane entered into a PIA with Crane Technology, Inc. (CTI), a public-private partnership and business development resource established with support from the state of Indiana. The result was the creation of the RF Alliance, which spins-out DOD RF technology to the private sector and spins-in DOD private sector innovations. The Alliance's focus on RF technologies makes it an ideal partner for NSWC Crane since RF technologies are a major component of electronic warfare/information operations, one of the lab's three primary mission areas.

The RF Alliance has been able to convert targeted industry members into tangible economic development success stories. Two new companies, Omega Micro Technologies and Indiana Microelectronics, have been established as a direct result of the NSWC Crane/CTI partnership. The Alliance has facilitated 9 partnerships between various private-sector entities and public institutions, and has even assisted science, technology, engineering, and mathematics (STEM) activities in 43 schools. At least 21 high tech jobs have been directly created as a result of Alliance activity, with another 60 jobs created indirectly.

CONTACT: **John Dement** • (812) 854-4164
john.dement@navy.mil



STEM AWARD

For some years the Department of Defense has been concerned with the ability of the United States to produce enough high-caliber science, technology, engineering and mathematics (STEM) talent to meet the nation's growing needs in national defense. In support of this need, strong STEM outreach efforts are progressing at the Air Force Research Laboratory's (AFRL) Directed Energy and Space Vehicles directorates. A dedicated and innovative STEM team is helping to meet the science and technology workforce challenge through a variety of programs that offer unique STEM opportunities for students – beginning in fifth grade and continuing through the doctoral level. Several of these programs include:

- The University Nanosat Program (UNP), a partnership among AFRL, the Air Force Office of Scientific Research, and the American Institute of Aeronautics and Astronautics, which encourages U.S. university students to competitively design, build, launch and track a small satellite or nanosat. It is the only program in the federal government open and dedicated exclusively to U.S. university participation in spacecraft development.
- The AFRL Scholars Program was established in 2001 to create a well-qualified science and engineering recruiting pool for the laboratory

and its industry and academic partners. The program attracts top students from across the nation to conduct original research to enhance Air Force technology, increase diversity in the laboratory workforce, and promote community outreach and goodwill for AFRL and the military community.

- AFRL La Luz Academy has been in operation since the mid-1990s and has served more than 77,000 students from 377 schools in New Mexico. The Academy's goal is to inspire future scientists and engineers by providing hands-on STEM activities mapped to New Mexico's education content standards and benchmarks. AFRL La Luz Academy served over 3,000 students during the past year, offering nine distinct activities for elementary, middle, and high school students.

The AFRL STEM team is passionate about creating the next generation of scientists and engineers by providing opportunities for student involvement in distinctive, real-world, hands-on STEM activities. Their commitment to STEM has driven them to find ways to use a variety of mechanisms to build successful programs that support students at all levels of the educational spectrum.

Winners not pictured: Casey DeRaad, Dr. David Voss, Dr. David Hostutler, Ronda Cole, Dr. Stacie Williams, Mitchell Thierry



Dr. Mary Satterfield
STEM AWARD



Through her vision and exceptional leadership, Dr. Mary Satterfield has been instrumental in the development and implementation of the National Institute of Standards and

Technology's (NIST) Summer Institute for Middle School Science Teachers. The Institute brings together teachers and more than 100 NIST scientists and engineers for two weeks of hands-on science based on the cutting-edge measurement research at NIST, which is designed to match the middle school science curriculum and expose the teachers to educational models. Teachers complete the NIST Summer Institute with a wealth of new knowledge about "hot" topics such as cybersecurity, forensics, nanotechnology, and biotechnology. They are supplied with information and artifacts to assist them with integrating these topics into their classroom while meeting curriculum standards.

Since 2007, the program has helped increase understanding and awareness of science in middle school teachers in Maryland. In 2010 the NIST Summer Institute expanded to offer teachers across the nation the opportunity to participate, allowing the program to grow from just 12 teachers from the local school district to one that has now reached over 120 teachers from 17 school districts, including several from underserved communities.

Dr. Satterfield designed the program as a multi-phase interactive learning experience for science teachers that includes at its core a 2-week workshop to immerse teachers in the excitement of science at NIST; a series of interactive seminars and activities, "Science Afternoons at NIST," conducted throughout the normal school year to introduce stimulating and timely scientific topics; and other informal meetings and social occasions for NIST scientists and engineers, undergraduate research fellows, and previous NIST Summer Institute teachers to build networks for future interactions.

In 2011, Dr. Satterfield further expanded the program by designing a unique 6-week "Research Experience for Teachers" (RET). This experience allowed previous participants in the 2-week workshop to directly participate in scientific research at NIST. Through one-on-one mentorship with NIST scientists, the teachers worked on projects combining research with direct applications tailored to developing, maintaining, advancing, and enabling the nation's measurement system.

Dr. Satterfield is continuing to look for new, innovative approaches to expand the reach of the program as she has begun discussions and outreach efforts with a group of universities, Historically Black Colleges and Universities, and Tribal Colleges and Universities about adopting the program through a "train-the-trainer" concept.



OUTSTANDING TECHNOLOGY TRANSFER PROFESSIONAL AWARD

At its heart, technology transfer is about connecting ideas, people, and purpose. These kinds of connections—with a large measure of creative thinking, innovation, and collaboration—led to the creation of the resoundingly successful Military 2 Market (M2M) program, a new kind of partnership between the Naval Surface Warfare Center, Crane Division (NSWC Crane) and Ball State University's (BSU) nationally ranked Entrepreneurship Center (EC) in the Miller College of Business.

M2M is a two-year, two-stage program for BSU students. In stage one, the Business Concept phase, junior entrepreneurship students work with actual NSWC Crane technologies. The students, with full access to Navy intellectual property and the researchers who developed it, craft commercialization studies for potential businesses based on the military applications of the technology. Filling the role of marketing specialists, students provide detailed assessments of the commercial potential of

Navy technologies in return for one-of-a-kind professional experience. In stage two, the M2M Design phase, seniors create business plans around the technologies for presentation at national competitions.

From January 2010 to May 2012, M2M spawned four startup companies and nine transferred inventions, including a realistic skin substitute, a battery-operated laser cutter to help first responders free trapped accident victims, and turning a secure military analog and digital data system into a black-box tracking device with applications for safe transportation of school children and the elderly and disabled.

In April 2011, *U.S. News & World Report* put the Military 2 Market program at the top of its list of "10 College Classes That Impact the Outside World." The program was also featured in the August 2011 issue of the National Defense Industry Association's business and technology magazine, *National Defense*.



John Dement

Winners not pictured: Dr. Michael Goldsby, Brian Geiselhart



Michael Larkin

ROOKIE OF THE YEAR AWARD



Michael Larkin hit the ground running when he joined the Naval Undersea Warfare Center (NUWC) Division Newport Technology Partnerships Office as

Technology Transfer Coordinator in March 2010. Selected for his unique background and skills, Larkin has demonstrated exceptional service as a technology transfer professional by going beyond the routine execution of Cooperative Research and Development Agreements (CRADAs) and promoting Navy technology transfer and its value in initiating a number of international technology transfer projects, including workshops and forums.

Larkin pioneered a U.S./Canada Undersea Collaboration Forum as an adjunct to the Marine Technology Society's 2011 Ocean Tech Expo held in Newport, R.I., in May 2011. This joint international effort hosted by the Canadian Consulate General allowed Division Newport engineers and scientists to present technical partnering and commercialization opportunities to representatives from Canadian companies, and included tours of Division Newport's test and evaluation facilities. As a result of the event, Division Newport is currently in talks with the

American affiliate of a Canadian company for commercialization of an unmanned vehicle design through a patent license and CRADA.

Drawing on his diverse background as a naval officer, engineer, scientist and small business principal, Larkin has developed a successful strategy to meet the needs of the Navy Fleet while attending to the interests of industry partners. For example, Larkin facilitated an agreement with the Department of Energy's (DOE) Brookhaven National Laboratory that enabled the DOE to leverage unique facilities and expertise at Division Newport to design tests for the Long-Baseline Neutrino Experiment (LBNE). The DOE saved millions of dollars by using a torpedo propulsion noise facility and Division Newport computer modeling capabilities to address implosions of photo-multiplier tubes in a pressurized environment that could lead to a failure of the LBNE.

In his role as the technology transfer coordinator, Larkin executes the Division's technology transfer mission to support the warfighter through partnerships by developing, negotiating, and executing CRADAs and other formal collaborative agreements with private industry, academia, not-for-profits, and state and local governments. Twenty-seven new CRADAs and an additional 12 amendments to existing agreements have been signed since Larkin assumed the Technology Transfer Coordinator responsibilities.



Michael Coats

LABORATORY DIRECTOR OF THE YEAR AWARD



For more than half a century, the Johnson Space Center has consistently transferred many human spaceflight technologies to benefit the public through

private industry, federal and state governments, academia, and nonprofit organizations and foundations. But technology transfer was transformed into a highly strategic effort when Michael Coats served as Director of the Johnson Space Center from 2005 until his retirement in 2012.

During his tenure, Coats created the Advanced Planning Office, which infused all technology transfer efforts into the Center's strategic direction. In 2007 he was also instrumental in establishing a Space Act Agreement with the Houston Technology Center to collaborate on advancing awareness of new technologies developed for use in space, and for the benefit of emerging commercial enterprises in the Houston area.

Coats was also involved in the successful transfer of technologies with a wide range of partners, including General Motors and Oceaneering Space Systems on the humanoid "Robonaut 2" currently supporting the crew at the International Space Station; "Solar Refrigerator" technology with SunDanzer Refrigeration, Inc.; "Endothelium Preserving Microwave Treatment for Atherosclerosis" technology with Meridian Health Systems; and "Bone Loss Detection" technology with Arizona State University.

As Director, Coats was committed to continually enhancing the work environment at the Center by emphasizing innovation, promoting diversity, and encouraging professional development and advancement opportunities. This included spearheading a mentoring initiative to develop junior employees and expand networking opportunities, and the establishment of the Innovation Design Center. Also known as the "Sandbox," the Innovation Design Center is a place where innovation is incubated at its earliest stages.



Duane Embree

LABORATORY DIRECTOR OF THE YEAR



For five inspired years, Duane Embree redefined technology transfer at one of the nation's most prolific research institutions, the Naval Surface Warfare Center, Crane Division

(NSWC Crane). Appointed Technical Director in May 2007, he quickly initiated changes with remarkable results, including notable increases in patent applications and Patent Licensing Agreements (PLAs), high-return collaborations with diverse external partners, and innovative outreach programs with local business and academic communities. When he retired in October 2012, his leadership legacy included a highly productive, award-winning technology transfer team that continues to stimulate economic revitalization in the region and create model approaches to technology transfer success that are garnering national recognition.

Examples of Embree-era technology transfer initiatives at NSWC Crane include: creation of popular "mining" events to engage outside experts in identifying lab inventions with commercial potential; unique partnerships with area universities to enlist graduate students in technology transfer activities; a growing lab presence in K-12 schools to mentor science, technology, engineering, and mathematics

(STEM) education; and internal efforts to amplify technology transfer participation by NSWC Crane's own inventive workforce.

As the world's third largest naval installation, the 100-square-mile NSWC Crane campus is the third largest employer in southern Indiana, infusing about \$2 million daily into the area economy. NSWC Crane not only provides crucial jobs, but also supports private-sector businesses as both a direct customer and an incubator of intellectual property with marketplace potential. Under Embree's direction, the laboratory expanded its already impressive role as a motive force in regional economic development and STEM education.

When possible, Embree personally participated in technology transfer outreach, engaging the president of the University of Southern Indiana to establish mutually beneficial agreements and initiating agreements with two local partners, the Terre Haute Economic Development Corporation and the Bloomington Economic Development Corporation. He also hosted a university summit, attended by 14 universities and prominent state officials, to present shareable NSWC Crane assets and pertinent technology transfer mechanisms. As the public face of NSWC Crane's technical prowess, Embree was an outspoken technology transfer advocate, appearing on television, radio, and other media to promote technology transfer and the lab's commitment to it.



Dr. Paul Hommert

LABORATORY DIRECTOR OF THE YEAR



As Director of Sandia National Laboratories, Dr. Paul Hommert understands the need to maintain a strong science, technology, and engineering base in order to deliver

on mission requirements and commitments. Dr. Hommert has been a strong advocate for the overarching Department of Energy (DOE) strategic objectives that call for innovation that helps to strengthen U.S. economic competitiveness and improve the quality of life through science and engineering breakthroughs.

Over the years, Sandia's missions relating to national security have expanded beyond weapons and defense to offer industry, academia, and other organizations access to a broad array of technologies and expertise in a number of disciplines, ranging from life and physical sciences to microelectronics and information systems. Having an engineering background and professional experience in both national laboratories and the private sector, Dr. Hommert understands the importance of partnerships and technology transfer from all sides. This knowledge contributed to his vital role in developing a successful new intellectual property (IP) initiative as one of his priorities after becoming Laboratories Director in 2010.

The IP Lifecycle Initiative encourages scientists and managers to participate in the technology

transfer process. The Initiative promotes IP management throughout its life cycle and asks Sandia employees to think about IP development, protection, and deployment much earlier in the project life cycle than has traditionally been done. The Initiative works with ongoing technology transfer programs such as the Entrepreneurial Separation for Technology Transfer (ESTT) Program, which allows Sandia employees to leave the Labs to start up new technology companies or help expand existing companies. To date, there have been 46 ESTT startup companies, 49 ESTT expansion companies, 142 Sandia employees who have left the Labs to start up or help expand a business, and 42 licenses associated with these companies.

Dr. Hommert has been actively engaged in promoting community involvement and industry interchange, taking part in a number of public events. In September 2012, the first annual Sandia Research & Technology Showcase was held in Albuquerque, featuring cutting-edge research and technology development taking place at Sandia and providing information on doing business with the Labs. The event attracted almost 400 attendees, including industry representatives from throughout New Mexico as well as companies from 11 other states. As a result of the Showcase, there were 21 new New Mexico Small Business Assistance (NMSBA) prospects. The NMSBA Program assists small businesses in New Mexico with solving technical challenges and gaining knowledge from Sandia laboratory experts at no cost.



Brian Suh

REPRESENTATIVE OF THE YEAR AWARD



As the Director of the Technology Transfer Office at Space and Naval Warfare Systems Center Pacific (SSC Pacific), Brian Suh's passionate advocacy for

technology transfer has delivered far-reaching results in just a few years. Within SSC Pacific, his championship of technology transfer has dramatically increased awareness among scientists and engineers of the critical role it plays in SSC Pacific's mission, leading to a full pipeline of patented SSC Pacific technologies. Suh's success beyond SSC Pacific is just as impressive. From his leadership executing the lab's first Partnership Intermediary Agreement (PIA) to his high visibility creating technology transfer conduits with industry and academia, Suh is building an infrastructure that will serve and support SSC Pacific, as well as the Navy and the Department of Defense, well into the future.

The SSC Pacific PIA Suh negotiated provides a vital link for creating as well as nurturing partnerships. Established in 2011, the agreement with the San Diego State University Research Foundation was made in support of the San Diego Advanced Defense Technologies (SDADT) regional cluster. The SDADT offers unprecedented opportunities for building collaboration with local small businesses involved in Command, Control, Communications, Computers, Intelligence, Surveillance and

Reconnaissance (C4ISR). Suh serves as a military liaison on SDADT's executive board, working hand-in-hand with top industry and academic leaders to identify collaboration opportunities in support of local economic development and furthering the SSC Pacific research and development mission.

Under his leadership, the Technology Transfer Office has facilitated 12 Cooperative Research and Development Agreements (CRADAs), along with 16 Limited Purpose CRADAs, which combined committed more than \$750,000 in funding to SSC Pacific. Suh is directly responsible for \$3.4 million in royalties to SSC Pacific from nine executed Patent License Agreements. In addition, he is leading an executive Lean Six Sigma team review of SSC Pacific's CRADA process to make it as efficient and effective as possible.

Suh's passion for promoting technology transfer stems in part from his own experience. An engineer, Suh worked for the Navy for several years before learning of the benefits technology transfer offers for all involved—from the government inventors to the warfighters and their industry partners. Determined to bridge that gap for other scientists and engineers, Suh launched a Patent/Technology Transfer Road Show in 2010, traveling throughout SSC Pacific to educate Navy inventors about patents, licenses, CRADAs and more. Those visits, combined with other internal awareness efforts, including the "Unleashing the Entrepreneurial Spirit" workshop—resulted in more than 100 invention disclosures in 2011, the highest in SSC Pacific's history.

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“Technology is the campfire around
which we tell our stories.”

– LAURIE ANDERSON
composer and musician



REGIONAL AWARD WINNERS
& HONORABLE MENTION

2012 Regional Award Winners

The FLC congratulates the following regional award winners that were recognized in 2012.

FAR WEST

Outstanding Technology Development

NASA Ames Research Center

“TUFROC”

Idaho National Laboratory

“Wireless Spectrum Communication”

SPAWAR Systems Center Pacific

“Communication Asset Survey and Mapping Tool”

“Advances in Microbial Fuel Cell Technology”

Outstanding Partnership

Idaho National Laboratory

Lindsey Manufacturing Company

“Transmission Line Security Monitor to Protect High-Voltage Transmission Lines From Sabotage”

Lawrence Livermore National Laboratory

Biotelligent, Inc.

Russian Federal Nuclear Center

“IntelliProbe Optical Breast Cancer Diagnostic System”

Sandia National Laboratories

City of Livermore (California)

California Governor’s Office

Lawrence Livermore National Laboratory

“i-Gate Innovation Hub”

Outstanding Commercialization Success

NASA Ames Research Center

“Spatial Standard Observer”

USDA Agricultural Research Service, Animal Disease Research Unit

“Control of a Re-emergent Exotic Disease (Babesiosis) in U.S. Livestock Through Provision of Modern Diagnostics and Chemotherapeutics”

USDA Agricultural Research Service, Horticulture Crops Research Unit

“Inoculum Detection to Aid Disease Management of Grape Powdery Mildew”

USDA Agricultural Research Service, U.S. Pacific Basin Agricultural Research Center

USDA Agricultural Research Service, San Joaquin Valley Agricultural Sciences Center

“Systems Approach for Allowing Movement of High-Value Agricultural Foodstuffs From State and Federal Quarantine Areas”

Lawrence Livermore National Laboratory

“Integrated Dynamic Electron Solutions”

Technology Transfer Professional of the Year

Jason Stolworthy

Idaho National Laboratory

MID-ATLANTIC

Excellence in Technology Transfer Award

Eunice Kennedy Shriver National Institute of Child Health and Human Development

“Treatment of Niemann Pick Disease Type-C With 2-Hydroxypropyl- β -cyclodextrin”

Invasive Insect Biocontrol and Behavior Laboratory*

“Novel Microbial Insecticide *Chromobacterium subtsugae*”

National Energy Technology Laboratory

“AVESTAR Dynamic Simulator for IGCC Power Plants With Carbon Capture”

National Institute of Allergy and Infectious Diseases*

“Sound Attenuation Canopy”

National Institutes of Health

“AAV Technology: Delivery Vehicle of Choice for Gene Therapy”

**Also a 2013 national award winner*

Interagency Partnership Award

**Department of Agriculture
Department of Homeland Security**

Outstanding Technology Transfer Professional Award

Richard Rodriguez
National Institutes of Health

Representative of the Year Award

Dr. Thomas Stackhouse
National Cancer Institute

State & Local Economic Development Award

**Chief Science Officer Development Training
Certificate Program**

STEM Award

James Batterson
NASA Langley Research Center

MID-CONTINENT

Outstanding Laboratory Award

NASA Johnson Space Center

Outstanding STEM Mentorship Award

Casey DeRaad
Air Force Research Laboratory Phillips Research Site

Clint Hoffman
USDA Agricultural Research Service,
College Station, Texas

Excellence in Technology Transfer Award

USDA Agricultural Research Service
“Smartphone Apps - The Aerial Application
Technology Team”

**National Renewable Energy Laboratory
Natcore Technologies, Inc.**
“Black Silicon Nanocatalytic Wet-Chemical Etch
With Liquid Phase Passivation”

Los Alamos National Laboratory
“CO2ETM Enabled Geothermal Energy”

The Ames Laboratory
“Enhancing Virtual Pain Software”

**Sandia National Laboratories*
UOP, a Honeywell Company**
“Crystalline Silico-Titanates”

Notable Technology Development Award

USDA Agricultural Research Service
“Poultry Litter Subsurfer”

Sandia National Laboratories
“Biomimetic Membranes for Water Filtration”

**Los Alamos National Laboratory
The Threat Reduction Science and Engineering Group**
“Hazardous Device Utility Tools”

**NASA Johnson Space Center*
General Motors**
“Human Grasp Assistance Device – RoboGlove”

Air Force Research Laboratory
“Massive Heat Transfer Experiment (MHTEX) and
Variable Emissions Device, Aerogel Insulation Blanket,
Dual Zone Thermal Control, Experiment Suite for
Responsive Space (VADER)”

**Also a 2013 national award winner*

MIDWEST

Excellence in Technology Transfer Award

NASA Glenn Research Center

“Layered Composite Fan Case”

AFRL 711th Human Performance Wing

“Preservation of Air Force Health Study Assets for Beneficial Public Health Research”

Naval Surface Warfare Center, Crane Division

“Technology Transfer of Red Dot Innovation”

USDA Agricultural Research Service, Midwest Area

“Development and Deployment of the GRIN-Global System for Global Plant Genetic Resource Management”

U.S. Transportation Command

“Technology Transfer for Hybrid Airship Concept Exploration”

Regional Appreciation Award

Dr. Andrew Moad

University of Southern Indiana

Partnership Award

Growth Alliance of Greater Evansville

NORTHEAST

Excellence in Technology Transfer Award

U.S. Army Armament Research, Development & Engineering Center*

“Foamed Celluloid and Its Applications to Propellant Packaging”

Naval Undersea Warfare Center Division Newport

“Implosion Test”

“Material Test Fixtures”

Regional Laboratory Recognition

Transportation Security Laboratory

SOUTHEAST

Information unavailable at press time.

*Also a 2013 national award winner

Honorable Mention

AWARDS FOR EXCELLENCE IN TECHNOLOGY TRANSFER

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

Department of Agriculture – Agricultural Research Service

Agricultural Research Service

“USDA Plant Hardiness Zone Map (PHZM) Team”

ARS Midwest Area

“GRIN-Global: An Innovative Information Management System for Genebanks”

ARS Northern Great Plains Research Laboratory

“Decision Support Tools for Cropping System Diversification”

ARS Pacific West Area, Animal Disease Research Unit

“Control of Babesiosis/Theileriosis in U.S. Livestock Through Modern Diagnostics and Chemotherapeutics”

ARS Pacific West Area, Horticultural Crops Research Unit

“Inoculum Detection to Aid Disease Management of Grape Powdery Mildew”

ARS South Atlantic Area, Quality and Safety Assessment Research Unit

“Microwave Meter for Moisture and Density Sensing of Seeds”

ARS Southern Plains Agricultural Research Center

“Development of a Smartphone Application to Calculate Spray Droplet Size”

ARS U.S. Meat Animal Research Center

“Development and Improvement of a Beef Carcass Grading Camera”

U.S. Pacific Basin Agricultural Research Center San Joaquin Valley Agricultural Sciences Center

“System for Movement of High-Value Agricultural Foodstuffs From Quarantine Areas”

Department of Agriculture – U.S. Forest Service

U.S. Forest Service Southern Research Station, Center for Bottomland Hardwoods Research

“Federal Research Inspires Conservation Capitalism in Reforesting Mississippi Alluvial Valley”

Department of Commerce

National Institute of Standards and Technology

“Commercializing Superconducting X-ray Spectrometers for High Resolution Materials Analysis”

“Successful Technology Transfer Eliminates Major Problem in Particle Beam Microscopy”

Department of Defense – U.S. Army

U.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory

“Construction Operations Building information exchange (COBie) Standard”

U.S. Army Research, Development and Engineering Command - Communications-Electronics Research, Development, and Engineering Center

“Semantic Mediation for Army Reasoning and Teamwork (SMART)”

Department of Defense – U.S. Navy

Naval Air Systems Command (NAVAIR) Integrated Diagnostics and Automated Test Systems (IDATS), Lakehurst

“‘Smart Connector’ Avionics Diagnostic Testing System”

Naval Facilities Engineering Services Center

“Achieving Excellence in the Transfer of High-Security Locking Technology”

Naval Undersea Warfare Center Division Newport

“Material Test Fixtures”

Honorable Mention (continued)

Department of Defense – U.S. Air Force

Air Force Institute of Technology

“Enhanced Signed Code Application for Page-level Execution (ESCAPE)”

Air Force Research Laboratory, 711th Human Performance Wing

“Multi-modal Communication”

Department of Energy

The Ames Laboratory

“Enhancing VirtualPaint® With Virtual Engineering Suite (VE-Suite)”

Argonne National Laboratory

“Transfer of Large-Area Microchannel Plate Technology”

“Ultra-Fast and Large-Scale Boriding”

Brookhaven National Laboratory

“Core-Shell Electrocatalysts for Fuel Cell Cathodes”

Los Alamos National Laboratory

“Hazardous Device Utility Tools - Bomb Disposal”

“KIVA - Family of Fortran-based Computational Fluid Dynamics Software”

“Supercritical CO₂E™ Enabled Geothermal Energy”

National Energy Technology Laboratory

“AVESTAR Dynamic Simulator for IGCC Power Plants With Carbon Capture”

“Use of Cerium Oxide Coating for Improved Corrosion Resistance”

Oak Ridge National Laboratory

“CermaClad™”

“New Stainless Steel Alloy Tooling for High-Temperature Presses”

Pacific Northwest National Laboratory

“Visual Patent Search - A Scalable Reasoning System Application”

Sandia National Laboratories

“Injectable Calcium Apatite Permeable Reactive Barrier for Radionuclide Immobilization”

“Solution Deposition Planarization and Ion Beam Assisted Deposition”

Department of Health and Human Services – National Institutes of Health

Eunice Kennedy Shriver National Institute of Child Health and Human Development

“Treatment of Niemann Pick Disease Type-C (NPC) With 2-Hydroxypropyl- β -cyclodextrin (HP β CD)”

National Aeronautics and Space Administration

Glenn Research Center

“Layered Composite Fan Case Benefits Aerospace and Generates Multiple Spinoffs”

INTERAGENCY PARTNERSHIP AWARD

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

Air Force Research Laboratory 711th Human Performance Wing – Department of Veterans Affairs

Food and Drug Administration – National Institutes of Health

Naval Undersea Warfare Center Division Newport – Brookhaven National Laboratory

Space and Naval Warfare Systems Center Pacific – Office of Emergency Communications

USDA Agricultural Research Service – Plum Island Animal Disease Center

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.

Brookhaven National Laboratory

Idaho National Laboratory

National Institutes of Health – Montgomery County Department of Economic Development – FAES Graduate School – Montgomery College – Human Workflows, LLC

Sandia National Laboratories – Lawrence Livermore National Laboratory

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.

Department of Agriculture – Agricultural Research Service

National Center for Agricultural Utilization Research

U.S. Dairy Forage Research Center

Department of Defense – U.S. Army

U.S. Army Engineer Research and Development Center

Greg Chappelle

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

Department of Defense – U.S. Navy

Toby Ratcliffe

Naval Surface Warfare Center, Carderock Division

Naval Surface Warfare Center, Crane Division

Edward Linsenmeyer

Naval Surface Warfare Center, Panama City Division

Naval Undersea Warfare Center Division, Keyport

Space and Naval Warfare Systems Center Pacific

Department of Defense – U.S. Air Force

Air Force Research Laboratory, 711th Human Performance Wing

Air Force Research Laboratory, Information Directorate

Department of Energy

Kenneth White

Brookhaven National Laboratory

Oak Ridge National Laboratory

Dr. Hongyou Fan

Sandia National Laboratories

Department of Health and Human Services – National Institutes of Health

National Institutes of Health – Montgomery College – FAES Graduate School – Montgomery County Department of Economic Development – Human Workflows, LLC

Department of Transportation

Dr. Fred Snyder

FAA William J. Hughes Technical Center

National Aeronautics and Space Administration

James Batterson

NASA Langley Research Center

OUTSTANDING TECHNOLOGY TRANSFER PROFESSIONAL AWARD

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

Department of Defense – U.S. Army

Dr. Philip Malone

U.S. Army Engineer Research and Development Center, Geotechnical and Structures Laboratory

Department of Defense – U.S. Navy

Technology Transfer Team

Naval Air Warfare Center Aircraft Division

Emiliano Aragon

Space and Naval Warfare Systems Center Pacific

Department of Defense – U.S. Air Force

Franklin Hoke, Jr.

Air Force Research Laboratory, Information Directorate

Department of Energy

Annemarie Meike

Lawrence Livermore National Laboratory

Genaro Mempin

Lawrence Livermore National Laboratory

Department of Energy – National Institutes of Health

NCATS Team

National Institutes of Health

Richard Rodriguez

National Institutes of Health

Department of Transportation

Dr. Nelson Miller

FAA William J. Hughes Technical Center

National Aeronautics and Space Administration

Automotive Industry Workshop Team

NASA Glenn Research Center

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 Agriculture – Agricultural Research Service

Dr. Sarah Hake

USDA Plant Gene Expression Center

Dr. Neal Martin

U.S. Dairy Forage Research Center

Department of Defense – U.S. Army

Joseph Wienand

Edgewood Chemical Biological Center

Department of Defense – U.S. Navy

Rear Admiral Randolph Mahr

Naval Air Warfare Center Aircraft Division

Department of Defense – U.S. Air Force

Colonel William Cooley

Air Force Research Laboratory, Space Vehicles Directorate

Dr. David Hardy

Air Force Research Laboratory, Directed Energy Directorate

Department of Energy

Dr. Dan Arvizu

National Renewable Energy Laboratory

Dr. Alexander King

The Ames Laboratory

Department of Homeland Security

Dr. Susan Hallowell

Transportation Security Laboratory

Department of Transportation

Dr. Wilson Felder

FAA William J. Hughes Technical Center

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 – U.S. Navy

John Rein – Office of Naval Research

Department of Transportation

John Hensyl – FAA William J. Hughes Technical Center

Awards Committee

The FLC expresses its gratitude to the members of the Awards Committee for their tireless efforts in making the 2013 awards program a success.

JAMES POULOS, III (COMMITTEE CHAIR)
USDA ARS Beltsville Area

TOM ANYOS
Technology Ventures Corporation

DR. DONALD ARCHER
National Institute of Standards and Technology

MOJDEH BAHAR
National Institutes of Health

DR. THERESA BAUS
Naval Undersea Warfare Center Division Newport

CHRIS CURRENS
National Institute of Standards and Technology

DR. J. SCOTT DEITER
Naval Surface Warfare Center - Indian Head

JOSHUA FORBES
Air Force Research Laboratory

CATHY FORE
Oak Ridge Associated Universities

DR. SUZANNE FRISBIE
National Institute of Allergy and Infectious Diseases

MARCIA GRAEFF
TechLink

GARY JONES
Federal Laboratory Consortium for
Technology Transfer

ANN KERKSEICK
FLC Mid-Continent Regional Support

DR. ROBERT LYNCH, JR.
Naval Undersea Warfare Center Division Newport

CARRIEANN MCDONOUGH
National Renewable Energy Laboratory

CAROLYN MCMILLAN
Marshall Space Flight Center

STEVE NEIGHBORS
Strategic & Operational Solutions

MELISSA ORTIZ
Air Force Research Laboratory Space
Vehicles Directorate

GAIL POULOS
USDA ARS Beltsville Area

KEITH QUINN
Air Force Research Laboratory Propulsion
Directorate

LINDA SCHILLING
National Cancer Institute

DAVID SIKORA
Air Force Research Laboratory

ASUNCION SIMMONDS
Naval Air Warfare Center - Training Systems Division

J. SUSAN SPRAKE
Los Alamos National Laboratory

DR. THOMAS STACKHOUSE
National Cancer Institute

KATHRYN TOWNSEND
Naval Meteorology and Oceanography Command

DR. THOMAS VALCO
USDA ARS Mid South Area

DR. MICHAEL WALSH
National Institute of Standards and Technology

DR. 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 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.

AUGUST/SEPTEMBER

Nomination forms for all categories are distributed via email, 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.

MAY

Awards presented at FLC national meeting.



FLC Award
for Excellence in
Technology Transfer

Environmental Protection Agency

Commercialization of EPA Technology for
Small and Medium Enterprises

FLC

FLC

FLC

FLC



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