

**CREATE**

**2013 Mid-Atlantic  
Regional Meeting**

**EDUCATE**

**Building Technology Transfer  
for the 21<sup>st</sup> Century**

**INNOVATE**

# AWARDS PROGRAM

**November 13 - 14 • Leesburg, Virginia**

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# WELCOME TO THE

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## 2013 Mid-Atlantic Regional Meeting

### Building Technology Transfer for the 21<sup>st</sup> Century

Thank you for taking the time to attend today's awards presentation. The Federal Laboratory Consortium for Technology Transfer (FLC) Mid-Atlantic Region boasts a significant number of laboratories that are not just taking the lead in producing innovative technologies, but finding creative ways to make them easily accessible. The winners you will meet today have met this high standard—and raised it even further—through their knowledge, hard work, and dedication to the idea that their creation could produce benefits far beyond laboratory walls.

This year, the FLC Mid-Atlantic Region is pleased to honor individuals and organizations in the following categories:

**Excellence in Technology Transfer Award**—The Excellence in Technology Transfer Award recognizes laboratory employees, and their partners, who have accomplished outstanding work in the process of transferring federally developed technology to the marketplace.

**Interagency Partnership Award**—The FLC Mid-Atlantic Region Interagency Partnership Award recognizes the efforts of federal science and technology employees from at least two different agencies in the region who have collaboratively accomplished outstanding work in the process of transferring a technology.

We congratulate the winners on their well-deserved success.



**Courtney Silverthorn, Ph.D.**

Mid-Atlantic  
Regional Coordinator  
Leidos Biomedical  
Research, Inc.



**Donna Bialozor**

Mid-Atlantic Deputy  
Regional Coordinator  
National Cancer Institute

# 2013 WINNERS



## Project Jack Rabbit: Chemical Release Trials to Improve Modeling, Mitigation

### Department of Homeland Security

Science and Technology Chemical Security Analysis Center

### Award for Excellence in Technology Transfer

In 2010, in conjunction with the Transportation Security Administration (TSA), the Department of Homeland Security Science and Technology Chemical Security Analysis Center (DHS/S&T/CSAC) executed a series of highly instrumented, large-scale, chemical-release field trials known as Project Jack Rabbit. This project developed critical data necessary to improve the modeling of toxic inhalation hazard chemicals (TIHs) released from accidents or terrorist attacks on chemical storage tanks or railcars. The web-based data repository, modeling data and methodologies, and training materials developed during Jack Rabbit resulted in new insights, enhanced training, and novel risk mitigation strategies for the chemical and railroad industries.

The Jack Rabbit technology was transferred through four major trade associations representing hundreds of industrial members: the Chlorine Institute, the Ammonia Safety & Training Institute, The Fertilizer Institute, and the Association of American Railroads. Technology transfer occurred through presentations at industry meetings and training sessions; distribution of data, modeling and knowledge products through the Jack Rabbit website; and a Cooperative Research and Development Agreement (CRADA).

**Contact:**

**Adolfo Negron**

410-417-0904

adolfo.negron@st.dhs.gov

**Nominator:**

Christopher Turner

DHS S&T CSAC

The impetus for Jack Rabbit originated from congressional concerns over 90-ton railcars filled with chlorine and other TIHs traveling through metropolitan areas. Accidents resulting in loss of life from TIH releases continue to be periodic occurrences, and terrorists' interest in using weapons of mass destruction, particularly chemical weapons, is well-documented. As with the events on September 11, 2001, the use of our own infrastructure as a weapon against us is a concern. TIHs such as chlorine and ammonia are transported around the country in bulk quantities daily and tens of millions of tons annually.

It was recognized that a better understanding of TIH releases was a critical first step to accurately assessing risk and developing mitigation strategies. The knowledge that the products generated and transitioned to industry from Jack Rabbit are equally applicable to TIH chemical release disasters resulting from accidents or terrorist attacks. This technology transfer enables major risk reduction, mitigation, and cost avoidance for industries in such incidents.

**Other Winners:**

**DHS Science & Technology Chemical Security Analysis Center**  
Dr. Shannon Fox

**DHS Transportation Security Agency**  
Jack Aherne  
Patricia McKenney

**DHS**  
Nohemi Zerbi



Adolfo Negron



Shannon Fox



Patricia McKenney



Nohemi Zerbi



Jack Aherne



### Award for Excellence in Technology Transfer

## Diffusion Tensor Magnetic Resonance Imaging

### Department of Health and Human Services

Eunice Kennedy Shriver National Institute  
of Child Health and Development

Diffusion tensor imaging (DTI) is an MRI method that produces in vivo magnetic resonance images of biological tissues sensitized with the localized and contrasting characteristics of water diffusion, producing microscopic images of tissues. Water molecules become excited when exposed to a strong magnetic field, which causes the protons in water molecules to move in a coordinated and precise way. The intensity of each image element (voxel) reflects the best estimate of the rate of water diffusion at that location. Because the mobility of water is driven by thermal agitation and highly dependent on its cellular environment, the hypothesis behind DTI is that findings may indicate (early) pathologic change. The main clinical application of DTI has been neurological disorders, especially for the management of acute stroke patients.

The NIH Office of Technology Transfer (OTT) licensed the patent estate (mainly U.S. Patent 5,539,310) claiming this technology to the “big-three” MRI instrumentation manufacturers: General Electric, Philips, and Siemens. The three companies have a DTI feature built into their existing MRI devices, which have been helpful in the imaging, diagnosis, and prevention for stroke patients.

NIH OTT also granted a license to Bruker BioSpin for use of the technique in MRI devices directed toward laboratory animals. Drs. Peter Basser, Denis LeBihan, and Carlo Pierpaoli, the inventors of the technique, were instrumental in actively identifying collaborators, potential licensees, and infringers of the technique.

#### Contact:

**Michael Shmilovich**  
301-435-5019  
shmilovm@mail.nih.gov

#### Nominator:

Steven Ferguson  
Deputy Director, Licensing &  
Entrepreneurship  
National Institutes of Health

#### Other Winners:

**Dr. Peter J. Basser**  
**Dr. Denis LeBihan**  
**Dr. Carol Pierpaoli**



## New Low-Cost Meningitis Vaccine for Sub-Saharan Africa

**Department of Health and Human Services  
Food and Drug Administration**  
National Institutes of Health

### Award for Excellence in Technology Transfer & Interagency Partnership Award

Meningococcal meningitis, a bacterial infection of the brain that sweeps across sub-Saharan Africa in an area called the “meningitis belt,” is now losing its power to inflict illness and death. Scientists and technology transfer officers from the U.S. Food and Drug Administration (FDA), along with technology transfer officers from the National Institutes of Health (NIH) Office of Technology Transfer (OTT), made a critical contribution in developing and transferring the technology needed to manufacture a vaccine against this terrible disease, and at an affordable cost for African nations like Burkina Faso, Chad, Ethiopia, and Niger. Meningitis can be prevented with vaccination, but the technology is complex and generally beyond the capacity of scientists in most developing countries. This new vaccine, designed specifically for the serotype that affects Africa, is based on a conjugate structure formed by a chain of sugars connected to a protein that the immune system responds to very well.

Under a novel partnership mechanism organized by the Program for Appropriate Technology in Health (PATH), NIH OTT licensed to PATH a conjugate vaccine technology developed by Dr. Che-Hung Robert Lee and Dr. Carl Frasch of the FDA. The Serum Institute of India, which worked with PATH, agreed to produce the vaccine cheaply in exchange for technical know-how. The collaboration agreement has

been described by SciDev.Net as an “intriguing model” of vaccine development in developing countries, in which a vaccine with specific characteristics tailored to a particular population is developed at a modest cost and provisions to ensure that sustainable access is built in from the start.

After preclinical animal studies and a series of clinical trials in people in India and Africa’s meningitis belt to assess its safety and effectiveness, the new vaccine, MenAfriVac, was approved by India in December 2009 for export to Africa. In June 2010, the World Health Organization (WHO) had prequalified the vaccine for use in global immunization programs. By the end of 2011, an estimated 55 million people had been vaccinated with MenAfriVac at a cost of only 40 cents per dose. In 2012, a low-cost meningitis vaccine designed for use in sub-Sahara Africa without refrigeration or cold-chain custody was launched, with sales of 100 million doses.

#### Contact:

**Steven Ferguson**

301-435-4075

fergusos@od6100m1.od.nih.gov

#### Nominator:

Steven Ferguson  
Deputy Director, Licensing &  
Entrepreneurship  
National Institutes of Health

#### Other Winners:

##### Food and Drug Administration

Beatrice Droke  
Dr. Carl Frasch  
Dr. Che-Hung Robert Lee  
Dano Murphy  
Dr. Willie Vann

##### National Institutes of Health

Dr. Uri Reichman  
Peter Soukas



## 3D Virtual Energy Plant Simulator and Immersive Training System

### Department of Energy

National Energy Technology Laboratory

### Award for Excellence in Technology Transfer

The 3D Virtual Energy Plant Simulator and Immersive Training System (ITS) from the National Energy Technology Laboratory (NETL) combines a high-fidelity, real-time dynamic simulator and 3D virtual reality (VR) technology to deliver a virtual energy plant for interactive, multimodal, experiential learning. Power plants, particularly those with CO<sub>2</sub> capture, are some of the most complex and expensive plants in the world, costing several billion dollars to design and build, and tens of millions annually to operate, control, and maintain. The 3D virtual energy plant simulator deployed at NETL's AVESTAR® Center is accelerating industry progress toward achieving operational and people excellence for commercial-scale power plants, and transforming how companies conduct training, research, and development aimed at safe, reliable, and efficient field operations.

NETL and its training partner, Fossil Consulting Services, are using the 3D virtual energy plant ITS to deliver realistic, cost-effective, and low-risk workforce training, thereby transferring much-needed field operations and control knowledge to the energy industries. VR-based training helps operators increase their process knowledge and confidence so they can bring plants on line faster, reduce shutdowns and downtime, and reduce the risk and cost of equipment damage. In addition, NETL uses Nonexclusive Software License Agreements to transfer the 3D virtual energy plant simulator to third parties for internal training purposes.

To launch 3D virtual ITS in education, a software license agreement was executed with West Virginia University (WVU), enabling the school to provide hands-on game-based learning to engineering students and researchers. NETL is also enabling Pierpont Community & Technical College to offer VR-based training to students enrolled in a power plant certificate program sponsored by FirstEnergy Corporation.

Under the auspices of the NETL Regional University Alliance, NETL is transferring the technology to URS Corporation—a leading provider of engineering services around the world—and five nationally recognized regional universities: Carnegie Mellon University, The Pennsylvania State University, University of Pittsburgh, Virginia Tech, and WVU.

Another strategic mechanism used by NETL to transfer the 3D virtual energy plant simulator/ITS to the worldwide marketplace is a License of a Federally Owned Invention with Invensys Operations Management, a leading provider of automation technologies, systems, and software solutions. The license agreement assigns commercialization rights to Invensys and allows it to market and sell the NETL technology as a generic virtual energy plant simulator and also use it as the basis for developing customized, plant-specific ITS solutions.



*Terry Jordan*



*Eric Liese*



*Dr. Priyadarshi Mahapatra*



*Dr. Stephen Zitney*

#### Contact:

**Dr. Stephen Zitney**  
304-285-1379  
stephen.zitney@netl.doe.gov

#### Nominator:

Jessica Sosenko  
Technology Transfer Program  
Manager, National Energy  
Technology Laboratory

#### Other Winners:

**Terry Jordan**  
**Eric A. Liese**  
**Dr. Priyadarshi Mahapatra**



## Drugs to Treat Malaria Targeting the Plasmodial Surface Anion Channel

**Department of Health and Human Services –  
National Institutes of Health**

National Institute of Allergy and Infectious Diseases

### Award for Excellence in Technology Transfer

Malaria is a life-threatening disease transmitted through the bite of mosquitoes infected with malaria parasites. In 2012, there were an estimated 219 million cases of malaria and an estimated 660,000 deaths, mostly among young children in sub-Saharan Africa. With the effectiveness of current drugs diminishing as resistant strains of malaria have emerged, new drugs are urgently needed. The plasmodial surface anion channel (PSAC) found on the surface of red blood cells infected with malaria parasites offers an opportunity to develop new drugs to treat and prevent malaria. The channel allows malaria parasites to live and grow inside the red cells of infected hosts. PSAC was first discovered at the National Institute of Allergy and Infectious Diseases (NIAID).

NIH technology transfer offices used conventional and unconventional mechanisms to develop and transfer the technology. Through funding under a conditional gift from nonprofit organization Medicines for Malaria Venture, the NIAID laboratory conducted screens of chemical libraries to identify small molecule inhibitors of PSAC. In response to an NIH advertisement, an anti-infective company, Microbiotix, Inc., approached scientists at NIAID and eventually entered into a partnership under a Cooperative Research and Development Agreement to develop several chemical scaffolds. Further collaboration is ongoing under a Small Business Innovation Research Grant awarded to the company.

As a result of technology transfer efforts, key scientists in the public and private sectors are collaborating to address an urgent unmet public health need to develop new drugs to treat and prevent a disease that burdens large populations worldwide. These efforts are in fulfillment of NIH's mission and advance drug development in an area where there is no market incentive due to a lack of perceived profitability.

#### Contact:

**S. Dana Hsu**  
301-451-3521  
dhsu@niaid.nih.gov

#### Nominator:

Dr. Michael Mowatt  
TTIPO Director, National  
Institute of Allergy and  
Infectious Diseases

#### Other Winners:

**Kevin Chang**  
**Sanjay Desai**  
**Charles Rainwater**  
**Mukul Ranjan**



*From left to right: Dr. Michael R. Mowatt,  
Dr. Kevin Chang, Dr. Sanjay Desai,  
Dr. Mukul Ranjan, Dana Hsu, J.D, M.S.*

*Not pictured: Charles Rainwater*



## Novel "Black Pearl" Pepper Cultivar

### Department of Agriculture

Agricultural Research Service

Genetic Improvement of Fruits and Vegetables Laboratory

### Award for Excellence in Technology Transfer

A team of scientists from the U.S. Department of Agriculture Agricultural Research Service (USDA-ARS) Beltsville Agricultural Research Center's Genetic Improvement of Fruits and Vegetables Laboratory, and the U.S. National Arboretum's Floral and Nursery Plants Research Unit developed novel ornamental/culinary pepper (*capsicum annuum*) breeding material from which they created the award-winning "Black Pearl" cultivar. This cultivar is highly drought-tolerant; shows solid, true-black-pigmented foliage; and produces small black round fruit that are hot, turn red at maturity, and can be harvested for culinary spice. Novel peppers have the highest per unit value of any pepper product. "Black Pearl" provides an alternative high-value crop for greenhouse pot plant/transplant production and an innovative high-value farm crop. It is the first successful black foliage pepper with true black pigmentation in the commercial market.

The USDA-ARS research team actively promoted the concept of new pepper ideotypes for dual-purpose ornamental/culinary applications. They communicated with leaders in the crop development and production industry, and identified prospective partners with the capacity to bring research products to the market. As a result of these efforts, a Cooperative Research and Development Agreement (CRADA) was developed with one of the largest seed companies in the world, Pan America Seed Company, a division of Ball Horticultural Company, to develop novel vegetable germplasm. Material Transfer Agreements

were executed for exchange and testing of plant material. An application for and award of U.S. Plant Variety Protection Certificate 200500020 in 2006 for "Black Pearl" allowed the private partner to obtain an exclusive license (U.S. License No. 1381-001) from the USDA Office of Technology Transfer and commercialize the invention.

The commercial pepper cultivar "Black Pearl" is marketed worldwide in wholesale and retail markets, and has been honored with prestigious awards for horticultural quality. "Black Pearl" was recognized internationally in Europe as a 2005 Quality Award Winner by Fleuroselect, the international organization for the ornamental plants industry. It also received 12 additional awards during 2006-2012, including a U.S. 2006 All America Selections award for superior performance in impartial trials conducted across North America.

"Black Pearl" has been widely adopted by the nursery trade, botanic gardens, arboreta and gardeners, and has created an increased demand for garden plants with novel foliage color, resulting in their use as standard elements in garden design.

#### Contact:

**Dr. John Stommel**

301-504-5583

john.stommel@ars.usda.gov

#### Nominator:

June Blalock, Acting Assistant

Administrator USDA

Agricultural Research Service

#### Other Winner:

**USDA Agricultural Research Service**

Dr. Robert Griesbach



From left to right: Dr. Robert Griesbach, Dr. John Stommel

## HONORABLE MENTION



### Interagency Partnership Award

Department of Homeland Security/Department of Agriculture

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

## FLC MID-ATLANTIC REGIONAL AWARD EVALUATOR PANEL

Representing several federal laboratories, the members of the Evaluator Panel enthusiastically devoted their time and effort to judging the nominations submitted for this year's awards. Selecting the winners was a difficult task, but these evaluators admirably rose to the challenge. The FLC Mid-Atlantic Region recognizes their tireless efforts and expresses its gratitude.

**Tawanda Abdelmouti**, National Institutes of Health  
**Krishna Balakrishnan**, NIH Center for Translational Therapeutics  
**Dr. Megan Irvin**, National Institute of Allergy and Infectious Diseases  
**Gail Poulos**, USDA Agricultural Research Service – Beltsville Area  
**Dr. Courtney Silverthorn**, Leidos Biomedical Research, Inc.

## 2013 MID-ATLANTIC MEETING PLANNING TEAM

### Maryam Azarion

Office of General Counsel,  
 Department of Veterans Affairs  
[maryam.azarion@va.gov](mailto:maryam.azarion@va.gov)

### Mojdeh Bahar

Technology Licensing Specialist, Office of Technology Transfer, Division of Technology Development and Transfer, National Institutes of Health  
[baharm@od.nih.gov](mailto:baharm@od.nih.gov)

### Donna Bialozor

Technology Transfer Specialist,  
 National Cancer Institute  
[bialozod@otd.nci.nih.gov](mailto:bialozod@otd.nci.nih.gov)

### Donna Cannella

Edgewood Chemical Biological Center  
[donna.a.cannella.civ@mail.mil](mailto:donna.a.cannella.civ@mail.mil)

### John Emond

National Aeronautics and Space Administration (retired)  
[johnlamaremond@aol.com](mailto:johnlamaremond@aol.com)

### Steven Ferguson

Deputy Director, Licensing & Entrepreneurship,  
 Office of Technology Transfer, National Institutes of Health  
[FERGUSOS@od6100m1.od.nih.gov](mailto:FERGUSOS@od6100m1.od.nih.gov)

### Dr. Robert Griesbach

Deputy Assistant Administrator,  
 USDA ARS Office of Technology Transfer  
[robert.griesbach@ars.usda.gov](mailto:robert.griesbach@ars.usda.gov)

### Fizie Haleem

Manager Strategic Development, Women & Minority Businesses, Montgomery County Department of Economic Development  
[Fizie.Haleem@montgomerycountymd.gov](mailto:Fizie.Haleem@montgomerycountymd.gov)

### Gary Jones

DC Liaison, Federal Laboratory Consortium for Technology Transfer  
[gkjones\\_ctr@federallabs.org](mailto:gkjones_ctr@federallabs.org)

### Ken Levin

Department of Veterans Affairs  
[Ken.levin@VA.gov](mailto:Ken.levin@VA.gov)

### Steven Marquis

Senior Licensing Associate, Naval Research Laboratory  
[Steven.Marquis@nrl.navy.mil](mailto:Steven.Marquis@nrl.navy.mil)

### Courtney Silverthorn

Intellectual Property Specialist, Leidos Biomedical Research, Inc.  
[silverthorncf@mail.nih.gov](mailto:silverthorncf@mail.nih.gov)

### Dr. Thomas Stackhouse

Senior Technology Development & Patent Specialist, Technology Development & Commercialization Branch, National Cancer Institute  
[stackhot@otd.nci.nih.gov](mailto:stackhot@otd.nci.nih.gov)

### Debra Thedford

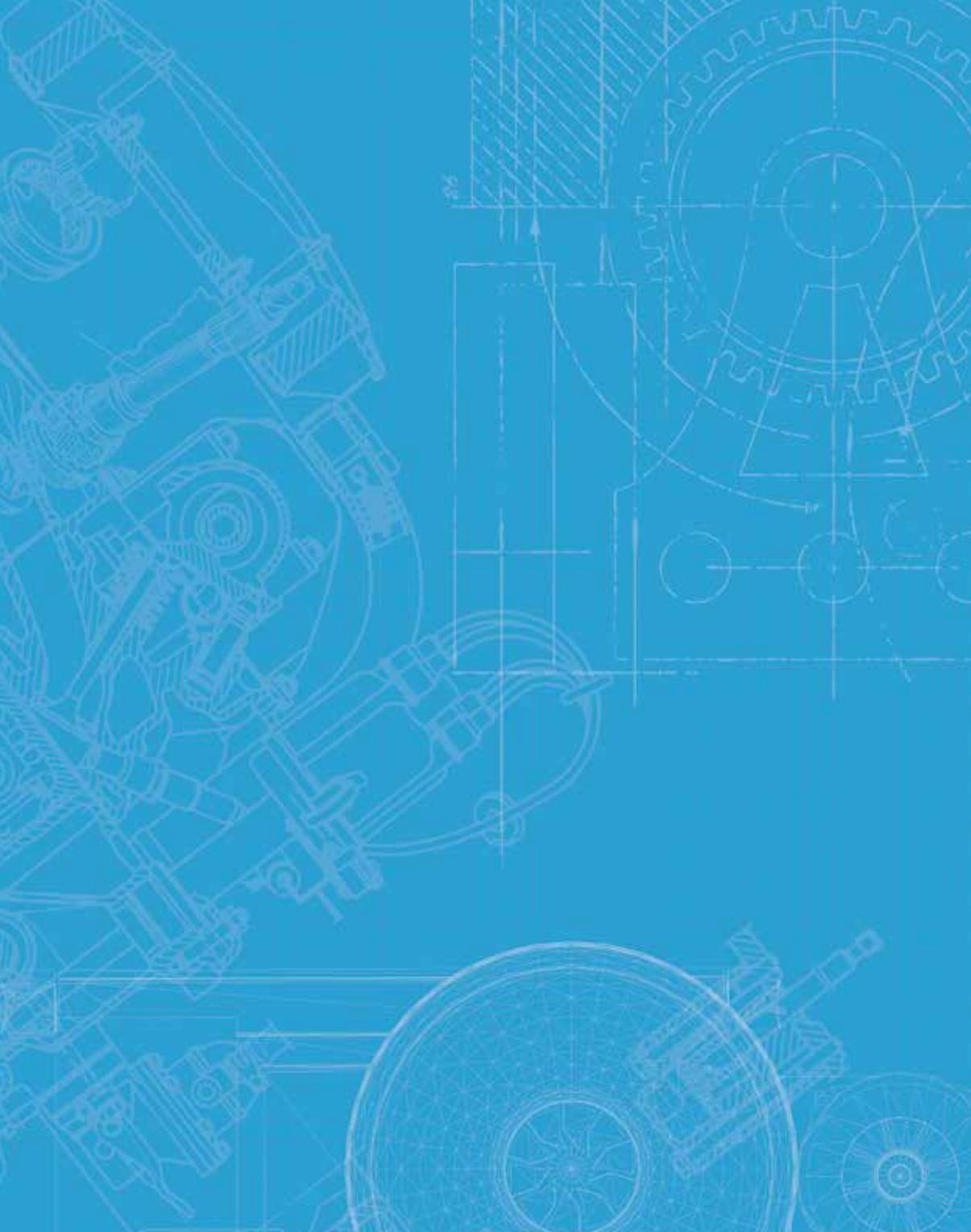
Edgewood Chemical Biological Center  
[debra.thedford@us.army.mil](mailto:debra.thedford@us.army.mil)

### Mike Thielke

Eastern Shore Entrepreneurship Center  
[mike@ventureahead.org](mailto:mike@ventureahead.org)

### Rheal P. Turcotte

NASA Langley Research Center  
[rheal.p.turcotte@nasa.gov](mailto:rheal.p.turcotte@nasa.gov)



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