NJIT Research Newsletter

Issue: ORN-2018-15

NJIT Research Newsletter includes recent awards, and announcements of research related seminars, webinars, national and federal research news related to research funding, and ***Grant Opportunity Alerts***. The Newsletter is posted on the NJIT Research Website http://www.njit.edu/research/ .

Grant Opportunity Alerts

Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: Centers for Chemical Innovation (CCI); STEM + Computing K-12 Education (STEM+C); Accelerating Discovery: Educating the Future STEM Workforce (AD); Dear Colleague Letter: Advancing Long-term Reuse of Scientific Data; Computer and Information Science and Engineering (CISE) Research Initiation Initiative (CRII)
NIH: BRAIN Initiative: Targeted BRAIN Circuits Projects- TargetedBCP (R01); NIH Director's Early Independence Award (DP5); International Bioethics Research Training Program (D43); BRAIN Initiative: New Technologies and Novel Approaches for Large-Scale Recording and Modulation in the Nervous System (R01); NEI Translational Research Program (TRP) to Develop Novel Therapies and Devices for the Treatment of Visual System Disorders (R24)
Department of Defense/US Army/DARPA/ONR: 3-Dimensional Modeling and Simulation for Lifetime Predictions; Computers and Humans Exploring Software Security (CHESS); SIGMA+ Sensors; Notice of Intent for the Funding Opportunity for Bilateral Academic Research Initiative (BARI) Pilot Program; Proof of Concept Commercialization Pilot Program Innovation Corps @ Department of Defense (I-Corps @ DoD); 2019 Department of Defense Multidisciplinary Research Program of the University Research Initiative (MURI); 2019 DEFENSE UNIVERSITY RESEARCH INSTRUMENTATION PROGRAM (DURIP); Air Force Fiscal Year 2019 Young Investigator Research Program (YIP)
Department of Education: Education Innovation and Research Program: Early-phase Grants
Department of Energy: Solar Energy Technologies; Hydrogen and Fuel Cell R&D; Industry Partnerships for Cybersecurity of Energy Delivery Systems (CEDS); Critical Water Issues Prize Competition RFI; Solid Oxide Fuel Cells Core Technology Research
EPA (Environmental Protection Agency): FY 2019 Pollution Prevention Grant Program

NASA: Transformational Tools and Technologies (TTT); Astrophysics Data Analysis; Discovery Data Analysis; Advanced Information Systems Technology
National Endowment of Humanities: Research and Development; Digital Humanities Advancement Grants
American Diabetes Association: Pathway Program
Cisco: Research and Open Innovation

Special Announcement

President's Forum and Inauguration of The Henry J. and Erna D. Leir Research Institute for Business, Technology, and Society
April 30, 2018: 10.00 AM to 2.00 PM, Ballroom A/B and MTSM

The Henry J. and Erna D. Leir Research Institute for Business, Technology, and Society, funded by $1.5 million grant from The Leir Charitable Foundations will have an integrated dual mission to conduct business and management research and direct targeted outreach, both through partnerships with the academic and business communities, regional economic leaders and government agencies. Its primary research initiatives will center on predictive and proactive data analytics for disruptive events, business vulnerabilities and risk mitigation; metrics for corporate resiliency, sustainability, risk exposure and business ethics; and real-time supply and demand risk assessment across the value chain using social media sources. Other areas to be explored as well include advanced machine learning and autonomous intelligence with knowledge management constructs; enterprise tools to provide data visibility and security in heterogeneous legacy systems; and management-focused data insights and knowledge visualization with interactive enterprise simulation. Of special interest is the advancement of novel Internet of Things technologies.

President's Forum and Inauguration of The Henry J. and Erna D. Leir Research Institute for Business, Technology, and Society

Agenda

Ballroom A/B

10.00 AM - 10.30 AM:	Welcome Remarks Joel Bloom, President Margot Gibis, President of the Leir Charitable Foundations Vince DeCaprio, Vice Chair, BOT Fadi Deek, Provost and Senior Executive VP Atam Dhawan, Senior Vice Provost for Research
10.30 AM - 10.45 AM:	Institute Mission and Introduction to Panelists Reggie Caudill, Dean and Director, The Henry J. and Erna D. Leir Research Institute for Business, Technology, and Society
10.45 AM - 11.45 AM:	President's Forum: Panel on Cognitive Techniques and Innovative Management Strategies to Enhance Corporate Sustainability, Resiliency, and Agility

Reggie Caudill, Dean and Panel Moderator
Kumar Bhaskaran, Program Director in Industry Research, IBM Research
John Schwall, Chief Operating Office, IEX Groups, Inc.
Shravanthi Budhi, MTSM Student/Avanade Scholar/Salesforce Wiz
Yi Chen, Associate Professor and Henry J. Leir Chair of Healthcare
Bill Rapp, Professor and Henry J. Leir Chair of International Trade and Business

11.45 AM – 12.30 PM: Lunch and Networking Session

MTSM Building

12.45 PM – 1.00 PM: Inauguration Ceremony at the Henry J. and Erna D. Leir Research Institute for Business, Technology, and Society

1.00 PM – 2.00 PM: Institute and Laboratory Tour
Coffee and Desserts

This President's forum is a featured event in the Albert Dorman Honors College Colloquium Series and is made possible in part by the generous support of the DeCaprio Family.

Recent Research Grant and Contract Awards

Congratulations to faculty and staff on receiving research grant and contract awards!

PI: Wenda Cai (PI) and Philip Goode (Co-PI)
Department: Center for Solar Terrestrial Research
Grant/Contract Project Title: Collaborative Research in Solar Physics between KASI, SNU, and BBSO
Funding Agency: KASI
Duration: 06/01/18-05/31/19

PI: William Marshall (PI)
Department: NJIT
Grant/Contract Project Title: Advanced Manufacturing for Weapon Systems Standardization and Effectiveness (AMWSSE)
Funding Agency: US Army (Picatinny Arsenal)
Duration: 04/18/18-03/27/19

PI: Samuel Lieber (PI)
Department: Biomedical Engineering and CoAD
Grant/Contract Project Title: Case Study on Applications of Stainless Steel
Funding Agency: Howmedica Osteonics Corp.
Duration: 04/03/18-12/31/18

PI: Yan Yong (PI) (correction)
Department: Chemistry and Environmental Sciences
Grant/Contract Project Title: Hybrid Halide Perovskite Materials for Photocatalytic Carbon-Carbon Bond Formation
Funding Agency: NSF
Duration: 07/01/18-06/30/21

Streamlyne Question of the Week

Question: How can I update my eRA Commons ID for all future NIH proposals?

Answer: Go to Main Menu>Setting>Person Extended Attributes, click "Edit", enter it under "eRA Commons User Name" and submit the change/update.

More FAQs on Streamlyne: Please visit http://www.njit.edu/research/streamlyne/

In the News…

(National and Federal News Related to Research Funding and Grant Opportunities)

Universities' R&D Priorities: The Coalition for National Security Research is preparing to seek an increase for the armed services' University Research Initiatives, with the added sums going to the Multidisciplinary University Research Initiative (MURI) program. Other funding priorities include the Defense University Research Instrumentation Program (DURIP), each Service's Young Investigator Programs (YIP), Vannevar Bush Faculty (VBF) Fellowships, Minerva Research Initiative, and National Defense Science & Engineering Graduate (NDSEG) Fellowships. The coalition is also flagging a number of programs within Basic Research Initiatives and the National Defense Education Program, including the Manufacturing Engineering Education Program. More information about the National Defense Authorization Act for Fiscal Year 2019 is posted on https://www.congress.gov/bill/115th-congress/house-bill/5515?r=64

BIG IDEAS – Where Engineering Fits: All 10 of the National Science Foundation's **Big Ideas** depend at least in part on engineering if they're to be realized. The Engineering Directorate is carving out a niche in a number of them, according to reports and discussion at this week's **meeting of its Advisory Committee**. Lewis-Burke Associates, who attended, cited The Future of Work at the Human-Technology Frontier, where ENG is pressing ahead with "intelligent cognitive assistants"; Quantum Leap; Mid-scale Research Infrastructure; Navigating the New Arctic (subject of an extended discussion); and Harnessing Data for 21st Century Science and Engineering. Engineers were involved in INCLUDES before it became part of the Big 10. Addressing NSF 2026, look for a competition for ideas, including a video competition, from which it's hoped two to four great ideas will emerge. The committee also heard from liaisons to committees on cyberinfrastructure, environmental research and education, equal opportunities in science and engineering, and the Small Business Innovative Research/Technology Transfer program. A full solicitation for future Engineering Research Centers is expected before the end of this calendar year.

NSF Office of Advanced Cyberinfrastructure: The National Science Foundation's Office of Advanced Cyberinfrastructure seeks "solutions (that) accelerate the dissemination and use of fundamental research results in the form of data that will advance the frontiers of knowledge and help sustain the Nation's prosperity." It encourages "proposals for conferences" and for Early-Concept Grants for Exploratory Research (EAGER) for high-risk/high-reward innovative concepts and pilot projects that yield new fundamental research discoveries from existing NSF-funded data or that ultimately result in deployment of ambitious, sustainable socio-technical infrastructure resources and capabilities that enhance and accelerate new discoveries from existing NSF-funded data." The Deal Colleague Letter (DCL) is posted on the website https://www.nsf.gov/pubs/2018/nsf18060/nsf18060.jsp?WT.mc_id=USNSF_179 This DCL encourages funding requests aligned with one of the following three tracks:

1. Community Track
2. Data Reuse Track
3. Socio-Technical Infrastructure

SEVEN NEXT BIG THINGS: To the five historical technology-powered waves that drove productivity growth -- the steam engine; iron; steel and electricity; electromechanical and chemical technologies; and information and communication technology -- will be added a sixth wave, says the Information Technology and Innovation Foundation. Seven technologies that look likely to form this wave are artificial intelligence; the Internet of Things; blockchain; autonomous devices; robotics; new materials; and convergence. "While these technologies are already in the marketplace, they are generally both too expensive and not powerful enough to drive economy-wide productivity." Full report is posted on the website http://www2.itif.org/2018-emerging-technology-future-labor.pdf

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Webinar and Events

Event: The Next AI Revolution Will Not Be Supervised
Sponsor: NSF
When: April 25, 2018 from 11.00 AM to 12.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=245180&org=NSF
Brief Description: Deep learning is causing revolutions in computer perception and natural language understanding. But almost all these successes largely rely on supervised learning, where the machine is trained with a large number of human-annotated samples. For control and game AI, most systems use model-free reinforcement learning, which requires too many trials to be practical in the real world. By contrast, animals and humans seem to learn complex tasks from a very small amount of interactions with the real world. One hypothesis is that animals and humans learn vast amounts of knowledge about how the world works through mere observation and occasional actions. Good predictive world models are an essential component of intelligent behavior: with them, one can predict outcomes and plan courses of actions. One could argue that prediction is the essence of intelligence. Good predictive models may be the basis of intuition, intuitive physics, reasoning and "common sense", allowing us to fill in missing information: predicting the future from the past and present or the state of the world from noisy percepts. After a brief presentation of the state of the art in deep learning, I will discuss some

promising approaches based on prediction that may allow machines to acquire some level of common sense and to learn complex tasks with few interactions.
BIO: Yann LeCun is Director of AI Research at Facebook and Silver Professor at New York University, affiliated with the Courant Institute, the Center for Neural Science and the Center for Data Science, for which he served as founding director until 2014. He received an EE Diploma from ESIEE (Paris) in 1983, a PhD in Computer Science from Université Pierre et Marie Curie (Paris) in 1987. After a postdoc at the University of Toronto, he joined AT&T Bell Laboratories. He became head of the Image Processing Research Department at AT&T Labs-Research in 1996, and joined NYU in 2003 after a short tenure at the NEC Research Institute. In late 2013, LeCun became Director of AI Research at Facebook, while remaining on the NYU Faculty part-time. He was visiting professor at Collège de France in 2016. His research interests include machine learning and artificial intelligence, with applications to computer vision, natural language understanding, robotics, and computational neuroscience. He is best known for his work in deep learning and the invention of the convolutional network method which is widely used for image, video and speech recognition. He is a member of the US National Academy of Engineering, the recipient of the 2014 IEEE Neural Network Pioneer Award, the 2015 IEEE Pattern Analysis and Machine Intelligence Distinguished Researcher Award, the 2016 Lovie Award for Lifetime Achievement, and a honorary doctorate from IPN, Mexico.
To join the webinar: please register at: http://www.tvworldwide.com/events/nsf/180425/

Event: In the Eye of the Storm: Biometrics, Security and Privacy
Sponsor: NSF
When: April 26, 2018 from 12.00 PM to 1.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=245183&org=NSF
Brief Description: Biometrics is the science of recognizing individuals based on their physical and behavioral attributes such as fingerprints, face, iris, voice and gait. The past decade has witnessed tremendous progress in this field, including the deployment of biometric solutions in diverse applications such as border security, national ID cards, cybersecurity, access control, and smartphones. Despite these advancements, biometric systems have to contend with a number of challenges related to data quality, spoof attacks, and personal privacy. This talk will highlight some of the recent progress made in the field of biometrics; present our lab's work on biometrics security, spoof detection and data privacy; and discuss some of the challenges that have to be solved in order to promote the widespread use of this technology.
To join the webinar: please register at: http://www.tvworldwide.com/events/nsf/180426/

Event: 2018 CBET CAREER Proposal Webinar
Sponsor: NSF
When: April 27, 2018 from 12.00 PM to 4.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=244709&org=NSF
Brief Description: The NSF Division of Chemical, Bioengineering, Environmental, and Transport Systems (CBET) will host a CAREER Proposal Webinar, Friday, April 27, 2018, 12pm-4pm eastern time, to share best practices regarding the development and submission of proposals to the CAREER program.
Topics will include:

- CAREER Solicitation Overview
- CBET Programs
- CAREER Perspectives From Awardees

The webinar will also feature a live question–answer session with ENG program officers and CAREER awardees. Read the CAREER webinar agenda.
To attend the webinar, please register at the above URL.

Event: 2018 CAREER Program Webinar
Sponsor: NSF
When: May 15, 2018 from 1.00 PM to 3.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=244740&org=NSF
Brief Description: The NSF CAREER Coordinating Committee hosts a webinar to answer participants' questions about development and submission of proposals to the NSF Faculty Early Career Development Program (CAREER). The webinar will give participants the opportunity to interact with members of the NSF-wide CAREER Coordinating Committee in a question-and-answer format.
In preparation for the webinar, participants are strongly encouraged to consult material available on-line concerning the CAREER program. In particular, the CAREER program web page has a wealth of current information about the program, including:

- the CAREER program solicitation NSF 17-537;
- frequently asked questions about the CAREER program; and
- slides from a CAREER program overview.

Additionally, there is a video of a live presentation about the CAREER program accessible through the library of videos from a recent NSF Grants Conference.
How to Submit Questions
Participants may submit questions about CAREER proposal development and submission in advance of the webinar by sending e-mail to: careerwebinarqs@nsf.gov Questions received by May 11, 2018 will be considered for inclusion in the webinar.
Please note that questions regarding eligibility for the CAREER program in any individual case will not be addressed during the webinar. Questions about the CAREER program that are not covered during the webinar should be directed to the appropriate NSF Divisional contact shown on the web page http://www.nsf.gov/crssprgm/career/contacts.jsp
Registration: Participants should register in advance at the web page https://nsf.webex.com/nsf/onstage/g.php?MTID=e1dd0a274fcc95e58f42bc7d3490834b4.

Event: Math Frontiers Monthly Webinar Series
Sponsor: National Academies
When: May 8, 2018 from 2.00 PM
Website: http://sites.nationalacademies.org/deps/bmsa/deps_183972
Brief Description: Join the National Academies of Sciences, Engineering, and Medicine for a webinar series on exciting and upcoming mathematics research across an array of topics. Webinars will take place on the **second Tuesday of each month from 2-3 p.m. ET,** with two speakers and live Q&A. See below for the list of dates and themes for each webinar. ***When registering, please make sure you select all the webinars you would like to attend.*** You will only receive reminder emails and login instructions for webinars you have registered for.
As each webinar approaches, we will post more information about the speakers on the webinar series page at nas.edu/mathfrontiers.
May 8, 2018: *Mathematics of Redistricting*
Professors Jonathan Mattingly and Karen Saxe will discuss the mathematics of political redistricting—the process of redrawing congressional and state legislative electoral districts.

June 12, 2018: ***Number Theory: The Riemann Hypothesis***
Professors Ken Ono and Terence Tao will speak on the importance and recent advances on the Riemann Hypothesis, one of the most famous unsolved problems in algebra and number theory.
July 10, 2018: ***Topology***
Professors Jeffrey F. Brock and John Morgan will discuss applications of topology—the mathematical study of how object properties are impacted by deformations—to fields such as data analytics, tumor identification, and robotics.
August 14, 2018: ***Algorithms for Threat Detection***
Professor Andrea Bertozzi and others will discuss applications of mathematics to spatiotemporal data analytics as a way to discover and mitigate national security threats.
September 11, 2018: ***Mathematical Analysis***
Professor Dimitri Shlyakhtenko and others will discuss mathematical analysis—the study of functions and their limits. Application areas include computational fluid dynamics and astronomy.
October 9, 2018: ***Combinatorics***
Invited speakers will discuss the mathematical study of discrete structures and their properties focusing on some of the modern techniques in the area including the probabilistic method. Application areas include information theory, statistical physics, molecular biology and computer science.
November 13, 2018: ***Why Machine Learning Works***
Invited speakers will discuss the mathematics behind machine learning and how they enable predictive analyses.
December 11, 2018: ***Mathematics of Epidemics***
Professors Calistus Ngonghala and Folashade B. Agusto will discuss mathematical approaches to studying biology, including ecology and infectious disease.
To join the webinar: Please register at
http://sites.nationalacademies.org/deps/bmsa/deps_183972

Grant Opportunities

National Science Foundation

Grant Program: Centers for Chemical Innovation (CCI)
Agency: National Science Foundation NSF 18-555
RFP Website: https://www.nsf.gov/pubs/2018/nsf18555/nsf18555.htm
Brief Description: The Centers for Chemical Innovation (CCI) Program supports research centers focused on major, long-term fundamental chemical research challenges. CCIs that address these challenges will produce transformative research, lead to innovation, and attract broad scientific and public interest. CCIs are agile structures that can respond rapidly to emerging opportunities through enhanced collaborations. CCIs integrate research, innovation, education, broadening participation, and informal science communication.
The FY 2019 Phase I CCI competition is open to projects in all fields supported by the Division of Chemistry, and must have scientific focus and the potential for transformative impact in chemistry. *NSF Chemistry particularly encourages fundamental chemistry projects related to one or more of NSF's 10 Big Ideas.*
The CCI Program is a two-phase program. Both phases are described in this solicitation. Phase I CCIs receive significant resources to develop the science, management and broader impacts of a

major research center before requesting Phase II funding. Satisfactory progress in Phase I is required for Phase II applications; Phase I proposals funded in FY 2019 will seek Phase II funding in FY 2022. This solicitation also covers the renewal application of the Phase II CCI initiated in FY 2014: the Center for Sustainable Polymers, led by the University of Minnesota.
Awards: Standard grants; **Anticipated Funding Amount:** $9,400,000
Letter of Intent: Not Required
Full Proposal Submission Deadline: July 2, 2018
Contacts: Katharine J. Covert, E 9332, telephone: (703) 292-4950, email: kcovert@nsf.gov

- Lin He, E 9329, telephone: (703) 292-4956, email: lhe@nsf.gov

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Grant Program: STEM + Computing K-12 Education (STEM+C)
Agency: National Science Foundation NSF PD 18-005Y
RFP Website:
https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505006&org=NSF&sel_org=NSF&from=fund
Brief Description: An innovative science, technology, engineering, mathematics and computing (STEM+C) workforce and well-educated citizenry are crucial to the Nation's prosperity, security and competitiveness. Preparation for the future workforce must begin in the earliest grades from preK-12, where students need to learn not only the science and mathematics central to these areas, but also how computational thinking is integral to STEM disciplines. Because of the powerful innovation and application of computing in STEM disciplines there is an urgent need for real-world, interdisciplinary, and computational preparation of students from the early grades through high school (preK-12) that will provide a strong foundation for mid-level technical careers and for continuing education in higher education. This is particularly important in the key science areas described in the National Science Foundation's Big Ideas for Future NSF Investment. The STEM+C program supports research and development proposals related to new approaches to pre-K-12 STEM teaching and learning related to Harnessing the Data Revolution, Convergence Research and the Future of Work at the Human-Technology Frontier.

The STEM+C Program focuses on research and development of interdisciplinary and transdisciplinary approaches to the integration of computing within STEM teaching and learning for preK-12 students in both formal and informal settings. The STEM+C program supports research on how students learn to think computationally to solve interdisciplinary problems in science and mathematics. The program supports research and development that builds on evidence-based teacher preparation or professional development activities that enable teachers to provide excellent instruction on the integration of computation and STEM disciplines. Proposals should describe projects that are grounded in prior evidence and theory, are innovative or potentially transformative, and that will generate and build knowledge about the integration of computing and one or more STEM disciplines at the preK-12 level.

A proposal submitted to this program description should describe the integration of computing with one or more STEM disciplines. A proposal may focus on studies on the effects of integrating computational thinking with STEM disciplines or the challenges of implementing these potentially disruptive educational interventions. Proposed projects may develop models, assessments, and technological tools to support teaching and learning in this area as well as conduct research on these models, assessments, and tools.

Outcomes of projects should enable the Nation to have a future workforce with knowledge of computational thinking integrated with STEM disciplines, and students prepared and interested in careers in the skilled technical work force or further education and science careers.

Awards: Standard grants
Letter of Intent: Not Required
Full Proposal Submission Deadline: July 2, 2018
Contacts: Arlene M. de Strulle adestrul@nsf.gov (703) 292-8620
Chia Shen cshen@nsf.gov (703) 292-8447

Grant Program: Accelerating Discovery: Educating the Future STEM Workforce (AD)
Agency: National Science Foundation NSF PD 18-1998
RFP Website:
https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505552&org=NSF&sel_org=NSF&from=fund

Brief Description: A well-prepared, innovative science, technology, engineering, and mathematics (STEM) workforce is crucial to the Nation's prosperity and security. Future generations of STEM professionals are a key sector of this workforce, especially in the critical scientific areas described in the Big Ideas for Future NSF Investments. To accelerate progress in these areas, the next generation of STEM professionals will need to master new knowledge and skills, collaborate across disciplines, and shape the future of the human-technology interface in the workplace. As a result, NSF recognizes the need to support development of and research on effective educational approaches that can position the future STEM workforce to make bold advances in these Big Ideas.

In response to this need, the NSF's Education and Human Resources Directorate seeks to invest in projects that can educate the STEM workforce to advance discovery in the six research Big Ideas: Harnessing the Data Revolution; The Future of Work; Navigating the New Arctic; Multi-messenger Astrophysics; The Quantum Leap; and Understanding the Rules of Life. In addition to developing and implementing novel educational and/or training programs, these projects should simultaneously generate new knowledge about effective STEM education, by studying such programs and exploring related issues.

Specifically, NSF accepts proposals to support education research and development projects focused on re- or up-skilling the existing workforce; developing the skilled technical workforce; and/or preparing those at the undergraduate, graduate, or postdoctoral fellow/early career levels. We encourage projects to partner with industry, public, and private sectors to define the needs of tomorrow's workforce and develop educational and learning strategies to meet those needs. Proposals should address near-, mid-, and long-term challenges and opportunities facing the development of STEM professionals or anticipate new structures and functions of the STEM learning and teaching enterprise. Proposers are encouraged to include approaches that have the potential to increase and diversify participation in STEM. All proposals should contribute to one or more of the six research Big Ideas.

EHR is particularly interested in supporting innovative education research and development in two Big Ideas: The Future of Work at the Human-Technology Frontier (FW-HTF) and Harnessing the Data Revolution for 21st Century Science and Engineering(HDR). Projects of interest include: innovative uses of technology and big data to understand learning; educational approaches that prepare tomorrow's innovators to use technology and big data to understand the natural world; effects of advances in intelligent agents on STEM teaching and learning; and evaluation of disruptive educational interventions on long-term student outcomes.

Outcomes of these projects can enable the Nation to: better prepare its scientific and technical workforce for the future; use technological innovations effectively for education; and advance the frontiers of science. Proposals should describe projects that build on available

evidence and theory, and that will generate evidence and build knowledge, while contributing to the education of the future STEM professionals.
Awards: Standard grants
Letter of Intent: Not Required
Full Proposal Submission Deadline: July 2, 2018; Window: April 2, 2018 - January 16, 2019
Contacts: Ellen Carpenter elcarpen@nsf.gov (703) 292-5104
Laura B. Regassa lregassa@nsf.gov (703) 292-2343
Clytrice L. Watson clwatson@nsf.gov (703) 292-4775

Grant Program: Dear Colleague Letter: Advancing Long-term Reuse of Scientific Data
Agency: National Science Foundation NSF 18-060
RFP Website: https://www.nsf.gov/pubs/2018/nsf18060/nsf18060.jsp?WT.mc_id=USNSF_179
Brief Description: NSF supports fundamental research grants that result in publications, primary data, samples, physical collections and other supporting materials created or gathered in the course of work performed under these grants.
Specifically, this DCL encourages two types of funding requests: (1) proposals for Conferences (i.e., community workshops and other events) that are designed to bring together stakeholders to explore opportunities to converge on innovative solutions to advancing public access; and (2) proposals for Early-Concept Grants for Exploratory Research (EAGER) for high-risk/high-reward innovative concepts and pilot projects that yield new fundamental research discoveries from existing NSF-funded data or that ultimately result in deployment of ambitious, sustainable socio-technical infrastructure resources and capabilities that enhance and accelerate new discoveries from existing NSF-funded data. Research ideas that do not advance public access as narrowly defined in this DCL may be suitable for other solicitations such as Cyberinfrastructure for Sustained Scientific Innovation (CSSI) - Data and Software (see https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf18531).
SPECIFIC GUIDANCE TO PROPOSERS RESPONDING PURSUANT TO THIS DCL
This DCL encourages funding requests aligned with one of the following three tracks:

I. **Community track**: This track funds proposals for Conferences (i.e., community workshops and other events) that enable better data stewardship by the NSF research community, in particular of data produced and used by the community in the conduct of research and education. Topics include community activities to organize stakeholders (e.g., discipline experts, data repository managers, and data appraisal experts) to explore:
    - Community-specific agreements that identify the data of importance to the community; knowing what to keep helps determine what to throw away;
    - Common data types (e.g., volumetric, image, etc.) across multiple disciplines to harness tools and best practices in data stewardship and use;
    - Data repository findability, accessibility, interoperability, and reuse;
    - The minimal descriptive information for findability and accessibility of data; and
    - Best practices associated with data management plans.

II. **Data reuse track.** This track encourages reuse of data created as a product of NSF-funded research. Research ideas are sought in two areas as described below.
    - EAGER proposals for high-risk/high-reward innovative studies that address development and testing of important science and engineering ideas and theories through use of existing data. Proposals that are responsive to this track may not involve collection of new data or field research; may not involve data created by an NSF Large Facility (see the list of NSF Large Facilities

at https://www.nsf.gov/bfa/lfo/docs/large-facilities-list.pdf); and may not come from an investigator who is listed as a principal investigator (PI) or co-PI on an award that created the data set of use. Rather, proposals must:
    - Involve, for data proposed for use, publicly-available data generated through NSF funding; and
    - Agree to make public the details about their experiences reusing the data, including especially challenges associated with that reuse.
- Proposals for Conferences (community workshops) that creatively employ data challenges, meetups, hackathons, or related activities. These activities enable education and workforce development, along with novel use of existing data created through NSF funding. The majority of the data (but not all) must be publicly available and the result of NSF-funded activities.

III. **Socio-Technical Infrastructure.** This track encourages EAGER proposals for high-risk/high-reward innovative concepts and pilot projects that address one or more social and/or technical barriers that limit the findability, accessibility, and interoperability of research data in the US and internationally. Suggested topics include, but are not limited to, exploration of:
- Utility of persistent identifiers early in the data lifecycle that facilitate discovery, filtering, indexing, and routing of the data objects;
- Costs to repositories of legacy data objects made findable, accessible, interoperable, and reusable;
- Metrics for assessing findability and accessibility of data;
- Community-driven studies of data appraisal;
- Actions to reduce adverse use factors that fit the norms of a community; and
- Principles for generation of data that are consciously designed for reuse.

Awards: Standard grants
Full Proposal Submission Deadline: The deadline for submission of Conference and EAGER proposals proposal submission date is May 23, 2018. Guidance on proposal preparation is given in Chapter II.E of the NSF PAPPG: for EAGER proposals see part 2 at https://www.nsf.gov/pubs/policydocs/pappg18_1/pappg_2.jsp#IIE2 and for Conference proposals see part 7 at https://www.nsf.gov/pubs/policydocs/pappg18_1/pappg_2.jsp#IIE7. Proposals may be submitted via Fastlane or Grants.gov. NSF anticipates that all awards will be made by September 2018.
Contacts: PIs are urged to discuss the suitability of their ideas with Beth Plale at bplale@nsf.gov prior to submission.

Grant Program: Computer and Information Science and Engineering (CISE) Research Initiation Initiative (CRII)
Agency: National Science Foundation NSF 18-554
RFP Website: https://www.nsf.gov/pubs/2018/nsf18554/nsf18554.htm
Brief Description: With the goal of encouraging research independence immediately upon obtaining one's first academic position after receipt of the PhD, the Directorate for Computer and Information Science and Engineering (CISE) will award grants to initiate the course of one's independent research. Understanding the critical role of establishing that independence early in one's career, it is expected that funds will be used to support untenured faculty or research scientists (or equivalent) in their first three years in a primary academic position after the PhD, but not more than a total of five years after completion of their PhD. One may not yet have

received any other grants or contracts in the Principal Investigator (PI) role from any department, agency, or institution of the federal government, including from the CAREER program or any other program, post-PhD, regardless of the size of the grant or contract, with certain exceptions noted below. Serving as co-PI, Senior Personnel, Postdoctoral Fellow, or other Fellow does not count against this eligibility rule. Grants, contracts, or gifts from private companies or foundations; state, local, or tribal governments; or universities do not count against this eligibility rule.

It is expected that these funds will allow the new CISE Research Initiation Initiative PI to support one or more graduate students for up to two years. Faculty at undergraduate and two-year institutions may use funds to support undergraduate students, and may use the additional RUI designation (which requires inclusion of a RUI Impact Statement) -- see https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5518 for additional information. In addition, submissions from all institutions may use funds for postdoctoral scholars, travel, and/or research equipment.

Awards: Standard grants; **Anticipated Funding Amount:** $10,000,000

Letter of Intent: Not Required

Full Proposal Submission Deadline: August 4, 2018

Contacts: Almadena Y. Chtchelkanova, Program Director, CCF, 1115, telephone: (703) 292-8910, email: achtchel@nsf.gov

- Mimi McClure, Associate Program Director, CNS, 1175, telephone: (703) 292-8950, email: mmcclure@nsf.gov
- Ephraim P. Glinert, Program Director, IIS, 1125, telephone: (703) 292-8930, email: eglinert@nsf.gov

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National Institutes of Health

Grant Program: BRAIN Initiative: Targeted BRAIN Circuits Projects- TargetedBCP (R01 Clinical Trial Not Allowed)

Agency: National Institutes of Health RFA-NS-18-030

RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-NS-18-030.html

Brief Description: This FOA is one of a family of "Integrated Approaches" NIH BRAIN FOAs that range from small or exploratory, targeted brain circuits projects with specific research deliverables (R21, R01) to large, team-research projects with exploratory aims (U01) or with extensive and elaborated goals and a 5-10 year horizon of discovery (U19). In each case, the FOAs are guided by BRAIN 2025 A Scientific Vision: "The Application of Integrated Technologies to Study Fundamental Questions in Neuroscience: Numerous long-standing problems in brain science will benefit dramatically from the integrated experimental approach made possible by the BRAIN Initiative." Potential applicants are encouraged to visit the NIH BRAIN Initiative website for information and guidance https://www.braininitiative.nih.gov/funding/initiatives.htm.

All FOAs in this family of initiatives emphasize the use of cutting-edge methods of activation and recording to understand the behavior of circuits at cellular and sub-second levels of spatial and temporal resolution; that is, at the level of the functional units of circuits. All FOAs welcome basic research using human or non-human animal subjects. However, there is a specific FOA for neurobiology research involving research opportunities employing invasive neural recording (Research Opportunities Using Invasive Neural Recording and Stimulating Technologies in the Human Brain). This family of initiatives also seeks advances in theory and/or analytics, and has a requirement of a data standards and management plan, as well as a data

dissemination plan to facilitate use of the results by the research community.

Targeted Brain Circuits Projects

The primary goal of this FOA is to solicit research projects using innovative, methodologically-integrated approaches to understand how circuit activity gives rise to mental experience and behavior. The activity of neural circuits is the substrate of cognitive processes such as perception, attention, reasoning, intention, decision-making, and emotion. These internal activities are translated into patterns of activation that support simple motor behaviors, as well as more complex behaviors such as navigation and communication. Dysfunction of these large systems of neurons due to disease, injury, or developmental anomaly is the basis of neural and mental disorders. A mission of the NIH BRAIN Initiative is to understand how large scale neural systems contribute to cognitive and neurological function in both health and disease.

Targeted Brain Circuit Project R01 awards will support an individual laboratory or a small multi-PD/PI group. Supported projects will reflect the NIH BRAIN Initiative interests in the application of cutting-edge methodologies in the service of understanding brain circuit function at cellular and sub-second levels of resolution in ethologically relevant behaviors. Applications should offer specific, feasible research goals as endpoints within a 5-year term.

The proposed studies should relate to at least one of the seven major topic areas of the BRAIN 2025 report:

1. Discovering diversity: Identify and provide experimental access to the different cell types to determine their roles in the context of circuit function.

2. Maps at multiple scales: Generate structural and functional circuit diagrams that can span resolution from synapses to the whole brain.

3. The brain in action: Produce a dynamic picture of the functioning brain by developing and applying improved methods for large-scale monitoring of neural activity.

4. Demonstrating causality: Link brain activity to behavior with precise interventional tools that change neural circuit dynamics.

5. Identifying fundamental principles: Produce conceptual foundations about circuit dynamics and functional connectivity for understanding the biological basis of mental processes through development of new theoretical and data analysis tools.

6. Advancing human neuroscience: Develop innovative technologies to understand brain circuits and ensembles of circuits that inform understanding of the human brain and mechanisms for treating its disorders.

7. From BRAIN Initiative to the brain: Integrate new technological and conceptual approaches produced in Goals #1-6 to discover how dynamic patterns of neural activity are transformed into cognition, emotion, perception, and action in health and disease.

Awards: Application budgets are not limited but need to reflect the actual needs of the proposed project.

Letter of Intent: June 3, 2018

Deadline: September July 3, 2018; November 6, 2018; July 3, 2019; November 6, 2019; July 1, 2020; November 10, 2020 by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: NIH Director's Early Independence Award (DP5 - Clinical Trial Optional)
Agency: National Institutes of Health RFA-RM-18-010
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-RM-18-010.html

Brief Description: The NIH Director's Early Independence Award provides an opportunity for exceptional junior scientists to accelerate their entry into an independent research career by forgoing the traditional post-doctoral training period. Though most newly graduated doctoral-level researchers would benefit from post-doctoral training, a small number of outstanding junior investigators would benefit from skipping such training and launching essentially directly into an independent research career. For those select junior investigators who already have established a record of scientific innovation and research productivity and who have demonstrated unusual scientific vision and maturity, typical post-doctoral training would unnecessarily delay their entry into independent research. Also, importantly, the NIH Director's Early Independence Award provides an opportunity for institutions to invigorate their research programs by bringing in the fresh scientific perspectives of the awardees that they host.

To be eligible, the investigator, at the time of application, must have received the most recent doctoral degree or completed clinical training within the previous fifteen months or expect to do so within the following twelve months. **To be consistent with the updated NIH definition of Early Stage Investigators, eligible clinical training includes clinical residency and clinical fellowship**. For full eligibility requirements, see Section III. Eligibility Information. By the end of the award period, the Early Independence Award investigator is expected to be competitive for continued funding of his/her research program through other NIH funding activities and for a permanent research-oriented position.

The NIH recognizes a compelling need to promote diversity in the biomedical, behavioral, clinical and social sciences research workforce. The NIH expects its efforts towards diversifying the workforce to lead to the recruitment of the most talented researchers from all groups; to improve the quality of the educational and training environment; to balance and broaden the perspective in setting research priorities; to improve the ability to recruit subjects from diverse backgrounds into clinical research protocols; and to improve the Nation's capacity to address and eliminate health disparities. Applicant institutions are always encouraged to consider talented researchers from diverse backgrounds underrepresented in biomedical research, including underrepresented racial and ethnic groups, persons with disabilities, and women for participation in all NIH-funded research opportunities.

Awards: Awards will be for up to $250,000 in direct costs per year, plus applicable Facilities and Administrative (F&A) costs.

Letter of Intent: August 27, 2018

Deadline: September 27, 2018, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on this date.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: International Bioethics Research Training Program (D43 Clinical Trial Optional)

Agency: National Institutes of Health PAR-18-716

RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-18-716.html

Brief Description: he primary objective of proposed International Bioethics Research Training programs should be to support individuals with ethics expertise from a LMIC research intensive institution to develop the capabilities to conduct original empirical or conceptual research on critical ethical issues in health research in their countries. The proposed doctoral and/or long term postdoctoral training program should provide:

- A strong foundation in research design, methods, and analytic techniques appropriate for the proposed bioethics research area;
- The enhancement of the trainees' ability to conceptualize, analyze and solve bioethics research problems with increasing independence;
- Experience conducting bioethics research using state-of-the-art methods as well as presenting and publishing their research findings;
- The opportunity to interact with members of the international bioethics academic community at appropriate conferences and workshops; and
- The enhancement of the trainees' understanding of the bioethics theory and ethical practice related to global health research.

A secondary objective of proposed programs should be to provide training in the competencies necessary to sustain scholarly careers in leadership positions at institutions in the LMIC as well as teaching bioethics, leading ethical review of research and providing research ethics consultation.
The overall goal of this initiative is to contribute to the development of a sustainable critical mass of bioethics leaders at the LMIC research intensive institution to meet the needs for research ethics capacity in this country. Applicants should describe the specific needs for research ethics capacity, scholarship and leadership in the LMIC and how the results of the proposed doctoral and postdoctoral training will meet these needs at the end of the proposed award period. Applicants are encouraged to develop plans for post-training interaction and activities among the doctoral and postdoctoral trainees specifically to create a sustainable critical mass for bioethics leadership at LMIC institutions.
Awards: Applicants may request up to $230,000 direct costs per year
Letter of Intent: 30 days prior to the application due date
Deadline: May 17, 2018, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: BRAIN Initiative: New Technologies and Novel Approaches for Large-Scale Recording and Modulation in the Nervous System (R01 Clinical Trial Not Allowed)
Agency: National Institutes of Health RFA-NS-18-020
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-NS-18-020.html
Brief Description: This FOA is related to the recommendations in section III of the BRAIN 2025 Report, with the goal to 'produce a dynamic picture of the functioning brain by developing and applying improved methods for large-scale monitoring of neural activity'. Towards this end, the report calls for accelerated development of new and improved electrodes for large-scale recording, new and improved electrical and chemical optical sensors of neural activity, and new and improved instruments for optical monitoring of neural activity. These new technologies and approaches will provide unprecedented opportunities for exploring how the nervous system encodes, processes, utilizes, stores, and retrieves vast quantities of information. A better understanding of this dynamic neural activity will enable researchers to seek new ways to diagnose, treat, and prevent brain disorders. Moreover, this FOA is intended to support the core principles of technology validation and dissemination highlighted in the BRAIN 2025 Report.
This FOA seeks applications to conduct proof-of-concept development and testing of new technologies and novel approaches for large-scale recording and manipulation of neural activity, to enable transformative understanding of dynamic signaling in the nervous system.

An additional BRAIN FOA (RFA-NS-18-019) solicits applications for iterative refinement and validation of existing and emerging technologies for large-scale recording and manipulation of neural activity.

Applications are expected to address any or all of the following three general goals for the FOA:

1. Develop New Large-Scale Network Recording Capabilities

Recording dynamic neural activity from complete neural networks, over long periods, in any area of the brain is a challenging but essential goal. Advances in the exploration and development of new technologies for neural cell recording, including methods based on electrodes, microelectronics/microchips, imaging, molecular genetics, and nanoscience are encouraged. It is expected that progress will initially be tractable in non-human animals (invertebrate or vertebrate), but extrapolation to human circuits is an ultimate goal.

2. Develop Tools for Circuit Manipulation

The ability to activate and inhibit specific populations of neurons is key to understanding functional circuits, which will advance the scope of our knowledge from observation of neural phenomena to a mechanistic understanding of neural causation. A new generation of tools for optogenetics, pharmacogenetics, biochemical, electromagnetic and/or acoustic modulation needs to be developed for use in animals, and eventually in humans, to enable the immense potential of circuit manipulation.

3. Link Neural Activity to Behavior

The goal of this FOA is to produce technologies with potential to elucidate nervous system function, in health and disease, in the context of complex behaviors. Proposed technologies should be compatible with experiments in behaving animals and should be validated under in vivo experimental conditions. In addition, novel approaches for enabling large-scale neural recording or manipulation during complex behaviors are encouraged along with the computational and statistical tools necessary to link neural activity to behavior. In combination with concurrent measurement and manipulation of neuronal activity, applications may propose methods to enhance the ability to quantify and interpret animal behavior, at high temporal and spatial resolution, reliably and objectively, over long periods of time and under a broad set of conditions.

Awards: Application budgets are not limited but need to reflect the actual needs of the proposed project.

Letter of Intent: 30 days prior to the application due date

Deadline: May 15, 2018, October 29, 2018, May 1, 2019, October 29, 2019, May 1, 2020, and October 29, 2020 , by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: NEI Translational Research Program (TRP) to Develop Novel Therapies and Devices for the Treatment of Visual System Disorders (R24 Clinical Trial Optional)
Agency: National Institutes of Health PAR-18-707

RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-18-707.html

Brief Description: The objective of this FOA is to encourage collaborative research that facilitates the translation of focused laboratory and animal studies into novel resources for the treatment of ocular diseases. Translational research may target new or previously identified genes, molecules, and/or pathways that are appropriate for therapeutic intervention. The broad scope of this program intended to cover all visual system diseases and disorders that are relevant

to the mission of the NEI. The concept is to bring teams of experts together to create a pipeline for therapy and/or medical device development. The scope of the proposed research should be beyond the capabilities and resources of one research laboratory. For example, development of gene therapy may require research teams with expertise in the pathophysiology of the disease, clinical experience in the manifestations and treatments currently available, cell biologists able to contribute resources such as therapeutic genes and vectors capable of appropriate tissue targeting and gene expression, and with animal models appropriate for toxicology and efficacy testing. Rational drug design may require different scientific disciplines to identify and validate appropriate therapeutic targets, devise suitable delivery systems, and test the efficacy and safety of such agents in animal models.

Examples

The following are presented as general examples and are not intended to be exclusive nor to limit creativity and innovation.

- Gene Therapy: Including vector design and therapeutic strategies where the replacement of one mutated gene may be curative or in pathological conditions where temporary expression of a transferred gene could result a beneficial clinical effect.
- Cell-based therapies: transplantation of cells expressing various angiostatic or neurotrophic factors might represent another approach. Autologous grafts of such cells alone or after transfection to express a desirable gene product. Expression of trophic factors might achieve generic rescue effects on selected cell populations, possibly circumventing the need to target specific gene defects.
- Stem cell therapy: human adult bone-marrow-derived stem cells and Induced Pluripotent Stem (iPS) cells aimed at rescuing or replacing degenerating cells.
- Rational drug design: characterization of pathways leading to cell degeneration and death in order to identify novel targets for therapeutic intervention in retinal diseases or the identification of neuroprotection strategies that might halt or slow the degenerative process.
- Small molecules: development of compounds that show promise for treating visual disorders, but are not yet suitable for clinical testing for ocular diseases.
- Prosthesis and other devices: Medical Devices may include sensory substitution, disease treatment, and assistive technologies. For example, retinal prosthetics that transform light to electrical signals that stimulate the remaining retinal neurons to produce visual percepts. Devices to deliver therapeutic agents to eye tissue as well as assistive technologies that aid people with low-vision or blindness with their everyday activities of life.

Awards: Applicants may request up to $1.5 million per year direct costs

Letter of Intent: Not Required

Deadline: April 10, 2018; April 10, 2019; April 10, 2020), by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: BRAIN Initiative: New Concepts and Early - Stage Research for Large - Scale Recording and Modulation in the Nervous System (R21 Clinical Trial Not Allowed)
Agency: National Institutes of Health RFA-EY-18-001

RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-EY-18-001.html
Brief Description: This FOA is related to the recommendations in sections II.2, II.3, and II.4 from the BRAIN 2025 Report. These three recommendations call for accelerated development of new large-scale recording technologies and tools for neural circuit manipulation. These new technologies and approaches will provide unprecedented opportunities for exploring how the nervous system encodes, processes, utilizes, stores, and retrieves vast quantities of information. A better understanding of this dynamic neural activity will enable researchers to seek new ways to diagnose, treat, and prevent brain disorders.

Achieving these goals requires the ability to record simultaneously from thousands or tens-of- thousands of neurons contributing to the dynamic activity in a neural circuit. The relevant activity may be in clusters of cells packed closely together or may be in widely distributed circuits. Current microelectrode and imaging technologies are limited in the number of cells from which activity can be isolated and sampled simultaneously, by the size or location of the area to be sampled, by the depth of penetration, and by the invasiveness of the technique that might prohibit their use in human experimentation. Non-invasive technologies suitable for use in humans are currently limited in spatial resolution and temporal dynamics, as well as in their reflection of on-going electrical activity in circuit elements. This FOA seeks entirely new ideas, concepts and/or approaches from physics and engineering, and biology, for how these limitations might be overcome to enable increased recording capabilities on the scale of one or more orders of magnitude beyond that of current technology.

This FOA also seeks novel ideas for technology capable of manipulating activity in circuits that overcome the limitations of current invasive and non-invasive approaches. Dissecting the function of neural circuits requires the ability to manipulate neural activity in order to investigate underlying mechanisms and demonstrate causality. Current technologies such as microstimulation and optogenetic approaches are limited in specificity, temporal dynamics, and by the invasiveness of the technique.

Applications are expected to propose the development of ideas in the earliest stages for entirely new approaches for large-scale neural recording and/or manipulation of neural activity. Such ideas could encompass unique and innovative combinations of existing technology that create a synergistic result. An important goal is to stimulate new thinking and concepts for accelerating development of novel technologies that break current barriers to neural recording and/or manipulation. In addition to experimental approaches, this FOA may support early-stage testing using calculations, simulations, computational models, or other mathematical techniques for demonstrating that the signal sources and/or measurement technologies are theoretically capable of meeting the demands of large-scale recording or manipulation of circuit activity in humans or animal models. The support might also be used for building and testing phantoms, prototypes, in-vitro or other bench-top models in order to validate underlying theoretical assumptions in preparation for future FOAs aimed at proof-of concept testing in animal models.
Awards: The combined direct cost budget for the two-year project period may not exceed $300,000. No more than $200,000 may be requested in any single year.
Letter of Intent: Not Required
Deadline: May 1, 2018, October 29, 2018, May 1, 2019 October 29, 2019, May 1, 2020 October 29, 2020, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Department of Defense/US Army/DARPA/ONR

Grant Program: 3-Dimensional Modeling and Simulation for Lifetime Predictions
Agency: Department of Defense NSWC - CRANE
Website: https://www.grants.gov/web/grants/search-grants.html
Brief Description: NSWC Crane is interested in funding research on developing 3-D models of component lifetime predictions incorporating finite element analysis, fatigue analysis, and deep learning methods. These models will encompass both the forces that change the materials properties within a system and materials properties that change with chemical aging; i.e., aging of materials under no external load. Virtual reality visualization will be employed to allow field operators to analyzing the results in an intuitive way to implement maintenance schedules and/or corrective actions.
Awards: Estimated Award: $40,000.00 Option Year 1: 12 months NTE $160,000.00 TBD
Total Estimated Award: $200,000.00
Proposal Deadline: May 16, 2018
Contact Information: Dallas Parsley
Code 021 BLDG 3373
Naval Surface Warfare Center Crane Division
300 HWY 361
Crane, IN 47522
Email: dallas.parsley@navy.mil

Grant Program: Computers and Humans Exploring Software Security (CHESS)
Agency: Department of Defense DARPA HR001118S0040
Website: https://www.darpa.mil/work-with-us/opportunities
Brief Description: DARPA is soliciting innovative research proposals to develop techniques and systems that will substantially accelerate software vulnerability research (VR). The goal of the CHESS program is to develop computer-human systems to rapidly discover all classes of vulnerability in complex software. These novel approaches for the rapid detection of vulnerabilities will focus on identification of system information gaps that require human assistance, generation of representations of these gaps appropriate for human collaborators, capture and integration of human insights into the analysis process, and the synthesis of software patches based on this collaborative analysis. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice. This Broad Agency Announcement (BAA) is being issued, and any resultant selection will be made, using procedures under Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016. Any negotiations and/or awards will use procedures under FAR 15.4 (or 32 CFR § 200.203 for cooperative agreements). Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process.
Awards: Various
Proposal Deadline: Abstract Due Date: May 3, 2018, 12:00 noon (ET)
Proposal Due Date: June 15, 2018, 12:00 noon (ET)
Contact Information: Mr. Dustin Fraze, Program Manager, DARPA/I2O o BAA Email: CHESS@darpa.mil

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Grant Program: SIGMA+ Sensors
Agency: Department of Defense DARPA HR001118S0035
Website: https://www.darpa.mil/work-with-us/opportunities
Brief Description: SIGMA+ will advance, integrate, and scale emerging sensor and data analytics technologies to demonstrate and transition a detection system that fundamentally changes how we detect, interdict, and deter clandestine WMD. The SIGMA+ initiative will leverage and build on sensor capabilities to enable fully-networked scalable, high-capability detectors in the chemical, biological, and explosive (CBE) threat space, similar to what was accomplished in the RN threat space under the SIGMA program. (Although the SIGMA+ system will address RN threats, new RN sensor capabilities are not solicited in this BAA.) Beyond incorporating these additional sensor modalities, SIGMA+ will fuse CBRNE sensor data with new automated intelligence analysis and other contextual data. Furthermore, advanced social science techniques will be leveraged for adversary modeling and integrated into SIGMA+ to maximize detection and interdiction effectiveness. This holistic development and integration of physical sensing, automated intelligence and contextual data analysis, and advanced adversary modeling will result in a transformative and practical early detection system for the full spectrum of CBRNE WMD threats. Proposers to this BAA should focus only on the CBE sensor network domain; other areas mentioned will be incorporated into the complete system through subsequent SIGMA+ solicitations and integration efforts. For chemical and explosives threats, the existing SIGMA network will be extended to include scalable chemical detection technologies that enable identification of a broad range of species and precursors at the 10 parts-per-billion (ppb) (or better) level to identify illicit production of harmful threats in complex urban environments. The focus on detecting threat production will help enable interdiction prior to an attack. For biological threats, SIGMA+ will develop novel methods, either environmental or humansensing based, for improved real-time detection of attacks. This effort aims to provide days earlier attack detection and geolocation of a much wider range of attacks, enabling more effective countermeasures and mitigation strategies. For radiological and nuclear threats, the incorporation of large-scale automated intelligence analytics into SIGMA+ will allow prioritization of detections near statistical limits to enable interdiction of heavily shielded threats, increasing effective system sensitivity by up to an order of magnitude.
Awards: The level of funding for individual awards made under this BAA will depend on the quality of the proposals received and the availability of funds. Awards will be made to proposers1 whose proposals are determined to be the most advantageous to the Government, all evaluation factors considered.
Proposal Deadline:
Abstract Due Date: April 18, 2018, 4:00 p.m.
FAQ Submission Deadline: May 24, 2018, 4:00 p.m. See Section VIII.A.
Full Proposal Due Date: May 31, 2018, 4:00 p.m.
Contact Information: Dr. Vincent Tang, Program Manager, DARPA/DSO – SIGMA+ program lead Dr. Anne Fischer, Program Manager, DARPA/DSO – chemical/explosive sensors lead Col. Matt Hepburn, M.D., Program Manager, DARPA/BTO – biological sensors lead
BAA Email: SigmaPlus@darpa.mil

Grant Program: Notice of Intent for the Funding Opportunity for Bilateral Academic Research Initiative (BARI) Pilot Program
Agency: Department of Defense Dept of the Army -- Materiel Command W911NF-18-S-0007
Website: https://www.arl.army.mil/www/default.cfm?page=8

Brief Description: This notice is provided to allow potential applicants sufficient time to develop meaningful collaborations and responsive applications. The BARI program supports basic research in science and engineering stemming from interactive collaborative efforts between U.S. institutions of higher education and U.K. institutions of higher education that is of potential interests to U.S. Department of Defense (DoD) and U.K Ministry of Defense (MOD). The program is focused on international collaborative research efforts where teams from the United States and the United Kingdom combine unique skillsets and approaches to provide rapid advances in scientific areas of mutual interests to the U.S. DoD and UK MOD. The area of interest is artificial intelligence (AI) and collaborative decision making. The research goal is to progress beyond collaborative human-machine sense making to develop approaches that might also enable collaborative decision making. The end goal is for humans and technology to be effective parts of the same team, with a machine behaving as an equal team member that can reason as well as its human team mates. These teaming capabilities are an essential step toward a more general AI that is capable of true human-machine teaming.
Awards: TBA
Proposal Deadline: TBA
Contact Information: William Creech Contracting Officer
9195494387 william.a.creech3.civ@mail.mil

Grant Program: Proof of Concept Commercialization Pilot Program Innovation Corps @ Department of Defense (I-Corps @ DoD)
Agency: Department of Defense Dept of the Army -- Materiel Command W911NF-18-S-0004
Website: https://www.arl.army.mil/www/default.cfm?page=8
Brief Description: The Department of Defense (DoD) is soliciting applications from current/recent DoD awardees on basic research topics to receive mentoring and funding to accelerate the transition and commercialization of the funded research. The I-Corps @ DoD program is designed to support the acceleration of basic research innovations from qualifying institutions by providing Principal Investigators (PIs) and students with training and mentorship in customer discovery and the commercialization process. The goals of this program are to spur the transition of fundamental research with potential defense relevance to the marketplace, to encourage collaboration between academia and industry, and to train students, faculty, and other researchers to understand innovation and entrepreneurship. There will be three outcomes of the I-Corps @ DoD program: 1) a clear go/no go decision regarding viability of products and services, 2) should the decision be to move the effort forward, a transition plan to do so, and 3) an understanding of what kind of minimum viable product demonstration would be required by key partners and customer segments.

The I-Corps @ DoD program is a pilot program modeled after the National Science Foundation (NSF) I-Corps™ program (Note: Trademark hereafter asserted and referred to as I-Corps). The key component of the I-Corps @ DoD program is the I-Corps Team. The I-Corps Team is comprised of the Technical Lead, the Entrepreneurial Lead and the Mentor. The Entrepreneurial Lead is typically a postdoctoral researcher, graduate student, or other student, possesses relevant technical knowledge and a deep commitment to investigate the commercial landscape surrounding the innovation. The Mentor brings entrepreneurial experience and serves as the principal guide in determining the technology disposition – Technical Leads/PIs ideally locate their own mentor, but can also contact the I-Corps @ DoD Program Manager for assistance with locating a mentor.

Awards: The Innovation Corps at the Department of Defense (I-Corps @ DoD) program is an opportunity for Principal Investigators (PIs) to learn how to commercialize their discoveries / innovations. Successful applicants will receive a grant of up to $70,000 to attend a program that provides extensive training in product commercialization from industry experts and 'serial entrepreneurs' who have helped train over 1000 I-Corps™ Teams in how to bring their innovations to market.
White Paper Submission: 8 June 2018
Proposal Deadline: 6 July 2018
Contact Information: Kevin Bassler Grants Officer
Grants Officer Contact information

Grant Program: 2019 Department of Defense Multidisciplinary Research Program of the University Research Initiative (MURI) - ARMY SUBMISSION
Agency: Department of Defense ONR, ARO, Air Force Office of Scientific Research
ONR # N00014-18-S-F006
ARO # W911NF18S0003
AFOSR # FOA-AFRL-AFOSR-2018-0001
Website: https://www.arl.army.mil/www/default.cfm?page=8
Brief Description: The MURI program supports basic research in science and engineering at U.S. institutions of higher education (hereafter referred to as "universities") that is of potential interest to DoD. The program is focused on multidisciplinary research efforts where more than one traditional discipline interacts to provide rapid advances in scientific areas of interest to the DoD. As defined in the DoD Financial Management Regulation: Basic research is systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. It includes all scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs. It is farsighted high payoff research that provides the basis for technological progress (DoD 7000.14-R, vol. 2B, chap. 5, para. 050201.B). DoD's basic research program invests broadly in many fields to ensure that it has early cognizance of new scientific knowledge.
White papers and proposals addressing the following topics should be submitted to the Office of Naval Research (ONR):
Topic 1: Fundamental Limits on Information Latency
Topic 2: Molecularly Programmable Graphene Architecture (MPGA)
Topic 3: Identifying invariances for improved modeling and prediction of oceanographic phenomena
Awards: Various
White Paper Submission: White papers may be submitted via e-mail directly to a Research Topic Chief, via the United States Postal Service (USPS), or via a commercial carrier to the agency specified for the topic. For hard copy submissions, use the addresses provided in Section II. D. 2. a, entitled, "Address for Submission of Hard Copy White Papers." The due date and time for receipt of white papers is no later than 29 June 2018 (Friday) at 11:59 PM Eastern Time.
Proposal Deadline: Proposals must be submitted and received electronically through Grants.gov not later than 16 October 2018 (Tuesday) at 11:59 PM Eastern Time to be considered for selection. This is the final due date.
Contact Information: Kia McCormick Procurement Analyst Phone (919)549-4281

Dr. Ellen Livingston MURI Program Manager Office of Naval Research Email: ellen.s.livingston@navy.mil

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Grant Program: 2019 DEFENSE UNIVERSITY RESEARCH INSTRUMENTATION PROGRAM (DURIP)
Agency: Department of Defense Office of Naval Research AFOSR ARO
AFOSR: FOA-AFRL-AFOSR-2018-0002
ARO: W911NF18S0002
ONR: N00014-18-S-F007
Website: https://www.onr.navy.mil/en/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements
Brief Description: As the capacity of the DoN Science and Technology (S&T) workforce is interconnected with the basic research enterprise and STEM education system, ONR recognizes the need to support efforts that can jointly improve STEM student outcomes and align educational efforts with Naval S&T current and future workforce needs. This announcement explicitly encourages projects that improve the capacity of education systems and communities to create impactful STEM educational experiences for students and workers. Submissions are encouraged to consider including active learning approaches and incorporating 21st century skill development. Projects must aim to increase student and worker engagement in STEM and enhance people with needed Naval STEM capabilities. ONR encourages applications to utilize current STEM educational research for informing project design and advancing our understanding of how and why people choose STEM careers and opportunities of naval relevance. While this announcement is relevant for any stage of the STEM educational system, funding efforts will be targeted primarily toward projects addressing the below communities or any combination of these communities: • Secondary education communities; • Post-Secondary communities; • Informal science communities; • Current naval STEM workforce communities. Project scope may range in size and complexity. Projects that are already established with prior funding sources or have established stakeholders are especially encouraged to consider the following scope areas: • Develop and implement exploratory pilot projects that seek to create new educational experiences within educational and training communities. • Develop larger cohesive STEM education and training activities that strengthen the capacity of regional communities and stakeholders to improve STEM education and training. • Establish meetings of stakeholders that must seek to connect relevant people and organizations to explicitly develop broader projects for impacting entire communities.
Awards: Various
Submission of White Papers: As mentioned prior, white papers are a MANDATORY component of a two-part submission process. White papers must NOT be submitted through the Grants.gov application process. Instead, white papers are to be submitted via email to the attention of Dr. Michael Simpson at onr_stem@navy.mil as either a PDF or Microsoft Word 2010 compatible file. The subject line of the email shall read "N00014-18-S-F003 White Paper Submission." The due date and time for receipt of white papers begins on 2 April 2018 and ends on 31 July 2018 (Tuesday) at 5:00 PM Eastern Time.
Proposal Deadline: Applications may only be submitted by invitation and received electronically through https://www.grants.gov/ no later than 28 September 2018 (Friday) at 11:59 PM Eastern Time.
Contact Information: Dr. Michael Simpson Director of Education and Workforce Office of Naval Research 875 North Randolph Street Arlington VA 22203-1995 Email: onr_stem@navy.mil

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Grant Program: Air Force Fiscal Year 2019 Young Investigator Research Program (YIP)
Agency: Department of Defense Air Force Office of Scientific Research FA9550-18-S-0002
Website: https://www.grants.gov/web/grants/search-grants.html
Brief Description: The Fiscal Year 2019 Air Force Young Investigator Research Program (YIP) intends support young in career scientists and engineers who have received Ph.D. or equivalent degrees by 1 April 2012 or later showing exceptional ability and promise for conducting basic research. The program objective is to foster creative basic research in science and engineering; enhance early career development of outstanding young investigators; and increase opportunities for the young investigator to recognize the Air Force mission and related challenges in science and engineering. Individual awards are made to U.S. institutions of higher education, industrial laboratories, or non-profit research organizations where the principal investigator (PI) is employed on a full-time basis and holds a regular position. YIP PIs must be a U.S. citizen, national, or permanent resident. Researchers working at a Federally Funded Research and Development Center or DoD Laboratory are not eligible for this competition. Most YIP awards are funded up to $150,000 per year for three years, for a total of $450,000. Exceptional proposals will be considered individually for higher funding levels and/or longer duration. Please review the remainder of this announcement for additional information. We anticipate approximately thirty-six (36) awards under this competition if funds are available.
Please see the eligibility requirements in the solicitation: Doctorate no earlier than 01 Apr 2012
Awards: Most YIP awards are three (3) years in duration, funded up to $150,000 per year for a total of approximately $450,000. Proposals should be submitted in adherence to these guidelines.
Proposal Deadline: Proposals must be received electronically through Grants.gov by Friday, 01 Jun 2018 at 11:59 PM Eastern time to be considered. Technical or general pre-proposal inquiries and questions must be received in writing by electronic mail not later than Friday, 27 April 2018 to be considered.
Contact Information: MS. ELLEN M. ROBINSON, AFOSR/RTB Program Coordinator Telephone: (703) 588-8527 Email: afosryip@us.af.mil
General Inquires: MS. BRITTANY TURNER, AFOSR/PKC Procurement Analyst Email: brittany.turner.5@us.af.mil

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Department of Education

Grant Program: Office of Innovation and Improvement (OII): Education Innovation and Research Program: Early-phase Grants
Agency: Department of Education CFDA Number 84.411C ED-GRANTS-041918-003
Website: https://innovation.ed.gov/what-we-do/innovation/education-innovation-and-research-eir/
Brief Description: The Education Innovation and Research (EIR) program, established under section 4611 of the Elementary and Secondary Education Act, as amended (ESEA), provides funding to create, develop, implement, replicate, or take to scale entrepreneurial, evidence-based, field-initiated innovations to improve student achievement and attainment for high-need students; and rigorously evaluate such innovations. The EIR program is designed to generate and validate solutions to persistent educational challenges and to support the expansion of those solutions to serve substantially larger numbers of students. The central design element of the EIR

program is its multi-tier structure that links the amount of funding that an applicant may receive to the quality of the evidence supporting the efficacy of the proposed project, with the expectation that projects that build this evidence will advance through EIR's grant tiers: ``Early-phase,'' ``Mid-phase,'' and ``Expansion.'' Applicants proposing innovative projects that are supported by limited evidence can receive relatively small grants to support the development, implementation, and initial evaluation of the practices; applicants proposing projects supported by evidence from rigorous evaluations, such as an experimental study (as defined in this notice), can receive larger grant awards to support expansion across the country. This structure provides incentives for applicants to: (1) Explore new ways of addressing persistent challenges that other educators can build on and learn from; (2) build evidence of effectiveness of their practices; and (3) replicate and scale successful practices in new schools, districts, and States while addressing the barriers to scale, such as cost structures and implementation fidelity. All EIR projects are expected to generate information regarding their effectiveness in order to inform EIR grantees' efforts to learn about and improve upon their efforts, and to help similar, non-EIR efforts across the country benefit from EIR grantees' knowledge. By requiring that all grantees conduct independent evaluations of their EIR projects, EIR ensures that its funded projects make a significant contribution to improving the quality and quantity of information available to practitioners and policymakers about which practices improve student achievement and attainment, for which types of students, and in what contexts. The Department awards three types of grants under this program: ``Early-phase'' grants, ``Mid-phase'' grants, and ``Expansion'' grants. These grants differ in terms of the level of prior evidence of effectiveness required for consideration for funding, the expectations regarding the kind of evidence and information funded projects should produce, the level of scale funded projects should reach, and, consequently, the amount of funding available to support each type of project. Early-phase grants provide funding to support the development, implementation, and feasibility testing of a program, which prior research suggests has promise, for the purpose of determining whether the program can successfully improve student achievement and attainment for high-need students. Early-phase grants must demonstrate a rationale (as defined in this notice). These Early-phase grants are not intended simply to implement established practices in additional locations or address needs that are unique to one particular context. The goal is to determine whether and in what ways relatively newer practices can improve student achievement and attainment for high-need students. This notice invites applications for Early-phase grants only. The notices inviting applications for Mid-phase and Expansion grants are published elsewhere in this issue of the Federal Register. Background: EIR is designed to offer opportunities for States, districts, schools, and educators to develop innovations and scale effective practices that address their most pressing challenges. Early-phase grantees are encouraged to make continuous improvements in project design and implementation before conducting a full-scale evaluation of effectiveness. Grantees should consider questions such as: How easy would it be for others to implement this practice, and how can its implementation be improved? How can I use data from early indicators to gauge impact, and what changes in implementation and student achievement do these early indicators suggest? By focusing on continuous improvement and iterative development, Early-phase grantees can make adaptations that are necessary to increase their practice's potential to be effective and ensure that the EIR-funded evaluation assesses the impact of a thoroughly conceived practice. Early-phase applicants should develop, implement, and test the feasibility of their projects. The evaluation of an Early-phase project should be an experimental or quasi-experimental design study (as defined in this notice) that can determine whether the program can successfully improve student achievement and attainment for high-need students. Early-phase grantees' evaluation designs are encouraged to have the potential to meet the moderate evidence (as defined in this notice) threshold. The

Department intends to provide grantees and their independent evaluators with evaluation technical assistance. This evaluation technical assistance could include grantees and their independent evaluators providing to the Department or its contractor updated comprehensive evaluation plans in a format as requested by the technical assistance provider and using such tools as the Department may request. Grantees will be encouraged to update this evaluation plan at least annually to reflect any changes to the evaluation, with updates consistent with the scope and objectives of the approved application.
Awards: Up to $4,000,000. Estimated total funding: $115,000,000
Proposal Deadline:

- Deadline for Notice of Intent to Apply: May 9, 2018
- Deadline for Transmittal of Applications: June 5, 2018
- Deadline for Intergovernmental Review: August 6, 2018

Contact Information: Julius Cotton ED Grants.gov FIND Systems Admin. Phone 202-245-6288 EducationGrantInquiries@ed.gov ; Program Manager: Kelly Terpak, U.S. Department of Education, 400 Maryland Avenue SW, Room 4W312, Washington, DC 20202-5900. Telephone: (202) 453-7122. Email: eir@ed.gov

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Department of Energy

Grant Program: Solar Energy Technologies Office (SETO) Funding Opportunity Announcement (FOA) FY 2018
Agency: Department of Energy DE-FOA-0001840
Website: https://eere-exchange.energy.gov/Default.aspx#FoaId731692d0-c60d-42e0-a6ff-617ce4510d77
Brief Description: The FOA will support early-stage research that spans the Solar Energy Technologies Office (SETO) portfolio, seeking to advance both solar photovoltaic (PV) and concentrating solar thermal power (CSP) technologies and to facilitate the swift integration of those technologies into the nation's electricity grid. It also is designed to support efforts that prepare the workforce for the solar industry's future needs. The FOA is organized into the following high level Topic Areas: Topic 1: Advanced Solar Systems Integration Technologies describes SETO research priorities in the seamless integration of high penetrations of solar energy onto the nation's electricity grid. Topic 2: Concentrating Solar Thermal Power Research and Development describes SETO research priorities that support solar technologies that focus sunlight to generate and store high-temperature heat for electricity generation and other end uses. Topic 3: Photovoltaic Research and Development describes SETO research priorities that support the further development of photovoltaic technologies that improve system reliability, annual energy yield, demonstrate performance of novel PV devices and develop new PV materials. Topic 4: Improving and Expanding the Solar Industry through Workforce Initiatives describes SETO research priorities that support solar workforce development.
Webinars:
Topic 1: Advanced Solar Systems Integration Technologies Webinar
April 23, 2018 1-2 pm EST
https://meetings.doe.gov/orion/joinmeeting.do?MTID=8ed931c4b7a7dfc06b4c54aa8db46055
Topic 2: Concentrating Solar Thermal Power Research and Development Webinar
April 23, 2018 2-3 pm EST
https://meetings.doe.gov/orion/joinmeeting.do?MTID=7993ba670f1327aeda96b3584f541b1a
Topic 3: Photovoltaic Research and Development Webinar

April 24, 2018 4-5 pm EST
https://meetings.doe.gov/orion/joinmeeting.do?MTID=6aa33236e167ca68666a5b3f420283b8
Topic 4: Improving and Expanding the Solar Industry through Workforce Initiatives Webinar
April 24, 2018 1-2 pm EST
https://meetings.doe.gov/orion/joinmeeting.do?MTID=516a967629e43ac5ce6ef51e0a0d7015
Awards: Various
Submission Deadline:

- Letter of Intent Deadline: 5/4/2018 3:00 PM ET
- Concept Paper Submission Deadline: 5/9/2018 3:00 PM ET
- Full Application Submission Deadline: 6/26/2018 3:00 PM ET

Contact Information: Clay L. Pfrangle SETO.FOA@ee.doe.gov

Grant Program: FY18 Hydrogen and Fuel Cell R&D Funding Opportunity Announcement
Agency: Department of Energy DE-FOA-0001874
Website: https://eere-exchange.energy.gov/Default.aspx#FoaId79690f66-6dc9-47e9-ac9f-86057538ae44
Brief Description: This FOA supports research and development of key early-stage technical challenges for fuel cells and for hydrogen fuel production, delivery and storage, and will leverage the private sector to address institutional barriers that impact progress in the field. The goal of this research activity is to provide affordable, clean, safe, and reliable energy from diverse domestic resources, providing the benefits of increased energy security and reduced emissions through early-stage research and development.
The global fuel cell market increased its growth 40% in 2016, with revenues of over $1.6 billion in 2016 and over 20,000 fuel cell units for material handling equipment purchased in the U.S. alone since 2009. Light duty vehicles are an emerging application for fuel cells that has earned substantial commercial and government interest worldwide due to the superior efficiencies, reductions in petroleum consumption, and reductions in criteria pollutants fuel cells make possible. The FOA topics include:
Topic 1: Energy Materials Network (EMN) - ElectroCat – this topic will leverage the Electrocatalysis Consortium (ElectroCat) to accelerate the development of catalysts made without platinum group metals for use in fuel cells for transportation. The EMN consortia have been established to make unique, world-class capabilities at the national laboratories more accessible to industry, facilitating collaborations that will expedite the development and manufacturing of advanced materials for commercial markets.
Topic 2: H2@Scale – this topic aims to improve the efficiency and resiliency of the electrical grid and of the transportation sector, and to realize gains in the various industries using or producing hydrogen. Some of the key research areas in this topic include materials compatibility, electrolyzer integration, and analysis.
Topic 3: Innovative Concepts – this topic supports applied early stage research and development of fuel cell technologies for transportation, stationary, and early market applications, with a primary focus on reducing cost and improving durability. While the main focal points of the program's R&D portfolio are polymer electrolyte membrane fuel cells and platinum-based catalysts, the program also supports longer-term technical approaches that offer advantages over PEMFCs.
Awards; Up to $2,500,000; Available Funding: $39,000,000
Submission Deadline:

- Concept Paper Submission Deadline: 5/7/2018 5:00 PM ET
- Full Application Submission Deadline: 6/12/2018 5:00 PM ET

Contact Information: Laura J. Gonzalez FCTOFOA@ee.doe.gov

Grant Program: Industry Partnerships for Cybersecurity of Energy Delivery Systems (CEDS) Research, Development and Demonstration
Agency: Department of Energy DE-FOA-0001755
Website:
https://www.fedconnect.net/FedConnect/default.aspx?ReturnUrl=%2ffedconnect%3fdoc%3dDE-FOA-0001755%26agency%3dDOE&doc=DE-FOA-0001755&agency=DOE
Brief Description: The Department of Energy's (DOE's) National Energy Technology Laboratory (NETL) on behalf of the Office of Electricity Delivery and Energy Reliability (OE) Cybersecurity for Energy Delivery Systems (CEDS) Research and Development (R&D) program is seeking applications under this Funding Opportunity Announcement (Announcement) to conduct research, development and demonstrations (RD&D) for innovative approaches to advance cyber resilient energy delivery systems. This RD&D will lead to next generation tools and technologies that are not available today that will become widely adopted throughout the energy sector to reduce the risk that a cyber incident could disrupt energy delivery.

The objective of this Announcement is to enhance the reliability and resilience of the nation's energy infrastructure through innovative RD&D cybersecurity solutions. The energy infrastructure includes electricity generation, transmission and distribution as well as the production, refining, storage and distribution of oil and gas.

This Announcement will support multi-year research, development and demonstration of tools and technologies to enhance the cybersecurity of energy delivery systems. Proposed solutions should be interoperable, scalable, readily manageable advanced tools and technologies and are compatible with common methods and best practices. It is expected that a strategy for transitioning solutions into practice throughout the energy sector, for example through commercialization or by making the solution available through open source, will be included. The tools or technologies must not impede critical energy delivery functions; must not introduce a burden for operating and maintaining the system; must be manageable by asset owners; must recognize energy reliability as a priority; must be demonstrated at a relevant end-user site to validate a clear path to industry acceptance; and must be red-team tested by an independent third party using project funds.
Awards; Up to $4,000,000; Available Funding: $25,000,000
Submission Deadline: June 18, 2018
Contact Information: Maureen.Davison@NETL.DOE.GOV

Grant Program: Critical Water Issues Prize Competition RFI
Agency: Department of Energy DE-FOA-0001899
Website: https://eere-exchange.energy.gov/#FoaId45c72943-674f-484c-8592-1b95b0906387
Brief Description: The U.S. Department of Energy seeks to understand the key technical and other barriers that may prevent long-term access to low-cost water supplies that could be best addressed through challenges and prize competitions. For the purposes of this Request for Information (RFI), challenges and prize competitions are tools and approaches the Federal government and others can use to engage a broad range of stakeholders, including the general public, in developing solutions to difficult problems. Challenges and prize competitions rely on

competitive structures to drive innovation among participants and usually offer rewards (financial and/or other) to winners and/or finalists. DOE may use the information provided through this RFI to develop challenges and prize competitions to address key water issues. This RFI is not designed to solicit input on DOE's broader R&D efforts on affordable water.
Submission Deadline: Responses to this RFI must be submitted electronically to WaterPrizeRFI@ee.doe.gov no later than 5:00pm (ET) on May 14, 2018. Responses must be provided as attachments to an email. It is recommended that attachments with file sizes exceeding 25MB be compressed (i.e., zipped) to ensure message delivery. Responses must be provided as a Microsoft Word (.docx) attachment to the email, and no more than 5 pages in length per category of questions, 12 point font, 1 inch margins. Only electronic responses will be accepted.
Contact Information: EERE-ExchangeSupport@hq.doe.gov
This email address is for EERE Exchange Technical Support.

- waterprizerfi@ee.doe.gov

This email address is for submission of RFI responses.

Grant Program: Solid Oxide Fuel Cells Core Technology Research
Agency: Department of Energy DE-FOA-0001853
Website: https://www.netl.doe.gov/business/solicitations/details?title=4bff5699-c11b-4230-b25e-ba5c79c4ad89
Brief Description: The goal of this Funding Opportunity Announcement (FOA) is to seek innovative research and development projects to support fuel cells system manufacturers in addressing issues related to cost and reliability of fuel cells systems. Applications are sought in two areas of interest (AOI) that include AOI 1 – Solid Oxide Fuel Cells (SOFC) Core Technology Research and AOI 2 – Core Technology Research and Development (R&D) in Support of Near-Term SOFC Power Systems Prototype Tests. visit FedConnect for more.
Awards; Up to $2,000,000; Available Funding: $9,500,000
Submission Deadline: April 30, 2018
Contact Information: Charles C. Tomasiak Charles.Tomasiak@NETL.DOE.GOV

EPA (Environmental Protection Agency)

Grant Program: FY 2019 Pollution Prevention Grant Program
Agency: EPA EPA-HQ-OPPT-2018-001
Website: https://www.epa.gov/sites/production/files/2018-03/documents/2018rfpp2grant.pdf
Brief Description: EPA is announcing a grant competition to fund two-year Pollution Prevention assistance agreements for projects expected to be performed in each EPA region that provide technical assistance and/or training to businesses/facilities to help them adopt source reduction approaches (also known as "pollution prevention" or "P2"). P2 means reducing or eliminating pollutants from entering any waste stream or otherwise released into the environment prior to recycling, treatment, or disposal. In keeping with the Pollution Prevention Act of 1990, EPA is encouraging P2 because implementing these approaches can result in reductions in toxic pollutants, the use of water, energy and other raw materials, while also lowering business costs. For this current round of grants, EPA is putting additional emphasis on documenting and sharing the P2 best practices and innovations identified and developed through these grants so that others can replicate these approaches and outcomes. Therefore, in general, grant recipients must document and report on the P2 recommendations where they are provided to

businesses/facilities as part of the technical assistance, and at a later date, report on P2 actions adopted by the businesses/facilities that received the technical assistance and training (alternative reporting provisions are available if technical assistance is broadly provided to businesses/facilities – see Section VI.C.3.b.). If necessary, awardee budgets and workplans may allot time and/or set-aside funds from the potential two years of federal funding provided for an optional third-year to collect and report on the P2 approaches adopted. States, state entities and federally-recognized tribes and intertribal consortia are eligible to apply.

If Congress appropriates Fiscal Year (FY) 2018 and 2019 funds for the P2 Program at levels comparable to FY 2017 funding levels, the EPA may award a total of approximately $9.38 million in federal P2 grant funding for these two-year assistance agreements (approximately $4.69 million in FY 2018 funds and approximately $4.69 million in FY 2019 funds). P2 awards are expected to be performed in each EPA region and will be funded in the form of grants or cooperative agreements. Please note that notwithstanding the potential amounts stated above, these amounts are estimates only and the amount of grant funding awarded will be dependent on Congressional appropriations, funding availability, the quality of proposals received, satisfactory performance and other applicable considerations.

Awards: NY, NJ: Region 2 – Federal awards may be in the range of $40,000 – $300,000, issued over a two-year funding period (between $20,000 - $150,000 incrementally funded per year).

Estimated Total Program Funding: $9,380,000

Notice of Intent: Not Required

Proposal Deadline: April 26, 2018

Contact: EPA Region 2 NJ, NY, PR, VI Alex Peck U.S. EPA Region 2 290 Broadway, 25th Floor (PSPMMB) New York, NY 10007-1866 Phone: 212-637-3758 Email address: peck.alex@epa.gov

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NASA

Grant Program: Transformational Tools and Technologies (TTT)

Agency: NASA NNH18ZEA001N-TTT

Website:

https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B4770A320-3997-5B8F-4A4B-B0D67C98ADD9%7D&path=open&method=init

Brief Description: The Transformational Tools and Technologies (TTT) Project advances state-of-the-art computational and experimental tools and technologies that are vital to aviation applications in the six strategic thrusts. The project develops new computer-based tools, computational fluid dynamics models, and associated scientific knowledge that will provide first-of-a-kind capabilities to analyze, understand, and predict aviation concept performance. These revolutionary tools will be applied to accelerate NASA's research and the community's design and introduction of advanced concepts. The Project also explores technologies that are broadly critical to advancing ARMD strategic outcomes. Such technologies include the understanding of new types of strong and lightweight materials, innovative controls techniques, and experimental methods. TTT also develops improved Multi-Disciplinary Design, Analysis, & Optimization (MDAO) and systems analysis tools to enable multi-disciplinary integration. All of these technologies will support and enable concept development and benefits assessment across multiple ARMD programs and disciplines. The TTT Project is organized into three sub-projects. The Revolutionary Tools and Methods (RTM) Sub-project is responsible for the development of revolutionary comprehensive physics-based aeronautics analysis and design capability. It includes work in computational aerosciences, MDAO and systems analysis, and tools for modeling

both combustion and aircraft structures and materials. The Critical Aeronautics Technologies (CAT) Sub-project is responsible for the development of critical aeronautics technologies that can enable revolutionary improvement in aircraft system design. Innovative ideas developed in CAT often lead to patentable results. Currently, technologies are under development in the areas of aircraft structures and materials, innovative measurement techniques, propulsion controls, flight controls, and combustion. The Autonomous Systems (AS) Sub-Project advances fundamental research in autonomous systems. The tools and technologies of interest span many disciplines. The Fluid Mechanics Discipline encompasses advanced turbulence modeling, boundary layer transition prediction and modeling, numerical methods, and flow control development and prediction for a wide range of airframe and propulsion system flow problems of interest. Canonical data is developed and used to validate the modeling improvements developed in this discipline. Development of more accurate physics-based methods such as large eddy simulation (LES) is emphasized.
Awards: Between $1.1M and $1.4M will be invested annually in these NRAs over the next 3 years.
Notice of Intent: April 16, 2018
Proposal Deadline: May 14, 2018
Contact: NRA Manager: Tracey M. Frisby
tracey.m.frisby@nasa.gov

Grant Program: Astrophysics Data Analysis
Agency: NASA NNH18ZDA001N-ADAP
Website:
https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B3E84A8DB-8B71-2451-EB02-2111D9EEA891%7D&path=open&method=init
Brief Description: The Astrophysics Data Analysis Program (ADAP; program element D.2) supports research with a primary emphasis on the analysis of archival data from current and past NASA space astrophysics missions. The magnitude and scope of the archival data from those missions enables science that transcends traditional wavelength regimes and allows researchers to answer questions that would be difficult, if not impossible, to address through an individual observing program. The program now also supports the analysis of publicly available data from the Neutron star Interior Composition Explorer (NICER) and some approved Guest Observer (GO) programs using Spitzer, even if those observations have yet to be executed, or the data are still within their proprietary period.
Awards: Standard Grants, Available Funds: $7,000,000
Notice of Intent: Not Required
Proposal Deadline: May 17, 2018
Contact: Douglas M. Hudgins Astrophysics Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: (202) 358-0988 Email: Douglas.M.Hudgins@nasa.gov

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Grant Program: Discovery Data Analysis
Agency: NASA NNH18ZDA001N-DDAP
Website:
https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7BE17AD920-C9F2-600D-5913-6951AB56F31F%7D&path=open&method=init

Brief Description: The objective of the Discovery Data Analysis Program (DDAP) is to enhance the scientific return of Discovery Program missions and broaden the scientific participation in the analysis of data, both recent and archived, collected by Discovery missions. Spacecraft data used in DDAP investigations must be available in the Planetary Data System (PDS; https://pds.nasa.gov/), or equivalent publicly accessible archive(s), at least 30 days prior to the Step-2 submission deadline for DDAP proposals. Spacecraft data that have not been placed in such archives are not eligible for use in DDAP investigations. In all cases, it is the responsibility of the DDAP investigator to acquire any necessary data. Investigators are encouraged to contact the archive for assistance in identifying specifics of available datasets. Datasets to be used in the proposed work must be clearly and specifically identified in the proposal. NASA puts no other restriction on the status or condition of the data. However, regardless of the archive(s) used, if the data to be analyzed have known issues that might represent an obstacle to analysis, the proposers must demonstrate clearly and satisfactorily how such potential difficulties will be overcome. In other words, it is the proposer's responsibility to demonstrate clearly that the public data are of sufficient quantity and quality to achieve the project's science goals.
Awards: Standard Grants
Step-1 Proposal: August 30, 2018
Step-2 Proposal Deadline: November 01, 2018
Contact: Thomas S. Statler Planetary Science Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 Email: thomas.s.statler@nasa.gov Telephone: 202-358-0272

Grant Program: Advanced Information Systems Technology
Agency: NASA NNH18ZDA001N-AIST
Website:
https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7BC0D379E0-B4A8-6B97-7B0C-7F5409CD2442%7D&path=open&method=init
Brief Description: Advanced information systems play a critical role in the collection, handling, and management of the vast amounts of Earth science data, both in space and on the ground. Advanced computational systems and technology concepts that enable the capture, transmission, and dissemination of terabytes of data are essential to NASA's vision of a distributed observational network. ESTO's Advanced Information Systems Technology (AIST) program employs an end-to-end approach to develop these critical technologies—from the space segment, where the information pipeline begins, to the end user, where knowledge is advanced. Two major AIST thrusts are in progress: (1) support to a new observing strategy involving the integration of observations from orbital, airborne and in situ instruments along with models into a sensor web to advance the state of the art understanding of physical processes and natural phenomena, and (2) Analytic Centers focusing on a scientific investigation, where data from many sources, computational resources and tools are harmonized to improve the ability of the investigator to discover new knowledge.
Awards: Standard Grants
Notice of Intent: TBD
Proposal Deadline: TBD
Contact: Michael M. Little Earth Science Technology Office Telephone: (301) 286-7404 Email: Michael.M.Little@nasa.gov

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National Endowment of Humanities

Grant Program: Research and Development
Agency: National Endowment of Humanities
Website: https://www.neh.gov/grants/preservation/research-and-development
Brief Description: The Research and Development program supports projects that address major challenges in preserving or providing access to humanities collections and resources. These challenges include the need to find better ways to preserve materials of critical importance to the nation's cultural heritage—from fragile artifacts and manuscripts to analog recordings and digital assets subject to technological obsolescence—and to develop advanced modes of organizing, searching, discovering, and using such materials.
This program recognizes that finding solutions to complex problems often requires forming interdisciplinary project teams, bringing together participants with expertise in the humanities; in preservation; and in information, computer, and natural science.
All projects must demonstrate how advances in preservation and access would benefit the cultural heritage community in supporting humanities research, teaching, or public programming.
Awards: Up to $350,000
Research and Development offers two funding tiers in order to address projects at all stages of development and implementation.
Tier I: Planning and Basic Research
Tier I provides awards up to $75,000 for a period of performance of one to two years. This level supports the following activities:

- planning and preliminary work for large-scale research and development projects; and
- stand-alone basic research projects, such as case studies, experiments, or the development of methods, models, and tools.

Tier II: Advanced Implementation
Tier II provides awards up to $350,000 for a period of performance of one to three years. This level supports projects at a more advanced stage of implementation for the following activities:

- the development of standards, practices, methodologies, or workflows for preserving and creating access to humanities collections; and
- applied research addressing preservation and access issues concerning humanities collections.

Proposal Deadline: June 7, 2018
Contact: Contact the staff of NEH's Division of Preservation and Access at preservation@neh.gov and 202-606-8570. Applicants who are deaf or hard of hearing can contact NEH via Federal Relay (TTY users) at 800-877-8399.

Grant Program: Digital Humanities Advancement Grants
Agency: National Endowment of Humanities
Website: https://www.neh.gov/grants/odh/digital-humanities-advancement-grants
Brief Description: Digital Humanities Advancement Grants (DHAG) support digital projects throughout their lifecycles, from early start-up phases through implementation and long-term sustainability. Experimentation, reuse, and extensibility are hallmarks of this program, leading to innovative work that can scale to enhance scholarly research, teaching, and public programming in the humanities. This program is offered twice per year. Proposals are welcome for digital initiatives in any area of the humanities.

Through a special partnership with NEH, the Institute of Museum and Library Services (IMLS) anticipates providing additional funding to this program to encourage innovative collaborations between museum or library professionals and humanities professionals to advance preservation of, access to, use of, and engagement with digital collections and services. IMLS and NEH may jointly fund some DHAG projects that involve collaborations with museums and/or libraries.
Digital Humanities Advancement Grants may involve

- creating or enhancing experimental, computationally-based methods, techniques, or infrastructure that contribute to the humanities;
- pursuing scholarship that examines the history, criticism, and philosophy of digital culture and its impact on society, or explores the philosophical or practical implications and impact of digital humanities in specific fields or disciplines; or
- revitalizing and/or recovering existing digital projects that promise to contribute substantively to scholarship, teaching, or public knowledge of the humanities.

Awards: Up to $375,000
Proposal Deadline: June 5, 2018
Contact: Contact the Office of Digital Humanities (ODH) via e-mail at odh@neh.gov. Applicants wishing to speak to a staff member by telephone should provide in an e-mail message a telephone number and a preferred time to call. Applicants who are deaf or hard of hearing can contact NEH via Federal Relay (TTY users) at 800-877-8399.

American Diabetes Association

Grant Program: Pathway Program
Agency: American Diabetes Association
Website: https://professional.diabetes.org/meetings/pathway-stop-diabetes%C2%AE
Brief Description: ***The American Diabetes Association "Pathway" Program"*** invites nominations from a "broad range of disciplines, including biology, chemistry, engineering, mathematics and physics. The Association encourages nomination of individuals from diverse backgrounds, including minorities that are underrepresented in research."
Pathway seeks to bring new investigators and new perspectives to diabetes research. Supporting scientists with different backgrounds and experience is critical to achieving that objective. Pathway accepts nominations for exceptional investigators with medical and scientific backgrounds who propose innovative basic, clinical, translational, behavioral, epidemiological and health services research relevant to any type of diabetes, diabetes-related disease state or complication. Pathway solicits nominations for candidates in all disciplines as applied to diabetes including medicine, biology, chemistry, computing, physics, mathematics and engineering. In addition, nomination of scientists from diverse backgrounds, including minority groups that are underrepresented in biomedical research, is strongly encouraged.
Three Award Categories: –

- Post-docs,
- Early Career
- Established Investigators.

Limited Nomination: NJIT can submit only one nomination**.**
Draft nominations should be sent to Eric Blitz (eric.blitz@njit.edu) and Atam Dhawan (dhawan@njit.edu) by June 1 for internal evaluation.
Proposal Deadline: July 2, 2018 at 4:00 p.m. CST.

Cisco Research and Open Innovation

Grant Program: Grand Challenges Exploration (GCE)
Agency: Bill & Melinda Gates Foundation
Website: https://gcgh.grandchallenges.org/about
Brief Description: Connected IoT devices provide many new opportunities and benefits for manufacturers and consumers. The ubiquitous nature of IoT connectivity enables new use cases in connected manufacturing, connected cars, connected spaces, smart cities and other market verticals. However, the security of IoT has not kept pace with the fast innovation and deployment of solutions creating significant safety and economic risks. The growing number of IoT devices, systems, and services increases the attack surface making the solutions more vulnerable to cyber-attacks. Recent Distributed Denial of Service (DDoS) attacks against Internet service providers and commercial entities were carried out by a diverse network of botnets made up of compromised set-top devices and other consumer products. Therefore, assuring the security of each component within an IoT solution is crucial in keeping malicious actors from using it in an unauthorized manner.

In addition, IoT devices enable massive data collection and analysis. The analysis of this data will allow previously unknown relationships between things to be discovered which causes a big concern for the privacy of individuals, businesses (including IP protection), groups, and governments. Since the analysis of data is essential for the value of IoT, strong consideration must be given to data privacy and data protection throughout its lifecycle.
Awards: TBD
Proposal Deadline: Please use the link below to submit a proposal for research responding to this RFP. After a preliminary review, we may ask you to revise and resubmit your proposal.
Submit a proposal for this RFP
Contact: research@cisco.com

Streamlyne Contacts

Two user manuals on Streamlyne have been added on the Streamlyne website http://www.njit.edu/research/streamlyne/

Steamlyne_NewUserManual_CommonElements.docx : This manual provides a reference to all the common elements of Streamlyne Research. This user manual is a good document to review each module's functionality.

Steamlyne_NewUserManual_PD&PDBudget.docx: This is a user manual on proposal and budget development in Streamlyne. The content herein explain the use and functionality of this module. This is the most useful Streamlyne document for PIs and users new to Streamlyne.

How-to-do-Videos

New "How to Do" videos have been posted on the research website http://www5.njit.edu/research/streamlyne/. These videos show step-by-step process on the following tasks:

- How to Begin Proposal Submission in Streamlyne
- How to Input Proposal Budget
- How to Process Approvals
- How to Upload Proposal Attachments
- How to Search for a Proposal that is in Route
- Difference Between "Prime Sponsor Code" and "Sponsor Code"
- How to Select an RR Budget, RR Sub-award or Modular Budget
- How to Add a Student/Summary
- Participant Support Categories
- Supplies Specific Category Materials
- How to Create a Modular Budget

Also, the following links may be helpful**:**

- Streamlyne Benefits for Proposal Submission and Grant Management
- Grants.gov Presentation on Online Proposal Submission Systems
- Streamlyne Newsletter V2017.1
- Streamlyne FAQs

Faculty and staff having any questions on proposal submission, may contact their college representatives, and also follow up with **Justin Samolewicz, Associate Director (Pre Award)** 973-596-3145; justin.m.samolewicz@njit.edu; and **Eric Hetherington,** Director, Sponsored Research Programs Administration 973-596-3631; eric.d.hetherington@njit.edu. The college representatives to help PIs on proposal submissions are

John McCarthy, NCE Director of Research; (973) 596-3247; john.p.mccarthy@njit.edu
Cristo Leon, CSLA Director of Research; (973) 596-6426; cristo.e.yanezleon@njit.edu
Sean Andrews, YWCC Director of Research; (973) 596-5352; sean.t.andrews@njit.edu
Iris Pantoja, NCE, CoAD and MTSM Project Manager; 973-596-4483; irp3@njit.edu

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