NJIT Research Newsletter

Issue: ORN-2019-14

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/ .

Special Announcements

Leir Research Institute Conference 2019

Monday, April 15, 2019; 9:30 a.m. – 6:00 p.m.
Campus Center Atrium
https://management.njit.edu/program

Agenda

9:30 a.m. - 9:40 a.m. - **Introduction and Opening Remarks**
Yi Chen, Director, Leir Research Institute, Professor and Leir Chair, Martin Tuchman School of Management, NJIT
Atam P. Dhawan, Senior Vice Provost of Research, NJIT

9:40 a.m. - 10:20 a.m. - **Keynote Presentation**
"Challenges, Technologies, and Impacts of Innovative Orthopedic Surgical Procedures and Implanted Device Prostheses"
Robert Cohen, '83, '84, & '87, Vice President and Chief Technology Officer - Global Research and Development, Stryker Joint Replacement, and Member of the NJIT Board of Trustees

10:20 a.m. - 11:20 a.m. - **Panel Discussion**
"The Convergence of Wellbeing, Connectedness, and Resilience"

Moderator:
Reggie J. Caudill, Dean, Martin Tuchman School of Management, Professor and Panasonic Chair of Sustainability
Panelists:
Katherine Hempstead, Senior Policy Advisor, Robert Wood Johnson Foundation
Alain Kornhauser, Professor of Operations Research and Financial Engineering, Princeton University
Mark S. Squillante, Distinguished Research Staff Member and Area Head, Watson Research Center, IBM

11:20 a.m. - 12:10 p.m. **- Session: Autonomous Systems and Connectedness**
Session Chair:
Lazar Spasovic, Professor and Director, National Center for Transportation and Industrial Productivity, NJIT

Presentations:
"Assessment of Mobility Challenges of Populations on the Autism Spectrum and How to Address Them Using Technology"
Branislav Dimitrijevic, Assistant Professor, Civil and Environmental Engineering, NJIT
Cecilia Feeley, Transportation Autism Project Manager, Center for Advanced Infrastructure and Transportation,
Rutgers, The State University of New Jersey
"DeepJetsonCar: A Versatile Deep Neural Network-Based Autonomous System for Real-time Safety, Performance and Reliability of Self-Driving Vehicles"
Dantong Yu, Associate Professor, Martin Tuchman School of Management, NJIT

12:10 p.m. - 12:50 p.m. - **Lunch**

12:50 p.m. - 12:55 p.m. - **Remarks**
Fadi P. Deek, '85,'86 '97, Provost and Senior Executive Vice President, NJIT

12:55 p.m. - 1:45 p.m. - **Keynote Presentation**
"Building Smarter, Better Connected and More Resilient Healthy Communities"
Wendy Nilsen, Lead Program Director, Smart and Connected Health Program, National Science Foundation

1:45 p.m. - 3:00 p.m. – **Session: Healthcare and Wellbeing**
Session Chair: Yi Chen, NJIT

Presentations:
"Health Care In The Age Of Electronic Health Records"
Frank Sonnenberg, Chief Medical Informatics Officer, Professor of Medicine, Robert Johnson Medical School, Rutgers, The State University of New Jersey
"Is SNOMED CT Fit for Annotation of EHR Notes?"
Yehoshua Perl, Professor, Computer and Information Science, NJIT
"AI for Healthcare: Angel or Devil"
Fei Wang, Associate Professor, Healthcare Policy and Research, Weil Cornell Medicine, Cornell University

3:00 p.m. - 3:30 p.m. -Coffee Break

3:30 p.m. - 4:45 p.m. - **Session: Risk Management and Resillience**

Session Chair:
Sanchoy K. Das, Professor and Graduate Advisor, Mechanical and Industrial Engineering, NJIT

Presentations:
"Current and Future Trends in Supply Chain Management and Logistics"
Subodha Kumar, Paul R. Anderson Distinguished Professor and Director, Center for Data Analytics, Temple University
"Mitigating Disruptions in the Energy Supply Chain"
Boris Defourny, Assistant Professor, Department of Industrial and Systems Engineering, Lehigh University
"Blockchain Meets Supply Chain: Blockchain Design for Supply Chain Management"
Jim (Junmin) Shi, Associate Professor, Martin Tuchman School of Management, NJIT

4:45 p.m. - 6:00pm - **Reception and Poster Session**

6:00 p.m. **Announcement of Best Poster and Closing Remarks**

Bios of the Keynote Speakers:

Robert C. Cohen
Mr. Cohen currently holds the position of Vice President and Chief Technology Officer, Global Research & Development of Stryker's Orthopaedic Joint Replacement division. He has worked in the orthopedic medical device industry for thirty-five years and has managed research, development, manufacturing, regulatory, clinical research, quality and marketing functions. Prior to their acquisition by Stryker in 2013, Mr. Cohen held the position of Senior Vice President, Clinical and Market Development, for MAKO Surgical Corp., an orthopedic robotics company, as well as having the role of General Manager of their New Jersey implant R&D and additive-manufacturing facility. From 2007 until MAKO's purchase of the assets in 2013 of Pipeline Biomedical, a company founded by Mr Cohen, he served as its Chief Technology Officer and Senior Vice President of R&D. From 1992 to 2004, he served as Vice President of Product Development for Implex Corp, a developer of advanced joint replacement and spinal implants fabricated from a novel porous metal biomaterial trademarked as Trabecular Metal. Following the acquisition of Implex Corp by Zimmer Inc, a large manufacturer and supplier of orthopedic implants in 2004, Mr. Cohen served as Zimmer's General Manager of their New Jersey engineering and manufacturing operations through 2006. From 1984 to 1992, he held various engineering positions at Stryker's joint replacement division Osteonics, including Director of Product Development. Mr. Cohen has over 25 patents and speaks globally at medical education conferences. He also serves on numerous boards and is the Vice-Chair of the Board of Trustees of the New Jersey Institute of Technology, a leading US polytechnic university with over 12,000 students. Mr. Cohen has a Bachelor of Science and a Master of Science in Mechanical Engineering and a Master of Science in Engineering Management, all from New Jersey Institute of Technology.

Wendy Nilsen, Ph.D
Wendy Nilsen, Ph.D. is a Program Director for the Smart and Connected Health program at the National Science Foundation. Her work focuses on the intersection of computing, technology and health. This includes a wide range of methods for data collection, data analytics, data visualization and turning data to knowledge through effective and efficient human-computer interfaces. More specifically, her efforts in

this area of research include: serving as the lead for the NSF/NIH Smart and Connected Health announcement, serving as co-chair of the National Information and Technology Research and Development's Health Information Technology Community of Practice, convening meetings to address methodology in mobile technology research; serving on numerous federal technology initiatives; and, leading training institutes.

Bio of the Panel Moderator:

Reggie J. Caudill, Ph.D
Dr. Reggie J. Caudill is currently the Dean of the Martin Tuchman School of Management at New Jersey Institute of Technology (NJIT) and the Panasonic Chair of Sustainability. He received his PhD degree in Mechanical Engineering from the University of Minnesota and earned a BS in Mechanical Engineering and MS in Engineering Mechanics from the University of Alabama. Dr. Caudill has over 30 years of experience in research related to industrial ecology, sustainability and industrial systems, with over $10 million in research funding since 1990 including a recently funded million-dollar grant from PSE&G bringing advanced energy efficiency and sustainability techniques to New Jersey industry. A significant aspect of his teaching and research has focused on dynamic systems analysis, simulation and data-driven decision making in industrial and management systems, including design for environment, production operations and corporate sustainability.

Bios of the Panelists:

Katherine Hempstead, Ph.D
Katherine Hempstead is a Senior Policy Adviser at the Robert Wood Johnson Foundation. She works on health care issues, mostly those related to health insurance, costs, and access to care. In her work in the policy unit, she seeks to inform policy discussions at the federal and state level by making data and analyses widely available. She is particularly interested making new sources of data that have the potential to inform policy available to researchers and the public sector. Hempstead joined the Foundation in 2011. Prior to that, she was the Director of the Center for Health Statistics in the New Jersey Department of Health, where she focused on analysis and dissemination of major data sets including vital statistics, hospital discharge data, and the Behavioral Risk Factor Surveillance System. In this role, she became involved in a number of CDC surveillance projects, and led New Jersey's participation in the National Violent Death Reporting System. During this time, she also worked at New Jersey's Office of the Attorney General, where she led the internal evaluation of several criminal justice initiatives and participated in other analytical projects. During this time, she served on the faculty at the Rutgers Center for State Health Policy, where she is still a visitor.

Hempstead received a PhD in Demography and History from the University of Pennsylvania, where she also received a bachelor's degree in history and economics. She was a post-doctoral fellow at Princeton University's Office of Population Research at the Woodrow Wilson School. Hempstead has taught history, public policy, and biostatistics in various settings. She frequently speaks and writes about health insurance and other health care topics. She is also an active researcher, and has authored numerous articles in the peer reviewed literature.

Alain Kornhauser, Ph.D
Alain Kornhauser is Professor of Operations Research & Financial Engineering at Princeton University. He serves as Director of the Transportation Program where he continues his basic research in Transportation focused on the real-time operation of large fleets of driverless vehicles and on the development of Deep-Learning Neural Networks that safely drive road vehicles. He was the Faculty

Leader of Princeton's entries the 2005 DARPA Grand Challenge and 2007 Urban Challenge and continues his interest in the complete automation of the automobile with particular interest in the autonomous Taxi concept and its potential to transform mass transit and deliver ubiquitous mobility to everyone. He is Faculty Chair of Princeton Autonomous Vehicle Engineering (PAVE) an extracurricular undergraduate Smart Driving Car research effort at Princeton, Editor of the Smart Driving Cars Newsletter and Board Chair of the Advanced Transit Association (ATRA). He is currently in the process of creating a major Center for Automated Road Transportation Safety. In addition to his teaching and research duties he serves as the ORFE's Department's Director of Undergraduate Studies.

Mark S. Squillante, Ph.D
Mark S. Squillante is a Distinguished Research Staff Member and the Area Head of Stochastic Processes, Optimization and Control within Mathematical Sciences of IBM Research AI at the Thomas J. Watson Research Center. He also serves as Director of the Center for Optimization under Uncertainty Research across IBM Research. He received a Ph.D. degree from the University of Washington (Seattle, WA). He has been an adjunct faculty member in the School of Engineering and Applied Science at Columbia University (New York, NY), and a Member of the Technical Staff at Bell Telephone Laboratories (Murray Hill, NJ). He has also held visiting positions at various academic institutions.

Grant Opportunity Alerts

Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: Methodology, Measurement, and Statistics (MMS); Secure and Trustworthy Cyberspace Frontiers (SaTC Frontiers); NSF Program on Fairness in Artificial Intelligence in Collaboration with Amazon (FAI); Broadening Participation in Engineering (BPE); Sustained Availability of Biological Infrastructure (SABI) Core Program; Science and Technology Centers; Real-Time Machine Learning (RTML); Smart and Connected Communities (S&CC); Next Generation Networks for Neuroscience; Planning Grants for Engineering Research Centers (ERC); Quantum Leap Challenge Institutes (QLCI); Faculty Development in the Space Sciences; EHR Core Research: Production Engineering Education and Research (ECR: PEER); Signals in the Soil (SitS); Cyber-Physical Systems (CPS)
NIH: BRAIN Initiative: Focused Technology Research and Development (R01); Exploratory Research for Technology Development (R21); Tools to Facilitate High-Throughput Microconnectivity Analysis (R01); NIH Director's Pioneer Award Program (DP1); NIH Director's Transformative Research Awards (R01); Institutional Translational Research Training Program (T32); Undergraduate Research Training Initiative for Student Enhancement (U-RISE) (T34); NINDS Institutional Research Training Program (T32); Team-Based Design in Biomedical Engineering Education (R25); Summer Research Education Experience Program (R25); Clinical and Biological Measures of TBI-related dementia including Chronic Traumatic Encephalopathy (CTE) (R01)
Department of Transportation: Pipeline Safety Research Competitive Academic Agreement Program (CAAP); Innovative Technology Deployment (HP-ITD); Dwight David Eisenhower Transportation Fellowship Program (DDETFP) Graduate Fellowship
Department of Defense/US Army/DARPA/ONR: Military Medical Photonics Program ; Research Interests of the Air Force Office of Scientific Research; DoD Parkinson's Investigator-Initiated Research Award; DoD Autism Idea Development Award; Real Time Machine Learning (RTML); Science of Artificial Intelligence and Learning for Open-world Novelty (SAIL-ON); Air Force Fiscal Year 2020 Young Investigator Research Program (YIP); Multidisciplinary Research Program of the University Research Initiative (FY20 ARMY and FY AFOSR); Multidisciplinary Research Program of the University Research Initiative (ONR); Department of Defense Advanced Computing Initiative (ACI);

Bioelectronics for Tissue Regeneration (BETR); Army Research Laboratory Broad Agency Announcement for Basic and Applied Scientific Research; ERDC Broad Agency Announcement
Department of Education: Fulbright-Hays Group Projects Abroad (GPA) Short-Term Project)
EPA: 2019 Healthy Communities Grant Program; A National Student Design Competition Focusing on People, Prosperity and the Planet - Safe and Sustainable Water Resources
Department of Energy: 2019 Advanced Vehicle Technologies Research; Solar Energy Technologies Office FY19 Funding Program; 2019 Wind Energy Technologies Office Funding Opportunity Announcement; Data Science for Discovery in Chemical and Materials Sciences; Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0002022; FY 2019 Bioenergy Technologies Office (BETO) Multi-topic Request for Information (RFI)
NASA: ROSES 2019: B.7 Space Weather Science Applications Operations 2 Research; Heliophysics Theory, Modeling, and Simulations; Astrophysics Research and Analysis; Heliophysics Data Environment Emphasis
National Endowment of Humanities: Research and Development Program
Environment Research and Education Foundation: Research on Sustainable Solid Waste Management
Brain Research Foundation: 2020 Scientific Innovation Award

Recent Research Grant and Contract Awards

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

PI: Xinyue Ye (PI)
Department: Informatics
Grant/Contract Project Title: Using Sentiment Analysis and Topic Modeling in Assessing the Impact of Police Signaling on Investigative and Prosecutorial Outcomes in Sexual Assault Reports
Funding Agency: National Institute for Justice
Duration: 01/01/19-12/31/21

PI: Mesut Sahin (PI)
Department: Biomedical Engineering
Grant/Contract Project Title: Brain Injury Research Fellowships 2019
Funding Agency: NJ Department of Health
Duration: 04/01/19-03/31/22

PI: Wenda Cao (PI)
Department: Center for Solar Terrestrial Research
Grant/Contract Project Title: Synoptic Investigations of the Sun Using SOLIS of NSO
Funding Agency: NSF
Duration: 10/01/17-09/30/21

PI: Qiang Tang (PI)
Department: Computer Science
Grant/Contract Project Title: B2CSM: Blockchain-Based Cyber Security Management: Design, Analysis, and Prototype Implementation
Funding Agency: U.S. Air Force Research Laboratory (AFRL)
Duration: 03/01/19-08/30/19

In the News…

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

AF YIP Program: The Air Force Young Investigator Program (YIP) plans to make awards of up to $450,000 to career scientists and engineers who have received Ph.D. or equivalent degrees by 1 April 2012 or later and who show "exceptional ability and promise for conducting basic research." The deadline for applications is June 3. More information is included in the Grant Opportunity section and on the website https://www.grants.gov/web/grants/view-opportunity.html?oppId=313523

SURF'S UP: The Department of Energy's Water Power Technologies Office is interested in supporting hydropower operational flexibility; low-head hydropower and in-stream hydrokinetic technologies; advancing wave energy device design; and marine energy centers research infrastructure upgrades. More information about RFP is included in the Grant Opportunity section and on the website https://eere-exchange.energy.gov/#FoaId65c1ef13-e519-465c-86f1-70ad805ad1ec

PARTICLE ACCELERATOR TRAINING: The Department of Energy has $5 million available for "U.S. colleges and universities, singly or as consortia" to develop "an innovative curriculum for the program, including a rigorous thesis or dissertation requirement, with studies closely aligned to DOE science and technology priorities. Application institutions will normally be expected to form a collaborative relationship with one or more DOE National Laboratories, where many of the nation's most powerful particle accelerators reside." https://science.energy.gov/news/featured-articles/2019/04-12-19/

Semiconductor Industry and STEM Education: The Semiconductor Industry Association wants the government to "Triple U.S. investments in semiconductor-specific research across federal scientific agencies from approximately $1.5 billion to $5 billion annually to advance new materials, designs, and architectures that will exponentially increase chip performance; double U.S. research investments in semiconductor-related fields such as materials science, computer science, engineering, and applied mathematics across federal scientific agencies to spur leap-ahead innovations . . . "; and "increase U.S. investments in STEM education by 50 percent and implement a national STEM education initiative to double the number of American STEM graduates by 2029." The SIA says that although U.S. companies still lead the world with nearly half of global market share, "state-backed competition from abroad seeks to displace U.S. leadership."

Photonics and Military Medicine: The Air Force Office of Scientific Research (AFOSR) plans to offer "a small number of individual awards" for research and development aimed at using lasers and other light source technology applications in military medicine and combat casualty care, including photobiology, surgery, and closely related materials sciences. The efforts proposed may be basic or applied research, and "must offer unique capabilities, not substantially funded by other DOD or other agency programs." Learn more (FA9550-19-S-0002).

NSF, AMAZON TEAM UP ON AI 'FAIRNESS': NSF and Amazon are partnering to jointly support computational research focused on fairness in AI, with the goal of contributing to trustworthy AI systems that are readily accepted and deployed to tackle grand challenges facing society. Specific topics of interest include, but are not limited to transparency, explainability, accountability, potential adverse biases and effects, mitigation strategies, validation of fairness, and considerations of inclusivity. Funded projects will enable broadened acceptance of AI systems, helping the U.S. further capitalize on the potential of AI technologies. Although Amazon provides partial funding for this program, it will not play a role in the

selection of proposals for award. The RFP and more information is posted on the website https://www.nsf.gov/pubs/2019/nsf19571/nsf19571.htm?WT.mc_id=USNSF_179 More details are included in the grant opportunity section below.

$36 MILLION FOR SOLAR-GRID RESILIENCE: Seven universities and several companies will share research money intended to "advance solar energy's role in strengthening the resilience of the nation's electricity grid," the Department of Energy says. "With more and more solar being added to the U.S. electricity generation portfolio, these projects will enable grid operators to rapidly detect physical and cyber-based abnormalities in the power system and utilize solar generation to recover quickly from power outages, in many cases without human control." See the winning projects.

NSF REPORT on AMERICA'S WORKFORCE: According to the recent National Science Board publication, our Nation's Future Competitiveness Relies on Building a STEM-Capable Workforce: A Policy Companion to Science and Engineering Indicators 2018, the number of U.S. jobs requiring "substantial science, technology, engineering, and mathematics (STEM) expertise" has increased 34 percent over the past decade. A workshop by the Business Higher Education Forum and National Science Foundation concluded that the nation needs "a STEM-capable U.S. workforce that leverages the hard work, creativity, and ingenuity of women and men of all ages, all education levels, and all backgrounds." Participants, including ASEE representatives, recommended:

- Support creation of education ecosystems, pathways, and workforce partnership models that result in dissemination and wide-spread take-up of research findings by the broader community.
- Plan and implement new federal programs and activities focused on STEM-capable workforce development, diversification, and reskilling.
- Facilitate coordination both internally within each federal agency and externally across all agencies on workforce development.
- Create a clearinghouse of policies, best practices, and recommendations for state and local governments to align and leverage federal legislation related to STEM, STEM capable, and broader workforce-related topics. Read the full report.

QUANTUM LEAP: NSF Director France Córdova tells Nextgov the field of quantum information sciences could be on the verge of a significant breakthrough in the coming years. NSF played a critical role in the "first quantum revolution," which helped create lasers and computer chips, the publication reports, "and today she said the field 'is ready for its second revolution' in the information sciences. 'If I've had any surprises in the time I've been [NSF director], it's how advanced that particular branch of the field is,' she said. 'The research is at hand and just needs a little more investment. I think that something very exciting will happen' in the next three to five years." Chief among those industries is artificial intelligence, a technology the White House sees as increasingly critical to the country's national and economic security. In the national AI strategy released last month, the Trump administration called on agencies to double down on efforts to advance AI and help the U.S. workforce navigate an increasingly tech-heavy job market. More information is on the website https://www.nextgov.com/emerging-tech/2019/03/nsf-director-approaching-uncertain-tech-landscape-confidence/155724/

NSF Convergence Acceleration: NSF's Convergence Accelerator Pilot has two goals: "to accelerate use-inspired convergence research in areas of national importance, and initiate convergence team-building capacity around exploratory, potentially high-risk proposals in three convergence topics (tracks). . . . NSF is planning to fund approximately 50 Phase 1 awards (up to 9 months and up to $1 million each). Additional funds will be available for a smaller number of Phase 2 awards. The first-step to become part of the NSF C-Accel Pilot is to submit a 2-page Research Concept Outline (RCO), aligned with one of the

tracks described below, with a target submission date of April 15, 2019." The NSF C-Accel Pilot consists of three tracks, with each track aligned with one of NSF's 10 Big Ideas, namely Harnessing the Data Revolution (HDR) (track A1) and the Future of Work at the Human-Technology Frontier (FW-HTF) (tracks B1 and B2). These tracks also align with Administration R&D Priorities including leadership in artificial intelligence (see July 2018 memo M-18-22), the President's Management Agenda (see Cross Agency Priority Goals), and the U.S. 5-Year STEM Education Strategic Plan. The NSF C-Accel Pilot's tracks focus on use-inspired research with relatively short timeframes for deliverables and are intended to leverage partnerships. The tracks build upon existing convergence research with the intention of accelerating discovery and innovation, leading to deliverable research products. More information is on the website https://www.nsf.gov/pubs/2019/nsf19050/nsf19050.jsp?org=NSF

Webinar and Events

Event: Webcast: Presidential Awards for Excellence in Mathematics and Science Teaching Events
Sponsor: NSF
When: April 15, 2019; 7.00 PM – 8.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=298106&org=NSF
Brief Description: The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the highest honors bestowed by the United States government for K-12 science, technology, engineering, mathematics, and/or computer science teaching, with up to 108 teachers awarded each year. Awardees receive $10,000 from NSF, attend an awards ceremony in Washington, D.C., and receive a certificate signed by the President of the United States.
This year, the program is recognizing 7-12 grade teachers and is currently accepting nominations. To nominate an excellent science, technology, engineering, mathematics, and/or computer science teacher, visit https://www.paemst.org/nomination/nominate. Deadline for nominations is April 1st.
Applicant webinars will be held throughout the cycle to provide PAEMST nominees and applicants an in-depth look at the application, feature tips from alumni, and answer all questions. Please consider joining the team for an upcoming applicant webinar **between March 27 and April 30** to learn more about the program and application process.
To register for a webinar: Register at www.paemst.org/webinar. The full schedule is as follows:

- Monday, April 15 at 7:00pm EDT
- Saturday, April 20 at 2:00pm EDT
- Tuesday, April 23 at 7:00pm EDT
- Thursday, April 25 at 8:00pm EDT
- Tuesday, April 30 at 6:00pm EDT

NSF manages PAEMST on behalf of the White House Office of Science and Technology Policy.

Event: NSF Distinguished Lecture Series in Mathematical and Physical Sciences
Sponsor: NSF
When: April 15, 2019 from 2.00 PM
Website: http://sites.nationalacademies.org/deps/bmsa/deps_183972
Brief Description:
Prof. Vicky Kalogera (Northwestern University)
April 15, 2019, 2:00 p.m., Room E3410
"Life Crystals"
Prof. Pupa Gilbert (University of Wisconsin)

May 20, 2019, 2:00 p.m., Room E2020
"Quantum Chemistry: Present and Future Directions"
Prof. Garnet Chan (California Institute of Technology)
To join the webinar: All Distinguished Lectures in Mathematical and Physical Sciences from 2014 through 2017 can be viewed on the web (please click here).

Event: National Science Board Task Force on the Skilled Technical Workforce Teleconference
Sponsor: NSF
When: April 16, 2019; 3.00 PM – 4.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=298039&org=NSF
Brief Description: The National Science Board's Task Force on the Skilled Technical Workforce, pursuant to NSF regulations (45 CFR Part 614), the National Science Foundation Act, as amended (42 U.S.C. § 1862n-5), and the Government in the Sunshine Act (5 U.S.C. § 552b), hereby gives notice of the scheduling of a teleconference for the transaction of National Science Board business. This meeting will be held by teleconference at the National Science Foundation, 2415 Eisenhower Avenue, Alexandria, VA 22314. An audio link will be available for the public. Members of the public must contact the Board Office to request the public audio link by sending an e-mail to nationalsciencebrd@nsf.gov at least 24 hours prior to the teleconference.
To join the webinar: Point of contact for this meeting is: Mateo Munoz, mmunoz@nsf.gov, 703-292-7000. Meeting information and updates may be found at http://www.nsf.gov/nsb/notices.jsp#sunshine . Please refer to the National Science Board website at www.nsf.gov/nsb for general information.

Event: I-Corps Bio-Entrepreneurship Workshop
Sponsor: UNH ICorps
When: June 2-5, 2019; Applications are due Monday, April 15 at 5 PM eastern time
Website: https://innovation.unh.edu/icorps/i-corps-bio-entrepreneurship-workshop
Brief Description: The United Negro College Fund, the National Science Foundation, the Biotechnology Innovation Organization (BIO), the Ernest E. Just Institute for the Life Sciences, University of New Hampshire I-Corps, CSU I-Corps, MIT I-Corps, and Penn I-Corps have partnered to offer a Bio-Entrepreneurship Workshop during the Biotechnology International Conference (BIO 2019; convention.bio.org) in Philadelphia, Pennsylvania June 2-5, 2019. A 3-day I-Corps Bio-Entrepreneurship Workshop, including BIO International Convention exhibition access. Work on teams with industry mentors to learn about biotechnology commercialization, grow your professional network, and explore entrepreneurial opportunities that build on basic research.

Early-career life science researchers from groups underrepresented in biotechnology research organizations. Research-active undergraduate and graduate students, postdoctoral fellows, and assistant professors from universities and colleges nationwide are eligible to participate. Researchers from Historically Black Colleges and Universities, Hispanic Serving Institutions, Tribal Colleges and Universities, and minority-serving institutions are especially encouraged to apply.

Grant Opportunities

National Science Foundation

Grant Program: Methodology, Measurement, and Statistics (MMS)
Agency: National Science Foundation NSF 19-575
RFP Website: https://www.nsf.gov/pubs/2019/nsf19575/nsf19575.htm

Brief Description: The Methodology, Measurement, and Statistics (MMS) Program is an interdisciplinary program in the Directorate for Social, Behavioral, and Economic Sciences that supports the development of innovative analytical and statistical methods and models for those sciences. MMS seeks proposals that are methodologically innovative, grounded in theory, and have potential utility for multiple fields within the social, behavioral, and economic sciences. As part of its larger portfolio, the MMS Program partners with a consortium of federal statistical agencies to support research proposals that further the production and use of official statistics.
The MMS Program provides support through a number of different funding mechanisms. The following mechanisms are addressed in this solicitation:

- Regular Research Awards
- Awards for conferences and community-development activities
- Doctoral Dissertation Research Improvement (DDRI) Grants
- Research Experience for Undergraduates (REU) Supplements

MMS also supports Faculty Early Career Development (CAREER) awards. Please see the CAREER Program Web Site for more information about this activity.
Awards: Standard Grant. Anticipated Funding: $3,760,000.
Letter of Intent: Not Required
Proposal Submission Deadline: August 29, 2019
Contacts: Cheryl L. Eavey - Program Director, telephone: (703) 292-7269, email: ceavey@nsf.gov

- Liana A. Denola - Social Scientist, telephone: (703) 292-2675, email: ldenola@nsf.gov
- Robbie W. Brown - Program Specialist, telephone: (703) 292-7264, email: rbrown@nsf.gov

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Grant Program: Secure and Trustworthy Cyberspace Frontiers (SaTC Frontiers)
Agency: National Science Foundation NSF 19-572
RFP Website: https://www.nsf.gov/pubs/2019/nsf19572/nsf19572.htm
Brief Description: In today's increasingly networked, distributed, and asynchronous world, cybersecurity involves hardware, software, networks, data, people, and integration with the physical world. Society's overwhelming reliance on this complex cyberspace, however, has exposed its fragility and vulnerabilities that defy existing cyber-defense measures; corporations, agencies, national infrastructure and individuals continue to suffer cyber-attacks. Achieving a truly secure cyberspace requires addressing both challenging scientific and engineering problems involving many components of a system, and vulnerabilities that stem from human behaviors and choices. Examining the fundamentals of security and privacy as a multidisciplinary subject can lead to fundamentally new ways to design, build and operate cyber systems, protect existing infrastructure, and motivate and educate individuals about cybersecurity. The Secure and Trustworthy Cyberspace (SaTC) program welcomes proposals that address cybersecurity and privacy, and draw on expertise in one or more of these areas: computing, communication and information sciences; engineering; economics; education; mathematics; statistics; and social and behavioral sciences. Proposals that advance the field of cybersecurity and privacy within a single discipline or interdisciplinary efforts that span multiple disciplines are both encouraged. Please see SaTC program solicitation for more details.

Through this solicitation—under the SaTC umbrella—NSF specifically seeks ambitious and potentially transformative **center-scale projects** in the area of security and privacy that (1) catalyze far-reaching research explorations motivated by deep scientific questions or hard problems and/or by compelling applications and novel technologies that promise significant scientific and/or societal benefits, and (2) stimulate significant research and education outcomes that, through effective knowledge transfer mechanisms, promise scientific, economic and/or other societal benefits. The goal of the SaTC Frontiers

program is to advance the frontiers of cybersecurity and privacy, and the areas listed in the SaTC program solicitation are meant to be illustrative but not exhaustive.
Awards: Continuing Grant. The SaTC Frontiers program will support proposals from $5,000,000 to $10,000,000 in total budget, with durations of up to five years. Anticipated Funding: $15,000,000.
Letter of Intent: July 05, 2019
Proposal Submission Deadline: September 30, 2019
Contacts: Nina Amla, Program Director, CISE/CCF, telephone: (703) 292-7991, email: namla@nsf.gov

- Shannon I. Beck, Associate Program Director/Program Coordinator, CISE/CNS, telephone: (703) 292-2487, email: sbeck@nsf.gov
- Dan R. Cosley, Program Director, CISE/IIS, telephone: (703) 292-8491, email: dcosley@nsf.gov

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Grant Program: Fairness in Artificial Intelligence in Collaboration with Amazon (FAI)
Agency: National Science Foundation NSF 19-571
RFP Website: https://www.nsf.gov/pubs/2019/nsf19571/nsf19571.htm?WT.mc_id=USNSF_179
Brief Description: NSF has long supported transformative research in artificial intelligence (AI) and machine learning (ML). The resulting innovations offer new levels of economic opportunity and growth, safety and security, and health and wellness. At the same time, broad acceptance of large-scale deployments of AI systems relies critically on their trustworthiness which, in turn, depends upon the collective ability to ensure, assess, and ultimately demonstrate the fairness, transparency, explainability, and accountability of such systems. Importantly, the beneficial effects of AI systems should be broadly available across all segments of society.

NSF and Amazon are partnering to jointly support computational research focused on fairness in AI, with the goal of contributing to trustworthy AI systems that are readily accepted and deployed to tackle grand challenges facing society. Specific topics of interest include, but are not limited to transparency, explainability, accountability, potential adverse biases and effects, mitigation strategies, validation of fairness, and considerations of inclusivity. Funded projects will enable broadened acceptance of AI systems, helping the U.S. further capitalize on the potential of AI technologies. Although Amazon provides partial funding for this program, it will not play a role in the selection of proposals for award.

Advancing AI is a highly interdisciplinary endeavor drawing on fields such as computer science, information science, engineering, statistics, mathematics, cognitive science, and psychology. As such, NSF and Amazon expect these varied perspectives to be critical for the study of fairness in AI. NSF's ability to bring together multiple scientific disciplines uniquely positions the agency in this collaboration, while building AI that is fair and unbiased is an important aspect of Amazon's AI initiatives. This program supports the conduct of fundamental computer science research into theories, techniques, and methodologies that go well beyond today's capabilities and are motivated by challenges and requirements in real systems.
Awards: Standard and Continuing Grants. $750,000 - up to a maximum of $1,250,000 for periods of up to 3 years. Anticipated Funding: $7,600,000.
Letter of Intent: May 10, 2019
Proposal Submission Deadline: June 25, 2019
Contacts: Todd Leen, Program Director, CISE/IIS, telephone: (703) 292-8930, email: tleen@nsf.gov

- Sylvia Spengler, Program Director, CISE/IIS, telephone: (703) 292-8930, email: sspengle@nsf.gov
- Steven Breckler, Program Director, SBE/BCS, telephone: (703) 292-7369, email: sbreckle@nsf.gov

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Grant Program: Broadening Participation in Engineering (BPE)
Agency: National Science Foundation PD 19-7680
RFP Website:
https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505632&org=NSF&sel_org=NSF&from=fund
Brief Description: NSF seeks to strengthen the future U.S. Engineering workforce by enabling the participation of all citizens through the support of research in the science of Broadening Participation in Engineering (BPE). The BPE program is a dedicated to supporting the development of a diverse and well-prepared engineering workforce. BPE focuses on enhancing the diversity and inclusion of all underrepresented populations in engineering, including gender identity and expression, race and ethnicity (African Americans/Blacks, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians, and Native Pacific Islanders), disability, LGBTQ+, first generation college and socio-economic status.
BPE funds research to

- Understand and analyze the systemic barriers that prevent underrepresented groups from pursuing and succeeding in engineering, for example, understand the problem of insufficient interest and poorly sustained participation in engineering across underrepresented demographic groups; insignificant preparation and scarce opportunities for members of underrepresented groups to learn meaningful, relevant engineering content.
- Understand and analyze factors that enhance our ability to increase access to engineering by creating support systems and social networks that raise career awareness about different engineering pathways.
- Develop innovative methods and projects to significantly impact the recruitment and retention of engineering students from underrepresented groups. Activities must be supported by relevant data and have the capability to produce a model that can be replicated in other contexts.
- Develop innovative methods and projects to aggressively recruit and retain tenure track faculty from underrepresented groups.
- Design and transform culture to make diversity, equity, and inclusion a priority in the engineering enterprise.

BPE research activities will provide scientific evidence that engineering educators, employers, and policy makers need to make informed decisions to design effective programs that broaden the participation of persons from historically underrepresented groups in the engineering workforce. BPE is interested in funding research that spans K-12 to workforce and offers the greatest return on investment. BPE funded research should produce outcomes that are scalable, sustainable, and applicable to various contexts, settings, and demographics within the engineering enterprise. BPE is particularly interested in research that employs intersectional approaches in recognition that gender, race and ethnicity do not exist in isolation from each other and from other categories of social identity.
Awards: Average award is $350,000 for 36 months
Letter of Intent: Not required
Proposal Submission Deadline: No deadline
Contacts: Paige E. Smith psmith@nsf.gov 703-292-7107

Grant Program: Sustained Availability of Biological Infrastructure (SABI) Core Program
Agency: National Science Foundation NSF 19-569
RFP Website: https://www.nsf.gov/pubs/2019/nsf19569/nsf19569.htm
Brief Description: The Sustained Availability of Biological Infrastructure program (SABI) supports the continued operation of extant infrastructure that will advance basic biological research. Infrastructure supported under this program may include cyberinfrastructure, instrumentation, experimental or

observational facilities, biological living stocks which have ongoing costs of operation and maintenance that exceed the reasonable capacity of the host institution. Proposals must make a compelling case that sustained availability of the proposed infrastructure will advance or transform research in biological sciences as supported by the National Science Foundation.

While other programs in the Division of Biological Infrastructure focus on research leading to future infrastructure or on the development or implementation of shared infrastructure, this program focuses on awards that ensure the continued availability of mature infrastructure resources critical to sustain the ability of today's scientific community to conduct leading edge research. Awards made through this program are expected to lead to novel, impactful, and transformative science outcomes through research activities enabled by their use. Infrastructure that demonstrates substantial impact on research supported by the Directorate for Biological Sciences and its collaborating organizations is eligible for support under this program.

Awards: Standard and Continuing Grants. Anticipated Funding: $5,000,000.

Letter of Intent: Not required

Proposal Submission Deadline: Proposals Accepted Anytime

Contacts: Peter H. McCartney, telephone: (703) 292-8470, email: pmccartn@nsf.gov

- Roland P. Roberts, telephone: (703) 292-7884, email: rolrober@nsf.gov
- Reed S. Beaman, telephone: (703) 292-7163, email: rsbeaman@nsf.gov

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Grant Program: Science and Technology Centers: Integrative Partnerships
Agency: National Science Foundation NSF 19-567
RFP Website: https://www.nsf.gov/pubs/2019/nsf19567/nsf19567.htm

Brief Description: The Science and Technology Centers (STC): Integrative Partnerships program supports exceptionally innovative, complex research and education projects that require large-scale, long-term awards. STCs focus on creating new scientific paradigms, establishing entirely new scientific disciplines and developing transformative technologies which have the potential for broad scientific or societal impact. STCs conduct world-class research through partnerships among institutions of higher education, national laboratories, industrial organizations, other public or private entities**,** and via international collaborations, as appropriate. They provide a means to undertake potentially groundbreaking investigations at the interfaces of disciplines and/or highly innovative approaches within disciplines. STCs may involve any area of science and engineering that NSF supports. STC investments support the NSF vision of creating and exploiting new concepts in science and engineering and providing global leadership in research and education. Centers provide a rich environment for encouraging future scientists, engineers, and educators to take risks in pursuing discoveries and new knowledge. STCs foster excellence in education by integrating education and research, and by creating bonds between learning and inquiry so that discovery and creativity fully support the learning process.

NSF expects STCs to demonstrate leadership in the involvement of groups traditionally underrepresented in science and engineering at all levels (faculty, students, and postdoctoral researchers) within the Center. Centers use either proven or innovative mechanisms to address issues such as recruitment, retention and mentorship of participants from underrepresented groups. Centers must undertake activities that facilitate knowledge transfer, i.e., the exchange of scientific and technical information with the objective of disseminating and utilizing knowledge broadly in multiple sectors. Examples of knowledge transfer include technology transfer, providing key information to public policy-makers, or dissemination of knowledge from one field of science to another.

The STC program supports potentially groundbreaking investigations at the interfaces of disciplines or highly innovative approaches within disciplines. STCs may involve any area of science and engineering that NSF supports. STCs exploit opportunities in science, engineering and technology where the complexity of the research agenda requires the duration, scope, scale, flexibility, and facilities that

center support can provide. They help enable U.S. leadership in research in a world in which discovery, learning, and innovation enterprises are increasingly interconnected and increasingly global**.** Centers offer the science and engineering community a venue for developing effective mechanisms to integrate scientific and technological research and education activities; to explore better and more effective ways to educate students; to broaden participation of underrepresented groups; and to ensure the timely transfer of research and education advances made in service to society. STC partner organizations work together with the lead institution as an integrated whole to achieve the shared research, education, broadening participation, and knowledge-transfer goals of the Center.
Awards: Cooperative Agreements. Anticipated Funding: $25,000,000; Up to 5 awards in FY2021
Letter of Intent: Not required
Preliminary Proposals: Submission of Preliminary Proposals is required by June 25, 2019
Proposal Submission Deadline: January 27, 2020
Limit on Number of Proposals per Organization: 3
A single organization may submit a maximum of three preliminary proposals as the lead institution. Full proposals are to be submitted only when invited by NSF. There is no limit on the number of proposals in which an organization participates as a partner institution. The STC program will not support more than one Center from any one lead institution in this competition.
Contacts: Dragana Brzakovic, telephone: (703) 292-8040, email: dbrzakov@nsf.gov

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Grant Program: Real-Time Machine Learning (RTML)
Agency: National Science Foundation NSF 19-566
RFP Website: https://www.nsf.gov/pubs/2019/nsf19566/nsf19566.htm
Brief Description: A grand challenge in computing is the creation of machines that can proactively interpret and learn from data in real time, solve unfamiliar problems using what they have learned, and operate with the energy efficiency of the human brain. While complex machine-learning algorithms and advanced electronic hardware (henceforth referred to as 'hardware') that can support large-scale learning have been realized in recent years and support applications such as speech recognition and computer vision, emerging computing challenges require real-time learning, prediction, and automated decision-making in diverse domains such as autonomous vehicles, military applications, healthcare informatics and business analytics.

A salient feature of these emerging domains is the large and continuously streaming data sets that these applications generate, which must be processed efficiently enough to support real-time learning and decision making based on these data. This challenge requires novel hardware techniques and machine-learning architectures. This solicitation seeks to lay the foundation for next-generation co-design of RTML algorithms and hardware, with the principal focus on developing novel hardware architectures and learning algorithms in which all stages of training (including incremental training, hyperparameter estimation, and deployment) can be performed in real time.

The National Science Foundation (NSF) and the Defense Advanced Research Projects Agency (DARPA) are teaming up through this Real-Time Machine Learning (RTML) program to explore high-performance, energy-efficient hardware and machine-learning architectures that can learn from a continuous stream of new data in real time, through opportunities for post-award collaboration between researchers supported by DARPA and NSF.
Awards: Continuing Grants. Anticipated Funding: $10,000,000.
Letter of Intent: Not required
Proposal Submission Deadline: June 6, 2019
Contacts: Sankar Basu, telephone: (703) 292-7843, email: sabasu@nsf.gov

- Jenshan Lin, telephone: (703) 292-7950, email: jenlin@nsf.gov

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Grant Program: Smart and Connected Communities (S&CC)
Agency: National Science Foundation NSF 19-564
RFP Website: https://www.nsf.gov/pubs/2019/nsf19564/nsf19564.htm
Brief Description: Communities in the United States (US) and around the world are entering a new era of transformation in which residents and their surrounding environments are increasingly connected through rapidly-changing intelligent technologies. This transformation offers great promise for improved wellbeing and prosperity but poses significant challenges at the complex intersection of technology and society. The goal of the NSF Smart and Connected Communities (S&CC) program solicitation is to accelerate the creation of the scientific and engineering foundations that will enable smart and connected communities to bring about new levels of economic opportunity and growth, safety and security, health and wellness, and overall quality of life.

For the purposes of this solicitation, communities are defined as having geographically-delineated boundaries—such as towns, cities, counties, neighborhoods, community districts, rural areas, and tribal regions—consisting of various populations, with the structure and ability to engage in meaningful ways with proposed research activities. A "smart and connected community" is, in turn, defined as a community that synergistically integrates intelligent technologies with the natural and built environments, including infrastructure, to improve the social, economic, and environmental well-being of those who live, work, or travel within it.

The S&CC program encourages researchers to work with communities and residents to identify and define challenges they are facing, enabling those challenges to motivate use-inspired research questions. The S&CC program **supports integrative research that addresses fundamental technological and social science dimensions of smart and connected communities** and pilots solutions together with communities. Importantly, the program is interested in projects that consider the sustainability of the research outcomes beyond the life of the project, including the scalability and transferability of the proposed solutions.

This S&CC solicitation will support research projects in the following categories:

- **S&CC Integrative Research Grants (SCC-IRGs) Tracks 1 and 2.** Awards in this category will support fundamental integrative research that addresses technological and social science dimensions of smart and connected communities and pilots solutions together with communities. Track 1 is for budgets greater than $1,500,000 with no recommended budget limit, and for up to four years of support. Track 2 is for budgets not to exceed $1,500,000, and for up to three years of support.
- **S&CC Planning Grants (SCC-PGs).** Awards in this category are for capacity building to prepare project teams to propose future well-developed SCC-IRG proposals. Each of these awards will provide support for a period of one year and may be requested at a level not to exceed $150,000 for the total budget.

S&CC is a cross-directorate program supported by NSF's Directorates for Computer and Information Science and Engineering (CISE), Education and Human Resources (EHR), Engineering (ENG), and Social, Behavioral, and Economic Sciences (SBE).

Awards: 35 to 40 Standard Grants. Anticipated Funding: $43,000,000. The planning grant is for one year and the proposed budget for each planning grant should not exceed $150,000.

Letter of Intent: August 6, 2019

Proposal Submission Deadline: September 6, 2019

Contacts: David Corman, Program Director, CISE/CNS, telephone: (703) 292-8754, email: dcorman@nsf.gov

- Radhakishan Baheti, Program Director, ENG/ECCS, telephone: (703) 292-8339, email: rbaheti@nsf.gov
- Wendy Nilsen, Program Director, CISE/IIS, telephone: (703) 292-2568, email: wnilsen@nsf.gov

Grant Program: Next Generation Networks for Neuroscience (NeuroNex): Technology-enabled, Team-based Neuroscience
Agency: National Science Foundation NSF 19-563
RFP Website: https://www.nsf.gov/pubs/2019/nsf19563/nsf19563.htm
Brief Description: Understanding how behavior emerges from the dynamic patterns of electrical and chemical activity of brain circuits is universally recognized as one of the great, unsolved mysteries of science. Advances in recent decades have elucidated how individual elements of the nervous system and brain relate to specific behaviors and cognitive processes. However, there remains much to discover to attain a comprehensive understanding of how the healthy brain functions, specifically, the general principles underlying how cognition and behavior relate to the brain's structural organization and dynamic activities, how the brain interacts with its environment, and how brains maintain their functionality over time. Achieving an understanding of brain structure and function that spans levels of organization, spatial and temporal scales, and the diversity of species requires an international, transdisciplinary collaborative effort to not only integrate discipline-specific ideas and approaches but also extend them to stimulate new discoveries, and innovative concepts, theories, and methodologies.

The objective of this phase of the NeuroNex Program is the establishment of distributed, international research networks that build on existing global investments in neurotechnologies to address overarching questions in neuroscience. The creation of such global research networks of excellence will foster international cooperation by seeding close interactions between a wide array of organizations across the world, as well as creating links and articulating alliances between multiple recently launched international brain projects. The potential transformative advances in neuroscience stemming from this activity will have profound scientific and societal impacts.

The goal of this solicitation is to support collaborative networks (approximately 15 to 20 investigators in each network) comprised of international teams of disciplinarily diverse experimentalists, theorists, and research resource (including technology and cyberinfrastructure) developers working on a common foundational question in neuroscience. It is anticipated that these international networks will enable experimentation, analysis, and discovery in neuroscience at scales much larger than currently possible.

This interdisciplinary, international program is one element of NSF's broader effort directed at Understanding the Brain, a multi-year activity that includes NSF's participation in the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative (https://www.nsf.gov/brain/) and the phased approach to develop a research infrastructure for neuroscience as outlined in the Dear Colleague Letter NSF 16-047. The need for a program that helps neuroscientists collect, standardize, manage, and analyze the large amounts of data that result from research attempting to understand how the brain functions has been recognized by stakeholders in the scientific community and by the U.S. Congress in the American Innovation and Competitiveness Act (AICA) of 2017. The NSF and international partner agencies envision a connected portfolio of transformative, integrative projects that leverage existing global investments in neurotechnologies and create synergistic links across domestic and international investigators and communities, yielding novel ways of tackling the challenges of understanding the brain in action and in context.
Awards: 3 to 5 Standard Grants. Anticipated Funding: $10,000,000.
Preliminary Proposal: June 14, 2019
Proposal Submission Deadline: December 13, 2019
Contacts: Reed S. Beaman, telephone: (703) 292-7163, email: rsbeaman@nsf.gov

- Krastan B. Blagoev, telephone: (703) 292-4666, email: kblagoev@nsf.gov
- Shubhra Gangopadhyay, telephone: (703) 292-2485, email: sgangopa@nsf.gov
- Claire A. Hemingway, telephone: (703) 292-7135, email: chemingw@nsf.gov

Grant Program: Planning Grants for Engineering Research Centers (ERC)
Agency: National Science Foundation NSF 19-562
RFP Website: https://www.nsf.gov/pubs/2019/nsf19562/nsf19562.htm
Brief Description: The ERC program is placing greater emphasis on research that leads to societal impact, including convergent approaches, engaging stakeholder communities, and strengthening team formation, in response to the NASEM study recommendations. The ERC program intends to support planning activities leading to convergent research team formation and capacity-building within the engineering community. This planning grant solicitation is designed to foster and facilitate the engineering community's thinking about how to form convergent research collaborations. To participate in a forthcoming ERC competition, one is not required to submit a planning grant proposal nor to receive a planning grant.
Awards: 30 to 40 Standard Grants. Anticipated Funding: $4,000,000. The planning grant is for one year and the proposed budget for each planning grant should not exceed $100,000.
Letter of Intent: Not required
Proposal Submission Deadline: June 3, 2019
Contacts: Junhong Chen, telephone: (703) 292-4623, email: junchen@nsf.gov

- Sandra Cruz-Pol, telephone: (703) 292-2928, email: scruzpol@nsf.gov
- Dana L. Denick, telephone: (703) 292-8866, email: ddenick@nsf.gov

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Grant Program: Quantum Leap Challenge Institutes (QLCI)
Agency: National Science Foundation NSF 19-559
RFP Website: https://www.nsf.gov/pubs/2019/nsf19559/nsf19559.htm
Brief Description: Quantum Leap Challenge Institutes are large-scale interdisciplinary research projects that aim to advance the frontiers of quantum information science and engineering. Research at these Institutes will span the focus areas of quantum computation, quantum communication, quantum simulation and/or quantum sensing. The institutes are expected to foster multidisciplinary approaches to specific scientific, technological, educational workforce development goals in these fields. Two types of awards will be supported under this program: (i) 12-month Conceptualization Grants (CGs) to support teams envisioning subsequent Institute proposals and (ii) 5-year Challenge Institute (CI) awards to establish and operate Quantum Leap Challenge Institutes. This activity is part of the Quantum Leap, one of the research Big Ideas promoted by the National Science Foundation (NSF). The NSF Quantum Leap Challenge Institutes program is consistent with the scope of *NSF multidisciplinary centers for quantum research and education* as described in the National Quantum Initiative Act [1].

In 2016, the NSF unveiled a set of "Big Ideas," ten bold, long-term research and process ideas that identify areas for future investment at the frontiers of science and engineering (see https://www.nsf.gov/news/special_reports/big_ideas/index.jsp). The Big Ideas represent unique opportunities to position our nation at the cutting edge of global science and engineering leadership by bringing together diverse disciplinary perspectives to support convergence research. Although proposals responding to this solicitation must be submitted to the Office of Multidisciplinary Activities (OMA) in the Directorate of Mathematical and Physical Sciences (MPS), they will subsequently be managed by a cross-disciplinary team of NSF Program Directors.
Awards: Standard Grants. Anticipated Funding: $94,000,000; **Estimated Number of Awards:** 1 to 28
Letter of Intent: Required
Proposal Submission Deadline:
Proposal Due Dates:

Round I (CG and CI proposals):	

Letters of Intent for CG proposals due	Apr 1, 2019
CG proposals due	June 3, 2019
Letters of Intent for CI preliminary proposals (Round I) due	June 3, 2019
CI preliminary proposals (Round I) due	Aug 1, 2019
CI full proposals (by invitation only) due	Jan 2, 2020
Round II (CI proposals only):	
Letters of Intent for CI preliminary proposals (Round II) due	Aug 3, 2020
CI preliminary proposals (Round II) due	Sep 1, 2020
CI full proposals (by invitation only) due	Feb 1, 2021

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 19-1).
Contacts: Quantum Leap Challenge Institutes, telephone: (703) 292-4861, email: QLCI@nsf.gov

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Grant Program: Faculty Development in the Space Sciences
Agency: National Science Foundation NSF 19-558
RFP Website: https://www.nsf.gov/pubs/2019/nsf19558/nsf19558.htm
Brief Description: The Geospace Section of the Division of Atmospheric and Geospace Sciences is pleased to offer awards for the creation of new tenure-track faculty positions within the intellectual disciplines which comprise the space sciences to ensure the health and vitality of solar and space sciences on university teaching faculties. The aim of these awards is to integrate research topics in solar and space physics into basic physics, astronomy, electrical engineering, geoscience, meteorology, computer science, and applied mathematics programs, and to develop space physics graduate programs capable of training the next generation of leaders in this field. Space Science is interdisciplinary in nature and the Faculty Development in the Space Sciences awardees will be expected to establish partnerships within the university community. NSF funding will support the entire academic year salary and benefits of the newly recruited tenure-track faculty member for a duration of up to five years with a total award amount not to exceed $1,500,000.
Awards: Continuing Grants. Anticipated Funding: $4,500,000.
Letter of Intent: Not required
Proposal Submission Deadline: May 24, 2019
Contacts: S. Irfan Azeem, telephone: (703) 292-8518, email: sazeem@nsf.gov

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Grant Program: EHR Core Research: Production Engineering Education and Research (ECR: PEER)
Agency: National Science Foundation NSF 19-557
RFP Website: https://www.nsf.gov/pubs/2019/nsf19557/nsf19557.htm
Brief Description: The National Science Foundation (NSF) and The Boeing Company are supporting a new initiative, managed and administered by NSF through its EHR Core Research (ECR) program, to

accelerate training in critical skill areas for the Nation's engineering and advanced manufacturing workforce. The *EHR Core Research: Production Engineering Education and Research* (ECR: PEER) initiative supports foundational research arising from the design, development, and deployment of creative online curricula that provide learners at various levels with skills in five focal areas: model-based systems engineering, software engineering, mechatronics, data science, and artificial intelligence. ECR: PEER invites proposals to design, develop, deploy, and study the effectiveness of online courses in any one of these focal areas using the theories and tools of the learning sciences. Proposals for these ECR: PEER *Course, Curriculum, and Evaluation* projects may request a maximum of $2,000,000 support for a duration of up to three years.
Additionally, ECR: PEER welcomes proposals to convene experts in the academic, for-profit, and non-profit sectors to imagine the future of production engineering education for one of the five focal areas. Proposals for these ECR: PEER *Workforce Development Workshops* may request a maximum of $100,000 support for a duration of up to one year.
Awards: Standard Grants. Anticipated Funding: $10,000,000.
Letter of Intent: Not required
Proposal Submission Deadline: May 15, 2019
Contacts: Radhakishan Baheti, telephone: (703) 292-8339, email: rbaheti@nsf.gov
- John C. Cherniavsky, telephone: (703) 292-5136, email: jchernia@nsf.gov
- David L. Haury, telephone: (703) 292-8614, email: dhaury@nsf.gov

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Grant Program: Signals in the Soil (SitS)
Agency: National Science Foundation NSF 19-556
RFP Website: https://www.nsf.gov/pubs/2019/nsf19556/nsf19556.htm
Brief Description: The National Science Foundation (NSF) Directorates for Engineering (ENG) and Geosciences (GEO), the Division of Integrative Organismal Systems in the Directorate for Biological Sciences (BIO/IOS), and the Division of Computer and Network Systems in the Directorate Computer and Information Science and Engineering (CISE/CNS), in collaboration with the US Department of Agriculture National Institute of Food and Agriculture (USDA NIFA) and the Natural Environment Research Council (NERC), the Engineering and Physical Sciences Research Council (EPSRC), the Biotechnology and Biological Sciences Research Council (BBSRC), and the Science and Technology Facilities Council (STFC) of United Kingdom Research and Innovation (UKRI) encourage convergent research that transforms existing capabilities in understanding dynamic, near-surface soil processes through advances in sensor systems and modeling. To accomplish this research, multiple disciplines must converge to produce novel sensors and/or sensing systems of multiple modalities that are adaptable to different environments and collect data and report on a wide range of chemical, biological and physical parameters. This type of approach will also be necessary to develop next generation soil models, wireless communication and cyber systems capabilities, and to grow a scientific community that is able to address complex problems through education and outreach. This program fosters collaboration among the partner agencies and the researchers they support by combining resources and funding for the most innovative and high-impact projects that address their respective missions.
Awards: Standard Grants. Anticipated Funding: $5,600,000.
Letter of Intent: Not required
Proposal Submission Deadline: May 15, 2019
Contacts: Brandi L. Schottel, National Science Foundation Directorate for Engineering / Division of Chemical, Bioengineering, Environmental, and Transport Systems, telephone: (703) 292-4798, email: bschotte@nsf.gov

James W. Jones, National Science Foundation Directorate for Engineering / Division of Chemical, Bioengineering, Environmental, and Transport Systems, telephone: (703) 292-4458, email: jwjones@nsf.gov

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Grant Program: Cyber-Physical Systems (CPS)
Agency: National Science Foundation NSF 19-553
RFP Website: https://www.nsf.gov/pubs/2019/nsf19553/nsf19553.htm
Brief Description: Cyber-physical systems (CPS) are engineered systems that are built from, and depend upon, the seamless integration of computation and physical components. Advances in CPS will enable capability, adaptability, scalability, resiliency, safety, security, and usability that will expand the horizons of these critical systems. CPS technologies are transforming the way people interact with engineered systems, just as the Internet has transformed the way people interact with information. New, smart CPS drive innovation and competition in a range of application domains including agriculture, aeronautics, building design, civil infrastructure, energy, environmental quality, healthcare and personalized medicine, manufacturing, and transportation. Moreover, the integration of artificial intelligence with CPS creates new research opportunities with major societal implications.

While tremendous progress has been made in advancing CPS technologies, the demand for innovation across application domains is driving the need to accelerate fundamental research to keep pace. At the same time, the CPS program seeks to open new vistas for the research community to think beyond the usual cyber-physical paradigms and structures and propose creative ideas to address the myriad challenges of today's systems as well as those of the future that have not yet been designed or fielded.

The CPS program aims to develop the core research needed to engineer these complex CPS, some of which may also require dependable, high-confidence, or provable behaviors. Core research areas of the program include control, data analytics, autonomy, design, information management, internet of things (IoT), mixed initiatives including human-in- or on-the-loop, networking, privacy, real-time systems, safety, security, and verification. By abstracting from the particulars of specific systems and application domains, the CPS program seeks to reveal cross-cutting, fundamental scientific and engineering principles that underpin the integration of cyber and physical elements across all application domains. The program additionally supports the development of methods, tools, and hardware and software components based upon these cross-cutting principles, along with validation of the principles via prototypes and testbeds. This program also fosters a research community that is committed to advancing education and outreach in CPS and accelerating the transition of CPS research into the real world.
Awards: Standard Grants. Anticipated Funding: $51,500,000.
Letter of Intent: Not required
Proposal Submission Deadline:
April 01, 2019 - April 12, 2019: Small and Medium
September 12, 2019 - September 26, 2019: Frontier
Contacts: David Corman, Program Director, CISE/CNS, telephone: (703) 292-8754, email: dcorman@nsf.gov

- Radhakisan Baheti, Program Director, ENG/ECCS, telephone: (703) 292-8339, email: rbaheti@nsf.gov
- Anindya Banerjee, Program Director CISE /CCF, telephone: (703) 292-7885, email: abanerje@nsf.gov

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National Institutes of Health

Grant Program: Focused Technology Research and Development (R01 - Clinical Trial Not Allowed)
Agency: National Institutes of Health PAR-19-253
Companion Funding Opportunity: PAR-19-254, R21 Exploratory/Developmental Grant
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-19-253.html
Brief Description: Support for Early-Stage Technology Development is Critical to Advance Biomedical Research: Biomedical research is enabled and accelerated by the development of advanced technologies. Technology enables science by providing new ways to answer questions, and more importantly, allowing new types of questions to be asked that could not be anticipated in the absence of the enabling technology. New knowledge drives the imperative for new tools, and those tools open new questions, in a mutually reinforcing positive feedback loop that drives science forward.

A study by NIGMS staff in 2015, which included substantial, detailed input from the biomedical research community in response to a Request for Information (NOT-GM-15-118), concluded that there is a significant unmet need for explicit support of early stage technology development, before nascent tools are ready to be applied to untested biomedical research problems. Early stage technology development can be described in two stages: (I) exploratory proof-of-concept research to determine the best approach(es) for a technology development project, and (II) the subsequent research and development that focuses exclusively on creating and validating a working prototype technology before application to untested biomedical problems is possible.

To address the immediate need for funding programs that support early stage technology development, NIGMS developed programs focusing on the two stages described above. This FOA invites projects in Stage II research and development of a working prototype. A companion FOA, PAR-19-254 "Exploratory Research for Technology Development" supports projects in Stage I evaluation of an untested concept.
Award: Application budgets are not limited but need to reflect the actual needs of the proposed project.
Letter of Intent: Not required
Deadline: Standard dates apply, by 5:00 PM local time of applicant organization. All types of 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: Exploratory Research for Technology Development (R21 - Clinical Trial Not Allowed)
Agency: National Institutes of Health PAR-19-254
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-19-254.html
Brief Description: Support for Early-Stage Technology Development is Critical to Advance Biomedical Research: Biomedical research is enabled and accelerated by the development of advanced technologies. Technology enables science by providing new ways to answer questions, and more importantly, allowing new types of questions to be asked that could not be anticipated in the absence of the enabling technology. New knowledge drives the imperative for new tools, and those tools open new questions, in a mutually reinforcing positive feedback loop that drives science forward.

A study by NIGMS staff in 2015, which included substantial, detailed input from the biomedical research community in response to a Request for Information (NOT-GM-15-118), concluded that there is a significant unmet need for explicit support of early stage technology development, before nascent tools are ready to be applied to untested biomedical research problems. Early stage technology development can be described in two stages: (I) exploratory proof-of-concept research to determine the best

approach(es) for a technology development project, and (II) the subsequent research and development that focuses exclusively on creating and validating a working prototype technology before application to untested biomedical problems is possible.

To address the immediate need for funding programs that support early stage technology development, NIGMS developed programs focusing on the two stages described above. This FOA invites projects in Stage II research and development of a working prototype. A companion FOA, PAR-19-254 "Exploratory Research for Technology Development" supports projects in Stage I evaluation of an untested concept.

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

Letter of Intent: Not required

Deadline: Standard dates apply, by 5:00 PM local time of applicant organization. All types of 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: Tools to Facilitate High-Throughput Microconnectivity Analysis (R01 Clinical Trial Not Allowed)

Agency: National Institutes of Health RFA-MH-20-135

RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-MH-20-135.html

Brief Description: This FOA is designed to support development and validation of novel tools to facilitate the detailed analysis of brain microconnectivity. The primary goal is to provide techniques and resources for understanding and delineating the structure of complex circuits at the level of synaptic connections, alone or in combination with methods for identifying important cellular and circuit features, for example, for classifying or characterizing cellular or synaptic phenotypes. Understanding and delineating complex circuits will provide insight into important cellular interactions that underlie brain function and ultimately complex behaviors. Defining cellular and circuit-level function is dependent on detailed knowledge about the components and structure of the circuit. Such knowledge, in turn, is fundamental to understanding how these features underlie cognition and behavior, which should aid in the development of targeted cell-type and circuit-specific therapeutics to treat brain disorders. This initiative is focused on developing and optimizing tools and resources to characterize the cells and connections within neuronal circuits.

Recent advances in electron microscopy (EM) and alternative techniques for nanoscale imaging have enabled major gains in the rate and quality of morphological and connectivity analysis of neurons and their embedded circuits. Some of these gains have come from ongoing EM efforts outside of NIH, including the HHMI Janelia Farm FlyEM project, the IARPA MICrONS project, and major efforts from the Max Planck Institute in Germany. In addition, newer techniques such as expansion microscopy and array tomography, and emerging methods for barcode-based tagging of synaptic connections, have advanced to the point they may be considered for the purposes of mapping brain connectivity with synapse resolution.

Despite these ongoing projects and the progress they have made, addressing the dramatic scale of mapping circuits at the level of the trillions of synapses in the brain, and the scope of the analytic challenges for interpreting their connectivity, requires concerted technical development towards true high-throughput microconnectomics. The goal of this proposed effort is to produce the necessary tools, including novel or refined techniques and new datasets, to bring microconnectivity analysis into routine use for interrogating healthy and diseased brains, in model organisms and humans. More broadly, the intention is to put within reach the ultimate challenge of understanding the circuit level substrates of brain activity.

Development of novel tools that will delineate anatomical connections between cells and expand our knowledge of circuit architecture and function is an area well poised for additional investment. Several

efforts are currently underway to study large-scale, long-range connections, such as the NIH Human Connectome Project, as well as large scale rodent connectional studies. This FOA solicits applications to develop next-generation, innovative technologies for the analysis of the microconnectome. Traditional EM studies have provided our best understanding to date of synaptic connections but breakthroughs in additional imaging modalities hold promise for alternative approaches that can be implemented to deliver high quality connectional information at high throughput.
Award: Application budgets are not limited but need to reflect the actual needs of the proposed project.
Letter of Intent: Not required
Deadline: September 27, 2019 and September 30, 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. No late applications will be accepted for this Funding Opportunity Announcement.
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 Pioneer Award Program (DP1 Clinical Trial Optional)
Agency: National Institutes of Health RFA-RM-19-005
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-RM-19-005.html
Brief Description: The NIH Director's Pioneer Award supports individual scientists of exceptional creativity who propose highly innovative and broadly impactful research towards the ultimate goal of enhancing human health. In order to support the most innovative and impactful research, the NIH recognizes the need to promote a diverse research workforce. Applications to this award program should reflect the full diversity of potential applicants, applicant institutions, and research topic areas. Applications from talented researchers with diverse backgrounds underrepresented in research, including underrepresented racial and ethnic groups, persons with disabilities, and women are strongly encouraged to apply to this Funding Opportunity Announcement. Outstanding research is conducted at a broad spectrum of institutions. In seeking to support the highest quality research, this Funding Opportunity Announcement encourages applications from the full range of eligible institutions, including those that may serve primarily underrepresented groups, those that may be less research-intensive, and from all domestic geographic locations. Applications are welcome in all research topics that have the potential ultimately to have a substantial impact on human health. In addition to the nominal biomedical sciences, these include, but are not limited to, relevant research topics in the behavioral, social, applied, and formal sciences. The potential for impact on human health may be near term (clinical or translational research) or long term (basic research). The paramount features of the research proposed must be innovation and magnitude of potential impact.

In the Pioneer Award program, emphases are on the qualities of the investigator, the innovativeness, and potential impact of the proposed research. Preliminary data and detailed experimental plans are not requested. To be considered pioneering, the proposed research must reflect substantially different ideas from those being pursued in the investigator's current research program or elsewhere. The Pioneer Award is not intended to expand a current research program into the area of the proposed project. While the research direction may rely on the applicant's prior work and expertise as its foundation, it cannot be an obvious extension or scale-up of a current research enterprise which may be competitive as a new or renewal R01 application. Rather, the proposed project must reflect a fundamental new insight, and which may involve exceptionally innovative approaches and/or radically unconventional hypotheses. Applications for projects that are extensions of ongoing research should not be submitted.
Award: Awards will be for $700,000 in direct costs per year, plus applicable Facilities and Administrative (F&A) costs.
Letter of Intent: Not required

Deadline: September 9, 2019, 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: NIH Director's Transformative Research Awards (R01 Clinical Trial Optional)
Agency: National Institutes of Health RFA-RM-19-007
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-RM-19-007.html
Brief Description: The NIH Director's Transformative Research Award Program supports collaborative investigative teams or individual scientists who propose unusually innovative research projects, which, if successful, would have a major impact in a broad area of relevance to the NIH. To be considered transformative, projects must have the potential to create or overturn fundamental scientific paradigms through novel approaches, transform the way research is conducted through the development of novel tools or technologies, or lead to major improvements in health through the development of highly innovative therapies, diagnostic tools, or preventive strategies. Consistent with this focus, Transformative Research Award applications should reflect ideas substantially different from mainstream concepts.

Several key features of this FOA are designed to emphasize to applicants and peer reviewers that Transformative Research applications are very different from conventional, investigator-initiated research applications.The Transformative Research application focuses on the importance of the problem, the novelty of the hypothesis and/or the proposed methodology, and the magnitude of the potential impact rather than on preliminary data or experimental details. Reviewers will be instructed to emphasize the significance and innovation of the application in their evaluations. Applicants and reviewers should keep the goal of the Transformative Research Award in mind throughout the process– to solicit and fund unusually innovative and potentially transformative research.

In order to support the most innovative and impactful research, the NIH recognizes the need to promote a diverse research workforce. Applications to this award program should reflect the full diversity of potential applicants, applicant institutions, and research topic areas. Applications from talented researchers with diverse backgrounds underrepresented in research, including underrepresented racial and ethnic groups, persons with disabilities, and women are strongly encouraged to apply to this Funding Opportunity Announcement. Outstanding research is conducted at a broad spectrum of institutions. In seeking to support the highest quality research, this Funding Opportunity Announcement encourages applications from the full range of eligible institutions, including those that may serve primarily underrepresented groups, those that may be less research-intensive, and from all domestic geographic locations. Applications are welcome in all research topics that have the potential ultimately to have a substantial impact on human health. In addition to the nominal biomedical sciences, these include, but are not limited to, relevant research topics in the behavioral, social, applied, and formal sciences. The potential for impact on human health may be near term (clinical or translational research) or long term (basic research). The paramount features of the research proposed must be innovation and magnitude of potential impact.
Award: Application budgets are not limited but need to reflect the actual needs of the proposed project.
Letter of Intent: Not required
Deadline: September 20, 2019, 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: Institutional Translational Research Training Program (T32)
Agency: National Institutes of Health PAR-19-228
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-19-228.html
Brief Description: The purpose of the Institutional Translational Research Training Program is to equip trainees with the knowledge and skills needed to advance basic research toward clinical application. These programs will support, students and/or postdocs conducting basic, disease-relevant research in an environment that includes 1) basic scientists and clinicians who are actively engaged in collaborative research projects, 2) neuroscience researchers with expertise in translational processes who are conducting research designed to move basic discoveries toward clinical application and 3) relationships with industry and government regulatory agencies. Programs will have a cohesive educational approach to translational training in areas relevant to the NINDS and NIA missions, and in which students and postdocs learn the processes involved in translational research in the context of their individual projects. Programs supported by this FOA must include activities that ensure a thorough understanding of experimental design, strong statistical and analytical skills, and skills for communicating science with a wide variety of audiences. These programs are intended to be 2 years in duration and support training of one or more of the following groups: advanced predoctoral students, postdoctoral fellows and fellowship-stage clinicians. Upon completion of the program, trainees will be prepared to address basic research problems with an understanding of the requirements for translating discoveries into viable therapies.

This Funding Opportunity Announcement (FOA) does not allow appointed Trainees to lead an independent clinical trial but does allow them to obtain research experience in a clinical trial led by a mentor or co-mentor.
Award: 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 29, 2019; May 27, 2020; May 26, 2021, 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: Undergraduate Research Training Initiative for Student Enhancement (U-RISE) (T34)
Agency: National Institutes of Health PAR-19-218
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-19-218.html
Brief Description: The **Overarching Objective** of this Undergraduate Research Training Initiative for Student Enhancement program is to develop a diverse pool of undergraduates who complete their baccalaureate degree and transition into and complete biomedical, research-focused higher degree programs (e.g., Ph.D. or M.D./Ph.D.). The long-term goal is to develop a diverse pool of well-trained biomedical scientists, who have the following technical, operational, and professional skills:

- A broad understanding across biomedical disciplines and the skills to independently acquire the knowledge needed to advance their chosen fields;
- The ability to think critically and independently, and to identify important biomedical research questions and approaches that push forward the boundaries of their areas of study;
- A strong foundation in scientific reasoning, rigorous research design, experimental methods, quantitative and computational approaches, and data analysis and interpretation;
- A commitment to approaching and conducting biomedical research responsibly, ethically, and with integrity;
- Experience initiating, conducting, interpreting, and presenting rigorous and reproducible biomedical research with increasing self-direction;

- The ability to work effectively in teams with colleagues from a variety of cultural and scientific backgrounds, and to promote inclusive and supportive scientific research environments;
- The skills to teach and communicate scientific research methodologies and findings to a wide variety of audiences (e.g., discipline-specific, across disciplines, and the public); and
- The knowledge, professional skills and experiences required to identify and transition into careers in the biomedical research workforce (i.e., the breadth of careers that sustain biomedical research in areas that are relevant to the NIH mission).

Diversity at all levels—from the kinds of science to the regions in which it is conducted to the backgrounds of the people conducting it— contributes to excellence in research training environments and strengthens the research enterprise. This FOA is intended to support outstanding research training programs that will enhance diversity at all levels. As part of a larger initiative to enhance diversity, the U-RISE program will support trainees who are earning a baccalaureate degree at research-active institutions and who intend to complete a biomedical research higher degree program (e.g., Ph.D., or M.D./Ph.D.).
Award: Application budgets are not limited but need to reflect the actual needs of the proposed project.
Letter of Intent: Not required.
Deadline: May 21, 2019; May 21, 2020; May 21, 2021, 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: NINDS Institutional Research Training Program (T32)
Agency: National Institutes of Health PAR-19-211
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-19-211.html
Brief Description: The objective of the NINDS Institutional Research Training Program is to support outstanding training with the breadth and depth to prepare advanced predoctoral and postdoctoral trainees to become successful scientists in a rapidly evolving research enterprise that is increasingly complex and multidisciplinary. Neuroscience research requires investigators who can draw on knowledge and approaches from multiple disciplines and levels of analysis, and apply this broad knowledge in novel ways to yield new discoveries about the nervous system. Moreover, impactful neuroscience research requires investigators with strong foundational skills in experimental design, statistical methodology and quantitative reasoning.
Summary of key points. It is expected that the programs supported under this funding opportunity announcement will provide:

- training and activities with a defined goal and within a thematic area that will add depth and breadth to the trainees' scientific development
- an emphasis on sound experimental design, the proper use of statistical methodology and a theoretical understanding by each trainee of the quantitative limits and capabilities of his or her experimental system (quantitative literacy)
- effective oversight of trainee mentoring and progression to the next career stage
- an environment that promotes the success of individuals with a wide variety of backgrounds and perspectives
- direct access to an appropriate diversity of role models, both within the institution and through activities such as invited seminars.
- activities for trainees to develop oral and written skills for communicating their science to a wide variety of audiences
- access to structured career development advising and opportunities to learn about career options in various sectors

Moreover, NINDS T32 support should only be provided to trainees in labs of mentors who proactively ensure the opportunity to lead and be first author on a significant project.
The proposed institutional research training program may complement other ongoing research training and career development programs at the applicant institution, but the proposed program must be clearly distinct from related programs currently receiving Federal support.
Award: Application budgets are not limited, but need to reflect the actual needs of the proposed project up to 5 years.
Letter of Intent: 30 days prior to the application due date
Deadline: May 29, 2019; May 27, 2020; May 26, 2021, 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: Team-Based Design in Biomedical Engineering Education (R25 Clinical Trial Not Allowed)
Agency: National Institutes of Health PAR-19-215
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-19-215.html
Brief Description: The NIH Research Education Program (R25) supports research educational activities that complement other formal training programs in the mission areas of the NIH Institutes and Centers. The over-arching goals of the NIH R25 program are to: (1) complement and/or enhance the training of a workforce to meet the nation's biomedical, behavioral and clinical research needs; (2) encourage individuals from diverse backgrounds, including those from groups underrepresented in the biomedical and behavioral sciences, to pursue further studies or careers in research; (3) help recruit individuals with specific specialty or disciplinary backgrounds to research careers in biomedical, behavioral and clinical sciences; and (4) foster a better understanding of biomedical, behavioral and clinical research and its implications.
The over-arching goal of this NIBIB R25 program is to support educational activities that complement and/or enhance the training of a workforce to meet the nation's biomedical, behavioral and clinical research needs. To accomplish the stated over-arching goal, this FOA will support creative educational activities with a primary focus on:

- ***Courses for Skills Development:*** For example, courses and programs that, using a team-based design approach, incorporate state-of-the-art best practices (such as multidisciplinary/interdisciplinary education, the regulatory pathway and other issues related to the commercialization of medical devices, and the immersion of engineering students in a clinical environment) and further enhance these with novel creative and/or ground-breaking approaches and activities which will be implemented and evaluated with the goal of disseminating the outcomes for the benefit of the larger biomedical engineering education community.

Research education programs may complement ongoing research training and education occurring at the applicant institution, but the proposed educational experiences must be distinct from those training and education programs currently receiving Federal support. R25 programs may augment institutional research training programs (e.g., T32, T90) but cannot be used to replace or circumvent Ruth L. Kirschstein National Research Service Award (NRSA) programs.
Award: Direct costs of up to $20,000 per year may be requested. Programs that include a clinical immersion program outside the academic year and lasting 6 to 10 weeks may request an additional $20,000 to cover participant costs (see Participant Costs section below), yielding a total of $40,000 in direct costs.
Letter of Intent: April 29, 2019, April 27, 2020, April 26,2021

Deadline: May 31, 2019; May 28, 2020; May 28, 2021, 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: Summer Research Education Experience Program (R25 Clinical Trial Not Allowed)
Agency: National Institutes of Health PAR-19-197
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-19-197.html
Brief Description: The over-arching goal of this R25 program is to support educational activities that complement and/or enhance the training of a workforce to meet the nation's biomedical, behavioral and clinical research needs. To accomplish the stated over-arching goal, this FOA will support creative educational activities with a primary focus on:

- ***Research Experiences:*** For example, for high school and undergraduate students: to provide hands-on exposure to research, to reinforce their intent to graduate with a science degree and/or continue to participate in research, and/or to prepare them for college or graduate school admissions and/or careers in research; for high school science teachers: to enhance their science teaching.
- Support for science teachers will be limited to those programs with a clear plan for how teachers will utilize their summer experience in their teaching during the school year, such as enhancing the STEM curriculum or increasing number of STEM courses taught.
- Applications that demonstrate the potential to impact students and teachers from diverse backgrounds are particularly encouraged.
- In addition to hands-on research experiences, programs are expected to include complementary activities that support the participants' scientific development, such as scientific writing and presentation skills and training in rigor and reproducibility.
- The proposed program needs to fit with the mission of the participating IC that the application is being submitted to and should not have a general STEM focus. ICs will not support projects, regardless of the results of merit review, if they do not fulfill current programmatic priorities. Therefore, we strongly recommend that potential applicants consult Scientific/Research Staff at the intended IC listed in Section VII before preparing an application. For the specific ICs, the following represents mission focus areas (more information can be found on the Table of IC-Specific Information and Contacts page):
- **NIAAA** broadly encourages research that focuses on the following 5 goals: (1) identifying the mechanism of; (2) improve diagnosis and tracking of; (3) develop and improve strategies to prevent; and (4) develop and improve treatments for alcohol misuse, alcohol use disorder and alcohol-related consequences; and (5) enhance the public health impact of NIAAA-supported research.
- **NIBIB** will support applications focusing on summer research experiences broadly in the areas of biomedical imaging, bioengineering, or health informatics. NIBIB will support programs only for high school science teachers and community college faculty from STEM-related departments, and not for students.
- **NIDA**. Four main goals outline the broad scope of NIDA's strategic objectives: (1) identify the biological, environmental, behavioral, and social causes and consequences of drug use and addiction across the lifespan; (2) develop new and improved strategies to prevent drug use and its consequences; (3) develop new and improved treatments to help people with substance use disorders achieve and maintain a meaningful and sustained recovery; (4) increase the public health impact of NIDA research and programs.

- **NIEHS** will support applications focusing on summer research experiences in the environmental health sciences. Applications to NIEHS should provide research experiences that address or seek to understand how exposures to toxic environmental insults impact health, alter biologic processes, are linked to disease initiation, progression or morbidity, or activities that lead to the development of prevention and intervention strategies to reduce environmentally induced diseases.
- **NINDS** will support applications focusing on summer research experiences that address or seek fundamental knowledge about the brain and nervous system by supporting and conducting research on the healthy and diseased brain, spinal cord, and peripheral nerves and to use that knowledge to reduce the burden of neurological disease.

Research education programs may complement ongoing research training and education occurring at the applicant institution, but the proposed educational experiences must be distinct from those training and education programs currently receiving Federal support. R25 programs may augment institutional research training programs (e.g., T32, T90) but cannot be used to replace or circumvent Ruth L. Kirschstein National Research Service Award (NRSA) programs.

Award: Although the size of award may vary with the scope of the Summer Research Program proposed, budgets cannot exceed $100,000 direct costs per year.

Letter of Intent: 30 days prior to application due date

Deadline: April 23, 2019, March 17, 2020, March 17 2021, 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: Clinical and Biological Measures of TBI-related dementia including Chronic Traumatic Encephalopathy (CTE) (R01 Clinical Trial Not Allowed)

Agency: National Institutes of Health RFA-NS-19-026

RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-NS-19-026.html

Brief Description: Applications to this FOA will be expected to discover and develop biological and clinical measures of TBI-related progressive neurodegeneration and cognitive decline associated with increased risk for dementia including traumatic encephalopathy syndrome (TES) (clinicopathologic diagnostic counterpart to the neuropathological diagnosis of Chronic Traumatic Encephalopathy (CTE)). Results are expected to inform dementia risk prognoses for patients with history of TBI, using objective clinical and pathophysiologically relevant biological measures. Addressing this goal will require (1) enhanced, validated methods for assessing individual's lifetime exposure to TBI (across varying levels of frequency, severity, and time since injury), (2) accounting for chronic but non-progressive neurocognitive impairment following TBI, and (3) access to an existing longitudinal cohort with a history of TBI exposure and / or dementia cohort with measures of TBI-exposure history. Applicants to this FOA are expected to assess hypothesis-driven objective biological measures and clinical assessments of progressive neurodegeneration, neurocognitive impairment, and neuropsychiatric dysfunction that, in persons with a history of exposure to TBI, may catalyze pathological pathways associated with AD / ADRD and TES. Biological measures may include but are not limited to neuroimaging (such as CT, MRI and PET imaging), vascular reactivity, assessments of sleep, oculomotor and vestibular function, blood-based biomarkers, proteomics, transcriptomics, metabolomics, biofluid markers from samples of CSF and saliva, and known genetic markers of dementia risk.

To address the heterogeneity of post-TBI clinicopathology and extend the generalizability of results, applications to this FOA are expected to recruit both male and female participants with history of TBI across multiple injury severities. These individuals may include former athletes from a variety of

sports but should not be limited to the recruitment of or enrich recruitment primarily with former American-rules Football players. To ensure maximal value of this project, a critical feature of this FOA includes the broad sharing of clinical, neuroimaging, physiological, and biospecimen data through the Federal Interagency TBI Research (FITBIR) database.
Award: Application budgets are not limited, but should rarely exceed $1,000,000 in direct costs per year, and need to reflect the actual needs of the proposed project.
Letter of Intent: March 15, 2019
Deadline: April 15, 2019, by 5:00 PM local time of applicant organization.
No late applications will be accepted for this Funding Opportunity Announcement.
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 Transportation

Grant Program: Pipeline Safety Research Competitive Academic Agreement Program (CAAP)
Agency: Department of Transportation 693JK319NF0005
Website: https://www.fedconnect.net/FedConnect/default.htm
Brief Description: The U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) hereby requests applications from non-profit institutions of higher education for CAAP funding to research innovative solutions to pipeline corrosion and other known pipeline integrity challenges.

Research Area #1: Anomaly Detection and Characterization Background: Advancements in nondestructive inspection methods have continued to increase in sophistication and capabilities, allowing for the detection of more pipeline anomalies with an array of geometries, depths, severities, and types. However, current technologies are limited in identifying interactive anomalies.

Research Area #2: Develop and Validate ILI Technologies for Circumferential Anomalies and Bending Stresses Collectively, PHMSA and industry have invested heavily in improvements to In Line Inspection (ILI) technology towards a variety of integrity threats. However, some preliminary research was funded on circumferential cracking detection and characterization cracking in dents (particularly on the pipe's bottom side) creating a driver for additional research and development. This project should develop and validate advanced ILI technology in compliance with B31G and Remaining Strength of Corroded Pipe (RSTRENG) to detect circumferential cracking and characterize its severity in dents (particularly bottom side). The project should also quantify bending stresses, including those contributions from geotechnical and environmental conditions.

Research Area #3: Unmanned Aerial Systems (UAS) to Enhance Pipeline Safety Background: Unmanned Aerial Systems (UAS), using both line of sight and beyond line of sight unmanned aerial vehicles, potentially provide the safety regulator the ability to gain visual access to areas that would otherwise be inaccessible due to rough terrain, inclement weather, or other adverse conditions. Furthermore, UAS-collected information may provide pipeline inspectors the ability to determine regulatory compliance, and enhance incident response following pipeline leaks or natural disasters.
Awards: Subject to the availability of funds, PHMSA anticipates awarding up to $2,000,000 and the amount of Federal funding may not exceed $250,000 per award.
Proposal Deadline: May 03, 2019
Contact Information: Agreement Administrator Ben Patterson Ben.Patterson@dot.gov

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Grant Program: FY19 High Priority Program – Innovative Technology Deployment (HP-ITD)
Agency: Department of Transportation DOT/Federal Motor Carrier Safety Administration FM-MHP-19-002
Website: https://www.grantsolutions.gov/gs/preaward/previewPublicAnnouncement.do?id=63372
Brief Description: As the lead government agency responsible for the regulation and safety oversight of commercial motor vehicles (CMV), FMCSA awards HP-ITD funds to support innovative and impactful projects that advance its mission to reduce crashes, injuries, and fatalities involving large trucks and buses. Funding is available for the support of innovative projects that improve safety and compliance with CMV regulations, are national in scope, demonstrate new technologies, and reduce the number of CMV crashes.These activities are supported in alignment with the U.S. Department of Transportations strategic goals of: •SAFETY:Reduce transportation-related fatalities and serious injuries across the transportation system.•INFRASTRUCTURE:Invest in infrastructure to ensure safety, mobility and accessibility and to stimulate economic growth, productivity and competitiveness for American workers and businesses.•INNOVATION:Lead in the development and deployment of innovative practices and technologies that improve the safety and performance of the Nations transportation system.•ACCOUNTABILITY:Serve the Nation with reduced regulatory burden and greater efficiency, effectiveness and accountability.
Awards: Any award for funds to develop or revise an ITD PP/TLD shall not exceed $150,000 of Federal funding.
Proposal Deadline: April 26, 2019
Contact Information: Administrative and Budgetary Requirements: 202-366-4186 Rikita Jarrett (Grants Management Office) email: rikita.jarrett@dot.gov
Program Requirements or Technical Assistance: Bettina Conroy 518-810-2985 email: bettina.conroy@dot.gov

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Grant Program: Dwight David Eisenhower Transportation Fellowship Program (DDETFP) Graduate Fellowship
Agency: Department of Transportation 693JJ318NF5227-2019
Website: https://fhwaapps.fhwa.dot.gov/tficsp/signin.aspx.
Brief Description: The DDETFP Graduate Fellowship provides funding for students to pursue master's or doctoral degrees in transportation-related disciplines. The program objectives are: 1) to attract the Nation's brightest minds to the field of transportation; 2) to enhance the careers of transportation professionals by encouraging them to seek advanced degrees; and 3) to retain top talent in the transportation industry of the United States. The DDETFP is intended to enhance the breadth and scope of knowledge of the entire transportation community in the United States. The DDETFP Graduate Fellowship encompasses all modes of transportation.
Awards: Actual stipend level may vary based upon IHE formal policy and available funding.
Proposal Deadline: April 8, 2019
Contact Information: Contact the FHWA Universities and Grants Programs (U&GP) at 703-235-0538 or transportationedu@dot.gov.

Department of Defense/US Army/DARPA/ONR/AFOSR

Grant Program: Military Medical Photonics Program
Agency: Department of Defense Air Force Office of Scientific Research FA9550-19-S-0004
Website: https://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842050/afosr-funding-opportunities/

Brief Description: The Air Force Office of Scientific Research (AFOSR) seeks unclassified proposals for broadbased research and development aimed at using lasers and other light source technology to develop applications in medicine, photobiology, surgery, and closely related materials sciences, with applications to combat casualty care and other military medical problems. This announcement is primarily directed toward university-based medical institutions; however, all qualified and responsible prime applicants located in the United States are eligible to submit proposals. The highest priority will be extended to proposals up to three (3) years duration to be conducted by teams of physicians, biomedical scientists, physical scientists, and engineers. The efforts proposed may be basic or applied research, and must have direct relevance to combat casualty care or other military medical priorities. Applicants must demonstrate substantial experience working to further military medical priorities, including transitioning research into clinical practice and working products. Substantial experience collaborating with military medical centers is also a requirement to establish relevance to combat casualty care or other military medical priorities, and facilitate the transition of research results to meet military needs.
Awards: Various
Proposal Deadline: This BAA will remain open until superseded. However any currently available funds must be obligated by 30 September, 2019, and so proposals for those funds must be received before 30 June 2019. Further, applicants are encouraged to apply as early as practicable, since proposals may be reviewed and selected as received, and currently available funds may be used up prior to that date.
Contact Information: CDMRP Help Desk Phone: 301-682-5507 Email: help@eBRAP.org

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Grant Program: Research Interests of the Air Force Office of Scientific Research
Agency: Department of Defense Air Force Office of Scientific Research FA9550-19-S-0003
Website: http://www.wpafb.af.mil/afrl/afosr
Brief Description: Our focus is on research areas that offer significant and comprehensive benefits to our national warfighting and peacekeeping capabilities. These areas are organized and managed in two scientific branches: ♣ Engineering and Information Sciences(RTA) ♣ Physical and Biological Sciences (RTB)

1. ENGINEERING AND COMPLEX SYSTEMS(RTA1) Research proposals are sought in all aspects of the chemistry and physics of energetic materials with particular emphasis on chemistry-microstructure relationships and the fundamental dynamics of heterogeneous materials with complex structural properties. The problems of interest span multiple time and length scales, and strongly couple a broad range of physical phenomena, presenting fundamental challenges in experimental characterization, data assimilation, and model development. Efforts that leverage recent breakthroughs in other scientific disciplines to foster rapid research advancements are also encouraged.
2. INFORMATION AND NETWORKS (RTA2) The Information and Networks Team within the Engineering and Information Science Branch is organized to support many U.S. Air Force priority areas including autonomy, space situational awareness, and cyber security. The research programs within this team lead the discovery and development of foundational issues in mathematical, information and network oriented sciences. They are organized along three themes: Information, Decision Making, and Networks. The information theme addresses the critical challenges faced by the U.S. Air Force which lie at the intersection of the ability to collect, mathematically analyze, and disseminate large quantities of information in a time critical fashion with assurances of operation and security. Closely aligned with the mathematical analysis of information is the need for autonomous decision making. Research in this theme focuses on the discovery of mathematical laws, foundational scientific principles, and new, reliable and robust algorithms, which underlie intelligent, mixed human-machine decision-making to achieve accurate real-time projection of expertise and knowledge into and out of the battle space. Information analysis and decision

making rarely occur in the context of a single source. The networks theme addresses critical issues involving how the organization and interaction among large collections of information providers and consumers contributes to an understanding of the dynamics of complex information systems.

3. PHYSICAL SCIENCES(RTB1) The Physical Sciences Team leads the discovery and transition of foundational physical science to enable air, space, and cyber power. Research in physics generates the fundamental knowledge needed to advance U.S. Air Force operations, from the perspective of sensing, characterizing, and managing the operational environment as well as developing advanced devices that exploit novel physical principles to bring new capabilities to the warfighter. Research directions are categorized in the following four broad areas, with the focus on advancing our basic understanding of the physical world: (1) Quantum matter and devices; (2) plasma and high-energy-density physics; (3) optics, photonics, and electromagnetics; and (4) aerospace materials.
4. CHEMISTRYAND BIOLOGICAL SCIENCES (RTB2) The Chemistry and Biological Sciences Team is responsible for research activities in chemistry and biological sciences. A wide range of fundamental chemistry, biology, mechanics, and biophysics research is supported to provide the Air Force with novel options to increase performance and operational flexibility. Research carried out within this team will help usher in revolutionary new technologies that will fundamentally change the way future Air Force weapon systems are designed and implemented. This research effort will endeavor to identify chemical and biological mechanisms, structures, and systems with the potential to inspire future technology in all Air Force systems. Understanding these mechanisms, structures and systems at a fundamental level will accelerate advances in energy technology, control of complex systems, sensors and sensory systems, and materials engineering.

Awards: Approximately $300 million is anticipated to be available for support of actions awarded under this announcement, subject to availability of funds. Research proposals funded between $200,000 and $400,000 per year are encouraged. Most of our awards are three (3) years in duration. Awards may be proposed for not more than five (5) years.
Proposal Deadline: Until the BAA is suspended.
Contact Information: CALVIN D. SCOTT, AFOSR/RBKC Senior Procurement Analyst Email: afosr.baa@us.af.mil

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Grant Program: DoD Autism Idea Development Award
Agency: Department of Defense Dept. of the Army – USAMRAA W81XWH-19-ARP-IDA
Co-RFP: W81XWH-19-ARP-CTRA DoD Autism Clinical Translational Research Award
Website: https://cdmrp.army.mil/funding/arp
Brief Description: The ARP Idea Development Award supports the development of innovative, high-risk/highreward research that could lead to critical discoveries or major advancements that will accelerate progress in improving outcomes for individuals with ASD. This award mechanism is designed to support innovative ideas with the potential to yield impactful data and new avenues of investigation.

The FY19 ARP Idea Development Award seeks applications from all areas of basic and preclinical research and strongly encourages applications that address the critical needs of the ASD community in one or more of the following areas: • Assessment of novel therapeutics using valid preclinical models • Environmental risk factors • Mechanisms of heterogeneous clinical expression of ASD • Mechanisms underlying conditions co-occurring with ASD (e.g., sleep disturbances, gastrointestinal issues, inflammation, aggression, depression, anxiety, attention deficit, seizures, eating disorders, pharmacologic side effects, gender dysphoria) • Factors promoting success in key transitions to independence for individuals living with ASD • Factors impacting quality of life during geographic relocation, such as military permanent change of station • Development of healthcare provider-focused training or tools to improve healthcare delivery for individuals with ASD across the life span and the continuum of care (i.e.,

primary care, urgent/emergent care, and disaster relief) • Improve diagnosis and access to services across the life span
Awards: The anticipated direct costs budgeted for the entire period of performance for an FY19 ARP Idea Development Award will not exceed $500,000.
Proposal Deadline: Pre-Application Submission Deadline: 5:00 p.m. Eastern time (ET), May 1, 2019 • Invitation to Submit an Application: June 10, 2019 • Application Submission Deadline: 11:59 p.m. ET, August 8, 2019
Contact Information: CDMRP Help Desk Phone: 301-682-5507 Email: help@eBRAP.org

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Grant Program: Real Time Machine Learning (RTML)
Agency: Department of Defense DARPA - Microsystems Technology Office HR001119S0037
Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=a32e37cfad63edcba7cfd5d997422d93&tab=core&_cview=1
Brief Description: A grand challenge in computing is the creation of a processor that can proactively interpret and learn from data in real-time, solve unfamiliar problems using what it has learned, and operate with the energy efficiency of the human brain. The National Science Foundation (NSF) and the Defense Advanced Research Projects Agency (DARPA) are teaming up through the Real-Time Machine Learning (RTML) program to develop the foundational breakthroughs in hardware and machine learning needed to build systems that respond and adapt in real time.

The Microsystems Technology Office at DARPA is soliciting innovative research proposals in the area of real time machine learning hardware. The Real Time Machine Learning program will develop machine-learning hardware generators and explore circuit architectures that can proactively interpret and learn from data, solve unfamiliar problems using what it has learned, and operate at power levels on par or better than the human brain. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems.
Awards: Multiple awards; Available Funding $10,000,000
Proposal Deadline: Proposers Day: April 2, 2019 o FAQ Submission Deadline: 1:00 PM on April 15, 2019 o Proposal Due Date: 1:00 PM on May 1, 2019
Contact Information: Andreas Olofsson, Program Manager BAA Coordinator: HR001119S0037@darpa.mil

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Grant Program: Science of Artificial Intelligence and Learning for Open-world Novelty (SAIL-ON)
Agency: Department of Defense DARPA - Defense Sciences Office HR001119S0038

Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=42d0a9427a1f878b0ce99fcaabb6c645&tab=core&_cview=1
Brief Description: The Defense Sciences Office (DSO) of the Defense Advanced Research Projects Agency (DARPA) is soliciting innovative research proposals for new AI methodologies and techniques that support (1) the principled characterization and generation of novelty in open worlds and (2) the creation of AI systems capable of operating appropriately and effectively in open worlds. 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.
Awards: Multiple Awards

Proposal Deadline: Proposers Day: March 5, 2019. See Section VIII.C. o Abstract Due Date: April 2, 2019, 4:00 p.m. o FAQ Submission Deadline: April 30, 2019, 4:00 p.m. See Section VIII.A. o Full Proposal Due Date: May 10, 2019, 4:00 p.m.
Contact Information: Ted Senator, Program Manager, DARPA/DSO o BAA Email: SAILON@darpa.mil

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Grant Program: Air Force Fiscal Year 2020 Young Investigator Research Program (YIP)
Agency: Department of Defense Air Force Office of Scientific Research FOA-AFRL-AFOSR-2019-0003
Website: https://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842100/afosr-funding-opportunities-special-programs/#anchor2
Brief Description: The Air Force YIP supports scientists and engineers who have received Ph.D. or equivalent degrees within the last seven years and show exceptional ability and promise for conducting basic research. The objectives of this program are:
1.to foster creative basic research in science and engineering;
2. enhance early career development of outstanding young investigators;
3. and increase opportunities for the young investigator to recognize the Air Force mission and related challenges in science and engineering.
Eligibility: 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. Research proposals must address Research Interests of the Air Force Office of Scientific Research, FA9550-18-S-0003, found on www.grants.gov.
Awards: 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.
Proposal Deadline: May 31, 2019
Contact Information: Ellen M. Robinson (703) 588-8527 DSN 425-8527 Email: afosryip@us.af.mil

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Grant Program: Multidisciplinary Research Program of the University Research Initiative: FY20 ARMY and FY20 AFOSR
Agency: Department of Defense Dept of the Army -- Materiel Command W911NF-19-S-0008
Air Force Office of Scientific Research FOA-AFRL-AFOSR-2019-0002
Website: https://www.arl.army.mil/www/default.cfm?page=8 for US Army Funding
https://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842111/afosr-funding-opportunities-university-research-initiative-uri/#anchor2 for AFOSR
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. 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 specific fields to ensure that it has early cognizance of new scientific knowledge. DoD's

basic research program invests broadly in many fields to ensure that it has early cognizance of new scientific knowledge.
Awards: Various; Available funding: $180,000,000. It is anticipated that awards under this topic will be no more than an average of $1.5M per year for 5 years, supporting no more than 8 funded faculty researchers. Exceptions warranted by specific proposal approaches should be discussed with the topic chief during the white paper phase of the solicitation.
Proposal Deadline: White Paper Inquiries and Questions 24 May 2019 (Friday) White Papers must be received no later than 03 June 2019 (Monday) at 11:59 PM Eastern Time Application Inquiries and Questions 30 August 2019 (Friday) Applications must be received no later than 13 September 2019 (Friday) at 11:59 PM Eastern Time
Contact Information: Kia S McCormick Procurement Analyst Phone 919-549-4281
Dr. Michael R. Berman, AFOSR, 703-696-7781, michael.berman@us.af.mil Dr. Aura Gimm, AFOSR, 703-696-9542, jung-hwa.gimm.1@us.af.mil

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Grant Program: Department of Defense Multidisciplinary Research Program of the University Research Initiative (ONR)
Agency: Department of Defense Office of Naval Research N00014-19-S-F005
Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=90876d7b71e42be9ba9a2f475bbc782d&tab=core&_cview=1
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).
Awards: Various
Proposal Deadline: White Paper Inquiries and Questions 24 May 2019 (Friday) White Papers must be received no later than 03 June 2019 (Monday) at 11:59 PM Eastern Time Application Inquiries and Questions 30 August 2019 (Friday) Applications must be received no later than 13 September 2019 (Friday) at 11:59 PM Eastern Time
Contact Information: David Broadwell Grant Management Specialist Phone 703-588-2866

Grant Program: Department of Defense Advanced Computing Initiative (ACI) Fiscal Year 2019
Agency: Department of Defense Dept of the Army -- Materiel Command W911NF-19-S-0007
Website: https://www.arl.army.mil/www/default.cfm?page=8
Brief Description: The ACI is a DoD-sponsored computing systems research program initiated by the NSA and the Combat Capabilities Development Command/Army Research Laboratory/ARO. It focuses on areas of strategic importance to U.S. national security policy. It seeks to increase the Department's intellectual capital in computing systems and improve its ability to address future challenges and build bridges between the Department and the computing research community. ACI brings together universities, research institutions, companies, and individual scholars and supports multidisciplinary and

cross-institutional projects addressing specific topic areas determined by the Department of Defense. The ACI aims to promote research in specific areas of computing systems and to promote a candid and constructive relationship between DoD and the computing research community.
Awards: Various
Proposal Deadline: May 31, 2019
Contact Information: Kevin J Bassler kevin.j.bassler.civ@mail.mil

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Grant Program: Bioelectronics for Tissue Regeneration (BETR)
Agency: Department of Defense DARPA - Biological Technologies Office HR001119S0027
Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=90876d7b71e42be9ba9a2f475bbc782d&tab=core&_cview=1
Brief Description: DARPA believes that recent advances in biosensors, actuators, and artificial intelligence could be extended and integrated to dramatically improve tissue regeneration. To achieve this, the new Bioelectronics for Tissue Regeneration (BETR) program asks researchers to develop bioelectronics that closely track the progress of the wound and then stimulate healing processes in real time to optimize tissue repair and regeneration.
Awards: Various
Proposal Deadline: April 18, 2019
Contact Information: BAA Coordinator BETR@darpa.mil

Grant Program: Army Research Laboratory Broad Agency Announcement for Basic and Applied Scientific Research
Agency: Department of Defense Dept of the Army -- Materiel Command W911NF-17-S-0003
Also Army Research Office Broad Agency Announcement for Basic and Applied Scientific Research W911NF-17-S-0002
Website:
https://www.fbo.gov/index?s=opportunity&mode=form&tab=core&id=1ff4626a4e06143fe31e4b837e890c6f
Brief Description: This Broad Agency Announcement (BAA) sets forth research areas of interest of the Army Research Laboratory (ARL). This BAA is issued under FAR 6.102(d)(2), which provides for the competitive selection of basic and applied research proposals, and 10 U.S.C. 2358, 10 U.S.C. 2371, and 10 U.S.C. 2371b, which provide the authorities for issuing awards under this announcement for basic and applied research. The definitions of basic and applied research may be found at 32 CFR 22.105. Proposals submitted in response to this BAA and selected for award are considered to be the result of full and open competition and in full compliance with the provision of Public Law 98-369, "The Competition in Contracting Act of 1984" and subsequent amendments. Eligible applicants under this BAA include institutions of higher education, nonprofit organizations, state and local governments, foreign organizations, foreign public entities, and for-profit organizations (i. large and small businesses) for scientific research in mechanical sciences, mathematical sciences, electronics, computing science, physics, chemistry, life sciences, materials science, network science, and environmental sciences.
Awards: Various.
Proposal Deadline: This BAA is a continuously open announcement valid throughout the period from the date of issuance through March 31, 2022, unless announced otherwise.
Contact Information: ANDREW L. FISKE PROCUREMENT ANALYST Phone: (919) 549-4338

Grant Program: 2019 ERDC Broad Agency Announcement
Agency: Department of Defense; Engineer Research and Development Center W912HZ-19-BAA-01
Website: https://www.erdc.usace.army.mil/
Brief Description: The U.S. Army Engineer Research and Development Center (ERDC) has issued a Broad Agency Announcement (BAA) for various research and development topic areas. The ERDC consists of the Coastal and Hydraulics Lab (CHL), the Geotechnical and Structures Lab (GSL), the USACE Reachback Operations Center (UROC), the Environmental Lab (EL) and the Information Technology Lab (ITL) in Vicksburg, Mississippi; the Cold Regions Research and Engineering Lab (CRREL) in Hanover, New Hampshire; the Construction Engineering Research Lab (CERL) in Champaign, Illinois; and the Geospatial Research Laboratory (GRL) in Alexandria, Virginia. The ERDC is responsible for conducting research in the broad fields of hydraulics, dredging, coastal engineering, instrumentation, oceanography, remote sensing, geotechnical engineering, earthquake engineering, soil effects, vehicle mobility, self-contained munitions, military engineering, geophysics, pavements, protective structures, aquatic plants, water quality, dredged material, treatment of hazardous waste, wetlands, physical/mechanical/chemical properties of snow and other frozen precipitation, infrastructure and environmental issues for installations, computer science, telecommunications management, energy, facilities maintenance, materials and structures, engineering processes, environmental processes, land and heritage conservation, and ecological processes.
Awards: Various
Proposal Deadline: All proposals initially submitted in response to this BAA will be considered preproposals. Should ERDC evaluation indicate a need for a full proposal, one will be requested from the offeror. Until January 31, 2020
Contact Information: For questions regarding proposals to CHL, GSL, EL, ITL, CRREL, and UROC submit your question to the following e-mail address: ERDC-BAA@usace.army.mil . You may also contact Reginald Bryant at 601-634-7166.

Department of Education

Grant Program: Fulbright-Hays Group Projects Abroad (GPA) Short-Term Project
Agency: Department of Education CFDA Number 84.021A
Website: https://www.govinfo.gov/content/pkg/FR-2019-01-24/pdf/2019-00107.pdf
Brief Description: The purpose of the Fulbright-Hays GPA Program is to promote, improve, and develop modern foreign languages and area studies at varying levels of education. The program provides opportunities for faculty, teachers, and undergraduate and graduate students to conduct individual and group projects overseas to carry out research and study in the fields of modern foreign languages and area studies. This notice relates to the approved information collection under OMB control number 1840-0792.

This competition invites applicants to submit an application to request support for either a Fulbright-Hays GPA short-term project (GPA short-term projects 84.021A) or a Fulbright-Hays GPA long-term project (GPA long-term projects 84.021B). Applicants must clearly indicate on the SF 424, Application for Federal Assistance cover sheet whether they are applying for a GPA short-term project (84.021A) or a GPA long-term project (84.021B). Additional submission details are included in the application package.

There are three types of GPA short-term projects: (1) Short-term seminar projects of four to six weeks in length designed to help integrate international studies into an institution's or school system's general curriculum by focusing on a particular aspect of area study, such as the culture of an area or country of study (34 CFR 664.11); (2) curriculum development projects of four to eight weeks in length that provide participants an opportunity to acquire resource materials for curriculum development in modern foreign

language and area studies for use and dissemination in the United States (34 CFR 664.12); and (3) group research or study projects of three to twelve months in duration designed to give participants the opportunity to undertake research or study in a foreign country (34 CFR 664.13).
Awards: Up to $100,000. Estimated total funding: $1,000,000
Proposal Deadline: March 25, 2019; Applications available: January 24, 2019. Deadline for transmittal of applications: March 25, 2019.
Contact Information: Julius C Cotton ED Grants.gov FIND Systems Admin. Phone 202-245-6288 julius.cotton@ed.gov
Program Manager: Cory Neal, U.S. Department of Education, 400 Maryland Avenue SW, Room 258-42, Washington, DC 20202. Telephone: (202) 453-6137. Email: GPA@ed.gov .

EPA

Grant Program: 2019 Healthy Communities Grant Program
Agency: Environmental Protection Agency EPA-R1-HC-2019
Website: https://www3.epa.gov/region1/eco/uep/pdfs/2019-hcgp-rfa.pdf
Brief Description: The Healthy Communities Grant Program is the U.S. Environmental Protection Agency, Region 1's (EPA New England) main competitive grant program to work directly with communities to support EPA's "Back-to- Basics" agenda to reduce environmental risks, protect and improve human health and improve the quality of life. The Healthy Communities Grant Program will achieve these goals through identifying and funding projects that: • Target resources to benefit communities at risk [areas needing to create community resilience, environmental justice areas of potential concern, sensitive populations (e.g., children, elderly, tribes, urban and rural residents, and others at increased risk)]. • Assess, understand, and reduce environmental and human health risks. • Increase collaboration through partnerships and community-based projects. • Build institutional and community capacity to understand and solve environmental and human health problems. • Advance emergency preparedness and ecosystem resilience. • Achieve measurable environmental and human health benefits. To qualify as eligible projects under the Healthy Communities Grant Program, proposed projects must: (1) be located in and/or directly benefit one or more of the Target Investment Areas; and (2) identify how the proposed project will achieve measurable environmental and/or public health results in one or more of the Target Program Areas. Please see Section III for further information on eligibility requirements.
Awards: Proposals may be submitted for amounts up to $25,000. The project period will start no earlier than October 1, 2019 and can last for a one or two-year period.
Letter of Intent Deadline: Your organization's AOR must submit your complete application package electronically to EPA through Grants.gov no later than May 28, 2019, 11:59 PM ET.
Contact: Katie Marrese EPA New England 5 Post Office Square, Suite 100 (OEP06-2) Boston, MA 02109-3912 Phone: 617-918-1658 Fax: 617-918-0658 Marrese.Katie@epa.gov

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Grant Program: 16th Annual P3 Awards: A National Student Design Competition Focusing on People, Prosperity and the Planet - Safe and Sustainable Water Resources
EPA-G2019-P3-Q1 – Air Quality
EPA-G2019-P3-Q2 – Safe and Sustainable Water Resources
EPA-G2019-P3-Q3 – Sustainable and Healthy Communities
EPA-G2019-P3-Q4 – Chemical Safety
Agency: Environmental Protection Agency

Website: https://www.epa.gov/research-grants/16th-annual-p3-awards-national-student-design-competition-focusing-people-prosperity
Brief Description: The U.S. Environmental Protection Agency (EPA) – as part of its People, Prosperity and the Planet (P3) Award Program – is seeking applications proposing to research, develop, design, and demonstrate solutions to real world challenges. The P3 competition highlights the use of scientific principles in creating innovative technology-based projects that achieve the mutual goals of improved quality of life, economic prosperity, and protection of the planet – people, prosperity, and the planet. The EPA offers the P3 competition to respond to the needs of people in the United States (U.S.)—e.g., those in small, rural, tribal, and disadvantaged communities. Please see the People, Prosperity and the Planet (P3) Student Design Competition website for more details about this program. Proposed projects must embody the P3 approach, which is that they have the intention and capability to simultaneously improve the quality of people's lives, provide economic benefits, and protect the environment.

This solicitation provides the opportunity for the submission of applications for projects that may involve human subjects research. Human subjects research supported by the EPA is governed by EPA Regulation 40 CFR Part 26 (Protection of Human Subjects). This includes the Common Rule at subpart A and prohibitions and additional protections for pregnant women and fetuses, nursing women, and children at subparts B, C, and D. Research meeting the regulatory definition of intentional exposure research found in subpart B is prohibited by that subpart in pregnant women, nursing women, and children. Research meeting the regulatory definition of observational research found in subparts C and D is subject to the additional protections found in those subparts for pregnant women and fetuses (subpart C) and children (subpart D). All applications must include a Human Subjects Research Statement (HSRS, as described in Section IV.C.5.b of this solicitation), and if the project involves human subjects research, it will be subject to an additional level of review prior to funding decisions being made as described in Sections V.C and V.D of this solicitation.
Awards; The first phase is a competition for one-year grants of up to $25,000 to test, research, and develop innovative scientific projects or engineering designs that use the P3 approach. In the spring of 2020, the Phase I grantees awarded from this solicitation are required to present their projects/designs at the National Student Design Expo. EPA will provide teams with information about the Expo during the award year. At the end of Phase I, teams will submit a *Project Report* that will serve as an application for a Phase II grant award of up to $100,000. The Phase II grant awards are intended to support the further development and demonstration of the projects/designs created in Phase I. The competitors for 2020 P3 Phase II grants are limited to recipients of Phase I grant awards from this solicitation.
Submission Deadline: December 11, 2018, 11:59:59 pm Eastern Time
Contact Information: Technical Contact: Angela Page (page.angelad@epa.gov), Phone: 202-564-7957; Eligibility Contact: Ron Josephson (josephson.ron@epa.gov), Phone: 202-564-7823; Electronic Submissions: Debra M. Jones (jones.debram@epa.gov), Phone: 202-564-7839

Department of Energy

Grant Program: 2019 Advanced Vehicle Technologies Research
Agency: Department of Energy DE-FOA-0002014
Website: https://eere-exchange.energy.gov/#FoaId439d5a28-e6a1-48a2-b453-093d3bfbe1df
Brief Description: This FOA seeks research projects to address priorities in the following areas: advanced batteries and electric drive systems, energy efficient mobility systems, materials for more efficient powertrains, co-optimized advanced engine and fuel technologies, and alternative fuels and new mobility options.
Awards: EERE expects to make a total of approximately $59,000,000 of federal funding available for new awards under this FOA, subject to the availability of appropriated funds. EERE anticipates making

approximately 40-68 awards under this FOA. EERE may issue one, multiple, or no awards under each area of interest. Individual awards may vary between $350,000 and $7,500,000.
Letter of Intent Deadline: Submission Deadline for Concept Papers: 5/1/2019 5:00 PM ET Anticipated Date of Concept Paper Notifications: 5/20/2019 Submission Deadline for Full Applications: 6/19/2019 5:00 PM ET
Contact: DE-FOA-0002014@netl.doe.gov

Grant Program: Solar Energy Technologies Office Fiscal Year 2019 Funding Program
Agency: Department of Energy DE-FOA-0002064
Website: https://eere-exchange.energy.gov/Default.aspx#FoaId45eda43a-e826-4481-ae7a-cc6e8ed4fdae
Brief Description: The Solar Energy Technologies Office (SETO) works across the solar energy technology spectrum with the goal of improving the affordability, reliability, and performance of solar technologies on the grid. Ensuring that more Americans can benefit from the declining costs of solar is one of SETO's primary goals, which support early-stage research, development, and demonstration of solar technologies. Achieving SETO's priorities across the solar energy technology landscape requires sustained, multifaceted innovation. With this Funding Opportunity Announcement (FOA), the office intends to fund high-impact, early-stage research in the following areas: Topic Area 1: Photovoltaics Research and Development Topic Area 2: Concentrating Solar-Thermal Power Research and Development Topic Area 3: Balance of Systems Soft Costs Reduction Topic Area 4: Innovations in Manufacturing: Hardware Incubator Topic Area 5: Advanced Solar Systems Integration Technologies.
Use the links below to register for the webinars:
SETO FY 2019 FUNDING OPPORTUNITY - OVERVIEW
April 2, 2019 2:00 pm EST
Topic Area 1- PHOTOVOLTAICS
April 3, 2019 3:00 pm EST
Topic Area 2 - CONCENTRATING SOLAR POWER
April 4, 2019 2:00 pm EST
Topic Area 3 - SOFT COSTS
April 5, 2019 2:00pm EST
Topic Area 4 - INNOVATIONS IN MANUFACTURING
April 4, 2019 4:00 pm EST
Topic Area 5 - SYSTEMS INTEGRATION
April 3, 2019 2:00 pm EST
Awards: Various; Available Funding: $130,000,000
Letter of Intent Deadline: 5/7/2019 5:00 PM ET
Concept Paper Submission Deadline: 5/14/2019 5:00 PM ET
Full Application Submission Deadline: 7/25/2019 5:00 PM ET
Contact: Elizabeth A. Parrish SETO.foa@ee.doe.gov

Grant Program: 2019 Wind Energy Technologies Office Funding Opportunity Announcement
Agency: Department of Energy DE-FOA-0002071
Website: https://eere-exchange.energy.gov/#FoaIdb3bff091-3531-4356-b234-d079118ccce3
Brief Description: The Office of Energy Efficiency and Renewable Energy (EERE) is issuing, on behalf of the Wind EnergyTechnologies Office (WETO), a Funding Opportunity Announcement (FOA) titled "Fiscal Year (FY) 2019 Wind Energy Technologies Office Funding Opportunity Announcement."

This FOA consists of four Areas of Interest and will provide $28.1M in federal funding for innovative wind energy technologies research and development including land-based, distributed, and offshore applications.
1) *Wind Innovations for Rural Economic Development (WIRED)*
Subtopic 1a: Fully integrated distributed wind research and development (R&D) innovations to enhance resilience and reliability
Subtopic 1b: Balance of system cost reduction through standardization
2) *Utilizing and Upgrading National-Level Facilities for Offshore Wind R&D*
Subtopic 2a: R&D utilizing existing national-level offshore wind testing facilities
Subtopic 2b: R&D requiring upgrades to existing national offshore wind testing facilities
3) *Project Development for Offshore Wind Technology Demonstrations*
4) *Tall Towers for U.S. Wind Power*
Awards: Various; Available Funding: $130,000,000
Concept Paper Submission Deadline: 4/29/2019 5:00 PM ET
Full Application Submission Deadline: 6/17/2019 5:00 PM ET
Contact: EERE-Exchangesupport@hq.doe.gov
For questions related to the EERE Exchange website.

- FY19WETOFOA@ee.doe.gov

For questions related to this specific Funding Opportunity Announcement.

Grant Program: Data Science for Discovery in Chemical and Materials Sciences
Agency: Department of Energy Office of Science DE-FOA-0002082
Website: https://science.energy.gov/funding-opportunities/digital-datamanagement/
Brief Description: The DOE SC program in Basic Energy Sciences (BES) announces its interest in receiving new applications in Data Science for Knowledge Discovery for Chemical and Materials Research with the aim of advancing the use of modern data science approaches (artificial intelligence, machine learning, graph theory, uncertainty quantification, etc.) to accelerate discovery in chemical and materials sciences. This funding opportunity is the first in this topical area sponsored by BES. The program will support Single Investigator/Small Group efforts (up to $500,000 per year) for research with a focus on applying data science approaches and tools for experimental, theoretical/computational, or synergistic experimental/theoretical/computational research in areas supported by BES. Although the research may involve the development of new data science approaches, the focus of the effort should be on advancing understanding of fundamental properties and processes in chemical and materials systems.
Awards: Ceiling: $500,000 per year; Floor: $150,000 per year. It is anticipated that up to $20,000,000 (approximately $6,667,000 annually for up to 3-years) will be available under this FOA, contingent on satisfactory peer review and the availability of appropriated funds. Up to 15 awards are anticipated for Single Investigator/Small Group awards under this FOA.
Submission Deadline: A pre-application is required. PRE-APPLICATION DUE DATE March 8, 2019 at 5:00 PM Eastern Time ENCOURAGE/DISCOURAGE DATE April, 5, 2019
Contact: Dr. Raul Miranda, Basic Energy Sciences, Chemical Sciences, Geosciences, and Biosciences Division PHONE: (301)-903-8014 Raul.Miranda@science.doe.gov

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Grant Program: DE-FOA-0002021: Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0002022
Agency: Department of Energy DE-FOA-0002021
Website: https://eere-exchange.energy.gov/

Brief Description: The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Fuel Cell Technologies Office (FCTO), Funding Opportunity Announcement (FOA) DE-FOA-0002022 entitled "Fiscal Year 2019 H2@Scale Funding Opportunity Announcement." Hydrogen is one part of DOE's all-of-the-above energy portfolio, and can offer options for affordable and secure energy for transportation, as well as for stationary and industrial applications. The United States produces over 10 million metric tons of hydrogen per year, used primarily for petroleum refining and fertilizer production, but there are a number of opportunities to increase hydrogen generation and utilization across the country. "H2@Scale" is an initiative to enable affordable and reliable largescale hydrogen generation, transport, storage, and utilization in the United States across sectors. For example, electrolyzers can produce hydrogen by splitting water when power generation exceeds demand. This can reduce or prevent curtailment of renewables, optimize baseload (e.g., nuclear power) assets, and enable grid stability and resiliency, while also producing hydrogen as a fuel or feedstock for end users. In addition, hydrogen produced from existing baseload assets can be stored, distributed, and used as a fuel for transportation, stationary power, process or building heat, and industrial sectors (e.g. steel manufacturing), creating an additional revenue stream for those assets. FCTO focuses on research, development, and innovation to advance hydrogen and fuel cells for transportation and diverse applications enabling energy security, resiliency, and a strong domestic economy in emerging technologies. This notice of intent (NOI) is issued so that interested parties are aware of the EERE's intention to issue this FOA in the near term. All of the information contained in this NOI is subject to change. EERE will not respond to questions concerning this NOI. Once the FOA has been released, EERE will provide an avenue for potential applicants to submit questions. EERE plans to issue the FOA in January/February of 2019 via the EERE Exchange website https://eere-exchange.energy.gov/. If applicants wish to receive official notifications and information from EERE regarding this FOA, they should register in EERE Exchange. When the FOA is released, applications will be accepted only through EERE Exchange.
Awards: TBD
Submission Deadline: TBD
Contact: EERE-ExchangeSupport@hq.doe.gov

Grant Program: FY 2019 Bioenergy Technologies Office (BETO) Multi-topic Request for Information (RFI)
Agency: Department of Energy DE-FOA-0002020
Website: https://eere-exchange.energy.gov/
Brief Description: The U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) Bioenergy Technologies Office (BETO) is requesting information on research opportunities related to outdoor algae research, biomass characteristics and feedstock performance, and renewable energy from urban and suburban wastes to help inform its research priorities and funding strategies. BETO seeks information to help inform its research priorities, as part of its annual planning process. The purpose of this RFI is to solicit feedback from industry, academia, research laboratories, government agencies, and other stakeholders to help ensure research areas are relevant, timely, appropriate for federal government funding, and aligned with Administration priorities. This is solely a request for information and not a Funding Opportunity Announcement (FOA). No funding applications are being accepted in response to this RFI. Specifically, BETO is seeking information related to the following three topic areas: 1) Outdoor Algae Research; 2) Biomass Characteristics and Feedstock Performance; and 3) Renewable Energy from Urban and Suburban Wastes. Please see the full Request for Information (RFI) DE-FOA-0002020 at https://eere-exchange.energy.gov/.
Awards: TBD
Submission Deadline: TBD
Contact: EERE_Bioenergy@ee.doe.gov

Submit RFI Responses to this Inbox

- EEREExchangeSupport@hq.doe.gov

For EERE Exchange questions:

NASA

Grant Program: ROSES 2019: B.7 Space Weather Science Applications Operations 2 Research
Agency: NASA NNH19ZDA001N-SWO2R
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId={BD18A167-6DE8-1A35-A0ED-96F16AC6DE49}&path=&method=init
Brief Description: In October 2015, the National Science and Technology Council (NSTC) in the Executive Office of the President released the National Space Weather Strategy and the National Space Weather Action Plan (SWAP). In March 2019, these were updated with the release of the National Space Weather Strategy and Action Plan (NSW-SAP). The objectives of the actions described in the SWAP and NSW-SAP are to improve the understanding of, forecasting of, and preparedness for space weather events, recognizing the need for close cooperation among the federal agencies. The SWAP and NSW-SAP call for NASA, National Science Foundation (NSF), and Department of Defense (DOD) to identify and support basic research on space weather. They also direct NASA, Department of Commerce (DOC), and DOD to identify and support research opportunities that address targeted operational space-weather needs. Furthermore, they direct NASA, NSF, DOC, and DOD to facilitate the transition of space weather information and prediction capabilities to the Nation's space weather service providers (research-to-operations and operations-to-research). In response to the need to advance and coordinate the Nation's space weather research and operations capabilities, NASA has established the Heliophysics Space Weather Science Applications program, of which this operations-to-research (O2R) call is a part. NASA is supporting this funding opportunity in coordination with DOC/National Oceanic and Atmospheric Administration (NOAA) to promote O2R activities. For this call, the objective of O2R efforts is broadly defined as the joint pursuit of improvements of operational capabilities and advancements in related fundamental research.

The primary goal of this funding is to support research by the grant recipient to improve numerical models and/or data utilization techniques that could advance specification and/or forecasting capabilities and which could also lead to improved scientific understanding. Effective utilization of available data is encouraged. Employing data assimilation and/or machine-learning techniques is also encouraged.
Awards: Various
Proposal Deadline: Step-1 Proposal: December 16, 2019
Contact: James Spann Heliophysics Division Science mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: 202-358-0574 Email: jim.spann@nasa.gov

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Grant Program: Heliophysics Theory, Modeling, and Simulations: due dates TBD
Agency: NASA NNH19ZDA001N-HTMS
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B97F8C4AD-A0D1-7593-92DD-0418FE347186%7D&path=&method=init
Brief Description: The Heliophysics Theory, Modeling, Simulations (H-TMS) program is a component of the Heliophysics Research Program. Proposers interested in this program element are encouraged to see the overview of the Heliophysics Research Program in Appendix B.1 of this ROSES NRA. The H-TMS program was previously one element of the Heliophysics Grand Challenges Research (H-GCR) program (H-GCR-TMS, last competed in ROSES-2016 as program element B.5). Before that it was called "Heliophysics Theory Program" (HTP, last competed in ROSES-2013). For simplification, this program

is now referred to as the Theory, Modeling, and Simulations (TMS) element in the Heliophysics program. The former Heliophysics Theory Program provides the foundation of the TMS element. Increasingly, as computing power becomes more affordable and more available, numerical simulations and modeling become tools that can and have been used synergistically with data analyses and rigorous theory development to solve the fundamental problems of Heliophysics. They lead the way to new understanding and drive science concepts for future strategic missions. The ultimate goal of TMS investigations is to provide a complete chain of reasoning extending from the basic laws of nature to comparison with observation to the identification of future quantitative tests of the behavior of the environment. NASA acknowledges this and renames the element "Theory, Modeling, and Simulations."
Awards: Various
Notice of Intent: Not Required
Proposal Deadline: TBD; Program Close date: Feb 14, 2020
Contact: Ekaterina Verner Heliophysics Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: (202) 358-1213 Email: ekaterina.m.verner@nasa.gov

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Grant Program: Astrophysics Research and Analysis: due dates TBD
Agency: NASA NNH19ZDA001N-APRA
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B90F8A275-496D-A0FA-82A0-0BF6E9ABBA67%7D&path=&method=init
Brief Description: The Astrophysics Research and Analysis Program (APRA) program solicits basic research proposals for investigations that are relevant to NASA's programs in astronomy and astrophysics and includes research over the entire range of photons, gravitational waves, and particle astrophysics. Awards may be for up to four years' duration (up to five years for suborbital investigations), but shorter-term proposals are typical; four-year or five-year proposals must be well justified. Proposals for suborbital investigations are particularly encouraged. APRA investigations may advance technologies anywhere along the full line of readiness levels, from Technology Readiness Level (TRL) 1 through TRL 9. The emphasis of this program element is on technologies and investigations that advance NASA astrophysics missions and goals.
Awards: Various
Notice of Intent: Not Required
Proposal Deadline: TBD; Program Close date: Feb 14, 2020
Contact: Dominic J. Benford Astrophysics Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: (202) 358-1261 Email: Dominic.Benford@nasa.gov

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Grant Program: Heliophysics Data Environment Emphasis
Agency: NASA NNH19ZDA001N-HDEE
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7BC2FBD0C9-081B-8A0E-B883-CF137C591C5D%7D&path=&method=init
Brief Description: The Heliophysics Data Environment Enhancements (HDEE) program is a component of the Heliophysics Research Program and proposers interested in this program element are encouraged to see the overview of the Heliophysics Research Program in B.1 of this ROSES NRA. The work carried out for this program should be in support of the Heliophysics strategic goals and objectives in NASA's 2018 Strategic Plan and Chapter 4.1 of the NASA 2014 Science Plan (both at https://science.nasa.gov/about-us/science-strategy). The recommended priorities of the Heliophysics community are also discussed in the National Research Council Decadal Strategy for Solar and Space

Physics report, Solar and Space Physics: A Science for a Technological Society (http://www.nap.edu/catalog/13060/solar-and-space-physics-a-science-for-atechnological-society). Note particularly the sections of the Decadal report dealing with the "DRIVE" initiative, more specifically "R" and "I," and the discussion in Appendix B. The specific context of this call is provided by the NASA Heliophysics Science Data Management Policy (https://hpde.gsfc.nasa.gov/Heliophysics_Data_Policy_v1.2_2016Oct04.html).
Awards: Various
Notice of Intent: Not Required
Proposal Deadline: TBD; Program Close date: Feb 14, 2020
Contact: Jeffrey J. E. Hayes Heliophysics Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: (202) 358-0353 Email: jhayes@nasa.gov

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National Endowment of Humanities

Grant Program: Research and Development Program
Agency: National Endowment for the 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. The exact mix of specialists will depend on the particular nature of the project. Your project team should embody a well-defined humanities perspective that can frame your objectives and guide the project to successful completion. Such a perspective may be provided by members of an advisory committee, consultant(s), a project co-director, or another participant.
Awards: Maximum award amount: Tier I provides awards up to $75,000 Tier II provides awards up to $350,000
Deadlines:
Optional Draft due: April 3, 2019
Application due: May 15, 2019
Contact: 202-606-8570 preservation@neh.gov

Environment Research and Education Foundation

Grant Program: Research on Research on Sustainable Solid Waste Management and Recycling
Agency: Environment Research and Education Foundation
Website: https://erefdn.org/research-grants-projects/how-to-apply-for-grant/
Brief Description: The sustainability movement has reached the business models of nearly every industry in the United States, and many companies, municipalities and states have set aggressive sustainability goals that include how waste streams are being managed. The EREF Board of Directors has set an

initiative to ensure research funded reflects EREF's long-term strategic plan to address all areas of integrated solid waste management, with a strong focus towards research that increased sustainable solid waste management practices.

Pre-proposal topics must relate to sustainable solid waste management practices and pertain to the following topic areas:

1. Waste minimization
2. Recycling
3. Waste conversion to energy, biofuels, chemicals or other useful products. This includes, but is not limited to, the following technologies:
    - Waste-to-energy
    - Anaerobic digestion
    - Composting
    - Other thermal or biological conversion technologies
4. Strategies to promote diversion to higher and better uses (e.g. organics diversion, market analysis, optimized material management, logistics, etc.)
5. Landfilling

Upon submission, pre-proposals will be examined by a selection committee and successful pre-proposals will be invited to submit a full proposal for consideration. Full proposals will then be subjected to EREF's review process, as described later in this document.

Proposal Deadline: EREF has two deadlines per year for pre-proposals: December 1 and May 1

Contact: If interested, please send an email to Atam Dhawan (dhawan@njit.edu).

Brain Research Foundation

Grant Program: 2020 Scientific Innovation Award

Agency: Brain Research Foundation

Website: https://www.thebrf.org/for-researchers/scientific-innovations-award-2/

Brief Description: Brain Research Foundation (BRF) Annual Scientific Innovations Award supports innovative discovery science in both basic and clinical neuroscience. This funding mechanism is designed to support creative, cutting edge research in well-established research laboratories, under the direction of established investigators.

This funding opportunity is for projects that may be too innovative and speculative for traditional funding sources but still have a high likelihood of producing important findings in a very short time frame. It is expected that investigations supported by these grants will yield high impact findings and result in major grant applications and significant publications in high impact journals.

To be eligible, the nominee must be a **full-time associate professor/full professor** working in the area of neuroscience and brain function in health and disease. **Current major NIH or other peer-reviewed funding is preferred but evidence of such funding in the past three years is essential.**

Download a PDF version of the 2020 Guidelines.

For additional information, please visit our Frequently Asked Questions page.

Awards: Each total award is limited to $150,000 (direct costs) for a two year grant period. Exact dates will be provided by the BRF upon application approval. The first grant payment of $75,000 will be made upon completion of the SIA Acceptance Form (January 2020). The final payment of $75,000 will be made contingent upon receipt of a Preliminary Progress and Financial Report (January 2021).

Proposal Deadline: The deadline to submit the nominated Letter of Intent is Friday, June 25, 2019.

Streamlyne Question of the Week

Question: How do I see the ***Action List*** of pending items in workflow?
Answer: Streamlyne Research will route you to the Action List. The Action List is the jumping-off page for all Streamlyne functionality. The Action List occupies the center of the page. Each line on the Action List represents a pending workflow item, requiring some sort of action from you. (Page 3 of the New User Manual posted on the Research website http://www.njit.edu/research/sites/research/files/StreamlyneNewUserManualCommonElements.pdf).
The Menu Bar remains fixed to your primary Streamlyne Research tab regardless of where you are in the application. This is your primary means of navigation in the application.

- Click the List button to return to the Portal Page and Action List at any point.
- When you complete an action, the item is moved to the Outbox. Click the Outbox button to review all items on which you have taken action.
- Click the Magnifying Glass to access the Document Search function.

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

Streamlyne Information

Streamlyne User Manuals: 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.

New "How to Do" videos have been posted on the research website http://www5.njit.edu/research/streamlyne/.

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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Need Information about Funding?

Finding Research Opportunities and Collaborations (FROC)
Walk-In Open-Hour Discussion with SVPR Over Tea

Every Thursday: 3.00 PM-4.00 PM; 340 Fenster Hall

The Office of Research has started a new service to help all faculty and staff explore collaborative research opportunities and currently active RFPs (Request for Proposals) for potential proposal development and submission. Faculty and research staff members are welcome to meet with Senior Vice Provost for Research Atam Dhawan at the open-hour every Thursday from 3.00 PM to 4.00 PM to discuss research opportunities related issues including the following but not limited to:

- Research opportunities and potential collaborations
- Currently active RFPs and developing collaborative teams for proposal submission
- Proposal review criterion for specific RFP/program/agency
- Proposal concept and draft review in the context of review criterion
- Future plans for proposal development and submission
- Invention disclosures, patent applications and processing of intellectual property
- External faculty research awards including fellowships

Though *walk-ins* are welcome during the open-hour, faculty members are encouraged to email SVPR Atam Dhawan (dhawan@njit.edu) about specific questions on research opportunities and needs to be discussed in advance for more detailed discussion.

The open-hour session with individuals or small groups of faculty and research staff members is expected to focus on finding research opportunities, developing collaborative teams, exploring the review criterion and reviewing program requirements. Specific proposal submission and grant management issues can be discussed with Office of Research staff separately.

Enjoy coffee/tea and cookies with SVPR over the discussion.
For any questions and additional information, please send an email to SVPR at dhawan@njit.edu.
