FLC

Federal Laboratory Consortium
for Technology Transfer

AWARDS

APRIL 27, 2016 • CHICAGO

AWARDS SUMMARY

FLC
Federal Laboratory Consortium for Technology Transfer

Promoting, Educating and Facilitating Technology Transfer

Formally chartered by the Federal Technology Transfer Act of 1986, the Federal Laboratory Consortium for Technology Transfer (FLC) is a nationwide network of over 300 federal laboratories, agencies and research centers that foster commercialization best practice strategies and opportunities for accelerating technologies out of the labs and into the marketplace. The American taxpayers' investment in our federal laboratories' research and development (R&D) efforts has spurred scientific and technological breakthroughs that can return dividends for our economy—such as creating new industries, businesses and jobs—when introduced to the marketplace.

The FLC's mission is to promote, educate, and facilitate federal technology transfer (T2) among its member labs and institutions so they can easily attain their commercialization goals, and create a social and economic impact with new innovative technologies. Through the various resources, events, education and training, tools, and services the FLC creates and provides for members throughout its six regions and on federallabs.org, our federal laboratories are better able to create partnerships, navigate the commercialization process, and achieve market success.

By serving as the touchstone for technology transfer communication, education, and open data services tools, the FLC plays a central role in providing the skilled tech transfer workforce that our country needs. These highly motivated tech transfer professionals are the driving force behind improving the ability of federal labs to partner effectively with the private sector. The FLC strives to support the dedicated individuals who make up the federal laboratory system by continuing to serve as a gateway for industry, government, and academia to access R&D and stimulate our nation's economic health.

Welcome, and thank you for joining us as we present the 2016 FLC awards. Federal laboratories building partnerships to bring new technologies to the marketplace is the core of the government's technology transfer mission. The award winners this year provide excellent examples of how everyday lives are enhanced when technology transfer is well-executed.

The 2016 FLC awards mark my first full year as the Awards Committee Chair, and it has truly been an honor to serve and take part in this process. The quality of award nominations describing the work being done to move federal technologies into use by the public and private sectors was quite impressive, which made the awards selection process quite a demanding one for the Awards Committee evaluators. We trust that you will be as pleased as we are with the variety and substance of federal technologies and federal technology transfer efforts that are represented at this year's FLC awards ceremony.

FLC NATIONAL AWARDS

THE 2016 WINNERS WILL BE RECOGNIZED IN THE FOLLOWING CATEGORIES:

Excellence in Technology Transfer Awards – for employees of FLC member laboratories and technology transfer staff who have accomplished outstanding work in the process of transferring federally developed technology.

Interagency Partnership Award – presented jointly to agency and laboratory employees from at least two different agencies who have collaboratively accomplished outstanding work in transferring a technology.

Laboratory Director of the Year Award – honors laboratory directors who have made outstanding contributions to support technology transfer activities in their organizations and the communities they serve.

Outstanding Technology Transfer Professional Award – for an FLC laboratory technology transfer professional 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 position.

Rookie of the Year Award – recognizes an FLC laboratory professional with three years (or less) experience in a technology transfer position who has demonstrated outstanding work in the field of technology transfer over and above what was called for in the normal course of their duties.

FLC Service Award/Harold Metcalf Award – presented to an FLC laboratory employee for sustained significant service to the FLC as an organization.

State and Local Economic Development Award – for successful initiatives that involve partnership between state or local economic development groups and federal laboratories for economic benefit.

Reflecting the theme of the 2016 national meeting, "From Discovery to Commercialization," the following pages tell stories of how teams of dedicated scientists, researchers, technology transfer professionals, and partners in a wide range of fields worked seamlessly to take federal technologies from the drawing board to applications that stand to collectively benefit millions. These partnerships truly reflect what federal technology transfer is all about, and it is an honor for the FLC to recognize the dedicated individuals behind them.

Congratulations to the winners of the 2016 FLC awards.

Donna Bialozor
Awards Committee Chair

EXCELLENCE IN TECHNOLOGY TRANSFER AWARDS

FLC NATIONAL AWARDS

Handheld Imaging Device and Method for Improving Cleaning and Sanitation Inspection of Food Processing Environments

U.S. Department of Agriculture - Agricultural Research Service
Environmental Microbial and Food Safety Laboratory

The handheld device developed by the Environmental Microbial and Food Safety Laboratory has Wi-Fi capabilities to display live inspection images on smartphones or remote computers to help with performing visual sanitation inspections.

Left to right:
Dr. Moon Kim
Dr. Kevin Chao
Dr. Alan Lefcourt

Contact: Dr. Moon S. Kim, 301-504-8462, moon.kim@ars.usda.gov

EXCELLENCE IN TECHNOLOGY TRANSFER AWARD

Building Airflow and Contaminant Computer Model for Sustainability and Health

Department of Commerce
National Institute of Standards and Technology

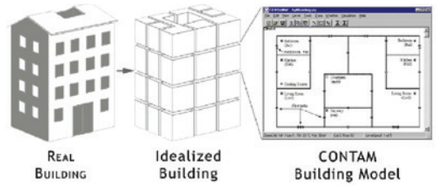
Consider a technology that allows supertall skyscrapers to be designed with lower energy use and environmental impacts, enables building smoke control systems that give occupants enough time to evacuate buildings during fires, and protects homeowners from the risks of carbon monoxide poisoning from portable generators. All of these have been made possible by the National Institute of Standards and Technology (NIST) with the development of a technology known as the CONTAM building model, which has been transferred to end users in the building community to meet these needs and more. CONTAM was collaboratively developed as a multizone transport simulation program that predicts air and contaminant movement in complex buildings. It was originally developed as a research tool, but given its broad application to real-world problems, the technology development has been followed by a multifaceted technology transfer effort involving the interaction of NIST staff with architects, engineers, indoor air quality professionals, and building security experts in the public and private sectors.

Starting with the release of CONTAM version 3.0 in 2011, a major effort was undertaken to further develop the technology and transfer it to a wide range of users. The CONTAM team successfully managed the development, distribution and application of this simulation tool, working with numerous partners outside of NIST. These partnerships, including a collaboration under a Cooperative Research and Development Agreement (CRADA), were undertaken to enable the program to support various applications of CONTAM, ranging from the design of sustainable buildings to the development of technologies to make buildings safe and secure from intentional and unintentional threats.

The transfer of CONTAM to its broad user community has involved a combination of technical reports and papers, conference presentations, a website devoted to CONTAM, email contact with users, a Yahoo user group, training, and interactions with professional colleagues from the research and building practitioner communities. These interactions have included public-private partnerships to collaborate on identifying computational needs to support the application of CONTAM. These needs were then met by NIST through modifications to CONTAM and transfer of these new capabilities to these users.

As a result of this technology transfer success, CONTAM has contributed to reduced energy consumption and improved indoor air quality in today's sustainable buildings, improved building occupant safety in the event of fire, and more secure buildings in the event of intentional or unintentional airborne releases of chemical, biological and radiological agents.

Left to right:
Brian Polidoro,
Steven Emmerich and
Dr. Stuart Dols.



CONTAM is a multi-zone transport simulation program that predicts air and contaminant movement in complex buildings.

Contact: W. Stuart Dols, 301-975-5860, william.dols@nist.gov

HyperX Parallel Memory/Processor Network Chip for Communications Equipment

Department of Defense – U.S. Army

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

The HyperX processor chip is a low-power, scalable, and embedded processor platform that may become the world's processing standard for advanced communication and image/video devices. Capable of storing, processing and retrieving massive amounts of data, HyperX combines the high computational performance of application-specific integrated circuits, the reconfiguration performance of programmable technology, and the "ease of use" of general purpose processors. These goals are achieved in a low-power processor less than a square centimeter in size.

"Using both serial and parallel processing with multiple programs operating simultaneously, the technology handles massive amounts of data more efficiently than other readily available multicore processors."

Using both serial and parallel processing with multiple programs operating simultaneously, the technology handles massive amounts of data more efficiently than other readily available multicore processors. Energy consumption is also balanced across the low-power chip, avoiding the hot spots and active cooling systems typical in comparable multicore processors. As a result, commercial users of HyperX processors report a reduction in power consumption by a factor of ten and a tenfold improvement in performance, as well as reduced chip count.

Evolving from hyperspectral image processing software created by Dr. Paul Willson while employed by the U.S. Army Armament Research, Development and Engineering Center (ARDEC) in the 1990s, the commercialization of the HyperX chip spanned more than a decade. From 2000 to 2012, a series of Small Business Innovation Research (SBIR) contracts between ARDEC and Coherent Logix (CLX) transformed Dr. Willson's innovative software into a groundbreaking multicore parallel processing technology. Other technology transfer tools, such as a 2011 Department of Defense Memorandum of Understanding, transitioned the technology to other locations. Throughout this time, Dr. Willson, Michael Doerr (CLX Chief Executive Officer), and Dr. Robert Reuss (Defense Advanced Research Projects Agency, Program Manager for HyperX) worked diligently to advance the technology. Today the HyperX processor chip is the cornerstone of CLX's portfolio of commercial products, with 29 related patents.

Among the multiple commercial products now with embedded Hyper technology are ixMax, the world's first carrier-class cognitive radio network, and small cell consumer and commercial wireless communications equipment from Public Wireless. As the power and popularity of mobile devices grows, HyperX has the promise to meet increasing commercial and military needs for faster data processing with lower power consumption.

Dr. Paul Willson

Not pictured: Michael Doerr, Dr. Robert Reuss

Contact: Dr. Venkataraman Swaminathan, 973-724-7455, venkataraman.swaminathan.civ@mail.mil

Hardened Alternative Trailer System

Department of Defense – U.S. Army

U.S. Army Engineer Research and Development Center

The Hardened Alternative Trailer System (HATS) grew out of increasing numbers of forced entry, small-arms, and ballistic attacks impacting personnel in and around U.S. embassies. Existing containerized housing units offered little-to-no force protection and required up-armoring in the field, a costly and unreliable means of addressing federal forced entry and blast-resistant requirements. HATS modules were developed and tested to exceed threat-level requirements and to be fully compatible with conventional International Organization for Standardization (ISO) freight container dimensions. The HATS modularity enables standardized shipping and handling, and the ability to stack units at site destinations to create multi-level building complexes. This hardened turnkey approach permits rapid implementation of secure, cost-effective modules to serve as housing, offices, and safe havens for U.S. personnel abroad.

In just two short years (2011-2013), the HATS technology moved from concept to initial implementation. U.S. Army Engineer Research and Development Center Geotechnical and Structures Laboratory (ERDC-GSL) engineering capabilities were recruited to address the concept initiated by the Department of State, Bureau of Diplomatic Security (DoS-DS). In 2012, the ERDC-GSL team collaborated to design, prototype, and blast test HATS to meet DoS-DS standards. Advancing rapidly to address demands for HATS demonstration units, the team had security concerns about how to release the sensitive design specifications and future updates to achieve high-quality manufacturing. By devising a technology transfer solution, the team protected the HATS design and method of production in 2013 under a first patent application; developed a licensing process to prequalify applicant manufacturing capabilities; found licensees through the use of novel resources; and used the resulting license agreements as a means to assert quality control and transfer ongoing design changes to manufacturers. In 2013, a first license was executed and the first contracting occurred for delivery of 38 HATS units.

"To date, 211 HATS units have been contracted through the licensees, representing an estimated $53 million of HATS licensee sales revenue..."

By 2015, technology transfer efforts resulted in eight nonexclusive licenses with Charleston Marine Containers, ARMAG Corporation, HWH Protective Structures, MBI Global/CLS, Power Systems & Controls, Griffin Incorporated, Quality Manufacturing Group, and LoneStar Marine Shelters. To date, 211 HATS units have been contracted through the licensees, representing an estimated $53 million of HATS licensee sales revenue, with installation locations now including Peshawar, Pakistan; Juba, South Sudan; Damascus, Syria; and Adana, Turkey. HATS modules have successfully provided an affordable, commercially available, physical force protection system to enhance the survivability of U.S. embassy and industry personnel in hostile threat situations. Transfer of the HATS technology has yielded a new product and market for the licensees, and has satisfied ERDC-GSL's mission to develop innovative technologies for survivability and protective structures on behalf of national interests.

Not pictured: John Hoemann, Justin Roberts, James Davis, Col. Gary Johnston

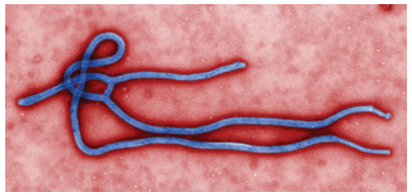
Contact: John M. Hoemann, 601-634-4647, John.M.Hoemann@usace.army.mil

Zmapp Therapeutic Monoclonal Antibody Cocktail

Department of Defense – U.S. Army

U.S. Army Medical Research Institute for Infectious Diseases

In August 2014, within days of being stricken by the Ebola virus, two American medical workers received an experimental drug that had never been tested on humans. ZMapp saved their lives. The recovery of physician Kent Brantly and aid worker Nancy Writebol is a testament to the critical work done at the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), where research scientists developed one of the three monoclonal antibodies that comprise ZMapp. The antibody was licensed to Mapp Biopharmaceutical of San Diego in October 2009, five years before the unprecedented Ebola outbreak in 2014. Since then, MappBio received a $25.9 million contract from the U.S. Department of Health and Human Services (HHS) to support accelerated development of ZMapp; and Phase I, Class II clinical trials are now underway in West Africa.



The Zmapp antibody cocktail was used to save the lives of two American medical workers stricken with the Ebola virus in 2014.

Barry M. Datlof

Not pictured:
Dr. Larry Zeitlin,
Dr. Mary Hart,
Dr. Julie Wilson,
Dr. Alan Schmaljohn

The license agreement between the Army and MappBio was the first in the Department of Defense, and perhaps the country, to leverage the U.S. Food and Drug Administration's (FDA) Tropical Disease Priority Review Voucher (PRV) program. As a technology transfer tool, the potential shared proceeds from a PRV represent one of the largest upsides in licensing ever negotiated. Under the program, the first company that receives FDA approval for a treatment or vaccine targeting certain tropical diseases can request a PRV, which can be used by the company to speed FDA review of one of its own drugs or can be sold to another pharmaceutical company. This can be a highly valuable asset as gaining another few months on the market with a patented drug can generate enormous revenue for a company. A recent PRV for a pediatric treatment, for example, sold for $350 million.

Terms developed for the MappBio agreement regarding a potential PRV are now standard in all tropical disease licenses negotiated by the Army Medical Research and Materiel Command's (MRMC) Technology Transfer Office. Considerations include determining the value of the potential voucher and the relative contributions of the licensee and licensor, which are unique to each negotiation. There is also precise language for timely distribution. Should the licensee receive a PRV, it must put it up for auction within a year. The company can purchase the voucher itself, but must outbid the highest bidder by one dollar to ensure that the lab receives a fair market price.

This technology transfer has exceeded all of the partners' expectations. MappBio has transitioned from a company of nine employees to a world leader in biotechnology, while at USAMRIID and the MRMC Technology Transfer Office, interest in Army Ebola-related technology has soared, resulting in many licensing agreements and establishing the lab as a national and international resource.

At the end of the day, it is about saving lives. Ebola patients and healthcare providers now have hope that there is an end to the 60% to 90% fatality rate of the most deadly virus on the planet.

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METBENCH Calibration Management System

Department of Defense – U.S. Navy

Naval Surface Warfare Center, Corona Division

On April 16, 2014, the Naval Surface Warfare Center, Corona Division (NSWC Corona) signed a nonexclusive Patent License Agreement (PLA) with American Technical Services, Inc. (ATS) of Norco, California. The agreement transferred the Navy's METBENCH Calibration Management System, a net-centric, browser-based information technology that automates standardized equipment calibration procedures and collects measurement data across the fleet. The historic cross-licensing agreement was the first of its kind for the U.S. Navy, creating a two-way exchange between ATS and the Navy of their respective calibration technologies. It also was the first PLA for NSWC Corona-designed technology.

The NSWC Corona team was principally responsible for the successful technology transfer (T2). To make history happen at NSWC Corona, they excelled in overcoming fundamental challenges inherent to the lab's inchoate T2 culture. The team not only smoothly transferred METBENCH to the private sector, but also expanded the lab's emerging intellectual property (IP) and T2 culture.

As Commanding Officer, Capt. Ver Hage was a singular advocate for METBENCH transfer, which became central to his vision for NSWC Corona's T2 future. Mr. Schumacher, a co-inventor of the Navy technology, provided the technical expertise. Ms. Stewart, as the lab's Office of Research and Technology Applications officer, brought together key individuals from within and outside the laboratory, and is credited by the team for providing the drive and creative energy. As the recently appointed Chief Technology Officer and former head of the Measurement Science Department, Mr. Hovakemian guided the transition with his deep knowledge of Navy metrology/calibration needs. An IP attorney at NSWC Crane, Mr. Monsey was the most experienced contributor with his extensive PLA knowledge and portfolio. Alen Petrossian of American Technical Services, Inc., and Sean Patten of TechLink also contributed to the successful transfer of METBENCH.

Naval ships and facilities employ the METBENCH system to automate calibration procedures and data flow, resulting in multimillion dollar cost savings and significant efficiency increases.

For the Navy, the transferred technology promises major savings by reducing resources needed to regularly calibrate innumerable pressure gauges, contact switches, temperature indicators, infrared cameras, night vision goggles, radios, weapons systems and more. U.S. sailors perform about 10,000 calibrations each year, and the Navy utilizes roughly 1.85 million pieces of calibration test equipment. The METBENCH technology increases collected data quality, eliminates technical errors, and decreases calibration times, with near real-time calibration guidance, asset tracking, and readiness reporting.

For ATS, the transfer instantly expanded company horizons from its Navy contractor focus to a vast commercial marketplace. Any sector, from pharmaceuticals to manufacturing, that uses electronic and physical measurement tools contains potential ATS customers. Ubiquitous in both private and public realms, equipment calibration is a multibillion dollar industry.

Not pictured:
Capt. Eric Ver Hage,
Arman Hovakemian,
Christopher Monsey,
Sean Patten,
Alen Petrossian,
Richard Schumacher,
Jennifer Stewart

Contact: Capt. Eric Ver Hage, 703-829-6248, eric.verhage@navy.mil

Explosive Ordnance Disposal Robotics

Department of Defense – U.S. Navy

Space and Naval Warfare Systems Center Pacific

Explosive Ordnance Disposal Robotics (EODR) is a system architecture for interoperability and operator control capability for unmanned ground vehicles (UGV) designated for explosive ordnance disposal duties. Space and Naval Warfare Systems Center Pacific (SSC Pacific) has developed several robotics-related software systems, including a common operator interface software framework called the Multi-robot Operator Control Unit (MOCU) and a software library for the Joint Architecture for Unmanned Systems interoperability standard.

SSC Pacific also maintained a Robotics Systems Pool that made the UGV platforms and technology available for transfer via Limited Purpose Cooperative Research and Development Agreements (LP-CRADA) to industry, academia, and state and local governments for R&D purposes. In July 2009, SSC Pacific signed an LP-CRADA with RE2, Inc. of Pittsburgh, Pennsylvania. Results quickly supported a full CRADA between the two partners, which was executed in August 2009 and effective through August 2012.

The SSC Pacific team also worked to validate use of SSC Pacific's MOCU in the Department of Defense's (DOD) EOD UGVs. The SSC Pacific-RE2 exchange excelled in its seamless integration of the two partners' robotics expertise, based on mutual respect and willingness to achieve "interoperability" not only in robotics, but in the steps taken to transition the valuable technologies to industry and back to the military.

The EODR tech transfer effort specifically targeted multiple problems that can decrease the field performance of EOD vehicles and ultimately the effectiveness and safety of the U.S. warfighter. Existing systems typically utilized different architectures and lacked a common controller, making training difficult and field upgrades costly. They also were unable to quickly support interchanging payloads and suffered from a lack of dexterity, primitive controls, inadequate depth perception feedback, lack of modularity and interoperability, poor human-robot interface designs, and lack of intuitive feedback. The partnership achieved agile robotic systems that can easily communicate using the Navy software to accelerate integration, allow for rapid insertion of upgrades, and lower system costs.

Both RE2 and SSC Pacific significantly contributed to the broader validation of open architecture for EOD UGV technologies. Their back-and-forth effort was critical to what ultimately became a paradigm shift in Navy and DOD robotics acquisition processes, from a process focused on unique solutions from a single company to one more focused on cost-effective open architecture and interoperability, which will guide development of the Navy's next-generation EOD UGVs in the advanced Explosive Ordnance Disposal Robotic System program of record.

Left to right: Michael Bruch, Gary Gilbreath, Jorgen Pedersen, See Yee

Contact: Michael Bruch, 619-553-7977, michael.bruch@navy.mil

EXCELLENCE IN TECHNOLOGY TRANSFER AWARD

Roll-out Solar Array

Department of Defense – U.S. Air Force

Air Force Research Laboratory, Space Vehicles Directorate

The primary source of power generation for spacecraft is solar power, and the solar panels used in space are many times larger than the satellite or payload itself. The wingspan of geostationary communication satellites is about 150 feet; however, the launch vehicle that carries the satellite to orbit has an internal diameter less than 15 feet. This causes challenges for launching solar arrays into space since they must be stowed in the narrow confines of launch vehicle fairings and then deployed on-orbit. Coupled to the tight launch confines is the exorbitant launch expense. Currently, the approximate cost to launch satellites is $10,000 per pound. These two factors result in the limited total power available to spacecraft payloads.

Since all spacecraft require power to operate, reducing the weight and stowed volume of the solar array greatly reduces the overall system cost and increases the total power for the mission. To tackle these challenges, the Air Force Research Laboratory Space Vehicles Directorate (AFRL/RV)—in partnership with NASA; Deployable Space Systems, Inc.; LoadPath, LLC; and Hall Composites—developed the roll-out solar array (ROSA), which uses novel, passively deployed, composite structural booms and a flexible solar cell blanket. ROSA's innovative architecture provides 6x improvement in stowed power density, 3x higher specific power, and 4x higher stiffness, all while lowering the array cost by 25%. The outstanding improvement in performance enables ROSA to shatter spacecraft on-orbit power limits, which leads to substantially higher communication bandwidth for commercial applications and opens up new classes of Department of Defense missions.

The technology transfer partnership was initiated using a Small Business Innovation Research (SBIR) contract with Deployable Space Systems, LLC, to improve the stowed volume and deployed on-orbit performance of solar arrays. LoadPath, LLC, a small business cooperative research and development partner with AFRL/RV, developed the boom fabrication methodology and provided the test data that was critical to demonstrating the capabilities of ROSA. NASA provided modeling support and transition to space exploration missions.

The multi-partner effort formed by the partnership led directly to the testing, demonstration, and commercialization of ROSA, with widespread adoption of the technology leading to broad economic impacts and transitioning to Space Systems Loral to replace its existing arrays for 37 geostationary orbit/low Earth orbit (GEO/LEO) communications satellites in production.

The Air Force Research Laboratory Space Vehicles Directorate—in partnership with NASA, Deployable Space Systems, Inc., LoadPath, LLC and Hall Composites—developed the roll-out solar array.

Left to right: 1st Lt. Nathan Gapp, Dr. Bernard Carpenter, and Joy Stein

Not pictured: Dr. Jeremy Banik, Dr. David Chapman, Dr. Paul Hausgen

Commercial Licensing of the Hyperion Cyber Security Computer Code

Department of Energy
Oak Ridge National Laboratory

Hyperion is a cyber-security technology that can alert a user to the existence of "sleeper code" embedded in executable computer files to thwart malicious activity. Hyperion accomplishes this by generating the software's program functions or "behaviors," along with the complete set of conditions under which they occur. These behaviors can be automatically checked for known malicious signatures and inspected by domain experts to ensure correct operation and the absence of malicious content.

The Cyber Warfare Research Team at Oak Ridge National Laboratory (ORNL) developed Hyperion over a four-year period with funding from multiple sources. The licensing of Hyperion by the ORNL Technology Transfer Office required above-average effort to secure the intellectual property, which had become more complex over time due to the multiple funding sources. And when restrictive open source code was identified during copyright review, which would have prevented commercial licensing of the code, the Cyber Warfare Research team members designed and implemented creative replacement solutions in a relatively short time.

Left to right: Dr. Stacy Prowell and David Sims

At least five different funding sources, contributions from different research institutions, multiple code writers, and the use of various third-party computer code and libraries made the technology transfer process a true challenge for all involved. The resulting patent and copyright licenses represent the culmination of almost a year's efforts to mature the software and secure the intellectual property rights. Thereafter, a renegotiation of the copyright license was required to establish agreeable license terms that would enable the licensee to secure external funding. The transfer of Hyperion was the methodical and persistent movement forward by a competent and productive team that would ultimately overcome any obstacle it encountered.

The immediate benefits of the transfer effort are the expansion of the community of interest for this technology and the establishment of a commercial partner (R&K Cyber Solutions, LLC). The long-term benefits include a demonstration case for how a small minority- and disabled veteran-owned business can benefit from commercialization licenses with a national laboratory, as well as the establishment of a local branch of R&K Cyber Solutions, LLC, in Knoxville, Tennessee. The new employees hired increase the local cyber security community of interest and promote local workforce development, which in turn helps the laboratory with recruiting and retention.

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EXCELLENCE IN TECHNOLOGY TRANSFER AWARD

Columnar Hierarchical Auto-Associative Memory Processing in Ontological Networks

Department of Energy
Pacific Northwest National Laboratory

Columnar Hierarchical Auto-Associative Memory Processing in Ontological Networks (CHAMPION) technology is an advanced reasoning software system that is revolutionizing the detection of cyber threats and decision making in a range of domains. CHAMPION recognizes patterns by combining subject-matter expertise with historical data, thus enabling security analysts to detect threats in near real-time.

The patented software and methodology were designed and brought to market by the scientists, engineers, and technology commercialization staff at Pacific Northwest National Laboratory (PNNL) in conjunction with the Early X Foundation, an early-stage investor. The National Nuclear Security Administration also recognized the promise of the technology to address insider threats. Subsequently, CHAMPION developers advanced the product with the potential for even greater impact beyond the national laboratory enterprise.

Efforts to bring CHAMPION to market began in 2011, when CHAMPION creator and former PNNL staff member Ryan Hohimer partnered with the PNNL commercialization staff to harden the code for commercial use, demonstrate its applicability in a real enterprise, and apply for a patent, which was granted in 2014. During this time, the CHAMPION team was introduced to Early X, a nonprofit education foundation spun out from Pepperdine University's Graziadio School of Business and Management. Early X partnered 26 MBA students and 35 business executives from diverse business backgrounds, who identified approximately 70 new vertical market opportunities and developed market feasibility reports to pursue those opportunities for the patented software system. Recognizing the market potential for this technology, Early X decided to create Champion Technology Company, Inc. (CTCI) (which licensed the technology from PNNL) and recruited angel investors to secure the seed funding needed to deliver CHAMPION to the cybersecurity market.

As an outcome of this technology transfer, the CTCI for-profit corporation is now an 18-month-old startup built around the patented CHAMPION system. The company has attracted investments totaling approximately $1.54 million to date. CTCI is applying CHAMPION's groundbreaking reasoning system to cybersecurity challenges facing the government, commercial industry, and non-government organizations.

CHAMPION is software that can reason like an analyst to determine if network activity is suspicious, then issues an alert in near-real-time. PNNL Shawn Hampton (left), Champion Technology Company's Ryan Hohimer (right) and their teams received an R&D 100 Award for developing this technology.

Left to right:
Frank Getzler,
Shawn Hampton,
Ryan Hohimer,
Dr. Kannan Krishnaswami,
Matthew Love,
John McEntire

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Micro Aerosol Disinfecting System

Department of Energy
Pacific Northwest National Laboratory

The Micro Aerosol Disinfecting System turns a simple salt solution into a fine aerosol fog containing natural and powerful molecules that disinfect an entire room. The simple-to-use, inexpensive system can kill at least 99.999 percent of tiny, health-harming microbes such as bacteria, viruses, and mold spores.

Pacific Northwest National Laboratory (PNNL) developed the initial concept for the Micro Aerosol Disinfecting System while working in partnership with a Russian institution under the U.S. Department of Energy's Global Initiatives for Proliferation Prevention program. PNNL later finalized the technology's design and proved its effectiveness with internal funding and support from the Defense Threat Reduction Agency. PNNL licensed the system to Watertech Equipment & Sales, LLC, which is preparing to sell the technology under the product name NebuPure. Watertech has conducted further tests and made additional improvements with PNNL's support, and is now actively marketing the technology to a number of industries.

The technology's initial development included a Cooperative Research and Development Agreement (CRADA) with a start-up research company. One of that company's leaders spun off his own company in the hopes of commercializing the technology, but lacked the business expertise and connections needed to move the technology to market. Despite these early disappointments, PNNL continued to believe in the technology and its tremendous commercial potential. The Laboratory then independently funded the system's continued development and later tested its efficacy for the military, which drew Watertech's interest.

Dedication and tenacity enabled PNNL to sign with Watertech an option-to-license agreement—developed within one hour during Watertech's initial visit to PNNL—in December 2014, eight years after the Laboratory first began developing the technology. To seal the deal, PNNL staff put forth considerable effort to explain, demonstrate and document the micro aerosol system's abilities to Watertech. As a result, a final license agreement was signed just eight months later in July 2015.

The Micro Aerosol Disinfecting System offers a simple-to-use, highly effective, low-cost, and nontoxic way to eliminate a variety of pathogens responsible for various dangerous ailments ranging from common staph infections and the flu to Ebola. Removing pathogens from public areas such as hospitals, schools, auditoriums and locker rooms, and from commercial places related to agriculture, food production, travel and leisure can quickly and effectively stop an epidemic in its tracks, saving countless lives and billions in recuperative costs in the process.

Left to right: Glenn Barrett, Eric Frische, Keith Johnson, Derek Maughan, Dr. Evguenia Rainina, Ron Thomas

Contact: Dr. Evguenia I. Rainina, 509-375-3911, Evguenia.Rainina@pnnl.gov

Sandia Decontamination Technology for Chemical and Biological Agents

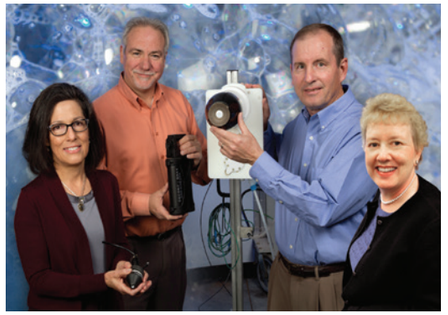
Department of Energy
Sandia National Laboratories

The Sandia decontamination (decon) technology is a safe, effective, easy-to-use disinfectant that helps people overcome many of the hazards of today's dangerous world. The decon technology handles biological and chemical threats, including emerging infectious diseases, clandestine drug labs, mold, fungi, viruses, and bacteria. It is a two- or three-part system consisting of hydrogen peroxide with surfactants and activators that can be used as a safe and highly efficient decontamination solution.

Originally used by the military and first responders, it has now found a growing number of applications in industrial, institutional, and military markets. When one of the two original small licensees went out of business, it could easily have been the end of the licensing road for the decon technology. Instead, diligence and creative thinking gave the technology new life, far beyond its original limited applications.

Through hard work and creativity, the Sandia team promoted the decontamination technology to new markets, worked with qualified companies who could license and commercialize it, and adapted it for new products, applications, and methods of deployment. After just a couple of years, seven new licensees are manufacturing and distributing products based on the Sandia patents.

Through tailoring of the chemistry, deployment methods and packaging, the decontamination products based on Sandia's patents are now available for use in a much wider variety of applications, and are providing new ways to disinfect medical facilities, agricultural processing plants, sports facilities, and housing. Focused chemistries allow production costs to be reduced for higher volume applications such as commercial laundry disinfection. New deployment methods such as charged aerosols will enable rapid decontamination of spaces such as aircraft and transportation centers.



Left to right: Rita Betty, Bruce Kelley, Mark Tucker, and Bianca Thayer

Sandia's decontamination products are now available for use in a much wider variety of applications, and are providing new ways to disinfect medical facilities, agricultural processing plants, sports facilities, and housing.

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X-Ray Toolkit

Department of Energy
Sandia National Laboratories

The X-Ray Toolkit (XTK) is an image processing and analysis software that helps emergency responders better perform in the high-stress, time-critical mission of disabling improvised explosive devices (IEDs). It has very quickly become the standard in the field, in part due to its ease of use and the fact that it was built specifically to support the needs of explosive ordnance disposal (EOD) personnel.

Left to right: Mark Monda, Scott Gladwell, Clint Hobart, and Justin Garretson

Not pictured: Josh Cordova, Sarah Low, Dr. Bob Westervelt

The software was developed to replace multiple imaging software packages that EOD teams were using with their x-ray scanners. After spending hundreds of hours with EOD personnel learning about their workflow, Sandia developers designed an application that is intuitive, versatile, compatible with most x-ray scanners, and better suited to the needs of EOD technicians.

Sandia also designed the patented Grid-Aim system as an optional hardware accessory kit for the XTK. Grid-Aim allows users to precisely disrupt and disable the internal components of an IED while preserving the rest of the device for evidence and minimizing damage to surrounding property and infrastructure.

In order to get the XTK out to those who could use and benefit from this lifesaving technology, the Sandia team came up with a diverse licensing strategy to foster deployment. From offering no-cost end user licenses and free test and evaluation licenses for scanner manufacturers, to encouraging adoption of the new software by supporting training by multiple organizations, the technology process was creative and multifaceted.

Creative technology transfer methods have helped the XTK to be rapidly adopted by the emergency response community. It is estimated that the XTK is now in the hands of over 20,000 end users in most of the 467 recognized non-military bomb squads across the U.S. It has even been adopted by the FBI's Hazardous Devices School for all its courses.

By offering the software at no cost and developing efficient ways to supply the application, hardware accessories, and training, Sandia's XTK has saved the emergency response community millions of dollars in licensing fees and training costs.

XTK is now in the hands of over 20,000 end users in most of the 467 recognized non-military bomb squads across the U.S.

The X-Ray Toolkit is image processing and analysis software that helps emergency responders disabling improvised explosive devices (IEDs).

Contact: Dr. Bob Westervelt, 505-284-6752, rtweste@sandia.gov

Candida Infection Diagnostic With High Sensitivity and Specificity

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

Vulvovaginal candidiasis (VVC) is a common condition in women worldwide, with more than 75% of women experiencing an infection once in their lifetime and 40-45% having two infections or more. On rare occasions, men may also get genital candidiasis. VVC occurs more frequently and more severely in diabetics, pregnant women, and those with weakened immune systems.

Most candidiasis patients are infected with *Candida albicans*, but the number of non-*Candida albicans* infections has grown steadily in recent years. Importantly, yeast infections caused by some non-*albicans* species are resistant to the azole drugs typically prescribed for *C. albicans* infections, resulting in persistent and recurrent non-*albicans* yeast infections. The rise in *Candida* species infections and the differences in effective therapeutic strategies highlight the need for a sensitive, rapid, and species-specific method to diagnose vulvovaginal candidiasis and to guide appropriate treatment.

Left to right, top to bottom: Dr. Sharon Soucek, Kevin Brand, JD, Dr. Christine J. Morrison, Suzanne Seavello Shope, JD, Lisa Marianni, RN, MBA

A Centers for Disease Control and Prevention (CDC) research team headed by Dr. Christine J. Morrison developed a method to detect the presence of and identify *Candida* species with high sensitivity and specificity. This breakthrough CDC technology was licensed to Quest Diagnostics, Inc., the largest U.S. provider of medical laboratory tests. Quest developed the SureSwab® candidiasis test, which uses a single swab to obtain a vulvovaginal specimen, followed by DNA extraction, real-time polymerase chain reaction (PCR) amplification, and the identification of *Candida* species DNA sequences. This gynecological test provides women with a rapid and specific diagnosis of a vaginal yeast infection for the major *Candida* species to facilitate timely and appropriate treatment. When combined with other Quest technology in a panel, this test detects VVC infections while also ruling out other genital infections.

This effort led to a successfully commercialized product that has had an incredible impact on women's health. In 2013 alone, 86,897 SureSwab® tests were ordered across the U.S. to diagnose women with candidiasis, and the tests continue to be offered today. By diagnosing patients more quickly and precisely, women suffering from VVC can receive prompt treatment and not succumb to complications such as severe infection (or direct extension to the urinary tract); recurrence; non-*albicans* candidiasis; or added consequences for diabetic, pregnant or immunosuppressed women who have more frequent and serious infections. Additionally, this has spurred more inventions for diagnosing other fungal infections and greatly increased the body of available tests for a variety of fungal infections, aiding in the surveillance and treatment of fungal diseases.

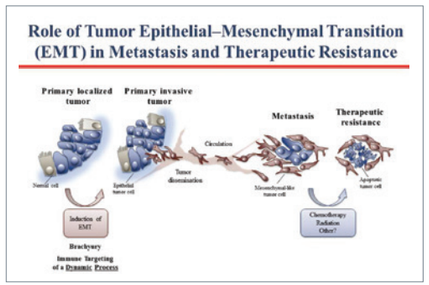
Not pictured: Dr. Brent Lasker, Dr. Timothy Lott, Dr. Errol Reiss, Dr. Sandra Zakroff

Contact: Lisa Marianni, 404-639-0377, lmarianni@cdc.gov

Development of First Immunotherapy to Treat Chordoma, a Rare Bone Cancer

Department of Health and Human Services
National Cancer Institute

Cancer vaccines harness the immune system to identify and destroy cancer cells, and are a promising new approach to fighting cancer. In contrast to preventative vaccines, cancer vaccines identify antigens from cancer cells and immunize cancer patients against those antigens to stimulate the body's immune cells to attack and kill the cancer cells. The National Cancer Institute (NCI) has developed investigational cancer vaccines that induce a specific, targeted immune response against cancer cells expressing the brachyury protein. The discovery may be the first medical treatment for chordoma, a rare cancer with no alternative medical therapy.



NCI researchers developed investigational therapeutic vaccines, used in clinical trials, that induce an immune response against cancer cells expressing the brachyury protein, resulting in the first immunotherapy for chordoma.

Brachyury is a type of genetic on-switch, also known as a transcription factor. It is a driver of a process associated with cancer progression and resistance to therapy. Brachyury is an attractive vaccine target because it is not generally found in normal tissues, but is abnormally found in many cancers and chordoma, a difficult-to-treat bone cancer. When brachyury is expressed in tumor cells, it enhances their invasiveness and induces resistance to chemotherapy and radiation.

Before NCI's discovery, brachyury was deemed "undruggable" because of challenges associated with developing therapies targeting transcription factors. The first NIH patent application covering brachyury as a cancer vaccine was filed in 2007. Since then, the invention has attracted significant commercial interest.

NCI is currently developing brachyury vaccines through Cooperative Research and Development Agreements (CRADAs) and license partnerships with GlobeImmune, Inc.; Bavarian Nordic; and Etubics Corporation, respectively. These collaborations led to the rapid translation of investigational therapeutic vaccines with the potential to revolutionize how researchers and physicians treat many cancers.

NCI's collaborations led to the creation of new intellectual property and licensing activities. Currently, there are several issued patents and pending patent applications. NCI's commitment to collaborate with multiple partners is helping to exploit the discovery's full potential. The rapid translation and clinical development of brachyury vaccines has been well-served by careful management of a complex technology transfer process.

Left to right: Mojdeh Bahar, Kevin Brand, Dr. Kevin Chang, Dr. Sabarni Chatterjee, Dr. James Gulley, Dr. Christopher Heery, Dr. Claudia Palina, Dr. Michael Pollack, Dr. Jeffrey Schlom

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EXCELLENCE IN TECHNOLOGY TRANSFER AWARD

Discovery to Commercialization: New Immunotherapy for Rare Childhood Cancer, Neuroblastoma

Department of Health and Human Services
National Cancer Institute

Prior to a groundbreaking discovery by scientists supported by the National Cancer Institute (NCI), fewer than 40 percent of children with high-risk neuroblastoma lived five years after diagnosis. Now an immunotherapy 30 years in the making, ch14.18, Unituxin™ (dinutuximab), is providing new hope for infants and children with this rare cancer. In March 2015, the Food and Drug Administration approved Unituxin™ as part of first-line therapy for pediatric patients with high-risk neuroblastoma. In August 2015, the European Commission (EC) also granted Marketing Authorization for Unituxin™. These approvals are the result of remarkably productive collaborative efforts between NCI, the Frederick National Laboratory for Cancer Research (FNLCR), the Children's Oncology Group, and United Therapeutics Corporation (UTC).

The NCI's Biopharmaceutical Development Program (BDP), located at the FNLCR, played an instrumental role in supporting this project. Specifically, ch14.18 was produced under NCI contracts/subcontracts and provided for NCI-sponsored clinical studies through NCI's BDP. The NCI BDP worked directly with NCI, the FDA, and Health Canada on issues of patient safety and product characterization. Members of the NCI BDP's manufacturing teams managed the bioreactor and purification units, and expended extraordinary effort to ensure that the supply of ch14.18 met the demand needed for patients enrolled in the pivotal, randomized clinical trial and subsequent clinical studies during the transitional period prior to FDA and EC approval. NCI BDP's Regulatory Affairs group worked extensively with NCI's Cancer Therapy Evaluation Program (CTEP), the FDA, and Health Canada in developing regulatory submissions and ensuring they were submitted in a timely manner. The Regulatory Affairs Branch of NCI's CTEP submitted its Investigational New Drug Application to the FDA on December 4, 1991, to sponsor ch14.18 clinical studies. Following definitive evidence of efficacy, NCI/CTEP and NCI/BDP worked with NCI's Technology Transfer Center on a CRADA announcement seeking a collaborator to assume responsibility for production and regulatory approval of ch14.18.

An NCI CRADA allowed for transfer of the NCI BDP's evolving drug production process to UTC, the company that ushered the product to licensure. The NCI CRADA also allowed for the transfer of data from the DCTD-sponsored clinical trials to UTC, which was an essential component for UTC to obtain FDA and EC approval of ch14.18 as a new immunotherapeutic for use in children with high-risk neuroblastoma.

Unituxin™ has been approved by the FDA for use by pediatric patients with high-risk neuroblastoma, a rare cancer that most often occurs in young children.

Left to right: Dr. Sherry Ansher, Donna Bialozor, Dr. Jan Casadei, Beverly Keseling, Dr. Karen Muszynski, Samir Shaban, Dr. Malcolm Smith, Dr. L. Mary Smith, Dr. Alice Yu

Contact: Donna Bialozor, 301-624-8875, bialozod@mail.nih.gov

Cities Adopt the Volpe Truck Side Guard Technology to Save Lives

Department of Transportation
Volpe National Transportation Systems Center

In 2014, New York City announced a safety pilot program for its largest-in-the-nation municipal truck fleet, with an initial roll-out on 240 City-owned trucks in February 2015 as part of NYC's landmark Vision Zero safety program.

Truck side guards are safety devices designed to prevent pedestrians, bicyclists, and motorcyclists from being swept under and run over by a large truck's rear wheels in side-impact collisions. Volpe National Transportation Systems Center has successfully advanced its adoption by partnering with several U.S. cities to deploy truck side guard safety technologies to address the deadliest and most over-represented road crashes between large trucks and pedestrians or bicyclists. Side guards can either be retrofitted onto existing trucks or incorporated into new vehicle fleets.

In 2012, Boston officials contacted Volpe to volunteer as a test bed city. It launched a side guard pilot safety technology adoption on 19 city-owned trucks in May 2013, initiating the truck side guard T2 process. In 2014, Volpe advised and Boston issued the nation's first mandatory side-guard ordinance for public and private truck fleets, which took effect in May 2015 and reached 230 trucks in the first year.

In 2014, New York City (NYC) asked Volpe to help develop a similar safety pilot for its largest-in-the-nation municipal truck fleet. Assisted by Volpe, NYC Mayor de Blasio announced the truck safety side guard program, with an initial rollout on 240 city-owned trucks in February 2015 as part of NYC's landmark Vision Zero safety program. In June 2015, NYC passed a Volpe-advised law requiring side guards on 10,000 city-owned and regulated trucks by 2024; and the NYC Department of Transportation engaged Volpe to accelerate side guard adoption by leveraging air quality funds and engaging commercial side guard suppliers to enhance urban truck safety.

The City of Cambridge engaged Volpe T2 support in 2014, leading to a joint press release and fleetwide side guard adoption. The University of Washington held a side guard press event in Seattle following Volpe's guidance and, as of October 2015, San Francisco MTA and Volpe have established the first West Coast side guard T2 partnership, with Chicago; Washington, D.C.; and Albany, NY in discussions. At least 500 side-guard equipped, safer trucks will be on the road saving lives in U.S. cities due to Volpe's successful T2 partnerships, with thousands more anticipated in the next several years.

Top to bottom, left to right: Dr. Alexander Epstein, Coralie Cooper, Eran Segev, Andrew Breck, Sean Peirce, Jacek Graczyk, Keith Kerman, Mahanth S. Joishy

Left to right: Kristopher Carter, Tom Maguire, Susan McSherry, John Nardone, Owen O'Riordan, John Knox White, Juliet Flores Wilson

Contact: Dr. Alexander Epstein, 617-494-2539, Alexander.Epstein@dot.gov

EPA Microbial Source Tracking Technology Transfer

Environmental Protection Agency
National Risk Management Research Laboratory

According to the Environmental Protection Agency's (EPA) National Water Quality Inventory Report to Congress, fecal bacteria are one of the leading causes of U.S. surface water impairment. The presence of fecal bacteria at elevated levels originating from human and other animal wastes in community water systems, at recreational beaches, and shellfish harvesting areas is correlated to negative public health outcomes ranging from the more common mild gastrointestinal illness to the rare and more severe illness or even death.

To protect human health, in 1972 Congress passed the Clean Water Act, mandating the EPA to provide the public with technologies to monitor for fecal pollution. The scientific community responded with the development of technologies ranging from chemical indicators to canine monitoring. EPA scientists recently sought an innovative approach through the study of fecal bacterial communities at a molecular level. The result was the development of novel genetic-based technologies that can measure human and cattle fecal pollution levels in surface water samples. The Microbial Source Tracking (MST) methods are technologies aimed at identifying and, in some instances, quantifying fecal animal sources of contamination in environmental waters.

The EPA's U.S. Patent No. US8574839 B2 describes genetic technologies that can estimate the concentration of human and cattle fecal pollution in environmental water samples.

Due to nationwide fecal pollution concerns and more than 290 peer-reviewed scientific citations, there is a growing demand by academic, state, and municipal government laboratories to implement EPA MST technologies. To accommodate interest from nonprofit entities, the EPA developed a new strategy whereby technology can be simultaneously transferred to commercial partners while making it available to noncommercial entities. This was accomplished through two new license formats in addition to the commercial license.

The academic sector can apply for a royalty-free "research" license for a specific project. Researchers are encouraged to publish results in peer-reviewed literature. To date, 13 licenses have been awarded to university research laboratories, leading to important scientific advancements in the MST field and a better understanding of EPA technology performance.

Government laboratories can also receive a royalty-free license, but are restricted to using the technology within their jurisdiction. In addition, a "government" license prohibits the use of the technology on a fee-for-service basis.

Two private companies have applied for and been granted commercial licenses. One commercial license holder has added five employees in the past three years and doubled revenue for four years in a row. In 2016, the company plans to hire a minimum of eight additional employees and implement an international business plan.

National Risk Management Research Laboratory

Left to right:
Sarah Bauer, Kathleen Graham, Sally Gutierrez, Dr. Mark Rodgers, Laura Scalise, Dr. Orin C. Shanks

Not pictured:
Robin Oshiro, Patricia Palmer

Contact: Dr. Orin Shanks, 513-569-7314, shanks.orin@epa.gov

INDIVIDUAL AND TEAM AWARDS

FLC NATIONAL AWARDS

INTERAGENCY
PARTNERSHIP
AWARD

Department of Defense – U.S. Army

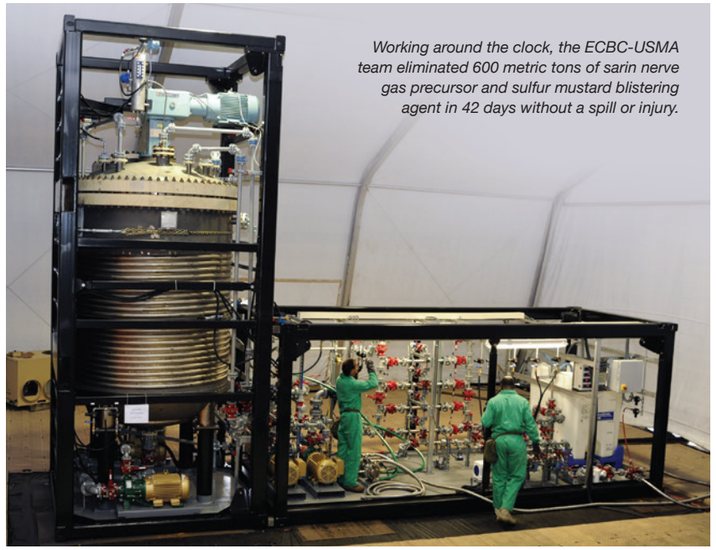
U.S. Army Edgewood Chemical Biological Center

Department of Transportation

U.S. Maritime Administration

On August 21, 2013, more than 1400 Syrian civilians were killed when their president, Bashar al-Assad, carried out a chemical attack using the nerve agent sarin. United Nations Secretary General Ban Ki-moon called the horrific attack "the most significant confirmed use of chemical weapons against civilians since Saddam Hussein used them in Halabja in 1988."

In the aftermath of the attack, the international community, led by the Organisation for the Prohibition of Chemical Weapons and the United Nations, moved quickly to broker a deal with Assad to eliminate Syria's entire stockpile. This would require countries with a chemical weapon destruction facility to accept the deadly arsenal, but none were willing to do so.



Working around the clock, the ECBC-USMA team eliminated 600 metric tons of sarin nerve gas precursor and sulfur mustard blistering agent in 42 days without a spill or injury.

That's when an interagency team led by Timothy Blades from the U.S. Army Edgewood Chemical Biological Center (ECBC) and Paul Gilmour from the U.S. Maritime Administration stepped in to carry out an historic mission to destroy these dangerous weapons at sea—a first in the history of chemical demilitarization. "Tim Blades, Paul Gilmour and their people made things happen," said Jay Santee, former deputy director of the Defense Threat Reduction Agency. "They knew the risks and wrote the book on what needed to be done."

Working around the clock, the team eliminated 600 metric tons of sarin nerve gas precursor and sulfur mustard blistering agent in 42 days without a spill or injury.

The process began in the summer of 2013 when Blades and his team completed the design and development of the Field Deployable Hydrolysis System (FDHS), a transportable neutralization technology that can convert chemical warfare material into compounds not usable as weapons, and meets the 99.9-percent destruction rate standard set by the Chemical Weapons Convention.

It is unusual for a federal laboratory to deploy its own technology, especially thousands of miles away from its facilities, but that was precisely what was needed by the international community. Even with the innovative technology, Blades and his team still needed a location where they could deploy this "giant Erector Set" to neutralize the chemicals. The only viable option was at sea, and the logical place to turn was the U.S. Maritime Administration.

At the Maritime Administration, Gilmour managed the Ready Reserve Force, a group of 46 vessels on standby to rapidly respond to emergencies. Of these ships, the *MV Cape Ray* was one of the few that could fit two FDHSs. Although tall enough, the *Cape Ray* had to be converted from a military transportation vessel to a chemical weapons destruction facility, which had never been done before.

The Cape Ray was converted from a military transportation vessel to a chemical weapons destruction facility to neutralize the stockpile.

The MV Cape Ray was one of the few that could fit two Field Deployable Hydrolysis Systems.

In only a month and a half, during the coldest winter on record in Portsmouth, Virginia, the team worked to retrofit the ship and install the systems to neutralize the chemical weapons. With ever-changing modifications, the partners relied on good engineering practices to ensure that the weapons could be safely destroyed without injuries, leakage, contamination, or impact on ship personnel and the environment.

In January 2014, Blades and his 60-person volunteer team of field operators, technicians and chemists set sail on the *Cape Ray* for a six-month mission that would involve loading and neutralizing the chemical weapons in international waters. "This is dangerous and hard work, and Tim Blades and his team did it expertly. I sleep well knowing they are the guys that got called," said Santee.

According to Gen. Paul Selva, Vice Chairman of the Joint Chiefs of Staff, all of the declared weapons in Syria were eliminated. "They rid the world of some pretty serious chemical weapons, which if they fell into the wrong hands would have been catastrophic," Selva said.

Maritime Administrator Paul Jaenichen said this historic mission represented "the whole of government enterprise."

"At the end of the day, we are making the world a safer place. It's success in every possible way," he said.

Left to right: Timothy Blades, Paul Gilmour

Contact: Amanda Hess, 410-436-5406, amanda.l.hess9.civ@mail.mil

U.S. Department of Agriculture (USDA)

Department of Commerce
National Oceanic and Atmospheric Administration (NOAA)

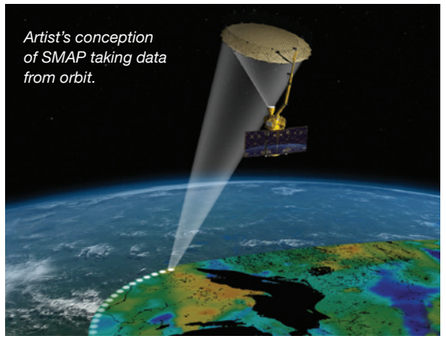
National Aeronautics and Space Administration (NASA)

Department of Defense
U.S. Army, U.S. Navy, U.S. Air Force

Department of Interior
U.S. Geological Survey (USGS)

The NASA Soil Moisture Active Passive (SMAP) satellite has a high-priority science and applications mission to provide daily global soil moisture measurements from space. Although the satellite was only launched in 2015, SMAP data are being rapidly integrated into national decision-making and assessment activities due to an outstanding pre-launch technology transfer effort driven by USDA and NASA, with the cooperation of USGS, NOAA, and DOD lab members and contractors.

So how was it done? The first step was to engage potential SMAP users. The USDA/NASA team began by holding a series of SMAP Applications Workshops, at which hundreds of scientists, engineers, managers and potential users came together to identify an array of SMAP applications and compile a list of potential users to form the inclusive SMAP Applications Working Group. This group comprised a wide breadth of over 700 users interested in SMAP products for applications, but it did not provide the depth of user involvement required to facilitate technology transfer and prepare for post-launch application. Consequently, as a second step, the SMAP Early Adopter Program was conceived to facilitate feedback on SMAP products pre-launch and accelerate the use of SMAP products post-launch.



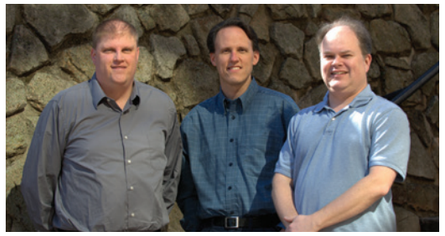
Artist's conception of SMAP taking data from orbit.

The SMAP Early Adopter Program was the heart of the technology transfer effort. Of the 700+ Working Group members from around the world, 55 were selected as SMAP Early Adopters through self-nomination and peer review. The basic agreement between the SMAP Early Adopters and the SMAP Project was that the Early Adopters would engage in applied research that would enable the integration of SMAP data in decision-making after launch. In turn, the SMAP Project would provide Early Adopters with extensive project support and simulated SMAP data products.

A support system was put in place to transform the Early Adopters and the SMAP mission into a single community functioning as a team. Each Early Adopter was coupled with a SMAP Science Team contact who provided personal help when necessary. At quarterly teleconferences of Early Adopters and the SMAP Science Team, they shared the latest information and arranged to share the latest research results with web-enabled presentations. The Early Adopters were included in planning and presentations at annual SMAP Applications Workshops and tutorials. An outreach video was produced with interviews of Early Adopters to inspire new SMAP users and cultivate broad community support for the SMAP mission. In this way, the Early Adopters became the face of the mission at most events.

Standing left to right:
Dr. Seungbum Kim, Erika Podest, Dr. Susan Moran, Dr. Eni Njoku, Dr. Peggy O'Neill, Thomas Jackson

Kneeling left to right:
Dr. Simon Yueh, Dr. Wade Crow, Dr. Narendra Das, Vanessa Escobar, Steven Chan, Amanda Leon



Left to right: Bradley Zavodsky, Jonathan Case, Dr. Clay Blankenship

NASA Marshall Space Flight Center Short-term Prediction Research and Transition (SPoRT) Early Adopters working to assimilate SMAP observations into real-time, high-resolution land surface model output to support National Weather Service users.

Left to right: Siri Jodha Khalsa, Amanda Leon, Karla LeFevre, Shannon Leslie, and Mike Laxer

NASA National Snow and Ice Data Center (NSIDC) Distributed Active Archive Center (DAAC)

It was this high level of USDA and NASA support that convinced Early Adopters they could invest their time and funds on a worthwhile project. And their investments paid off.

Of the 18 Early Adopters selected in the first rounds of nominations in 2011 and 2012, 8 have integrated the SMAP simulated data into their operational systems, and 9 submitted applied research results for publication. Of the 12 Early Adopters selected in 2013 and 2014, 6 have already tested the SMAP simulated data, and 7 have completed sufficient applied research to offer guidance to the Project. More than half of the 55 Early Adopters have adapted their systems to utilize SMAP products in their operations. Two national soil moisture monitoring agencies—Agriculture and Agri-Food Canada and the USDA National Agricultural Statistics Service—have developed operational prototypes for integrating SMAP soil moisture products into existing monitoring programs. These tangible examples demonstrate the value of the SMAP technology transfer plan to provide SMAP simulated data to users pre-launch.

Left to right, top to bottom:
Dr. Michael Cosh, Susan Frankenstein, John Eylander, Dr. George Mason, Pedro Restrepo, Dr. Gabriel Senay, Dr. Farshid Vahedifard, Dr. Naga Velpuri, Barry Weiss, Dr. Xiwu Zhan

Not pictured:
Bradley Doorn, Michael Ek, Dr. Chris Funk, John Eylander, Christopher Jackson, Dr. Li Li, Dr. Amy McNally, Gary McWilliams, Frank Monaldo, Dr. Jeffrey Morisette, Rick Mueller, Dr. Grey Nearing, Jim Reardon, Curt Reynolds, Constance Scott, Maria Stevens, Dr. Lynn Torak, James Verdin, Dr. Jerry Weigel, Dr. Zhengwei Yang

Contact: Mojdeh Bahar, 301-504-6905, mojdeh.bahar@ars.usda.gov

Dr. Willie E. May

Department of Commerce
National Institute of Standards and Technology

On May 4, 2015, the U.S. Senate confirmed Dr. Willie E. May as the second Under Secretary of Commerce for Standards and Technology and the 15th director of the National Institute of Standards and Technology (NIST). While Dr. May had been serving as acting director since June 2014, his work at NIST dates back to 1971, when he was a researcher in trace organic analytical measurement science. Secretary of Commerce Penny Pritzker has described Dr. May as "a partner and champion in our efforts to strengthen America's manufacturing sector and promote innovation, key drivers to spurring economic growth, and core pillars of the Department's 'Open for Business Agenda.'"

During Dr. May's tenure as Associate Director of Laboratory Programs, as Acting Director, and then as Director of NIST, technology transfer achievements have grown exponentially. Of the nearly 1000 active tech transfer agreements from fiscal years 2013 to 2015, over two-thirds were new agreements completed under Dr. May's oversight. These include 96 new bilateral Cooperative Research and Development Agreements (CRADAs), 140 new research consortium CRADAs, and 195 new facility use agreements.

In addition to his responsibilities at NIST, Dr. May belongs to a number of industry organizations in the fields of measurement sciences and physical sciences. He is the Vice President of the International Committee on Weights and Measures and chairs its subcommittee on Metrology in Chemistry and Biology. He serves on the advisory boards of the UK National Physical Laboratory and Japan's National Institute of Advanced Industrial Science and Technology. In addition to awards and honors received for his research successes, Dr. May was elected a Fellow of the American Chemical Society in 2011. The National Organization for the Professional Advancement of Black Chemists and Chemical Engineers has recognized him with both the Percy Julian Award for outstanding research in organic analytical chemistry and the Henry Hill Award for exemplary work and leadership in the field of chemistry. Additionally, he has been recognized with the Department of Commerce's Bronze (1981), Silver (1985), and Gold (1992) medals.

Dr. May's consistent advocacy for the development of standards and of measurement science to support biopharmaceutical development has caught the attention of key industry players. Ultimately, NIST established a five-year, multi-project partnership with MedImmune, a subsidiary of AstraZeneca. MedImmune funded post-doctoral researchers to work on joint projects related to structural science in biopharmaceutical drug development, and NIST made its experts and facilities available to further those objectives.

Bianca Thayer

Department of Energy
Sandia National Laboratories

Bianca Thayer has made significant contributions to the transfer of technologies developed at Sandia National Laboratories in the last five years since becoming a Licensing Executive, after working 30 years in industry. Her extensive business experience has made her a very effective negotiator as she understands both industry and national lab perspectives. She has brought many new industry partnerships to Sandia, and transferred a wide range of technologies via licensing, Cooperative Research and Development Agreements (CRADAs), and other mechanisms.

As Intellectual Property Manager and Licensing Executive, Thayer handles diverse patented technologies and a wide range of software. For each of these technologies she has utilized the best mechanism to make the transfer between the lab and the industry partner successful. This could be a patent or copyright license, a Work for Others (WFO) Agreement or a CRADA or, in some cases, a combination of all three. Thayer has transferred technology to companies of all sizes, ranging from startups to Fortune 100 companies, as well as multinationals.

The largest and most innovative technology transfer Thayer has accomplished to date is with decontamination technology, which is Sandia's largest international patent portfolio, with 36 patents in over 21 countries. She started analyzing this portfolio in late 2012 and realized that the two small companies that had licenses were not fully utilizing the international patents or selling into many potential markets. Originally created for the mitigation of chemical and biological warfare agents, the decontamination chemistry's broad applicability allows it to be safely used in many consumer applications, such as mold remediation, cleaning of agricultural and healthcare facilities, and strong odor removal.

Thayer worked closely with a technical team to qualify companies that would be a good fit to commercialize the technology in various fields of use. She then negotiated seven new licenses in 2013 and 2014 to ensure that all of the markets in the U.S. would be covered. Four of the licensees first started working with the decontamination technology using a Test and Evaluation License, or a License Option Agreement. These were then converted to full commercial licenses after development milestones were met.

In addition to all of her licensing work, Thayer has made time to mentor the new licensing executives at Sandia, assisting them with crafting licenses and coaching them through delicate negotiations toward win-win outcomes. David Wick, Sandia Licensing Executive and Distinguished Member Technical Staff, said, "Bianca has been invaluable to my growth as a licensing executive. Although I had been involved in some tech transfer activities in my previous life as a researcher, I really had no idea of the intricacies involved, nor did I understand the unique and often opposing tensions inherent to licensing from a national laboratory. She took the time to help me grow into this position, and I am forever grateful."

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Jonathan Sampson

Department of Defense – U.S. Army

U.S. Army Edgewood Chemical Biological Center

Jonathan Sampson joined the Edgewood Chemical Biological Center (ECBC) technology transfer (T2) team in February 2014, initially as a 120-day developmental assignment. The assignment came during a critical transition time for the T2 team as it had just lost one full-time senior T2 professional to promotion, another part-time senior T2 professional to a professional development opportunity, and ECBC's T2 chief would be retiring in approximately 6 months. From the very start of his technology transfer assignment, Sampson was willing to take on responsibility and tackle challenging projects. Given the results demonstrated in those first 120 days, and ECBC's critical need to fill a professional gap in its T2 staff, he was offered an extension of his developmental assignment for an additional 6 months. During this time, Sampson continued to excel, taking on responsibilities that were highly unusual for a first-year T2 professional.

During the initial assignment, Sampson took the lead in no less than seven T2 initiatives. His exceptional performance resulted in one signed Patent License Agreement (PLA); one pending PLA; 14 Cooperative Research and Development Agreements (CRADAs); a key invention disclosure, a first-of-its-kind tour of ECBC for Maryland biotech companies; and enhanced workforce engagement in T2—all of which would not have happened but for his innovation, creativity, and dedication. This exceptional performance led to ECBC offering him a permanent T2 position.

As an example of his outstanding effort, Sampson personally performed more than a dozen in-reach meetings with different elements of ECBC's workforce to brief them on technology transfer mechanisms, benefits, and processes. This culminated in a highly visible presence at ECBC's Research & Technology Directorate Town Hall meeting, where he briefed an audience of approximately 40 scientists, including the director, his associate directors, and branch chiefs. The fact that Sampson was trusted to make this presentation in his first year—which he executed as if he were a seasoned T2 professional—is another concrete demonstration of exceptional performance from a "T2 rookie."

Another key initiative that Sampson spearheaded for ECBC in his first year was a tour and technical exchange with BioHealth Innovations, a Maryland-based health and medical innovation intermediary. He personally coordinated and participated in this first-of-its-type exchange between the two organizations, in which representatives of BioHealth Innovations' member organizations (a range of biotech startups and established companies) interacted with ECBC researchers, engineers, and program managers. The meeting provided a forum for these companies to brief ECBC on their respective business efforts and look for areas of scientific collaboration and technical input from ECBC scientists. This was recognized by partnership intermediary Maryland Technology Development Corporation (TEDCO), laboratory leaders and others as a highly positive and productive technical exchange between parties that had not previously engaged.

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Sarah Bauer

Environmental Protection Agency

Sarah Bauer, in her outstanding support and longstanding commitment to the Federal Laboratory Consortium for Technology Transfer (FLC), fully personifies the qualities of the Harold Metcalf Award. Since 2007 she has been active in the FLC, serving as Chair of the Education and Training (E&T) Committee and an FLC Executive Board member in 2008. Her work and influence have touched the entire federal laboratory community and gained prestige for the FLC in the process.

During Bauer's tenure, the E&T Committee has delivered a wealth of learning opportunities for FLC members. The Committee offers a strong core of training courses, with leaders in the technology transfer (T2) community and industry experts helping students develop skills and knowledge that today's federal T2 professionals need. An entire generation of T2 professionals has been educated under her leadership, at a consistently high standard of quality that FLC members have come to expect, and she has led several expansions to the E&T program.

In addition to courses offered at FLC national and regional meetings, Bauer has guided the Committee in developing online learning opportunities. From 2012-2013, she oversaw the launch of e-books, the FLC's first webinar series, and its first on-demand e-learning course ("Introduction to Technology Transfer"). When the 2013 national meeting was canceled, she stepped up to preserve the opportunity to learn. She made the best of a tough situation with webinars, video on the FLC YouTube channel, and efforts toward on-demand e-courses.

Since then, the FLC has grown its online offerings, with four new on-demand e-courses and more in development; white paper releases; and a high-quality webinar program. In 2015, Bauer engaged the American Management Association (AMA) to deliver an intensive negotiation class online—one that typically requires three days out of the office and costs as much as $2300 per person—which was offered to FLC members at no cost for a few hours a week. These accomplishments have had wide-reaching impact. They provide "just-in-time" learning to new professionals, help ORTAs train lab scientists, and create a forum to discuss best practices, particularly crucial with ever-growing travel and funding challenges.

After seven years at the helm, Bauer continues to show vision and dedication. Her ideas for the future include connecting new FLC members with a pool of mentors, launching a scholarly journal about T2, growing a certificate program, and more. She is also active in the Interagency Working Group on Technology Transfer and several subcommittees, and the Office of Science and Technology Policy Lab-to-Market Summits; has shared her expertise with women technology professionals as part of a State Department program; and helped NASA with benchmarking its T2 efforts.

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STATE AND
LOCAL ECONOMIC
DEVELOPMENT AWARD

The Rural Indiana Technology Commercialization Initiative

Department of Defense – U.S. Navy

Naval Surface Warfare Center, Crane Division

Indiana Office of Defense Development

University of Southern Indiana

Purdue University

Indiana University

The Rural Indiana Technology Commercialization Initiative (RITCI) is a partnership with the Naval Surface Warfare Center, Crane Division (Crane), the Indiana Office of Defense Development (IODD), the University of Southern Indiana (USI), Purdue University, and Indiana University. It was launched in 2014 under the premise that most of the "pieces" needed to support technology-based economic development (TBED) existed in rural Indiana and were funded for the most part, but had yet to be connected.

Unlike federal laboratories in an urban environment, Crane is literally in the middle of a cornfield in a highly rural state in the middle of the country. Crane and most of its existing partners do not have an urban ecosystem or the local resources to connect all of the people, ideas and resources, and leverage the lab to its fullest economic development potential. The genius of the RITCI is its simplicity in linking existing programs and resources in an innovative way—connecting the dots, so to speak, so that the various pieces coalesce.

One example of RITCI's impact is a new startup, Pivot Engineering, LLC, a company started by graduates of the Technology Commercialization Academy (TCA) at USI. The TCA identified an innovative electrical contact device developed by Crane inventors as a potential opportunity and repurposed the innovation. The Growth Alliance for Greater Indiana (GAGE), a partnership intermediary, provided startup support; USI assisted with the invention disclosure and filing for provisional intellectual property (IP) protection; GAGE and USI funded the IP filing; and Purdue's Foundry provided distribution and marketing analyses. Next steps include pursuing the patent application; using USI resources to support product and team development; and working with the Indiana University Law Clinic.

As new and existing companies leverage Crane's assets to hire talent, invest capital, develop innovation, and bring new products and services to market, the fledgling innovation ecosystem within Crane's rural region benefits, as does the lab's ability to support its primary national security mission.

Left to right: John Dement, Norman Hedges, Elizabeth Brooke Pyne, Cliff Wojtalewicz, Daniela Vidal

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REGIONAL AWARD WINNERS

The FLC congratulates the following winners for their outstanding technology transfer efforts in their respective regions in 2015.

Far West

Outstanding Technology Development Award

Idaho National Laboratory
"Integrated Waste Screening System"

Lawrence Livermore National Laboratory
"Large Area Projection Micro Stereo Lithography"

NASA Armstrong Flight Research Center
"A Proven System for Preventing Ground Collisions of Aircraft"

NASA Armstrong Flight Research Center
"Low-Cost, Portable Platform for Mounting Antennas for Automatic UAV Tracking"

NASA Jet Propulsion Laboratory
"Multi-angle and Rear Viewing Endoscopic Tool"

Naval Surface Warfare Center, Corona Division
"Optimization of Cellular Solids for Energy Absorption"

NOAA Northwest Fisheries Science Center
"A Microparticulate Feeder for Larval and Juvenile Fish"

Sandia National Laboratories
"Twistact Technology: The Key to Proliferation of Wind Power"

Space and Naval Warfare Systems Center Pacific
"Nonvolatile and Cryogenic Compatible Quantum Memory Device"

USDA ARS WRRC Foodborne Toxin Detection and Prevention Research Unit
"Improved Detection of Shiga Toxin Through Monoclonal Antibodies"

Notable Technology Development Award

Pacific Northwest National Laboratory/Biocellion SPC
"Biocellion Software"

Outstanding Partnership Award

Pacific Northwest National Laboratory/General Motors/ Alcoa/TWB Company, LLC/Department of Energy
"Joining Dissimilar Thicknesses for Lightweight Vehicle Components"

Technology Transfer Professional of the Year Award

Bianca Thayer*
Sandia National Laboratories

Outstanding Commercialization Success Award

USDA ARS WRRC Bioproducts Research Unit
"Encapsulation of Beneficial Soil Microbes in Starch-Gypsum Matrix for Use in Agriculture"

Mid-Atlantic

Excellence in Technology Transfer Award

National Cancer Institute*
"Discovery to Commercialization: New Immunotherapy for Rare Childhood Cancer, Neuroblastoma"

National Cancer Institute*
"Development of First Immunotherapy to Treat Chordoma, Rare Bone Cancer"

National Institutes of Health
"Novel Therapeutics to Treat Niemann-Pick C Disease and Other Lysomal Disorders"

USDA ARS Environmental Microbial and Food Safety Laboratory*
"Handheld Imaging Device and Method for Improving Cleaning and Sanitation Inspection of Food Processing Environments"

USDA ARS Plant Genetic Resources
"New Productive, Disease-Resistant Apple Trees"

USDA ARS National Center for Cool and Cold Water Aquaculture
"Development and Release of a Disease-Resistant Rainbow Trout Line"

Interagency Partnership Award

Naval Surface Warfare Center, Carderock Division Department of Energy

Rookie of the Year Award

Alyssa Littlestone
Naval Surface Warfare Center, Carderock Division

** Also a 2016 national award winner*

State and Local Economic Development Award

FLC Mid-Atlantic Region
Montgomery County Department of Economic Development

STEM Award

National Institutes of Health

Mid-Continent

Outstanding Laboratory Award

Ames Laboratory

Outstanding Partnership Award

National Renewable Energy Laboratory/Wells Fargo

Notable Technology Development Award

Department of Energy National Security Campus
"Methods of Making Carbon Fiber From Asphaltenes"

Los Alamos National Laboratory/Whitewood Encryption Systems, Inc.
"Quantum Random Number Generator and Ky Management System for Secure Communications"

Sandia National Laboratories
"Dynamic Prosthetic Socket System"

USDA National Wildlife Research Center/Applied Design Corp.
"Biodegradable Bait Delivery and Automated Aerial Bait Delivery System"

Excellence in Technology Transfer Award

Sandia National Laboratories
"Sandia Decontaminating Technology for Chemical and Biological Agents"

USDA Agricultural Research Service/Acclima, Inc.
"Waveguide-On-Access-Tube Time Domain Reflectometry System"

Appreciation Award

Linda Von Boetticher
Sandia National Laboratories

Midwest

Partnership Award

Air Force Research Laboratory, 711th Human Performance Wing/UC Health

Excellence in Technology Transfer Award

USDA Agricultural Research Service, Midwest Area
"Commercialization of Estolides as a Biobased Engine Oil"

Regional Appreciation Award

Amy Hiltabidel
NASA Glenn Research Center

Northeast

Excellence in Technology Transfer Award

Air Force Research Laboratory, Information Directorate
"Android Tactical Assault Kit"

Volpe National Transportation Systems Center*
"Volpe Truck Side Guard Technology"

Regional Coordinator Excellence Award

Franklin E. Hoke, Jr.
Air Force Research Laboratory, Information Directorate

Regional Appreciation Award

Michael McCoy
Startup Strategy Group, LLC

Industry/Non-Federal Government/ University Award

The Griffiss Institute for Information Assurance

Southeast

Project of the Year Award

Kennedy Space Center
"The Commercialization of an Innovative Hydrogen Leak Detection Tape"

Excellence in Technology Transfer Award

Centers for Disease Control and Prevention
"Chimeric Attenuated Dengue Vaccine Candidate"

USDA Agricultural Research Service, Cotton Chemistry and Utilization Unit
"Griege Cotton Nonwoven Fabrics for Disposable Diapers"

USDA Agricultural Research Service, Quality and Safety Assessment Research Unit
"Microwave Moisture Sensor for In-shell Peanut Kernel Moisture Measurement"

Interagency Partnership Award

Naval Air Warfare Center Training Systems Division/ DHS Federal Law Enforcement Training Center

** Also a 2016 national award winner*

FLC AWARDS COMMITTEE

The FLC expresses its gratitude to the members of the Awards Committee for their tireless efforts in making the 2016 awards program a success.

Donna Bialozor
National Cancer Institute (Committee Chair)

Mojdeh Bahar
USDA ARS Beltsville Area

Dr. Sudeep Basu
Frost & Sullivan

Dr. Theresa Baus
Naval Undersea Warfare Center Division Newport

Dr. Sabarni Chatterjee
National Institutes of Health

Patricia Doutriaux
Naval Research Laboratory

Dr. Sevim Erhan
USDA ARS Eastern Regional Research Center

Hannah Farquar
Lawrence Livermore National Laboratory

Dr. Suzanne Frisbie
National Institute of Allergies and Infectious Diseases

Edward Glaser
Technology Commercialization Center

Marcia Graeff
TechLink

Amanda Horansky-McKinney
Naval Research Laboratory

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Dr. Katherine Lipka
Henry M. Jackson Foundation

Marianne Lynch
Department of Energy

Carolyn McMillan
Marshall Space Flight Center

Susan McRae
Army - Space & Missile Defense Command

Melissa Ortiz
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Gail Poulos
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Keith Quinn
Air Force Technology Transfer Program Office

Johnette Shockley
U.S. Army ERDC - Cold Regions Research and Engineering Laboratory

Dr. Thomas Stackhouse
National Cancer Institute

Janet Stockhausen
USDA Forest Service

Marc Suddleson
National Oceanic and Atmospheric Administration

Mark Surina
U.S. Transportation Command

Dr. Joseph Teter
Naval Surface Warfare Center, Carderock Division

Kathryn Townsend
Naval Meteorology and Oceanography Command

Rosemarie Truman
The Center for Advancing Innovation

Dr. Hailing Yu
Volpe National Transportation Systems Center

Dr. Xiao-Ying Yu
Pacific Northwest National Laboratory

Paul Zielinski
National Institute of Standards and Technology

FLC AWARDS PROGAM 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
- Laboratory Director of the Year
- Outstanding Technology Transfer Professional Award
- Rookie of the Year Award
- FLC Service Awards
  - › Harold Metcalf Award
  - › Representative of the Year Award
  - › Outstanding Service Award
- State and Local Economic Development 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 and 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/May
Award winners register for FLC national meeting; awards presented at FLC national meeting.

FLC NATIONAL AWARDS

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