AWARDS

2024 NATIONAL MEETING

April 9 – 11 / Dallas, Texas

50 | FLC

CELEBRATING 50 YEARS OF INNOVATION

50 Years of Innovation

In the last five decades, our technology, nation and world have changed immeasurably. Since its inception in 1974, the Federal Laboratory Consortium for Technology Transfer (FLC) has also grown and evolved, not only to adapt to a shifting landscape but also to catalyze change in the field.

The prestigious FLC Awards program reflects that evolution. Over the years, new awards categories have been added to recognize the skills, efforts and achievements that are most impactful in the changing landscape of federal tech transfer.

1974

The **FLC is established** with 34 member laboratories. The FLC's predecessor, the Department of Defense Laboratory Consortium, becomes part of the FLC.

1975

Still in its infancy, the FLC sets its north star with **two operating principles:** to provide technical assistance to state and local governments wherever and whenever possible and to transfer technology between laboratories.

The FLC's 1975 Fall Meeting attendees at the National Center for Atmospheric Research

1976

At the FLC's National Meeting, the FLC **establishes four regions:** Southeast, Mid-Atlantic, Northeast and Far West. George Lindsteadt, Chair of the preceding DoD Laboratory Consortium, is renamed Chair of the FLC Board.

Federal Laboratories Program Manager Joseph D. Antinucci (center) receives a special FLC Award of Appreciation. Antinucci had been pivotal to expanding and pursuing funding for the FLC in its early years.

1978

FLC **membership ramps up**, more than doubling in just one year from 72 to nearly 170 members by the 1978 National Meeting.

1979

Courtesy Jimmy Carter Library

President Jimmy Carter's *Science and Technology Message to the Congress* stresses the importance of federal research and development in addressing the pressing problems facing state and local governments.

1980

The **Stevenson-Wydler Technology Innovation Act of 1980** is the first major technology transfer policy in the U.S. This legislation defines the technology transfer mission and requires laboratories with 200+ scientists to have an Office of Research and Technology Applications.

1982

The **Small Business Innovation Development Act** passes, creating the Small Business Innovation Research (SBIR) program. The law also allocates a portion of agencies' budgets for domestic small businesses to engage in research and development with the prospect of commercialization.

1984

The **FLC Awards program** is established, with 17 award categories designed to honor the best in tech transfer.

1986

The **Federal Technology Transfer Act** establishes a formal charter for the FLC. The law also allows federal laboratories to enter Cooperative Research and Development Agreements (CRADAs) and negotiate licenses for patented inventions.

U.S. Senators Birch Bayh and Bob Dole jointly sponsor the **Bayh-Dole Act**, also known as the Patent and Trademark Act Amendments. This legislation establishes a federal policy regarding intellectual property for innovations developed with federal funds or facilities.

Sen. Birch Bayh (left) and Sen. Bob Dole (right)
Credit: Bob Dole Senate Office, Public domain, via Wikimedia Commons

2004

The FLC Awards Program expands to add categories for **Excellence in Technology Transfer, Lab Director of the Year** and **the FLC Service Award.**

2007

The FLC Awards program grows again with categories for **Interagency Partnership** and **Outstanding Technology Transfer Professional.**

2011

The FLC rolls out award categories for **State and Local Economic Development, STEM** and **Rookie of the Year.**

Timeline continues on page 57.

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Welcome
to the 2024 FLC Awards

As we celebrate the FLC's 50th anniversary and reflect on the incredible growth of federal technology transfer (T2), you can trace each stride back in our history to a person or team who pushed for that progress. In T2, success depends on the people involved and their knowledge, collaboration and innovation — and that's why it's so important that we gather each year to recognize the exceptional people, teams and partnerships in federal T2 with the FLC Awards.

In honoring the FLC Award winners, we are not just celebrating these recipients but also giving the entire T2 community an opportunity to learn about and gain insight from those excelling in our field. As the FLC enters its next 50 years, we are continuing to make history. For 2024, we are honoring 32 FLC award winners from eight federal agencies. There was a 25% increase in submissions from the 2023 award year to the 2024 award year. The Awards Subcommittee is working to increase member lab participation in the FLC Awards steadily by refining the submission and judging processes. We welcome and appreciate your participation in this continuous improvement process.

The 2024 Awards class exemplifies the diversity and excellence of the federal technology transfer community. With submissions reflecting exceptional work in labs across eight federal agencies, the outcomes of these efforts have created solutions to a range of issues from agriculture to national defense.

Please help me congratulate this exceptional group of 2024 FLC Awardees.

Best regards,

Jesse Midgett, NASA
Chair, FLC Awards Subcommittee

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2024 Awards by the Numbers

AWARDS SUMMARY

11	89	32	8
Categories	Nominations	Winners	Agencies Represented

WINNERS BY REGION

Far West

Mid-Atlantic

Mid-Continent

Midwest

Northeast

Southeast

**Winners by Region excludes Regional Award winners.*

WINNERS BY AGENCY

**Some categories include multiple agencies and regions, so the total will not match the number of winning nominations.*

A History of Excellence

Since the inception of the FLC Awards, the recipients have exemplified innovative thinking, bold leadership, creative collaboration and unwavering persistence. As we commemorate the FLC's milestone anniversary and celebrate this year's awardees, we honor the winners from past years. In a field that relies so heavily on forward thinking, each of these individuals, teams and institutions lays a stone in our path to the future.

Powertrain System Analysis Toolkit (PSAT), ***DOE*** *(2007)*

Treatment of Noise-induced Hearing Loss Through Biologic Mechanisms, ***DoD*** *(2006)*

Implementation of Phytosanitary Irradiation Treatment Protocols for Tropical Fruit, ***USDA*** *(2010)*

The Civilian American and European Surface Anthropometry Resource (CAESAR™) Project, ***DoD*** *(2008)*

Atomic Oxygen-Textured Surfaces for Blood Glucose Monitoring, ***NASA*** *(2009)*

Dual Antigen Detection Assay for Syphilis, ***HHS*** *(2008)*

Heat-Inactivated Rotavirus Vaccine, ***HHS*** *(2012)*

Adaptive Radio Technology for Satellite Communications, ***DOE*** *(2011)*

Method of Tampering Detection for Digital Devices (AutoBerry), ***DoD*** *(2012)*

Pulse Thermal Processing, ***DOE*** *(2013)*

Ultra-Scale Visualization Climate Data Analysis Tools (UV-CDAT), ***DOC, DOE, NASA*** *(2015)*

BaDx (Bacillus anthracis Diagnostics), ***DOE*** *(2015)*

New Productive, Disease-Resistant Apple Trees, ***USDA*** *(2015)*

X-Ray Toolkit, ***DOE*** *(2016)*

Interagency Award, ***DoD, DOT*** *(2016)*

NoMonia: A Process to Remove Ammonia from Drinking Water, ***EPA*** *(2017)*

NSA Port Protection Technology, ***DoD*** *(2017)*

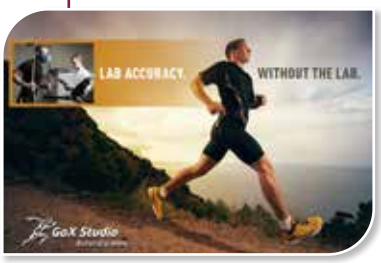
Transfer of PNNL's Acoustic Gunshot Detection Technology to Security USA, ***DOE*** *(2019)*

Rate-Activated Tethers (RATs), ***DoD*** *(2018)*

ORNL Secures Four Licenses for Low-Cost Carbon Fiber Technology, ***DOE*** *(2018)*

Birds Don't Always Like What They See, ***USDA*** *(2019)*

GoX Studio Ergo Wearable Sensor Kit, ***DoD*** *(2019)*



ARS Irrigation System Could Pay Off in Billions, ***USDA*** *(2020)*

PNNL-PST Collaboration Could Save Billions Through Proactive Detection of Fluid Contaminants, ***DOE*** *(2021)*

DoD Collaborations Drive Rapid Development and Deployment of COVID-19 Isolation Chamber, ***DoD*** *(2021)*

Catalyst Swaps CO_2 for Ethanol and Cleaner Air, ***DOE*** *(2020)*

ORNL Spinoff's Food Waste Conversion Process Has Environmental and Economic Potential, ***DOE*** *(2023)*

DEVCOM CBC and Pendar Team Up to Take Hand-Held Threat Detection to the Next Level, ***DoD*** *(2022)*

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AWARDS

EXCELLENCE IN TECHNOLOGY TRANSFER

Recognizes employees of FLC member laboratories and non-laboratory staff who have accomplished outstanding work in the process of transferring federally developed technology.

EXCELLENCE IN TECHNOLOGY TRANSFER

Aerial Electrostatic System for Weather Modification


Figure 1.


Figure 2.

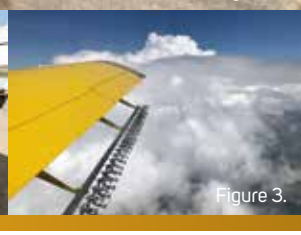
Figure 3.

THE PROBLEM: Low rainfall and drought slash crop yields, hurting local and national economies. For more than 20 years, the solution across roughly 50 million acres of Texas has been cloud seeding, which boosts rainfall by sending silver iodine and various chlorides into the clouds from pyrotechnic flares deployed from aircraft. Although effective, this method works only when a certain type of cloud is positioned within a specified elevation range while warm air rises in the right direction at the correct speed. This approach is relatively expensive, and many stakeholders have concerns about the cumulative environmental impact of using silver iodide to increase rainfall.

THE SOLUTION: In 2017, the U.S. Department of Agriculture (USDA) Agricultural Research Service (ARS) partnered with the Texas Weather Modification Association (TWMA) to pursue a more effective, efficient, flexible and cost-effective technology to support the nation's food supply. The result: the Aerial Electrostatic System for Weather Modification, an innovative method of seeding clouds without chemicals. Aircraft fitted with a specialized spraying system disperse negatively charged water droplets into clouds, where they bind to positively charged water droplets and increase rainfall. Compared to conventional seeding methods, this technology can seed clouds with warmer temperatures, as are typically found in areas of drought, and weaker updrafts, broadening the opportunities for use.

THE TECH TRANSFER MECHANISM: Initial studies began through a non-contracted cooperation between the USDA ARS Aerial Application Technology Research Unit and Rain Development Corp. (RDC). In 2017, research continued through a non-contracted agreement with TWMA, the largest convective weather modification organization in the U.S. In 2021, while work continued with TWMA, USDA ARS established a Cooperative Research and Development Agreement (CRADA) with Insight Engineering, though COVID-19 and funding restraints ended the partnership early. Funding from the ARSX Award research funding competition allowed research to continue, resulting in one issued patent and one pending application. In 2022, USDA-ARS entered into a license with TWMA to further extend their collaborative efforts and bring the technology to market.

THE TECH TRANSFER EXCELLENCE: USDA ARS research engineer Daniel Martin's persistence to repeatedly find innovative solutions to challenges was essential to this technology's progress. One tool he used was non-contracted agreements: Such an agreement with RDC produced crucial proof-of-concept data, while a non-codified partnership with TWMA prevented progress from halting when the USDA ARS research airplane was damaged so badly that it was put out of commission. When COVID-19 forced the end of a partnership with Insight Engineering, Martin's successful submission to the high-risk, high-reward ARSX funding competition enabled work to continue, which led to patents soon after.

THE OUTCOMES: Data have shown that aerial electrostatic cloud seeding can more than double the amount of extra precipitation from seeded clouds compared to conventional methods. For West Texas, this equates to an extra 3.8 inches of rain — contributing to agricultural security, reducing reliance on overtaxed aquifers and translating to a benefit of more than $22.8 million, according to a 2014 economic analysis. At the time of publication, research and fundraising continue, and public and private entities have expressed interest in licensing the technology for a variety of uses, potentially leading to new opportunities for aviation professionals.

Aerial Application Technology

THE LAB:

Aerial Application Technology Research Unit
U.S. Department of Agriculture
Agricultural Research Service

THE PARTNER:

Texas Weather Modification Association

THE TEAM:

Daniel Martin, PhD
Jonathan Jennings
George Bomar

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PHOTO CAPTIONS:

Figure 1: Dr. Martin and collaborators
Figure 2: Technology in action
Figure 3: Spray nozzle configuration

EXCELLENCE IN TECHNOLOGY TRANSFER

SUBMAT: A Temporary Roadway System Ingeniously Solves a Long-Standing Problem


Figure 1.


Figure 2.

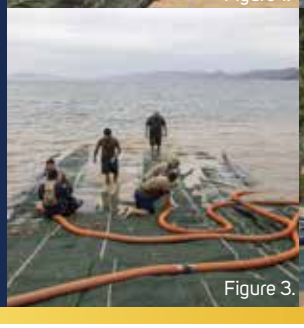
Figure 3.


Figure 4.

THE PROBLEM: When ships offload heavy equipment and supplies on ocean shores without fixed ports, the process often takes several days as ships avoid getting bogged down in the soft, wet sand in the littoral zone, the area that is underwater only during high tide. Many military ships address this issue by using the U.S. Army's Trident Pier, a roadway connecting the vessel to the beach. However, the pier is made of thousands of pounds of complex steel parts that take dozens of people weeks to assemble. Commercially available alternatives are hard to anchor, have a propensity to float, and are subject to scouring, when the sand and supporting material washes away.

THE SOLUTION: SUBMAT (Submersible Matting System) is like an air mattress that is filled with beach sand, pumped through lightweight, portable trash pumps. The result is a more-than-2,000 square foot surface that remains stable — on sandy, rocky, and coral beaches as well as steep- and shallow-sloped shorelines — amid waves as high as 13 feet and is durable enough to support heavy battle tanks and other military vehicles during offloading. SUBMAT is cost-effective and portable, made of inexpensive, readily available materials and designed to fold to fit in a compact space. Requiring only the mat, the trash pump and beach sand, SUBMAT can be installed by eight soldiers in less than a day. To disassemble, the sand is emptied from the mat back onto the beach, leaving no environmental footprint.

THE TECH TRANSFER MECHANISM: Under an Other Transaction (OT) agreement, a team of engineers in the Department of Defense (DoD) U.S. Army Engineer Research and Development Center (ERDC) Geotechnical and Structures Lab and the Coastal and Hydraulics Lab began development with Shavers-Whittle Construction LLC (SWC). The OT agreement included milestones that triggered rounds of funding, creating flexibility to work quickly or slow down when necessary. The follow-on Blanket Purchase Agreement (BPA) allowed SWC to produce more prototypes for testing and other purposes. SWC established the spin-off Nearshore Logistics LLC to continue R&D while bringing SUBMAT to a strategic market under a non-exclusive patent license that was fully executed in 2023. A Cooperative Research and Development Agreement (CRADA), also completed in 2023, allows Nearshore to continue advancing this technology and exploring non-military uses.

THE TECH TRANSFER EXCELLENCE: This transfer benefited from exceptional collaboration between ERDC engineers and SWC and the supportive design of the OT and follow-on agreements. The OT's tiered structure encouraged success while managing expenditure. The agreement also enabled collaborators to develop the project scope and adjust the contract as needed, creating crucial flexibility in the challenging early development stages. The follow-on BPA facilitated a speedy agreement execution, accelerating the commercialization timeframe. Leveraging the momentum from the OT agreement, the invention disclosure was reported in July 2022, a provisional patent application was filed in December 2022 and, within 16 months, ERDC had both a CRADA and a patent license executed with Nearshore.

THE OUTCOMES: SUBMAT addresses a problem that has plagued logistics operations for decades, making offloading faster, easier and more efficient to save time, resources and possibly lives. For the military, this creates a significant advantage in wartime, peacekeeping and relief operations; SUBMAT has been successfully demonstrated at military installations in Florida, Virginia and the Philippines. For non-military applications, the technology could be used for temporary boat ramps, piers and emergency access roadways, and its production creates jobs and contributes to the growth of the U.S. economy.

THE LAB:

Geotechnical and Structures Lab and Coastal and Hydraulics Lab
Department of Defense
U.S. Army Engineer Research and Development Center

THE PARTNER:

Nearshore Logistics LLC

THE TEAM:

Timothy Rushing, PhD
Zachary Tyler
Stanley Boc
Chris Rayer
Larry Schemmel
Alicia Bounds
Allison Hudson
Christie Bell
Melissa Keen

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PHOTO CAPTIONS:

Figure 1: A U.S. Army landing craft reaches SUBMAT's edge and drops its ramp for offloading.

Figure 2: SUBMATs that each measure 100 feet x 21 feet x 9 inches fit into 8-by-5-foot shipping containers.

Figure 3: U.S. Navy sailors fill up SUBMAT to conduct Joint Logistics Over-the-Shore (JLOTS) exercises.

Figure 4: SUBMAT supporting an M1A1 tank.

EXCELLENCE IN TECHNOLOGY TRANSFER

DISA Accelerates Cloud Adoption in the DoD

THE PROBLEM: For years, the Department of Defense (DoD) has been transitioning to cloud-based computing for the DoD Information Network (DoDIN), the agency's global network for gathering, processing, storing and distributing electronic information to warfighters, policymakers and support personnel. For the DoD entities, support agencies and other DoDIN users, switching to the cloud was a time-consuming and cumbersome process. Adopting cloud services required users to spend time setting up the infrastructure and security to meet their needs — and receiving DoD cybersecurity approval could take up to two years. These issues were burdening DoDIN users and complicating cloud adoption.

THE SOLUTION: Developed by the Defense Information Systems Agency (DISA), DoD Cloud Infrastructure as Code (IaC) is a collection of software templates with built-in features and capabilities that streamline and speed up cloud service adoption. The Cloud IaC templates use automation to create cloud computing setups that meet users' needs and follow the structure of commercial cloud services. Additionally, the templates are preset with DoD-approved cybersecurity policies and protections. This innovation removes the cost and burden of configuring cloud networking systems, allowing users to adopt and deploy the cloud service within months instead of years.

THE TECH TRANSFER MECHANISM: In 2021, the DoD began collaborating with Amazon, Google, Microsoft and Oracle through a Joint Warfighter Cloud Capability contract, which allows the agency to acquire commercial cloud capabilities and services directly from commercial cloud service providers. DISA established Cooperative Research and Development Agreements (CRADAs) with the four companies that built in regular meetings, feedback and information sharing that helped the technology develop efficiently. These close collaborations allowed DISA to develop and validate the software templates within each partner's cloud environment to then receive government cybersecurity approvals. DISA J9 Hosting and Compute, the legal department and technology transfer office worked with the industry partners to develop the strategy for optimizing the CRADAs.

THE TECH TRANSFER EXCELLENCE: The CRADA was creatively designed to overcome the project's inherent hurdles and to leverage DISA's deep understanding of the difficulties of cloud adoption in the DoD. A modified intellectual property (IP) rights structure allowed DISA to retain rights for the government as the technology's target end-user. The team strategized to avoid liability concerns around putting government-developed software code into commercial systems. The team also included a grace period after the CRADA's execution, during which industry collaborators could declare relevant preexisting IP. The advance planning streamlined CRADA negotiations and implementation and helped ensure the success of DoD Cloud IaC.

THE OUTCOMES: DoD Cloud IaC is also the first government product ever offered in a commercial cloud provider marketplace. This technology transfer effort accelerated cloud adoption within the DoD, directly supporting DISA's mission and fulfilling goals from the DoD's official Cloud Strategy. More than 40 DoD entities (military services and support agencies) and other federal agencies — including the Navy, Marines, Air Force, Space Force, Coast Guard and Department of Justice — have used Cloud IaC to support their cloud adoption.

DISA

THE LAB:

Defense Information Systems Agency
Department of Defense

THE PARTNERS:

Amazon
Google
Microsoft
Oracle

THE TEAM:

David Lago
Jonathan Williams
Tyler Mullen
Quanita Bost
Vicki Allums

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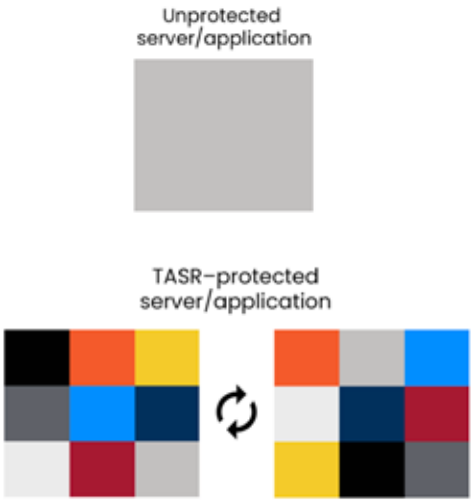
EXCELLENCE IN TECHNOLOGY TRANSFER

Timely Address Space Randomization (TASR)



THE PROBLEM: Sophisticated, large-scale cyberattacks have become widespread in recent years, costing the United States $220 billion in 2022 alone. Cybercriminals steal sensitive information to commit fraud and identity theft, compromise financial assets, and gain unauthorized access to other restricted and mission-critical systems. Such information-leakage attacks are particularly concerning on Linux-based operating systems, which run on a majority of the world's internet servers, Android phones, cloud platforms and supercomputers. The code is mapped similarly in all Linux-based systems, meaning once attackers break into one system, they could easily compromise millions more. The homogenous internals of such Linux-based systems create an economy of scale for attackers: once they devise an attack against a Linux-based application, the attack can often compromise millions of computers.

THE SOLUTION: Timely Address Space Randomization (TASR) protects Linux-based systems against these large-scale cyberattacks by scrambling, or re-randomizing, the location of code in memory. Whereas similar preceding technologies perform one-time randomization and leave systems vulnerable afterward, TASR continuously re-randomizes memory to hinder attacks. Whenever the system sends data out (output), TASR automatically scrambles the memory before that system processes any request (input), making any potentially leaked data from the output stale to an attacker before they have a chance to act on the information. This randomization technology is the first to mitigate the impact of information-leakage attacks regardless of the attacker's access point or the system's vulnerability.

THE TECH TRANSFER MECHANISM: The MIT Lincoln Laboratory (LL) research team developed TASR under sponsorship by the National Security Agency (NSA) over three years, resulting in a research prototype and a patent. In 2020, TASR was selected for the competitive Department of Homeland Security (DHS) Commercialization Accelerator Program (CAP), which provides funding for technology maturation and commercialization. From 2019 to 2021, the MIT Technology Licensing Office helped transfer TASR to a number of interested commercial partners.

THE TECH TRANSFER EXCELLENCE: After nearly a decade of development, maturation and transfer, this T2 effort filled a high-priority gap in cybersecurity. Throughout the process, funding support was crucial. The early stages of research and development were funded by the NSA. Later, funding from DHS CAP enabled the MIT LL team to mature TASR and position the technology for commercialization.

THE OUTCOMES: TASR has been transitioned to the government, and discussions with commercial entities for "productizing" are planned. In 2022, TASR won the prestigious R&D 100 Award, which recognizes the year's 100 most innovative new products.

LINCOLN LABORATORY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

THE LAB:

MIT Lincoln Laboratory
Department of Defense

THE TEAM:

Hamed Okhravi, PhD
Jason Martin
David Bigelow, PhD
Thomas Hobson
Robert Rudd
William Streilein, PhD
Daniel Dardani
Aidan Fowler

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Honors Gallery

PHOTO CAPTION:

TASR works by scrambling the code locations in a Linux-based server or application.

EXCELLENCE IN TECHNOLOGY TRANSFER

Adapter Makes Legacy EV Chargers "Smart" and More Accessible Nationwide

THE PROBLEM: An estimated 2 million electric vehicle (EV) charge stations are deployed today, and a significant portion of them are non-networked. This lack of network connectivity does not allow for monitoring and control of these charge sessions to optimize for cost or grid constraints. Networked electric vehicle charging stations overcome barriers associated with non-networked stations by enabling real-time monitoring, cost optimization, grid integration, improved user experience and remote maintenance and diagnostics.

THE SOLUTION: Researchers at the U.S. Department of Energy's (DOE) Argonne National Laboratory (ANL) developed hardware that fits onto the connector of non-networked EV charge stations, along with a companion mobile app. This plug-and-play adapter retrofits EV charge stations, enabling them to become smart, networked charge stations. This innovation extends the life of the roughly 2 million legacy EV charge stations, delaying the cost and waste of replacing them. For these EV charge station owners, smart charging makes powering their vehicles cheaper by optimizing power use and integrating their charging into the smart grid.

THE TECH TRANSFER MECHANISM: In 2014, ANL principal electrical engineer Jason Harper conceived the idea for the EV charger adapter and brought it to the DOE's Lab-Corps (now Energy I-Corps) immersive training program. A grant from the DOE's Technology Commercialization Fund and a partnership with engineers in Argonne's Smart Grid Electric Vehicle Interoperability Center were key to the technology's development. Harper also worked with Argonne's Science and Technology Partnerships and Outreach directorate to secure patents in the U.S. and European Union. In 2023, ANL licensed the technology to EVmatch, granting a 10-year right to commercialize and an innovative combination of select patent claims (exclusive) and copyrights (non-exclusive). The two parties also signed a Strategic Partnership Project agreement to help ensure the transfer's success.

THE TECH TRANSFER EXCELLENCE: This T2 effort showcases a series of innovative strategies. The lead inventor actively engaged in DOE's Lab-Corps program to assess the commercial potential of the initial idea. The team skillfully used DOE Technology Commercialization Fund support to propel early-stage development. Through extensive market research, they identified and pre-vetted over 25 potential partners, engaged prospects through direct marketing, employed a competitive partner selection process, and devised a license that builds in both flexibility for Argonne and market impact through exclusive patent claims and non-exclusive copyrights. In selecting EVmatch, ANL gained a partner that aligns with its organizational goals and, as a women-led business, one that reinforces the agency's commitment to diversity, equity and inclusion.

THE OUTCOMES: The technology transfer of the EVmatch Adapter brings sizable benefits on multiple fronts. EVmatch helps owners and operators save money in the short and long terms: The smart adapter technology reduces energy costs by charging when electricity rates are low, and improves overall charging station efficiency by enabling real-time monitoring, grid-friendly scheduling, and remote maintenance, thereby transforming non-networked stations into intelligent and cost-effective components of the electric vehicle charging infrastructure. This transfer can help accelerate the widespread adoption of electric vehicles, which will be critical to our ability to reduce carbon emissions in the coming years; importantly, this aligns with ANL's and DOE's missions for sustainable transportation and clean-energy technology advancement.

Argonne NATIONAL LABORATORY

THE LAB:

Argonne National Laboratory
Department of Energy

THE PARTNER:

EVmatch

THE TEAM:

Jason D. Harper
Hemant Bhimnathwala
Ilya Kats
Mark A. Langguth

Go to Honors Gallery

PHOTO CAPTION:

The EVmatch Adapter retrofits nearly any legacy electric vehicle charging station to make it "smart."

EXCELLENCE IN TECHNOLOGY TRANSFER

LLNL/EVOQ Therapeutics

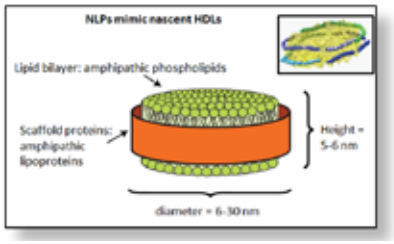

Figure 1.

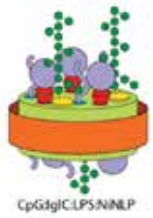

Figure 2.

THE PROBLEM: Millions of people struggle with autoimmune diseases including type 1 diabetes, celiac disease, multiple sclerosis and rheumatoid arthritis. These diseases represent a significant challenge to the medical community; while medications are available to treat some of these diseases, there have been no Food and Drug Administration (FDA)-approved vaccines to prevent them.

THE SOLUTION: The Department of Energy (DOE) Lawrence Livermore National Laboratory (LLNL) developed a technology, called nanolipoprotein particles (NLPs), which could provide a unique approach to developing vaccines for autoimmune diseases. NLPs are microscopic transport vehicles that can deliver vaccines directly to the lymph nodes, the hubs of the body's immune response. NLPs can deliver vaccines efficiently and effectively because they appear similar to structures already found in the body, and that resemblance allows NLPs to complete their delivery without raising red flags to the immune system. NLPs carry the vaccine's two key ingredients — the antigen (the active ingredient) and the adjuvant (the agent that boosts immune response) — at the same time as well as on the same particle (co-delivery), making NLPs very efficient carriers. NLPs are also very adaptable — they have the potential not only to deliver therapeutics to combat infectious, metabolic and autoimmune diseases as well as cancers, but also to be applied to protein research and drug screening.

THE TECH TRANSFER MECHANISM: For over a decade, LLNL has built a robust intellectual property (IP) portfolio for NLPs. After the technology's early development, LLNL's Innovation and Partnerships Office (IPO) identified potential partners through issued patents, published patent applications and marketing. In 2017, LLNL licensed the NLP technology to EVOQ Therapeutics, an immunotherapy tech start-up, to develop it for cancer vaccines. However, when the effort did not gain enough traction, LLNL amended the EVOQ license agreement in 2020 to address autoimmune diseases, a new and promising area of vaccine application. The shift paid off as EVOQ was able to establish license agreements and secured funding for collaborative research and development (R&D) with well-known biopharmaceutical companies: Amgen Inc. in 2021 and with Gilead Sciences Inc. in 2023. Also, in 2022, EVOQ announced a collaboration with the Juvenile Diabetes Research Foundation (JDRF) to develop drugs targeting type 1 diabetes.

THE TECH TRANSFER EXCELLENCE: The NLP technology is the first vaccines- and therapeutics-related innovation arising out of DOE national laboratories to enter preclinical trials — and the achievement has been hard won. Despite struggles in the initial pursuit to develop cancer vaccines, EVOQ and LLNL persisted. They saw the technology's potential to target autoimmune diseases, and shifted their focus. Since the switch, EVOQ has seen positive outcomes for its autoimmune vaccine approach — the NanoDisc platform — in preclinical models for multiple sclerosis and type 1 diabetes. The project's success has helped draw tens of millions of investment dollars with collaborating development partners.

THE OUTCOMES: EVOQ demonstrated that the NanoDisc technology can be applied to a range of autoimmune disorders that affect millions around the world. EVOQ signed collaborative agreements with partners to support ongoing R&D — including a 2021 partnership with Amgen providing hundreds of millions of dollars for preclinical and clinical development and commercialization, a 2022 collaboration with JDRF targeting type 1 diabetes, and a 2023 collaboration and licensing agreement with Gilead Sciences focused on rheumatoid arthritis and lupus. At the time of publication, the vaccines in development are making their way through preclinical trials with the goal of FDA approval so they can become available to the people who need them most.

Lawrence Livermore National Laboratory

THE LAB:

Lawrence Livermore National Laboratory
Department of Energy

THE PARTNER:

EVOQ Therapeutics

THE TEAM:

Nicholas Fischer, PhD
Yash Vaishnav, PhD
William Brinkerhoff
David Giljohann, PhD

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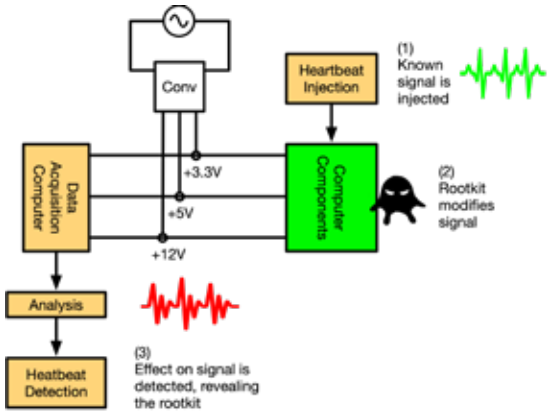
PHOTO CAPTIONS:

Figure 1. NLPs resemble the body's high-density lipoproteins to avoid an unwanted immune response and promote rapid transfer of NLPs to lymph nodes, introduce antigens, and trigger an effective immune response.

Figure 2. A customized arrangement of antigens (represented by purple circles and green hexagons) and adjuvants (represented by purple squiggly lines) can be added to the NLP platform for the safe delivery of vaccines.

EXCELLENCE IN TECHNOLOGY TRANSFER

Advanced Cybersecurity System Will Bring Greater Precision to National Security



THE PROBLEM: Malware infections and cyberattacks are rising in frequency, sophistication and severity. Existing defenses cannot keep up with the flood of new, advanced malware that is programmed to hide its presence within a computer's operating system. Networks are regularly compromised, causing the loss of intellectual property, the disclosure of state secrets, and billions of dollars in financial damages. In the deluge of data in today's networks, operators need better tools to help identify suspicious behavior that bypasses automated security systems and to understand what makes an event suspicious. Technology that highlights such anomalous behavior in real time would help operators focus their limited time effectively.

THE SOLUTION: Oak Ridge National Laboratory's (ORNL) Cyber Resilience and Intelligence Division developed two powerful technologies, Heartbeat and Situ, that work independently or together to provide advanced cybersecurity monitoring in real time. The Heartbeat system detects otherwise invisible malware by monitoring a device's power consumption: When any software runs, it uses more power; an unexplained rise in power use can be a red flag that malware is operating. Situ is a scalable, real-time cybersecurity platform that can quickly and effectively identify and explain suspicious activities that other technologies might miss. Situ uses constantly updated data to determine how likely it is that the suspicious activity is a threat and why, enhancing situational awareness. The technologies are efficient, flexible and user-friendly, and they deliver accurate data that sends alerts on only the most likely threats, reducing the demand on operators' time.

THE TECH TRANSFER MECHANISM: From 2015 to 2021, the ORNL Technology Transfer Office successfully filed five patents and registered two copyrights that cover this portfolio. In 2018, the Heartbeat research and commercialization team received funding through ORNL's Technology Innovation Program, which helped advance technical development, industry engagement, and marketing. In 2022, U2opia — a consortium of scientific, technology and senior administrative executives with experience in industry and defense — began collaborating with ORNL scientists to develop a large-scale approach to curtailing massive cyber breaches in the U.S. A few months later, ORNL executed an exclusive research and development (R&D) patent and copyright license and option agreement with U2opia for both the Heartbeat and Situ technologies.

THE TECH TRANSFER EXCELLENCE: The overarching achievement in this T2 effort is U2opia's highly proactive approach to the technology transfer in combination with support from ORNL. While it's not uncommon for entrepreneurs to reach out to labs with a specific mission-oriented goal, the federal lab is typically the one to reach out to industry with a grand vision — but this case was different. U2opia's persistence and innovation throughout the technology transfer process in combination with mentorship from ORNL allowed for the development of a platform that satisfies the organizations' shared vision to build a more cybersecure future. U2opia's initiative is also paving the way for future collaborations between small businesses and the government, as they are building an agile roadmap for the technology transfer process.

THE OUTCOMES: Since receiving the licensing package, U2opia has far exceeded what licensees typically accomplish with an R&D license. U2opia added an advisor on the technology transfer process, secured testing partners and worked toward completing commercialization testing of both technologies. U2opia's vision is to fully integrate the ORNL technologies into U2opia's anomaly detection system to deliver advanced security capabilities, with a focus on government testing and healthcare systems.

OAK RIDGE National Laboratory

U2opia™

THE LAB:

Oak Ridge National Laboratory
Department of Energy

THE PARTNER:

U2opia Technology LLC

THE TEAM:

Andreana Leskovjan, PhD
Stacy Prowell, PhD
John Goodall, PhD
Maurice Singleton
Joaneane Smith
J. Chris Ford, PhD

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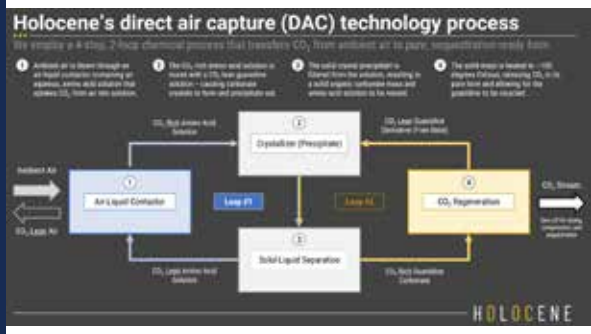
PHOTO CAPTIONS:

This Heartbeat system workflow illustrates how the technology detects cyberattacks. The technology, as a "periodic heartbeat," measures the health of the machine's "heartbeat" and reports on malicious activity that it can detect through monitoring power consumption.

EXCELLENCE IN TECHNOLOGY TRANSFER

Direct Air Capture of CO_2: Low Cost, Energy Efficient, Scalable



THE PROBLEM: Climate change is worsening extreme global weather, which has increasingly dangerous impacts on people and the environment. To mitigate the damage, we must not only reduce carbon dioxide (CO_2) output but also actively remove CO_2 that is already in the atmosphere, called achieving negative emissions. Based on estimates from the Intergovernmental Panel on Climate Change, by 2050, we need to remove up to 10 gigatons of CO_2 per year, costing an estimated $50 trillion to $100 trillion. The two existing carbon removal methods have limitations in their scalability and carbon footprints.

THE SOLUTION: Researchers at Oak Ridge National Laboratory (ORNL) developed a negative-emissions direct air capture (DAC) technology based on a new chemistry called Bis-Iminoguanidine Negative Emission Technology: The CO_2 is absorbed into another material and mixed with a reusable compound, which turns the captured CO_2into crystals that can be stored or heated. The technology uses organic and non-toxic materials, sustainable heat sources and less energy than other methods; collectively, this minimizes the technology's environmental impact. The ORNL technology will enable the startup Holocene to scale and deploy the process at least two times faster than existing technologies — removing more CO_2 more quickly to help the world meet its urgent deadline.

THE TECH TRANSFER MECHANISM: In 2021, ORNL began licensing discussions with Holocene, a startup co-founded by Anca Timofte, an MBA student at the time with a chemical engineering background and experience at Climeworks, one of the world's first DAC companies. As a startup in a young industry, Holocene had much to learn and do to create a business plan, determine the market and build a viable commercial product. In 2022, Timofte was chosen as a Breakthrough Energy Fellow, which awarded her a multimillion-dollar grant. She also joined the Spark Incubator Program, a two-year entrepreneurial support program, and ORNL's Innovation Crossroads program. A commercial license agreement was signed in 2022. Since then, Holocene has entered a Cooperative Research and Development Agreement with ORNL to perform experiments to inform their first plant's construction.

THE TECH TRANSFER EXCELLENCE: This technology transfer effort was fueled by the unrelenting efforts of Timofte, the ORNL commercialization team and the Innovation Crossroads team. Another key factor in this success was the partnership with Holocene. Despite the potential challenges of transferring technology to a startup, the ORNL team was impressed by Timofte, her background and the business model she was creating; they felt Holocene would be the company that would give the technology its greatest chance for success. The ORNL team also recognized the unique advantages a small startup can bring, such as having more agility and creativity than a larger organization.

THE OUTCOMES: Since its inception, Holocene has been awarded more than $5 million in grants and awards. In 2021, the technology won a prestigious R&D 100 Award. In 2023, Frontier Climate, a coalition of carbon removal services buyers, signed a purchase agreement for at least $1 billion collectively. At the time of publication, Holocene is focused on building a test facility with the chemical engineering equipment at scale for the first time, with the ability to remove 10 tons of CO_2 from the atmosphere per year. According to plans, a new pilot facility will remove 1,500 tons of CO_2 per year by 2026. By 2028, a projected 50-fold increase will mean 75,000 tons will be removed per year.

OAK RIDGE National Laboratory

HOLOCENE

THE LAB:

Oak Ridge National Laboratory
Department of Energy

THE PARTNER:

Holocene

THE TEAM:

Dan Miller
Kelly Wampler
Jose Zavala, PhD
Alex DeTrana
Anca Timofte

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PHOTO CAPTION:

The Holocene direct air capture technology process is a four-step, two-loop process that transfers CO_2 from ambient air to pure, sequestration-ready form.

EXCELLENCE IN TECHNOLOGY TRANSFER

Changing Lives in PASLI/APDS Patients, Disease Discovery and Treatment

THE PROBLEM: APDS (activated PI3 kinase delta syndrome) — also known as PASLI (p110 delta-activating mutation causing senescent T cells, lymphadenopathy and immunodeficiency) disease — is a rare disorder that severely impairs the immune system's ability to fight bacterial and viral infections, making patients susceptible to severe and recurrent infections, lymphoma, autoimmune diseases and other health issues. This disease is estimated to affect up to two people per million, and it can only be cured via bone marrow transplant. The only alternative for APDS patients was to treat their symptoms, using immunoglobulin replacement therapy, immunomodulatory drugs and treatments targeting infections.

THE SOLUTION: Researchers at the National Institute of Allergy and Infectious Diseases (NIAID) and Novartis Pharmaceuticals Corp. developed the first Food and Drug Administration (FDA)-approved medication to treat the source — not the symptoms — of APDS. NIAID researchers discovered that APDS patients have a common gene variation in the PI3 kinase gene, and that causes that gene's pathway to become hyperactive and produce an imbalance in white blood cells that makes it difficult for the body to fight infections. Through this technology transfer, they developed a medication that controls the overactive gene pathway to provide more effective, targeted treatment with fewer long-term side effects.

THE TECH TRANSFER MECHANISM: In 2013, NIAID researchers published their findings about the PI3 kinase delta gene mutation. Novartis had developed a proprietary compound, called leniolisib, as an inhibitor of this same gene. In 2015, NIAID entered into a Cooperative Research and Development Agreement (CRADA) with Novartis to assess the safety and efficacy of leniolisib as a treatment for APDS in a clinical trial. After this trial produced positive results, the team launched a Phase III clinical trial in 2018 and an extension study to test the drug's long-term safety and efficacy in APDS patients. In 2019, the commercialization rights to the clinical development of leniolisib were transferred from Novartis to Pharming Group N.V. The CRADA was amended to establish Pharming as NIAID's new collaborator for the leniolisib/APDS trial. In July 2022, Pharming submitted a New Drug Application for leniolisib; the following March, the FDA granted full approval of leniolisib (trade name Joenja) to treat APDS in adults and patients 12 years and older.

THE TECH TRANSFER EXCELLENCE: NIAID's Technology Transfer and Intellectual Property Office (TTIPO) played a key role in formalizing the collaboration under a CRADA with Novartis. Upon the successful completion of the Phase II trial, TTIPO negotiated an amendment to the CRADA to launch the Phase III trial and an extension study for APDS patients. TTIPO worked tirelessly with NIAID's clinical and research teams, NIAID's budget office and Novartis's (and subsequently Pharming's) clinical and legal teams, negotiating through the execution of 10 separate CRADA amendments to accommodate the partners' evolving needs, including modifying the research plan, adding extension studies and securing additional funds. TTIPO's diligence and meticulous attention to detail were central to the smooth and timely execution of the CRADA and the subsequent amendments.

THE OUTCOMES: This technology transfer has filled an unmet medical need: Joenja is the first and only treatment approved in the U.S. for APDS, an ultra-rare and progressive primary immunodeficiency disorder. The FDA approval of leniolisib was an important milestone for APDS patients as a treatment option that targets the root cause of the disease, rather than relying upon treatment of symptoms. At the time of publication, Pharming is investigating the safety and efficacy of leniolisib to treat APDS in patients under 12.

NIH National Institute of Allergy and Infectious Diseases

THE LAB:

National Institute of Allergy and Infectious Diseases
Department of Health and Human Services
National Institutes of Health

THE PARTNER:

Novartis (now Pharming)

THE TEAM:

Yogikala Prabhu, PhD
Michael Lenardo, MD
V. Koneti Rao, MD
Gulbu Uzel, MD
Sharon Webster
Alan Orpia
Cecilia Pazman, PhD
Peter Tung, PhD, MBA
Cosimo Fuda, JD, PhD

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EXCELLENCE IN TECHNOLOGY TRANSFER

TrackMate: The World's First Digital Disinfection Tracking System

THE PROBLEM: Too often, pathogens are spread on hospital equipment. This leads to dangerous infections in hospitalized patients. Hospital equipment is used many times per day, but it may not be cleaned often enough or as thoroughly as required by policy. Even when equipment is cleaned, studies have shown that over 50% of surfaces are missed completely during manual cleaning, and 40% of high-touch surfaces are inadequately disinfected. When these surfaces are not properly cleaned, pathogens can live there for months, posing a threat to susceptible patients.

THE SOLUTION: TrackMate is a disinfection tracking system that monitors how often equipment is disinfected. The device can be attached to a computer workstation, IV pump or other hospital equipment; when the equipment is disinfected with a wipe or with UV light, the system recognizes moisture and UV, and updates the time of disinfection in a digital log for managers, data tracking or audits. TrackMate also has a screen with a digital readout showing the time of the last disinfection. This technology is designed to help healthcare facilities keep patients safe and maintain compliance with policies.

THE TECH TRANSFER MECHANISM: In 2012, when TrackMate was first developed, then known as Disinfection Tracking System, it was reported to the Department of Veterans Affairs (VA) Technology Transfer Program (TTP). The VA TTP filed for a provisional patent that same year, followed by a Patent Cooperation Treaty in 2013. In 2014, the VA TTP set up a Cooperative Research and Development Agreement (CRADA) between the VA and Xenex Disinfection Services, which was selected for its track record in commercializing infection control technology and its evidence-based approach to product development. In 2015, TrackMate was exclusively licensed to Xenex. Xenex won two Small Business Innovation Research grants to study the impact of TrackMate on microbiology, cleaning behaviors and other factors. Xenex created and studied 250 beta devices, which led to four peer-reviewed published papers covering behavioral and worker acceptance of the technology. TrackMate was formally launched as a commercial product in 2023.

THE TECH TRANSFER EXCELLENCE: The VA TTP had an important role in TrackMate's success, facilitating the technology evaluation and patenting and later establishing the CRADA and license with Xenex. Xenex contributed heavily to refining the technology and developing a market-ready product. While the initial patents were filed by the VA, the collaboration between the VA and Xenex has been close and productive. This has included patent prosecution, modifying the device based on feedback from healthcare workers, manufacturing, developing new applications and final deployment. As part of its commercial launch, VA Technology Transfer Specialist Bhoomija Hariprasad recorded a first-of-its-kind video interview with Xenex's chief scientific officer and senior scientist to discuss the problem TrackMate solves, how the VA and Xenex partnered, how the VA TTP contributed to the process and TrackMate's potential impact.

THE OUTCOMES: TrackMate benefits both veterans and non-veterans by mitigating hospital-acquired infections in patients and monitoring disinfections in not just VA medical centers, but all healthcare settings where equipment is moved and reused among patients. TrackMate also has applications in any public place that requires frequent disinfection, including childcare centers, airports and planes. Studies have shown that using TrackMate prompts twice as many cleanings, helping to prevent the spread of dangerous pathogens such as MRSA, staph or enterococcus — protecting the health of the more than 9 million veterans enrolled in the VA health system, as well as countless civilians in American hospitals.

TECHNOLOGY TRANSFER PROGRAM

THE LAB:

Department of Veterans Affairs

THE PARTNER:

Xenex Disinfection Services

THE TEAM:

Bhoomija Hariprasad
Jenish Patel, PhD
John Kaplan, PhD
Chetan Jinadatha, PhD
Mark Stibich, PhD
Sarah Simmons, PhD

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PHOTO CAPTION:

Xenex TrackMate


DOE (2007)


DOC (2020)

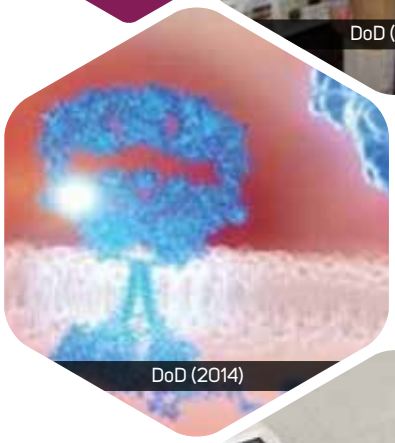

USDA (2022)


USDA, NASA (2023)


DoD (2010)


NASA (2021)


DHS (2023)


DoD (2014)


DOE (2011)


DoD (2014)

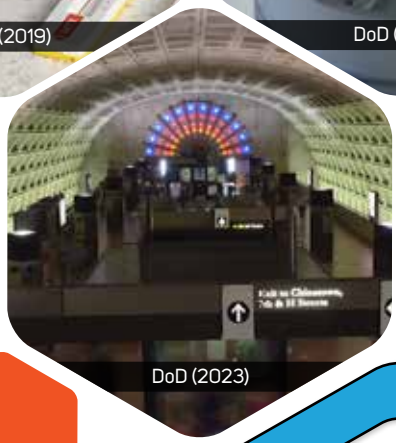

DoD (2018)

HHS (2019)


DoD (2018)


NASA (2013)

DOE (2023)


DoD (2023)


DOE (2020)


DOE (2004)

AWARDS

INTERAGENCY PARTNERSHIP

Recognizes agency and/or laboratory employees from at least two agencies who have collaboratively accomplished outstanding work in transferring technology.

INTERAGENCY PARTNERSHIP

Protecting Wildlife: The California Condor Project

Figure 1.

Figure 2.

THE PROBLEM: In December 2021, the virus H5N1 highly pathogenic avian influenza (HPAI) infected birds throughout North and South America. The outbreak became the largest animal disease event ever reported in the U.S., severely impacting poultry and devastating certain wild bird populations. In 2023, the virus killed 21 California condors, an iconic bird in western North America and a protected endangered species since 1967. Although the condor population had grown from just 22 in the 1980s to roughly 550 birds (both captive and wild) at the time of the outbreak, the H5N1 HPAI virus threatened to spread exponentially if healthy condors scavenged on infected animals, potentially pushing the species to extinction.

SOLUTION: The U.S. Fish and Wildlife Service (USFWS) requested assistance from the U.S. Department of Agriculture (USDA) to consider vaccinating the condors to protect against infection and potential extinction. The USDA collaborated with the Department of the Interior to develop and implement a historic vaccination plan to protect the endangered California condors from HPAI.

THE TECH TRANSFER MECHANISM: This vaccine was developed by the USDA Agricultural Research Service (ARS). Upon determining that the animal health company Zoetis was the best commercial partner for this technology, the USDA transferred the vaccine to Zoetis to establish a collaboration to commercialize the vaccine. Zoetis agreed to provide the vaccine for this project at no cost if federal and state approval was obtained for the experimental use in an endangered species. Representatives from Zoetis and the USFWS signed a Material Transfer Agreement (MTA) covering use of the vaccine.

With the help of USDA-Wildlife Services and the Carolina Raptor Center, the team ran trials that affirmed the vaccine was both safe and effective in black vultures, which are closely related to condors. Based on this data, the team began vaccine trials in condors — the first use of an HPAI vaccine in the U.S. and the first ever designed to protect a wild bird species from the HPAI virus. Researchers found the vaccinations to be safe, and in 2023, the Zoetis RG vaccine was deemed the best option to immunize condors. Zoetis agreed to contribute the vaccine and expertise at no cost, and the company signed a new MTA with USFWS in 2023.

THE OUTCOMES: At the time of publication, researchers planned to continue vaccinating all wild and captive condors against HPAI. Through the determined efforts of the interagency team members, this unique program is helping prevent the extinction of a critically endangered species. The HPAI vaccine also holds the distinction of being the first to protect wildlife, and one of the firsts to protect against HPAI and the first to protect an endangered species.

Achieving success in this first-of-its-kind effort required collaboration among many federal and state agencies and private organizations, each of which had separate capabilities or management responsibilities. The unprecedented speed of the program's conception and coordinated implementation was a credit to the partners' commitment to the program's success. Thanks to the team's combined efforts, they overcame obstacles that could have derailed the project.

THE LABS:

U.S. National Poultry Research Center
U.S. Department of Agriculture
Agricultural Research Service

U.S. Fish and Wildlife Service and U.S. Geological Survey
Department of the Interior

THE PARTNERS:

Carolina Raptor Center
San Diego Zoo
Los Angeles Zoo
NC Department of Agriculture and Consumer Services

THE TEAM:

David Suarez, DVM, PhD; Michael Martin, DVM; Samantha Gibbs, DVM, PhD; Todd Katzner, PhD; Greg Nitzel, PhD; Sunny Cooper; David White, DVM, PhD; Shanna Siegel, DVM; Mary Donahue, DVM; Dominique Keller, DVM, PhD

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PHOTO CAPTION:

Figures 1 and 2. The black vultures vaccination team.

INTERAGENCY PARTNERSHIP

ERDC-DHS Collaboration Achieves Far-Reaching Perimeter Security Solutions


Figure 1.


Figure 2.

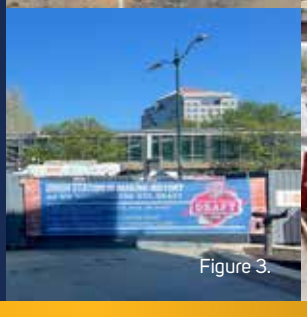
Figure 3.

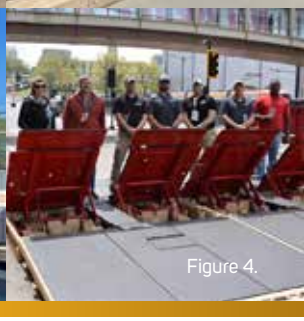
Figure 4.

THE PROBLEM: The U.S. Army anticipated that 30 years down the road, as cities keep growing, the Army will be unable to avoid conflicts in urban areas and will not stay in one place for a long period of time. Thus, the Army needed something to provide protection that could be deployed instantly, recovered quickly, and moved easily. The Geotechnical and Structures Laboratory (GSL), within the U.S. Army Engineer Research and Development Center (ERDC), developed the Perimeter Security Solutions technologies to address this need: Aggressor Vehicle Entry Readiness Technology (AVERT) is a barrier to mitigate hostile vehicle threats, Ready Armor Protection Instant Deployment (RAPID) is an accordion-like security wall for ballistic protection in urban environments, and Deployable Expedient Traffic Entry Regulator (DETER) provides an active vehicle barrier to protect critical assets and soft targets from vehicular attacks.

THE SOLUTION: ERDC originally developed its Perimeter Security Solutions to meet the needs of the future warfighter, but the Department of Homeland Security (DHS) saw the potential to tailor this technology solution for civilian law enforcement and homeland security needs. The Office for Bombing Prevention (OBP), within DHS's Cybersecurity and Infrastructure Security Agency (CISA), collaborated with the ERDC to adapt the perimeter technologies for civilian protection. As a result of the partnership, in 2023, DETER and RAPID were both deployed at the 88th annual NFL Draft in Kansas City, Missouri.

THE TECH TRANSFER MECHANISM: The ERDC demonstrated RAPID and AVERT at two events in 2019, where the technology caught the attention of members of the OBP, who saw the potential to develop the technologies with a new focus on the civilian sector. The ERDC entered into a five-year interagency agreement with DHS's Science & Technology Directorate (S&T). With help from the OPB and funding from S&T, the ERDC tested the technologies at public events to assess them in an operational environment with the new user focus in mind.

THE OUTCOMES: This interagency collaboration resulted in the rapid development of these perimeter technologies, including taking technologies originally developed for the warfighter and tailoring them for homeland security. The high-visibility demonstration of DETER and RAPID at the 2023 NFL Draft was a huge success and a testament to the commitment to collaboration and respect on all sides. ERDC researchers received valuable feedback from law enforcement, NFL security contacts and local security officials. This success is also leading to further partnerships, including through Cooperative Research and Development Agreements and commercial licenses. Thanks to the visibility of the NFL Draft demonstration, at the time of publication, the Secret Service is interested in purchasing RAPID and the team is scheduled to demonstrate DETER at the next Indianapolis 500. The agencies involved, the commercial companies licensing the technologies and the American public all stand to benefit from this expanding collaboration.

THE LABS:

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

Cybersecurity and Infrastructure Security Agency, Office for Bombing Prevention
Department of Homeland Security

THE TEAM:

Justin Roberts
Omar Esquilin-Mangual
August Johnson
William Hossley
James Davis
Ali Fadel (DHS Science and Technology Directorate)
Eric Keenan

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PHOTO CAPTION:

Figure 1. AVERT uses a mat connected to the barrier to stop an aggressor vehicle by friction, reducing the vehicle's traction to the ground.

Figure 2. RAPID kits deployed at the 88th annual NFL Draft demonstration in April.

Figure 3. Exterior view of RAPID kits deployed at the NFL Draft demonstration in April.

Figure 4. The interagency team that worked on the demonstration at the NFL Draft in front of DETER.


DOE (2014)


DOE (2014)


DoD (2014)


DOE (2006)

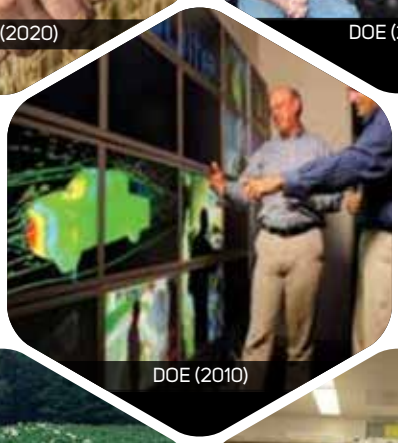

DoD (2020)


USDA (2020)


DOE (2006)


DOE (2015)


DOC (2015)


DOE (2010)


DoD (2021)


DoD (2021)


USDA (2015)


HHS (2016)


DOE (2016)


DoD (2016)


DOE (2011)


DoD (2016)

AWARDS

STATE AND LOCAL ECONOMIC DEVELOPMENT

Recognizes successful initiatives that involve partnerships between state or local economic development groups and federal laboratories for economic benefit.

STATE AND LOCAL ECONOMIC DEVELOPMENT

The TRGR Technology Readiness Initiative


Figure 1.


Figure 2.

THE PROBLEM: When a technology is transferred out of the laboratory, it takes significant capital investment and research and development to make that technology market ready. After collaborating for over 20 years on the successful New Mexico Small Business Assistance Program, which helps small businesses in the state overcome technical challenges, Sandia National Laboratories, Los Alamos National Laboratory (LANL) and the State of New Mexico asked: How can we help more companies, particularly those that have transferred technology, get the technology to market?

THE SOLUTION: Sandia and LANL partnered with the state to develop the TRGR Technology Readiness Initiative, an innovative program focused on technology maturation for New Mexico companies that have licensed technology from or established a Cooperative Research and Development Agreement (CRADA) with a New Mexico national laboratory. TRGR helps companies mature technologies and expedite product commercialization by assisting with prototype development and technology validation. This moves the companies closer to gaining investment funding, introducing new products and services to market, and hiring new employees. TRGR is an essential ingredient in creating more startups, capital and technology jobs in New Mexico.

THE TECH TRANSFER MECHANISM: Due to the innovative nature of the TRGR program, new technology transfer mechanisms were created and used by both nominees and their respective labs. Technical Assistance Maturation Agreements, a simple agreement used with all license types, speed up a company's engagement with the lab compared to a standard Strategic Partnership Project agreement. A TRGR-specific CRADA template makes it easier for companies to get access to lab technology and the assistance available through TRGR. LANL created a flat-rate, non-negotiable Test and Evaluation License that can now also be used beyond the TRGR program. Another innovative technology transfer mechanism, the umbrella CRADA, allows companies to work with Sandia or LANL on multiple projects with different task statements, whether funded by TRGR or other sources.

THE IMPACT: As of publication, since TRGR began in 2020, it has already been responsible for 15 new licenses and three new CRADAs. Almost $1.5 million in lab hours have been utilized to benefit NM businesses — and the number of participating companies is increasing each year. In fiscal years 2021 and 2022, companies in the TRGR program received $15,103,465 in new funding/financing, according to third-party data. The program has also allowed lab researchers to expand their skill sets as they provide assistance and learn what it takes to move technology to market. The initiative has become an essential ingredient to creating more startups, capital and technology jobs in New Mexico. Through collaboration, innovation, creativity and adopting best practices that streamline processes, the TRGR Initiative team is actively creating economic development in the state..

THE LABS:

Los Alamos National Laboratory and Sandia National Laboratories
Department of Energy

THE TEAM:

Genaro Montoya
Julia Wise, PhD

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PHOTO CAPTION:

Figure 1. Pajarito Powder manufactures catalysts for use with fuel cells and electrolyzers based on technology licensed from Los Alamos National Laboratory.

Figure 2. Kairos Power is a nuclear energy engineering, design, and manufacturing company commercializing a fluoride salt-cooled high-temperature reactor with a mission to enable the world's transition to clean energy.

AWARDS

IMPACT AWARD

Honors FLC member laboratories whose technology transfer efforts have made a tangible and lasting impact on the populace or marketplace, ranging from a local to global scale. The focus of this award is to recognize the powerful impact technology transfer can have, no matter how simple or complex the technology transfer effort.

IMPACT AWARD

USDA Catfish Germplasm Release


Figure 2.


Figure 1.


Figure 3.


Figure 4.

THE PROBLEM: Catfish is king in the U.S. aquaculture industry: The sector has the highest dollar value and greatest product output. In 2019, catfish farming and support industries (including feed mills and processing plants) contributed $1.91 billion and 9,166 jobs across Alabama, Arkansas and Mississippi, where catfish production is concentrated. Over 90% of the catfish fry (offspring) are currently produced at 13 hatcheries located in Mississippi and Arkansas, where the fish are raised and often sold to independent farmers to continue growing until they become large enough to sell. In this thriving market, catfish farmers want genetically improved broodstock (parent fish) with desirable traits, but conducting long-term genetic improvement programs has not been feasible.

THE SOLUTION: The U.S. Department of Agriculture (USDA) Agricultural Research Service Warmwater Aquaculture Research Unit (WARU) used sophisticated genetic and genomic selection techniques to produce a line of channel catfish called Delta Select. Researchers developed the Delta Select catfish to have a 25% increase in growth rate and 0.9% greater carcass yield; growth rate and carcass yield are two of the most important factors in making catfish farming more economically efficient. In March 2020, ARS released 180,000 pounds (90,000 head) of Delta Select channel catfish broodstock to 12 commercial catfish producers.

THE TECH TRANSFER MECHANISM: To market its channel catfish selective breeding program to commercial producers, WARU gave presentations at scientific and industry meetings published in the primary industry publication. Since researchers had a limited supply of Delta Select germplasm (genetic material used in breeding), they maximized its impact by choosing hatcheries with histories of producing catfish fry and the ability to reproduce the Delta Select line; catfish industry representatives were consulted about the release strategy and agreed that this was the best approach. In 2020, 12 catfish producers signed a Material Transfer Research Agreement and then received 2-year-old Delta Select catfish that had been grown to that point in WARU ponds.

THE IMPACT: The release of the Delta Select channel catfish line provides U.S. catfish farmers with a product with better performance and increased profitability. Of the 12 producers that received Delta Select germplasm, one has converted entirely to Delta Select, two more plan to fully convert in 2024 and others plan to dedicate portions of their production to the Delta Select catfish. One recipient has also sold Delta Select catfish to a hatchery that did not participate in the 2020 release, expanding the reach of this transfer. In 2024, just four years after WARU's 2020 germplasm release, catfish fry production could be up to 50% Delta Select line catfish. This release of Delta Select catfish will be the most widely incorporated release of improved germplasm to the catfish industry since its inception in the U.S. This T2 effort benefits consumers across the U.S. by reducing catfish production costs and keeping consumer prices down. Another release is planned for 2024.

USDA

THE LAB:

Warmwater Aquaculture Research Unit
U.S. Department of Agriculture
Agricultural Research Service

THE TEAM:

Brian Bosworth, PhD
Geoff Waldbieser, PhD

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PHOTO CAPTION:

Figure 1. Geoff Waldbieser, PhD, (left) and Brian Bosworth, PhD (right)

Figure 2-4. The Delta Select L ine Channel Catfish Release

IMPACT AWARD

Rapidly Deployed Modular Protective System Guard Tower for Counterinsurgency Operations


Figure 1.


Figure 2.

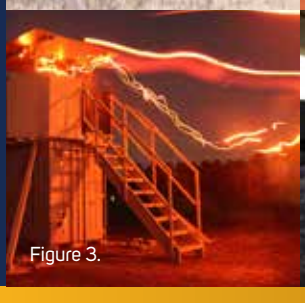
Figure 3.


Figure 4.

THE PROBLEM: Severe combat conditions during the wars in Afghanistan and Iraq highlighted the need for a portable guard tower. The U.S. Army and other armed forces needed a tower that could be quickly set up to protect them from a wide range of threats during counterinsurgency operations. Existing options were limited to low-tech guard towers of lumber and sandbags, which were not readily available and required significant manpower to build, or large concrete or prefabricated towers, which were expensive and required trucks and cranes. There was no logistically practical solution for remote deployment that provided adequate protection from bullets and explosives.

THE SOLUTION: The U.S. Army Engineer Research and Development Center (ERDC) developed the Modular Protective System Guard Tower (MPS-GT), a lightweight, rapidly constructable tower that is more efficient, safer, and more cost-effective than previous options. The versatile tower can be used as an elevated guard tower, a ground-level fighting position, an inspection station, and other purposes to keep warfighters safe in remote, austere environments. At less than 8,000 pounds, the MPS-GT can be transported by helicopter, truck or warship to remote locations, where five workers can assemble the structure in an hour using only an instruction booklet — no tools, experience or training required. The MPS-GT is designed to be disassembled and re-used for years. The tower's multi-layered armor panel system leverages ERDC's existing MPS technology, which can be tailored to provide blast and ballistic protection that matches threat levels.

THE TECH TRANSFER MECHANISM: The inventor spent nearly five years developing and optimizing the MPS-GT. To get the technology into military hands, it had to be thoroughly tested and approved. Over a two-year period, the towers were tested at multiple military bases by scores of soldiers in all environments; the experiment captured soldiers' feedback, range of motion and other human factors. In 2016, 32 towers were deployed to support the effort to defeat the Islamic State group. The towers made it possible to quickly establish U.S. military outposts in areas where the U.S. previously had no presence or infrastructure. At the time of this publication, all 32 towers are still deployed. For soldiers in those environments — who before this tower was available often had only bags of dirt stacked around them — it provides a much better level of protection and a feeling of security. The MPS-GT was patented in 2019. In 2023, Edwards Design & Fabrication Inc. worked with ERDC and intermediaries TechLink and ERDCWERX to sign a non-exclusive license for MPS-GT. Edwards has since acquired three more licenses for similar solutions.

THE IMPACT: The MPS-GT has opened the door for faster deployments into remote combat environments. The technology's impact on the strategic market is evident by the multiple purchases, inquiries and intellectual property license requests for the MPS-GT. Although MPS-GT was originally developed for defense, it became apparent that this technology also had broader applications. The towers can be used as military bases or command centers, diplomatic facilities at borders, communications centers after natural disasters, entry control and processing centers for refugee camps, security screening checkpoints for law enforcement and many more applications.

THE LAB:

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

THE PARTNER:

Edwards Design & Fabrication Inc.

THE TEAM:

Bradford Steed; Tyler Oesch, PhD; Matthew Holmer; Amy Douglass (formerly Allen); Andrew Edwards; Jason Edwards; Eric Fox; Christie Bell; Brian C. Jones

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Honors Gallery

PHOTO CAPTION:

Figure 1. To collect warfighter feedback and confirm operational effectiveness, the MPS Guard Tower was deployed in a simulated combat outpost at the Army Expeditionary Warfighter Experiment at Fort Moore, Georgia. Credit: Matthew Holmer

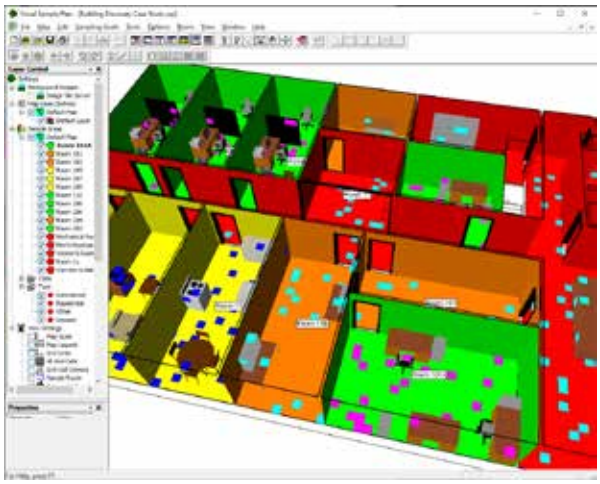
Figure 2. The blast-resistant capabilities of the MPS Guard Tower were evaluated by subjecting it to blast loads from vehicle-borne improvised explosive devices at Fort Johnson, Louisiana. Credit: Matthew Holmer

Figure 3. During testing, the MPS Guard Tower was assembled and used under a variety of conditions, including low-light conditions at night at Camp Roberts, California. Credit: Tyler Oesch

Figure 4. The effectiveness of the MPS Guard Tower to be used as a fighting position was evaluated by mounting various weapons systems (including the 240B machine gun, M2 .50-caliber machine gun, remotely operated 338 Lapua sniper rifle and Common Remotely Operated Weapon Station .50-caliber machine gun) and conducting live-fire testing. Credit: Matthew Holmer

IMPACT AWARD

Visual Sample Plan: Statistical Sampling for Confident Decision-Making



THE PROBLEM: Whether intentional, like poisonous attacks, or accidental, like that from a derailed train, chemical releases pose deadly hazards to humans and the environment. In the wake of a hazardous chemical spill, radiological release or biological contamination, sampling is crucial. Sampling is the process of systematically collecting and analyzing air, water, soil and other environmental substances potentially impacted by the contamination. Environmental and national security agencies use sampling data when making time-sensitive decisions that protect lives and the environment, so the sampling must be performed efficiently and effectively to provide necessary information and avoid wasting valuable time and money.

THE SOLUTION: Pacific Northwest National Laboratory's (PNNL's) Visual Sample Plan (VSP) makes it easy to create a systematic plan for sampling. VSP helps users determine where sampling should be conducted and how many samples are needed based on details about the location and the type, quality and quantity of data needed. With PNNL's enhanced 3-D and other visualization capabilities, the technology lets users map out the sampling plan within and outside buildings, on furniture, laboratory equipment or vehicles. The tool helps technical and non-technical users develop statistically backed sampling strategies, regardless of the contaminant or location. VSP is an adaptable tool that is easily tailored for defense, anti-terrorism, environmental restoration and many other applications. The technology's informed, automatic reporting and documentation tools streamline sample planning and make it easy to demonstrate compliance for environmental regulators, which is typically a time-consuming, labor-intensive effort. The software is free to download, and feedback from VSP's users worldwide drives the technology's improvements.

THE TECH TRANSFER MECHANISM: VSP's technology transfer is one of reciprocity. Recognizing the domestic and global need for rigorous, statistically sound environmental sampling, VSP creators chose technology transfer founded in accessibility, affordability and collaboration. By teaming with clients to build domain-specific statistical sampling designs, PNNL maximizes sponsor investments and continuously deploys software with maximum impact. The no-cost download approach has made this innovation available to users worldwide, including federal and international partners. VSP has become a model by which PNNL makes other software available at no cost and generates user communities, whose feedback drives continual improvements that keeps the software relevant to current industry needs and standards. VSP's lead developer created the software's architecture to allow the platform to continually expand and remain operational, accommodating new operating systems and computing updates.

THE IMPACT: As of 2023, VSP has more than 5,000 active users across multiple U.S. federal, state and local agencies and in over 70 countries around the world. The software has been downloaded over 8,000 times since 2018. As the number of users has more than doubled since 2018, its impact on national and global security has grown immensely. Additionally, offering such software at no cost to users and with open lines of communication for sharing use cases and best practices has generated communities of practitioners and enhanced long-term maintenance and stewardship of VSP and other mission-critical software tools.

Pacific Northwest NATIONAL LABORATORY

THE LABS:

Pacific Northwest National Laboratory
Department of Energy

THE TEAM:

Lisa Newburn
Kannan Krishnaswami
Brent Pulsipher
J. Hathaway
Landon Sego
Jim Davidson
Richard Gilbert
John Wilson
Debbie Fagan
Jen Huckett, PhD

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PHOTO CAPTION:

VSP is available for download from the PNNL-based VSP website. Here, users can register, download the software, learn about methodology and operations, and access robust training tools and help resources.

IMPACT AWARD

FDA-Approved RSV Vaccine Based on NIAID's F Protein Technology

THE PROBLEM: Respiratory syncytial virus (RSV) is a common virus that typically causes mild, cold-like symptoms — but it can be deadly to older adults, young children and people with chronic heart or lung disease or weakened immune systems. Each year in the U.S., 60,000 to 160,000 adults 65 years and older are hospitalized, and up to 10,000 people die each year from RSV infection, according to the Centers for Disease Control and Prevention.

THE SOLUTION: GlaxoSmithKline Biologicals SA's (GSK) RSV vaccine, Arexvy, received approval from the FDA as the first of its kind. This vaccine has shown over 80% vaccine efficacy in preventing lower respiratory tract disease caused by RSV in individuals aged 60 and older. It is similarly effective for older adults with select underlying medical conditions that put them at higher risk for RSV disease. Arexvy has been approved in multiple countries, including the U.S., Europe, UK and Japan.

The development of Arexvy stems from a significant discovery made by scientists at the National Institute of Allergy and Infectious Diseases (NIAID). In 1984, these researchers isolated a crucial protein, known as the fusion glycoprotein or F protein, that enables the RSV virus to infect human cells. Building on this knowledge, NIAID's Vaccine Research Center began investigating the F protein in 2006 for the development of an RSV vaccine. In 2013, NIAID scientists achieved a breakthrough by finding a new way to stabilize the F protein in its prefusion form, making it more effective in stimulating an immune response. This achievement paved the way for the creation of antibodies and vaccines, such as Arexvy, to prevent RSV disease in individuals aged 60 and older.

By bringing together cutting-edge science and innovative research, Arexvy offers a promising solution to help protect older individuals from the most severe effects of RSV-associated lower respiratory tract disease.

THE TECH TRANSFER MECHANISM: In 2013, NIAID filed a patent and published its discovery. Shortly after, Novartis applied for and signed a nonexclusive commercial license. In 2015, when Novartis sold its vaccine business to GSK, the RSV license from NIAID was transferred to GSK. To further develop the RSV vaccine, NIAID's Technology Transfer and Intellectual Property Office negotiated two Research Collaboration Agreements with GSK. These agreements enabled fruitful collaboration between NIAID and GSK scientists.

The outcome of this collaboration was the FDA approval of Arexvy in 2023, highlighting the power of collaboration and tireless efforts of dedicated scientists. Recognizing the importance of sharing their knowledge, NIAID also nonexclusively licensed their discovery to 10 other companies. This allows these companies to develop their own RSV vaccine, diagnostics and treatment products, expanding the impact of NIAID's pioneering research.

THE IMPACT: In 2023, Arexvy became readily available at major U.S. retail pharmacies. The vaccine became covered by most Medicare and commercial insurance plans in time for the fall and winter RSV season. The impressive sales of $1.5 billion worldwide reported by GSK on January 31, 2024, demonstrates strong demand for the vaccine. With an estimated 76.5 million people aged 60 and older in the U.S., Arexvy has the potential to make a significant positive impact. By helping to reduce the number of symptomatic RSV cases among older adults, this vaccine can help improve health outcomes and decrease hospitalizations, ultimately lightening the load on healthcare systems and lowering healthcare costs.

NIH National Institute of Allergy and Infectious Diseases

THE LAB:

National Institute of Allergy and Infectious Diseases
Department of Health and Human Services
National Institutes of Health

THE PARTNER:

GlaxoSmithKline Biologicals SA

THE TEAM:

Carol Salata, PhD
Jason McLellan, PhD
Barney Graham, PhD
Peter Kwong, PhD
Cristina Thalhammer-Reyero, PhD
Vince Contreras, PhD
Barry Buchbinder, PhD
Vincent Feliccia, PhD

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DoD (2017)


DOE (2021)

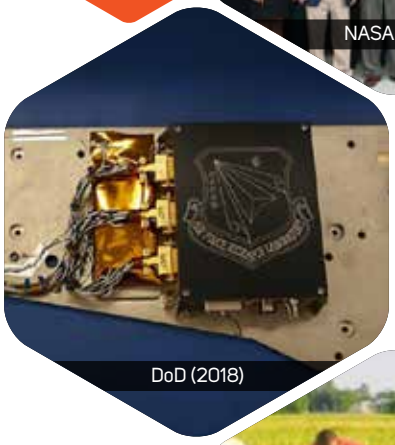

EPA (2017)


HHS (2017)

NASA (2017)


USDA (2017)


DoD (2018)

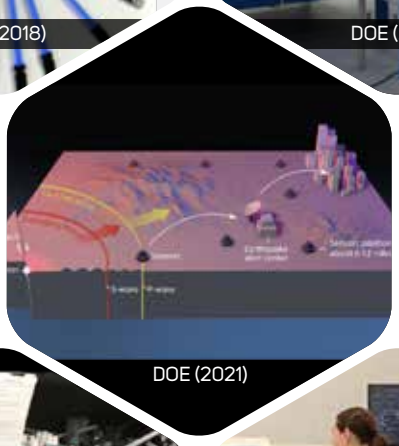

DoD (2018)


DoD (2018)


DOE (2018)


HHS (2018)


USDA (2019)


DOE (2021)


HHS (2021)


NASA (2021)


USDA (2021)


DOE (2022)


DoD (2019)

AWARDS

TECHNOLOGY TRANSFER INNOVATION

Recognizes federal laboratories that successfully implemented innovative or unconventional technology transfer approaches that resulted in a significant increase in technology transfer activities.

TECHNOLOGY TRANSFER INNOVATION

Assistive Technology Transfer: Moving Military Technology From Concept to Product

THE PROBLEM: Defense Health Agency (DHA) inventors approached the U.S. Army Medical Research and Development Command (MRDC) Medical Technology Transfer (MTT) office with products at all stages of development. MTT saw a need to de-risk innovative technologies at all stages of development, particularly at the early prototyping and field-testing stage.

THE SOLUTION: MTT created Assistive Technology Transfer (AT2), a program that helps academic collaborators and industrial partners traverse the Valley of Death, the gap between a startup's launch and steady revenue. AT2 helps systematically mature and de-risk biomedical technologies from concept to commercialization, expediting the process to make life-improving products available to military and civilian users. MTT developed the AT2 program to be responsive to the full lifecycle of activities required by inventors to commercialize their products.

As part of the AT2 process, royalty funds and MTT time are invested into identifying additional funding sources, and partners are introduced to potential sources of funding from angel and venture capital as well as economic development groups. AT2 also makes MTT part of the procurement process, something that differentiates MTT from academia and many other federal labs that do not buy back their own inventions.

THE IMPACT: The effect of AT2 is more life-improving products for warfighters and civilians. These products include vaccines, therapeutics, diagnostics, medical devices and medical software and algorithms. AT2 expedites the process so those products reach people faster. In just five years, MTT successfully used AT2 to help more than 20 technologies achieve commercial and/or military sales, generating licensing revenue of $26 million. This revenue has gone toward rewarding inventors and reinvesting into the AT2 program to move new inventions through development — creating a positive feedback loop of success.

The largest recent impact of AT2 has been through the prototype, test and evaluation stages of development. MTT has allocated some of its licensing revenue for the design and construction of prototypes through internal and external developers. Because money alone is insufficient for successful prototype development, MTT licensing officers facilitate multiple rounds of design and prototype production, often coordinating parties that provide incremental improvements along each step of the process. Bringing in clinical and regulatory expertise from across DHA into the process from the earliest stages is another aspect of AT2 that has proved useful in helping commercial partners develop technologies of use to the warfighter. MTT also helped several companies obtain National Stock Numbers through the Defense Logistics Agency. Through DHA Vendor Day events and one-on-one conversations, partners can better prepare to quickly sell their products to help the warfighter.

Although technology transfer success is usually measured by patents, licenses and royalties, AT2 focuses on the number and quality of products available to the warfighter and civilian users; these products positively impact their well-being through better medical and health outcomes. The AT2 pipeline created by MRDC's MTT provides a sustainable program that continues to produce new products for the Department of Defense and the public.

MEDICAL TECHNOLOGY TRANSFER

U.S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND

THE LAB:

U.S. Army Medical Research and Development Command
Department of Defense

THE PARTNER:

Defense Health Agency
Department of Defense

THE TEAM:

Barry Datlof
C. Blake Sajonia
Ronald Marchessault
Leigh Z. Callander
Marlana Chapin
William C. Schrot
Neche Harris

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PHOTO CAPTION:

Valley of Hope can be bridged by MTT and partners using Assistive Technology Transfer.

TECHNOLOGY TRANSFER INNOVATION

Technology Transfer Researcher Liaisons (TTRL) Program Provides a Valuable Bridge

THE PROBLEM: Successful technology commercialization programs depend upon close collaborations with researchers to identify, mature, market and deploy laboratory-developed technologies. However, in 2019, Oak Ridge National Laboratory (ORNL) realized that several recent trends were hurting connectivity between its technology transfer office (TTO) and researchers; these challenges were common across the Department of Energy (DOE) labs. Like many research and development organizations, ORNL has a high ratio of researchers to TTO staff, making it difficult for TTO staff to regularly engage with researchers. This challenge was further exacerbated by high turnover rates typical during the COVID-19 pandemic occurring simultaneously with growth in the size of research staff at labs, which created a gap in institutional knowledge regarding technology transfer. Furthermore, an analysis of invention disclosures revealed that only about one-third of ORNL's research staff were routinely filing invention disclosures. ORNL also wanted to see greater participation of researchers in several funding initiatives from DOE's Office of Technology Transitions, such as the Technology Commercialization Fund and Energy I-Corps, which provide commercialization and entrepreneurship education opportunities.

THE SOLUTION: To increase TTO-researcher engagement, ORNL led a team of other DOE labs in launching the technology transfer Researcher Liaison (TTRL) program. Established as a pilot project funded by DOE's Practices to Accelerate the Commercialization of Technologies (PACT) Laboratory Call, this innovative program's focus was to increase TTO engagement with the organization's research community, thus increasing researchers' technology transfer participation. The program recruited six or seven researchers at each participating lab and trained them to be liaisons — embedded technology scouts, local subject matter experts, ambassadors to their TTOs and to an advisory council for their laboratories. Liaisons assisted fellow researchers in identifying new inventions and disclosing them to the TTO, coached their peers on how to interact with prospective licensees and provided general assistance with the technology transfer process. Liaisons from all 11 participating labs also participated in a community of practice, in which they exchanged encouragement, experiences and lessons learned.

THE IMPACT: The goals of the TTRL program were to increase invention disclosures and participation in technology transfer programs. Despite the constraints of the COVID-19 pandemic, which began during the program's infancy, labs that participated in the TTRL program saw two-year average increases in invention disclosures (8%), first-time inventors reporting inventions (12%) and participants in most technology transfer programs (45%–78%).

After completing the PACT-supported pilot project in 2022, ORNL continued its TTRL program with support from its royalty fund, continuing to reap the substantial impacts of this innovative program. Since the program's inception, the results have shown that Technology Transfer Researcher Liaisons are an effective approach to building a valuable bridge between the lab and the TTO, increasing the TTO's engagement with researchers and thereby increasing researcher participation in the technology transfer process. This success is evidenced not only by the numbers above but also by the favorable feedback from the participating labs' TTOs, liaisons and researchers.

OAK RIDGE National Laboratory

THE LAB:

Oak Ridge National Laboratory
Department of Energy

THE TEAM:

Jennifer Caldwell, PhD
Michael Paulus, PhD
Alex DeTrana

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PHOTO CAPTION:

This image was used to promote the Technology Transfer Researcher Liaisons Program to the ORNL researcher community.

TECHNOLOGY TRANSFER INNOVATION

New Enterprise Technology Transfer System Revolutionizes Tech Transfer at NIH

THE PROBLEM: At the National Institutes of Health (NIH), an inefficient system for documenting and storing data related to technology transfer (T2) activities made sharing information cumbersome, resulting in information silos and long wait times for information. Tech Transfer Offices (TTOs) in the NIH's 27 institutes and centers manage T2 activities for research conducted by more than 6,000 researchers, including patent protection, licensing, marketing and negotiation of collaborative agreements. However, T2 data were spread across nine separate databases, complicating efforts to enter information, ensure data integrity, track the lifecycle of technologies and pull data to create reports. The NIH needed a centralized repository of information that would allow stakeholders to view all data and relationships between patents, licenses, inventions and expenses.

THE SOLUTION: A new database, the Enterprise Technology Transfer (ETT) system, was created to serve as the system of record for all activities performed by NIH's TTOs. Data for technology transfer activities — including inventions, patents, licenses and agreements — across all 27 NIH institutes and centers are now accessible from a single database. Over five years, over 50 people worked to bring the new database online — a process that entailed cleaning, consolidating and migrating 7,857 data fields; 591 data tables; and 13,337,463 records.

ETT was built to bring automation to processes and workflows, improve efficiency by eliminating the need to duplicate work, help support full compliance with security and policy guidelines, provide increased transparency into NIH-wide approaches for negotiating agreements and provide flexibility and support to users. When creating ETT, the team strived to make T2 tasks easier with features like dashboards and options to show a user a summary of the records they manage, such as agreements or patents. Custom query grids, a popular ETT feature, allow users to review the results of a set search criteria with one click; this greatly speeds up the search process and ensures that the right results are returned by removing the possibility of missing a filter through user error.

THE IMPACT: ETT makes T2 at NIH more efficient, which helps move more inventions from the lab to market to benefit public health. The data, processes and reports housed in ETT have immense relevance to public health. At the time of publication, the 200+ staff who rely on this system to complete and track their work managed 39,324 active transactional agreements; 2,020 active licenses; 9,285 patents; 586 CRADAs; and 1,638 technologies available for licensing or collaboration. They collected more than $704.4 million in royalties in fiscal year 2022. They also executed 440 research collaboration agreements and 80 clinical trial agreements.

ETT has become the backbone of T2 at NIH, automating processes, data validation and approval workflows across the agency's entire T2 community. The system enables anyone to gather information they need without relying on another person while also improving transparency by providing the real-time status of objects such as patent submissions and license applications. ETT eliminates the need to replicate data across multiple systems or places in the system, supports full compliance with all NIH security guidelines and provides flexibility for TTOs by enabling customized solutions as needed.

NIH National Institutes of Health
Turning Discovery Into Health

THE LAB:

National Institutes of Health
Department of Health and Human Services

THE CORE TEAM:

Timothy Leahy
Bill Bigelow
Kyle Doss
Amanda Wingo
Terence Goodell
Falguni Sanghani
Sougata Roy
Richelle Holnick
Mitchell Ha
Prasanna Raja
Tarunikha Sriram
Jarod Raedels
Jennifer Yu
Samuel J. Claxton
Akshay Bhardwaj
Adam Dahl
Brian Gallagher

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PHOTO CAPTION:

Home page of ETT showing modules in the ribbon along the top and the customizable dashboards that load upon login and allow a user to access the information they oversee immediately. (Sample data being shown.)

TECHNOLOGY TRANSFER INNOVATION

VA TTP Academic Affiliate Auditing Program

THE PROBLEM: The Department of Veterans Affairs (VA) manages more than a billion dollars utilized at about 80 productive research centers throughout the U.S. to advance basic and applied research to solve veteran-related healthcare issues. This research often results in ground-breaking inventions and patentable discoveries that lead to private-sector partnerships that frequently consist of direct licensing and collaborative research agreements.

More than 80 percent of VA researchers hold an appointment with at least one outside academic institution, and they are often obligated to assign invention rights to their employing institutions — resulting in a great deal of jointly owned intellectual property. In these cases, Invention Management Agreements (IMAs) govern technology transfer (T2) relationships between the VA and an academic partner; this agreement strives to achieve transparency and open communication between the joint intellectual property owners and hopes to ensure clear title while also assisting in reaching proper legal inventorship determinations. In 2019, the Department of Veterans Affairs Technology Transfer Program (TTP) began to consider taking heightened diligence concerning its academic partners' and licensees' invention disclosures and distribution of royalties to the VA. It became apparent, however, that its limited staff at the time did not have the bandwidth or technical experience to effectively enforce all the oversight provisions in its many IMAs, licenses and research agreements.

THE SOLUTION: TTP expanded its staff and instituted a regular audit program, enforcing provisions of its IMAs and licenses. TTP looked to the VA Office of Business Oversight (OBO) for technical assistance in achieving this goal. TTP executed a service-level agreement with OBO to develop the T2 audit program to perform audits of academic affiliate partners with IMAs. Audits aim to confirm that the terms of the IMA between VA and its academic affiliate partners were being met, identify areas requiring improvement and provide specific recommendations as needed.

As OBO performed its audits, one of the unique questions was how to identify whether university partners had disclosed all inventions to which VA scientists and researchers contributed. At one point, OBO requested the university to search its own invention database, but the team was hesitant to rely upon the university being audited to provide audit results because this reliance would create an audit independence conflict. To avoid this, OBO and TTP conceived of a solution to parse all available patent databases, cross-indexing university patent assignment information with available VA research employee information.

THE IMPACT: This innovative approach has identified more than 300 inventions previously undisclosed by academic partners to the VA. The VA is not aware of any other federal agency performing audits of its affiliates or licensees, making these audits the first of their kind in the T2 field. This program represents a notable advancement in the practice of T2 — not only for the federal government but also having a wider impact on the national T2 ecosystem. Due to the auditing program, TTP has established better relationships with its academic partners.

THE LABS:

Department of Veterans Affairs

THE PARTNERS:

TechLink
Montana State University

THE TEAM:

Chris Drabik
Greg McLaughlin
Austin Leach, PhD
Chris Huvaere

Go to Honors Gallery


DOE (2020)

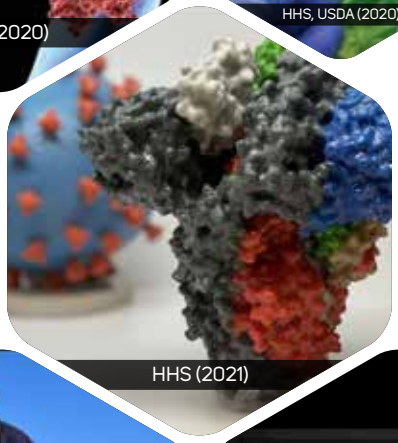

DOE (2020)


HHS (2020)


HHS, USDA (2020)


USDA (2020)


DoD (2021)


HHS (2021)


DoD (2022)


HHS (2022)


USDA (2023)


DOE (2014)


USDA (2014)


USDA (2014)

DOE (2005)


DOC (2008)


DoD (2008)


DOE (2009)


DOE (2010)

AWARDS

INDIVIDUAL AND SMALL TEAM AWARDS

ROOKIE OF THE YEAR

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

OUTSTANDING RESEARCHER/ SMALL RESEARCH TEAM

Awarded to a researcher or small research team who has made the most significant contributions to federal technology transfer.

OUTSTANDING TECHNOLOGY TRANSFER PROFESSIONAL

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

LAB DIRECTOR OF THE YEAR

Honors a laboratory director who has made maximum contributions to the overall enhancement of technology transfer for economic development.

HAROLD METCALF SERVICE AWARD

Recognizes an FLC member laboratory employee who has provided sustained significant service to the FLC as an organization.

ROOKIE OF THE YEAR

Stacy Mills, Esq.

Transforming IP Management and Streamlining Success

Stacy Mills, Esq., has been a technology business specialist in the Air Force Research Laboratory (AFRL), 711th Human Performance Wing (711 HPW), Office of Research and Technology Applications (ORTA) since December 2021. A recreational runner, Mills says her favorite part of a race is the final sprint to the finish line — and she has applied this same tenacity to her work in the 711 HPW ORTA.

The 711 HPW has a broad intellectual property (IP) portfolio, and amid a period of heavy staff turnover in the 711 HPW ORTA, the IP portfolio continued to grow even more from the integration of another AFRL ORTA. During that time, Mills helped revitalize the management of the 711 HPW IP, integrating different sets of records for a more accurate and complete picture of the lab's IP portfolio. Mills compiled a new repository of lab IPs, coordinating with and compiling records from the lab, Air Force T2 and legal offices, and the U.S. Patent and Trademark Office.

To get a clearer picture of license fee terms, timelines and patents to maintain, Mills also conducted a review of 60 patent license agreements within the previous year. Mills leveraged resources from partnership intermediaries — the Wright Brothers Institute and TechLink — to ensure the review was comprehensive. Mills updated ORTA tracking tools, conducted follow-ups with licensees to re-establish communication on licensing fee and royalty payment amounts and due dates, and coordinated with AFRL finance and accounting departments to ensure payments were being disbursed.

Mills also improved standardized reporting of data and metrics on the IP portfolio and T2 activity required by the lab, Department of the Air Force, Department of Defense, leadership and other stakeholders. She instituted more regular communications to lab inventors and leadership on patent maintenance fee due dates, where previously they were sporadic and only partially covered the IP portfolio. Since the beginning of fiscal year 2023, hundreds of thousands of dollars in outstanding royalties and fees have been collected, and over $295,000 of additional royalties and fees have been identified for collection.

Mills led 711 HPW ORTA efforts to assess a series of Educational Partnership Agreements (EPAs) and reestablish collaboration under new agreements. Working with the lab's legal and contracts departments, Mills examined the applicability of various cooperative agreements as alternate vehicles to continue 18 academia partnerships. After the team determined that none of these options fit the nature of the collaborations, Mills developed a new EPA template specifically to facilitate the bioeffects research to be conducted under these collaborations. Mills worked to terminate the active EPAs and execute new individual EPAs with university partners using the new standardized template that she had created.

In her short time at the 711 HPW ORTA, Mills' efforts have had a tangible impact on the lab. Mills led the development and execution of over 50 technology transfer agreements and over 25 Memorandum of Understanding agreements. Additionally, 711 HPW has been able to plan better for patent maintenance fees, improve its collection of patent license fees and royalties, and identify non-performing licenses for termination.

THE LAB:

Air Force Research Laboratory, 711th Human Performance Wing
Department of Defense

> Mills has led over 50 tech transfer agreements, revitalized IP management and orchestrated collection of royalties – showcasing her impactful achievements in one short year.

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ROOKIE OF THE YEAR

Cecilia Gentle, PhD

Creative Dynamo Driving Innovation at Argonne

Trained as a materials chemist, Cecilia Gentle took a leap of faith in 2021. Her passion began pulling her away from research and toward technology transfer. When she saw a technology transfer opportunity open at the U.S. Department of Energy's (DOE) Argonne National Laboratory, she jumped at the opportunity.

Since then, Gentle has distinguished herself as a high-impact technology transfer professional within Argonne's Science and Technology Partnerships and Outreach directorate. She serves Argonne's Applied Materials Division (AMD), which is one of the most demanding divisions at Argonne due to its large number of subgroups and principal investigators, the wide diversity of technologies with which the group works and the volume of intellectual property it produces — one third of the total inventions disclosed at Argonne.

Gentle manages project complexity by working proactively and with great attention to detail: When supporting the development of sponsored research engagements, Gentle looks for potential stumbling blocks to an eventual deal and tackles these proactively by reaching out to her partner-side counterparts with the goal of facilitating a resolution prior to term negotiations.

Within Argonne, Gentle has built invaluable relationships by opting for in-person meetings instead of virtual meetings whenever possible and dedicating one day each week to spending more time interacting directly with AMD researchers and leadership. Outside Argonne, she has made numerous site visits to existing and potential industry partners to build stronger relationships and gain a better understanding of partners' perspectives and needs. In 2023, she helped to develop an innovative deal structure to enable the licensing of Argonne-developed electronic waste processing technology to two materials recycling companies.

Gentle employs creative thinking and innovative marketing solutions that create new opportunities for Argonne and its partners. In a signature achievement, Gentle conceived, organized and promoted a technology showcase event — in the style of an industry tradeshow — for potential industry partners in collaboration with DOE's Fermi National Accelerator Laboratory and the University of Chicago, featuring IP from the three research institutions related to technologies in relevant areas. As part of this showcase, Gentle assisted 10 principal investigators in recording short, punchy promotional pitches for their technologies that can be used long after the event.

In fiscal year 2023, Gentle executed around 30 non-disclosure agreements in support of AMD researchers and their partnership activities, and she shepherded six Cooperative Research and Development Agreements (CRADAs) and nine Strategic Partnership Projects (total value: $5.6 million). Some of those agreements she facilitated were complex, including one five-party CRADA consisting of two national labs, two major corporations, and a technology startup company. Despite her scant two years in federal technology transfer, she evaluated 65 invention disclosures, accounting for 30% of the total inventions reported across the entire lab by the end of 2023. She also shepherded 43 sponsored and collaborative research partnerships totaling more than $14.5 million in agreement value through Argonne's pipeline.

Of all these metrics, the most impressive might be the number of Impact Argonne Awards she garnered in 2023: two. The award is among the highest honors an Argonne employee can earn. In both instances, Gentle was recognized for her engagement in projects focused on building and streamlining internal technology transfer activities and processes.

Argonne NATIONAL LABORATORY

THE LAB:

Argonne National Laboratory
Department of Energy

> In just two years, Gentle achieved remarkable results, spearheading impactful partnerships and showcasing inventive thinking that created new opportunities for Argonne and its partners.

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OUTSTANDING SMALL RESEARCH TEAM

Hsiaopo Cheng and Soheila J. Maleki, PhD

Developing the First FDA-Approved Peanut Allergy Treatment

In partnership with Allergen Research Corp. (later Aimmune Therapeutics), Soheila J. Maleki, PhD, and Hsiaopo Cheng developed an oral immunotherapy treatment for peanut allergy sufferers. Their collaboration led to the pharmaceutical Palforzia®, an oral immunotherapy treatment for peanut allergy sufferers — and the first food-allergy treatment approved by the Food and Drug Administration (FDA). Before FDA approval in 2020, most people with peanut allergies had only one option to prevent reactions: avoid peanuts.

In 2012, the CEO of then-startup Allergen Research Corp. recruited Maleki and Cheng to help produce a standardized pharmaceutical-grade peanut flour to desensitize individuals with peanut allergies. Technology transfer officers worked with the small research team at the Agricultural Research Service (ARS) to create a material transfer and research agreement with Aimmune Therapeutics, who also assisted in funding the research and providing the materials and financial support to advance the research.

Maleki, lead scientist of food allergy research at the U.S. Department of Agriculture's ARS-Southern Regional Research Center, is known worldwide as an expert on the effects of processing on peanut allergens. Maleki was responsible for understanding how peanut and tree nut allergens are structured, how they function and why they trigger an allergic reaction in some people and not others. Cheng, a support scientist in the Food Processing and Sensory Quality Research Unit, is an expert in developing methods to improve detection, diagnostics and therapeutics for peanut and tree nut allergies. With their work, the team developed a pharmaceutical grade roasted peanut flour that patients take orally in increasing doses to desensitize their peanut allergy.

Palforzia®, a peanut-flour-derived pharmaceutical, is the only food that has been FDA approved for marketing and prescription by physicians. Furthermore, the protocols and methods the ARS team developed open the door for similar oral treatments for all kinds of food allergies.

USDA

THE LAB:

Southern Regional Research Center
U.S. Department of Agriculture
Agricultural Research Service

> Maleki's and Cheng's complementary expertise and contributions were integral to this pioneer breakthrough in oral immunotherapy for food allergies, ushering in a new era of possibility.

Go to Honors Gallery

PHOTO CAPTION:

Hsiaopo Cheng (left) and Soheila Maleki, PhD

OUTSTANDING SMALL RESEARCH TEAM

Sustainment Management System (SMS) Team

Transforming Facility Management from Military to Mainstream

The Construction Engineering Research Laboratory (CERL) Sustainment Management System (SMS) Team led the way for innovation in software technology transfer at the U.S. Army Engineer Research and Development Center (ERDC). The SMS Team developed and transferred a platform technology that delivers mission-critical software to support the Department of Defense (DoD) and other federal agencies. The SMS suite of web-based software applications help property asset management stakeholders maintain existing infrastructure efficiently to cut costs and protect resources for government and commercial users.

Lance Marrano and Matthew Walters, who consecutively led the interdisciplinary SMS Team of engineers and software engineers who developed and maintain SMS, redefined the software commercialization process. Though the ownership of SMS software remained in-house at CERL, Marrano and Walters saw value in leveraging several technology transfer mechanisms to improve the accessibility of the software for external partners.

SMS Team researchers developed the BUILDER® tool as part of its SMS suite and patented its processes in 2006. BUILDER helps improve long-term evaluation and maintenance of building infrastructure by using data to assess and project the life expectancy of the facilities, providing a schedule for facility repairs and investment. To transfer the BUILDER technology to users, the SMS Team used technology transfer mechanisms such as Cooperative Research and Development Agreements (CRADAs), patent license agreements and interagency partnerships. Additionally, the team developed informal alliances with groups including the National Academy of Sciences and hosted user summits to showcase BUILDER's capabilities. These technology transfer activities resulted in five CRADAs and over a dozen licenses with nine commercial licensing partners.

At the time of publication, users at the DoD, Coast Guard, Department of State, Department of Commerce and Department of Agriculture have used BUILDER to assess nearly 2.3 billion square feet of federal facilities. The tool has proved so valuable that the DoD required its facility managers to use the tool for all facility conditions assessments, and in 2019, the U.S. Office of Management and Budget called BUILDER vital to federal budgeting plans.

Private industry also benefits from the SMS Team's technology transfer efforts. Colorado-based Digon Systems and Maryland's Golden Wolf established CRADAs with CERL to improve and refine BUILDER's capabilities in the areas of condition assessments, asset management and portfolio capital investment planning. AECOM, CardnoTEC, Tetra Tech and others licensed BUILDER to provide asset management services to their clients.

What began as an essential tool for the military to assess facility needs while keeping assessment costs down and maintaining military readiness is making facility management more efficient for everyone.

"We're fortunate to develop innovations based on information technology, which allows us to disseminate them widely," Marrano said. "We can take what we have learned about facilities and asset management and provide maximum reach for this capability for the DoD and other federal agencies and make it available to municipalities, universities and other users."

PHOTO CAPTION:

The SMS Team at an offsite planning meeting in 2021.

ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER

THE LAB:

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

TEAM LEADERS:

Lance Marrano
Matthew Walters

> Marrano and Walters redefined the software commercialization process, leveraging several technology transfer mechanisms to improve the accessibility of the software for external partners.

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OUTSTANDING RESEARCHER

Kyle R. Gluesenkamp

Leading the Charge for Sustainable Building Technologies

Kyle R. Gluesenkamp is a senior research scientist at Oak Ridge National Laboratory (ORNL), where he manages a portfolio of thermal energy storage technologies and advanced equipment for buildings, such as heat pumps, water heating and residential appliances. As ORNL's subprogram manager for thermal energy storage, he bridges gaps between science and industry by collaborating with manufacturers and other stakeholders to develop products that can reduce energy consumption and peak demand to enable a decarbonized energy future.

Gluesenkamp works in ORNL's Thermal Energy Storage Research Group within the Building Technologies Research and Integration Center, a Department of Energy (DOE) user facility that aims to improve the energy efficiency and environmental compatibility of residential and commercial buildings. This mission aligns with the DOE's long-term goal of reducing U.S. buildings' energy consumption by 50%. With deep expertise in thermal storage, residential appliances, experimental prototype evaluation, and other areas, Gluesenkamp is working to advance some of the most energy-efficient building equipment technologies in development today. He says the primary way for his lab's work to impact the market is through technology transfer.

At ORNL, Gluesenkamp facilitates partnerships and industry engagement, secures funding for research projects, serves as principal investigator (PI) for numerous research projects, publishes journal and conference articles and reports, and mentors peers and student researchers. He assists ORNL's Technology Transfer Office (TTO) by promoting ORNL-developed technologies in conversations and negotiations with potential industry and university partners, at conferences, and in DOE programs, including Energy I-Corps, Innovation Crossroads and the Technology Commercialization Fund.

Gluesenkamp helps his peers fine-tune invention disclosures, conference presentations, patent applications and industry pitches, encouraging them to consider their innovations from a commercialization perspective. He uses these same skills in collaborating with ORNL's TTO to recruit industry and university partners, help them understand how to get the most out of the technology transfer process, define the scope of work and then implement the research plan. He contributed directly to three licenses, 20 nondisclosure agreements and one material transfer agreement.

As a PI, Gluesenkamp has secured more than $20 million in funding from competitive solicitations for energy-efficient building equipment research and development (R&D). He has contributed as a team member to R&D projects that have garnered an additional $10 million. He manages and leads projects with major manufacturers, DOE and lab-directed research, often via Cooperative Research and Development Agreements. He also establishes partnerships and subcontracts with universities and industry, including large manufacturers and small businesses.

In a single decade at ORNL, Gluesenkamp published more than 50 journal articles and over 100 conference articles and technical reports, filed 42 invention disclosures, and received five patents and one R&D 100 Award. Through all of these achievements, Gluesenkamp has promoted the value of ORNL-developed innovations to the energy community.

OAK RIDGE National Laboratory

THE LAB:

Oak Ridge National Laboratory
Department of Energy

> Gluesenkamp is working to advance energy-efficient building equipment technologies through facilitating partnerships and industry engagement, securing research funding, lending his expertise in the lab and more.

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OUTSTANDING TECHNOLOGY TRANSFER PROFESSIONAL

Michael J. Hall, PhD

Revolutionizing Federal Technology Transfer Reporting for Impactful Policy

Michael J. Hall, PhD, an economist in the Technology Partnerships Office (TPO) at the National Institute of Standards and Technology (NIST), has taken outstanding initiative in designing and executing processes that reformed crucial technology transfer reporting across the federal government. Hall's streamlined reporting method and his coordination of the project eliminated a four-year submission backlog in compiling and publishing the annual Federal Laboratory Technology Transfer Summary Report to the President and Congress, known as the Summary Report.

The Summary Report details the technology transfer activities of each of the 11 agencies that operate federal laboratories or engage in the patenting or licensing of federally owned inventions to ensure that the nation's investment in innovative research is transferred from those laboratories to the American people. The report chronicles each participating agency's invention disclosures, patent applications, patents issued, active licenses, Cooperative Research and Development Agreements (CRADAs) and other collaborative R&D relationships, among other data.

Technology transfer is a crucial, time-sensitive and fast-moving field. The delay in issuing the mandated annual Summary Report led to concern from the White House, Congress and participating agencies. These critical stakeholders needed more timely data to develop and implement technology transfer policy, in order to fulfill their mission of promoting economic growth and the development of new technologies.

When Hall took over this project in 2021, the Summary Reports for fiscal years 2017, 2018, 2019 and 2020 had not been compiled or published. He wasted no time instituting new processes for data management, interagency coordination and project management. Rather than compiling and publishing one report at a time, Hall's approach implemented parallel collection and analysis of the annual data for multiple years.

One of Hall's most vital innovations was to establish regular communication with the other participating agencies and Department of Commerce bureaus. This communication helped him monitor and facilitate ongoing progress, and his coordination with the review and clearance organization aided efficient processing.

Due to Hall's efforts and innovative processes, four Summary Reports were published in 15 months — roughly three times faster than the previous four years' publishing rate. Hall's accomplishments brought the entire federal research and development community back on schedule with the mandated reporting of the outcomes and impacts of billions of dollars. He provided valuable information to the White House, Congress, the United States Trade Representative, and science policymakers, thereby promoting economic growth and the introduction of new technologies into the marketplace for societal benefit.

Hall achieved this success at the same time as he continued to fulfill his established professional responsibilities researching federal technology transfer activities and their economic impact, providing economic advice and guidance to the federal technology transfer community and participating in economic-related working groups and communities of practice. During the last phase of remedying the reporting backlog, Hall simultaneously provided support and advice in the fields of economics, data analysis and evaluation metrics to Department of Commerce stakeholders.

NIST NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY U.S. DEPARTMENT OF COMMERCE

THE LAB:

National Institute of Standards and Technology
Department of Commerce

> Hall streamlined federal technology transfer reporting, eliminating a four-year backlog and accelerating vital data for policy-making and economic growth.

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OUTSTANDING TECHNOLOGY TRANSFER PROFESSIONAL

Samantha Updegraff, JD

Pioneering Legal Strategies for Efficient and High-Value Tech Transfer

Samantha Updegraff started her career at Sandia National Laboratories as a licensing executive in 2015 after working for many years in private practice representing clients on intellectual property/patent law matters. With an undergraduate degree in chemical engineering, Updegraff previously worked as a process engineer in human insulin manufacturing. With her unique engineering, law firm and licensing executive experience, Updegraff supports and expedites technology transfer activities.

When a technology transfer matter involves legal challenges, Updegraff devises creative ways to ensure compliance with regulations and meet Sandia's technology transfer mission. Her legal expertise spans intellectual property, licensing, non-disclosure agreements, Cooperative Research and Development Agreements and Strategic Project Partnerships, patents, copyrights and software.

Publication is, by far, the most common way Sandia transfers its technology. To streamline the publication process, Updegraff created a program that transfers copyright in written works to Sandia authors. Sandia employees/authors publish more than 2,000 written works per year — sometimes operating as "publish or perish" like universities — and they previously had to wait months or years while Sandia Legal negotiated publication agreements with publishers. The program allows employees/authors to sign their own publication agreement and collect royalties directly from the publisher. The program was a huge success, increasing employees' job satisfaction and reducing frustration.

Updegraff is also the patent attorney for multiple centers at the Labs, working to patent inventions that can later be licensed. She worked diligently with her licensing executive colleague to negotiate a high-value license with a major electronics company for an entire portfolio of patents. There were several negotiations with the company before an agreement was finalized.

Updegraff works with other Department of Energy (DOE) lab attorneys on multi-party technology transfer agreements and teams with management and staff on proposals, consortiums and other partnership and technology transfer opportunities. She regularly presents on partnership mechanisms and best practices for working with non-federal agencies.

Updegraff has worked with the licensing group on updating all licensing and technology transfer agreement templates. She has led the way in ensuring the most recent 2021 science and engineering determination of exceptional circumstances (DEC) is being considered and complied with in patenting and licensing. She worked closely with the DOE/National Nuclear Security Administration Patent Counsel to understand how the new DEC would apply to Sandia and its patent waiver and licensing processes.

Updegraff is the lead intellectual property attorney at Sandia working on technology transfer activities. She not only works on patent licenses and technology transfer agreements, but also reviews all copyright assertion third-party software reviews and copyright issues with software to ensure Sandia can properly license or open-source its software. Updegraff is involved in several inter-laboratory collaborations and consortiums to improve technology transfer practices, including being a mentor in Boost, a project funded by the DOE Technology Commercialization Fund. Updegraff mentored the Los Alamos National Laboratory licensing group in licensing practices including software/copyright licensing.

Sandia National Laboratories

U.S. DEPARTMENT OF ENERGY

NNSA

THE LAB:

Sandia National Laboratories
Department of Energy

> Updegraff, an attorney with broad expertise, innovates technology transfer at Sandia, from copyrights to high-value patents.

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LABORATORY DIRECTOR OF THE YEAR

Martin Keller, PhD

Pioneering Partnerships, Inspiring Transformative Tech Transfer

Since taking the helm as laboratory director in November 2015, Martin Keller, PhD, has been unwavering in his commitment to enhancing the National Renewable Energy Laboratory's (NREL) impact through building partnerships and ensuring basic science research is transferred to industry and commercialized.

Keller's effort starts within the lab, where he frequently urges postdocs, interns and early-career staff to partner with industry, consider intellectual property protection for their research and work with the lab's Technology Transfer Office. A recent survey found that lab staff believe a culture of innovation is pervasive at NREL and encouraged by management — correlating to a high number of innovations, licenses, CRADAs and publications, according to a multi-lab study.

Under Keller's leadership, NREL's active partnerships have grown from 696 in 2015 to more than 1,100 in 2023. In 2017, Keller challenged the business development team and laboratory leadership to aim for $100 million annually in new partnership work — and three years later, the lab had surpassed that goal to reach an all-time high in new technology partnership project agreements. These agreements accounted for $130 million of the laboratory's total business volume. In fiscal year 2023, NREL signed a record $143 million in partnerships, with 30 agreements executed at $1 million or more.

Many of NREL's partnerships are a direct result of Keller's promotion and frequent speaking engagements throughout the year, where he emphasizes the value of partnerships and maximizing impact by bringing innovative technologies to market. In just two years, he addressed state, national and international groups and events including the U.S. Energy Association's annual Advanced Energy Technology Forum, the Global Clean Energy Action Forum and the United Nations Climate Change Conference. In all his public appearances, Keller references the lab's successful partnerships and examples of technology transfer with great pride. His enthusiastic support for industry partnerships, entrepreneurial engagements, and the economic development that flows from these activities has encouraged an inclusive approach to technology development and commercialization.

During NREL's annual Partner Forum, Keller actively collaborates with representatives from numerous organizations, fostering existing partnerships and exploring potential collaborations. Notably, a collaboration initiated at the 2018 Partner Forum with Dallas Fort Worth International Airport has evolved into a highly impactful partnership. This collaboration, born out of an initial project utilizing DOE supercomputers, has enabled NREL to provide crucial expertise and cutting-edge technology to revamp key operational capabilities at the system level for the airport's ambitious 2030 net-zero carbon emissions goals.

Keller was named one of 2022's Most Admired CEOs by the Denver Business Journal, particularly for his remarkable leadership amidst a global pandemic. His visionary approach has not only led to significant partnership growth but also contributed to staffing and infrastructure expansion at NREL.

NREL
Transforming ENERGY

THE LAB:

National Renewable Energy Laboratory
Department of Energy

> Keller's leadership at NREL drives partnerships and propels transformative technology transfer, fostering a culture of impact and collaboration within and beyond the lab.

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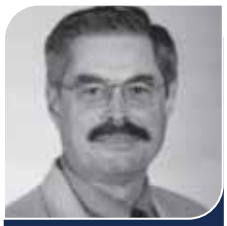
Lab Directors of the Years

From bold leadership to strategic vision, these exceptional individuals have shaped the course of federal innovation and technology transfer, driving progress and impact across diverse fields. As we commemorate the FLC's 50th anniversary, we honor their enduring legacy and pivotal contributions to the advancement of knowledge and discovery.

Peter Berghsey Johnsen, Ph.D. (2004)
USDAARS National Center for Agricultural Utilization Research

Mary Lacy (2004)
Naval Surface Warfare Center, DoD



Chris Risbrudt, Ph.D. (2004)
USDA Forest Service Forest Products Laboratory

Admiral Richard H. Truly (2005)
National Renewable Energy Laboratory, DOE

John P. Cherry, Ph.D. (2005)
USDA ARS Eastern Regional Research Center

Ted Glum (2005)
Defense Microelectronics Activity, DoD

Philip Brandler (2006)
U.S. Army Combat Capabilities Development Command (formerly RDECOM), DoD

John Montgomery, Ph.D. (2006)
Naval Research Laboratory, DoD

Capt. David Schubert (2006)
Naval Research Laboratory, DoD

Hendrick W. Ruck, Ph.D. (2006)
Air Force Research Laboratory, DoD

Carl Bauer (2007)
National Energy Technology Laboratory, DOE

David Swayne, Ph.D. (2007)
Southeast Poultry Research Laboratory, USDA

Joseph Zarzycki (2007)
U.S. Army Edgewood Chemical Biological Center, DoD

R. Ilker Adiguzel, Ph.D. (2008)
Construction Engineering Research Laboratory, DoD

Capt. Michael Byman (2008)
Naval Undersea Warfare Center Division Newport, DoD

Donald Aker (2008)
Naval Undersea Warfare Center Division Newport, DoD

Paul Lefebvre, Ph.D. (2008)
Naval Undersea Warfare Center Division Newport, DoD

Joe Sciabica (2008)
Air Force Research Laboratory, DoD

Edgar King, Jr., Ph.D. (2009)
USDA ARS Mid South Area

S. Pete Worden, Ph.D. (2009)
Ames Research Laboratory, NASA

Kenneth Linthicum, Ph.D. (2010)
USDA ARS Center for Medical, Agricultural and Veterinary Entomology

Robert Wiltrout, Ph.D. (2010)
National Cancer Institute, HHS

This list is based on the information available since 2004.

Patrick Hunt, Ph.D. (2011)
USDA ARS Coastal Plains Soil and Water Conservation Research Center

David Pittman, Ph.D. (2011)
Geotechnical and Structures Laboratory, DoD

Douglas Bowers (2012)
Air Force Research Laboratory, DoD

Michael Kluse (2012)
Pacific Northwest National Laboratory, DOE

Samuel Aronson, Ph.D. (2012)
Brookhaven National Laboratory, DOE

Michael Coats (2013)
Lyndon B. Johnson Space Center, NASA

Duane Embree (2013)
Naval Surface Warfare Center, Crane Division, DoD

Paul Hommert, Ph.D. (2013)
Sandia National Laboratories, DOE

Jeffrey Holland, Ph.D. (2014)
U.S. Army Engineer Research and Development Center, DoD

Joseph Wienand (2014)
U.S. Army Edgewood Chemical Biological Center, DoD

Capt. Joseph Beel (2014)
SPAWAR Systems Center Pacific, DoD

Carmela Keeney (2014)
SPAWAR Systems Center Pacific, DoD

George Duchak (2015)
Air Force Research Laboratory, DoD

Sevim Erhan, Ph.D. (2015)
USDA ARS

Sally Gutierrez (2015)
Environmental Technology Innovation Clusters Program, EPA

Willie May, Ph.D. (2016)
National Institute of Standards and Technology, DOC

Capt. Jeffrey T. Elder (2017)
Naval Surface Warfare Center Crane Division, DoD

Philip Perconti, Ph.D. (2018)
Army Research Laboratory, DoD

Larry Clark, Ph.D. (2019)
National Wildlife Research Center, USDA

Paul Kearns, Ph.D. (2020)
Argonne National Laboratory, DOE

Walter Copan, Ph.D. (2021)
National Institute of Standards and Technology, DOC

David Pittman, Ph.D. (2021)
Engineer Research and Development Center, DoD

Brian J. Anderson, Ph.D. (2021)
National Energy Technology Laboratory, DOE

Bartley P. Durst (2022)
Geotechnical and Structures Laboratory, DoD

Eric Moore, Ph.D. (2023)
Command Chemical Biological Center, DoD

Martin Keller, Ph.D (2024)
National Renewable Energy Laboratory, DOE

50 | FLC
CELEBRATING 50 YEARS OF INNOVATION

HAROLD METCALF AWARD FOR FLC SERVICE

Jenna Dix

Leveraging Bold Leadership and Dynamic Skills

Jenna Dix's career trajectory at the Naval Surface Warfare Center Crane Division (NSWC Crane) exemplifies a remarkable journey of leadership and innovation in technology transfer. In less than a decade, Dix entered the field of technology transfer and ascended to NSWC Crane's executive leadership team as Director of Engagement. She has also become an active and influential member of the FLC community.

From 2005 to 2015, Dix provided programmatic and logistics support to the Navy's Small Arms Program office. It was an easy transition from that office to NSWC Crane's Chief Technology Office, where she oversaw the strategic management of intellectual capital and developed vital partnerships to enhance NSWC Crane's research and development (R&D) capabilities. Soon, she became Crane's subject matter expert in technology partnerships. With laser-like focus and business acumen, she expertly supported Crane's top R&D goals and mission objectives.

Dix began working in Crane's Chief Technology Office in 2015. At the same time, though brand-new to technology transfer, Dix was elected Deputy Regional Coordinator of the Midwest Region in 2016. Diving into her role, Dix immediately began searching for ways to improve FLC engagement among the 30 labs in her six-state region. By 2019, midway through her second term as deputy, Dix assumed two new roles: Regional Coordinator and acting NSWC Crane ORTA Technology Transfer (T2) Director.

Recognizing Dix's background in public administration and management and her enthusiasm for and exemplary service to the FLC, the Consortium's then-Chair John Dement wasted no time appointing Dix to the ad hoc committee developing plans for the FLC's future. Dix's astute contributions there led to another key appointment: assembling the FLC Facilitate Committee, whose mission is to proactively engage and leverage partnerships that connect the private sector with federal laboratories to increase measurable outcomes.

Dix was tapped to be the inaugural chair of Facilitate, a position that capitalized on her dynamic leadership skills. Within that year, however, her work as NSWC Crane's ORTA T2 director increased exponentially, which necessitated relinquishing the chair to regain the quarter of her professional time she dedicated to Facilitate. Still, she continues volunteering to champion FLC and Facilitate activities.

With grounding in Dix's foresightful leadership, Facilitate is fulfilling its mission and increasing FLC engagement and inclusivity. Among its laudable successes in its first three years were 17 new strategic partnerships, including the U.S. Small Business Innovation Research program, Development Capital Networks and Xelevate. The pillar also achieved a rise in engagement, with an increase of 1,308 non-federal entities at FLC events between 2020 and 2022.

Dix has earned numerous awards for her outstanding contributions to technology transfer and innovation. These include the George Linsteadt Technology Transfer Achievement Award; the Warfare Center Innovation Award; and FLC Awards for Excellence in Technology Transfer, Interagency Partnership, Innovation in Technology Transfer, Covid Response and Rookie of the Year.

Dix's journey underscores her commitment to advancing technology transfer efforts, both within NSWC Crane and the broader federal laboratory community. Through her leadership and dedication, she continues to drive impactful collaborations and facilitate the transfer of cutting-edge technologies to benefit national security and economic growth.

NAVSEA WARFARE CENTERS CRANE

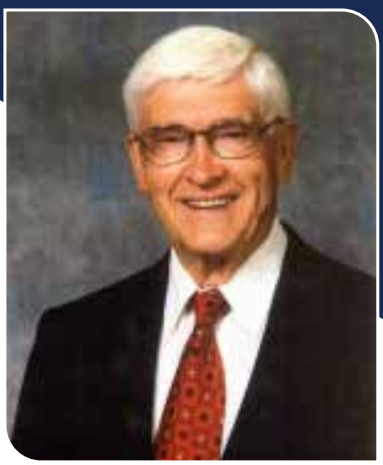
THE LAB:

Naval Surface Warfare Center
Crane Division
Department of Defense

> Dix's rise from tech transfer newcomer to NSWC Crane executive and impactful FLC volunteer demonstrates exceptional leadership and dedication.

Go to Honors Gallery

Harold Metcalf: A Linchpin in Federal T2



Attendees at the 1971 annual meeting of the DoD Laboratory Consortium at Naval Ammunition Depot Crane (now Naval Surface Warfare Center Crane Division). From the left, Metcalf is first in row one.

Harold Metcalf played a pivotal role in laying the groundwork for the FLC. From 1971 to 1974, leading up to the FLC's creation, he served as the National Science Foundation (NSF) embedded liaison in the Department of Defense (DoD) Laboratory Consortium, a precursor to the FLC. Metcalf's position provided a key coordination point and funding mechanism that allowed for the growth of the DOD Consortium as he focused on including other agencies.

During those years, Metcalf became a singular force in a small group of self-described zealots who drove progress in federal technology transfer (T2) before it had the structure of policy or institutions.

Metcalf had spent his career in the War Construction Division of the DuPont Co., as a naval officer in World War II and in research and development at the Naval Weapons Center (NWC) at China Lake (now the Naval Air Weapons Station China Lake). The seed of his commitment to federal T2 was planted in 1958 when he imagined a "Department of Offense," a governmental agency dedicated to addressing domestic challenges — such as health, poverty and education — with the same vigor as national defense.

More than a decade later, outgoing Secretary of Defense Clark Clifford echoed a similar sentiment when he declared that the Department of Defense had "a deep obligation to contribute far more than it has ever contributed before to the social needs of our country." This led Clifford's successor, Melvin Laird, to establish the DoD Domestic Action Program in 1969, which encouraged DoD laboratories to use the knowledge they gained through defense research to address critical national issues.

The Domestic Action Program faced challenges, but it signaled a shift in the federal laboratories' role toward providing secondary applications of taxpayer-funded technologies. In this evolving landscape, the DoD Technology Transfer Consortium was formed with 11 defense laboratories in 1971. NWC had emerged as a leader in the DoD's early T2 activities, and the lab lent Metcalf to serve as the NSF program manager, acting as a liaison to Consortium.

"For a few years, we were a loosely affiliated group of 'zealots,' operating without policy or written documentation of our organization," Metcalf wrote. "Our philosophy was this: if you do not exist, no one can abolish you."

In 1974, Metcalf retired from federal service months before the FLC was created, though Metcalf would remain active in the FLC for years after. Metcalf's instrumental role in shaping federal technology transfer efforts inspired an FLC Award in honor of his dedication and service. His pioneering spirit continues to inspire us to harness federal research and innovation for the betterment of society.

In a 1994 column, Metcalf wrote, "There is no way that those six or eight people who met to initiate the DoD Consortium back in 1970 could have imagined its potential, which is only now being realized."

Three decades later, the first part of that statement may be truer than when he wrote it: What would those torchbearers have thought to see the ecosystem of policies, mechanisms, resources and networks that support federal T2 today? However, the full potential of the Consortium has not yet been realized — rather, it grows exponentially each year.

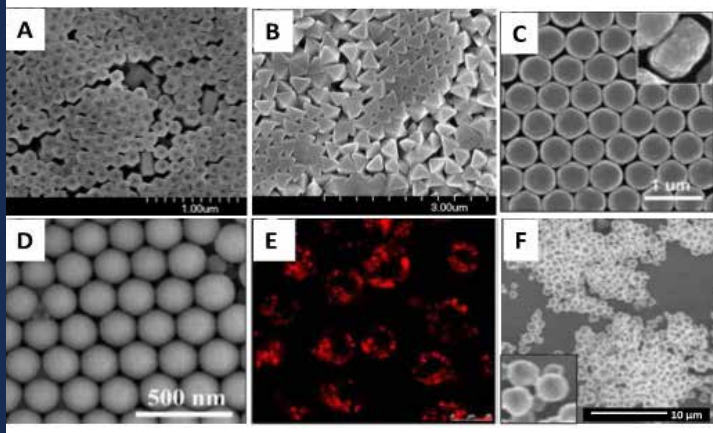
AWARDS

REGIONAL TECHNOLOGY TRANSFER

Recognizes employees of FLC member laboratories and non-laboratory staff located within the six FLC regions who have accomplished outstanding work in federal technology transfer.

REGIONAL TECHNOLOGY TRANSFER: MID-CONTINENT

Long-Lasting Disinfectant 2.0



THE PROBLEM: In 2020, as the global COVID-19 pandemic overwhelmed medical facilities, businesses were trying to find new ways to disinfect various surfaces. They needed a product that works continuously and doesn't have a strong odor or give customers headaches.

THE SOLUTION: Sandia National Laborato ries and Lunano LLC developed Disinfectant 2.0, which uses tiny particles called porphyrin photosensitizer nanoparticles to disinfect and curb the spread of COVID-19 and other virus outbreaks. Disinfectant 2.0 resulted from an award-winning Sandia invention, a method called Detergent-Assisted Fabrication of porphyrin nanoparticle photosensitizers, which creates porphyrin nanoparticles that release highly reactive species that can kill E. coli, staph infection, viruses, bacteria and fungi for years at a time.

THE TECH TRANSFER MECHANISM: In 2020, a team at Sandia National Laboratories participated in the FedTech Startup Studio, which pairs aspiring entrepreneurs with breakthrough technologies from national laboratories and guides them in launching their own venture. At FedTech, the team from Sandia, led by Hongyou Fan, partnered with Bradley Duckworth, CEO and co-founder of Lunano, to commercialize an award-winning technology Fan had developed to create nanomaterials. However, as the pandemic gained momentum, Fan and Duckworth pivoted to instead commercialize porphyrin nanoparticle photosensitizers as Disinfectant 2.0, which they recognized could address urgent disinfection needs during and beyond the pandemic. The team then discovered a market for Disinfectant 2.0 among airlines, hotels, restaurants, car service providers and other businesses.

Sandia and FedTech supported Duckworth throughout the commercialization process in securing a licensing agreement, developing a commercial model, establishing the company and building an intellectual property structure. One mechanism Duckworth leveraged was Rapid Technology Deployment, an innovative licensing program Sandia launched during the COVID-19 pandemic. The program provided no-cost, low-friction licenses for companies to leverage Sandia's large technologies portfolio to address business needs stemming from the crisis. At the end of the first phase of the FedTech Startup Studio, Duckworth's Lunano used the RTD program to obtain a no-cost, one-year license for the Detergent-Assisted Fabrication technology. In 2021, Sandia licensed the technology to Lunano with exclusive rights through the end of 2024 within the fields of disinfection, sanitization and decontamination. While Lunano holds the patent in these fields of use, the patent has other applications outside of disinfection and sanitation. Lunano's license is renewable for two additional years to allow the company to develop products without the risk of losing its potential customers.

THE OUTCOMES: Disinfectant 2.0 is expected to enhance disinfectants for households, transportation, restaurants, hotels, and other public and personal spaces. Startup Lunano, the result of a commercialization effort, is now conducting research with large companies to determine how to best integrate the antiviral/antimicrobial technology into their products and into Americans' everyday lives. This commercialization effort benefits the Mid-Continent Region because Lunano anticipates it will create about 100 jobs in the region. Detergent-Assisted Fabrication, which is the technology used in Disinfectant 2.0, won the 2015 Materials Research Society Fred Kavli Nanoscience Award and an R&D 100 Award in 2018.

Sandia National Laboratories

U.S. DEPARTMENT OF ENERGY

NNSA

THE LAB:

Sandia National Laboratories
Department of Energy

THE PARTNER:

Lunano LLC

THE TEAM:

Hongyou Fan, PhD
Bradley Duckworth
Nasuh Onal
Robert Westervelt, PhD

Go to Honors Gallery

PHOTO CAPTION:

Well-defined porphyrin nanomaterials provide benefits in a range of potential applications, such as photodegradation of organic pollutants, photocatalytic hydrogen production, synthesis of fuel cell catalysts and targeted phototherapy. Credit: Hongyou Fan (Sandia)

REGIONAL TECHNOLOGY TRANSFER: SOUTHEAST

Safe Impact Resistant Electrolyte (SAFIRE) Enables Safer Lithium-Ion Batteries

THE PROBLEM: Lithium-ion batteries power consumer electronics, electric vehicles (EVs), military defense equipment, satellites and much more. While these rechargeable batteries provide high power density, they can catch fire when damaged during impact, excessive heat or misuse: If the battery's positive and negative electrodes touch, they can ignite the highly flammable electrolyte liquid in lithium-ion batteries. A thin piece of plastic separates the electrodes to prevent this risk, but if the battery is damaged, that plastic layer can fail. Once ignited, lithium-ion battery fires are self-sustaining and not easily contained.

To prevent injury and property damage if a fire breaks out, the batteries are designed with layers of armor — but this shielding results in heavy, bulky batteries that often use much of their energy carrying their own weight. In EVs, the extra weight reduces the vehicle's efficiency and driving range, burdening drivers and making EVs less marketable to consumers. As new technological capabilities require greater power, the size and weight of the battery casing will continue to increase.

THE SOLUTION: Oak Ridge National Laboratory (ORNL) developed the Safe Impact Resistant Electrolyte (SAFIRE™) technology to make lithium-ion batteries safer and lighter. SAFIRE is a liquid-to-solid electrolyte formulation that, under normal conditions, performs like a traditional battery electrolyte. However, upon impact — such as from an explosion or blunt force — the electrolyte immediately becomes solid, blocking the negative and positive electrodes from touching and preventing fire. The effect also provides ballistic protection and allows the battery to keep working, even if it is partially damaged. SAFIRE is a drop-in technology that conventional battery manufacturers can incorporate into their process with only minor modifications.

THE TECH TRANSFER MECHANISM: Development began in 2013 when ORNL researcher Gabriel Veith recognized the need to improve lithium-ion battery safety. Veith developed the technology with funding from ORNL, the Advanced Research Projects Agency-Energy (ARPA-E) program and ORNL's Technology Innovation Program (TIP). In 2017, the technology won an R&D 100 Award. The SAFIRE technology was selected for the FedTech Spring 2020 Startup Studio, where the ORNL team met entrepreneur Michael Grubbs, who was immediately interested in the technology.

Given the upfront capital required for battery technology startups, ORNL's Technology Transfer Office (TTO) developed a milestone-driven exclusive license agreement, recognizing that investor interest would hinge on license exclusivity. In 2022, ORNL and Grubbs signed an exclusive licensing agreement for a portfolio of five patents. With the technology secured, Grubbs changed the name of his company from BTRY to Safire Technology Group. At the time of publication, Safire and ORNL continue to operate under a Strategic Partnership Project agreement.

THE OUTCOMES: In 2024, Safire anticipates building a 10,000-square-foot facility in the Knoxville area to maintain proximity to both ORNL and the wealth of university talent, ensuring economic advantages for both Safire and the region. Safire's new facility will attract new talent to the area, and the company anticipates having 20 employees through 2025 and increasing beyond that number into 2026.

OAK RIDGE National Laboratory

Safire

THE LAB:

Oak Ridge National Laboratory
Department of Energy

THE PARTNER:

Safire Technology Group Inc.

THE TEAM:

Eugene Cochran, PhD
Gabriel Veith, PhD
Mike Grubbs

Go to Honors Gallery

PHOTO CAPTION:

The Li-ion battery cell with SAFIRE inside protects against thermal runaway during impacts, such as an EV crash.

2025 FLC AWARDS CALENDAR

Who Will Be the Next History Makers? **You Tell Us.**

Thanks to all who submitted, judged and participated in the 2024 FLC Awards. We name and celebrate awardees not only to honor those raising the bar in federal tech transfer, but also to learn from their ingenuity, be inspired by their persistence and remember that greatness is among us.

Take notice of the history-makers around you — on your team, in your meetings and among your collaborators. Submissions for the 2025 FLC Awards open in July 2024, but you can start now by reflecting on and gathering information about your team's standout achievements.

THE AWARDS CATEGORIES WILL INCLUDE:

- **Excellence in Technology Transfer**
- **Interagency Partnership**
- **State and Local Economic Development**
- **Impact**
- **Technology Transfer Innovation**
- **Rookie of the Year**
- **Lab Director of the Year**
- **Outstanding Researcher/ Small Research Team**
- **Outstanding Technology Transfer Professional**
- **Harold Metcalf Service Award**
- **Regional Technology Transfer**

Make sure you're subscribed to the FLC's mailing list for Awards announcements, updates and information. Contact **info@federallabs.org** for more information.

2025 FLC Awards Program Timeline

Summer 2024
Call for submissions opens

Fall 2024
Submissions deadline
Judging period

Winter 2024 – 25
Winners are notified and announced

Spring 2025
Awardees honored at the FLC National Meeting

Honoring Excellence, Inspiring Progress

The annual FLC Awards Ceremony is a pivotal moment for the federal tech transfer community to gather, connect and celebrate hard work and high achievement. In the process of honoring the people, partnerships and innovations at the forefront of T2, the ceremony raises ceilings, inspires excellence and drives future FLC Awardees. The gathering also fosters relationships and nurtures a sense of community, both essential in the "contact sport" of T2.















FLC
Federal Laboratory Consortium
for Technology Transfer
RESERVED

Awards Judges

The FLC expresses its gratitude to the members of the Awards Subcommittee and other volunteer judges for their tireless efforts in making the 2024 Awards program a success.

Jesse Midgett
National Aeronautics and Space Administration
(Awards Subcommittee Chair)

Derek Parks
National Oceanic and Atmospheric Administration
(Promote Committee Chair)

Whitney Hastings
National Institutes of Health, National Cancer Institute
(FLC Chair)

Michelle Atchison
University of Texas at San Antonio

Zack Baize
National Oceanic and Atmospheric Administration

Shaniece Bowens
Food and Drug Administration

Victoria Brun
National Institutes of Health, National Cancer Institute

Annie Bullock Yoder
Naval Surface Warfare Center, Crane Division

Sabarni Chatterjee
National Institutes of Health, National Institute of Allergy and Infectious Diseases

Hannah Farquar
Lawrence Livermore National Laboratory

Steven Ferguson
National Institutes of Health, Office of the Director

Linda Field
Department of Energy, Office of the General Counsel

Suzanne Frisbie
National Institutes of Health, National Cancer Institute

Paige George
U.S. Navy, Naval Surface Warfare Center Panama City Division

Fizie Haleem
Montgomery College

Neche Harris
U.S. Army Medical Research & Development Command

Lydia Hierl
National Security Agency

Stacy Hollis
National Aeronautics and Space Administration

Amanda Jelsema
Sandia National Laboratories

Andreana Leskovjan
Oak Ridge National Laboratory

Christina Lomasney
Pacific Northwest National Laboratory

Marianne Lynch
Department of Energy, Office of the General Counsel

Lisa Marianni
Centers for Disease Control and Prevention

Jason Martinez
National Nuclear Security Administration, Sandia National Laboratories

David McCallum
Argonne National Laboratory

Heidi Medford
Pacific Northwest National Laboratory

Jackie Kerby Moore
Sandia National Laboratories (retired)

Andy Myers
National Nuclear Security Administration, Kansas City National Security Campus

Patricia Nevala
Sandia National Laboratories

Dick Paul
FLC National Advisory Council

Jack Pevenstein
National Institute of Standards and Technology (retired)

Elsie Quaite-Randall
Lawrence Livermore National Laboratory

Maria Restrepo-Hartwig
Agricultural Research Service

Daniel Riddick
National Nuclear Security Administration

Eric Rosenberg
U.S. Air Force

Michael Salgaller
National Institutes of Health, National Cancer Institute

Meghan Sheehan
Environmental Protection Agency

Leslie M. Smith
Oak Ridge National Laboratory

Jennifer Stewart
National Oceanic and Atmospheric Administration

Wayne Strickland
National Telecommunications and Information Administration, National Technical Information Service

Karen Surabian
National Institutes of Health, National Human Genome Research Institute

Stefan Susta
Department of Veterans Affairs

Allan Tuan
Pacific Northwest National Laboratory

FLC Awards Chairs, 2004 – 24

Meet the esteemed leaders who have steered the course of the FLC Awards Program through the past 20 years. As Chairs of the Awards Subcommittee (formerly Awards Committee), these volunteers have played a pivotal role in shaping the program to ensure that outstanding achievements across the federal technology transfer ecosystem receive the recognition they deserve.

Victor Chavez
(2004 – 06)
Sandia National Laboratories,
Department of Energy

Donna Bialozor
(2016 – 18)
National Cancer Institute,
Department of Health and
Human Services

Tara Weaver-Missick
(2007)
Agricultural Research Service,
U.S. Department of Agriculture

Whitney Hastings, Ph.D.
(Chair, 2019 – 20;
Co-Chair, 2021 – 22)
National Cancer Institute,
Department of Health and
Human Services

Lorraine Flanders
(2008 – 11)
Naval Surface Warfare
Center Dahlgren Division,
Department of Defense

Lisa Marianni
(Co-Chair, 2021 – 22;
Chair, 2023)
Centers for Disease
Control and Prevention,
Department of Health
and Human Services

James Poulos III
(2012 – 15)
Agricultural Research Service,
U.S. Department of Agriculture

Jesse Midgett
(2024)
National Aeronautics
and Space Administration

This list is based on available information; it is not exhaustive. Job titles and affiliations may not be current.

Past, Present ...

Timeline continued from first page.

2013

The launch of **FLC Business** provides a critical database of federal laboratories, facilities and equipment, programs and funding resources available for technology transfer.

2018

The FLC unveils **LabTech In Your Life**, an interactive virtual world where visitors can explore everyday products commercialized through federal tech transfer.

2019

The FLC develops a new **five-year strategic plan** to be executed with its new cooperative partner, AUTM.

2020

As the global COVID-19 pandemic triggers office closings and travel bans, the FLC quickly pivots to deliver its **National Meeting virtually**.

2022

The FLC rolls out the **FLC Learning Center**, an online database of professional development materials tailored to a range of career pathways and experience levels.

2023

Once the government travel ban is lifted as the COVID-19 pandemic eases, the FLC hosts its first **in-person National Meeting** in three years and draws a record-breaking crowd.

2024

The FLC celebrates its **50th anniversary!**

… and Future

For 50 years, the FLC has continually grown and adapted to meet the needs of its member laboratories and industry stakeholders. As we move into the future, we strive to **promote** technology transfer, **educate** T2 professionals and practitioners, and **facilitate** T2 through public-private partnerships — so you can keep making history.

PROMOTE YOUR WORK

FLC Awards: Earn recognition and inspire others with your team's T2 excellence.

Planner: Display your work in full color.

Labs in Action: Tell the story of your success.

LabTech in Your Life: Show how your technology impacts daily life.

FLC Digest: Share news and announcements with the FLC community.

FLC Podcast: Discuss your work, knowledge and career on *The Transfer Files*.

GAIN AND SHARPEN T2 SKILLS

FLC Learning Center: Expand your T2 skills and track your training.

FLC National Meeting: Learn and connect at the preeminent annual conference for federal T2.

T2 Resources: Deepen your knowledge of T2 terminology, policies, mechanisms and more.

Careers: Explore educational paths and job lists curated specifically for T2.

CONNECT WITH T2 PARTNERS

FLC Business: Highlight your lab's assets in this searchable database.

Industry and Tech Events: Find potential partners within a tech or industry sector.

Engagement Opportunities: Virtually showcase what your lab has to offer.

Partnering Events: Connect with a broader community at events hosted by our strategic industry partners.

Tech Transfer Services: Capitalize on the FLEX program, agreement matrix, intent to license notices and more.

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CELEBRATING 50 YEARS OF INNOVATION

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for Technology Transfer

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