

NJIT Research Newsletter

Issue: ORN-2019-30

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

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Special Announcements

Department of Defense DARPA-SN-19-70 Young Faculty Award Proposer Day
<https://www.fbo.gov/index?s=opportunity&mode=form&id=d317a5adb4078543eaaae721a79548f5&tab=core&cvview=0>

The Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) is sponsoring a Proposers Day webcast to provide information to potential proposers on the objectives of an anticipated Research Announcement (RA) for the Young Faculty Award Program 2020 (YFA 2020). The Proposers Day will be held via prerecorded webcast on August 21, 2019 from 1:00 PM to 3:00 PM ET. Advance registration is required for viewing the webcast. Note, all times listed in this announcement and on the registration website are Eastern Time. Following the event, DARPA may post the presented materials as well as a Frequently Asked Questions (FAQ) list to the DARPA/DSO Opportunities website. Response Deadline: August 16, 2019

Contact Information: Dr. Michael Fiddy, Program Manager; Michael.Fiddy@darpa.mil

Limited Submission Internal Competition for NSF PFI and MRI Programs

Grant Program: Partnerships for Innovation (PFI)

Agency: National Science Foundation NSF 19-506

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19506/nsf19506.htm>

Brief Description: The Partnerships for Innovation (PFI) Program within the Division of Industrial Innovation and Partnerships (IIP) offers researchers from all disciplines of science and engineering funded by NSF the opportunity to perform translational research and technology development, catalyze partnerships and accelerate the transition of discoveries from the laboratory to the marketplace for societal benefit.

PFI has five broad goals, as set forth by the American Innovation and Competitiveness Act of 2017 (“the Act”, [S.3084 — 114th Congress](#); [Sec. 602. Translational Research Grants](#)): (1) identifying and supporting NSF-sponsored research and technologies that have the potential for accelerated commercialization; (2) supporting prior or current NSF-sponsored investigators, institutions of higher education, and non-profit organizations that partner with an institution of higher education in undertaking proof-of-concept work, including the development of technology prototypes that are derived from NSF-sponsored research and have potential market value; (3) promoting sustainable partnerships between NSF-funded institutions, industry, and other organizations within academia and the private sector with the purpose of accelerating the transfer of technology; (4) developing multi-disciplinary innovation ecosystems which involve and are responsive to the specific needs of academia and industry; (5) providing professional development, mentoring, and advice in entrepreneurship, project management, and technology and business development to innovators. This solicitation offers two broad tracks for proposals in pursuit of the aforementioned goals:

The **Technology Translation (PFI-TT) track** offers the opportunity to translate prior NSF-funded research results in any field of science or engineering into technological innovations with promising commercial potential and societal impact. PFI-TT supports commercial potential demonstration projects for academic research outputs in any NSF-funded science and engineering discipline. This demonstration is achieved through proof-of-concept, prototyping, technology development and/or scale-up work. Concurrently, students and postdoctoral researchers who participate in PFI-TT projects receive education and leadership training in innovation and entrepreneurship. Successful PFI-TT projects generate technology-driven commercialization outcomes that address societal needs.

The **Research Partnerships (PFI-RP) track** seeks to achieve the same goals as the PFI-TT track by supporting instead complex, multi-faceted technology development projects that are typically beyond the scope of a single researcher or institution and require a multi-organizational, interdisciplinary, synergistic collaboration. A PFI-RP project requires the creation of partnerships between academic researchers and third-party organizations such as industry, non-academic research organizations, federal laboratories, public or non-profit technology transfer organizations or other universities. Such partnerships are needed to conduct applied research on a stand-alone larger project toward commercialization and societal impact. In the absence of such synergistic partnership, the project’s likelihood for success would be minimal.

The intended outcomes of both PFI-TT and PFI-RP tracks are: a) the commercialization of new intellectual property derived from NSF-funded research outputs; b) the creation of new or broader collaborations with industry (including increased corporate sponsored research); c) the licensing of NSF-funded research outputs to third party corporations or to start-up companies funded by a PFI team; and d) the training of future innovation and entrepreneurship leaders.

Limit on Number of Proposals per Organization: There is no limit on the number of PFI-TT proposals an organization may submit to a deadline of this solicitation. However, an organization may not submit more than one (1) new or resubmitted PFI-RP proposal to a deadline of this solicitation. This eligibility constraint will be strictly enforced. If an organization exceeds this limit, the first PFI-RP proposal received will be accepted, and the remainder will be returned without review. An organization may not receive more than two (2) awards from a submission deadline of this solicitation.

Internal Competition: If you are interested in submitting PFI-RP track proposal, please submit a pre-proposal to your college dean by October 15, 2019 using the following format. Each college dean is requested to forward maximum one pre-proposal with college recommendation to Atam Dhawan, SVPR by October 28, 2019. The selection of one institutional PFI-RP proposal will be announced by November 1, 2019. Institutional pre-proposal should follow the following format:

1. Cover Page: Title and list of all key investigators (including collaborators) with their affiliations and roles
2. Project Summary (max 1 page)
3. Intellectual Merit and Broader Impact (max 1 page)
4. Project Description: Significance, Innovation, Approach and Partnership with Management Plan (max 3 pages)
5. Budget including subcontracts
6. NSF format Biosketch for PI and Co-PIs

Awards: Standard Grants. Anticipated Funding: \$20,000,000; Number of Awards: 55-65

Letter of Intent: Not Required

Proposal Submission Deadline: January 08, 2020

Contacts: Jesus V. Soriano, telephone: (703) 292-7795, email: jsoriano@nsf.gov

Grant Program: NSF Major Research Instrumentation Program: (MRI)

Agency: National Science Foundation NSF 18-513

RFP Website: <https://www.nsf.gov/pubs/2018/nsf18513/nsf18513.htm>

Brief Description: The Major Research Instrumentation (MRI) Program serves to increase access to multi-user scientific and engineering instrumentation for research and research training in our Nation's institutions of higher education and not-for-profit scientific/engineering research organizations. An MRI award supports the acquisition or development of a multi-user research instrument that is, in general, too costly and/or not appropriate for support through other NSF programs.

MRI provides support to acquire critical research instrumentation without which advances in fundamental science and engineering research may not otherwise occur. MRI also provides support to develop next-generation research instruments that open new opportunities to advance the frontiers in science and engineering research. Additionally, an MRI award is expected to enhance research training of students who will become the next generation of instrument users, designers and builders.

An MRI proposal may request up to \$4 million for either acquisition or development of a research instrument. Beginning with the FY 2018 competition, each performing organization may submit in *revised* "Tracks" as defined below, *with no more than two submissions in Track 1 and no more than one submission in Track 2.*

- Track 1: Track 1 MRI proposals are those that request funds from NSF greater than or equal to \$100,000¹ and less than \$1,000,000.
- Track 2: Track 2 MRI proposals are those that request funds from NSF greater than or equal to \$1,000,000 up to and including \$4,000,000.

Consistent with the America COMPETES Act of 2007 (Public Law 110-69), cost sharing of precisely 30% of the total project cost is required for Ph.D.-granting institutions of higher education and for non-degree-granting organizations. Non-Ph.D.-granting institutions of higher education are exempt from the cost-sharing requirement and cannot include it. National Science Board policy prohibits voluntary committed cost sharing.

Please see the solicitation text for organizational definitions used by the MRI program.

The MRI Program especially seeks broad representation of PIs in its award portfolio, including women, underrepresented minorities and persons with disabilities. Since demographic diversity may be greater among early-career researchers the MRI program also encourages proposals with early-career PIs and proposals that benefit early-career researchers.

Awards Range: \$100,000-\$4 million; **Anticipated Funding Amount:** \$75,000,000

Letter of Intent: Not Required

Submission Deadline: January 01, 2020 - January 19, 2020

Limit on Number of Proposals per Organization:

Three (3) as described below. Potential PIs are advised to contact their institutional office of research regarding processes used to select proposals for submission.

The MRI program requires that an MRI-eligible organization may, as a performing organization, submit or be included as a significantly funded [3] subawardee in no more than three MRI proposals. Beginning with this competition, each performing organization is now limited to a maximum of three proposals in *revised* “Tracks” as defined below, with no more than two submissions in Track 1 and no more than one submission in Track 2. Any MRI proposal may request support for either the acquisition or development of a research instrument. Within their submission limit, NSF strongly encourages organizations to submit proposals for innovative development projects.

Any MRI proposal may request support for either the acquisition or development of a research instrument.

- Track 1: Track 1 MRI proposals are those that request funds from NSF greater than or equal to \$100,000¹ and less than \$1,000,000.
- Track 2: Track 2 MRI proposals are those that request funds from NSF greater than or equal to \$1,000,000 up to and including \$4,000,000.

Note: The 30% cost-sharing requirement applies to only the portion of the total project cost budgeted to non-exempt organizations, including those participating through subawards. When required, cost-sharing must be precisely 30%. Cost sharing is required for Ph.D.-granting institutions of higher education and for non-degree-granting organizations. Non-Ph.D.-granting institutions of higher education are exempt from cost-sharing and cannot provide it. National Science Board policy is that voluntary committed cost sharing is prohibited. See section V.B. for specific information on cost-sharing calculations and the solicitation text for definitions of organizational types used for the MRI program.

[3] An unfunded collaboration does not count against the submission limit. Inclusion as a funded subawardee on a development proposal at a level in excess of 20% of the total budget requested from NSF, or as a funded subawardee, when allowed, on any acquisition proposal, will be counted against an organization's proposal submission limit. Separately submitted linked collaborative proposals count against the submission limit of each of the submitting organizations. However, if a subaward to an organization in a *development proposal* is 20% or less of the proposal's total budget request from NSF, the subawardee's submission limit will not be affected. For subawards within a linked collaborative proposal, the 20% threshold applies to the budget request from NSF in the proposal containing the subaward(s), not to the combined budget request from NSF for the collaborative project.

Internal Competition Deadline to College Dean's Office: November 1, 2019: Please submit up to 5 pages pre-proposal white paper to your respective Dean by November 1, 2019 in the following format. College level reviews will be conducted by Deans to forward recommendations for up to 2 proposals to the Office of Research and Development by November 7, 2019. The final selection will be announced by November 15, 2019. The following format for the pre-proposal is suggested which is consistent with actual proposal guidelines and review criterion:

1. Cover Sheet (not counted in the page limit):
 - a. Title of the project proposal
 - b. Track Type: I or II
 - c. PI name and affiliation and contact information
 - d. Co-PIs name and affiliation
 - e. Additional users or any consortium information, if applicable
 - f. Date submitted to College Dean
2. Project Summary

Each proposal must contain a summary of the proposed project not more than one page in length. The Project Summary consists of an overview, a statement on the intellectual merit of the proposed activity, and a statement on the broader impacts of the proposed activity.

3. Proposal Description covering the subsections (a)-(e) as posted on the previous RFP on <https://www.nsf.gov/pubs/2018/nsf18513/nsf18513.htm> with the section:

(a) **a1. Instrument Location and Type**

a2. ONLY REQUIRED FOR DEVELOPMENT PROPOSALS: Justification for submission as a Development proposal

(b) Research Activities to be Enabled

(c) Description of the Research Instrumentation and Needs

(d) Broader Impacts (Including Impact on Research and Training Infrastructure)

(e) Management Plan

4. Preliminary Budget and Budget Justification; and Required Cost-Sharing

5. Brief biographical sketch of PI with a brief description of current and previous accomplishments.

For pre-proposal review, the NSF MRI proposal review criterion may be used to help faculty receive some feedback on their proposals that may be helpful for their final or future proposal submissions. The merit review criterion as posted on the RFP is:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes

Instrument Acquisition Proposals.

- The extent to which the instrument is used for multi-user, shared-use research and/or research training.
- Whether the management plan demonstrates sufficient commitment and technical expertise for effective scheduling and usage of the instrument.
- The organization's commitment to ensuring successful operations and maintenance over the expected lifetime of the instrument.
- Whether the research to be enabled is compelling and justifies the instrument request.
- Whether the budget request is appropriate and well justified.
- if student involvement is in the form of direct support for operations and maintenance of the instrument, reviewers will be asked to evaluate the involvement in terms of both instrument needs and the training of the next generation of instrumentalists.
- For instrument acquisition proposals of \$1 million or above, the potential impact of the instrument on the research community of interest at the regional or national level, if appropriate.

Instrument Development Proposals:

- The appropriateness of submission as a development proposal.
 - The need for development of a new instrument. Will the proposed instrument enable enhanced performance over existing instruments, or new types of measurement or information gathering? Is there a strong need for the new instrument in the larger user community to advance new frontiers of research?
 - The adequacy of the project's management plan. Does the plan have a realistic schedule that is described in sufficient detail to be assessed? Are mechanisms described to mitigate and deal with potential risks?
 - The availability of appropriate technical expertise to design and construct the instrument. If direct support for student involvement in development efforts is requested, reviewers will be asked to evaluate the involvement in terms of both project needs and training the next generation of instrumentalists.
 - The appropriateness of the cost of the new technology.
-

Actions Taken by Universities to Address Growing Concerns about Security Threats and Undue Foreign Influence on Campus

AAU and APLU are identifying and sharing practices that universities are employing to ensure the security of research, protect against intellectual property theft and academic espionage, and prevent actions or activities by foreign governments and/or other entities that seek to exert undue foreign influence or which infringe on core academic values (e.g. free speech, scientific integrity, etc.).

The associations recently conducted a [survey](#) asking campus representatives to provide examples of effective policies, practices, tools, and resources they are using and which other campuses may benefit from learning about as our universities collectively work to address ongoing and emerging foreign security threats. The following is a sample of some of the activities being pursued by universities, both existing activities in response to federal requirements and emerging activities in response to recent security concerns, in over 140 examples submitted by 39 institutions. We encourage all universities to review these examples and to consider implementing many of these practices on their own campuses as deemed appropriate to protect against security threats and undue foreign influence. Additional support collecting and summarizing these examples was provided by the American Council on Education (ACE) and the Council on Governmental Relations (COGR).

REVIEW OF FOREIGN GIFTS, GRANTS, CONTRACTS, AND COLLABORATIONS

- ***Development and use of comprehensive processes for review of foreign gifts, grants, and contracts.*** Institutions have established extensive routing and screening systems for agreements and awards involving foreign support. This involves scanning agreements for foreign engagement, export controls, grant terms and conditions, and the potential receipt or generation of sensitive data and routing documents as needed for in-depth review of international sponsorship requirements, export control risks, and information security controls.
- ***Development and use of templates to mitigate risks and protect against foreign threats.*** Institutions have developed templates to guide faculty and staff as they review and consider entering into partnerships and/or agreements with foreign entities. These templates often include prompts with the intent of mitigating potential risks, protecting core academic values such as free speech, and ensuring compliance with export control laws and other federal requirements.
- ***Use of restricted or denied party screening techniques and tools.*** Institutions are expanding their techniques for screening foreign sponsors and collaborators, including visitors, visiting scholars, and employees on non-immigrant visas, to ensure compliance with federal export control requirements and restricted entities lists. Many institutions are using software solutions such as [Visual Compliance](#), which searches numerous continually-updated restricted parties lists, to screen for restricted or denied parties. If an individual or entity is present on a restricted, denied, debarred, designated, or blocked party list, they may be prohibited from doing business with or providing services to the institution or may receive restricted access to specific facilities or information.

REVIEW OF FACULTY FOREIGN FINANCIAL INTERESTS AND AFFILIATIONS

- ***Development and use of Conflict of Interest and Conflict of Commitment policies.*** Institutions are using existing Conflict of Interest (COI) reporting requirements to identify faculty who have foreign financial interests, including affiliations with foreign institutions of higher education. Institutions have expanded their existing COI policies by developing complimentary Conflict of Commitment policies. These policies seek to identify foreign affiliations, relationships, and financial interests which may conflict with the faculty member's responsibilities to their home institution or otherwise raise concerns. Institutions also have enhanced their screening of COI disclosures for international activity.

PROTECTION OF DATA AND CYBERSECURITY

- ***Enhancement of data handling and management.*** Institutions have updated training, tools, policies, and governance for handling data and developed comprehensive approaches for storing, protecting, and ensuring the appropriate use of different types of data. In particular, institutions have identified appropriate protections for sensitive data in grants and contracts to ensure compliance with [NIST SP 800-171 Rev. 1](#), “Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations.”
- ***Improved data security measures.*** Institutions have taken measures to improve data security and internal breach prevention and incident response processes. This includes bolstering network perimeter security and conducting enhanced monitoring of network traffic. Institutions are using encryption, multi- factor authentication, and virus scanning to protect data and are developing new processes for monitoring systems and networks for intrusions and reporting suspected data breaches.
- ***Development and use of coordinated approaches for cyber threat notification.*** Institutions have joined the [Research and Education Networking Information Sharing and Analysis Center](#) (REN-ISAC), which monitors the threat landscape and seeks to enhance operational security and mitigate risk at higher education institutions. REN-ISAC works with trusted third parties to notify its 627 members of infected hosts and suspicious network traffic. Institutions also have joined the [Omni Security Operations Center](#) (OmniSOC), an initiative aimed at reducing cybersecurity threats and serving as a cybersecurity operations center that can be shared among multiple institutions. OmniSOC analyzes data for potential threats and notifies members when incidents require further action.

PROTECTION OF INTELLECTUAL PROPERTY AND USE OF TECHNOLOGY CONTROL PLANS

- ***Development and use of faculty disclosure requirements for intellectual property protection.*** Institutions routinely require disclosure of intellectual property with commercialization potential by faculty, with the intent of ensuring that such IP is secured by quickly applying for the appropriate patent protection. Institutions also protect and restrict access to specific information on university invention disclosures, patent applications, and license agreements.
- ***Use of Technology Control Plans (TCPs) and non-disclosure agreements.*** Institutions regularly establish TCPs and other risk mitigation initiatives to ensure the security of research and protection of intellectual property and to maintain compliance with federal regulations, laws, and contract directives. In instances where proprietary research is being conducted, institutions regularly make use of non-disclosure agreements.

REGULAR INTERACTIONS WITH FEDERAL SECURITY AND INTELLIGENCE AGENCIES

- ***Establishment of a clear POC and strong relationship with regional federal security officials.*** Institutions have developed much stronger relationships and are regularly interacting with local and regional officials from the FBI, ICE, Defense Security Service (DSS), and other organizations. This includes participation by senior university administrators in classified briefings. Institutions have established a primary campus point of contact for these agencies, with whom they may interact when they have identified issues or threats to campus or if they have concerns about the activities of specific faculty and/or students. Institutions described utilizing the FBI as a resource for consultation regarding the screening of foreign visitors and collaborators and as a source of security updates.

FOREIGN TRAVEL

- ***Deployment of faculty foreign travel review and assistance.*** Institutions have created programs, often through their export control or research compliance offices, for reviewing travel by faculty and administrators for export compliance, software use restrictions, and other safety and security

concerns. This includes cleaning laptops, iPads, smartphones, and other electronic devices to make sure they are protected from cyber theft before, during, and after travel in specific countries. Institutions with these programs will often provide blank, secure loaner laptops to researchers traveling abroad and encourage faculty not to cross international borders with devices containing research data. Some institutions also provide security briefings for individuals traveling internationally on university business and tailored one-on-one briefings as needed for destinations considered high-risk.

INTERNATIONAL VISITORS TO CAMPUS

- ***Development and use of requirements for vetting and securely hosting foreign visitors while on campus.*** Institutions have developed policies requiring faculty to alert university officials, often through their export control, research compliance, or international affairs offices, when they plan to have foreign visitors come to visit campus and/or tour their laboratories. The hosting faculty member may be required to fill out a brief questionnaire and/or form for each visitor. Some institutions use software solutions such as [Visual Compliance](#), which searches numerous continually-updated restricted parties lists, to screen for restricted or denied parties. Other institutions have implemented measures for securely hosting and escorting foreign visitors and avoiding unauthorized information gathering.

EXPORT CONTROL COMPLIANCE

- ***Use and strengthening of policies and programs to ensure full compliance with federal export control requirements.*** Institutions have in place clear and comprehensive policies regarding whether and how they will undertake export-controlled research activities. This includes applying for export control licenses when required and creating Technology Control Plans (TCPs) to protect technology from unauthorized access when export-controlled technologies are involved and/or classified work is being conducted.
- ***Employing university staff with specific export control compliance expertise.*** Most AAU and APLU institutions have one or more staff members with specific responsibility for ensuring compliance with export controls. Many of these individuals belong to the [Association of University Export Control Officers \(AUECO\)](#), a national association aimed at exchanging information and sharing knowledge and effective university policies and procedures to advance university compliance with U.S. export, import, and trade sanctions laws and regulations. Institutions conducting classified research also have specially-trained Facility Security Officers (FSOs), who oversee security specific to this research.

Grant Opportunity Alerts

Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: Ecology and Evolution of Infectious Diseases (EEID); NSF/Intel Partnership on Machine Learning for Wireless Networking Systems (MLWiNS); Ecology and Evolution of Infectious Diseases (EEID); Graduate Research Fellowship Program (GRFP); Critical Aspects of Sustainability (CAS); Computer and Information Science and Engineering (CISE): Core Programs; Advanced Computing Systems & Services; International Research Experiences for Students (IRES); Opportunities for Promoting Understanding through Synthesis (OPUS); Division of Chemistry: Disciplinary Research Programs (CHE-DRP), Centers for Chemical Innovation (CCI)

NIH: The NCI Predoctoral to Postdoctoral Fellow Transition Award (F99/K00); BRAIN Initiative: Development of Next Generation Human Brain Imaging Tools and Technologies (U01); Novel Technology Tools to Facilitate Research Using Next Generation Patient-derived Cancer Models (U01);

BRAIN Initiative: Non-Invasive Neuromodulation - New Tools and Techniques for Spatiotemporal Precision (R01); Bridges to the Doctorate Research Training Program (T32)
Department of Defense/US Army/DARPA/ONR: Research on the Use of Autonomy and Unmanned Vehicle; DoD Restoring Warfighters with Neuromusculoskeletal Injuries Research Award (RESTORE); Microsystems Exploration; Microsystems Exploration Research Area Announcement; Securing Information for Encrypted Verification and Evaluation (SIEVE); Science of Artificial Intelligence – Basic and Applied Research for the Naval Domain; Artificial Intelligence/Machine Learning Enabled Capabilities; Office of Naval Research (ONR) Young Investigator; DSO Office-wide Broad Agency Announcement; Program Announcement for Disruptioneering
Department of Transportation: Grants or Research Fellowship (GRF); Advanced Transportation and Congestion Management Technologies Deployment Initiative; National Infrastructure Investments
Department of Labor: Apprenticeships: Closing the Skills Gap
EPA: Contaminated Sites, Natural Disasters, Changing Environmental Conditions and Vulnerable Communities: Research to Build Resilience; Chemical Mechanisms to Address New Challenges in Air Quality Modeling; 2019 Healthy Communities Grant Program
Department of Energy: Energy-Efficient Technologies for Automated Vehicles (AVs); RFI: Planning and Operation Models and Data Analytics for Solar Grid Integration; Electric Grid of Things; Request for Information (RFI): Marine Sciences Laboratory
NASA: University Student Research Challenge; NASA Innovative Advanced Concepts (NIAC) Phase I; ROSES 2019: Living With a Star Science; Space Weather Science Applications Operations 2 Research
National Endowment of Humanities: Public Humanities Projects; Summer Stipends; Fellowship Programs at Independent Research Institutions
Pharma Foundation: Pre-Doctoral Fellowships
Simons and Moore Foundations: Origin of the Eukaryotic Cell
Arnold and Mabel Beekman Foundation: Post-Doctoral Fellowships
Sigma-Xi: Students and Engineering Research Grants

Recent Research Grant and Contract Awards

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

PI: Shawn Chester (PI)

Department: Mechanical and Industrial Engineering

Grant/Contract Project Title: CAREER: Damage Evolution in Polymeric Materials Undergoing Hydrolysis or Photo-Degradation

Funding Agency: NSF

Duration: 08/01/18-07/31/23

PI: Timothy Franklin (PI)

Department: Technology and Business Development

Grant/Contract Project Title: NJ Cyberlink

Funding Agency: Office of Economic Adjustment

Duration: 07/01/19-10/31/20

PI: William Marshall (PI) and Somenath Mitra (Co-PI)

Department: Transformative Manufacturing Enhancements for Munitions and Weapon Systems Standardization and Effectiveness (TMEMWSS)

Grant/Contract Project Title: NJ Cyberlink

Funding Agency: U.S. Army (Picatinny Arsenal)

Duration: 09/26/18-07/31/20

PI: Murat Guvendiren (PI)

Department: Chemical and Material Engineering

Grant/Contract Project Title: Fabrication of 3D Printed Pliable Scaffolds and Disclosure Form Preparation

Funding Agency: Acuitive Technologies, Inc.

Duration: 03/16/18-07/15/20

PI: Xianlian Zhou (PI)

Department: Biomedical Engineering

Grant/Contract Project Title: Augmented Reality Surgical Visualization Tool for Combat Casualty Care

Funding Agency: U.S. Department of Defense (Defense Health Agency)

Duration: 07/08/19-01/07/20

NJII

PI: Ian Trammell (PI)

Department: NJII

Grant/Contract Project Title: NJ Cyberlink

Funding Agency: Office of Economic Adjustment

Duration: 07/01/19-10/31/20

In the News...

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

NSF 19-200: NSF Dear Colleague Letter about Policy on Research Protection: A great strength of the U.S. research and engineering enterprise is the diversity of talent—both domestic and international—and that is a strength we are committed to maintaining. International collaboration is essential to pursuing the frontiers of science, as dramatically demonstrated by the incredible imaging of a black hole event horizon, the ambitious MOSAIC project to study Arctic changes, and the detection of gravitational waves on Earth. Our science and engineering enterprise, however, is put at risk when another government endeavors to benefit from the global research ecosystem without upholding the values of openness, transparency, and reciprocal collaboration. Faced with such a risk, we must respond.

Since 1978, NSF has required senior project personnel on proposals to disclose all sources of support, both foreign and domestic. A renewed effort is now underway to ensure that existing requirements to disclose current and pending support information are known, understood, and followed. For example, in May, we published in the Federal Register a proposed clarification of our proposal disclosure requirements (open for public comment through July 29). Our draft NSF Proposal and Award

Policies and Procedures Guide includes clarifications regarding reporting requirements for both current and pending support and professional appointments.

To streamline the process for providing these disclosures to NSF, we are proposing use of an electronic format for submission of biographical sketches, including disclosure of all appointments. As currently envisioned, this will become effective in January 2020. We are also working to develop an electronic format for disclosure of current and pending support information.

We want to ensure we have expert input into issues related to open science and security, so we have commissioned the independent scientific advisory group JASON to conduct a study. This study will assess risks and recommend possible practices for NSF and its awardee organizations to achieve the best balance between openness and security of science. They will complete their report by the end of the calendar year.

Finally, we are issuing a policy making it clear that NSF personnel and IPAs detailed to NSF cannot participate in foreign government talent recruitment programs. There is a risk that participation in foreign government talent recruitment programs by NSF personnel and IPAs will compromise the ethical principles that bind us. Moreover, such participation poses significant risks of inappropriate foreign influence on NSF policies, programs, and priorities, including the integrity of NSF's merit review process—risks we simply cannot accept.

We recognize this issue is difficult. We won't be able to make the changes needed to address this new challenge to our community without your input and support. We want to hear from you and look forward to working together to develop solutions, even if it means making changes to long-standing policies and practices. In the end, the steps we are taking and will take are aimed at protecting your vital research and continuing the kinds of international collaborations that are needed to promote the progress of science, to advance the national health, prosperity, and welfare, and to secure the national defense. NSF 19-200 letter is available on the website https://www.nsf.gov/pubs/2019/nsf19200/research_protection.jsp

Congress Looks to 'Minibus' and Stopgap Measures in September: Final approval of the two-year agreement by the president sets in motion a hectic pace for appropriators, led by Sen. Richard Shelby (R-Ala.) and Rep. Nita Lowey (D-N.Y.). Shelby "has said his committee will work during the five-week summer recess to prepare appropriations bills for the floor," the Association of American Universities reports. With just 13 legislative days before the end of the fiscal year, Congress is expected to package several agency funding measures--most likely covering Defense, Labor, Health and Human Services (including the National Institutes of Health), Education, and the Department of Energy--into a so-called minibus spending bill. Other agencies may be funded temporarily at current levels through a short-term continuing resolution.

Workshop to Look to Future of Nanotechnology 'Ecosystem': A [workshop](#) for stakeholders in the National Nanotechnology Initiative (NNI) is taking place Thursday and Friday to explore ideas for the field's next 15 years. Participants will address the needs of the nanotechnology "ecosystem," touching on applications in energy, aerospace, and electronics, among other areas. On the workshop's second day, representatives from federal agencies, including the National Science Foundation and Department of Energy, will discuss mechanisms for supporting the field. The last time NNI came up for review three years ago, a National Academies panel [urged](#) it to help provide "focus," particularly in moving applications toward commercialization. This week, the latest National Academies review panel will also be holding its [third meeting](#), which will include presentations from three federal agencies as well as discussions related to research, commercialization, and hazards identification.

Science Committee Makes Case for Sustainable Chemistry Initiative: The House Science Committee held a [hearing](#) last week to survey support for the [Sustainable Chemistry Research and Development Act](#).

Committee Chair Eddie Bernice Johnson (D-TX) argued the time for the federal government to formalize its support for the field is overdue, noting it has been over 20 years since the [“12 design principles of green chemistry”](#) were developed, and over 10 years since she first sponsored [legislation](#) to spur green chemistry. Johnson said she is “concerned about steps this administration has taken to reverse the little progress we have made,” pointing to a 2018 executive order that rescinded a requirement that agencies purchase certain products with sustainable chemicals, and said she believes the National Science Foundation can do more to integrate sustainability principles into its chemistry research and education programs. Witnesses endorsed the concept of establishing a national initiative and called for the adoption of a definition for “sustainable chemistry,” which they said is broader than the well-established concept of green chemistry. Other recommendations included requiring all chemists to be trained in green chemistry and teaching sustainability principles in earlier stages of science education.

A Pipeline of Intellectual Property: This is "flowing back to China for the advancement of its various strategic plans" as a result of China's talent recruitment programs, FBI Director Christopher Wray told the [Senate Judiciary Committee July 23](#). Particularly at the graduate level in major universities, we need to make sure U.S. tax dollars aren't used to help China achieve economic dominance. Wray said he's "heartened" by the level of alignment and consensus in Congress about the China threat. He wants to raise universities' awareness so they can make "thoughtful, voluntary decisions." Sen. Ted Cruz (R-Tex.) commented that academic leaders tend to be less aware of the scope of the threat, "less sophisticated and savvy" than Fortune 100 executives. Read coverage by the American Institute of Physics' on <https://www.aip.org/fyi/fyi-this-week/week-july-29-2019>

ARPA-Energy Projects: Legislation reauthorizing the Advanced Research Projects Agency-Energy calls for ramping up its funding from \$428 million in fiscal 2020--as proposed by House appropriators--to \$1 billion in FY 2024, according to a memo from the Energy Sciences Coalition. The new bill updates a version Rep. Eddie Bernice Johnson (D-Tex.), chair of the House Science, Space, and Technology Committee, introduced in the last Congress. That measure won a host of endorsements, including from the U.S. Chamber of Commerce, the National Association of Manufacturers, the American Council for Capital Formation, the American Petroleum Institute (API), the American Gas Association, and the Alliance to Save Energy. In a February statement, Johnson noted: "Thus far, 71 ARPA-E projects have led to the formation of new companies; 109 have partnered with other government agencies for further development; and 136 have attracted over \$2.6 billion in private sector follow-on funding. More information about funding opportunities from ARPA-E is available on the website <https://arpa-e.energy.gov/>.

Department of Energy Requesting Information on Microelectronics Research: The Department of Energy's Office of Science (DOE-SC) "is considering the launch of a multi-program basic research initiative in support of microelectronics and semiconductor sectors. The participating program offices in DOE-SC invite interested parties to provide input on the topical areas, innovation mechanisms, impact, and potential collaborations, including public-private partnerships, that could be implemented under this initiative. DOE-SC is particularly interested in ways in which unique DOE facilities, expertise and capabilities can be leveraged to support U.S. continued global innovation and leadership in this field." Request for Information: Basic Research Initiative for Microelectronics is posted on the website <https://www.govinfo.gov/content/pkg/FR-2019-07-12/html/2019-14869.htm>. Written comments and information are requested on or before August 30, 2019.

DARPA Announces Microsystems Exploration Program: DARPA's Microsystems Exploration program "will constitute a series of short-term investments into high-risk, high-reward research" and leverage "streamlined contracting and funding approaches." The agency hopes it will provide a way "to

assess whether or not a concept could evolve into a full program without requiring the use of more significant resources.” The Microsystems Exploration program will employ best practices from DARPA’s other fast-track solicitation programs – the agency-wide AI Exploration program and the Defense Science Office’s “Disruptioneering” initiative. These programs are focused on enabling rapid advances in artificial intelligence and basic science respectively, and have shown numerous benefits to this approach. Similar to these efforts, the simplified proposal, contracting, and funding process employed by each μ E topic will make it even easier for individuals and organizations to contribute to DARPA’s mission. Each award may be worth up to \$1 million, as described in the individual μ E solicitations. Additional information about the Microsystems Exploration program can be found under Program Announcement [DARPA-PA-19-04](#). Further details on the three potential μ E topics can be found under Special Notice [DARPA-SN-19-69](#). The Microsystems Exploration Research Area Announcement Special Notice has been issued solely for information and potential new program planning purposes. All future and official solicitation notices for μ E topics will be published to Federal Business Opportunities (FBO) at www.fbo.gov. More information about these RFPs is included in the Grant Opportunity section below.

Webinar and Events

Event: Open source, academic science and the public mission of research: reflections from the field

Sponsor: NSF

When: August 15, 2019; 11.00 AM – 12.00 PM

Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=298971&org=NSF

Speaker: Professor Fernando Perez from the University of California Berkeley

Brief Description: The future of science should be open, reproducible, inclusive and community-driven. In this talk, I’ll explore the challenges this position presents from the perspective of someone who has spent almost 20 years building open source software and communities. I have lived (often precariously) a dual life of “real academic” and of open source developer and advocate, working on IPython, Project Jupyter and the Scientific Python ecosystem since 2001.

I will provide an overview of Project Jupyter, including its intellectual backbone, the open source community context that surrounds it, and some of the impact it has had in recent years. This will help frame the second part of the talk, what I hope will be an invitation to a discussion on how the opening sentence above can be realized, with the support of agencies like the NSF. The scientific, technical and community dynamics of projects like Jupyter presents interesting challenges in the context of traditional scientific incentives (funding, publishing, hiring and promotion, etc.) I’ll briefly outline some of these but will mostly focus on some ideas that I hope can move the conversation forward in productive ways.

To Join the Webinar: Please register at: <http://www.tvworldwide.com/events/nsf/190815/>

Event: NSF 19-044 DCL: Fundamental Discipline-Based Education Research (DBER) Outreach Webinar

Sponsor: NSF

When: August 15, 2019; 2.00 PM – 3.30 PM

Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=299029&org=NSF

Brief Description: The EHR Core Research (ECR) program will provide an overview of the funding emphasis outlined in the Dear Colleague Letter: Fundamental Discipline-Based Education Research (DBER) Focused on Undergraduate and Graduate STEM Education within the EHR Core Research (ECR) Program ([NSF 19-044](#)) and answer questions from participants. The session will be recorded and posted so those who cannot attend can listen to the webinar later. We suggest reviewing the [Dear Colleague Letter](#) before the webinar to prepare your questions for program officers.

Registration is required so we can communicate with you before and after the webinar (there is no need to email the program directly). After registering, you will automatically receive instructions by email from WebEx (from messenger@webex.com) for joining the webinar on August 15th. Please check your junk or clutter folders for the information on joining the webinar. You can forward the information to join the webinar to your team and more than one person can use the same registration to join the webinar from different locations.

To Join the Webinar: Please register at the above website

Event: NSF 19-033 ECR Dear Colleague Letter Outreach Webinar

Sponsor: NSF

When: August 19, 2019; 2.00 PM – 3.30 PM

Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=299030&org=NSF

Brief Description: The EHR Core Research (ECR) program will provide an overview of the funding emphasis outlined in the Dear Colleague Letter: Research to Improve STEM Teaching and Learning, and Workforce Development for Persons with Disabilities ([NSF 19-033](#)) and answer questions from participants. The session will be recorded and posted so those who cannot attend can listen to the webinar later. We suggest reviewing the [Dear Colleague Letter](#) before the webinar to prepare your questions for program officers.

Registration is required so we can communicate with you before and after the webinar (there is no need to email the program directly). After registering, you will automatically receive instructions by email from WebEx (from messenger@webex.com) for joining the webinar on August 19th. Please check your junk or clutter folders for the information on joining the webinar. You can forward the information to join the webinar to your team and more than one person can use the same registration to join the webinar from different locations.

To Join the Webinar: Please register at the above website

Event: NSF 19-035 DCL: Fundamental Research on Equity, Inclusion, and Ethics Outreach Webinar

Sponsor: NSF

When: August 20, 2019; 2.00 PM – 3.30 PM

Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=299031&org=NSF

Brief Description: The EHR Core Research (ECR) program will provide an overview of the funding emphasis outlined in the Dear Colleague Letter: Fundamental Research on Equity, Inclusion, and Ethics in Postsecondary Academic Workplaces and the Academic Profession within the EHR Core Research Program ([NSF 19-035](#)) and answer questions from participants. The session will be recorded and posted so those who cannot attend can listen to the webinar later. We suggest reviewing the [Dear Colleague Letter](#) before the webinar to prepare your questions for program officers.

Registration is required so we can communicate with you before and after the webinar (there is no need to email the program directly). After registering, you will automatically receive instructions by email from WebEx (from messenger@webex.com) for joining the webinar on August 20th. Please check your junk or clutter folders for the information on joining the webinar. You can forward the information to join the webinar to your team and more than one person can use the same registration to join the webinar from different locations.

To Join the Webinar: Please register at the above website

Event: NSF 19-025 DCL: STEM Workforce Development Using Flexible Personal Learning Environments

Sponsor: NSF

When: August 21, 2019; 2.00 PM – 3.30 PM

Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=299034&org=NSF

Brief Description: The EHR Core Research (ECR) program will provide an overview of the funding emphasis outlined in the Dear Colleague Letter: STEM Workforce Development Using Flexible Personal Learning Environments ([NSF 19-025](#)) and answer questions from participants. The session will be recorded and posted so those who cannot attend can listen to the webinar later (you may review the webinar slides through the link under the Public Attachments section below). We suggest reviewing the [Dear Colleague Letter](#) before the webinar to prepare your questions for program officers.

Registration is required so we can communicate with you before and after the webinar (there is no need to email the program directly). After registering, you will automatically receive instructions by email from WebEx (from messenger@webex.com) for joining the webinar on August 21st. Please check your junk or clutter folders for the information on joining the webinar. You can forward the information to join the webinar to your team and more than one person can use the same registration to join the webinar from different locations.

To Join the Webinar: Please register at the above website

Grant Opportunities

National Science Foundation

Grant Program: Ecology and Evolution of Infectious Diseases (EEID)

Agency: National Science Foundation NSF 19-592

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19592/nsf19592.htm>

Brief Description: The multi-agency Ecology and Evolution of Infectious Diseases program supports research on the ecological, evolutionary, and social drivers that influence the transmission dynamics of infectious diseases. The central theme of submitted projects must be the quantitative or computational understanding of pathogen transmission dynamics. The intent is discovery of principles of infectious disease transmission and testing mathematical or computational models that elucidate infectious disease systems. Projects should be broad, interdisciplinary efforts that go beyond the scope of typical studies. They should focus on the determinants and interactions of transmission among humans, non-human animals, and/or plants. This includes, for example, the spread of pathogens; the influence of environmental factors such as climate; the population dynamics and genetics of reservoir species or hosts; the feedback between ecological transmission and evolutionary dynamics; and the cultural, social, behavioral, and economic dimensions of pathogen transmission. Research may be on zoonotic, environmentally-borne, vector-borne, or enteric pathogens of either terrestrial or aquatic systems and organisms, including diseases of animals and plants, at any scale from specific pathogens to inclusive environmental systems. Proposals for research on disease systems of public health concern to developing countries are strongly encouraged, as are disease systems of concern in agricultural systems. Investigators are encouraged to develop the appropriate multidisciplinary team, including for example, anthropologists, modelers, ecologists, bioinformaticians, genomics researchers, social scientists, economists, oceanographers, mathematical scientists, epidemiologists, evolutionary biologists, entomologists, parasitologists, microbiologists, bacteriologists, virologists, pathologists or veterinarians, with the goal of integrating knowledge across disciplines to enhance our ability to predict and control infectious diseases.

Awards: Standard grants; **Anticipated Funding Amount:** \$24,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: November 20, 2019

Contacts: Katharina Dittmar, Program Director, NSF/BIO, telephone: (703) 292-7799, email: kdittmar@nsf.gov

- Christine Jessup, Program Director, NIH/FIC, telephone: (301) 496-1653, fax: (301) 402-0779, email: christine.jessup@nih.gov
 - Peter Johnson, National Program Leader, USDA/NIFA, telephone: (202) 401-1896, email: pjohnson@nifa.usda.gov
-

Grant Program: NSF/Intel Partnership on Machine Learning for Wireless Networking Systems (MLWiNS)

Agency: National Science Foundation NSF 19-591

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19591/nsf19591.htm>

Brief Description: This program seeks to accelerate fundamental, broad-based research on wireless-specific machine learning (ML) techniques, towards a new wireless system and architecture design, which can dynamically access shared spectrum, efficiently operate with limited radio and network resources, and scale to address the diverse and stringent quality-of-service requirements of future wireless applications. In parallel, this program also targets research on reliable distributed ML by addressing the challenge of computation over wireless edge networks to enable ML for wireless and future applications. Model-based approaches for designing the wireless network stack have proven quite efficient in delivering the networks in wide use today; research enabled by this program is expected to identify realistic problems that can be best solved by ML and to address fundamental questions about expected improvements from using ML over model-based methods.

Awards: Proposals may address one or more Research Vectors (RVs): ML for Wireless Networks; ML for Spectrum Management; and Distributed ML over Wireless Edge Networks. It is anticipated that 10 to 15 awards will be made, with an award size of \$300,000-\$1,500,000, for periods of up to 3 years. The budget should be commensurate with the complexity of the proposed research. Projects will be funded across this range. **Anticipated Funding Amount:** \$9,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: October 29, 2019

Contacts: Monisha Ghosh, Program Director, CISE/CNS, telephone: (703) 292-8746, email: mghosh@nsf.gov

- Balakrishnan Prabhakaran, Program Director, CISE/IIS, telephone: (703) 292-4847, email: bprabhak@nsf.gov
 - Phillip A. Regalia, Program Director, CISE/CCF, telephone: (703) 292-2981, email: pregalia@nsf.gov
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Grant Program: Ecology and Evolution of Infectious Diseases (EEID)

Agency: National Science Foundation NSF 19-592

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19592/nsf19592.htm>

Brief Description: The multi-agency Ecology and Evolution of Infectious Diseases program supports research on the ecological, evolutionary, and social drivers that influence the transmission dynamics of infectious diseases. The central theme of submitted projects must be the quantitative or computational understanding of pathogen transmission dynamics. The intent is discovery of principles of infectious disease transmission and testing mathematical or computational models that elucidate infectious disease systems. Projects should be broad, interdisciplinary efforts that go beyond the scope of typical studies. They should focus on the determinants and interactions of transmission among humans, non-human animals, and/or plants. This includes, for example, the spread of pathogens; the influence of environmental factors such as climate; the population dynamics and genetics of reservoir species or hosts; the feedback between ecological transmission and evolutionary dynamics; and the cultural, social, behavioral, and economic dimensions of pathogen transmission. Research may be on zoonotic,

environmentally-borne, vector-borne, or enteric pathogens of either terrestrial or aquatic systems and organisms, including diseases of animals and plants, at any scale from specific pathogens to inclusive environmental systems. Proposals for research on disease systems of public health concern to developing countries are strongly encouraged, as are disease systems of concern in agricultural systems. Investigators are encouraged to develop the appropriate multidisciplinary team, including for example, anthropologists, modelers, ecologists, bioinformaticians, genomics researchers, social scientists, economists, oceanographers, mathematical scientists, epidemiologists, evolutionary biologists, entomologists, parasitologists, microbiologists, bacteriologists, virologists, pathologists or veterinarians, with the goal of integrating knowledge across disciplines to enhance our ability to predict and control infectious diseases.

Awards: Standard Grants; **Anticipated Funding Amount:** \$24,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: November 20, 2019

Contacts: Katharina Dittmar, Program Director, NSF/BIO, telephone: (703) 292-7799, email: kdittmar@nsf.gov

- Christine Jessup, Program Director, NIH/FIC, telephone: (301) 496-1653, fax: (301) 402-0779, email: christine.jessup@nih.gov
- Peter Johnson, National Program Leader, USDA/NIFA, telephone: (202) 401-1896, email: pjohnson@nifa.usda.gov

Grant Program: Graduate Research Fellowship Program (GRFP)

Agency: National Science Foundation NSF 19-590

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19590/nsf19590.htm>

Brief Description: The purpose of the NSF Graduate Research Fellowship Program (GRFP) is to help ensure the vitality and diversity of the scientific and engineering workforce of the United States. The program recognizes and supports outstanding graduate students who are pursuing full-time research-based master's and doctoral degrees in science, technology, engineering, and mathematics (STEM) or in STEM education. The GRFP provides three years of support for the graduate education of individuals who have demonstrated their potential for significant research achievements in STEM or STEM education. NSF especially encourages women, members of underrepresented minority groups, persons with disabilities, veterans, and undergraduate seniors to apply.

Awards: Fellowship; **Estimated Number of Awards:** 1,600

Letter of Intent: Not Required

Proposal Submission Deadline:

October 21, 2019

Life Sciences, Geosciences

October 22, 2019

Computer and Information Science and Engineering, Engineering, Materials Research

October 24, 2019

Psychology, Social Sciences, STEM Education and Learning

October 25, 2019

Chemistry, Mathematical Sciences, Physics and Astronomy

October 19, 2020

Life Sciences, Geosciences

October 20, 2020

Computer and Information Science and Engineering, Engineering, Materials Research

October 22, 2020

Psychology, Social Sciences, STEM Education and Learning

October 23, 2020

Chemistry, Mathematical Sciences, Physics and Astronomy

Limit on Number of Applications per Applicant: 1

Contacts: Christopher Hill, telephone: (866) 673-4737, email: info@nsfgrfp.org

- Jong-on Hahm, telephone: (866) 673-4737, email: info@nsfgrfp.org
 - Applications contact: GRF Operations Center, telephone: (866) 673-4737, email: info@nsfgrfp.org
-

Grant Program: Critical Aspects of Sustainability (CAS)

Agency: National Science Foundation NSF PD 19-9102

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505673&org=NSF&sel_org=NSF&from=fund

Brief Description: Economic development and human progress have led to a proliferation of manufactured chemicals and materials made from limited resources found in nature (i.e., minerals and metals, petroleum-based products and natural gas). Long-term sustainability requires consideration of the availability of specific natural resources, energy, and water usage. NSF continues to support efforts that seek to improve the efficiency with which natural resources are used to meet human needs for products and services. Sustainability research encompasses the design, manufacture and use of efficient, effective, safe and more environmentally-benign products and processes; stimulates innovation across all sectors to design and discover new chemicals and materials, production processes, and product stewardship practices; and, increases performance and value while meeting the goals of protecting and enhancing human health and the environment.

This program seeks to support basic research through core disciplinary programs aimed at improving the sustainability of resources for future generations while maintaining or improving current products in order to offer technologically-advanced, economically competitive, environmentally-benign and useful materials to a global society. In order to address these challenges, the program aims to identify opportunities for innovation in a wide range of contributing disciplines as well as integrative activities. This program encourages the development of new experimental and theoretical/modeling approaches that will aid in both reductionist and whole-systems approaches.

Awards: Standard Grants.

Letter of Intent: Not Required

Proposal Submission Deadline: Accepted anytime

All proposals to: the Advanced Manufacturing Program in the Division of Civil, Mechanical and Manufacturing Innovation (CMMI) -- Full Proposal Accepted Anytime;

All proposals to: the Ceramics and the Condensed Matter and Materials Theory Programs in the Division of Materials Research (DMR) -- Full Proposal Accepted Anytime;

All proposals to: the core programs in the Division of Chemical, Bioengineering, Environmental and Transport Systems (CBET) listed in the Program Announcement --Full Proposal Accepted Anytime;

All proposals to: the Petrology and Geochemistry (CH), Geobiology and Low-Temperature Geochemistry (GG), and Frontier Research in Earth Sciences (FRES) Programs in the Division of Earth Sciences (EAR) -- Full Proposal Accepted Anytime;

September 1, 2019 - September 30, 2019

All proposals to: Chemical Catalysis (CAT); Chemical Structure, Dynamics and Mechanisms-A/B (CSDM-A/B); Chemical Theory, Models and Computational Methods (CTMC); and Chemical Synthesis (SYN) in the Division of Chemistry (CHE) -- 09/01/2019 - 09/30/2019;

October 1, 2019 - November 1, 2019

All proposals to: Biomaterials, Condensed Matter Physics, Electronic and Photonic Materials, Metals and Metallic Nanostructures, Polymers, and Solid-State and Materials Chemistry in the Division of Materials Research (DMR) -- 10/01/2019 - 11/01/2019;

October 1, 2019 - October 31, 2019

All proposals to: Chemical Measurement and Imaging (CMI); Chemistry of Life Processes (CLP); Environmental Chemical Sciences (ECS); and Macromolecular, Supramolecular and Nanochemistry (MSN) in the Division of Chemistry (CHE) -- 10/01/2019 - 10/31/2019;

Contacts: Anne-Marie Schmoltner	aschmolt@nsf.gov	(703) 292-4716	CHE
Enriqueta C. Barrera	ebarrera@nsf.gov	(703) 292-7780	EAR
Khershed P. Cooper	khcooper@nsf.gov	(703) 292-7017	CMMI
Bruce K. Hamilton	bhamilto@nsf.gov	(703) 292-7066	CBET
Andrew J. Lovinger	alovinge@nsf.gov	(703) 292-4933	DMR

Grant Program: Computer and Information Science and Engineering (CISE): Core Programs

Agency: National Science Foundation NSF PD 19-589

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19589/nsf19589.htm>

Brief Description: The NSF CISE Directorate supports research and education projects that develop new knowledge in all aspects of computing, communications, and information science and engineering, as well as advanced cyberinfrastructure, through the following core programs:

Office of Advanced Cyberinfrastructure (OAC):

- OAC Core Research (OAC Core) program;

Division of Computing and Communication Foundations (CCF):

- Algorithmic Foundations (AF) program;
- Communications and Information Foundations (CIF) program;
- Foundations of Emerging Technologies (FET) program; and
- Software and Hardware Foundations (SHF) program;

Division of Computer and Network Systems (CNS):

- CNS Core (CNS Core) program;

Division of Information and Intelligent Systems (IIS):

- Cyber-Human Systems (CHS) program;
- Information Integration and Informatics (III) program; and
- Robust Intelligence (RI) program.

Awards: Proposers are invited to submit proposals in several project classes, which are defined as follows:

- Small Projects -- up to \$500,000 total budget with durations up to three years: projects in this class may be submitted to OAC, CCF, CNS, and IIS;
- Medium Projects -- \$500,001 to \$1,200,000 total budget with durations up to four years: projects in this class may be submitted to CCF, CNS, and IIS only; and
- Large Projects -- \$1,200,001 to \$3,000,000 total budget with durations up to five years: projects in this class may be submitted to CNS only.

Anticipated Funding Amount: \$280,000,000

Letter of Intent: Not Required

Proposal Submission Deadline:

September 20, 2019 - September 30, 2019

LARGE projects

September 20, 2019 - September 30, 2019

MEDIUM projects

October 31, 2019 - November 14, 2019

SMALL projects

September 07, 2020 - September 14, 2020

MEDIUM projects

September 16, 2020 - September 23, 2020

LARGE projects

October 29, 2020 - November 12, 2020

SMALL projects

Contacts: Alan Sussman, Point of Contact, OAC Core Research (OAC Core), telephone: (703) 292-7563, email: oac-core@nsf.gov

- Anindya Banerjee, Point of Contact, Software and Hardware Foundations (SHF), telephone: (703) 292-8910, email: ccf-shf@nsf.gov
- Mitra Basu, Point of Contact, Foundations of Emerging Technologies (FET), telephone: (703) 292-8910, email: ccf-fet@nsf.gov

Grant Program: Advanced Computing Systems & Services: Adapting to the Rapid Evolution of Science and Engineering Research

Agency: National Science Foundation NSF 19-587

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19587/nsf19587.htm>

Brief Description: The intent of this solicitation is to request proposals from organizations willing to serve as service providers (SPs) within the NSF Innovative High-Performance Computing (HPC) program to provide advanced cyberinfrastructure (CI) capabilities and/or services in production operations to support the full range of computational- and data-intensive research across all of science and engineering (S&E). The current solicitation is intended to complement previous NSF investments in advanced computational infrastructure by provisioning resources, broadly defined in this solicitation to include systems and/or services, in two categories:

- Category I, Capacity Systems: production computational resources maximizing the capacity provided to support the broad range of computation and data analytics needs in S&E research; and
- Category II, Innovative Prototypes/Testbeds: innovative forward-looking capabilities deploying novel technologies, architectures, usage modes, etc., and exploring new target applications, methods, and paradigms for S&E discoveries.

Resources supported through awards from this solicitation will be incorporated into and allocated as part of NSF's Innovative HPC program. This program complements investments in [leadership-class computing](#) and funds a federation of nationally-available HPC resources that are technically diverse and intended to enable discoveries at a computational scale beyond the research of individual or regional academic institutions. NSF anticipates that at least 90% of the provisioned system or services will be available to the S&E community through an open peer-reviewed national allocation process and be supported by community and other support services [such as those currently supported through eXtreme Science and Engineering Discovery Environment (XSEDE) 2.0 project-managed allocations recommended by the XSEDE Resource Allocation Committee (XRAC), and other activities intended to foster efficient coordination across resources], or an NSF-approved alternative that may emerge. If this is not feasible for the proposed system/services, proposers must clearly explain in detail why this is the case and how they intend to make the proposed system/services available to the national S&E community.

Awards: Cooperative Agreements. Anticipated funding available: \$5,000,000 to \$10,000,000 per award. A total of \$30,000,000 is available for this solicitation, subject to the availability of funds. It is anticipated that 1-2 awards will be made in Category I at up to \$10,000,000 per award for up to five years and up to 1-2 awards in Category II at up to \$5,000,000 per award for up to five years.

Letter of Intent: Not Required

Limit on Number of Proposals per Organization: 1

Proposal Submission Deadline: November 05, 2019

Contacts: Robert Chadduck, Program Director, CISE/OAC, telephone: (703) 292-8970, email: rchadduc@nsf.gov

- Alejandro M. Suarez, Assistant Program Director, CISE/OAC, telephone: (703) 292-7092, email: alsuarez@nsf.gov
 - Edward Walker, Program Director, CISE/OAC, telephone: (703) 292-4863, email: edwalker@nsf.gov
-

Grant Program: International Research Experiences for Students (IRES)

Agency: National Science Foundation NSF 19-585

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19585/nsf19585.htm>

Brief Description: The International Research Experiences for Students (IRES) program supports international research and research-related activities for U.S. science and engineering students. The IRES program contributes to development of a diverse, globally-engaged workforce with world-class skills. IRES focuses on active research participation by undergraduate or graduate students in high quality international research, education and professional development experiences in NSF-funded research areas.

The overarching, long-term goal of the IRES program is to enhance U.S. leadership in research and education and to strengthen economic competitiveness through training the next generation of research leaders.

This solicitation features three mechanisms; proposers are required to select one of the following tracks to submit their proposal.

Track I focuses on the development of world-class research skills in international cohort experiences. Track II is dedicated to targeted, intensive learning and training opportunities that leverage international knowledge at the frontiers of research. Track III supports U.S. institutional collaborations to develop, implement and evaluate innovative models for high-impact, large-scale international research and professional development experiences for U.S. graduate students.

Student participants supported by IRES funds must be citizens, nationals, or permanent residents of the United States.

Students do not apply directly to NSF to participate in IRES activities. Students apply to NSF-funded investigators who receive IRES awards. To identify appropriate IRES projects, students should consult the directory of active [IRES awards](#).

All PIs, co-PIs and Senior Personnel on IRES proposals must be from U.S. based institutions.

1. **IRES - Track I: *IRES Sites (IS)*** projects engage a group of undergraduate and/or graduate students in active high-quality collaborative research at an international site with mentorship from researchers at a host lab. IRES Sites must be organized around a coherent intellectual theme that may involve a single discipline or multiple disciplines funded by NSF.
2. **IRES - Track II: *Advanced Studies Institutes (ASI)*** are intensive short courses with related activities that engage advanced graduate students in active learning and research at the frontiers of knowledge. ASIs typically range in length from ten to twenty-one days and must be held outside the United States. ASIs must have a compelling rationale for their international location and should involve distinguished active researchers in the target field from the U.S. and abroad. ASIs should enable students to develop skills and broaden professional networks, leveraging international participation and complementary resources (expertise, facilities, data, field site, etc.) for mutual benefit.
3. **IRES - Track III: *New Concepts in International Graduate Experience (IGE)*** The IGE IRES track invites teams of PIs to propose, implement, evaluate and disseminate innovative large-scale programs (models) for providing high-quality international research and research-related professional development experiences to U.S. graduate students. The PIs should explain how their innovative program (model) could potentially be adaptable beyond the immediate disciplinary fields involved in their proposal. The proposals should be designed from the viewpoint of

graduate-level STEM research/training, and globally engaged STEM workforce development. The proposals should be grounded in relevant literature on graduate STEM research/training, education, and graduate level international experiences.

U.S. graduate students recruited from a broad, diverse applicant pool should travel to non-U.S. locations for periods of several weeks to a semester for immersive experiences under the mentorship of appropriate collaborators. The proposed international graduate research experience model may focus on research and research-related activities in any NSF-funded area(s). Proposals that utilize, leverage and expand existing global networks and infrastructure are strongly encouraged.

Awards: Standard Grant or Continuing Grant

Estimated Number of Awards: 30 to 35

Track- I: IRES Sites. Approximately 20-25 awards will be made in FY 2020, pending quality of proposals and availability of funds.

Track- II: Advanced Studies Institutes. Approximately 5-7 awards will be made in FY 2020 pending quality of proposals and availability of funds.

Track- III: New Concepts in International Graduate Experience. Approximately 3-5 awards will be made in FY 2020, pending quality of proposals and availability of funds.

Anticipated Funding Amount: \$13,000,000 in FY 2020, pending availability of funds.

Track- I: IRES Sites. Up to \$300,000 per award. For exceptionally creative proposals, awards up to \$400,000 will be considered.

Track- II: Advanced Studies Institutes. Typically, an average ASI budget is \$150,000 for each institute. Proposals involving a series of institutes are permitted when well-justified. The overall total budget for Track II proposals should not exceed \$400,000.

Track- III: New Concepts in International Graduate Experience. Up to \$1,000,000 per award. Smaller budgets (\$400,000 - \$600,000) appropriate for highly innovative models that may serve as pilots.

Letter of Intent: Not Required

Proposal Submission Deadline:

September 10, 2019

Second Tuesday in September, Annually Thereafter

Track - I: IRES Sites

September 17, 2019

Third Tuesday in September, Annually Thereafter

Track-II: Advanced Studies Institutes

September 24, 2019

Fourth Tuesday in September, Annually Thereafter

Track - III: New Concepts in International Graduate Experience

Contacts: Maija M. Kukla, telephone: (703) 292-4940, email: mkukla@nsf.gov

- Fahmida N. Chowdhury, telephone: (703) 292-4672, email: fchowdhu@nsf.gov

Grant Program: Opportunities for Promoting Understanding through Synthesis (OPUS)

Agency: National Science Foundation NSF 19-584

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19584/nsf19584.htm>

Brief Description: The OPUS program seeks to provide opportunities for mid- to later-career investigators to develop new understanding of science in the fields supported by the Division of Environmental Biology (DEB) through two tracks of synthesis activities.

OPUS: Mid-Career Synthesis. This track aims to provide a mid-career researcher, defined as a candidate at the associate professor rank (or equivalent), with new capabilities to enhance their productivity, improve their retention as a scientist, and ensure a diverse scientific workforce that remains engaged in active research (including more women and minorities at high academic ranks). This track provides an

opportunity for the mid-career scientist to enable a new synthesis of their ongoing research. Synthesis is achieved by developing new research capabilities through collaboration with a mentor to enable new understanding of the research system and questions of interest.

OPUS: Core Research Synthesis. This track provides an opportunity for an individual or a group of investigators to revisit and synthesize a significant body of their prior research in a way that will enable new understanding of their research system and questions of interest. This track would also be appropriate early enough in a career to produce unique, integrated insight useful both to the scientific community and to the development of the investigator's future career.

All four clusters within the Division of Environmental Biology (Ecosystem Science, Evolutionary Processes, Population and Community Ecology, and Systematics and Biodiversity Science) encourage the submission of these proposals enabling researchers to expand understanding and develop new insights in their research.

Awards: Standard Grants. Annually. Anticipated award size is \$175,000-\$350,000

Letter of Intent: Not Required

Proposal Submission Deadline: August 28, 2019

Contacts: George W. Gilchrist, telephone: (703) 292-7138, email: ggilchri@nsf.gov

- Leslie J. Rissler, telephone: (703) 292-4628, email: lrisler@nsf.gov

Grant Program: NSF Convergence Accelerator

Agency: National Science Foundation NSF PD 19-095Y

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505665&org=NSF&sel_org=NSF&from=fund

Brief Description: With the NSF Convergence Accelerator, NSF's goals are: (i) to pilot a new NSF capability to accelerate use-inspired convergence research in areas of national importance, and (ii) to initiate convergence team-building capacity around exploratory, potentially high-risk proposals in specific convergence topics (tracks). The NSF Convergence Accelerator supports use-inspired, goal-oriented, basic research, encouraging rapid advances through partnerships that include multiple stakeholders (e.g., industry, academic, not-for-profits, government entities, and others). The NSF Convergence Accelerator brings teams together in a cohort that are all focused on a common research goal of national importance, but which may be pursuing many different approaches.

As a funder of research and education across all fields of science and engineering and with relationships with universities and funding agencies around the world, NSF is uniquely positioned to pilot this approach to accelerate discovery and innovation. Teams supported by the NSF Convergence Accelerator will focus on grand challenges that require a convergence approach. The teams are multidisciplinary and leverage partnerships; tracks within the NSF Convergence Accelerator relate to a grand challenge problem and have a high probability of resulting in deliverables that will benefit society within a fixed term. The NSF Convergence Accelerator is modeled on acceleration and innovation activities from the most forward-looking companies and universities.

Specific funding opportunities will be announced through Dear Colleague Letters, program announcements, and/or solicitations. For more information see the NSF Convergence Accelerator website: <https://www.nsf.gov/od/oia/convergence-accelerator/index.jsp>

Awards: Standard Grants.

Letter of Intent: Not Required

Proposal Submission Deadline: Accepted anytime

Contacts: Douglas Maughan dmaughan@nsf.gov 703-292-2497

Lara A. Campbell lcampbel@nsf.gov (703) 292-7049

Grant Program: Division of Chemistry: Disciplinary Research Programs (CHE-DRP)

Agency: National Science Foundation NSF 19-577

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19577/nsf19577.htm>

Brief Description: This solicitation applies to nine CHE Disciplinary Chemistry Research Programs: Chemical Catalysis (CAT); Chemical Measurement and Imaging (CMI); Chemical Structure, Dynamics and Mechanisms-A (CSDM-A); Chemical Structure Dynamics and Mechanisms-B (CSDM-B); Chemical Synthesis (SYN); Chemical Theory, Models and Computational Methods (CTMC); Chemistry of Life Processes (CLP); Environmental Chemical Sciences (ECS); and Macromolecular, Supramolecular and Nanochemistry (MSN).

All proposals submitted to these nine CHE Disciplinary Research Programs (other than the following exceptions) must be submitted through this solicitation, otherwise they will be returned without review.

Exceptions:

- Faculty Early Career Development Program (CAREER) proposals should be submitted through the CAREER solicitation (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214) by the CAREER deadline date specified.
- Facilitating Research at Primarily Undergraduate Institutions: Research in Undergraduate Institutions (RUI) and Research Opportunity Awards (ROA) proposals should be submitted through the RUI/ROA solicitation (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5518) during the window for the appropriate CHE Disciplinary Research Program. In addition to the requirements of the RUI program, proposals should follow the guidance in this solicitation.
- Proposals for Early-concept Grants for Exploratory Research (EAGER), Grants for Rapid Response Research (RAPID), Research Advanced by Interdisciplinary Science and Engineering (RAISE), and conferences can be submitted anytime after consultation with the cognizant NSF Program Officer.
- Supplemental funding requests to existing grants can be submitted anytime after consultation with the cognizant NSF Program Officer.

Awards: Standard Grant. Anticipated Funding: \$150,000,000.

Letter of Intent: Not Required

Proposal Submission Deadline: September 01, 2019 - September 30, 2019

Contacts: For CTMC: Evelyn Goldfield, telephone: (703) 292-2173, email: egoldfie@nsf.gov

- For CLP: Catalina Achim, telephone: (703) 292-2048, email: cachim@nsf.gov
- For CSDM-A: Colby A. Foss, telephone: (703) 292-5327, email: cfoss@nsf.gov
- For CMI: Kelsey D. Cook, telephone: (703) 292-7490, email: kcook@nsf.gov
- For CSDM-B: Tingyu Li, telephone: (703) 292-4949, email: tli@nsf.gov

Grant Program: Centers for Chemical Innovation (CCI): Phase I Awards and New/Renewal Phase II Centers

Agency: National Science Foundation NSF 19-576

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19576/nsf19576.htm>

Brief Description: The Centers for Chemical Innovation (CCI) Program supports research centers focused on major, long-term fundamental chemical research challenges. CCIs that address these challenges will produce transformative research, lead to innovation, and attract broad scientific and public interest. CCIs are agile structures that can respond rapidly to emerging opportunities through enhanced collaborations. CCIs integrate research, innovation, education, broadening participation, and informal science communication.

The CCI Program is a two-phase program. Both phases are described in this solicitation. Phase I CCIs receive significant resources to develop the science, management and broader impacts of a major research center before requesting Phase II funding. Satisfactory progress in Phase I is required for Phase

II applications; Phase I proposals funded in FY 2020 will seek Phase II funding in FY 2023. The FY 2020 Phase I CCI competition is open to projects in all fields supported by the Division of Chemistry, and must have scientific focus and the potential for transformative impact in chemistry. *NSF Chemistry particularly encourages fundamental chemistry projects related to one or more of NSF's [10 Big Ideas](#).*

The FY 2020 Phase II CCI competition is open to projects funded as Phase I awards in FY 2017 and the renewal of the Center for Sustainable Nanotechnology.

Awards: Standard Grant. Anticipated Funding: \$17,400,000.

Letter of Intent: Not Required

Preliminary Proposal Due Date(s) (required) (due by 5 p.m. submitter's local time):

August 13, 2019: Phase I Preliminary Proposals

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):

October 16, 2019: Phase II Full Proposals, New and Renewal

February 19, 2020: Phase I Full Proposals, by invitation only

Contacts: Michelle M. Bushey, telephone: (703) 292-4938, email: mbushey@nsf.gov

- Katharine J. Covert, telephone: (703) 292-4950, email: kcovert@nsf.gov

- Colby A. Foss, telephone: (703) 292-5327, email: cfoss@nsf.gov

National Institutes of Health

Grant Program: The NCI Predoctoral to Postdoctoral Fellow Transition Award (F99/K00)

Agency: National Institutes of Health RFA-CA-19-057

RFP Website: <https://grants.nih.gov/grants/guide/rfa-files/RFA-CA-19-057.html>

Brief Description: The objective of the NCI Predoctoral to Postdoctoral Fellow Transition Award (F99/K00) is to identify and encourage outstanding graduate students who are recognized by their institutions as having high potential and strong interest in pursuing careers as independent cancer researchers, and then to facilitate their successful transition to postdoctoral positions. The F99/K00 award is intended for individuals who require 1-2 years to complete their Ph.D. dissertation research training (F99 phase) before transitioning to mentored postdoctoral research training (K00 phase). Consequently, applicants are expected to propose an individualized research training plan for the next 1-2 years of dissertation research training and a plan for 3-4 years of mentored postdoctoral research and career development activities that will prepare them for independent cancer-focused research careers.

The F99/K00 award is meant to provide up to 6 years of support in two phases. The initial (F99) phase will provide support for 1-2 years of dissertation research (final experiments, dissertation preparation, and selection of a postdoctoral mentor). The transition (K00) phase will provide up to 4 years of mentored postdoctoral research and career development support, contingent upon successful completion of the doctoral degree requirements and securing a cancer-focused postdoctoral position. The two award phases are intended to be continuous in time. A K00 award will be made only to a PD/PI who has successfully completed the F99-supported training, secured a cancer-focused postdoctoral appointment, and provided NCI with a strong research and career development plan.

Award: NCI intends to commit \$1.2 M to fund up to 24 awards in FY2020. For the F99 phase, award budgets are composed of stipends, tuition and fees, and institutional allowance, as described below. For the K00 phase, award budgets are composed of salary and fringe benefits, tuition and fees, research and career development support, and indirect costs.

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

Deadline: December 4, 2019, by 5:00 PM local time of applicant organization. All [types of non-AIDS applications](#) allowed for this funding opportunity announcement are due on these dates. No late applications will be accepted for this Funding Opportunity Announcement.

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

Grant Program: BRAIN Initiative: Development of Next Generation Human Brain Imaging Tools and Technologies (U01 Clinical Trial Not Allowed)

BRAIN Initiative: Proof of Concept Development of Early Stage Next Generation Human Brain Imaging (R01 Clinical Trial Not Allowed)

Agency: National Institutes of Health RFA-EB-19-002 RFA-EB-19-001

RFP Website: <https://grants.nih.gov/grants/guide/rfa-files/RFA-EB-19-002.html>

<https://grants.nih.gov/grants/guide/rfa-files/RFA-EB-19-001.html>

Brief Description: The long-term objective of the overall BRAIN initiative is to accelerate technology development and the use of tools for acquiring fundamental insight about how the nervous system functions in health and disease. This FOA aims to support early stage development of entirely new and novel noninvasive human brain imaging technologies and methods that will lead to transformative advances in our understanding of the human brain.

The FOA solicits unusually bold and potentially transformative approaches and supports small-scale, proof-of-concept development of human brain imaging based on exceptionally innovative, original and/or unconventional concepts. The goal is to accelerate early stage development of promising and entirely new concepts that require some initial stage of development and testing before launching into full-scale tool development. Applications submitted in response to this FOA should focus on innovative approaches and proof-of-principle initial stage development for breakthrough, noninvasive imaging technology to measure human brain processes in ways that are currently unachievable via imaging technologies in live persons. The proposed concepts and approaches are expected to be high-risk, high-impact, and disruptive. Innovative, impactful next generation imaging tools span a wide array of approaches. These include hardware, software, and methods that have a potential to revolutionize the way noninvasive human neuroimaging is conducted today.

These FOAs solicits applications proposing early stage (**RFA-EB-19-001**) and full (**RFA-EB-19-002**) development of entirely new concepts for next generation human brain imaging, including but not limited to:

- New classes of noninvasive human neuroimaging
- Disruptive, new approaches that dramatically improve spatiotemporal resolution of current human neuroimaging, preferable at mesoscale level.
- Behaviorally active human neuroimaging that allows for movement during imaging in more natural environments while maintaining high resolution
- Innovative multi-modal or multi-scale approaches in human neuroimaging

Developmental activities and efforts that may be supported by this FOA include but are not limited to:

- Developing actionable plans and approaches to further research concepts, and identify anticipated challenges for achieving the proposed team's research focus and goals
- Conducting small-scale studies in mammals or humans
- Developing prototypes, along with pilot studies to provide proof-of-concept and generate preliminary data

The breakthrough technologies that overcome existing barriers, if fully developed, would enable imaging and measuring brain processes in ways that are currently unachievable, thereby acquiring fundamental novel insight about how the human brain is organized and functions. The noninvasive imaging technologies can be focused at multiple scales from molecules to cells to circuits to larger structures. However, all technologies must have the goal of being applied to live, healthy humans. Applications that do not have this objective will not be considered responsive and will not be reviewed.

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

For Early Stage proposals: Application budgets are limited to \$300,000 in direct costs in any project year.

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

Deadline: September 3, 2019 by 5:00 PM local time of applicant organization. All [types of non-AIDS applications](#) allowed for this funding opportunity announcement are due on this date. No late applications will be accepted for this Funding Opportunity Announcement.

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

Grant Program: Novel Technology Tools to Facilitate Research Using Next Generation Patient-derived Cancer Models (U01 Clinical Trial Not Allowed)

Agency: National Institutes of Health RFA-CA-19-055

RFP Website: <https://grants.nih.gov/grants/guide/rfa-files/RFA-CA-19-055.html>

Brief Description: Through this Funding Opportunity Announcement (FOA), the National Cancer Institute (NCI) will support the development of technology tools (see definition below) that will facilitate, accelerate, and/or enhance research using advanced human-derived next generation cancer models, such as organoids, conditionally reprogrammed cells, and others.

The studies proposed under this FOA must focus entirely on the next generation cancer models developed under the auspices of an international consortium with NCI participation, [Human Cancer Models Initiative](#).

"Technology tools" to be developed under this FOA may include new and/or optimized laboratory methods, reagents/reference materials, and/or appropriate software/bioinformatics tools. (The development of new hardware/equipment will not be supported).

The proposed technology tools are expected to a) facilitate the utilization of the cancer models, e.g., in terms of increasing robustness, rigor, and/or reproducibility of results, b) enable advanced interpretations of experiments in which these model are used, c) design and test NGCM genomic editing/manipulating reagents for all cancer and NGCM types, and d) develop robust approaches to method standardization, quality assurance/control, etc., that could serve as routine workflows/best practices for use in a wide range of laboratories.

The collective outcomes of projects under this FOA should facilitate the adoption of NGCMs by the research community and expedite sharing and validating of NGCMs-derived results. The new tools and broader use of NCGMs are expected to contribute to the progress in such areas as the identification of novel therapeutic targets, mechanisms of resistance, development of diagnostic and/or predictive biomarkers, and other aspects relevant to precision oncology.

Award: Application budgets are limited to \$700,000 in direct cost per year and must reflect the actual needs of the proposed project.

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

Deadline: August 30, 2019. All applications are due by 5:00 PM local time of applicant organization.

All [applications](#) allowed for this funding opportunity announcement are due on the listed date(s).

No late applications will be accepted for this Funding Opportunity Announcement.

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

Grant Program: BRAIN Initiative: Non-Invasive Neuromodulation - New Tools and Techniques for Spatiotemporal Precision (R01 Clinical Trial Optional)

Agency: National Institutes of Health RFA-MH-20-310

RFP Website: <https://grants.nih.gov/grants/guide/rfa-files/RFA-MH-20-310.html>

Brief Description: This FOA solicits grant applications in two related but distinct areas.

The first area is in the development and testing of novel tools and methods of neuromodulation that go beyond the existing stimulation methods. The rationale for this objective is that existing magnetic and electrical stimulation methods have limited spatial and temporal precision. To overcome these obstacles and move beyond incremental advances in the field, collaborations between physicists, engineers, neuroscientists, and clinicians are encouraged. The fresh perspective of such integrative teams would enable the development and testing of novel approaches that leverage other types of energy in a way that can lead to novel tools for scientific discovery and for therapeutic brain stimulation with high spatial and temporal resolution. This type of application may be in the initial stages and may therefore still be in the animal testing phase; however, the proposed tools and methods must be adaptable for use in humans. In recognition of the fact that these methods might be in early stages of development, work with human volunteers can, but does not need to, be included.

The second distinct area that this FOA seeks to encourage is the significant improvement of existing stimulation methods. Applications should propose technology improvements and testing methods in areas such as, but not limited to: (1) substantial improvement of the focality and depth of penetration of the stimulus, (2) prevention of extraneous stimulation (e.g. auditory clicking, scalp sensation, stimulation of non-target brain regions), (3) integration with endogenous rhythmic activity and advancing closed-loop stimulation capabilities, (4) use in natural ambulatory settings such as home or community settings, (5) improved sham and control conditions, and (6) development of multi-modal non-invasive recording plus brain stimulating devices.

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

Letter of Intent: August 03, 2019

Deadline: September 03, 2019 and February 14, 2020, by 5:00 PM local time of applicant organization.

All [types of non-AIDS applications](#) allowed for this funding opportunity announcement are due on these dates. No late applications will be accepted for this Funding Opportunity Announcement.

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

Grant Program: Bridges to the Doctorate Research Training Program (T32)

Agency: National Institutes of Health PAR-19-300

RFP Website: <https://grants.nih.gov/grants/guide/pa-files/PAR-19-300.html>

Brief Description: The **Overarching Objective** of this Bridges to the Doctorate Research Training program is to develop a diverse pool of well-trained Ph.D. biomedical scientists, who have the following technical, operational, and professional skills:

- A broad understanding across biomedical disciplines and the skills to independently acquire the knowledge needed to advance their chosen fields;
- The ability to think critically and independently, and to identify important biomedical research questions and approaches that push forward the boundaries of their areas of study;
- A strong foundation in scientific reasoning, rigorous research design, experimental methods, quantitative and computational approaches, and data analysis and interpretation;
- A commitment to approaching and conducting biomedical research responsibly, ethically, and with integrity;
- Experience initiating, conducting, interpreting, and presenting rigorous and reproducible biomedical research with increasing self-direction;
- The ability to work effectively in teams with colleagues from a variety of cultural and scientific backgrounds, and to promote inclusive and supportive scientific research environments;
- The skills to teach and communicate scientific research methodologies and findings to a wide variety of audiences (e.g., discipline-specific, across disciplines, and the public); and

- The knowledge, professional skills and experiences required to identify and transition into careers in the biomedical research workforce (i.e., the breadth of careers that sustain biomedical research in areas that are relevant to the NIH mission).

Diversity at all levels—from the kinds of science to the regions in which it is conducted to the backgrounds of the people conducting it— contributes to excellence in research training environments and strengthens the research enterprise. This FOA is intended to support outstanding research training programs that will enhance diversity at all levels. As part of a larger initiative to enhance diversity, the Bridges to the Doctorate Research Training program will support trainees enrolled full-time at institutions with terminal master's degrees in the biomedical sciences to transition into and complete biomedically relevant Ph.D. programs within partnering research-intensive institutions.

Award: Application budgets are not limited but need to reflect the actual needs of the proposed project. NIGMS expects to fund programs at or below 15 trainees, as appropriate to the institutional capabilities.

Letter of Intent: Not required

Deadline: September 25, 2019; September 25, 2020; September 27, 2021, by 5:00 PM local time of applicant organization. All [types of non-AIDS applications](#) allowed for this funding opportunity announcement are due on these dates.

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

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

Grant Program: DARPA Young Faculty Award Proposer Day

Agency: Department of Defense DARPA DARPA-SN-19-70

Website:

https://www.fbo.gov/index?s=opportunity&mode=form&id=d317a5adb4078543eaaae721a79548f5&tab=core&_cview=0

Brief Description: The Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) is sponsoring a Proposers Day webcast to provide information to potential proposers on the objectives of an anticipated Research Announcement (RA) for the Young Faculty Award Program 2020 (YFA 2020). The Proposers Day will be held via prerecorded webcast on August 21, 2019 from 1:00 PM to 3:00 PM ET. Advance registration is required for viewing the webcast. Note, all times listed in this announcement and on the registration website are Eastern Time. Following the event, DARPA may post the presented materials as well as a Frequently Asked Questions (FAQ) list to the DARPA/DSO Opportunities website.

Awards: Various

Response Deadline: August 16, 2019

Contact Information: Dr. Michael Fiddy, Program Manager

Michael.Fiddy@darpa.mil

Grant Program: DARPA-SN-19-73: ReSource Proposers Day

Agency: Department of Defense DARPA DARPA-SN-19-73

Website:

https://www.fbo.gov/index?s=opportunity&mode=form&id=e74bbf768e27d6b589c67b6646259f10&tab=core&_cview=0

Brief Description: The Biological Technologies Office (BTO) of the Defense Advanced Research Projects Agency (DARPA) is hosting a Proposers Day for the potential proposer community in support

of a planned Broad Agency Announcement (BAA) for the ReSource program. The Proposers Day will be held on August 29, 2019 at Embassy Suites by Hilton Phoenix Downtown North, Phoenix, AZ. Advance registration is required. The event will be webcast for those who would like to participate remotely. Advance registration is required for both the physical meeting and the webcast. Note, all times listed in this announcement and on the registration website are Eastern Time.

Awards: Various

Response Deadline: August 27, 2019

Contact Information: Dr. Blake Bextine,, DARPA PM

DARPA-SN-19-73@darpa.mil

Grant Program: Research on the Use of Autonomy and Unmanned Vehicles in Support of USAF Operations

Agency: Department of Defense Air Force Academy USAFA-BAA-2015-CALL-0008

Website: <https://www.grants.gov/web/grants/search-grants.html>

Brief Description: The Academy Center for Cyberspace Research (ACCR) conducts research in a wide range of areas within the fields of Computer and Cyber Science in support of the AF, DoD and other government and commercial sponsors. ACCR is especially interested in research that incorporates proposed student projects to further its leadership in the areas of Artificial Intelligence (AI) and Autonomous Systems (AS) education. In support of the departments continued Artificial Intelligence (AI) and Autonomous Systems (AS) research, an emphasis has been placed on retooling and expanding our curriculum by conducting technical and pedagogical research on new AI/AS methodologies.

This CALL is focused on fundamental research that can lead to the development of new novel pedagogical approaches to AI/AS education. Research areas should fall within autonomy and AI to include algorithms and techniques for such, as well as researching educational best practices, techniques and pedagogical approaches. USAFA is interested in data that could potentially lead to the external development of lesson plans, exercises, and classroom activities that embody those techniques/approaches, which could be used as the basis for new AI/AS curricula at USAFA and for public educational institutions. Research should be conducted utilizing hands-on mentoring with cadets in support of senior capstone projects addressing AI/AS system concepts and rapid deployment of newly developed concepts in an effort to answer critical research questions in real time. The results and methodologies discovered, to include the focused research conducted in capstone projects, will form the basis of scholarly work presented at conferences or in journal articles. In addition to briefings and presentations it is expected the effort will culminate in a final report, submitted to USAFA DFCS, which will cover research elements derived entirety from the AI/AS studies.

Awards: Various: Estimated award funding available: \$40,000,000

White Paper Due Date and Time: The due date for white papers submitted in response to this CALL is no later than 4:30 PM MST on 30 August 2019. White Paper should include:

1. **Project Title:** *Succinct descriptive title of proposed research.*
2. **Potential Impact/Benefit:** *What capability (technology, process or other research products) will successful execution of this project bring to DoD? To the general public?*
3. **Student Involvement:** *If applicable, briefly summarize the number of students impacted by the proposed research project and the level of impact. (For example; research project for 2 PhD students, capstone projects for team of 3-4 undergraduate students, and 1 summer co-op opportunity.)*

Period of Performance and Budget: *Time to execute from award, total project cost and investigators working on the project.*

Proposal Deadline: The due date for proposals will be 30 days after a formal request for proposal has been sent to the submitter of the selected white paper(s).

Contact Information: Judson Dressler, Major
Director, Academy Center for Cyberspace Research
USAFA Department of Computer Science
Phone: 719 333-8328
Judson.Dressler@usafa.edu

Grant Program: DoD Restoring Warfighters with Neuromusculoskeletal Injuries Research Award (RESTORE)

Agency: Department of Defense Dept. of the Army – USAMRAA W81XWH-19-DMRDP-CRMRP-RESTORE

Website: <https://crmrp.amedd.army.mil/>

Brief Description: The JPC-8/CRMRP is one of six major DHP core research program areas within the DHA J9, Research and Development Directorate, and focuses on innovations to reconstruct, rehabilitate, and provide definitive care for injured Service members. The ultimate goal is to return the Service members to duty and restore their quality of life. Innovations developed from JPC-8/ CRMRP-supported research efforts are expected to improve restorative treatments and rehabilitative care to maximize function for return to duty (RTD) or civilian life. The goal is to advance medical technologies (drugs, biologics, and/or devices) and treatment/rehabilitation strategies (methods, guidelines, standards, and information) that will significantly improve the medical care provided to our wounded Service members within the Department of Defense (DoD) healthcare system. Implementation of these technologies and strategies should improve the rate of RTD of Service members and the time to clinical workload (patient encounters, treatments, etc.), and reduce the initial and long-term costs associated with restorative and rehabilitative or acute care. Additional information about the JPC-8/CRMRP can be found at <https://crmrp.amedd.army.mil/>

Awards: Various: Estimated award funding available: \$40,000,000

Proposal Deadline: Pre-Application Submission Deadline: 5:00 p.m. Eastern time (ET), September 3, 2019 • Invitation to Submit an Application: October 2019 • Application Submission Deadline: 11:59 p.m. ET, December 16, 2019

Contact Information: CDMRP Help Desk Phone: 301-682-5507 Email: help@eBRAP.org

Grant Program: Microsystems Exploration

Agency: Department of Defense DARPA DARPA-PA-19-04

Website:

https://www.fbo.gov/index?s=opportunity&mode=form&id=7fdf6787c32630b41d642e18a20d4557&tab=core&_cview=0

Brief Description: MTO seeks to develop high-risk, high-reward technologies that enable revolutionary advances in materials, devices, and systems and continue DARPA's mission of creating and preventing strategic surprise. In order to capitalize rapidly on new opportunities, DARPA announces the Microsystems Exploration program which calls for faster responses with smaller, targeted investments. Microsystems Exploration awards will be made within 90 days of each Microsystems Exploration topic (μ E) announcement.

To enable this approach, MTO will issue Microsystems Exploration Topics (called μ E topics) via targeted Pre-Solicitation Notices. These Pre-Solicitation Notices will focus on technical domains important to MTO's mission pursuing innovative research concepts that explore frontiers in: • Embedded microsystem intelligence and localized processing, • Next-generation electromagnetic components and technologies, • Microsystem integration for functional density and security, and • Disruptive microsystem

applications in command, control, communications, computer, intelligence, surveillance, and reconnaissance (C4ISR), electronic warfare and directed energy.

Microsystems Exploration Topics, or μ Es, will be announced via Pre-Solicitation Notices issued under this Program Announcement (PA). These μ E topics will solicit proposals and will be open for at least 30 days from publication at <https://www.fbo.gov/>. μ Es will describe short-duration, fast-paced projects comprising one or two phases as described below. Each μ E will fund research that leads to prototype development that results in new game-changing technologies for U.S. national security. During the periods of performance, very high-risk, high-reward topics will be investigated with the goal of determining feasibility and clarifying whether the area is ready for further investment beyond the prototype stage. The prototype projects pursued under μ Es may include proofs of concept; pilots; novel applications of commercial technologies for defense purposes; creation, design, development, demonstration of technical or operational utility; or combinations of the foregoing, related to a prototype. **Awards:** Multiple awards are anticipated. The total value for each award is limited to \$1,000,000. This total value includes Government award funding and any performer cost share (if required). All awards made as a result of a μ E topic issued under this PA will be Other Transactions (OTs) for prototype projects awarded under the authority of 10 U.S.C. § 2371b.

Proposal Deadline: TBD

Contact Information: Dr. Mark Rosker, MTO Office Director o Email: DARPA-PA-19-04@darpa.mil

Grant Program: Microsystems Exploration Research Area Announcement

Agency: Department of Defense DARPA DARPA-SN-19-69

Website:

https://www.fbo.gov/index?s=opportunity&mode=form&id=f9c3ff8ff14209943ae4630ee8cbd3ed&tab=core&_cview=0

Brief Description: The purpose of this Special Notice (SN) is to provide public notification of research areas of initial interest to the Microsystems Technology Office, specifically the Microsystems Exploration program. The Defense Advanced Research Projects Agency (DARPA) Microsystems Technology Office (MTO) seeks to develop high-risk, high-reward technologies that enable revolutionary advances in materials, devices, and systems and continue DARPA's mission of creating and preventing strategic surprise. In order to capitalize rapidly on new opportunities, DARPA announced the Microsystems Exploration program in July 2019 that calls for faster responses with smaller, targeted investments. Microsystems Exploration awards will be made within 90 days of each Microsystems Exploration topic announcement. To enable this new approach, MTO will issue Microsystems Exploration Topics (called μ E topics) via targeted Pre-Solicitation Notices. These Pre-Solicitation Notices will focus on technical domains important to MTO's mission pursuing innovative research concepts that explore frontiers in: • Embedded microsystem intelligence and localized processing, • Next-generation electromagnetic components and technologies, • Microsystem integration for functional density and security, and • Disruptive microsystem applications in command, control, communications computer, intelligence surveillance, and reconnaissance (C4ISR), electronic warfare, and directed energy.

All administrative questions regarding this notice must be emailed to DARPA-PA-19-04@darpa.mil. DARPA will post an FAQ on the DARPA/MTO Opportunities page at (<http://www.darpa.mil/work-withus/opportunities>). The list will be updated on an ongoing basis until the close of the Microsystems Exploration program announcement.

Awards: Various

Proposal Deadline: TBD

Contact Information: E-MAIL: DARPA-PA-19-04@darpa.mil

Grant Program: Securing Information for Encrypted Verification and Evaluation (SIEVE)

Agency: Department of Defense DARPA - Information Innovation Office HR001119S0076

Website: <http://www.darpa.mil/work-with-us/opportunities>

Brief Description: DARPA is soliciting innovative research proposals in the area of zero-knowledge proofs for complex, DoD-relevant capabilities. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice. This Broad Agency Announcement (BAA) is being issued, and any resultant selection will be made, using procedures under Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016. Any negotiations and/or awards will use procedures under FAR 15.4. Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process.

The SIEVE program has been organized into three (3) phases; all phases will be awarded at once if the proposal is selected (there will not be separate options). Phase 1 will be 18 months, followed by an 18-month Phase 2, and then concluded with Phase 3 at 12 months. • Phase 1 will emphasize initial development to demonstrate feasibility of encoding DoD-relevant statements into IRs and for giving efficient ZK proofs in DoD-relevant scenarios. • Phase 2 will emphasize developing an initial integrated pipeline to take DoD-relevant, IR-encoded statements and provide ZK proofs for them. • Phase 3 will emphasize optimization and scaling techniques.

Awards: Various

Proposal Deadline: Proposers Day: July 17, 2019 o Abstract Due Date: July 31, 2019, 12:00 noon (ET)
o Proposal Due Date: September 20, 2019, 12:00 noon (ET)

Contact Information: Dr Joshua Baron, Program Manager, DARPA/I2O; BAA Email: SIEVE@darpa.mil

Grant Program: Science of Artificial Intelligence – Basic and Applied Research for the Naval Domain

Agency: Department of Defense Office of Naval Research N00014-19-S-SN08

Website: <https://www.onr.navy.mil/en/work-with-us/funding-opportunities>

Brief Description: ONR is interested in receiving white papers and proposals in support of advancing artificial intelligence for future naval applications. Work under this program will consist of basic and applied research, and therefore projects would be funded under Budget Activities 1 & 2 (as defined in the DoD Financial Management Regulation Vol. 2B, Ch. 5). The overall S&T efforts will be conducted at the Technology Readiness Level (TRL) 1-5 stage. Topic 1 Title: AI for Predictive Maintenance (AI Applied Research); Topic 2 Title: Rapid Learning of Task Procedures (AI Applied Research); Topic 3 Title: Scalable Verification and Validation Tools for Artificial Intelligence in the Naval Domain (AI Fundamental and Applied Research); Topic 4 Title: Brain-Inspired Deep Learning with Spiking Neurons (AI Fundamental Research); Topic 5 Title: Brain-based computation (AI Fundamental Research); Topic 6 Title: Explainable AI Systems (AI Fundamental and Applied Research); Topic 7 Title: Mission-focused AI (AI fundamental and applied Research); Topic 8 Title: Predictive Adaptations to Support Human Performance and Injury Prevention (Applied Research)

Awards: Various

Proposal Deadline:

White Paper Submission 15 August 2019 1400 Eastern Local Time Notification of White Paper Valuation* 15 September 2019 Full Proposal Submission 15 October 2019 1400 Eastern Local Time Full Proposal Selections* 01 November 2019 Awards* 01 March 2020 Note: *These are approximate dates

Contact Information: Topic 1: Dr. Thomas McKenna, ONR 34, 703-696-4503, tom.mckenna@navy.mil
Dr. Robert Brizzolara, ONR 331, 703-696-2597, robert.brizzolara@navy.mil Topic 2: Dr. Jeffrey

Morrison, ONR 341, jeffrey.g.morrison@navy.mil 703-696-4875 Topic 3: Marc Steinberg, Code 351, marc.steinberg@navy.mil 703-696-5115 Topic 4: Dr. Thomas McKenna, ONR Code 341, 703-696-4503, tom.mckenna@navy.mil Topic 5: Dr. Thomas McKenna, ONR 341. 703-696-4503, tom.mckenna@navy.mil Dr. Harold Hawkins, ONR 341, 703-696-4323, harold.hawkins@navy.mil Dr. Behzad Kamgar-Parsi, ONR 311, 703-696-5754, behzad.kamgarparsi@navy.mil Topic 6 Martin Kruger, ONR 341, martin.kruger1@navy.mil 703-696-5349 Topic 7: Martin Kruger, ONR 341, martin.kruger1@navy.mil 703-696-5349 Topic 8: Dr. Peter Squire, ONR 341, peter.squire@navy.mil 703-696-0407

Grant Program: Artificial Intelligence/Machine Learning Enabled Capabilities

Agency: Department of Defense Office of Naval Research N00014-19-S-SN07

Website: <https://www.onr.navy.mil/en/work-with-us/funding-opportunities>

Brief Description: ONR is interested in receiving proposals that leverage state of the art AI/ML techniques to enable novel capabilities related to mission planning, as well as: command and control, logistics, intelligence and training for Navy and USMC forces. This Special Notice does not focus on basic research to develop totally new and/or unproven AI/ML techniques. Any such basic research may be the subject of a separate Special Notice on the Science of AI. Rather, this Special Notice draws attention to research areas of interest that include but are not limited to the following:

Analysis of Factors Affecting Possible Courses of Action

1. Develop and demonstrate the use of natural language processing to enable machines to tailor warfighter support based on commander's intent (CI) and rules of engagement (ROE) to include: 1.1. Develop tools that can take written text describing ROEs for warfighters and translate them into a machine readable / human interpretable form that may then be processed by machine learning algorithms in the development and assessment of Courses of Action (COAs) for compliance with ROEs & CI. 1.2. Develop tools that can take real time/near real time updates to or clarification of CI / ROE, and appropriately modify the machine representation of CI / ROEs to reflect these updates. These tools would document changes and facilitate curation of CI/ROEs to detect conflicts that might emerge over the course of a mission.

2. Develop AI capabilities that enable identification and orderly examination of all factors that could affect mission execution and expected outcomes. 2.1. Develop a human interpretable dashboard for assessing COAs and recommended COAs status for both the consistency of evolving ROEs, their compliance with human understanding of CI/ROEs, and expectations for mission effectiveness given current CI/ROEs. The dashboard should highlight inconsistencies and missing ROEs required for mission execution. Provide a human interpretable explanation for changes in recommendations developed by AI/ML based algorithms that reflect evolving ROEs.

3. Develop AI capabilities that estimate mission search areas based explicitly stated, or implicitly learned, models of sensor/weapon performance, adversary (enemy) courses of action, and environmental factors that would impact sensor and/or weapon performance.

ECO Development

4. Formulate learning mechanisms to enable application of knowledge regarding previous courses of action (under similar but potentially different) enemy commander's intent and enemy rules of engagement. Demonstrate utility of learned relationships to more quickly develop new courses of action under current enemy commander's intent and enemy rules of engagement.

5. Formulate AI approaches/methods to predict and/or determine most likely, and most dangerous, enemy courses of action (ECOAs).

6. Develop methods to determine significant threat entity patterns of life (PoLs) based upon factual and/or historical behavioral data and/or based on results derived from simulation.

Awards: Various

Proposal Deadline: Recommended White Paper Submission Date* 15 July 2019 COB Notification of White Paper Valuation* 7 August 2019 COB Recommended Full Proposal Submission 6 September 2019 COB Notification of Selection: Full Proposals * 4 October 2019 COB Awards * 7 Feb 2020 COB
Contact Information: Technical Points of Contact: Martin Kruger Martin.kruger1@navy.mil

Grant Program: FY2020 Office of Naval Research (ONR) Young Investigator

Agency: Department of Defense Office of Naval Research N00014-19-S-F008

Website: <https://www.onr.navy.mil/en/work-with-us/funding-opportunities>

Brief Description: Investigator Program (YIP). ONR's Young Investigator Program seeks to identify and support academic scientists and engineers who are in their first or second full-time tenure-track or tenure-track-equivalent academic appointment, who have received their PhD or equivalent degree on or after 01 January 2012, and who show exceptional promise for doing creative research. The objectives of this program are to attract outstanding faculty members of Institutions of Higher Education (hereafter also called "universities") to the Department of the Navy's Science and Technology (S&T) research program, to support their research, and to encourage their teaching and research careers. Individuals who are holding U.S. non-profit equivalent positions are encouraged to apply.

Proposals addressing research areas (as described in the ONR Science and Technology Department section of ONR's website at www.onr.navy.mil) which are of interest to ONR program officers will be considered. Contact information for each division (a subgroup of an S&T Department) is also listed within the S&T section of the website.

Applicants are STRONGLY ENCOURAGED to contact the appropriate Program Officer who is the point of contact for a specific technical area to discuss their research ideas. A list of most Program Officers and their contact information can be found at: <https://www.onr.navy.mil/our-research/technology-areas> or at: <https://www.onr.navy.mil/our-research/our-program-managers>

Awards: Various

Proposal Deadline: August 16, 2019

Contact Information: Veronica Lacey Grants Officer Phone 703-696-2593

[Grants.gov Questions](#)

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 FAQ Submission Deadline: June 2, 2020, 4:00 p.m. See Section VIII.A. o Full Proposal Due Date: June 12, 2020, 4:00 p.m.

Contact Information: BAA Email: HR001119S0071@darpa.mil

Grant Program: Program Announcement for Disruptioneering; Disruptive Capabilities for Future Warfare

Agency: Department of Defense DARPA DARPA-PA-19-02 and HR001119S0054

Website:

https://www.fbo.gov/index?s=opportunity&mode=form&id=890c20829acd406c338ac6287403f970&tab=core&_cview=0

https://www.fbo.gov/index?s=opportunity&mode=form&id=e7248da47889d975d0ccb0261d002a9a&tab=core&_cview=1

Brief Description: The mission of the Defense Advanced Research Projects Agency is to make strategic, early investments in science and technology that will have long-term positive impact on our nation's national security. As part of this mission, DARPA makes high-risk, high-reward investments in science and technology that have the potential to disrupt current understanding and/or approaches. The pace of discovery in both science and technology is accelerating worldwide, resulting in new fields of study and the identification of scientific areas ripe for disruption. While DARPA's existing investment strategy continues to yield success, in order to capitalize on these new opportunities, its approach to investing must include faster responses with more small, targeted investments. This new approach is called Disruptioneering. Disruptioneering will enable DARPA to initiate a new investment in less than 90 days from idea inception.

HR001119S0054: The Tactical Technology Office of the Defense Advanced Research Projects Agency is soliciting executive summaries, proposal abstracts and proposals for applied research, advanced technology development, and platform demonstrations that aim to enable disruptive capabilities for future warfare.

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: RFP is open until March 18, 2020

HR001119S0054: June 11, 2020

Contact Information: BAA Coordinator DARPA-PA-19-02@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 agency¹ 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

Grant Program: Advanced Transportation and Congestion Management Technologies Deployment Initiative

Agency: Department of Transportation 693JJ319NF00003

Website: <https://www.fhwa.dot.gov/fastact/factsheets/advtranscongmtfs.cfm>

Brief Description: The DOT hereby requests applications to result in awards to eligible entities to develop model deployment sites for large scale installation and operation of advanced transportation technologies to improve safety, efficiency, system performance, and infrastructure return on investment. Grant recipients may use funds under this program to deploy advanced transportation and congestion management technologies, including—

- advanced traveler information systems;
- advanced transportation management technologies;
- infrastructure maintenance, monitoring, and condition assessment;
- advanced public transportation systems;
- transportation system performance data collection, analysis, and dissemination systems;
- advanced safety systems, including vehicle-to-vehicle and vehicle-to-infrastructure communications;
- technologies associated with autonomous vehicles, and other collision avoidance technologies, including systems using cellular technology;
- integration of intelligent transportation systems with the Smart Grid and other energy distribution and charging systems;
- electronic pricing and payment systems; or
- advanced mobility and access technologies, such as dynamic ridesharing and information systems to support human services for elderly and disabled individuals. [23.U.S.C. 503(c)(4)(E)]

Awards: Up to \$60 million in Federal funding to provide grants to eligible entities to develop model deployment sites for large scale installation and operation of advanced transportation technologies to improve safety, efficiency, system performance, and infrastructure return on investment

Proposal Deadline: July 19, 2019

Contact Information: Submit Questions to: ATCMTD@dot.gov

Grant Program: FY 2019 National Infrastructure Investments

Agency: Department of Transportation DTOS59-19-RA-BUILD

Website: <https://www.transportation.gov/buildgrants/build-nofo>

Brief Description: The Consolidated Appropriations Act, 2019 (Pub. L. 116-6, February 15, 2019) (“FY 2019 Appropriations Act”) appropriated \$900 million to be awarded by the Department of Transportation (“DOT”) for National Infrastructure Investments. This appropriation stems from the program funded and implemented pursuant to the American Recovery and Reinvestment Act of 2009 (the “Recovery Act”) and is known as the Better Utilizing Investments to Leverage Development, or “BUILD Transportation

¹ The U.S. Department of Education publishes a list of nationally recognized accrediting agencies on <https://www.ed.gov/accreditation>

grants,” program. Funds for the FY 2019 BUILD Transportation grants program are to be awarded on a competitive basis for surface transportation infrastructure projects that will have a significant local or regional impact. The purpose of this notice is to solicit applications for BUILD Transportation grants.

The FY 2019 BUILD Transportation grant program will make awards to surface transportation infrastructure projects that will have a significant impact throughout the country. Each section of this notice contains information and instructions relevant to the application process for these BUILD Transportation grants, and all applicants should read this notice in its entirety so that they have the information they need to submit eligible and competitive applications. For this round of BUILD Transportation grants, the maximum grant award is \$25 million, and no more than \$90 million can be awarded to a single State, as specified in the FY 2019 Appropriations Act. Per statute, the FY 2019 selection criteria are the same as under the FY 2017 TIGER program, although the description for each criterion has been updated. For FY 2019 BUILD Transportation grants, the definitions of urban and rural areas differ from previous rounds. Additionally, not more than 50 percent of funds will be awarded to projects located in urban and rural areas, respectively.

Awards: The FY 2019 Appropriations Act specifies that BUILD Transportation grants may not be less than \$5 million and not greater than \$25 million, except that for projects located in rural areas (as defined in Section C.3.ii.) the award size is \$1 million. There is no minimum award size, regardless of location, for BUILD Transportation planning grants.

Proposal Deadline: July 15, 2019

Contact Information: Program staff will address questions to BUILDgrants@dot.gov throughout the application period.

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. Grant funds will be awarded to an apprenticeship partnership of public and private sector entities which together seek to develop and implement new apprenticeship models; or expand an existing apprenticeship program to a new industry sector or occupation, a new population, on a local/regional, statewide, or national scale.

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: The closing date for receipt of applications under this Announcement is September 24, 2019 no later than 4:00:00 p.m. Eastern Time.

Contact Information: Denise Roach Grants Management Specialist roach.denise@dol.gov

EPA

Grant Program: Contaminated Sites, Natural Disasters, Changing Environmental Conditions and Vulnerable Communities: Research to Build Resilience Agency: Environmental Protection

Agency EPA EPA-G2019-STAR-E1

Website: <https://www.epa.gov/research-grants/research-funding-opportunities-how-apply-and-required-forms>

Brief Description: The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is asking the scientific community to propose transdisciplinary research with an approach that integrates the following research questions: (1) How may certain natural disasters (e.g., wildfires, severe storms, flooding, hurricanes, tornadoes, volcanic eruptions, earthquakes or tsunamis) or changing environmental conditions (e.g., rising sea levels, higher average temperature or heat index) cause specific chemical contaminants to migrate from certain contaminated or containment sites (e.g., hazardous waste sites, landfills, solid waste or wastewater storage or treatment facilities, industrial sites such as mines or refineries) to nearby communities and pose elevated exposure risks to vulnerable groups, especially the elderly and/or children under the age of five years? (2) What are the major contributing factors or effect modifiers, in addition to the contaminants and natural disasters or changing environmental conditions, that may exacerbate the impacts to these vulnerable groups in impacted communities? and (3) How can scientific research results specifically help communities build better resilience against the problems and issues identified above?

Awards: Potential Funding per Award: Up to a total of \$800,000 for regular awards, and up to a total of \$400,000 for early career awards, with a maximum duration of three years.

Submission Deadline: June 24, 2019: 11:59:59 pm Eastern Time

Contact: Technical Contact: Serena Chung; phone: 202-564-6069; email: chung.serena@epa.gov

Eligibility Contact: Ron Josephson; phone: 202-564-7823; email: josephson.ron@epa.gov Electronic

Submissions Contact: Debra M. Jones; phone: 202-564-7839; email: jones.debram@epa.gov

Grant Program: 2019 Healthy Communities Grant Program

Agency: Environmental Protection Agency EPA-R1-HC-2019

Website: <https://www3.epa.gov/region1/eco/uep/pdfs/2019-hcgp-rfa.pdf>

Brief Description: The Healthy Communities Grant Program is the U.S. Environmental Protection Agency, Region 1's (EPA New England) main competitive grant program to work directly with communities to support EPA's "Back-to-Basics" agenda to reduce environmental risks, protect and improve human health and improve the quality of life. The Healthy Communities Grant Program will achieve these goals through identifying and funding projects that:

- Target resources to benefit communities at risk [areas needing to create community resilience, environmental justice areas of

potential concern, sensitive populations (e.g., children, elderly, tribes, urban and rural residents, and others at increased risk)]. • Assess, understand, and reduce environmental and human health risks. • Increase collaboration through partnerships and community-based projects. • Build institutional and community capacity to understand and solve environmental and human health problems. • Advance emergency preparedness and ecosystem resilience. • Achieve measurable environmental and human health benefits. To qualify as eligible projects under the Healthy Communities Grant Program, proposed projects must: (1) be located in and/or directly benefit one or more of the Target Investment Areas; and (2) identify how the proposed project will achieve measurable environmental and/or public health results in one or more of the Target Program Areas. Please see Section III for further information on eligibility requirements.

Awards: Up to \$800k; **Anticipated Funding:** Approximately \$4 million total for all awards

Submission Deadline: September 17, 2019: 11:59:59 pm Eastern Time

Contact: Technical Contact: Intaek Hahn; phone: 202-564-4377; email: hahn.intaek@epa.gov

Department of Energy

Grant Program: RFI: Energy-Efficient Technologies for Automated Vehicles (AVs)

Agency: Department of Energy DE-FOA-0002092

Website: <https://arpa-e-foa.energy.gov/#FoaId91fd9a2a-9262-48dd-a1a9-644965c10ee7>

Brief Description: The Advanced Research Projects Agency – Energy (ARPA-E) of the US Department of Energy is seeking information concerning the current state and future development of automotive technologies that can improve the energy efficiency of fully automated vehicles (AVs).

The purpose of this RFI is solely to solicit input for ARPA-E’s consideration to inform the possible formulation of future research, development, and commercialization programs intended to reduce the energy burden of future automotive transportation, specifically with regard to the deployment of high-efficiency AVs. ARPA-E will not provide funding or compensation for any information submitted in response to this RFI, and ARPA-E may use information submitted to this RFI on a non-attribution basis. This RFI provides the broader research and development community with an opportunity to contribute information, views and opinions regarding the state of the art and the future development of highly energy-efficient vehicle technologies for L4-L5 AVs. Based on the input provided in response to this RFI and other considerations, ARPA-E may decide to issue a FOA. If a FOA is published, it will be issued under a new FOA number. No FOA exists at this time. ARPA-E reserves the right to not issue a FOA in this area.

Response Submission Deadline: Responses to this RFI should be submitted in PDF format to the e-mail address ARPA-E-RFI@hq.doe.gov by **5:00 PM Eastern Time on September 16, 2019.**

Contact: ARPA-E CO arpa-e-co@hq.doe.gov

Grant Program: Request for Information: Planning and Operation Models and Data Analytics for Solar Grid Integration

Agency: Department of Energy DE-FOA-0002157

Website: <https://eere-exchange.energy.gov/#FoaId0bd0912e-b495-4dab-b685-2db954a7d163>

Brief Description: The U.S. Department of Energy Solar Energy Technologies Office (SETO) is issuing this request for information (RFI) to solicit feedback from industry, academia, research laboratories, government agencies, and other stakeholders. This RFI will inform SETO’s strategic planning on research related to the integration of distributed solar energy resources. Specifically, this RFI will inform strategies relating to the modeling, monitoring, predicting, and controlling of solar photovoltaic (PV) systems. As

the penetration of solar PV on the grid grows, these activities will become more important as grid operators consider how solar adoption impacts grid planning and operations technologies.

This RFI is not a Funding Opportunity Announcement (FOA); therefore, EERE is not accepting applications at this time. EERE may issue a FOA in the future based on or related to the content and responses to this RFI; however, EERE may also elect not to issue a FOA. There is no guarantee that a FOA will be issued as a result of this RFI. Responding to this RFI does not provide any advantage or disadvantage to potential applicants if EERE chooses to issue a FOA regarding the subject matter. Final details, including the anticipated award size, quantity, and timing of EERE funded awards, will be subject to Congressional appropriations and direction.

Any information obtained as a result of this RFI is intended to be used by the Government on a non-attribution basis for planning and strategy development; this RFI does not constitute a formal solicitation for proposals or abstracts. Your response to this notice will be treated as information only. EERE will review and consider all responses in its formulation of program strategies for the identified materials of interest that are the subject of this request. EERE will not provide reimbursement for costs incurred in responding to this RFI. Respondents are advised that EERE is under no obligation to acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted under this RFI. Responses to this RFI do not bind EERE to any further actions related to this topic.

Award: This is solely a request for information and not a funding opportunity announcement (FOA).

No funding applications are being accepted in response to this RFI.

Response Submission: To respond, please email your response to SETO.RFI.SI@ee.doe.gov no later than 12:00pm (ET) on August 30, 2019. Responses to this RFI must be submitted electronically and provided as attachments to an email. It is recommended that attachments with file sizes exceeding 25MB be compressed (i.e., zipped) to ensure message delivery. Responses must be provided as a Microsoft Word (.docx) attachment to the email, and no more than ten (10) pages in length, 12 point font, 1 inch margins. Only electronic responses will be accepted.

Proposal Submission Deadline: TBD

Contact: SETO.RFI.SI@ee.doe.gov

Responses to this RFI must be submitted electronically to this inbox

- EERE_ExchangeSupport@hq.doe.gov

Contact information for technical issues related to the EERE Exchange Website

Grant Program: Electric Grid of Things

Agency: Department of Energy DE-FOA-0002092

Website: <https://www.fedconnect.net/FedConnect/default.htm>

Brief Description: The objective of this FOA is to conceive and develop scenarios, approaches, methodologies, tools, techniques and systems that maximize the bi-directional exchange of grid services while optimizing connectivity and information exchange at the grid edge to Internet of Things (IoT) interface that leads to enhanced system resilience and reliability. These advancements must be applicable to the scenario of maintaining energy surety to defense installations, where coordination between defense facilities, the utility, and surrounding Distributed Energy Resources(DER) can extend the functioning of those facilities through abnormal events.

Awards: Up to \$2,000,000

Proposal Submission Deadline: September 09, 2019

Contact: Sheldon E. Funk 304-285-0204 sheldon.funk@netl.doe.gov

Grant Program: Request for Information (RFI): Marine Sciences Laboratory

Agency: Department of Energy DE-FOA-0002123

Website: <https://eere-exchange.energy.gov/>

Brief Description: The purpose of this RFI is to solicit feedback from industry, academia, research laboratories, government agencies, and other stakeholders on issues related to the growing Research and Development (R&D) interest in the use of the Pacific Northwest National Laboratory's (PNNL's) Marine Sciences Laboratory (MSL) facilities for renewable energy, maritime markets, and energy storage research, technology development and testing. This information will help DOE and PNNL prioritize resources and investments. This is solely a request for information and not a Funding Opportunity Announcement (FOA). EERE is not accepting applications.

Responses to this RFI must be submitted electronically to WPTORFI@ee.doe.gov no later than 5:00 p.m. on August 8, 2019. Responses must be provided as attachments to an email. Only electronic responses will be accepted.

This is a Request for Information (RFI) only. EERE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives.

Awards: TBD

Proposal Submission Deadline: Responses to this RFI must be submitted electronically to this inbox WPTORFI@ee.doe.gov

Contact: EERE_ExchangeSupport@hq.doe.gov Contact information for technical issues

NASA

Grant Program: University Student Research Challenge

Agency: NASA NNH19ZEA001N-USRC

Website: <https://www.grants.gov/web/grants/search-grants.html>

Brief Description: Amendment 1 to the NASA ARMD Research Opportunities in Aeronautics (ROA) 2019 NRA has been posted on the NSPIRES site. University Student Research Challenge (solicitation NNH19ZEA001N-USRC) seeks to challenge students to propose new aeronautics ideas/concepts that are relevant to NASA Aeronautics. USRC will provide students, from accredited U.S. colleges or universities, with grants for their projects and it includes the challenge of raising a modest amount of cost share funds through crowdfunding platform. The process of creating and preparing a crowdfunding campaign acts as a teaching accelerator - requiring students to act like entrepreneurs and taking action. Crowdfunding also raises awareness about students' research among the public. The solicitation goal can be accomplished through project ideas such as advancing the design, developing technology or capabilities in support of aviation, by demonstrating a novel concept, or enabling advancement of aeronautics-related technologies. There have been a number of changes from the previous USRC pilot project, including NASA providing a larger share of funds and half of that being provided upfront. Notices of Intent (NOIs) are not required for this solicitation. Proposals can be submitted at any time and will be evaluated in three cycles: October 30, 2019, February 26, 2020, and June 24, 2020.

Awards: Various

Proposal Deadline: October 30, 2019

Contact: Koushik Datta HQ-USRC@mail.nasa.gov

Grant Program: NASA Innovative Advanced Concepts (NIAC) Phase I

Agency: NASA 80HQTR19NOA01-20NIAC_A1

Website: <https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B4F9000A1-EF96-1E04-959B-A1991D0BE4C3%7D&path=&method=init>

Brief Description: The NIAC Program focuses on early stage feasibility studies of visionary concepts that address national government and commercial aerospace goals. Concepts are solicited from any field of study that offers a radically different approach or disruptive innovation that may significantly enhance or enable new human or robotic science and exploration missions. Proposed concepts must be framed in terms of a mission context that clearly identifies scientific or technical advancements and associated benefits compared to current approaches. Comparatively high risk and far term, NIAC concepts are transformational investments in future NASA and commercial space capabilities. The entry Technology Readiness Level (TRL) for Phase I concepts should be TRL 2 or lower. Proposed concepts must identify credible approaches toward new scientific or technical innovations that advance NASA's strategic themes to Discover, Explore, Develop, and Enable, as outlined in the 2018 NASA Strategic Plan. Advancements are sought across the broad spectrum of disciplines that support the goals and objectives encompassed by these themes, including nontraditional areas such as biophysics, life sciences, human factors engineering, artificial intelligence, resource sustainability, and other topics that may inspire innovative approaches to meet future exploration needs.

Awards: Expected Award Amount: Not to exceed \$125K

Notice of Intent: See below

Proposal Deadline: Proposer's Virtual Forum: August 22, 2019, 1:00-3:00PM ET Step A Proposal Due: September 20, 2019, 5:00pm ET Step B Invitations Issued: November 1, 2019 (Target) Step B Proposal Due: December 13, 2019 (Target), 5:00pm ET

Contact: Jason Derleth NIAC Program Executive Space Technology Mission Directorate, NASA Headquarters hq-niac@mail.nasa.gov

Grant Program: ROSES 2019: Living With a Star Science

Agency: NASA NNH19ZDA001N-LWS

Website: <https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B922F3674-F02A-FB17-DD75-0230277DDD&path=&method=init>

Brief Description: The Living With a Star (LWS) Program emphasizes the science necessary to understand those aspects of the Sun and Earth's space environment that affect life and society. The ultimate goal of the LWS Program is to provide a scientific understanding of the system that leads to predictive capability of the space environment conditions at Earth, other planetary systems, and in the interplanetary medium. The LWS program objectives are as follows: 1. Understand how the Sun varies and what drives solar variability. 2. Understand how the Earth and planetary systems respond to dynamic external and internal drivers. 3. Understand how and in what ways dynamic space environments affect human and robotic exploration activities. The LWS Program seeks to make progress in understanding the complex Heliophysics system, focusing on the fundamental science of the most critical interconnections. Further information on the LWS Program can be found at the LWS website (<http://lwstrt.gsfc.nasa.gov/>). The LWS Science program maintains a strategy with three components, namely, Strategic Capabilities, Targeted Investigations, and CrossDisciplinary Infrastructure Building programs. Only the Targeted Investigations will be competed in this announcement. Proposers interested in Strategic Capabilities should see Program Element B.10 Living With a Star Strategic Capabilities. Cross-Disciplinary Infrastructure Building may be competed in ROSES-2020.

Awards: Available funding: \$4,900,000

Notice of Intent: Contact the program officer

Proposal Deadline: Step 1 Proposals Due December 05, 2019

Contact: Simon Plunkett Heliophysics Division Science Mission Directorate National Aeronautics and Space Administration Washington, DC 20546-0001 Telephone: (202) 358-2034 Email:

simon.p.plunkett@nasa.gov

Grant Program: ROSES 2019: B.7 Space Weather Science Applications Operations 2 Research
Agency: NASA NNH19ZDA001N-SWO2R

Website: <https://nspires.nasaprs.com/external/solicitations/summary.do?solId={BD18A167-6DE8-1A35-A0ED-96F16AC6DE49}&path=&method=init>

Brief Description: In October 2015, the National Science and Technology Council (NSTC) in the Executive Office of the President released the National Space Weather Strategy and the National Space Weather Action Plan (SWAP). In March 2019, these were updated with the release of the National Space Weather Strategy and Action Plan (NSW-SAP). The objectives of the actions described in the SWAP and NSW-SAP are to improve the understanding of, forecasting of, and preparedness for space weather events, recognizing the need for close cooperation among the federal agencies. The SWAP and NSW-SAP call for NASA, National Science Foundation (NSF), and Department of Defense (DOD) to identify and support basic research on space weather. They also direct NASA, Department of Commerce (DOC), and DOD to identify and support research opportunities that address targeted operational space-weather needs. Furthermore, they direct NASA, NSF, DOC, and DOD to facilitate the transition of space weather information and prediction capabilities to the Nation's space weather service providers (research-to-operations and operations-to-research). In response to the need to advance and coordinate the Nation's space weather research and operations capabilities, NASA has established the Heliophysics Space Weather Science Applications program, of which this operations-to-research (O2R) call is a part. NASA is supporting this funding opportunity in coordination with DOC/National Oceanic and Atmospheric Administration (NOAA) to promote O2R activities. For this call, the objective of O2R efforts is broadly defined as the joint pursuit of improvements of operational capabilities and advancements in related fundamental research.

The primary goal of this funding is to support research by the grant recipient to improve numerical models and/or data utilization techniques that could advance specification and/or forecasting capabilities and which could also lead to improved scientific understanding. Effective utilization of available data is encouraged. Employing data assimilation and/or machine-learning techniques is also encouraged.

Awards: Various

Proposal Deadline: Step-1 Proposal: December 16, 2019

Contact: James Spann Heliophysics Division Science mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: 202-358-0574 Email: jim.spann@nasa.gov

Grant Program: Heliophysics Theory, Modeling, and Simulations: due dates TBD

Agency: NASA NNH19ZDA001N-HTMS

Website: <https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B97F8C4AD-A0D1-7593-92DD-0418FE347186%7D&path=&method=init>

Brief Description: The Heliophysics Theory, Modeling, Simulations (H-TMS) program is a component of the Heliophysics Research Program. Proposers interested in this program element are encouraged to see the overview of the Heliophysics Research Program in Appendix B.1 of this ROSES NRA. The H-TMS program was previously one element of the Heliophysics Grand Challenges Research (H-GCR) program (H-GCR-TMS, last competed in ROSES-2016 as program element B.5). Before that it was called "Heliophysics Theory Program" (HTP, last competed in ROSES-2013). For simplification, this program is now referred to as the Theory, Modeling, and Simulations (TMS) element in the Heliophysics program. The former Heliophysics Theory Program provides the foundation of the TMS element. Increasingly, as computing power becomes more affordable and more available, numerical simulations and modeling become tools that can and have been used synergistically with data analyses and rigorous theory development to solve the fundamental problems of Heliophysics. They lead the way to new understanding and drive science concepts for future strategic missions. The ultimate goal of TMS investigations is to

provide a complete chain of reasoning extending from the basic laws of nature to comparison with observation to the identification of future quantitative tests of the behavior of the environment. NASA acknowledges this and renames the element "Theory, Modeling, and Simulations."

Awards: Various

Notice of Intent: Not Required

Proposal Deadline: TBD; Program Close date: Feb 14, 2020

Contact: Ekaterina Verner Heliophysics Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: (202) 358-1213 Email: ekaterina.m.verner@nasa.gov

Grant Program: Astrophysics Research and Analysis: due dates TBD

Agency: NASA NNH19ZDA001N-APRA

Website: <https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B90F8A275-496D-A0FA-82A0-0BF6E9ABBA67%7D&path=&method=init>

Brief Description: The Astrophysics Research and Analysis Program (APRA) program solicits basic research proposals for investigations that are relevant to NASA's programs in astronomy and astrophysics and includes research over the entire range of photons, gravitational waves, and particle astrophysics. Awards may be for up to four years' duration (up to five years for suborbital investigations), but shorter-term proposals are typical; four-year or five-year proposals must be well justified. Proposals for suborbital investigations are particularly encouraged. APRA investigations may advance technologies anywhere along the full line of readiness levels, from Technology Readiness Level (TRL) 1 through TRL 9. The emphasis of this program element is on technologies and investigations that advance NASA astrophysics missions and goals.

Awards: Various

Notice of Intent: Not Required

Proposal Deadline: TBD; Program Close date: Feb 14, 2020

Contact: Dominic J. Benford Astrophysics Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: (202) 358-1261 Email: Dominic.Benford@nasa.gov

National Endowment of Humanities

Grant Program: Public Humanities Projects

Agency: National Endowment for the Humanities 20190814-BP-BR-GE-GG-GI

Website: <https://www.neh.gov/grants/public/public-humanities-projects>

Brief Description: The Public Humanities Projects program supports projects that bring the ideas and insights of the humanities to life for general audiences through in-person programming. Projects must engage humanities scholarship to analyze significant themes in disciplines such as history, literature, ethics, and art history. This program supports projects in three categories: **Exhibitions** (permanent, temporary, or traveling); interpretive programs at **Historic Places**; and **Humanities Discussions** related to the 250th anniversary of the nation's founding.

Awards: Planning grants (up to \$75,000); Implementation grants (up to \$ 400,000)

Deadlines: Optional Draft due: July 3, 2019; Application due: August 14, 2019

Contact: If you have questions about the program, Contact the Division of Research Programs Team 202-606-8269 publicpgms@neh.gov

Grant Program: Summer Stipends**Agency: National Endowment for the Humanities 20190925-FT****Website:** <https://www.neh.gov/grants/research/summer-stipends>**Brief Description:** The National Endowment for the Humanities' Summer Stipends program aims to stimulate new research in the humanities and its publication. The program works to accomplish this goal by:

- Providing small awards to individuals pursuing advanced research that is of value to humanities scholars, general audiences, or both.
- Supporting projects at any stage of development, but most especially early-stage research and late-stage writing in which small awards are most effective
- Furthering the NEH's commitment to diversity and inclusion in the humanities by encouraging applications from independent scholars and faculty at Hispanic Serving Institutions, Historically Black Colleges and Universities, tribal colleges and universities, and community colleges

Summer Stipends support continuous full-time work on a humanities project for a period of two consecutive months. NEH funds may support recipients' compensation, travel, and other costs related to the proposed scholarly research.

Summer Stipends are awarded to individual scholars. Organizations are not eligible to apply.

Awards: Up to \$6,000**Deadlines:** Application due: September 25, 2019**Contact:** If you have questions about the program, Contact the Division of Research Programs Team 202-606-8200 fpiri@neh.gov

Pharma Foundation**Grant Program: Pre Doctoral Fellowships****Agency: Pharma Foundation****Website:** <http://www.phrmfoundation.org/>**Brief Description:** The [PhRMA Foundation](http://www.phrmfoundation.org/) supports the research and early-career endeavors of scientists in drug discovery and development.

To that end, it currently is accepting applications for its Informatics Pre Doctoral Fellowships program. Through the program, grants of \$25,000 a year for up to two years will be awarded in support of the career development of early-career scientists engaged in research that significantly integrates state-of-the-art information technology with advanced biological, chemical, and pharmacological sciences in relevant areas, including genetics/genomics; proteomics/metabioimics; molecular systems biology; medical (human) pathways and networks; genomics molecular epidemiology; pharmaco-integrative biology/pharmaco-genomics; population modeling and simulation; and novel approaches to the analysis of biomedical big data.

To be eligible, applicants must be a full-time student (U.S. or non-U.S. citizen) who has completed most of his/her pre-thesis requirements (at least two years of study) and be engaged in thesis research as a PhD candidate by the time the award is activated. The PhRMA Foundation will accept only two applications per academic institution. See the PhRMA Foundation website for complete program guidelines and application instructions.

Proposal Deadline: September 1, 2019

Pharma Foundation

Grant Program: Pre Doctoral Fellowships

Agency: Pharma Foundation

Website: <http://www.phrmafoundation.org/>

Brief Description: The [PhRMA Foundation](#) supports the research and early-career endeavors of scientists in drug discovery and development.

To that end, it currently is accepting applications for its Informatics Pre Doctoral Fellowships program. Through the program, grants of \$25,000 a year for up to two years will be awarded in support of the career development of early-career scientists engaged in research that significantly integrates state-of-the-art information technology with advanced biological, chemical, and pharmacological sciences in relevant areas, including genetics/genomics; proteomics/metabonomics; molecular systems biology; medical (human) pathways and networks; genomics molecular epidemiology; pharmaco-integrative biology/pharmaco-genomics; population modeling and simulation; and novel approaches to the analysis of biomedical big data. To be eligible, applicants must be a full-time student (U.S. or non-U.S. citizen) who has completed most of his/her pre-thesis requirements (at least two years of study) and be engaged in thesis research as a PhD candidate by the time the award is activated. The PhRMA Foundation will accept only two applications per academic institution. See the PhRMA Foundation website for complete program guidelines and application instructions.

Proposal Deadline: September 1, 2019

Simons and Moore Foundations

Grant Program: Pre Doctoral Fellowships

Agency: [Gordon and Betty Moore Foundation](#) and [Simons Foundation](#)

Website: https://symbiosis.smapply.io/prog/origin_of_the_eukaryotic_cell_solicitation/

Brief Description: The [Gordon and Betty Moore Foundation](#) and [Simons Foundation](#) have issued a joint call for proposals for the Moore–Simons Project on the Origin of the Eukaryotic Cell. This major transition in the history of life, estimated to have occurred almost two billion years ago, remains an important yet unsolved puzzle in the biological sciences.

Under this call, the foundations invite proposals for novel research on the origin of the eukaryotic cell, including the processes that may have led to the emergence of the first eukaryotic common ancestor (FECA) and how FECA evolved into the last eukaryotic common ancestor (LECA). Individual and team projects of two to three years in duration will be supported, and the foundations seek to have scientists in both the early and established career stage as well as both current and emerging leaders in their fields. The foundations strongly encourage scientists and engineers from a wide range of disciplines, including those who have not previously worked on this topic, although those new to exploring questions about eukaryogenesis may wish to consider collaborating with those who have previously done research in this area. Disciplines and approaches encouraged to apply include but are not limited to cell biology, evolution, ecology, earth and aquatic sciences, paleontology, genomics, bioinformatics, synthetic biology, biophysics and chemistry.

To be eligible for this program, the proposal lead must hold a tenured or tenure-track position (or equivalent independent position). For projects with applicants located in the U.S., the primary institution must be tax exempt under section 501(c)(3) of the Internal Revenue Code. For international projects, the primary institution must be equivalent to a U.S. 501(c)(3) public charity. See the Simons Foundation website for complete program guidelines, application instructions, and an FAQ.

Proposal Deadline: September 30, 2019

Arnold and Mabel Beckman Foundation

Grant Program: Post-Doctoral Fellowships

Agency: Arnold and Mabel Beckman Foundation

Website: <http://www.beckman-foundation.org/programs/beckman-postdoctoral-fellows>

Brief Description: The Arnold O. Beckman Postdoctoral Fellowship in Chemical Sciences or Chemical Instrumentation Award Program supports advanced research by postdoctoral scholars within the core areas of fundamental chemistry or the development and build of chemical instrumentation; research must be innovative in method, speed or process, or represent new instrument technology. This fellowship will be a catalyst from "mentored yet independent" postdocs to outstanding, independent researchers in academic or industry/governmental labs.

The Fellowships will be in two tracks (applicants will choose one):

- **Postdoctoral Fellowship in Chemical Sciences** will allow chemists to pursue advanced research within the core areas of fundamental chemistry, such as chemical physics, chemical engineering, and chemistry of materials research. The fellowship is not intended to fund proposals that are supported by traditional NIH mechanisms in the fields of chemistry, chemical biology, biochemistry.
- **Postdoctoral Fellowship in Chemical Instrumentation** will allow researchers in chemistry to conceptualize, develop and build instrumentation suitable to advanced research in chemistry, chemical physics, chemical engineering, and chemistry of materials science. Instrumentation projects must be suitable to the two-year fellowship timeframe, be driven by a need in the chemical sciences listed above, be innovative in method speed or process or represent a wholly new instrument for technical advancement in chemistry, and may potentially be used for future research in the broader scientific community.

Proposal Deadline: September 6, 2019

Sigma-Xi

Grant Program: Student Science and Engineering Research Grants

Agency: Sigma-Xi

Website: <https://www.sigmaxi.org/programs/grants-in-aid>

Brief Description: [Sigma Xi](#), a society of research scientists and engineers that rewards excellence in research and cooperation among scientists in all fields, has been providing undergraduate and graduate students with valuable educational experiences and financial support since 1922. By encouraging close working relationships between students and faculty, the society promotes scientific achievement through hands-on learning. Through its Sigma Xi Grants-in-Aid of Research program, the society awards grants of up to \$1,000 to undergraduate and graduate students from most areas of the sciences and engineering. Designated funds from the National Academy of Sciences allow for grants of up to \$5,000 for astronomy research and \$2,500 for vision-related research. Funding can support travel expenses or nonstandard laboratory equipment necessary to complete a specific research project.

While membership in Sigma Xi is not a requirement to apply for funding, certain designated funds are restricted for use by dues-paying student members or students whose project advisor is a dues-paying member. Students from any country are eligible to receive funding. See the Sigma Xi website for complete program guidelines and application instructions.

Proposal Deadline: October 1, 2019

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. Streamlyne 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/>

Streamlyne Information

Streamlyne User Manuals: <http://www.njit.edu/research/streamlyne/>

Streamlyne_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.

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

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

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

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

Need Information about Funding?

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

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

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

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

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

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

Enjoy coffee/tea and cookies with SVPR over the discussion.

For any questions and additional information, please send an email to SVPR at dhawan@njit.edu.
