NJIT Research Newsletter

Issue: ORN-2019-49

Happy Holidays!
Happy New Year 2020!

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 https://research.njit.edu/funding-opportunities .

Special Announcements

NSF Releases JASON Report on Research Security

NSF-commissioned study by the independent JASON group calls foreign influence threat a complex issue that 'can be addressed within the framework of research integrity'. As part of its ongoing effort to keep international research collaboration both open and secure, the National Science Foundation (NSF) today released a report by the independent science advisory group JASON titled "Fundamental Research Security." NSF commissioned the report to enhance the agency's understanding of the threats to basic research posed by foreign governments that have taken actions that violate the principles of scientific ethics and research integrity. With the official receipt of the report, NSF will now begin the process of analyzing its findings and recommendations.

Across the federal government, research agencies are coordinating to address the challenges outlined in the report. These efforts include a new request for information issued by the White House Office of Science and Technology Policy's Joint Committee on Research Environments that seeks input on how to keep research secure.

"The integrity of our research enterprise rests upon core principles and values of transparency, openness, and merit-based competition. Principled international collaboration and foreign scientific talent in the United States are critical to the success of the U.S. research enterprise. Simultaneously, we must safeguard the research community from the threat of foreign government influence. As we continue the hard work in keeping our research secure, we look forward to continuing to coordinate, convene, and partner with all those in the research community to address these complex issues together and to reach innovative solutions."

NSF and other federal agencies that support research have worked to outline the problem. The independent JASON study affirms the scope and scale of the threat. Four main themes emerged from the JASON study:

- The value of, and need for, foreign scientific talent in the U.S.
- The significant negative impacts of placing new restrictions on access to fundamental research.
- The need to extend our notion of research integrity to include disclosures of commitments and potential conflicts of interest
- The need for a common understanding between academia and U.S. government agencies about how to best protect U.S. interests in fundamental research while maintaining openness and successfully competing in the global marketplace for STEM talent.

Bridging the gap in understanding among academia and government agencies requires addressing another of the report's findings: that academic leadership and faculties and government agencies have different understandings of the scope of foreign influence in U.S. basic research, the possible risks and the problems that could arise from efforts to respond to the problem. The report concludes that the problems with foreign influence identified thus far can be addressed within the framework of research integrity.

Grant Opportunity Alerts

Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: **NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM); Small Business Technology Transfer Program Phase I (STTR); Small Business Innovation Research Program Phase I (SBIR); NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM);** Early Career Development Program (CAREER); National Robotics Initiative 2.0: Ubiquitous Collaborative Robots (NRI-2.0); EHR Core Research (ECR): Building Capacity in STEM Education Research (ECR: BCSER); Dear Colleague Letter: NSF/NSFC Joint Research on Environmental Sustainability Challenges; Dear Colleague Letter: Supporting Transition of Research into Cities Through the U.S. ASEAN (Association of Southeast Asian Nations Cities) Smart Cities Partnership; EarthCube; Next Generation Software for Data-driven Models of Space Weather with Quantified Uncertainties (SWQU); Semiconductor Synthetic Biology for Information Storage and Retrieval (SemiSynBio-II); Environmental Convergence Opportunities in Chemical, Bioengineering, Environmental, and Transport Systems (ECO-CBET)

NIH: Glial Plasticity in the Aging Brain (R01 Clinical Trial Not Allowed); Institutional Predoctoral Training Program in the Neurosciences (T32); Revision Applications for Validation of Biomarker Assays Developed Through NIH-Supported Research Grants (R01); Innovative Molecular and Cellular Analysis Technologies for Basic and Clinical Cancer Research (R21); Postbaccalaureate Research Education Program (R25); NIMH Instrumentation Program (S10); New Investigator Projects on 4DN Organization and Function in Human Health and Disease (U01); Utilizing Invasive Recording and Stimulating Opportunities in Humans to Advance Neural Circuitry Understanding of Mental Health Disorders (R01 and R21), NIH Blueprint Program for Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences (BP-ENDURE) (R25)

Department of Defense/US Army/DARPA/ONR: **Quantum Characterization of Intermediate Scale Systems (QCISS); AFRL Research Collaboration Program II;** Commercial Technologies for Maintenance Activities (CTMA); Detect It with Gene Editing Technologies (DIGET); C4ISR, Information Operations, Cyberspace Operations and Information Technology System Research, Air Superiority Technology Broad Agency Announcement; NRL Long Range Broad Agency Announcement (BAA) for Basic and Applied Research; DSO Office-wide Broad Agency Announcement

Department of Transportation: Grants or Research Fellowship (GRF)
Department of Agriculture: Women and Minorities in STEM Fields; Integrated Research, Education, and Extension Competitive Grants Program – Organic Transitions; REAP-Renewable Energy Systems and Energy Efficiency Improvements
Department of Labor: Apprenticeships: Closing the Skills Gap
EPA: Solid Waste Recycling Enhancement Act (REA) Higher Education Research Grant Program; People, Prosperity and the Planet (P3) Student Design Competition
Department of Energy: **Seeding Critical Advances for Leading Energy Technologies with Untapped Potential;** Extreme Environment Materials for Power Generation; FY20 Vehicle Technologies Program Wide Notice of Intent; Notice of Intent: FY20 Bioenergy Technologies Office Multi-Topic Funding Opportunity; Flexible Carbon Capture & Storage (FLECCS); FY 2020 Solicitation for the Office of Science Financial Assistance Program; Environmental System Science
NASA: ROSES 2019: Applied Information Systems Research; Future Investigators in NASA Earth and Space Science and Technology; Heliophysics System Observatory Connect
National Endowment of Humanities: Institutes for Advanced Topics in the Digital Humanities; Digital Humanities Advancement Grants

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Recent Research Grant and Contract Awards

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

PI: Hieu Nguyen (PI)
Department: Electrical and Computer Engineering
Grant/Contract Project Title: CAREER: Development of ALLnN Nanostructures for Advanced Ultraviolet Light-Emitters
Funding Agency: NSF
Duration: 07/01/20-06/30/25

PI: Gennady Gor (PI)
Department: Chemical Material Engineering
Grant/Contract Project Title: CAREER: Coupling Adsorption and Mechanics: Towards the Development of Smart Porous Materials
Funding Agency: NSF
Duration: 06/01/20-05/31/25

PI: Somenath Mitra (PI)
Department: Chemistry and Environmental Sciences
Grant/Contract Project Title: Incorporation of Hydrophilic and Functionalized Nanoparticles (HFNP) into Hydrophobic Drug Crystals for Enhancing Aqueous Dissolution
Funding Agency: Bristol-Myers Squibb Company
Duration: 12/12/19-12/11/20

PI: Hyojin Kim (PI)
Department: Hillier College of Architecture and Design
Grant/Contract Project Title: Empirical Validation of Energy Simulation
Funding Agency: U.S. Department of Energy (Oak Ridge National Lab)
Duration: 12/09/19-09/30/22

PI: Michel Boufadel (PI)
Department: Center for Natural Resources
Grant/Contract Project Title: Bench Scale Treatability Study (PO 1905)
Funding Agency: Langan Engineering and Environmental Services, Inc.
Duration: 11/18/19-09/30/20

In the News…

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

U.S. Congress approves $1.4 trillion package of fiscal 2020 spending bills; With the appropriations, NASA would receive $22.6 billion, while NSF and NIH would receive respectively $8.3 billion and $41.7 billion. Defense appropriations are at $104 billion for research, development, test and evaluation with the Pentagon budget of $738 billion for military activities. The $1.4 trillion in spending for so-called "discretionary" programs, up from $1.36 trillion last year, is separate from "mandatory" programs like Social Security retirement benefits, which are automatically funded.

> HYPERSONICS AND UNMANNED SHIPS: An explanatory statement accompanying the defense appropriation says it provides $100 million for the Joint Hypersonics Transition Office "to develop and implement an integrated science and technology roadmap for hypersonics and to establish a university consortium for hypersonics research and workforce development to support Department efforts to expedite testing, evaluation, and acquisition of hypersonic weapons systems." The bill also provides $209 million for "two Large Unmanned Surface Vessels (LUSV s)."
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> SUPPORT FOR JASON STUDY: As part of an assessment of current risks and threats to research integrity, appropriators direct the White House Office of Science and Technology Policy "to also incorporate and apply the findings of the National Science Foundation JASON study to better protect the merit review system and for grantee institutions to maintain balance between openness and security of scientific research."
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> I-CORPS AND MSI's: NSF's Innovation Corps has become a durable institution. For FY 2020, Congress is providing $5 million more than last year while urging the agency "to facilitate greater participation in the program from academic institutions in states that have not previously received awards." Within NSF, lawmakers also direct $75 million to Advanced Technological Education; $35 million to the Historically Black Colleges and Universities Undergraduate Program; $47.5 million to the Louis Stokes Alliance for Minority Participation; $15 million to Tribal Colleges and Universities; $67 million to Robert Noyce Teacher Scholarships; and $45 million to Hispanic-serving Institutions. They want to see "capacity building at institutions of higher education that typically do not receive high levels of NSF funding."
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> A SEVENTH FORCE? The newly enacted National Defense Authorization Act "asks the Defense Department to assess 'the potential costs, benefits, and value, if any, of establishing a cyber force as a separate uniformed service,'" CQ reports. A cyber force would become the seventh branch of the armed services. The Government Accountability Office says that the Pentagon's $1.66 trillion worth of planned weaponry could be rendered useless by adversary hackers.

U.S. Relative Strength in Research as Measured by Publications: The United States remains highly influential in research, as measured by citations in science and engineering publications, according to a new installment of the National Science Board's Science and Engineering Indicators. While China still lags the United States and EU countries.in impact, it "has increased rapidly in the last decade from a small base." China's rate of research output has grown almost twice as fast as the world's annual average for the last 10 years. As measured by journal articles, "the United States, the EU, and Japan [are] more specialized in health sciences and China and India [are] more specialized in engineering."

Climate Compels Collaboration: Ever since climate change became a concern for policymakers and laypeople alike, the focus of public debate has largely been on mitigation: limiting greenhouse gas emissions, capturing carbon, and transitioning to renewable energy. Those efforts must continue if we hope to keep the planet hospitable. But it is also time to acknowledge that—no matter what we do—some measure of climate change is here to stay. The phenomenon has already affected the U.S. economy, U.S. national security, and human health. Such costs will only grow over time. The United States must build resilience and overhaul key systems, including those governing infrastructure, the use of climate data, and finance. Academic disciplines and government agencies often remain isolated from each other, and neither is particularly good at working with the private sector, write the authors of "**Adapt or Perish" in Foreign Affairs.** Resilience in the face of climate change "will require unprecedented levels of collaboration among different kinds of experts and across different kinds of organizations. For example, public health officials will have to partner with geospatial analysts and biologists to anticipate how climate change may shift the geographic spread of mosquito-borne diseases, such as dengue and Zika. Corporate risk managers will need to work with engineers to figure out how to protect industrial facilities from new weather extremes. And military planners will have to learn from climate modelers how to secure bases and supply chains." Full report is posted on the website https://www.foreignaffairs.com/articles/united-states/2019-12-10/adapt-or-perish

Value Proposition and Innovative Models for Multi-Sectoral Engagement in Global Health: The workshop included innovative technologies for global health applications such as drone technology for blood delivery developed in Rwanda by Zipline, an automated logistics company that designs, manufacturers, and operates drones as a service. The country had many unpaved roads and two rainy seasons, which made ground travel difficult. By now, Zipline's aerial delivery service has become routine. It has made thousands of deliveries and has flown more than 500,000 kilometers. This was one example offered at a National Academies workshop on global health innovation. The workshop targeted to explore value proposition for different sectors that engage in global health - including industry, government, philanthropy, and civil society - and innovative models for multi-sectoral collaboration, the Forum on Public-Private Partnerships for Global Health and Safety of the National Academies of Sciences, Engineering, and Medicine convened a 2-day workshop on November 15 and 16, 2018. With a specific focus on industry engagement, the workshop examined how stakeholders within industry define and measure value relative to global health as well as how and why other sectors in the global health community engage with industry. A report summarizing the presentation and discussion of the workshop is posted on the website https://www.nap.edu/catalog/25501/value-proposition-and-innovative-models-for-multi-sectoral-engagement-in-global-health

NSF/NSFC Joint Research on Environmental Sustainability Challenges: The NSF Engineering Directorate (ENG) and the National Natural Science Foundation of China (NSFC) Department of Engineering and Material Sciences (DEMS) and Department of Geosciences are partnering to encourage joint research by U.S. - China teams collaborating on fundamental research that addresses critical environmental sustainability challenges. Among nations, the U.S. and China have the two largest

economies on Earth and also have important engineering, technology, business and trade relationships with each other. Both nations face significant environmental sustainability challenges, for example in the food-energy-water (FEW) nexus, urban sustainability, global change, and manufacturing. Fundamental research is needed to provide the foundational knowledge for addressing these challenges. This Dear Colleague Letter is for research proposals from joint U.S. - China teams in the environmental sustainability themes of: "Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS: U.S.-China)" 1. quantitative and computational modeling of a FEW system 2. innovative human and technological solutions to critical FEW systems problems.

Every proposal must include the participation of researchers from at least one U.S. organization and at least one institution in China. Proposals that do not comply with this requirement will be returned without review. The proposal submitted to NSF must conform to NSF proposal requirements as specified in NSF's posted Proposal and Award Policies and Procedures Guide (NSF 19-1), and the matching proposal submitted to NSFC must conform to requirements posted by NSFC. NSF will fund the U.S. researchers up to a total of $500,000 for 4 years for each recommended award, while NSFC will fund the China 1 researchers up to a total of 3 million yuan for 4 years for each recommended award. In total, no more than 6 joint NSF-NSFC project grants are expected to be funded. NSF research funding is pending the availability of funds. Each proposal must include a management plan that clearly specifies the role of team researchers from both the U.S. and China, and the mechanisms through which close collaboration will be assured. The management plan is not to exceed 3 pages and is to be included in the supplementary document file of the electronic submission.

U.S.-based researchers, through their U.S. organizations, may submit unsolicited proposals to collaborate with China-based researchers on the INFEWS topic described above to the ENG/CBET Environmental Sustainability (7643) program. Please note that, even though the Environmental Sustainability program has no submission deadline, proposals submitted for consideration under this DCL must be received by 5:00 pm local submitter's time on February 26, 2020. More information on submittal procedures is posted at: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505695&org=CBET&from=home

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Webinar and Events

Event: PAESMEM Applicant Webinars
Sponsor: NSF
When: January 7, 2019 4:00 PM - 5:00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=299255&org=NSF
Brief Description: NSF is offering a webinar on January 7, 2020 for applicants to the Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM).
To Join the Webinar: Click on this link to register! https://paesmem.net/webinar

Event: NSF Distinguished Lecture Series in Mathematical and Physical Sciences for 2019-20
Sponsor: NSF
When: Various; Please see below.
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=299152&org=NSF
Brief Description: These lectures will be held at the National Science Foundation, 2415 Eisenhower Ave., Alexandria, VA 22314. Advance sign-up requests are required for preparation of visitor passes by emailing the contact below. Guidelines for visiting NSF are at https://www.nsf.gov/about/visit/
January 13, 2020 2:00 PM to January 13, 2020 3:00 PM

February 13, 2020 2:00 PM to February 13, 2020 3:00 PM
March 23, 2020 2:00 PM to March 23, 2020 3:00 PM
May 4, 2020 2:00 PM to May 4, 2020 3:00 PM
June 11, 2020 2:00 PM to June 11, 2020 3:00 PM
To Join the Webinar: Please register at the above URL.

Event: NSF CAREER Engineering Program Proposal Development Workshop
Sponsor: NSF
Website: https://nsfengcareerworkshop.ccny.cuny.edu/
Brief Description: The NSF CAREER program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization. An NSF CAREER Proposal Workshop focused on engineering will be held March 31 – April 2, 2020 in Arlington, Virginia. The objective of the 2020 NSF ENG Directorate Workshop is to introduce junior faculty who are interested in submitting NSF CAREER proposals to the Directorate for Engineering. The workshop aims to provide individuals with proposal development insights and a forum in which they can interact with NSF program directors and recent NSF CAREER awardees.

Workshop participation will be by invitation, based on applications, and limited to 300 participants who will be selected from the pool of applicants based on: a) applicability of the proposed research to the Directorate for Engineering, b) timeliness and completeness of the application, and c) preference given to those who have not previously attended an NSF Engineering CAREER workshop. Please review the application page for further information.
Cost: NSF has provided partial funding for the workshop. Those individuals selected to participate will be required to submit a workshop registration fee of $500. Workshop attendees are responsible for their travel, lodging, and expenses. There will be a limited number of $1,000 travel grants available to participants to help defray the cost of travel.
Application Deadline: January 6, 2020
Registration Deadline: February 14, 2020
Agenda: 2020 NSF ENG CAREER Proposal Writing Workshop
Crystal Gateway Marriott
1700 Richmond Hwy, Arlington, VA 22202
March 31 – April 2, 2020
Tuesday
Networking Reception, 5PM – 7PM
Wednesday
Workshop Day 1, 7:00AM – 5PM
Thursday
Workshop Day 2, 7:00AM – 2PM
To Apply and Register: Submit your application at
https://nsfengcareerworkshop.ccny.cuny.edu/application-will-be-available-on-october-28-2019/

Event: Public Workshop - Evolving Role of Artificial Intelligence in Radiological Imagin
Sponsor: FDA
When: February 25-26, 2020; 8.00 AM – 5.30 PM
Website: https://www.fda.gov/medical-devices/workshops-conferences-medical-devices/public-workshop-evolving-role-artificial-intelligence-radiological-imaging-02252020-02262020?utm_campaign=2019-12-03%20CDRH%20New&utm_medium=email&utm_source=Eloqua

Brief Description: The Food and Drug Administration (FDA) is announcing the following public workshop entitled "Evolving Role of Artificial Intelligence in Radiological Imaging." The intent of this public workshop is to discuss emerging applications of Artificial Intelligence (AI) in radiological imaging including AI devices intended to automate the diagnostic radiology workflow as well as guided image acquisition. The purpose of the workshop is to work with interested stakeholders to identify the benefits and risks associated with use of AI in radiological imaging. We also plan to discuss best practices for the validation of AI-automated radiological imaging software and image acquisition devices. Validation of device performance with respect to the intended use is critical to assess safety and effectiveness.
To Join the Webinar: Please register at the above URL.

Grant Opportunities

National Science Foundation

Grant Program: Small Business Technology Transfer Program Phase I (STTR)
Agency: National Science Foundation NSF 20-528 NSF
RFP Website: https://www.nsf.gov/pubs/2020/nsf20528/nsf20528.htm
Brief Description: The STTR program is intended to support scientific excellence and technological innovation through the investment of federal research funds to build a strong national economy by stimulating technological innovation in the private sector; strengthening the role of small business in meeting federal research and development needs; increasing the commercial application of federally supported research results; and fostering and encouraging participation by socially and economically disadvantaged and women-owned small businesses.
The STTR program at NSF solicits proposals from the small business sector consistent with NSF's mission to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.
Because the program has no topical or procurement focus, the NSF offers very broad solicitation topics that are intended to encourage as many eligible science- and technology-based small businesses as possible to compete for funding. The topics are detailed on the program website. In many cases, the program is also open to proposals focusing on technical and market areas not explicitly noted in the aforementioned topics.
Awards: Standard grants. Anticipated Funding Amount: $17,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: December 18, 2019 - March 05, 2020 The NSF SBIR/STTR Program opened **four submission windows**, as opposed to specific deadlines, that allow small businesses the flexibility to submit a full proposal at any time within a window.
Contacts: Henry Ahn, Biomedical (BM) Technologies and Medical Devices (MD), telephone: (703) 292-7069, email: hahn@nsf.gov

- Peter Atherton, Information Technologies (IT), Artificial Intelligence (AI), and Quantum Information Technologies (QT), telephone: (703) 292-8772, email: patherto@nsf.gov
- Anna Brady-Estevez, Chemical Technologies (CT), Energy Technologies (EN), and Distributed Ledger (DL), telephone: (703) 292-7077, email: abrady@nsf.gov

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Grant Program: Small Business Innovation Research Program Phase I (SBIR)
Agency: National Science Foundation 20-527
RFP Website: https://www.nsf.gov/pubs/2020/nsf20527/nsf20527.htm

Brief Description: The SBIR program is intended to support scientific excellence and technological innovation through the investment of federal research funds to build a strong national economy by stimulating technological innovation in the private sector; strengthening the role of small business in meeting federal research and development needs; increasing the commercial application of federally supported research results; and fostering and encouraging participation by socially and economically disadvantaged and women-owned small businesses.
The SBIR program at NSF solicits proposals from the small business sector consistent with NSF's mission to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.
Because the program has no topical or procurement focus, the NSF offers very broad solicitation topics that are intended to encourage as many eligible science- and technology-based small businesses as possible to compete for funding. The topics are detailed on the program website. In many cases, the program is also open to proposals focusing on technical and market areas not explicitly noted in the aforementioned topics.
Awards: Standard grants. Anticipated Funding Amount: $75,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: December 18, 2019 - March 05, 2020 The NSF SBIR/STTR Program opened **four submission windows**, as opposed to specific deadlines, that allow small businesses the flexibility to submit a full proposal at any time within a window.
Contacts: Henry Ahn, Biomedical (BM) Technologies and Medical Devices (MD), telephone: (703) 292-7069, email: hahn@nsf.gov

- Peter Atherton, Information Technologies (IT), Artificial Intelligence (AI), and Quantum Information Technologies (QT), telephone: (703) 292-8772, email: patherto@nsf.gov
- Anna Brady-Estevez, Chemical Technologies (CT), Energy Technologies (EN), and Distributed Ledger (DL), telephone: (703) 292-7077, email: abrady@nsf.gov

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Grant Program: NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)
Agency: National Science Foundation NSF 20-526
RFP Website: https://www.nsf.gov/pubs/2020/nsf20526/nsf20526.htm
Brief Description: A well-educated science, technology, engineering, and mathematics (STEM) workforce is a significant contributor to maintaining the competitiveness of the U.S. in the global economy. The National Science Foundation (NSF) Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) program addresses the need for a high quality STEM workforce in STEM disciplines supported by the program and for the increased success of low-income academically talented students with demonstrated financial need who are pursuing associate, baccalaureate, or graduate degrees in science, technology, engineering, and mathematics (STEM).

Recognizing that financial aid alone cannot increase retention and graduation in STEM, the program provides awards to Institutions of Higher Education (IHEs) to fund scholarships and to advance the adaptation, implementation, and study of effective evidence-based curricular and co-curricular activities that support recruitment, retention, transfer (if appropriate), student success, academic/career pathways, and graduation in STEM. The S-STEM program encourages collaborations among different types of participating groups, including but not limited to partnerships among different types of institutions; collaborations of STEM faculty and institutional, educational, and social science researchers; and partnerships among institutions of higher education and business, industry, local community organizations, national labs, or other federal or state government organizations, if appropriate.

The program seeks to 1) increase the number of low-income academically talented students with demonstrated financial need obtaining degrees in S-STEM eligible disciplines and entering the workforce or graduate programs in STEM; 2) improve the education of future scientists, engineers, and technicians, with a focus on low-income academically talented students with demonstrated financial need; and 3) generate knowledge to advance understanding of how interventions or evidence-based curricular and co-curricular activities affect the success, retention, transfer, academic/career pathways, and graduation of low-income students in STEM.
Scholars must be low-income, academically talented students with unmet financial need who are enrolled in an associate, baccalaureate or graduate degree program, with a major in an S-STEM eligible discipline.
S-STEM Eligible Degree Programs:
Associate of Arts, Associate of Science, and Associate of Applied Science
Bachelor of Arts, Bachelor of Science, and Bachelor of Applied Science
Master of Arts and Master of Science
Doctoral
S-STEM Eligible Disciplines:
Biological sciences (except medicine and other clinical fields)
Physical sciences (including physics, chemistry, astronomy, and materials science)
Mathematical sciences
Computer and information sciences
Geosciences
Engineering
Technology fields associated with the disciplines above (e.g. biotechnology, chemical technology, engineering technology, information technology
Awards: Standard grants. Anticipated Funding Amount: $70,000,000 to $95,000,000
$70,000,000 to $95,000,000 annually, for new and continuing awards. The program supports three types of projects. Awards for Track 1 (Institutional Capacity Building) projects may not exceed $650,000. Awards for Track 2 (Design and Development: Single Institution) projects may not exceed $1.0 million. Awards for Track 3 (Design and Development: Multi-Institutional Consortia) projects may not exceed $5.0 million. In all cases, the totals are inclusive of direct and indirect costs.
Limit on Number of Proposals per Organization: An Institution may submit one proposal (either as a single institution or as subawardee or a member of a Collaborative Research project) from each constituent school or college that awards degrees in an S-STEM eligible discipline.
Letter of Intent: Not Required
Proposal Submission Deadline: March 25, 2020
Contacts: Keith Sverdrup, telephone: (703) 292-4671, email: ksverdru@nsf.gov

- Andrea Johnson, telephone: (703) 292-5164, email: andjohns@nsf.gov
- Sami Rollins, telephone: (703) 292-7133, email: srollins@nsf.gov

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Grant Program: Faculty Early Career Development Program (CAREER): Includes the description of NSF Presidential Early Career Awards for Scientists and Engineers (PECASE)
Agency: National Science Foundation NSF 20-525
RFP Website: https://www.nsf.gov/pubs/2020/nsf20525/nsf20525.htm
Brief Description: *CAREER*: The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization. Activities pursued by early-career faculty should build a firm foundation for a lifetime of leadership in integrating education and research.

NSF encourages submission of CAREER proposals from early-career faculty at all CAREER-eligible organizations and especially encourages women, members of underrepresented minority groups, and persons with disabilities to apply.
PECASE: Each year NSF selects nominees for the Presidential Early Career Awards for Scientists and Engineers (PECASE) from among the most meritorious recent CAREER awardees. Selection for this award is based on two important criteria: 1) innovative research at the frontiers of science and technology that is relevant to the mission of NSF, and 2) community service demonstrated through scientific leadership, education, or community outreach. These awards foster innovative developments in science and technology, increase awareness of careers in science and engineering, give recognition to the scientific missions of the participating agencies, enhance connections between fundamental research and national goals, and highlight the importance of science and technology for the Nation's future. Individuals cannot apply for PECASE. These awards are initiated by the participating federal agencies. At NSF, up to twenty nominees for this award are selected each year from among the PECASE-eligible CAREER awardees most likely to become the leaders of academic research and education in the twenty-first century. The White House Office of Science and Technology Policy makes the final selection and announcement of the awardees.
Awards: Standard grants. Anticipated Funding Amount: $255,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: July 27, 2020
Contacts: Division CAREER contacts listed on the CAREER web page at: https://www.nsf.gov/crssprgm/career/contacts.jsp

- See Contacts listing, NSF, telephone: (703) 292-5111, email: nfo@nsf.gov

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Grant Program: National Robotics Initiative 2.0: Ubiquitous Collaborative Robots (NRI-2.0)
Agency: National Science Foundation NSF 20-522
RFP Website: https://www.nsf.gov/pubs/2020/nsf20522/nsf20522.htm
Brief Description: The NRI-2.0 program builds upon the original National Robotics Initiative (NRI) program to support fundamental research in the United States that will accelerate the development and use of collaborative robots (co-robots). A co-robot is a robot whose main purpose is to work with people or other robots to accomplish a goal. An ideal co-robot is an adaptable partner, not limited to a narrow set of specified interactions or functions, but able to significantly enhance team performance despite changes in its role, its teammates, or the team's collective goals. The focus of the NRI-2.0 program is on **ubiquity**, which in this context means seamless integration of co-robots to assist humans in every aspect of life.

The program supports four main research themes that are envisioned to advance the goal of ubiquitous co-robots: **scalability**, **customizability**, **lowering barriers to entry**, and **societal impact,** including human safety. Topics addressing **scalability** include how robots can collaborate effectively with orders of magnitude more humans or other robots than is handled by the current state of the art; how robots can perceive, plan, act, and learn in uncertain, real-world environments, especially in a distributed fashion; and how to facilitate large-scale, safe, robust and reliable operation of robots in complex environments. **Customizability** includes how to enable co-robots to adapt to specific different tasks, environments, or people, with minimal modification to hardware and software; how robots can personalize their interactions with people; and how robots can communicate naturally with humans, both verbally and non-verbally. Topics in **lowering barriers to entry** should focus on lowering the barriers for conducting fundamental robotics *research* and research on integrated robotics application. This may include development of open-source co-robot hardware and software, as well as widely-accessible testbeds. Outreach or using robots in educational programs do not, by themselves, lower the barriers to entry for robotics research. Topics in **societal impact** include fundamental research to establish and infuse

robotics into educational curricula, advance the robotics workforce through education pathways, and explore the social, economic, ethical, security, and legal implications of our future with ubiquitous collaborative robots.
Awards: Standard grants. Anticipated Funding Amount: $22,000,000 to $32,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: February 12, 2020 - February 26, 2020
Contacts: David Miller, CISE/IIS, telephone: (703) 292-4914, email: damiller@nsf.gov

- Scott Acton, CISE/CCF, telephone: (703) 292-2124, email: sacton@nsf.gov
- Radhakisan Baheti, ENG/ECCS, telephone: (703) 292-8339, email: rbaheti@nsf.gov

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Grant Program: EHR Core Research (ECR): Building Capacity in STEM Education Research (ECR: BCSER)
Agency: National Science Foundation NSF 20-521
RFP Website: https://www.nsf.gov/pubs/2020/nsf20521/nsf20521.htm
Brief Description: ECR's Building Capacity for STEM Education Research (ECR: BCSER) solicitation supports projects that build individuals' capacity to carry out high quality STEM education research that will enhance the nation's STEM education enterprise and broaden the pool of researchers that can conduct fundamental research in STEM learning and learning environments, broadening participation in STEM fields, and STEM workforce development.
Specifically, ECR: BCSER supports activities that enable early and mid-career researchers to acquire the requisite expertise and skills to conduct rigorous fundamental research in STEM education. ECR: BCSER seeks to fund research career development activities on topics that are relevant to qualitative and quantitative research methods and design, including the collection and analysis of new qualitative or quantitative data, secondary analyses using extant datasets, or meta-analyses.
This career development may be accomplished through investigator-initiated projects or through professional development institutes that enable researchers to integrate methodological strategies with theoretical and practical substantive issues in STEM education. Early and mid-career faculty new to STEM education research, particularly underrepresented minority faculty and faculty at minority-serving and two-year institutions, are encouraged to submit proposals.
ECR: BCSER especially welcomes proposals that pair well with the efforts of NSF INCLUDES (https://www.nsf.gov/news/special_reports/nsfincludes/index.jsp) to develop STEM talent from all sectors and groups in our society. Proposers are encouraged to identify topics that support the thrust of NSF INCLUDES projects.
Awards: Standard grants. Anticipated Funding Amount: $12,000,000
NSF expects to make 26 standard or continuing grant awards. The ECR: BCSER competition anticipates having approximately $12,000,000 for new awards in FY 2020, subject to availability of funds, as follows:
Individual Investigator Development in STEM Education Research: Up to 16 awards. The maximum award amount is $350,000 for two years.
Institutes in Research Methods: Up to five awards. The maximum award amount for is $1,000,000 for three years.
The typical award amount for Conferences is $25,000 to $100,000.
Letter of Intent: Not Required
Proposal Submission Deadline: February 28, 2020
Contacts: Please direct inquiries to:, telephone: (703) 292-8112, email: ECRBCSER@nsf.gov

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Grant Program: Dear Colleague Letter: NSF/NSFC Joint Research on Environmental Sustainability Challenges
Agency: National Science Foundation NSF 20-019
RFP Website: https://www.nsf.gov/pubs/2020/nsf20019/nsf20019.pdf
Brief Description: The NSF Engineering Directorate (ENG) and the National Natural Science Foundation of China (NSFC) Department of Engineering and Material Sciences (DEMS) and Department of Geosciences are partnering to encourage joint research by U.S. - China teams collaborating on fundamental research that addresses critical environmental sustainability challenges.

Among nations, the U.S. and China have the two largest economies on Earth and also have important engineering, technology, business and trade relationships with each other. Both nations face significant environmental sustainability challenges, for example in the foodenergy-water (FEW) nexus, urban sustainability, global change, and manufacturing. Fundamental research is needed to provide the foundational knowledge for addressing these challenges. This Dear Colleague Letter is for research proposals from joint U.S. - China teams in the environmental sustainability themes of: ***"Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS: U.S.-China)"***

1. quantitative and computational modeling of a FEW system
2. innovative human and technological solutions to critical FEW systems problems.

Every proposal must include the participation of researchers from at least one U.S. organization and at least one institution in China. Proposals that do not comply with this requirement will be returned without review. The proposal submitted to NSF must conform to NSF proposal requirements as specified in NSF's posted Proposal and Award Policies and Procedures Guide (NSF 19-1), and the matching proposal submitted to NSFC must conform to requirements posted by NSFC. NSF will fund the U.S. researchers up to a total of $500,000 for 4 years for each recommended award, while NSFC will fund the China 1 researchers up to a total of 3 million yuan for 4 years for each recommended award. In total, no more than 6 joint NSF-NSFC project grants are expected to be funded. NSF research funding is pending the availability of funds. Each proposal must include a management plan that clearly specifies the role of team researchers from both the U.S. and China, and the mechanisms through which close collaboration will be assured. The management plan is not to exceed 3 pages and is to be included in the supplementary document file of the electronic submission.

Cyberinfrastructure proposals are outside the scope of this Dear Colleague Letter.

Awards: U.S.-based researchers, through their U.S. organizations, may submit unsolicited proposals to collaborate with China-based researchers on the INFEWS topic described above to the ENG/CBET Environmental Sustainability (7643) program. Please note that, even though the Environmental Sustainability program has no submission deadline, proposals submitted for consideration under this DCL must be received by 5:00 pm local submitter's time on February 26, 2020.
More information on submittal procedures is posted at: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505695&org=CBET&from=home.

Each U.S. - China team is responsible for ensuring that their counterpart submits a matching proposal by the required deadline. Each submitted proposal must include a letter from the collaborator. For NSF proposals, the collaborator letter is to be included in the supplementary documents file of the electronic submission, along with the management plan described earlier.
Letter of Intent: Not Required
Proposal Submission Deadline: February 26, 2020
Contacts: Questions concerning this opportunity may be emailed to the CBET Environmental Sustainability program director, Bruce Hamilton (bhamilto@nsf.gov) or the CBET Associate Environmental Sustainability program director, Brandi Schottel (bschotte@nsf.gov)

Grant Program: Dear Colleague Letter: Supporting Transition of Research into Cities Through the U.S. ASEAN (Association of Southeast Asian Nations Cities) Smart Cities Partnership
Agency: National Science Foundation NSF 20-024
RFP Website: https://www.nsf.gov/pubs/2020/nsf20024/nsf20024.jsp?org=NSF
Brief Description: Through this Dear Colleague Letter (DCL), the National Science Foundation's (NSF) Directorate for Computer and Information Science and Engineering (CISE) together with the Department of State's Bureau of East Asia and Pacific Affairs wishes to notify the U.S. community of its intention to support the following high-impact research-transition funding requests aligned with the U.S.-ASEAN Smart Cities Partnership:

- Supplemental funding requests for active awards funded by the NSF Cyber-Physical Systems (CPS) and Smart and Connected Communities (S&CC) programs; and
- Early-concept Grants for Exploratory Research (EAGER) proposals exploring early-stage, untested, but potentially transformative, research ideas or approaches building on prior success in activities related to smart and connected communities and/or transitioning to practice research that is relevant to communities.

S&CC research integrates social and technological dimensions and is targeted at one or more communities. While S&CC research may eventually yield successful outcomes in the targeted communities, when initially applied to new environments and cultural contexts, new challenges will emerge. Such challenges introduce an element of high risk where the solutions have a corresponding potential for high impact in improving quality of life. Through this DCL, NSF is specifically announcing its intention to support such activities, where the "new environment" is within the ASEAN region. Supplemental funding requests and EAGER proposals will provide support for periods of up to two years and up to $300,000.
For specific areas of interest within each of the above cities, see the ASEAN smart cities plans compiled by each city: https://asean.org/storage/2019/02/ASCN-Consolidated-SCAPs.pdf. Note that activities in Cambodia must involve education or the environment.
Proposals must discuss active transitioning of the research into one of the indicated ASEAN cities working together with representatives from that city. **Proposals that do not incorporate at least one of the eligible ASEAN cities will be returned without review.**
Awards: To be considered for funding in fiscal year (FY) 2020, supplemental funding requests and EAGER proposals must be submitted by March 1, 2020, but earlier submissions are encouraged.
Letter of Intent: Not Required
Proposal Submission Deadline: March 12, 2020
Contacts: David Corman, Program Director, CISE/CNS, telephone: (703) 292-8754, email: dcorman@nsf.gov;

- Sandip Roy, Program Director, CISE/CNS, telephone: (703) 292-7096, email: saroy@nsf.gov;
- Ralph Wachter, Program Director, CISE/CNS, telephone: (703) 292-8950, email: rwachter@nsf.gov.

Grant Program: EarthCube: Developing a Community-Driven Data and Knowledge Environment for the Geosciences
Agency: National Science Foundation NSF 20-520
RFP Website: https://www.nsf.gov/pubs/2020/nsf20520/nsf20520.htm
Brief Description: EarthCube is a community-driven activity sponsored through a partnership between the NSF Directorate for Geosciences (GEO) and the NSF Office of Advanced Cyberinfrastructure (OAC) in the Directorate for Computer & Information Science & Engineering's (CISE) to transform research in the academic geosciences community. EarthCube aims to create a well-connected and facile environment

to share data and knowledge in an open, transparent, and inclusive manner, thus accelerating our ability to understand and predict the Earth system.

Achieving EarthCube will require a long-term dialog between NSF and the interested scientific communities to develop cyberinfrastructure that is thoughtfully and systematically built to meet the current and future requirements of geoscientists. New avenues will be supported to gather community requirements and priorities for the elements of EarthCube, and to capture the best technologies to meet these current and future needs. The EarthCube portfolio will consist of interconnected projects and activities that engage the geosciences, cyberinfrastructure, computer science, and associated communities. The portfolio of activities and funding opportunities will evolve over time depending on the status of the EarthCube effort and the scientific and cultural needs of the geosciences community.
Awards: Standard grants. Anticipated Funding Amount: $5,000,000 to $10,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: March 12, 2020
Contacts: Eva Zanzerkia, Directorate for Geosciences, Earth Sciences Division, telephone: (703) 292-4734, email: ezanzerk@nsf.gov

- Amy Walton, Directorate for Computer and Information Science and Engineering, Division of Advanced Cyberinfrastructure, telephone: (703) 292-4538, email: awalton@nsf.gov
- Sean C. Kennan, Directorate for Geosciences. Ocean Sciences Division, telephone: (703) 292-7575, email: skennan@nsf.gov

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Grant Program: Next Generation Software for Data-driven Models of Space Weather with Quantified Uncertainties (SWQU)
Agency: National Science Foundation NSF 20-519
RFP Website: https://www.nsf.gov/pubs/2020/nsf20519/nsf20519.htm
Brief Description: This solicitation addresses the overlapping objectives of the National Space Weather Strategy and Action Plan (NSW-SAP) and the National Strategic Computing Initiative (NSCI) Update through a pilot program. The goal of this pilot program is to transform development of predictive modeling of the coupled evolution of the magnetized solar atmosphere and the solar wind, and their interaction with the Earth's magnetosphere and upper atmosphere. This requires advancing our understanding of the necessary and sufficient requirements of model complexity, computational performance, and observational inputs. The pilot program is also expected to directly contribute to the long-term goal of creating space weather models with quantifiable predictive capability.
Awards: Standard grants. Anticipated Funding Amount: $12,000,000
Subject to availability of funds and receipt of sufficient quality proposals; the anticipated total funding amount includes joint funding from NSF and NASA. The awards are expected to be at the level of $500K-$1M per year; a total award for three years is expected to be in the range of $1,500,000 – $3,000,000.
Letter of Intent: Not Required
Proposal Submission Deadline: March 20, 2020
Contacts: Vyacheslav (Slava) Lukin, Program Director, Division of Physics, telephone: (703) 292-7382, email: vlukin@nsf.gov

- Bogdan Mihaila, Program Director, Division of Physics, telephone: (703) 292-8235, email: bmihaila@nsf.gov
- Ilia I. Roussev, Program Director, Division of Atmospheric and Geospace Sciences, telephone: (703) 292-8519, email: iroussev@nsf.gov

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Grant Program: Semiconductor Synthetic Biology for Information Storage and Retrieval (SemiSynBio-II)
Agency: National Science Foundation NSF 20-518
RFP Website: https://www.nsf.gov/pubs/2020/nsf20518/nsf20518.htm
Brief Description: The National Science Foundation (NSF), through its Divisions of Electrical, Communications and Cyber Systems (ECCS), Computing and Communication Foundations (CCF), Molecular and Cellular Biosciences (MCB), and Materials Research (DMR) announces a follow-up solicitation on the Semiconductor Synthetic Biology for Information Storage and Retrieval Program (SemiSynBio-II). Future ultra-low energy storage-based computing systems can be built on principles derived from organic systems that are at the intersection of physics, chemistry, biology, computer science and engineering. Next-generation information storage technologies can be envisioned that are driven by biological principles and use biomaterials in the fabrication of devices and systems that can store data for more than 100 years with storage capacity 1,000 times more than current storage technologies. Such a research effort can have a significant impact on the future of information storage and retrieval technologies. This focused solicitation seeks high-risk/high-return interdisciplinary research on novel concepts and enabling technologies that will address the fundamental scientific issues and technological challenges associated with the underpinnings of synthetic biology integrated with semiconductor technology. This research will foster interactions among various disciplines including biology, physics, chemistry, materials science, computer science and engineering that will enable in heretofore unanticipated breakthroughs.
Awards: Standard grants. Anticipated Funding Amount: $12,000,000
Individual projects will be funded at up to $1,500,000 for three years depending on the availability of funds.
Letter of Intent: Not Required
Proposal Submission Deadline: February 14, 2020 - March 16, 2020
Contacts: Usha Varshney, Program Director, ENG/ECCS, telephone: (703) 292-8339, email: uvarshne@nsf.gov
Mitra Basu, Program Director, CISE/CCF, telephone: (703) 292-8910, email: mbasu@nsf.gov
Elebeoba E. May, Program Director, BIO/MCB, telephone: (703) 292-2100, email: emay@nsf.gov

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Grant Program: Environmental Convergence Opportunities in Chemical, Bioengineering, Environmental, and Transport Systems (ECO-CBET)
Agency: National Science Foundation NSF 20-517
RFP Website: https://www.nsf.gov/pubs/2020/nsf20517/nsf20517.htm
Brief Description: Creating solutions to pressing environmental and sustainability challenges will require input and imaginative approaches from various fields, perspectives, and disciplines. The National Academies of Sciences, Engineering and Medicine (NASEM), in their report "Environmental Engineering for the 21st Century: Addressing Grand Challenges," identified five critical challenges we must address as a society:

- Sustainably supply food, water, and energy
- Curb climate change and adapt to its impacts
- Design a future without pollution and waste
- Create efficient, healthy, and resilient cities
- Foster informed decisions and actions

The report further states, "The challenges provide focal points for evolving environmental engineering education, research, and practice toward increased contributions and a greater impact. Implementing this new model will require modifications in educational curriculum and creative approaches to foster

interdisciplinary research on complex social and environmental problems." This solicitation aims to address these grand challenges by supporting a collaborative research model that seamlessly integrates sustainability, environmental engineering, and process science and engineering.
Accordingly, the Environmental Convergence Opportunities in Chemical, Bioengineering, Environmental, and Transport Systems (ECO-CBET) solicitation will support activities that confront vexing environmental engineering and sustainability problems by uncovering and incorporating fundamental knowledge to design new processes, materials, and devices from a systems-level perspective. Projects should be compelling and reflect sustained, coordinated efforts from interdisciplinary research teams. A key objective of the solicitation is to encourage conversations and robust collaborations amongst the chemical process, transport phenomena, bioengineering, and environmental and sustainability research communities such that unanticipated solutions may arise. Furthermore, training the future workforce to actively engage and be successful in interdisciplinary research will be necessary to continually innovate given the scope of the environmental problems faced by our global community.
Awards: Continuing grants. Anticipated Funding Amount: $8,500,000
Letter of Intent: Not Required
Pre-Proposal: Required; Due on February 12, 2020
Proposal Submission Deadline: April 30, 2020
Contacts: Christina Payne, telephone: (703) 292-2895, email: cpayne@nsf.gov
Bruce K. Hamilton, telephone: (703) 292-7066, email: bhamilto@nsf.gov
Robert McCabe, telephone: (703) 292-4826, email: RMCCABE@nsf.gov

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National Institutes of Health

Grant Program: Glial Plasticity in the Aging Brain (R01 Clinical Trial Not Allowed)
Agency: National Institutes of Health RFA-AG-21-010
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-AG-21-010.html
Brief Description: This FOA encourages research on within-glial-cell-type heterogeneity and diversity in the aging brain. Functionally defining glial diversity in the aging brain will provide the foundation for future work expanding on these findings as potential mechanisms of vulnerability and resilience to diseases of aging, such as Alzheimer's disease and its related dementias. While the primary goal of the FOA is to promote research on brain aging, applications proposing to include studies of Alzheimer's disease as a means of comparison to the aging process are permitted.
Appropriate topics include, but are not limited to, the following:

- Investigating the cellular and molecular pathways driving glial heterogeneity within cell types during aging, including whether sex-based differences contribute to glial diversity in the aging brain.
- Reprogramming targeted age-associated glial cell subtypes and/or broad glial landscapes to understand their impact on physiological function and resilience.
- Comparing the functional implications of age-associated glial cell subtypes in brain regions most vulnerable versus resistant to neurodegeneration.
- Assessing the functional consequences of introducing age-associated glial subtypes to the young brain and how this compares to introducing young-associated glial subtypes to the aged brain.
- Comparing how glial subtypes characteristic of the aged brain interact with other glial cell types and neurons.
- Confirming the human relevance of age-related glial subtypes discovered in animal models relevant to human brain aging.

- Conducting in silico analyses to uncover new relationships between glial subtypes, aging, neurodegeneration, and brain function.

Award: Application budgets are limited to $250,000 in direct costs per year. The maximum project period is 5 years.
Letter of Intent: May 17, 2020
Deadline: June 17, 2020
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).
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: Jointly Sponsored Ruth L. Kirschstein National Research Service Award Institutional Predoctoral Training Program in the Neurosciences (T32 Clinical Trial Not Allowed)
Agency: National Institutes of Health PAR-20-076
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-20-076.html
Brief Description: The purpose of the Jointly Sponsored Predoctoral Training Program in the Neurosciences (JSPTPN) is to provide strong, broad neuroscience training that will enable students to become successful research scientists at a time when the field is advancing at an astonishing pace. Neuroscience research increasingly requires investigators who can cross boundaries, draw on knowledge and approaches from various disciplines and levels of analysis, and apply this breadth of knowledge in novel ways to yield new discoveries about the nervous system. Moreover, the ability to conduct impactful neuroscience research requires strong foundational skills in experimental design, statistical methodology and quantitative reasoning related to study design, analysis and interpretation.

Breakthroughs in neuroscience have come, and will continue to come, not only from a deep and broad understanding of the nervous system, but also from an understanding of biological systems not historically associated with neuroscience. For example, blood brain barrier function is now known to be heavily dependent on the multidrug resistance transporter, inflammatory responses are key components of many neurological disorders, and metabolic processes historically associated with biology or diseases outside the nervous system are now known to play a role in both normal brain function and neurobiological disorders. To achieve the goals of the JSPTPN, students should therefore be exposed to a broad spectrum of relevant science. In addition, the training supported by the JSPTPN must be grounded in principles of rigorous experimental design, an understanding of the critical need for, and proper use of, statistics, and quantitative literacy.

Broad-based Research Training. The JSPTPN supports a program of broad-based education and research experience during the first two years of graduate training. As such, training programs supported by a JSPTPN training grant must have a comprehensive, two-year training plan.
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 26, 2020; May 25, 2021; May 25, 2022
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).
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: Revision Applications for Validation of Biomarker Assays Developed Through NIH-Supported Research Grants (R01 Clinical Trial Not Allowed)

Agency: National Institutes of Health PAR-20-074
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-20-074.html
Brief Description: Molecular markers and imaging markers are increasingly being integrated into clinical trials as enrichment or stratification markers for the identification of target patient populations in the development of new drugs or treatment regimens. They are also co-developed as treatment response markers for therapies (i.e. companion diagnostics), where positive findings from large clinical trials can provide the level of evidence needed to support their clinical use. Many of these imaging or molecular markers and assays are developed by investigators in academic institutions or small biotechnology companies through research funded by research project grants. Such markers may be suitable for assessing risk of developing cancer or risk of recurrence relevant for cancer prevention or cancer control. However, most investigators may not appreciate the rigors of marker validation and/or may not have the expertise to navigate the regulations that clinical laboratory assays need to meet. Additionally, marker and assay validation applications that do not include mechanistic, hypothesis-driven studies may not fare well during grant application reviews. These factors can hamper innovation, where many new biomarkers might be continuously discovered and developed early on but do not successfully advance and often fall to the wayside during later stages of development. Despite the need to incorporate these markers into clinical trials, many assays are not adequately validated and not ready for use on patients even as investigational assays/tools/devices.
This FOA will allow the investigators to advance the development of assays that they have begun working on with their existing research project (R01) awards without having to formulate the validation study into an application for a new, independent research project grant. This FOA will utilize the NIH Research Project Grant (R01) mechanism and targets currently funded NCI R01 projects with at least two years left at the estimated time of award. Applicants cannot request funds beyond the end date of the parent award.
Specific Research Objectives
Applications to this FOA should propose to clinically validate an exiting assay using human specimens in a clinical laboratory into a molecular assay that can be used in a clinical trial for the detection, diagnosis, treatment, prevention, or control of cancer. However, projects that improve standardization or harmonization of assay performance among laboratories are also highly encouraged, and these types of projects may involve continued efforts in assay optimization and ensuring concordance of assay results from different laboratories. Therefore, these types of applications may be viewed as exceptions to the requirement that analytical validation should have been completed by the time revision applications are submitted.
Award: Application budgets are limited to $150,000 in direct costs in any single year.
Letter of Intent: Not required.
Deadline: February 28, 2020; July 10, 2020; October 27, 2020; February 26, 2021; July 13, 2021; October 26, 2021; February 28, 2022; July 11, 2022; October 28, 2022
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s)
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: Innovative Molecular and Cellular Analysis Technologies for Basic and Clinical Cancer Research (R21 Clinical Trials Not Allowed)
Agency: National Institutes of Health RFA-CA-20-017
RFA-CA-20-018 , R33 Exploratory/Developmental Grant II
RFA-CA-20-019, R21 Exploratory/Developmental Grant
RFA-CA-20-020, R33 Exploratory/Developmental Grant II

RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-CA-20-017.html
Brief Description: This funding opportunity is part of a broader NCI-sponsored Innovative Molecular Analysis Technologies (IMAT) Program.
Since its inception in 1998, the IMAT Program has focused on stimulating and accelerating the development, integration, maturation, and dissemination of the most novel and highly innovative technologies in support of cancer research and medicine. Together with the NCI's other technology-focused programs, the IMAT program continues to support the development of tools and methods that enable cancer researchers to make new discoveries, enhance our understanding of cancer etiology and proliferation, improve detection capabilities, develop diagnostic methods and treatment strategies, conduct population-scale studies, address and reduce disparities in clinical care, and assist in clinical decision-making.
The current issuance of the IMAT Program consists of four separate FOAs that cover the following two areas:

- **Molecular and Cellular Analysis Technology Development for Cancer Research** is intended to support the development of technologies that are novel and potentially transformative to the molecular and cellular analysis of cancer, which may, in turn, accelerate basic or clinical cancer research. Applications must offer novel measurement, probing, or targeting of cancer-relevant targets at the molecular or cellular level.
    - RFA-CA-20-017 (this FOA, R21): Supports an early-stage feasibility study (inception through preliminary development) to demonstrate the core functional capabilities of the proposed technology.
    - RFA-CA-20-018 (R33): Assumes completion of the initial phase of development and supports the advanced development and robust validation of the technology.
- **Cancer-relevant Biospecimen Science Technologies** is centered on the development and validation of novel technologies to improve or assess the quality of cancer-relevant biospecimens for research or clinical care. Applications must offer novel approaches for procurement, preservation, and/or isolation of proteins, DNA, RNA, and other small molecules from biospecimens or otherwise assess their biological integrity. The emphasis is on reducing the impact of pre-analytical variations in the collection, processing, handling, and preservation of cancer-relevant biospecimens or their derivatives to improve their quality and utility for cancer research or clinical care.
    - RFA-CA-20-019 (R21): Supports an early-stage feasibility study (inception through preliminary development) to demonstrate the core functional capabilities of the proposed technology.
    - RFA-CA-20-020 (R33): Assumes completion of the initial phase of development and supports the advanced development and robust validation of the technology.

Additional information about the IMAT Program and its individual FOAs can be found here.
Award: Direct costs are limited to $400,000 over a 3-year period, with no more than $200,000 in direct costs allowed in any single year.
Letter of Intent: 30 days prior to the application due date
Deadline: February 21, 2020; May 28, 2020; September 29, 2020
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).
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: Postbaccalaureate Research Education Program (R25 - Independent Clinical Trial Not Allowed)
Agency: National Institutes of Health PAR-20-066
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-20-066.html
Brief Description: The **Overarching Objective** of (Postbaccalaureate Research Education Program) PREP is to develop a diverse pool of well-trained postbaccalaureate participants who will transition into and complete rigorous biomedical, research-focused doctoral degree programs (e.g., Ph.D. or M.D./Ph.D.) in biomedical fields relevant to the NIGMS mission. 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 contributes to excellence in research environments and strengthens the research enterprise. This FOA is intended to support outstanding research education programs that will enhance diversity at all levels.
Award: The total direct costs for each award are limited to $400,000 annually. The total project period may not exceed 5 years.
Letter of Intent: Not Applicable
Deadline: February 21, 2020; January 27, 2021; January 27, 2022, 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: NIMH Instrumentation Program (S10 Clinical Trial Not Allowed)
Agency: National Institutes of Health RFA-MH-20-555
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-MH-20-555.html
Brief Description: Types of instruments that might be appropriate for the NIMH Instrumentation Program include light microscopes, electron microscopes, spectrophotometers, and biomedical imagers. This list is representative and not exhaustive. Foreign-made instruments are allowed. A single application requesting multiple unrelated instruments is not appropriate for this Funding Opportunity Announcement (FOA). In such cases, multiple applications can be submitted.

The goal of this FOA is to provide instruments to collect data rather than components for further instrument/technology development. Instrument development applications should be submitted to other FOAs on which NIMH participates or to appropriate BRAIN Initiative FOAs.
Award: Applications will be accepted with an award budget between $300,000 and $600,000. There is no maximum limit on the cost of the instrument, but the maximum award is $600,000. S10 awards are only for the cost of the instrument, so indirect costs cannot be requested.
Letter of Intent: January 10, 2020; September 9, 2020; September 8, 2021
Deadline: February 10, 2020; October 9, 2020; October 8, 2021
No late applications will be accepted for this Funding Opportunity Announcement
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).
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: New Investigator Projects on 4DN Organization and Function in Human Health and Disease (U01 Clinical Trial Not Allowed)
Agency: National Institutes of Health RFA-RM-20-006
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-RM-20-006.html
UM1 Opportunity: 4DN Centers for Data Integration, Modeling and Visualization (UM1 Clinical Trial Not Allowed): https://grants.nih.gov/grants/guide/rfa-files/RFA-RM-20-004.html
Brief Description: The 4D Nucleome (4DN) NIH Common Fund Program was launched in 2015 with the goal of developing the tools and resources that would enable the characterization of the three-dimensional structure and dynamics of human and mouse genomes and provide deeper mechanistic insights into how the nucleus is functionally organized. The impetus for its selection as a Common Fund program was the growing awareness that understanding the architecture of the cell nucleus may have widespread and profound implications for human health and disease, but our ability to study nuclear organization was hindered by technological and conceptual challenges.

Progress applying 4DN tools to human health and disease has been hampered by the need for such studies to use more challenging systems such as human primary cells, tissues, or organoids. The purpose of this FOA is to support projects from scientists who are in the early stages of establishing an independent research career that apply new or existing tools to monitor and/or manipulate the 4DN in the context of human health and disease. Areas of potential scientific focus include but are not limited to: enabling monitoring and manipulation of 4DN features in vivo; exploring the stability/lability/reversibility of nucleome changes; studying transcriptional and non-transcriptional functional consequences; and promoting strategies to investigate the nucleomes of cell types within heterogeneous tissues using single cell, spatial genomics, and other approaches. All applications must set aside 20% of their Direct Costs from years 2-5 of the award to support new collaborative research opportunities in consultation with NIH staff. These projects are anticipated to further both the needs of the funded project and the 4DN consortium.
Award: Application budgets may not exceed $400,000 in direct costs for any one year and need to reflect the actual needs of the proposed project.
Letter of Intent: 30 days prior to the application due date
Deadline: March 2, 2020.
No late applications will be accepted for this Funding Opportunity Announcement
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).

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: Utilizing Invasive Recording and Stimulating Opportunities in Humans to Advance Neural Circuitry Understanding of Mental Health Disorders (R01 and R21 Clinical Trial Optional)
Agency: National Institutes of Health RFA-MH-20-350 RFA-MH-20-351
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-MH-20-350.html
https://grants.nih.gov/grants/guide/rfa-files/RFA-MH-20-351.html
Brief Description: Research related to this initiative may include, but is not limited to, studies of:

- Acute intra-operative recordings from single-unit or strip electrodes.
- Mood evaluations or mental health-relevant cognitive/behavioral tasks that can be completed in the operating room should be included.
- Quantification of behaviors (e.g., facial expression, vocal expression) that may be associated with internal subjective states (e.g., mood, thoughts/impulses, perceptions) may be explored to tag simultaneously acquired neurophysiological signals to elucidate circuits related to subjective states relevant for psychiatric disorders.

Sub-acute recordings from the epilepsy monitoring unit or related situations.

- Patients with ECoG or stereo-electroencephalography (sEEG, which may be underutilized in human neuroscience studies) electrodes could participate in a variety of tasks, depending on the placement of electrodes (e.g., amygdala, orbitofrontal cortex, or anterior cingulate cortex).
- Mood variations could be assessed using ecological momentary assessment (EMA) and other digital health tools to correlate mood/cognitive/behavioral fluctuations with neural circuitry changes. Researchers could stimulate portions of the network to assess the effect on network dynamics and behavior.

Chronic recordings from recording/stimulating deep brain stimulating (DBS) systems.

- Patients implanted for a clinical indication, either for a mental health disorder or not, can participate in research aimed at exploring relevant networks (though treatment development should not be the focus of the proposed research).
- Assessments of network stability and responses to perturbations, along with their relationship to long-term/dense behavioral measures and digital phenotyping, can be included.

Research Domain Criteria (RDoC)-based circuit assessments.

- Researchers could use RDoC-inspired paradigms in the above clinical scenarios to assess the relevant neural circuits of cognitive, affective, and social domains at a higher spatial and temporal precision than possible with non-invasive measures.

Novel technological approaches.

- Novel methods of neural or behavioral recording and stimulation are encouraged. This could include novel electrodes, recording devices, or digital phenotyping/dense behavioral trackers. However, this FOA does not support the stand-alone development of novel technology. New methods should be incorporated into an underlying scientific question.

Prospective or retrospective data.

- Both prospective or retrospective data can be utilized for this funding opportunity.

The companion R21 grant mechanism of this funding opportunity encourages shorter, higher-risk applications with little (or no) preliminary data.

Award: Application budgets are not limited but need to reflect the actual needs of the proposed project.
Letter of Intent: Not Applicable
Deadline: February 10, 2020; October 9, 2020; June 10, 2021
No late applications will be accepted for this Funding Opportunity Announcement.
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).
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 Blueprint Program for Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences (BP-ENDURE) (R25 Clinical Trial Not Allowed)
Agency: National Institutes of Health RFA-NS-20-015
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-NS-20-015.html
Brief Description: The NIH Research Education Program (R25) supports research education activities in the mission areas of the NIH. The over-arching goal of this R25 program is to support educational activities that encourage individuals from diverse backgrounds, including those from groups underrepresented in the biomedical and behavioral sciences, to pursue further studies or careers in research
To accomplish the stated over-arching goal, this FOA will support creative educational activities with a primary focus on:

- ***Research Experiences***
- ***Mentoring Activities***
- ***Courses for Skills Development***

The fully integrated educational activities should prepare undergraduate students from diverse backgrounds, including those from groups underrepresented in biomedical and behavioral sciences to enter Ph.D. degree programs in the neurosciences. To accomplish this goal, this initiative will provide institutional awards to develop neuroscience research education programs comprised of collaborative partnerships integrated across different educational institution types.
The overall objective of this funding opportunity is to support a diverse pool of undergraduates, including those from underrepresented groups, to help prepare them to successfully enter and complete Ph.D. degree programs in the neurosciences and become available to participate in NIH-supported neuroscience research. Individuals currently underrepresented in neuroscience research on a national basis (for example see surveys conducted by the Society for Neuroscience Committee on Neuroscience Departments and Programs), include: individuals from underrepresented racial and ethnic groups or individuals with disabilities (see also http://www.nsf.gov/statistics/wmpd/).
Award: Although the size of award may vary with the scope of the research education program proposed and there are no specific budget limitations, the requested direct costs must be reasonable, well documented, fully justified and commensurate with the scope of the proposed program. The average cost per program is estimated between $250K - $300K.
Letter of Intent: January 19, 2020
Deadline: February 19, 2020, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

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

Grant Program: Quantum Characterization of Intermediate Scale Systems (QCISS)
Agency: Department of Defense Department of Army Material Command W911NF20S0004
Website: https://www.arl.army.mil/business/broad-agency-announcements/
Brief Description: The U.S. Army Research Office (ARO) in partnership with the National Security Agency (NSA) is soliciting proposals for research in Quantum Characterization of Intermediate Scale Systems (QCISS). The goal of the BAA is to develop efficient and practical protocols and techniques that allow Quantum Characterization, Verification, and Validation (QCVV) of larger systems with direct relevance to Fault Tolerant Quantum Computing (FTQC), and to demonstrate these protocols on intermediate-scale systems. In this BAA, intermediate-scale refers to systems of size 10-20 qubits and larger systems greater than 20 qubits. Proposals are sought to develop reliable, efficient, and scalable protocols for evaluating intermediate-scale quantum systems and selectively characterizing only the subset of information relevant to FTQC. These new methods are sought as the next advances that will empower the quantum computing community to reliably interpret and evaluate emerging larger-scale quantum systems, and not merely a continuation of work applicable to one or two-qubit QCVV. The program success criterion is to identify the subset of information needed to characterize, verify, and validate a system's behavior relevant for FTQC and create a suite of procedures for measuring that information.

Quantum computing research has reached an exciting phase where controllable multi-qubit systems are becoming available across a number of venues, including academic laboratories, industry offerings, and even on the cloud. Demonstrations of progressively more sophisticated algorithms are occurring, and achieving 'quantum advantage' seems to be on the horizon. In order to evaluate and continue to improve quantum hardware, relevant protocols must be identified and used to characterize, verify, and validate the performance of these intermediatescale quantum processing systems. However, QCVV of these increasingly complex quantum systems remains a challenge. The challenge being that as the number of qubits in a quantum system increases, the Hilbert space that defines the system grows exponentially, and the resources needed for complete characterization correspondingly grows exponentially. These resource limitations are already being encountered in small quantum systems of about 10 qubits. For continued progress, an additional challenge to overcome is to be able to identify a smaller subset of parameters that allow system performance to be predicted and understood for applications of interest without the need for full characterization.

Two categories of proposals are sought for this BAA. The first category seeks proposals that integrate theoretical and experimental research to fully identify and address the challenges of QCVV for intermediate-scale quantum systems. The second category seeks theoretical research that may significantly advance QCVV for intermediate-scale quantum systems through novel approaches that retire a set of key challenges.
Awards: Various
Proposal Deadline: White Papers: 4:00 PM Eastern Time on: 28 JANUARY 2020
Proposals: 4:00 PM Eastern Time on: 17 MARCH 2020
Contact Information: Quantum Characterization of Intermediate Scale Systems (QCISS) BAA usarmy.rtp.rdecom-aro.mesg.qcbox@mail.mil
Dr. T.R. Govindan Army Research Office Email Address: t.r.govindan.civ@mail.mil

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Grant Program: AFRL Research Collaboration Program II
Agency: Department of Defense Air Force -- Research Lab FA8650-20-S-5002
Website: https://www.grants.gov/web/grants/search-grants.html

Brief Description: The objective of the AFRL Research Collaboration Program II is to enable collaborative research partnerships between Air Force Research Laboratory (AFRL) and Academia that engages a diverse pool of scientists and engineers in addressing foundational research challenges in support of the nation's air, space and cyberspace technology needs. Additionally, AFRL seeks to enhance and further develop the research competencies of partnering universities and expand the potential domestic pipeline of a future diverse STEM workforce for AFRL. These objectives will be achieved through the collaborative efforts of a network of Historically Black Colleges and Universities and Minority Institutions (HBCUs/MIs) and partnering Institutions of Higher Education (IHEs) executing AFRL directed research projects. The scope of the research projects will encompass a broad range of evolutionary and revolutionary technology advances within varied AFRL research topic areas to include but not limited to: Structural Materials and Applications, Functional Materials and Applications, Support for Operations, Manufacturing Technology, Radio Frequency (RF) Sensing, Electro-Optical Sensing, Spectrum Warfare, Layered Sensing Exploitation and Enabling Sensor Devices/Components, High Speed Systems, Control, Power, & Thermal Management Systems, Rocket Propulsion, Turbine Engines, Aerospace Vehicles, Human-Centered Intelligence Surveillance & Reconnaissance (ISR), Bio Effects, and Training & Decision Making.
Awards: Various Estimated Program Cost: $40,000,000
Proposal Deadline: 30 January 2020, 3:00 p.m.
Offerors that anticipate submitting a proposal are requested to submit an e-mail to Whitney Foxbower, Grants Officer at whitney.foxbower@us.af.mil containing the name of the contractor, the POC, and the contractor's intent to submit a proposal. This "Intent to Propose" is requested by Wednesday, 15 January 2020, 3:00 p.m. local time.
Contact Information: Address technical questions to the Technical POC: Asheley Blackford, phone number (937) 255-7107, e-mail: asheley.blackford@us.af.mil

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Grant Program: Commercial Technologies for Maintenance Activities (CTMA)
Agency: Department of Defense HQ0034-20-FOA-CTMA-0001
Website: https://www.grants.gov/web/grants/search-grants.html
Brief Description: The purpose of this Funding Opportunity Announcement (FOA) is to provide an assistance mechanism for the CTMA program to stimulate research, development, evaluation, integration and deployment of innovative maintenance and sustainment capabilities for the primary benefit of the public using a broad range of DoD sustainment and warfighter support operations as the test bed. Thus, the goal of this FOA is to leverage and advance commercial developments in maintenance and sustainment technology and processes for the primary benefit of U.S. industry and the public applying the research, development, evaluation, integration, and deployment to DoD issues – to reduce costs, improve system/platform operational availabilities, increase systems reliability, improve logistical support efficiency and effectiveness, improve the planning and execution of sustainment operations, increase the resiliency of the sustainment industrial base, improve environmental compliance, and increase sustainment personnel competency and safety.
Awards: Various
Proposal Deadline: January 21, 2020
Contact Information: Elizabeth Fuller, Grants Officer, Telephone: 703-545-9509, E-mail: elizabeth.e.fuller2.civ@mail.mil

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Grant Program: Detect It with Gene Editing Technologies (DIGET)
Agency: Department of Defense Naval Research Laboratory HR001120S0016

Website: https://beta.sam.gov/opp/3f1f4464416c4d73a025f84d916a3508/view
Brief Description: The goal of the DIGET program is to leverage advances in gene editing technologies to develop low-cost, high-trust, sensitive, multiplexed, rapidly reconfigurable, and fieldable diagnostics and biosurveillance technologies to address the need for timely and comprehensive threat detection surveillance to support DoD stabilization missions and outpace infectious disease.
Awards: Various
Proposal Deadline: Proposal Abstract Due Date and Time: January 7, 2020, 4:00 PM ET o Full Proposal Due Date and Time: February 25, 2020, 4:00 PM ET o BAA Closing Date: February 25, 2020 o Proposers Day: December 11, 2019
Contact Information: The BAA Coordinator for this effort may be reached at: DIGET@darpa.mil DARPA/BTO

Grant Program: Grant Program: NRL Long Range Broad Agency Announcement (BAA) for Basic and Applied Research
Agency: Department of Defense Naval Research Laboratory N66001-19-S-4701
Website: https://govtribe.com/opportunity/federal-contract-opportunity/c4isr-information-operations-cyberspace-operations-and-information-technology-system-n6600119s4701
Brief Description: The Naval Information Warfare Center, Pacific (NIWC Pacific) is soliciting white papers and proposals in accordance with Federal Acquisition Regulation (FAR)
6.102(d)(2), FAR 35.016 and Department of Defense Grant and Agreement Regulations (DoDGARS) 22.315(a) which provides for competitive selection of basic research, applied research, advanced technology development, and advanced component development and prototype (hereinafter referred to as research). Submissions in response to this announcement shall be for areas relating to the advancement of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) capabilities, enabling technologies for Information Operations and Cyberspace Operations, and Information Technology systems. Accordingly, proposals selected for award are considered to be the result of full and open competition and fully compliant with PL 98-369, "The Competition in Contracting Act of 1984." This BAA is for procurement contracts (hereinafter referred to as contracts), grants, cooperative agreements, and other transactions. Proposed research should investigate unique and innovative approaches for defining and developing next generation integratable C4ISR capabilities and command suites.
Awards: Various
Proposal Deadline: May 13, 2020 ((white papers and proposals are due by 4:00pm Pacific Time Zone on the closing date)
Contact Information: David Roden (Primary)
Contract Specialist
Telephone: (619) 553-2087
Email: David.Roden@navy.mil

Agency: Department of Defense Naval Research Laboratory N00173-19-S-BA01
Website: https://www.nrl.navy.mil/doing-business/Current-NRL-BAA
Brief Description: The Naval Research Laboratory (NRL) The Naval Research Laboratory (NRL) is the Navy's corporate laboratory. NRL conducts basic and applied research for the Navy in a variety of scientific and technical disciplines. The basic research program is driven by perceptions about future requirements of the Navy. NRL conducts most of its research program at its own facilities but also funds some related research such as anticipated by this announcement. More extensive research support

opportunities are available from the Naval Research Laboratory (NRL). NRL announcements may be accessed via the Internet at https://www.nrl.navy.mil/doingbusiness/contracting-division/baa.

NRL is interested in receiving proposals for Long-Range Science and Technology (S&T) Projects which offer potential for advancement and improvement of Navy and Marine Corps operations. Readers should note that this is an announcement to declare NRL's broad role in competitive funding of meritorious research across a spectrum of science and engineering disciplines. A brief description of the NRL Program Codes and the science and technology thrusts that NRL is pursuing is provided below. Additional information can be found at the NRL website at https://www.nrl.navy.mil/research/directorates-divisions/.

Awards: Various

Proposal Deadline: September 05, 2020

Contact Information: Mary A Johnson; Procurement Analyst; Phone 202-767-2021

General Inquiries

Grant Program: Air Superiority Technology Broad Agency Announcement
Agency: Department of Defense FA8651-20-S-0008
Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=dbdb4a35cb22a4a0d8414b652f0c74bb&tab=core&_cview=0

Brief Description: For purposes of this announcement, research is defined to be scientific study and experimentation directed at increasing knowledge and understanding in relation to long term national security needs. It is an enhancement to related exploratory and advanced development programs. A program should be designed to demonstrate well-defined and substantive research results, should not be overly ambitious or open-ended, and should not be a paper study that inherently requires a substantial testing effort.

RESEARCH AREA 1 – MODELING, SIMULATION, & ANALYSIS (MS&A): The objective of this work is to develop/modify and employ models used to analyze Air Superiority concepts and their related concepts of employment. The objective is to apply, modify and/or combine engineering, engagement (one-on-one), mission (few-on-few), systems-of-systems, campaign (many-on-many, military worth), level modeling techniques, tools, and analysis methods as well as virtual and constructive digital simulation which lend themselves to the quick and effective evaluation of air superiority concepts. Concepts include, but are not limited to, intercommunicative weapons, novel damage mechanisms, lethal and novel destruct mechanisms, multiple targeting, and time critical delivery. Detailed modeling includes, but is not limited to, sensors, aerodynamics, autopilots, navigation and guidance schemes, propulsion, warheads, fuzes, datalinks, fire control, launcher, suspension, carriage and release, error filters, environment (wind, fog, and dust), lethality, vulnerability, and threats.

RESEARCH AREA 2 – INNOVATIVE AIRCRAFT INTEGRATION TECHNOLOGIES The objective of this work is to design, develop, and demonstrate innovative aircraft integration technologies including but not limited to physical, electrical, and logical interfaces; and other aspects of aircraft integration that may be applicable.

RESEARCH AREA 3 –FIND-FIX-TARGET-TRACK (F2T2) & DATALINK TECHNOLOGIES The objective of this work is to design, develop, and demonstrate innovative Find, Fix, Target, and Track (F2T2) technologies for the detection of threats to aircraft. These F2T2 technologies should provide threat warning, threat characteristics, You Are The One (YATO) or You Are Not The One (YANTO) discrimination, highly accurate threat cueing, range and range rate, and other pertinent information required to analyze and coordinate a response to a threat.

RESEARCH AREA 4 – ENGAGEMENT MANAGEMENT SYSTEM TECHNOLOGIES The objective of this work is to design, develop, and demonstrate an innovative Engagement Management system to maximize aircraft survivability in increasingly contested environments while mining false positives and engagement costs. These technologies should interface with aircraft and other Find-Fix-Target-Track (F2T2) systems, determine the optimum counter measure response(s), respect keep-out or no-fire zones, and make other decisions required for aircraft survivability.
RESEARCH AREA 5 – HIGH VELOCITY FUZING The objective of this work is to design, develop, and demonstrate high velocity fuzing, including both Electronic Safe and Arm (ESAF) technologies that can safely initiate a warhead and Target Detection Devices (TDDs) that can provide miniaturized, fast-responding, highly accurate range and location information for high closure velocity intercepts.
RESEARCH AREA 6 – MISSILE ELECTRONICS The objective of this work is to investigate all aspects of Missile Power & Electronics as it applies to air-toair missiles. The following technologies and research areas are of particular interest: Power Conversion and Distribution, Power Generation and Storage Technologies (Advanced Missile Battery Technology and Ultracapacitors), Guidance Electronics, and Thermal Management.
RESEARCH AREA 7 – MISSILE GUIDANCE AND CONTROL TECHNOLOGIES The objective of this work is to investigate Missile Guidance and Control Technologies to include the following: Robust guidance algorithms against maneuvering targets, real time optimal lofting/energy management techniques, integrated guidance and control, reduced latency between seeker measurements and final control fin commands, highly accurate seeker technologies and algorithms, robust and novel target state estimators, third party queuing, optimal body orientation at endgame encounter, (reinforcement learning-adaptive control) approach, simultaneous learning and control, Hybrid (switched) guidance law selection based on the red-target strategy/maneuver, many-on-many engagement guidance laws, optimal pulse delay and propellant allocation, rapid flexible autopilot design process, robust control in aerodynamic cross coupling environments for various airframe designs from canard to tail control, robust control at high angles of attack, innovative autopilot architectures, efficient verification of safe separation over all flight regimes, Non-linear/adaptive control for agile maneuver, and advanced airframe control techniques.
RESEARCH AREA 8 – ADVANCED WARHEAD TECHNOLOGIES
More areas; Please see the BAA on above website.
Awards: Various
Proposal Deadline: This BAA will remain open through 31 October 2024 or until amended or superseded. It may be reissued and/or amended periodically, as needed. This BAA is set up in two parts: (1) Basic Open BAA, in which white papers may be submitted at any time during the open period, and (2) CALL BAA, in which proposal CALL announcements may be issued by the Government in FedBizOpps or Grants.gov under FA8651-20-S-0008. This BAA is intended to cover Applied Research, Advanced Technology Development and Advanced Component Development & Prototypes.
Contact Information: Technical POC: Mr. David Hartline , AFRL, (850) 882-1324
david.hartline.1@us.af.mil

Grant Program: NRL Long Range Broad Agency Announcement (BAA) for Basic and Applied Research
Agency: Department of Defense Naval Research Laboratory N00173-19-S-BA01
Website: https://www.nrl.navy.mil/doing-business/Current-NRL-BAA
Brief Description: The Naval Research Laboratory (NRL) The Naval Research Laboratory (NRL) is the Navy's corporate laboratory. NRL conducts basic and applied research for the Navy in a variety of scientific and technical disciplines. The basic research program is driven by perceptions about future requirements of the Navy. NRL conducts most of its research program at its own facilities but also funds

some related research such as anticipated by this announcement. More extensive research support opportunities are available from the Naval Research Laboratory (NRL). NRL announcements may be accessed via the Internet at https://www.nrl.navy.mil/doingbusiness/contracting-division/baa.

NRL is interested in receiving proposals for Long-Range Science and Technology (S&T) Projects which offer potential for advancement and improvement of Navy and Marine Corps operations. Readers should note that this is an announcement to declare NRL's broad role in competitive funding of meritorious research across a spectrum of science and engineering disciplines. A brief description of the NRL Program Codes and the science and technology thrusts that NRL is pursuing is provided below. Additional information can be found at the NRL website at https://www.nrl.navy.mil/research/directorates-divisions/.

Awards: Various

Proposal Deadline: September 05, 2020

Contact Information: Mary A Johnson; Procurement Analyst; Phone 202-767-2021 General Inquiries

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Grant Program: DSO Office-wide Broad Agency Announcement

Agency: Department of Defense DARPA HR001119S0071

Website: https://www.darpa.mil/work-with-us/opportunities?tFilter=&oFilter=2&sort=date https://www.fbo.gov/index?s=opportunity&mode=form&id=22a346a8b55f0a7040d57a8fbc19e644&tab=core&_cview=1

Brief Description: The mission of the Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) is to identify and create the next generation of scientific discovery by pursuing high-risk, high-payoff research initiatives across a broad spectrum of science and engineering disciplines and transforming these initiatives into disruptive technologies for U.S. national security. In support of this mission, the DSO Office-wide BAA invites proposers to submit innovative basic or applied research concepts that address one or more of the following technical domains: (1) Frontiers in Math, Computation and Design, (2) Limits of Sensing and Sensors, (3) Complex Social Systems, and (4) Anticipating Surprise. Each of these domains is described below and includes a list of example research topics that highlight several (but not all) potential areas of interest. Proposals must investigate innovative approaches that enable revolutionary advances. DSO is explicitly not interested in approaches or technologies that primarily result in evolutionary improvements to the existing state of practice.

Awards: The total award value for the combined Phase 1 base and Phase 2 option is limited to $1,000,000. This total award value includes Government funding and performer cost share (if required).

Proposal Deadline: Executive Summary Due Date: June 12, 2020, 4:00 p.m. o Abstract Due Date: June 12, 2020, 4:00 p.m. o Full Proposal Due Date: June 12, 2020, 4:00 p.m.

Contact Information: BAA Email: HR001119S0071@darpa.mil

Department of Transportation

Grant Program: Dwight David Eisenhower Transportation Fellowship Program (DDETFP) Grants or Research Fellowship (GRF)

Agency: Department of Transportation 693JJ318NF5229-2019

Website:

https://www.fhwa.dot.gov/innovativeprograms/centers/workforce_dev/post_secondary_education.aspx

Brief Description: The Dwight David Eisenhower Transportation Fellowship Program (DDETFP) awards fellowships to students pursuing degrees in transportation-related disciplines (PDF or HTML). This program advances the transportation workforce by helping to attract the nation's brightest minds to

the field of transportation, encouraging future transportation professionals to seek advanced degrees, and helping to retain top talent in the U.S. transportation industry. This funding opportunity is open to students that are U.S. citizens and non-U.S. citizens. The students must be enrolled in an IHE which must be accredited by a federally-recognized accrediting agency and must be located within the United States or its territories, both administratively as well as the campus the student is attending.
Awards: The anticipated stipends for the DDETFP GRF are based on academic level and shall be calculated as follows: Monthly Stipend: Master's Level: Up to $1,700; Doctoral Level: Up to $2,000
Proposal Deadline: July 25, 2019 at 3:00pm Eastern Time.
Contact Information: Ewa Flom Program Manager Phone 703-235-0532 ewa.flom@dot.gov

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Department of Agriculture:

Grant Program: Women and Minorities in STEM Fields
Agency: Department of Agriculture USDA-NIFA-WAMS-007011
Website: https://nifa.usda.gov/funding-opportunity/women-and-minorities-science-technology-engineering-and-mathematics-fields
Brief Description: The purpose of this program is to support research, education/teaching, and extension projects that increase participation by women and underrepresented minorities from rural areas in STEM. NIFA intends this program to address educational needs within broadly defined areas of food, agriculture, natural resources, and human (FANH) sciences. Applications recommended for funding must highlight and emphasize the development of a competent and qualified workforce in the FAHN sciences. WAMS-funded projects improve the economic health and viability of rural communities by developing research and extension initiatives that focus on new and emerging employment opportunities in STEM occupations. Projects that contribute to the economic viability of rural communities are also encouraged.
Awards: Anticipated Funding: $400,000
Submission Deadline: Monday, February 24, 2020
Contact: Technical Contact: Siva Sureshwaran at Email: sivapathasun.sureshwaran@usda.gov

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Grant Program: Integrated Research, Education, and Extension Competitive Grants Program – Organic Transitions
Agency: Department of Agriculture USDA-NIFA-ICGP-007010
Website: https://www.grants.gov/web/grants/search-grants.html
Brief Description: The overall goal of the Organic Transitions Program (ORG) is to support the development and implementation of research, extension and higher education programs to improve the competitiveness of organic livestock and crop producers, as well as those who are adopting organic practices. NIFA administers the ORG program by determining priorities in U.S. agriculture through Agency stakeholder input processes in consultation with the NAREEEAB. ORG will continue to prioritize environmental services provided by organic farming systems in the area of soil conservation, pollinator health, and climate change mitigation, including greenhouse gases (GHG), as well as the development of educational tools for Cooperative Extension personnel and other agricultural professionals who advise producers on organic practices, and development of cultural practices and other allowable alternatives to substances recommended for removal from the National Organic Program's National List of Allowed and Prohibited Substances. It is expected that all projects will integrate research, education and extension activities, as appropriate to project goals, although some projects may be

weighted more heavily than others in one or more of these areas. However, all proposals should have activities and impact in research and at least one of the other areas: education and extension.
Awards: Up to $500,000; Anticipated Funding: $5,800,000
Submission Deadline: February 27, 2020
Contact: Technical Contact: Mathieu Ngouajio, Phone (202) 570-1915; Email: mathieu.ngouajio@usda.gov

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Grant Program: REAP-Renewable Energy Systems and Energy Efficiency Improvements
Agency: Department of Agriculture RDBCP-11-REAP-RES-EEI-2020
Website: https://www.govinfo.gov/content/pkg/FR-2019-08-30/pdf/2019-18825.pdf
Brief Description: Eligible applicants are agricultural producers and rural small businesses. All agricultural producers, including farmers and ranchers, who gain 50% or more of their gross income from the agricultural operations are eligible. Small businesses that are located in a rural area can also apply. Rural electric cooperatives may also be eligible to apply. Additional Information on Eligibility:Citizenship - To be eligible, applicants must be individuals or entities at least 51 percent owned by persons who are either: 1) citizens of the United States (U.S.),the Republic of Palau, the Federated States of Micronesia, the Republic of the Marshall Islands, or American Samoa; or 2) legally admitted permanent residents residing in the U.S.Project - The project must be to conduct a feasibility study for a renewable energy system. Eligible technologies include: projects that produce energy from wind, solar, biomass, geothermal, hydro power and hydrogen-based sources. All projects must be located in a rural area and must be owned by the applicant.
Awards: Up to $500,000; Anticipated Funding: $70 million
Submission Deadline: September 30, 2020
Contact: Technical Contact: Maureen Hessel, Energy Specialist, Phone 202-401-0142

Department of Labor

Grant Program: Apprenticeships: Closing the Skills Gap
Agency: Department of Labor FOA-ETA-19-09
Website: https://www.grants.gov/web/grants/search-grants.html
Brief Description: Building on the experience abroad and in the United States, apprenticeships have emerged as a proven skills instruction model to meet industry's demand for a skilled American workforce. As the 21st economy requires greater skills development with an estimated 65 percent jobs of all jobs requiring some post-secondary education by 2020,1 apprenticeship programs can bolster the employability and technical skills of workers while meeting the workforce needs of business and industry.

There are more than 7.1 million job openings right now in the United States,3 many of which require a skilled workforce. These include in-demand cybersecurity professions and emerging occupations involving artificial intelligence (AI) across several industry sectors. Expanding apprenticeships can help individuals gain the skills necessary to fill these vacancies and help employers find skilled workers more readily. The period of performance is 48 months with an anticipated start date of February 1, 2020.

The purpose of this grant program is to promote apprenticeships as a significant workforce solution in filling current job vacancies and closing the skills gap between employer workforce needs and the skills of the current workforce. The overarching goals of this grant program are threefold: (1) to accelerate the expansion of apprenticeships to industry sectors and occupations that have not traditionally deployed apprenticeships for building a skilled workforce, such as cybersecurity, artificial intelligence,

and health care; (2) to promote the large-scale expansion of apprenticeships across the nation to a range of employers, including small and medium-sized employers; and (3) to increase apprenticeship opportunities for all Americans. Recognizing that apprenticeship is a training strategy that operates on both the supply side and the demand side of the labor market, this grant program aims to increase both the number of apprenticeship positions and the ability of all Americans to gain access to this proven pathway to family-sustaining careers.
Awards: We will award up to $100 million in H-1B funds initially to fund approximately 16 to 30 apprenticeship grants, with awards ranging from $500,000 to $6 million.
Anticipated Funding: $100,000,000
Proposal Deadline: September 24, 2019 no later than 4:00:00 p.m. Eastern Time.
Contact Information: Denise Roach Grants Management Specialist roach.denise@dol.gov

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EPA

Grant Program: Solid Waste Recycling Enhancement Act (REA) Higher Education Research Grant Program
Agency: NJ Department of Environmental Protection
Website: https://www.nj.gov/dep/grantandloanprograms/swrea-higher-ed.htm
Brief Description: This funding opportunity seeks to fund projects that support the objectives of the Recycling Enhancement Act. Eligible projects cover one or more of recycling demonstration, research or education, including professional training areas. Proposals may be designed to enhance existing resources, tools, or methodologies or create new resources pursuant to the Recycling Enhancement Act.
Awards: Approximately $1,000,000 of REA recycling tax funds have been allocated for this funding opportunity. Awardees and grant amounts will be selected based on the proposal, selection criteria and funds available to the Department.
Submission Deadline: December 13, 2019
Contact: Technical Contact: Fredrik Khayati, NJ Department of Environmental Protection, Division of Solid and Hazardous Waste; Phone: 609-984-4250
fredrik.khayati@dep.nj.gov

Grant Program: People, Prosperity and the Planet (P3) Student Design Competition
Agency: Environmental Protection Agency
EPA-G2020-P3-Q1 – Air Quality
EPA-G2020-P3-Q2 – Safe and Sustainable Water Resources
EPA-G2020-P3-Q3 – Sustainable and Healthy Communities
EPA-G2020-P3-Q4 – Chemical Safety
Website: https://www.epa.gov/research-grants/17th-annual-p3-awards-national-student-design-competition-focusing-people-0
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.)—including those in small, rural, tribal and/or 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.
Awards: Anticipated Funding Amount: Approximately $800,000 total for all awards Potential Funding per Award: Up to $25,000 per Phase I grant including direct and indirect costs. Applications for Phase I grants requesting an award of more than $25,000 will not be considered. Applications for Phase I grants must be for one year. Applications with a duration of more than one year will not be considered. Upon the successful completion of Phase I, grant recipients will have the opportunity to apply for a P3 Phase II grant of up to $100,000 total with a two-year duration, including direct and indirect costs (see Background section for more information). Applications for Phase II grants requesting an award of more than $100,000 or with a duration of more than two years will not be considered.
Submission Deadline: November. 19, 2019: 11:59:59 pm Eastern Time
Contact: Technical Contact: Technical Contact: Rich Callan; phone: 202-564-419; Eligibility Contact: Ron Josephson; phone: 202-564-7823; Submissions Contact: Debra M. Jones; phone: 202-564-7839

Department of Energy

Grant Program: Seeding Critical Advances for Leading Energy Technologies with Untapped Potential 2019
Agency: Department of Energy DE-FOA-0002166
Website: https://arpa-e-foa.energy.gov/#FoaId0a357909-3acf-4e0e-a0b0-3a02f16a3ed7
Brief Description: The Seeding Critical Advances for Leading Energy technologies with Untapped Potential (SCALEUP) solicitation provides a vital mechanism for the support of innovative energy R&D that complements ARPA-E's primary R&D focus on early-stage transformational energy technologies that still require proof-of-concept.
ARPA-E's mission is to develop transformational energy technologies in support of U.S. national security and economic competitiveness. ARPA-E funds the R&D of technologies to build and maintain U.S. technological leadership in highly competitive global energy markets, thus supporting American jobs and economic growth. ARPA-E's authorizing statute directs the Agency to develop linkages between its sponsored applied research and the marketplace.[1] These linkages are central to realizing the public's return on technology investments.
An enduring challenge to ARPA-E's mission is that even technologies that achieve substantial technical advancement under ARPA-E support are at risk of being stranded in their development path once ARPA-E funding ends (averaging $2.5M over three years). ARPA-E-funded technologies typically face significant remaining technical risks upon completion of an award's funding period. Experience across ARPA-E's diverse energy portfolios, and with a wide range of investors, indicates that pre-commercial "scaling" projects are critical to establishing that performance and cost parameters can be met in practice for these very early stage technologies. These pre-commercial scaling projects aim to translate the performance achieved at bench scale to commercially scalable versions of the technology, integrate the technology with broader systems, provide extended performance data, and validate the manufacturability and reliability of new energy technologies. (These projects are often termed "pre-pilot" development in different industries.) Success in these scaling projects would enable industry, investors, and partners to justify substantial commitments of financial resources, personnel, production facilities, and materials to develop promising ARPA-E technologies into early commercial products.
Awards: Various; Anticipated available funding: $52,000,000
Proposal Submission Deadline: Preliminary Application Submission Deadline: 2/14/2020 9:30 AM ET

- Full Application Submission Deadline: TBD

Contact: ExchangeHelp@hq.doe.gov
Please contact the email address above for questions regarding ARPA-E's online application portal, ARPA-E eXCHANGE.

- ARPA-E-CO@hq.doe.gov

Please contact the email address above for questions regarding Funding Opportunity Announcements. ARPA-E will post responses on a weekly basis to any questions that are received. ARPA-E may re-phrase questions or consolidate similar questions for administrative purposes.

Grant Program: Extreme Environment Materials for Power Generation
Agency: Department of Energy DE-FOA-0002192
Website: https://www.netl.doe.gov/node/9342
Brief Description: This Funding Opportunity Announcement will fill a gap with advanced materials and technologies to enhance the reliability and performance of the existing fleet while reducing O&M costs. The Crosscutting High Performance Materials Program has a unique ability to identify needs and foster technology development across many applications. Materials challenges will be targeted that apply to both coal-based and gas-based steam cycle components. Gas turbine applications will be considered non-responsive and hence any gas-focused work should focus on the bottoming cycle of a Natural Gas Combined Cycle (NGCC). The Program focuses on development and validation of materials and technologies for existing and new fossil power generation applications with improved cost, performance, and reliability. This not only supports fossil power generation but also provides targeted support to the nation's high-temperature materials supply chain thereby enhancing competitiveness in the global marketplace.
Awards: Various; Anticipated available funding: $20,000,000
Proposal Submission Deadline: February 21, 2020
Contact: Bethan K. Young 412-386-4402 bethan.young@netl.doe.gov

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Grant Program: FY20 Vehicle Technologies Program Wide Notice of Intent
Agency: Department of Energy DE-FOA-0002222
Website: https://eere-exchange.energy.gov/#FoaId7e88bb0b-dea3-49c3-b111-a81cef71d2bc
Brief Description: The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Vehicle Technologies Office (VTO), a Funding Opportunity Announcement (FOA) entitled "Fiscal Year 2020 Advanced Vehicle Technologies Funding Opportunity Announcement (FOA)."
VTO supports a broad portfolio of advanced vehicle technologies that can strengthen national security, enable future economic growth, support American energy dominance, and increase transportation affordability for all Americans. This portfolio includes advanced batteries, electric drive systems; smart charging technologies; energy efficient mobility technologies and systems; advanced combustion engines and fuels; materials for vehicle light-weighting; technology integration, which includes work with the national network of Clean Cities coalitions; and transportation and energy analysis.
Awards: Various
Proposal Submission Deadline: Concept Paper Submission Deadline: TBD

- Full Application Submission Deadline: TBD

Contact: Jodi L. Collins jodi.collins@netl.doe.gov. EERE plans to issue the FOA in January/February 2020 via the EERE Exchange website https://eere-exchange.energy.gov/

Grant Program: Notice of Intent: FY20 Bioenergy Technologies Office Multi-Topic Funding Opportunity
Agency: Department of Energy DE-FOA-0002202
Website: https://eere-exchange.energy.gov/#FoaId9e05c1b0-f1ab-44d1-8445-22f013f15d2a
Brief Description: The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Bioenergy Technologies Office (BETO), a Funding Opportunity Announcement (FOA) entitled "FY20 Bioenergy Technologies Multi-Topic FOA".
BETO develops technologies that convert domestic biomass and waste resources into fuels, products, and power to enable affordable energy, economic growth, and innovation in renewable energy and chemicals production. The activities funded through this opportunity will be a component of the comprehensive U.S. energy strategy to enhance energy supply, create domestic jobs, secure the nation's global leadership in bioenergy technologies and improve U.S. energy security.
This FOA will support high-impact technology research and development (R&D) to enable growth and innovation of the Bioeconomy. The topic areas will focus on BETO's objectives to reduce the minimum fuel selling price of drop-in biofuels, lower the cost of biopower, and enable high-value products from biomass or waste resources.
This notice of intent (NOI) is issued so that interested parties are aware of 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.
Awards: Various
Proposal Submission Deadline: Full Application Submission Deadline: TBD
Contact: Jodi L. Collins jodi.collins@netl.doe.gov. EERE plans to issue the FOA in January/February 2020 via the EERE Exchange website https://eere-exchange.energy.gov/

Grant Program: Environmental System Science
Agency: Department of Energy DE-FOA-0002184
Website: https://science.osti.gov/ber/Funding-Opportunities
Brief Description: The DOE SC program in Biological and Environmental Research (BER) hereby announces its interest in receiving applications for research in Environmental Systems Science (ESS), including Terrestrial Ecosystem Science (TES) and Subsurface Biogeochemical Research (SBR). The goal of the Environmental System Science (ESS) activity in BER is to advance a robust, predictive understanding of the set of interdependent physical, biogeochemical, ecological, hydrological, and geomorphological processes for use in Earth system, ecosystem and reactive transport models. Using an iterative approach to model-driven experimentation and observation, and interdisciplinary teams, ESS-supported scientists work to unravel the coupled physical, chemical and biological processes that control the structure and functioning of terrestrial ecosystems and integrated watersheds across critical spatial and temporal scales. This FOA will consider applications that focus on improving the understanding and representation of terrestrial and subsurface environments in ways that advance the sophistication and capabilities of local, regional, and larger scale models. Using new measurements, field experiments, more sophisticated modeling and/or synthesis studies, this FOA will encompass two topic areas: 1) Terrestrial Ecology, specifically linking above and belowground processes, as well as methane biogeochemistry; and 2) Subsurface and Watershed Hydro-biogeochemistry, specifically studying the function and dynamics of hydro-biogeochemical processes within watersheds. All applications are required to clearly delineate an integrative, hypothesis-driven approach and describe the existing needs/gaps in state-of-the-art models. Applicants should provide details on how the results of the proposed research will be used to improve the predictability and sophistication of integrated watershed systems and/or terrestrial ecosystem models.

Awards: Various
Proposal Submission Deadline: Submission Deadline for Pre-Applications: December 5, 2019, at 5:00 pm Eastern Time Pre-Application Response Date: December 19, 2019, at 11:59 pm Eastern Time Submission Deadline for Applications: February 20, 2020, at 11:59 pm Eastern Time.
Submit letters of intent, preapplications, and applications well ahead of stated deadlines.
Contact: Dr. Daniel Stover 301-903-0289 Daniel.Stover@science.doe.gov

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Grant Program: FLEXIBLE CARBON CAPTURE & STORAGE (FLECCS)
FLEXIBLE CARBON CAPTURE & STORAGE (FLECCS) - SBIR/STTR
Agency: Department of Energy DE-FOA-0002220 DE-FOA-0002221
Website: https://arpa-e-foa.energy.gov/#FoaId48a01f15-53a5-42d0-9650-d07e36f404cd
Brief Description: The objective of the FLExible Carbon Capture and Storage (FLECCS) program is to fund the development of carbon capture and storage (CCS) technologies that enable power generators to be responsive to grid conditions in a high variable renewable energy (VRE) penetration environment. This includes retrofits to existing power generators as well as greenfield systems with a carbon-containing fuel input and electricity as an output (i.e., a "black box" in which the nature of the fuel-to-electricity conversion process is not prescribed).

The value of such CCS technologies will be evaluated by their impact on the system LCOE of a net-zero carbon electricity grid, as determined by capacity expansion modeling. ARPA-E does not expect every CCS technology itself to be a net-zero carbon process; instead the cost and performance of each project selected under this FOA will be evaluated in the context of a net-zero carbon system which may include negative emission assets. Recent work suggests that a system LCOE of $75/MWh for a net-zero carbon electricity system is aggressive yet possible.

FLECCS is a 2-phase program. Phase 1 focuses on designing and optimizing innovative CCS processes that enable flexibility on a high-VRE grid. Phase 1 will last for approximately 15 months and include approximately $7 million in Federal funding. Based on the output of the individual projects, engineering design review, and capacity expansion analysis, ARPA-E will select projects to continue to the next phase. Phase 2 will focus on building components, unit operations, and small prototype systems to reduce the technical risk and cost associated with these CCS systems. This phase will last for approximately 3 years and have a total budget of approximately $36 million in Federal funding.
Awards: Various; Available Funding: $43,000,000
Proposal Submission Deadline: The deadline for Concept Papers is December 23, 2019. Applicants are strongly encouraged to submit their applications at least 48 hours in advance of the submission deadline.

- **Contact:** ExchangeHelp@hq.doe.gov

Please contact the email address above for questions regarding ARPA-E's online application portal, ARPA-E eXCHANGE.

- ARPA-E-CO@hq.doe.gov

Please contact the email address above for questions regarding Funding Opportunity Announcements. ARPA-E will post responses on a weekly basis to any questions that are received. ARPA-E may re-phrase questions or consolidate similar questions for administrative purposes.

Grant Program: FY 2020 Continuation of Solicitation for the Office of Science Financial Assistance Program
Agency: Department of Energy DE-FOA-0002181
Website: https://science.osti.gov/ber/Funding-Opportunities

Brief Description: TheSC mission is to deliver scientific discoveries and major scientific tools totransform our understanding of nature and advance the energy, economic andnational security of the United States. SC is the Nation's largest Federal sponsorof basic research in the physical sciences and the lead Federal agencysupporting fundamental scientific research for our Nation's energy future. SC accomplishes its mission and advances national goalsby supporting:

- The frontiers of science—exploring nature's mysteries from the study of fundamental subatomic particles, atoms, and molecules that are the building blocks of the materials of our universe and everything in it to the DNA, proteins, and cells that are the building blocks of life. Each of the programs in SC supports research probing the most fundamental disciplinary questions.
- The 21st Century tools of science—providing the nation's researchers with 27 state-of-the-art national scientific user facilities - the most advanced tools of modern science - propelling the U.S. to the forefront of science, technology development and deployment through innovation.
- Science for energy and the environment—paving the knowledge foundation to spur discoveries and innovations for advancing the Department's mission in energy and environment. SC supports a wide range of funding modalities from single principal investigators to large team-based activities to engage in fundamental research on energy production, conversion, storage, transmission, and use, and on our understanding of the earth systems.

Awards: Various; Available Funding: $250,000,000
Proposal Submission Deadline: A Pre-Application is optional/encouraged. September 30, 2020
Contact: SC.Grantsandcontracts@science.doe.gov

NASA

Grant Program: ROSES 2019: Applied Information Systems Research
Agency: NASA NNH19ZDA001N-AISR
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B6FD283AF-7FD6-7A9F-1546-0FBFD722B6C2%7D&path=&method=init
Brief Description: The purpose of the Applied Information Systems Research (AISR) program is to evolve advances in computer and information science and technology to enhance science productivity of the Science Mission Directorate (SMD). AISR seeks innovative ideas for applying advanced information and related technologies to increase life cycle effectiveness and efficiency of SMD programs. The focus this year of AISR is Autonomous Robotics Research for Ocean Worlds (ARROW).
Awards: Various; Available funding: $1,250,000
Proposal Deadline: AISR19 Step-1 Proposals Due Jan 20, 2020
Contact: Larry Edwards NASA Ames Research Center 650-604-4710 laurence.j.edwards@nasa.gov

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Grant Program: Future Investigators in NASA Earth and Space Science and Technology
Agency: NASA NNH19ZDA001N-FINESST
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7BE16CD59F-29DD-06C0-8971-CE1A9C252FD4%7D&path=&method=init
Brief Description: The Future Investigators in NASA Earth and Space Science and Technology (FINESST) is a new program element in Research Opportunities in Space and Earth Sciences (ROSES)-2019. ROSES is an "omnibus" solicitation, having default guidelines and information in the ROSES Summary of Solicitation that apply to all of ROSES, including this program element. Through FINESST, the Science Mission Directorate (SMD) solicits proposals from accredited U.S. universities and other eligible organizations for graduate student-designed and performed research projects that contribute to

SMD's science, technology and exploration goals. The Future Investigator (FI, i.e., the student participant) shall have the primary initiative to define the proposed FINESST research project and must be the primary author, with input or supervision from the proposal's Principal Investigator (PI), as appropriate. In cases when the PI already has an ongoing research award from NASA, the research proposed under FINESST may address a similar topic, but the proposal should make clear how the proposed research goes beyond what NASA has already agreed to support.
Awards: The number of proposals selected will be dependent on the number and quality of proposals submitted and on the availability of funds from the relevant SMD program.
Proposal Deadline: Proposals may be submitted at any time until 11:59 pm Eastern time on February 4, 2020.
Contact: Emails FINESST Program Scientists by Division: Earth Science: allison.k.leidner@nasa.gov Planetary Science: lindsay.hays@nasa.gov Astrophysics: evan.scannapieco@nasa.gov Heliophysics: hakimzadeh@nasa.gov

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Grant Program: ROSES 2019: Heliophysics System Observatory Connect
Agency: NASA NNH19ZDA001N-HSOC
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B1C50B1BF-52BA-7DD2-848D-13409588466F%7D&path=&method=init
Brief Description: The goal of the Heliophysics System Observatory (HSO) Connect program is to enhance the scientific return of the HSO by supporting investigations that innovatively connect observations from one or more HSO missions with spacecraft or ground-based observations from other SMD Divisions, and/or other agencies within or outside the U.S. This instance of HSO-Connect focuses on observations from the Parker Solar Probe (PSP) mission together with other observations throughout the whole heliosphere. This includes data from currently operating space missions and ground-based observatories, and can include data from missions or observatories not yet launched or operational, but expected to be operational within the time interval of awards from this competition. In addition to PSP observations, investigations can include, but are not limited to, any HSO mission, but also Solar Orbiter, Bepi-Colombo, the Daniel K. Inouye Solar Telescope (DKIST) for example. In order to include observations not yet available, NASA Heliophysics is relaxing the requirement that all data must be in a public archive ahead of proposal submission (see Section 3.4.3 Limited Risk Waver).
Awards: Various
Proposal Deadline: Step-1 proposals are due by January 15, 2020, and Step-2 proposals are due March 13, 2020.
Contact: Arik Posner, Heliophysics Division, Science Mission Directorate, Telephone: (202) 358 0727 Email: arik.posner@nasa.gov

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National Endowment of Humanities

Grant Program: Institutes for Advanced Topics in the Digital Humanities
Agency: National Endowment for the Humanities 20200305-HT
Website: https://www.neh.gov/grants/odh/institutes-advanced-topics-in-the-digital-humanities
Brief Description: The Institutes for Advanced Topics in the Digital Humanities (IATDH) program supports national or regional (multistate) training programs for scholars, humanities professionals, and advanced graduate students to broaden and extend their knowledge of digital humanities. Through this program NEH seeks to increase the number of humanities scholars and practitioners using digital

technology in their research and to broadly disseminate knowledge about advanced technology tools and methodologies relevant to the humanities.
Applicants may apply to create institutes that are a single opportunity or are offered multiple times to different audiences. Institutes may be as short as a few days or as long as six weeks and held at a single site or at multiples sites; virtual institutes are also permissible. Training opportunities could be offered before or after regularly occurring scholarly meetings, during the summer months, or during appropriate times of the academic year. The duration of a program should allow for full and thorough treatment of the topic; it should also be appropriate for the intended audience.
Awards: Maximum award amount: $250,000
Deadlines: Optional Draft Due: January 29, 2020
Application due: March 5, 2020
Contact: Contact the Office of Digital Humanities Team odh@neh.gov

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Grant Program: Digital Humanities Advancement Grants
Agency: National Endowment for the Humanities 20200115-HAA
Website: https://www.neh.gov/grants/odh/digital-humanities-advancement-grants
Brief Description: Digital Humanities Advancement Grants (DHAG) support innovative, experimental, and/or computationally challenging projects at different stages throughout their lifecycles, from early start-up phases through implementation and sustainability. Experimentation, reuse, and extensibility are hallmarks of this program, leading to innovative work that can scale to enhance scholarly research, teaching, and public programming in the humanities. This program is offered twice per year. Proposals are welcome for digital initiatives in any area of the humanities.

In support of its efforts to advance digital infrastructures and initiatives in libraries and archives, and subject to the availability of funds and IMLS discretion, the Institute of Museum and Library Services (IMLS) anticipates providing funding through this program. These funds may support some DHAG projects that further the IMLS mission to advance, support, and empower America's museums, libraries, and related organizations. IMLS funding will encourage innovative collaborations between library and archives professionals, humanities professionals, and relevant public communities that advance preservation of, access to, and public engagement with digital collections and services to empower community learning, foster civic cohesion, and strengthen knowledge networks. This could include collaborations with community-based archives, community-driven efforts, and institutions or initiatives representing the traditionally underserved. Interested applicants should also refer to the current IMLS Strategic Plan for additional context.
Awards: Maximum award amount Level I: $50,000; Level II: $100,000; Level III: $325,000 in outright funds, with an additional $50,000 in matching funds
Deadlines: Optional Draft due December 4, 2019
Application due January 15, 2020
Contact: Contact the Division of Research Programs Team: 202-606-8200; collaborative@neh.gov

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Streamlyne Question of the Week

Question: Can I generate budgets for multiple years from the Year-1 budget in Streamlyne?
Answer: Yes! You only need to input the Year-1 budget and then click on the "generate all periods" button. Stremalyne will create budget sheets for the remaining periods. You can then go to "summary" under the budget tab to review budget sheets for all periods. You can also

change specific budget items that you allocated in Year-1 but you do not want to continue them in the following periods.

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

Proposal Submission and Streamlyne Information

Internal Timeline for Successful and Timely Proposal Submission

Recently federal agencies including NSF, NIH and DoE/DoD have emphasized and requested Principal Investigators and institutions to submit their proposals well before the posted deadline to avoid unexpected problems in online submissions with respect to system error checks and additional needs of subsequent revisions. For example, NSF clearly stated during the CAREER program webinar held on May 9, 2019 posted on https://www.nsf.gov/career that any response from help desk within the last four days of the deadline may not be provided on the same day. NSF warned that the **questions related to errors and other proposal submission issues in the last 72 hours before the deadline may not be answered on time for submission.**

The NJIT Proposal Submission Guidelines and Policy posted on the website https://research.njit.edu/research-policies provides the institutional timeline in order to help faculty and staff Principal Investigators for successful proposal submission. We are requesting all Principal Investigators, faculty, staff and administration to follow the proposal submission to help everyone to submit a successful proposal on time, preferably before the deadline as requested by federal funding agencies. The following are the NJIT Proposal Submission Guidelines modified for Straemlyne proposal submission system:

- **1 month (or earlier) before the due date**: initiate the proposal submission process in Streamlyne with a notice of intent to apply to college POC and SRA including the request for proposal identification number (NSF, NIH) and/or the RFP document. This is an important step that will help the College POC and SRA to manage your proposals. It will allow:
    - preliminary review of needs and sponsor requirements (meeting recommended)
    - set up the timeline in motion and internal checklist/deadlines
    - collaborator outreach and intake requirements (where applicable)
    - set up the budget and Streamlyne document development process including any cost-sharing for consideration of department, college and office of research administration.
- **1 month - 2 weeks before due date:** the budget should be finalized and the approval process should be initiated**.** This includes the department and college approvals, conflict of interest forms, the detailed budget and justification, proposal title, and preliminary specific aims (NIH), proposal summary (NSF), or contract scope of work (SOW). The following checklist should be followed:
    - Proposal budget
        - Internal budget commitments such as cost-sharing should be fully calculated/loaded at this time. Any college specific internal process for index source and approvals should be followed within this timeline.
    - Complete initial proposal details and internal Streamlyne information
    - Complete Streamlyne questionnaires
        - Proposal specific
        - Sponsor specific (as applicable for grants.gov for S2S submission)

    - Complete special review disclosures (as applicable)
        - IRB/human subjects
        - Biosafety
        - Animals
        - Export Controls
        - Conflict of Interest
- **2 weeks - 1 week before the due date:** submit all required internal attachments including:
    - Project Summary/Statement of Work
    - Final Budget
    - Budget Justification
    - For S2S Proposals – Complete additional input of placeholder attachments.
    - Submit in Streamlyne and monitor routing/review by key personnel and department/college administration.
- **72 hours – 24 hours before the submission deadline:** Prepare the final version for submission. The following actions will be managed during this period.
    - All final technical documents/attachments are completed and validated in internal and/or sponsor system(s).
    - Central Office completes final review and coordination with PI and College POC on final proposal review, validation of system requirements and engages in sponsor actions and submission.
    - Central office completes internal data and archiving procedures and coordinates follow-up
- **At least 24 hours before the submission deadline:** The PI should release the final version of the proposal to the SRA office at least 24 hours prior to the deadline for on-time submission.

For a successful submission, it is expected that faculty/PIs will follow up with the designated point-of-contact (ambassadors) for their college in a timely manner so that appropriate planning steps can be managed with respect to the proposal complexity, scope of support, any special needs such as cost-sharing, and multiple submission volume with the same due date. The following are the respective college point-of-contacts (ambassadors)

NCE: John McCarthy, NCE Director of Research; (973) 596-3247; john.p.mccarthy@njit.edu
NCE: Deidra Slough, Grant Management Specialist, (973)-596-3428; deidra.l.slough@njit.edu
CSLA: Cristo Leon, CSLA Director of Research; (973) 596-6426; cristo.e.yanezleon@njit.edu
CSTR: Felicia Margolies, Project Manager, (973)-596-5377 felicia.h.margolies@njit.edu
YWCC: Sean Andrews, YWCC Director of Research; (973) 596-5352; sean.t.andrews@njit.edu
HCoAD and MTSM: Interim POC: Justin Samolewicz, Director (Pre Award); (973)-596-3145; justin.m.samolewicz@njit.edu**; Iris Pantoja**, Project Manager; 973-596-4483; irp3@njit.edu (on maternity leave)
NJII and T&BD: **Bobby J. Vadasserril**; (973)-596-2941; bobby.j.vadasserril@njit.edu

Faculty and staff having any questions on proposal submission, may contact their college point-of-contacts (ambassadors), and also follow up with **Justin Samolewicz, Director (Pre Award)** 973-596-3145; justin.m.samolewicz@njit.edu; and **Eric Hetherington,** Executive Director, Sponsored Research Programs Administration 973-596-3631; eric.d.hetherington@njit.edu as needed.

Streamlyne User Manuals: http://www.njit.edu/research/streamlyne/
New "How to Do" videos: http://www5.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.

Need Information about Funding?

Finding Research Opportunities and Collaborations (FROC)
***Walk-In* Open-Hour Discussion with SVPR Over Tea**
Every Thursday: 2.00 PM-3.00 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.
