

NJIT Research Newsletter

Issue: ORN-2019-35

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

Call for Proposals

NJIT Technology Innovation Translation and Acceleration (TITA) Seed Grant

Instructions and Additional Information on the website

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

TITA Seed Grant Program Objective

The NJIT Technology Innovation Translation and Acceleration (TITA) Seed Grant program will enable faculty and students to successfully accelerate the translation of their innovation to enterprise development and business incubation. The TITA grant program will foster entrepreneurial pathways from research and innovation to business and value creation with the acquisition of intellectual property, market validation and engagement of stakeholders towards commercialization.

The TITA Seed Grants will be funded towards market driven translational research to further develop innovation ready for enterprise development and commercialization under the mentoring of a business advisor. This will increase awareness of potential benefits at earlier stages of translation and market validation and allow researchers and stakeholders to collaborate for entrepreneurial success. It will also help faculty to submit competitive translational research proposals to external grant funding opportunities.

Eligibility

NJIT faculty members pursuing research addressing a significant unmet market need with an innovative potential solution of high impact are encouraged to apply for TITA seed grants. The following requirements must be met at the time of Stage-1 Idea Concept Paper (described below) submission:

1. Proof of concept of the innovative solution to the unmet market need of high significance has been demonstrated in laboratory settings with the ongoing research work.
2. A provisional or non-provisional patent has been filed by NJIT with the applicant inventor team.
3. A tenured or tenure-track faculty member at NJIT should be the PI and applicant team leader and may include other inventors, partners and co-investigators such as collaborators and students.

Awards

Up to two NJIT Technology Innovation Translation and Acceleration seed grants of **\$50,000** each will be awarded in Fall 2019 through an internal competition with the following process. The awarded teams will work on translational research and innovation projects with external business mentors on milestones based on preliminary market research and validation.

After 6-9 months of working with a mentor and milestone assessment of the progress, the teams can request a supplement of **\$25,000** for advanced market research, validation and strategic enterprise development for external funding and investments.

TITA Proposal Submission Process

Stage-1: Submit a simple 2-page TITA Idea Concept Paper

All Idea Concept papers will be reviewed by the TITA External Advisory Board who will invite selected applicants for Stage-2 submission. Comments and feedback on the evaluation will be provided.

Stage-2: If invited, submit a 5-page (with optional self-made video) TITA White Paper

All TITA White Papers will be reviewed by the TITA External Advisory Board who will invite selected applicants for Stage-3 submission. If invited, a mentor from the TITA Board will be assigned to the applicant team. Comments and feedback on the evaluation will be provided.

Stage-3: A mentor will be assigned to the applicant team to help submission of TITA Full Proposal and make a "Live Pitch" to the TITA Board.

All TITA Full Proposals will be reviewed by the TITA External Advisory Board who will invite selected applicants for a Live Pitch presentation to the Board and other potential inventors. The TITA Board will make the final decision of awarding TITA Seed Grants endorsing the overall goals, milestones, and assessment on the funded projects with applicant team and mentors. Comments and feedback on the evaluation will be provided.

Stage-4: If awarded with TITA Seed Grant, the applicant team will work with the assigned mentors and pursue translational and market research with enterprise development

Stage-5: With the milestone accomplishments, assessment and recommendation by the mentors, the applicant team can request for \$25,000 TITA Supplement Grant funding for additional market assessment and further strategic enterprise development for external funding.

TITA Seed Grant Proposal Submission Timeline

- TITA Seed Grant Announcement: August 30, 2019
- Stage-1: TITA 2-Page IDEA Concept Paper Submission: September 27, 2019
- Invitation to Submit TITA White Papers: October 4, 2019
- Stage-2: TITA 5-Page White Paper Submission: October 18, 2019
- Invitation to Submit Full TITA Proposal and Mentor Assignment: October 25, 2019
- Stage-3: TITA Full Proposal Submission: November 22, 2019
- Invitation to Live Pitch Presentation: November 29, 2019

- Stage-4: TITA Full Proposal Live Pitch Presentation to the EAB Board: December 9, 2019
- Announcement of TITA Seed Grant Award: December 12, 2019
- TITA Seed Grant Start Date: January 2, 2020

All Proposals and documents should be submitted via email attachment to tita-group@njit.edu

More information on the submission process and format was sent via email on August 30, 2019 and is also posted on the research website <https://research.njit.edu/funding-opportunities> along with a sample technology innovation translation project presentation (available next week)

For any questions or additional information, please contact Atam Dhawan, SVP for Research at dhawan@njit.edu.

New Jersey Health Foundation Research Grants

\$1 million is available in the latest round of funding in the New Jersey Health Foundation Research Grants Program to provide grants of up to \$35,000 each for research projects that demonstrate exciting potential and help applicants qualify for larger grants from other organizations to advance their research. Grants of up to \$50,000 each are available to researchers at organizations affiliated with New Jersey Health Foundation who have promising ideas that may lead to developing patents or other intellectual property. Full-time faculty members and personnel at these organizations affiliated with New Jersey Health Foundation are eligible to apply for research grants.

Applications for this round of funding will be accepted from September 16, 2019 through November 8, 2019. Click below for details:

1. [Policies and Procedures](#)
2. [FAQs](#)
3. [Sample Letter of Agreement](#)
4. [Apply Now](#)

Questions? E-mail researchgrant@njhf.org.

Grants must be used to fund only direct program costs. Grants cannot be used to fund overhead, tuition indirect or investment management fees.

**Have a great technology concept?
Need funds to explore the commercialization pathways?
Apply for an NJIT – I-Corps Site Mini-Grant**

<https://judithsheft.wufoo.com/forms/q14a5mgk0rwrafs/>

NJIT has been designated as an NSF I-Corps Site and through the NJIT School of Management and NJ Center for Innovation Acceleration, we will provide specialized training and mini grants of up to \$3,000 to teams interested in exploring the commercial viability of their ideas for products and businesses that are based on their own inventions or NJIT intellectual property.

Do you have an exciting technology that works in the lab? Would you like help to start a company to commercialize the technology? Do you want to test a prototype in the real-world environment?

What are the benefits?

Learn the lean start up methodology – an approach that has significant advantages over traditional business planning / new product development approaches.

Get out of the building and spend the majority of your time talking to potential customers to discover how your technology could effectively ‘solve’ customers’ unmet needs or pain points

Make connections with experienced entrepreneurs and investors that can lead to potential follow-on support or collaboration

Who is eligible?

I-Corps mini grants are available to teams made up NJIT students and faculty. Each team must have:

- an entrepreneurial lead(typically an NJIT undergraduate or graduate student(s))
- an academic lead researcher/advisor (faculty member)
- a business mentor with significant entrepreneurial business experience.

The NJIT I-Corps Program Managers (Dr. Michael Ehrlich and Ms. Judith Sheft) will provide assistance to complete teams as necessary. You must have at least 2 teams members identified to apply.

All team members must be able to participate for the 6 month project duration.

DEADLINES:

Deadline for Submissions: October 1, 2019

Interviews of Finalists: October 7 - 11, 2019

Announcement of Awards – October 16, 2019

Mandatory Team Orientation – October 23, 2019 (Common Hour)

QUESTIONS: PLEASE CONTACT:

Dr. Michael Ehrlich – NJIT School of Management and Co-Director of the NJ Innovation Acceleration Center - ehrllich@njit.edu

Judith Sheft Co- Director of the NJ Innovation Acceleration Center - sheft@njit.edu

Grant Opportunity Alerts

Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: Biosensing; Engineering of Biomedical Systems; Biophotonics; Disability and Rehabilitation Engineering (DARE); Particulate and Multiphase Processes; Environmental Engineering; Environmental Sustainability; Process Systems, Reaction Engineering, and Molecular Thermodynamics; Cellular and Biochemical Engineering; Combustion and Fire Systems; Fluid Dynamics; Secure and Trustworthy Cyberspace (SaTC); Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR); Inclusion Across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES); Security and Preparedness (SAP); EMERGING FRONTIERS IN RESEARCH AND INNOVATION (EFRI); Distributed Chemical Manufacturing (DCheM); Research in the Formation of Engineers (RFE); NSF/Intel Partnership on Foundational Microarchitecture Research (FoMR); Postdoctoral Research Fellowships in Biology (PRFB); NSF/DOE Partnership in Basic Plasma Science and Engineering; Antarctic Research; Ecology and Evolution of Infectious Diseases (EEID)

NIH: NIDCR Small Grant Program for New Investigators (R03); Trans-Agency Blood-Brain Interface Program (R61/R33); SBIR/STTR Commercialization Readiness Pilot (CRP) Program Technical Assistance (SB1, R44); Explainable Artificial Intelligence for Decoding and Modulating Neural Circuit Activity Linked to Behavior (R01); The NCI Predoctoral to Postdoctoral Fellow Transition Award (F99/K00)

Department of Defense/US Army/DARPA/ONR: NRL Long Range Broad Agency Announcement (BAA) for Basic and Applied Research; DARPA Young Faculty Award; Semantic Forensics (SemaFor); 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; 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: Minority Education, Workforce, and Training Program; Stewardship Science Academic Alliances (SSAA) Program; 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: NASA Space Technology Graduate Research Opportunities; Use of the NASA Physical Sciences Informatics System; 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

Recent Research Grant and Contract Awards

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

PI: Mengyan Li (PI)

Department: Chemistry and Environmental Sciences

Grant/Contract Project Title: Uncovering the Molecular and Microecological Basis for the Biotransformation of Antimicrobials by Rhizobacteria and Endophyte

Funding Agency: U.S. Department of Agriculture (NIFA)

Duration: 09/01/19-08/31/23

PI: Kurt Rohloff (PI)

Department: Cybersecurity Center

Grant/Contract Project Title: Verona (Hector)

Funding Agency: IARPA

Duration: 06/03/19-12/03/19

PI: Treena Arinzeh (PI)

Department: Biomedical Engineering

Grant/Contract Project Title: A Bifunctional Scaffold for Promoting Mesenchymal Stem Cell Cartilage Repair

Funding Agency: Lisa Dean Moseley Foundation

Duration: 09/01/19-08/31/20

In the News...

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

Defense Spending Bill and Research: The Senate defense spending bill calls for \$104 billion for research development, testing, and evaluation, about \$1.4 billion more than the president requested. The total includes \$308 million more than the president sought for basic research, which the panel considers the "foundation for Department of Defense innovation and future technologies." A beneficiary is the Office of Naval Research, which the White House wanted to squeeze. The bill cleared the full committee, as did [the Energy-Water appropriation](#), which funds R&D at the Energy Department. See a [comprehensive rundown by Lewis-Burke Associates](#) and a [Defense News account](#).

Energy and Resiliency: The Committee encourages a number of steps to ease the Navy's dependence on fossil fuels and "achieve military energy resiliency." These include materials to improve safety and performance in lithium-ion batteries, hybrid propulsion for small surface craft, and new novel energy technologies, such as marine hydrokinetic energy converters. It calls for "leveraging experienced energy university researchers in concert with industry partners and the Navy. Specific areas of interest include addressing electrical power intermittency, integrating renewable energy sources into the grid, energy storage, improved micro-grids, grid security (and) local generation of zero-carbon fuels." The panel recommends more money for research, development, testing and deployment of advanced energy systems with the potential to reduce the cost of energy and increase energy security, reliability, and resiliency.

CYBER ED: Appropriators want to boost spending on the National Centers for Academic Excellence Cyber Defense program and establish "a workforce development pilot program that would offer certificate-based courses through the centers . . . in cybersecurity and artificial intelligence. It urges establishment of Defense Cyber Institutes, with "consideration to the Senior Military Colleges, to award scholarships, student and research support, and a K-12 cyber education program. The panel "encourages the Department of Defense and the intelligence community to review opportunities" for future recruitment "in underrepresented populations and minority communities and to work with qualified historically black colleges and universities to identify and recruit the next generation of cyber professionals."

Department of Energy AI Center: The Department of Energy's Artificial Intelligence and Technology Office "will accelerate the delivery of AI-enabled capabilities, scale the department-wide development and impact of AI, and synchronize AI activities to advance the agency's core missions, expand partnerships, and support American AI Leadership." The vision is to "Transform DOE into a world-leading AI enterprise by accelerating the research, development, delivery, and adoption of AI." More information with the specific areas is posted on the website <https://www.energy.gov/artificial-intelligence-and-technology-office>

Evolving Computers from Tools to Partners in Cyber-Physical System Design: Department of Defense (DOD) systems and platforms are composed of numerous integrated cyber-physical subsystems, which create an enormous amount of complexity and makes their engineering a daunting task. Today, designing cyber-physical systems (CPS) requires an army of skilled engineers with the right domain expertise, and hundreds of domain-specific tools. The process used to design these systems is largely manual, creating long design cycles that often result in costly redesigns after building and testing the systems. The flaws in the process are numerous – from balancing predictability with cost-efficiency to operating under tight time constraints to integrating disparate pieces from multiple design teams. Further, teams are often limited to focusing on known design approaches, restricting their ability to create or identify more sophisticated system alternatives or innovative concepts. The Symbiotic Design program is a part of DARPA’s AI Next campaign – a multi-year, \$2 billion investment into new and existing programs focused on the development and application of “Third Wave” AI technologies. DARPA views the Third Wave of AI as the development of systems that are capable of acquiring new knowledge through generative contextual and explanatory models. In addition to developing the tools that will form the AI-enabled co-designer, the Symbiotic Design program seeks to create user-friendly interfaces to facilitate human-machine collaborations. Using automation technologies and human-machine interfaces, the program aims to make the design process accessible to more individuals by reducing the need for specialized skillsets, as well as augmenting the skills of experts. For research programs, please visit the DARPA website <https://www.darpa.mil/our-research>

Executive Order on Establishing the National Quantum Initiative Advisory Committee: Under an August 30 [presidential executive order](#), the Department of Energy will administer the National Quantum Initiative Advisory Committee, comprising the OSTP director (or a designee) and 22 experts, chosen by the secretary of energy, from industry, academia, federal laboratories, and other federal agencies. The committee is required under the 2018 National Quantum Initiative Act, which establishes a structured, multi-agency effort to advance quantum information science and associated technologies. The Committee shall advise the Secretary and the Subcommittee on Quantum Information Science of the National Science and Technology Council (Subcommittee) and make recommendations to the Secretary to consider when reviewing and revising the National Quantum Initiative Program (Program) established pursuant to section 101 of the Act. The Committee shall also carry out all responsibilities set forth in section 104 of the Act. The executive order is posted on the website <https://www.whitehouse.gov/presidential-actions/executive-order-establishing-national-quantum-initiative-advisory-committee/>

DOE Funding for Fusion Research: The U.S. Department of Energy (DOE) will provide \$50 million to U.S. universities, private industry and national laboratories for research projects in fusion energy and plasma science. Of the total, "\$30 million will go to 10 U.S. multi-institutional research teams to support fusion energy research at international facilities. The main focus of the fusion energy research is sustaining high-temperature plasmas for long durations within superconducting tokamak facilities." Another \$20.2 million "will fund the creation of new centers and facilities supporting research on low-temperature plasmas." A list of the grants awarded is posted on the website https://science.osti.gov/-/media/fes/pdf/Awards/Collaborative_Research_in_Magnetic_Fusion_Energy_Sciences-Awards_List.pdf?la=en&hash=9BDFBA1127467BB438573B8CE064EFE002AF4C2C

Frontiers of Materials Research: Report from National Academies: Modern materials science builds on knowledge from physics, chemistry, biology, mathematics, computer and data science, and engineering sciences to enable us to understand, control, and expand the material world. Although it is anchored in inquiry-based fundamental science, materials research is strongly focused on discovering and producing reliable and economically viable materials, from super alloys to polymer composites, that are

used in a vast array of products essential to today's societies and economies. The report is posted on the website <https://www.nap.edu/catalog/25244/frontiers-of-materials-research-a-decadal-survey>

Webinar and Events

Event: Emerging Frontiers in Research and Innovation Program - Informational Webinar

Sponsor: NSF

When: September 18, 2019; 1.00 PM – 2.30 PM

Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=299176&org=NSF

Brief Description: On Wednesday, September 18 from 1:00 to 2:30 pm Eastern time, NSF's Office of Emerging Frontiers and Multidisciplinary Activities (EFMA) will host a webinar to discuss the FY 2020 program solicitation of the [Emerging Frontiers in Research and Innovation \(EFRI\) program](#).

EFRI investigators pursue cutting-edge, interdisciplinary research with the potential for transformative impacts on national needs and grand challenges.

During this webinar, potential proposers to the program will be able to learn more about EFRI and ask questions about the [new EFRI solicitation](#).

The FY 2020 EFRI topics are:

- Distributed Chemical Manufacturing (DCheM)
- Engineering the Elimination of End-of-Life Plastics (E3P)

To Join the Webinar: Register at: <https://tinyurl.com/FY20-EFRI-Webinar>

Event: Educating Consumers on Electric Vehicles: What Utilities Have Learned

Sponsor: Advanced Energy Economy

When: September 18, 2019; 1.00 PM – 2.00 PM

Website: https://info.aee.net/educating-consumers-on-electric-vehicles-what-utilities-have-learned?utm_campaign=Webinars&utm_medium=email&_hsenc=p2ANqtz--

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Brief Description: Electric vehicles (EVs) offer drivers savings in fuel and maintenance costs, better driving performance, and no tailpipe emissions, but surveys show that lack of information holds consumers back from buying these vehicles. In this webinar, utilities and their vendors on the front lines of the electric transportation revolution will describe what they are doing to educate residential, commercial, and industrial customers about how and why to charge up, instead of gas up, their next car or corporate fleet – and what others can do to boost consumer understanding of EVs.

To Join the Webinar: Please register at the above website

Event: Informational Webinar on the NIH Maximizing Opportunities for Scientific and Academic Independent Careers (MOSAIC) Program Funding Opportunity Announcements (UE5 and K99/R00)

Sponsor: NIH

When: September 24, 2019; 1.00 PM – 3.00 PM

Website: <https://grants.nih.gov/grants/guide/notice-files/NOT-GM-19-058.html>

Brief Description: The purpose of this Notice is to inform potential applicants to the NIH Maximizing Opportunities for Scientific and Academic Independent Careers (MOSAIC) Program to Enhance Diversity UE5 ([PAR-19-342](#)) and K99/R00 ([PAR-19-343](#)) funding opportunity announcements (FOAs) of an upcoming webinar on planning submissions to this program. Participation in the webinar, although encouraged, is optional and is not required for application submission.

To Join the Webinar: Please register at the above website

Event: NSF Distinguished Lecture Series in Mathematical and Physical Sciences for 2019-20

Sponsor: NSF

When: Various; Please see below.

Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=299152&org=NSF

Brief Description: These lectures will be held at the National Science Foundation, 2415 Eisenhower Ave., Alexandria, VA 22314. Advance sign-up requests are required for preparation of visitor passes by emailing the contact below. Guidelines for visiting NSF are at <https://www.nsf.gov/about/visit/>

September 23, 2019 1:15 PM to September 23, 2019 2:15 PM

December 19, 2019 2:00 PM to December 19, 2019 3:00 PM

January 13, 2020 2:00 PM to January 13, 2020 3:00 PM

February 13, 2020 2:00 PM to February 13, 2020 3:00 PM

March 23, 2020 2:00 PM to March 23, 2020 3:00 PM

May 4, 2020 2:00 PM to May 4, 2020 3:00 PM

June 11, 2020 2:00 PM to June 11, 2020 3:00 PM

To Join the Webinar: Please register at the above URL.

Grant Opportunities

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.

National Science Foundation

Grant Program: Biosensing

Agency: National Science Foundation NSF PD 20-7909

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505720&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Biosensing** program is part of the Engineering Biology and Health cluster, which also includes 1) the **Biophotonics** program; 2) the **Cellular and Biochemical Engineering** program; 3) the **Disability and Rehabilitation Engineering** program; and 4) the **Engineering of Biomedical Systems** program. The **Biosensing** program supports fundamental engineering research on devices and methods for measurement and quantification of biological analytes. Examples of biosensors include, but are not limited to, electrochemical/electrical biosensors, optical biosensors, plasmonic biosensors, and paper-based and nanopore-based biosensors. In addition to advancing biosensor technology development, proposals that address critical needs in biomedical research, public health, food safety, agriculture, forensic, environmental protection, and homeland security are highly encouraged. Proposals that incorporate emerging nanotechnology methods are especially encouraged.

Areas of interest include:

- multiplex biosensing platforms that exceed the performance of current state-of-the-art devices;

- novel transduction principles, mechanisms and sensor designs suitable for measurement in practical matrix and sample-preparation-free approaches, including error-free detection of pathogens and toxins in food matrices, waterborne pathogens, parasites, toxins, biomarkers in body fluids, neuron chemicals, and others that improve human condition;
- biosensors that enable measurement of biomolecular interactions in their native states, transmembrane transport, intracellular transport and reactions, and other biological phenomena;
- biosensing performance optimization for specific health applications such as point-of-care testing and personalized health monitoring;
- miniaturization of biosensors for lab-on-a-chip and cell/organ-on-a-chip applications to enable measurement of biological properties and functions of cell/tissues *in vitro*;
- biosensing systems with integration of artificial intelligence (AI) and machine learning;
- biosensors that exploit quantum correlations to develop a suite of analytical tools that will have superior performance over ordinary classical biosensing technology; and
- biosensors that leverage unique electrical properties of biomolecules, such as DNA; proteins; cells; and the nervous system to develop miniaturized biomedical devices for modulating and characterization of biological species.

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Engineering of Biomedical Systems

Agency: National Science Foundation NSF PD 20-5345

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505722&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Engineering of Biomedical Systems** program is part of the Engineering Biology and Health cluster, which also includes: 1) the **Biophotonics** program; 2) the **Biosensing** program; 3) the **Cellular and Biochemical Engineering** program; and 4) the **Disability and Rehabilitation Engineering** program. The goal of the **Engineering of Biomedical Systems** (EBMS) program is to provide opportunities for creating fundamental and transformative research projects that integrate engineering and life sciences to solve biomedical problems and serve humanity in the long term. Projects are expected to use an engineering framework (for example, design or modeling) that supports increased understanding of physiological or pathophysiological processes. Projects must include objectives that advance both engineering and biomedical sciences.

Projects may include: methods, models, and enabling tools applied to understand or control living systems; fundamental improvements in deriving information from cells, tissues, organs, and organ systems; or new approaches to the design of systems that include both living and non-living components for eventual medical use in the long term.

The EBMS program supports fundamental and transformative research in the following areas of biomedical engineering:

- Development of validated models (living or computational) of healthy and pathological tissues and organ systems that can support improved fundamental understanding of these systems or development and testing of medical interventions,

- Design and validation of systems that integrate living and non-living components for improved understanding, diagnosis, monitoring, and treatment of disease or injury,
- Advanced biomanufacturing of three-dimensional tissues and organs, and
- Design and subsequent application of technologies and tools, including those that leverage an organism's microbiome, to investigate fundamental physiological and pathophysiological processes.

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Biophotonics

Agency: National Science Foundation NSF PD 20-7236

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505719&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Biophotonics** program is part of the Engineering Biology and Health cluster, which also includes: 1) the **Biosensing** program; 2) the **Cellular and Biochemical Engineering** program; 3) the **Disability and Rehabilitation Engineering** program; and 4) the **Engineering of Biomedical Systems** program.

The goal of the **Biophotonics** program is to explore the research frontiers in photonics principles, engineering and technology that are relevant for critical problems in fields of medicine, biology and biotechnology. Fundamental engineering research and innovation in photonics is required to lay the foundations for new technologies beyond those that are mature and ready for application in medical diagnostics and therapies. Advances are needed in nanophotonics, optogenetics, contrast and targeting agents, ultra-thin probes, wide field imaging, and rapid biomarker screening. Low cost and minimally invasive medical diagnostics and therapies are key motivating application goals.

Research topics in this program include:

- **Macromolecule Markers:** Innovative methods for labeling of macromolecules. Novel compositions of matter. Methods of fabrication of multicolor probes that could be used for marking and detection of specific pathological cells. Pushing the envelope of optical sensing to the limits of detection, resolution, and identification.
- **Low Coherence Sensing at the Nanoscale:** Low coherence enhanced backscattering (LEBS). N-dimensional elastic light scattering. Angle-resolved low coherence interferometry for early cancer detection (dysplasia).
- **Neurophotonics:** Studies of photon activation of neurons at the interface of nanomaterials attached to cells. Development and application of biocompatible photonic tools such as parallel interfaces and interconnects for communicating and control of neural networks.
- **Microphotonics and Nanophotonics:** Development and application of novel nanoparticle fluorescent quantum-dots. Sensitive, multiplexed, high-throughput characterization of macromolecular properties of cells. Nanomaterials and nanodevices for biomedicine.
- **Optogenetics:** Novel research in employing light-activated channels and enzymes for manipulation of neural activity with temporal precision. Utilizing nanophotonics, nanofibers, and genetic techniques for mapping and studying in real-time physiological processes in organs such as the brain and heart.

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Disability and Rehabilitation Engineering (DARE)

Agency: National Science Foundation NSF PD 20-5342

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505718&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Disability and Rehabilitation Engineering** program is part of the Engineering Biology and Health cluster, which also includes: 1) the **Biophotonics** program; 2) the **Biosensing** program; 3) the **Cellular and Biochemical Engineering** program; and 4) the **Engineering of Biomedical Systems** program.

The **Disability and Rehabilitation Engineering** program supports fundamental engineering research that will improve the quality of life of persons with disabilities through: development of new technologies, devices, or software; advancement of knowledge regarding healthy or pathological human motion; or understanding of injury mechanisms.

Research may be supported that is directed toward the characterization, restoration, rehabilitation, and/or substitution of human functional ability or cognition, or to the interaction between persons with disabilities and their environment. Areas of particular interest are neuroengineering and rehabilitation robotics. The program will also consider research in the areas of: new engineering approaches to understand healthy or pathological motion, both as a target for rehabilitation and as a means to characterize motion related to disability or injury; understanding injury at the tissue- or system-level such that interventions may be developed to reduce the impact of trauma and subsequent disability; or understanding the role of gut microbiota in modulating disability in the context of rehabilitation.

Emphasis is placed on significant advancement of fundamental engineering knowledge that facilitates transformative outcomes. We discourage applications that propose incremental improvements.

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Particulate and Multiphase Processes

Agency: National Science Foundation NSF PD 20-1415

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505700&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Particulate and Multiphase Processes** program is part of the Transport Phenomena cluster, which also includes 1) the **Combustion and Fire Systems** program; 2) the **Fluid Dynamics** program; and 3) the **Thermal Transport Processes** program.

The goal of the **Particulate and Multiphase Processes** program is to support fundamental research on physico-chemical phenomena that govern particulate and multiphase systems, including flow of suspensions, drops and bubbles, granular and granular-fluid flows, behavior of micro- and nanostructured fluids, unique characteristics of active fluids, and self assembly/directed-assembly processes that involve particulates. The program encourages transformative research to improve our basic understanding of particulate and multiphase processes with emphasis on research that demonstrates how particle-scale phenomena affect the behavior and dynamics of larger-scale systems. Although proposed research should focus on fundamentals, a clear vision is required that anticipates how results could benefit important applications in advanced manufacturing, energy harvesting, transport in biological systems, biotechnology, or environmental sustainability. Collaborative and interdisciplinary proposals are encouraged, especially those that involve a combination of experiment with theory or modeling.

Major research areas of interest in the program include:

- **Multiphase flow phenomena:** Dynamics of particle/bubble/droplet systems, behavior of structured fluids (colloids/ferro-fluids), granular flows, rheology of multiphase systems, unique characteristics of active fluids, and novel approaches that relate micro- and nanoscale phenomena to macroscale properties and process-level variables.
- **Particle science and technology:** Aerosols, production of particles and polymer-particle complexes with engineered properties, self-assembly, directed assembly, and template-directed assembly of particles into functional materials and devices.
- **Multiphase transport in biological systems:** Analysis of physiological processes, applications of functionalized nanostructures in clinical diagnostics and therapeutics.
- **Interfacial transport:** Dynamics of particles and macromolecules at interfaces, kinetics of adsorption and desorption of nanoparticles and surfactants and their spatial distributions at interfaces, complex molecular interactions at interfaces, formation of interfacial complexes that affect the dynamics of particles.

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Environmental Engineering

Agency: National Science Foundation NSF PD 20-1440

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505692&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Environmental Engineering** program is part of the **Environmental Engineering and Sustainability** cluster, which also includes 1) the **Nanoscale Interactions** program; and 2) the **Environmental Sustainability** program.

Environmental engineering is an interdisciplinary field that applies chemical, biological, and physical scientific principles to protect human and ecological health.

The goal of the **Environmental Engineering** program is to support potentially transformative fundamental research that applies scientific and engineering principles to 1) prevent, minimize, or re-use solid, liquid, and gaseous discharges of pollution to soil, water, and air by closing resource loops or through other measures; 2) mitigate the ecological and human-health impacts of such releases by

smart/adaptive/reactive amendments or manipulation of the environment, and 3) remediate polluted environments through engineered chemical, biological, and/or geo-physical processes.

Integral to achieving these goals is a fundamental understanding of the transport and biogeochemical reactivity of pollutants in the environment. Therefore, research on environmental micro/biology, environmental chemistry, and environmental geophysics may be relevant providing the research has a clear objective of protecting human and ecological health.

Major areas of interest include (but are not limited to):

- **Building a future without pollution or waste:** Investigation of innovative biogeochemical processes that prevent or minimize the production of waste; waste valorization and other research that will lead to new technologies to extract resources from waste streams to close the resource loop.
- **Sustainable supply and protection of water:** Investigation of innovative biogeochemical processes that remove, biologically or chemically transform, and/or prevent the release of contaminants in surface and groundwater; innovative processes for recovery of water, nutrients, and other resources from wastewater, saline water, or brines; innovative approaches to smart and adaptive management of surface water, groundwater, and urban watersheds and storm water to maintain/improve quality and prevent downstream impacts from nutrients and other water constituents.
- **Environmental chemistry, fate, and transport of nutrients and contaminants of emerging concern in air, water, soils, and sediments:** Investigation of transport and biogeochemical reactivity in the environment; environmental forensics to identify sources and reaction pathways; field- and laboratory scale experimental research that bridges gaps between data and predictions from molecular, continuum, and field-scale modeling.
- **Environmental engineering of the built environment:** Research to understand the biogeochemical reactivity of the built environment with the goal of enhancing and improving human and ecological health; research that will lead to new technologies to improve outdoor and indoor air quality; research to understand how drinking water and wastewater chemical characteristics and microbial community structure impact or are affected by water quality and human health.

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Environmental Sustainability

Agency: National Science Foundation NSF PD 20-7643

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505695&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Environmental Sustainability** program is part of the **Environmental Engineering and Sustainability** cluster together with 1) the **Environmental Engineering** program and 2) the **Nanoscale Interactions** program.

The goal of the **Environmental Sustainability** program is to promote sustainable engineered systems that support human well-being and that are also compatible with sustaining natural (environmental) systems. These systems provide ecological services vital for human survival. Research efforts supported

by the program typically consider long time horizons and may incorporate contributions from the social sciences and ethics. The program supports engineering research that seeks to balance society's need to provide ecological protection and maintain stable economic conditions.

There are four principal general research areas that are supported:

- **Industrial ecology:** Topics of interest include advancements in modeling such as life cycle assessment, materials flow analysis, input/output economic models, and novel metrics for measuring sustainable systems. Innovations in industrial ecology are encouraged.
- **Green engineering:** Research is encouraged to advance the sustainability of manufacturing processes, green buildings, and infrastructure. Many programs in the Engineering Directorate support research in environmentally benign manufacturing or chemical processes. The Environmental Sustainability program supports research that would affect more than one chemical or manufacturing process or that takes a systems or holistic approach to green engineering for infrastructure or green buildings. Improvements in distribution and collection systems that will advance smart growth strategies and ameliorate effects of growth are research areas that are supported by Environmental Sustainability. Innovations in management of storm water, recycling and reuse of drinking water, and other green engineering techniques to support sustainability may also be fruitful areas for research.
- **Ecological engineering:** Proposals should focus on the engineering aspects of restoring ecological function to natural systems. Engineering research in the enhancement of natural capital to foster sustainable development is encouraged.
- **Earth systems engineering:** Earth systems engineering considers aspects of large scale engineering research that involve mitigation of greenhouse gas emissions, adaptation to climate change, and other global concerns.

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Process Systems, Reaction Engineering, and Molecular Thermodynamics

Agency: National Science Foundation NSF PD 20-1403

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505727&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Process Systems, Reaction Engineering and Molecular Thermodynamics** program is part of the Chemical Process Systems cluster, which also includes: 1) the **Catalysis** program; 2) the **Electrochemical Systems** program; and 3) the **Interfacial Engineering** program.

The goal of the **Process Systems, Reaction Engineering and Molecular Thermodynamics** program is to advance fundamental engineering research on the rates and mechanisms of chemical reactions, systems engineering and molecular thermodynamics as they relate to the design and optimization of chemical reactors and the production of specialized materials that have important impacts on society.

The program supports the development of advanced optimization and control algorithms for chemical processes, molecular and multi-scale modeling of complex chemical systems, fundamental studies on molecular thermodynamics, and the integration of this information into the design of complex chemical

reactors. An important area supported by the program focuses on the development of energy-efficient and environmentally-friendly chemical processes and materials.

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Cellular and Biochemical Engineering

Agency: National Science Foundation NSF PD 20-1491

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505721&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Cellular and Biochemical Engineering** (CBE) program is part of the **Engineering Biology and Health** cluster, which also includes: 1) the **Biophotonics** program; 2) the **Biosensing** program; 3) the **Disability and Rehabilitation Engineering** program; and 4) the **Engineering of Biomedical Systems** program.

The **Cellular and Biochemical Engineering** program supports fundamental engineering research that advances understanding of cellular and biomolecular processes. CBE-funded research may lead to the development of enabling technology for advanced biomanufacturing in support of the therapeutic cell, biochemical, biopharmaceutical, and biotechnology industries.

Fundamental to many research projects in this area is the understanding of how biomolecules, subcellular systems, cells, and cell populations interact, and how those interactions lead to changes in structure, function, and behavior. A quantitative treatment of problems related to biological processes is considered vital to successful research projects in the CBE program.

The program encourages highly innovative and potentially transformative engineering research leading to novel bioprocessing and biomanufacturing approaches. The CBE program also encourages proposals that effectively integrate knowledge and practices from different disciplines while incorporating ongoing research into educational activities.

Major areas of interest for the program include:

- Metabolic engineering and synthetic biology for biomanufacturing, including the design of synthetic metabolic components and synthetic cells,
- Quantitative systems biotechnology,
- Microbiome structure, function, synthesis, and maintenance,
- Protein and enzyme engineering, and
- Single cell and population dynamics and modeling in the context of biomanufacturing.

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Combustion and Fire Systems**Agency: National Science Foundation NSF PD 20-1407****RFP Website:**https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505699&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Combustion and Fire Systems** program is part of the Transport Phenomena cluster, which also includes 1) the **Fluid Dynamics** program; 2) the **Particulate and Multiphase Processes** program; and 3) the **Thermal Transport Processes** program.

The goal of the **Combustion and Fire Systems** program is to advance energy conversion efficiency, improve energy security, enable cleaner environments, and enhance public safety.

The program endeavors to create fundamental scientific knowledge that is needed for useful combustion applications and for mitigating the effects of fire. The program aims to identify and understand the controlling basic principles and to use that knowledge to create predictive capabilities for designing and optimizing practical combustion devices.

Important outcomes for this program include:

- broad-based tools — experimental, theoretical, and computational — that can be applied to a variety of problems in combustion and fire systems;
- science and technology for clean and efficient generation of power;
- discoveries that enable clean environments (for example, by reduction in combustion-generated pollutants); and
- enhanced public safety through research on fire growth, inhibition, and suppression.

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Fluid Dynamics**Agency: National Science Foundation NSF PD 20-1443****RFP Website:**https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505698&org=NSF&sel_org=NSF&from=fund

Brief Description: The **Fluid Dynamics** program is part of the Transport Phenomena cluster, which also includes 1) the **Combustion and Fire Systems** program; 2) the **Particulate and Multiphase Processes** program; and 3) the **Thermal Transport Processes** program.

The **Fluid Dynamics** program supports fundamental research toward gaining an understanding of the physics of various fluid dynamics phenomena. Proposed research should contribute to basic scientific understanding via experiments, theoretical developments, and computational discovery.

Major areas of interest and activity in the program include:

- **Turbulence and transition:** High Reynolds number experiments; large eddy simulation; direct numerical simulation; transition to turbulence; 3-D boundary layers; separated flows; multi-phase turbulent flows; flow control and drag reduction. A new area of emphasis is high speed boundary layer transition and turbulence; the focus would be for flows at Mach numbers greater than 5 to understand cross-mode interactions leading to boundary layer transition and the ensuing developing and fully developed turbulent boundary layer flows. Combined experiments and simulations are encouraged.
- **Bio-fluid physics:** Bio-inspired flows; biological flows with emphasis on flow physics.

- **Non-Newtonian fluid mechanics:** Viscoelastic flows; solutions of macro-molecules.
- **Microfluidics and nanofluidics:** Micro-and nano-scale flow physics.
- **Wind and ocean energy harvesting:** Focused on fundamental fluid dynamics associated with renewal energy.
- **Fluid-structure interactions:** This is an NSF-AFOSR (Air Force Office of Scientific Research) joint funding area focused on theory, modeling and/or experiments for hypersonics applications. A small number of awards (depending on availability of funds and proposal quality) will be provided and will be jointly reviewed by NSF and AFOSR using the NSF panel format. Actual funding format and agency split for an award will be determined after the proposal selection process. The AFOSR program that participates in this initiative is the Program on High Speed Aerodynamics (program officer: [Dr. Ivett Leyva](#)).

Awards: Standard grants including Faculty Early Career Development (CAREER), Grants for Rapid Response Research (RAPID) and EARly-concept Grants for Exploratory Research (EAGER), Grant Opportunities for Academic Liaison with Industry (GOALI) and Conferences, Workshops, and Supplements

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

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Grant Program: Secure and Trustworthy Cyberspace (SaTC)

Agency: National Science Foundation NSF 19-603

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19603/nsf19603.htm>

Brief Description: The goals of the SaTC program are aligned with the National Science and Technology Council's (NSTC) [Federal Cybersecurity Research and Development Strategic Plan](#) (RDSP) and [National Privacy Research Strategy](#) (NPRS) to protect and preserve the growing social and economic benefits of cyber systems while ensuring security and privacy. The RDSP identified six areas critical to successful cybersecurity research and development: (1) scientific foundations; (2) risk management; (3) human aspects; (4) transitioning successful research into practice; (5) workforce development; and (6) enhancing the research infrastructure. The NPRS, which complements the RDSP, identifies a framework for privacy research, anchored in characterizing privacy expectations, understanding privacy violations, engineering privacy-protecting systems, and recovering from privacy violations. In alignment with the objectives in both strategic plans, the SaTC program takes an interdisciplinary, comprehensive and holistic approach to cybersecurity research, development, and education, and encourages the transition of promising research ideas into practice.

The SaTC program welcomes proposals that address cybersecurity and privacy, and draw on expertise in one or more of these areas: computing, communication and information sciences; engineering; education; mathematics; statistics; and social, behavioral, and economic sciences. Proposals that advance the field of cybersecurity and privacy within a single discipline or interdisciplinary efforts that span multiple disciplines are each welcome.

Awards: Standard grants including Anticipated Funding Amount: \$53,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: Full Proposal Accepted Anytime

Contacts: Nina Amla, Program Director, CISE/CCF, telephone: (703) 292-7991, email: namla@nsf.gov
Shannon I. Beck, Associate Program Director/Program Coordinator, CISE/CNS, telephone: (703) 292-2487, email: sbeck@nsf.gov

Grant Program: Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)

Agency: National Science Foundation NSF 19-601

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19601/nsf19601.htm>

Brief Description: The National Science Foundation (NSF) plays a leadership role in developing and implementing efforts to enhance and improve STEM education in the United States. Through the NSF *Improving Undergraduate STEM Education* (IUSE) initiative, the agency continues to make a substantial commitment to the highest caliber undergraduate STEM education through a Foundation-wide framework of investments. The IUSE: EHR is a core NSF STEM education program that seeks to promote novel, creative, and transformative approaches to generating and using new knowledge about STEM teaching and learning to improve STEM education for undergraduate students. The program is open to application from all institutions of higher education and associated organizations. NSF places high value on educating students to be leaders and innovators in emerging and rapidly changing STEM fields as well as educating a scientifically literate public. In pursuit of this goal, IUSE: EHR supports projects that seek to bring recent advances in STEM knowledge into undergraduate education, that adapt, improve, and incorporate evidence-based practices into STEM teaching and learning, and that lay the groundwork for institutional improvement in STEM education. In addition to innovative work at the frontier of STEM education, this program also encourages replication of research studies at different types of institutions and with different student bodies to produce deeper knowledge about the effectiveness and transferability of findings.

IUSE: EHR also seeks to support projects that have high potential for broader societal impacts, including improved diversity of students and instructors participating in STEM education, professional development for instructors to ensure adoption of new and effective pedagogical techniques that meet the changing needs of students, and projects that promote institutional partnerships for collaborative research and development. IUSE: EHR especially welcomes proposals that will pair well with the efforts of NSF INCLUDES (https://www.nsf.gov/news/special_reports/nsfincludes/index.jsp) to develop STEM talent from all sectors and groups in our society.

Awards: Standard grants **Anticipated Funding Amount:** \$63,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: December 04, 2019

Engaged Student Learning and Institutional and Community Transformation Level 2 and 3
February 04, 2020

Contacts: Ellen Carpenter, telephone: (703) 292-5104, email: elcarpen@nsf.gov

Andrea L. Nixon, telephone: (703) 292-5323, email: anixon@nsf.gov

Grant Program: Inclusion Across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES)

Agency: National Science Foundation NSF 19-600

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19600/nsf19600.htm>

Brief Description: Through this solicitation, NSF Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES) will support Planning Grants to build capacity for the development of collaborative infrastructure to: (a) facilitate innovative partnerships, networks, and theories of action for broadening participation in science, technology, engineering, and mathematics (STEM) at scale and (b) lead to the establishment of future centers, alliances, or other large-scale networks to address a broadening participation challenge. While this solicitation is open to all, NSF INCLUDES Design and Development Launch Pilots are especially encouraged to apply, as a Planning Grant could serve as an intermediate conduit for bringing their exploratory pilot work to scale.

A hallmark of NSF INCLUDES is to support the development of collaborative infrastructure to achieve systemic change. Collaborative infrastructure refers to the process by which partnering organizations come together with a shared vision; map out mutually reinforcing activities; develop goals, objectives, and measures to chart their progress; engage in constant communication; and advance the potential for expansion, sustainability, and scaling that would not be possible otherwise.

Awards: Standard grants Anticipated Funding Amount: \$1,000,000 to \$3,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: December 03, 2019

Contacts: NSF INCLUDES, telephone: (703) 292-4635, email: nsfincludes@nsf.gov

Grant Program: Security and Preparedness (SAP)

Agency: National Science Foundation NSF PD 19-118Y

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505712&org=NSF&sel_org=NSF&from=fund

Brief Description: The Security and Preparedness (SAP) Program supports basic scientific research that advances knowledge and understanding of issues broadly related to global and national security. Research proposals are evaluated on the criteria of intellectual merit and broader impacts; the proposed projects are expected to be theoretically motivated, conceptually precise, methodologically rigorous, and empirically oriented. Substantive areas include (but are not limited to) international relations, global and national security, human security, political violence, state stability, conflict processes, regime transition, international and comparative political economy, and peace science. Moreover, the Program supports research experiences for undergraduate students and infrastructural activities, including methodological innovations. The Program does not fund applied research. In addition, we encourage you to examine the websites for the National Science Foundation's Accountable Institutions and Behavior (AIB) and Law and Science (LS) programs.

Awards: Standard grants

Letter of Intent: Not Required

Proposal Submission Deadline: January 15, 2020 and August 17, 2020

Contacts: Zaryab Iqbal - Program Director ziqbal@nsf.gov 703-292-7174 W13241

Mauricia Barnett -Social Scientist mbarnett@nsf.gov 703-292-7309 W13200A

Grant Program: EMERGING FRONTIERS IN RESEARCH AND INNOVATION (EFRI):

Distributed Chemical Manufacturing (DCheM)

Agency: National Science Foundation NSF 19-599

RFP Website:

https://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=13708&ods_key=nsf19599

Brief Description: The Emerging Frontiers in Research and Innovation (EFRI) program of the NSF Directorate for Engineering (ENG) serves a critical role in helping ENG focus on important emerging areas in a timely manner. This solicitation is a funding opportunity for interdisciplinary teams of researchers to embark on rapidly advancing frontiers of fundamental engineering research. For this solicitation, we will consider proposals that aim to investigate emerging frontiers in one of the following two research areas:

- Distributed Chemical Manufacturing (DCheM)
- Engineering the Elimination of End-of-Life Plastics (E3P)

This solicitation will be coordinated with the Directorate for Biological Sciences, the Directorate for Mathematical and Physical Sciences and the Directorate for Social, Behavioral and Economic Sciences.

EFRI seeks proposals with transformative ideas that represent an opportunity for a significant shift in fundamental engineering knowledge with a strong potential for long term impact on national needs or a grand challenge. The proposals must also meet the detailed requirements delineated in this solicitation. FURTHER INFORMATION: The Emerging Frontiers and Multidisciplinary Activities (EFMA) Office will host an informational webinar on Wednesday, September 18, 2019 at 1:00pm Eastern to discuss the EFRI program and answer questions about the FY 2020 solicitation. Details on how to join this webinar will be posted on the [EFMA website](#).

Awards: Standard grants; Proposals submitted to other program announcements and solicitations, including the Faculty Early Career Development Program (CAREER), must meet their respective deadlines; please refer to the deadline dates specified in the appropriate announcement or solicitation. Proposals for EARly-concept Grants for Exploratory Research (EAGER) or Rapid Response Research (RAPID) can be submitted at any time but Principal Investigators must contact the cognizant program director prior to submission. Proposals for supplements or workshops can be submitted at any time, and PIs are encouraged to contact the cognizant PD prior to submission.

Letter of Intent: LOI Due on November 4, 2019

Preliminary Proposal Deadline Date: December 2, 2019

Full Proposal Submission Deadline: March 26, 2020

Contacts: Sohi Rastegar srastega@nsf.gov (703) 292-8305

Louise R. Howe lhowe@nsf.gov (703) 292-2548

Grant Program: Research in the Formation of Engineers (RFE)

Agency: National Science Foundation NSF PD 19-1340

RFP Website:

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505681&org=NSF&sel_org=NSF&from=fund

Brief Description: The NSF Engineering (ENG) Directorate has launched a multi-year initiative, the *Professional Formation of Engineers*, to create and support an innovative and inclusive engineering profession for the 21st century. Professional Formation of Engineers (PFE) refers to the formal and informal processes and value systems by which people become engineers. It also includes the ethical responsibility of practicing engineers to sustain and grow the profession in order to improve quality of life for all peoples. The engineering profession must be responsive to national priorities, grand challenges, and dynamic workforce needs; it must be equally open and accessible to all.

Professional Formation of Engineers includes, but is not limited, to:

- Introductions to the profession at any age;
- Development of deep technical and professional skills, knowledge, and abilities in both formal and informal settings/domains;
- Development of outlooks, perspectives, ways of thinking, knowing, and doing;
- Development of identity as an engineer and its intersection with other identities; and
- Acculturation to the profession, its standards, and norms.

The goal of the Research in the Formation of Engineers (RFE) program is to advance our understanding of professional formation. It seeks both to deepen our fundamental understanding of the underlying processes and mechanisms that support professional formation and to demonstrate how professional formation is or can be accomplished. Ultimately RFE aims to transform the engineer-formation system, and thus the impact of proposed projects on this system must be described. Principal Investigators (PIs) should provide a roadmap detailing how they envision the proposed research will eventually broadly impact practice within the engineer-formation system, even if these activities are not within the scope of the submitted proposal.

Awards: Standard grants; Proposals submitted to other program announcements and solicitations, including the Faculty Early Career Development Program (CAREER), must meet their respective

deadlines; please refer to the deadline dates specified in the appropriate announcement or solicitation. Proposals for EARly-concept Grants for Exploratory Research (EAGER) or Rapid Response Research (RAPID) can be submitted at any time but Principal Investigators must contact the cognizant program director prior to submission. Proposals for supplements or workshops can be submitted at any time, and PIs are encouraged to contact the cognizant PD prior to submission.

Letter of Intent: Not Required

Proposal Submission Deadline: Proposals Accepted Anytime

Contacts: Julie P. Martin julmarti@nsf.gov 703-292-8657

Grant Program: NSF/Intel Partnership on Foundational Microarchitecture Research (FoMR)

Agency: National Science Foundation NSF 19-598

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19598/nsf19598.htm>

Brief Description: The NSF/Intel Partnership on Foundational Microarchitecture Research will support transformative microarchitecture research targeting improvements in instructions per cycle (IPC). This solicitation seeks microarchitecture technique innovations beyond simplistic, incremental scaling of existing microarchitectural structures. Specifically, FoMR seeks to advance research that has the following characteristics: (1) high IPC techniques ranging from microarchitecture to code generation; (2) “microarchitecture turbo” techniques that marshal chip resources and system memory bandwidth to accelerate sequential or single-threaded programs; and (3) techniques to support efficient compiler code generation. Advances in these areas promise to provide significant performance improvements that continue the trends characterized by Moore’s Law.

Awards: Standard grants; **Anticipated Funding Amount:** \$2,500,000

Letter of Intent: Not Required

Proposal Submission Deadline: November 15, 2019 - November 20, 2019

Contacts: Yuanyuan Yang, Program Director, CCF, telephone: (703) 292-8910, email: yyang@nsf.gov

- Jeff Parkhurst, Center Program Director, Intel Labs, telephone: (916) 356-2508, email: jeff.parkhurst@intel.com
 - Matt Haycock, Center Executive Sponsor, Vice President, Intel Labs, telephone: (503) 712-2872, email: matthew.haycock@intel.com
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Grant Program: Postdoctoral Research Fellowships in Biology (PRFB)

Agency: National Science Foundation NSF 19-597

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19597/nsf19597.htm>

Brief Description: The Directorate for Biological Sciences (BIO) awards Postdoctoral Research Fellowships in Biology (PRFB) to recent recipients of the doctoral degree for research and training in *selected* areas supported by BIO and with special goals for human resource development in biology. The fellowships encourage independence at an early stage of the research career to permit Fellows to pursue their research and training goals in the most appropriate research locations regardless of the availability of funding for the Fellows at that site. For applications under this solicitation, these areas are (1) *Broadening Participation of Groups Underrepresented in Biology*, (2) *Interdisciplinary Research Using Biological Collections*, (3) *National Plant Genome Initiative (NPGI) Postdoctoral Research Fellowships* and (4) *Integrative Research Investigating the Rules of Life Governing Interactions Between Genomes, Environment and Phenotypes*.

Awards: Fellowships; **Anticipated Funding Amount:** \$12,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: November 19, 2019

Contacts: Amanda A. Simcox (Areas 1, 2 & 4), telephone: (703) 292-2532, email: asimcox@nsf.gov
• Diane J. Okamuro (Area 3), telephone: (703) 292-8420, email: dokamuro@nsf.gov

Grant Program: NSF/DOE Partnership in Basic Plasma Science and Engineering

Agency: National Science Foundation NSF 19-596

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19596/nsf19596.htm>

Brief Description: Plasma Physics is a study of matter and physical systems whose intrinsic properties are governed by collective interactions of large ensembles of free charged particles. 99.9% of the visible Universe is thought to consist of plasmas. The underlying physics of the collective behavior in plasmas has applications to space physics and astrophysics, materials science, applied mathematics, fusion science, accelerator science, and many branches of engineering.

The National Science Foundation (NSF), with participation of the Directorates for Engineering, Geosciences, and Mathematical and Physical Sciences, and the Department of Energy, Office of Science, Fusion Energy Sciences are continuing the joint Partnership in Basic Plasma Science and Engineering begun in FY1997 and renewed several times since. As stated in the original solicitation (NSF 97-39), which is superseded by the present solicitation, the goal of the Partnership is to enhance basic plasma science research and education in this broad, multidisciplinary field by coordinating efforts and combining resources of the two agencies. The current solicitation also encourages submission of proposals to perform basic plasma experiments at NSF and/or DOE supported user facilities, including facilities located at DOE national laboratories, designed to serve the needs of the broader plasma science and engineering.

Awards: Standard grants; **Anticipated Funding Amount:** \$4,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: November 18, 2019

Contacts: Vyacheslav (Slava) Lukin, Program Director, Division of Physics, NSF, telephone: (703) 292-7382, email: vlukin@nsf.gov

- Nigel A. Sharp, Program Director, Division of Astronomical Sciences, NSF, telephone: (703) 292-4905, email: nsharp@nsf.gov
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Grant Program: Antarctic Research

Agency: National Science Foundation NSF 19-595

RFP Website: <https://www.nsf.gov/pubs/2019/nsf19595/nsf19595.htm>

Brief Description: The Antarctic Sciences Section (ANT) of the Office of Polar Programs (OPP) supports cutting-edge research that (1) expands fundamental knowledge of the Antarctic and the natural laboratory it represents across a range of disciplines, (2) improves understanding of interactions between the Antarctic and Southern Ocean region and Earth system, and (3) utilizes the unique characteristics of the Antarctic continent as an observing platform. The U.S. Antarctic Program (USAP) supports scientific research in Antarctica and the Southern Ocean with logistics provided by OPP's Antarctic Infrastructure and Logistics Section (AIL). Antarctic fieldwork is supported only for research that must be performed, or is best performed, in Antarctica. ANT encourages research, using existing samples, data, and models, that does not require fieldwork. ANT also encourages research that crosses and combines, disciplinary perspectives and approaches.

Awards: Standard grants; **Anticipated Funding Amount:** \$55,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: Proposals Accepted Anytime

Contacts: Jennifer Burns, Program Director, Organisms and Ecosystems, W7178, telephone: (703) 292-2120, email: jmmburns@nsf.gov

- Paul M. Cutler, Program Director, Glaciology, Ice Core Science, and Geomorphology, W7217, telephone: (703) 292-4961, fax: (703) 292-9025, email: pcutler@nsf.gov
 - Michael E. Jackson, Program Director, Earth Science, Geodesy, Geophysics, and Antarctic Instrumentation, W7239, telephone: (703) 292-7120, email: mejacks@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

National Institutes of Health

Grant Program: NIDCR Small Grant Program for New Investigators (R03 Clinical Trial Not Allowed)

Agency: National Institutes of Health PAR-19-370

RFP Website: <https://grants.nih.gov/grants/guide/pa-files/PAR-19-370.html>

Brief Description: The NIDCR Small Grant Program for New Investigators (R03) is intended to provide support for New Investigators who are in the early stages of establishing independence in the areas of oral, dental and craniofacial research. Applications are invited from [New Investigators](#) whose proposed research addresses any of the goals described in the [NIDCR Strategic Plan](#). In brief, the NIDCR Strategic Plan is dedicated to enhancing dental, oral and craniofacial health through fundamental discoveries and

the clinical application of these discoveries. For more detailed information regarding scientific areas of interest and for program official contacts, please visit the [NIDCR website](#).

The R03 is intended to support small research projects that can be carried out in a short period of time with limited resources. This program will support small pilot or feasibility studies and developmental research projects with the intention of obtaining sufficient preliminary data to support the subsequent submission of a competitive investigator initiated R01 or equivalent research application.

Award: A budget for direct costs of up to \$200,000 may be requested. Application budgets should not exceed \$100,000 in direct costs in either year.

Letter of Intent: Not Applicable

Deadline: Standard dates apply 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.

The first standard application due date for this FOA is October 16, 2019.

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: Trans-Agency Blood-Brain Interface Program (R61/R33 - Clinical Trials Not Allowed)

Agency: National Institutes of Health RFA-HL-20-021

RFP Website: <https://grants.nih.gov/grants/guide/rfa-files/RFA-HL-20-021.html>

Brief Description: To date, the role of blood in the Blood-Brain Interface (e.g., blood-derived factors, blood-based biomarkers, circulating exosomes) in the pathogenesis of neurological disorders and brain injury states (e.g., brain trauma, stroke, amyotrophic lateral sclerosis, multiple sclerosis, and Alzheimer's Disease) and the underlying neurovascular mechanisms remain largely unknown and under-researched. The intent of this FOA is to stimulate the development of a new field of blood-based science by re-defining the neurovascular unit as a component of the blood-brain interface. This will facilitate development of human-based neurovascular-blood models to identify targets for diagnostics and regulation of the blood-brain interface through multi-PI collaborations. An improved human-like BBB prototype/model can serve as an invaluable resource to the scientific community, and complement BBB research currently based on animal models.

The first phase (R61) will focus on the development and/or the adaptation of relevant investigative models that harness the informative power of novel scientific and technologic developments (e.g., -Omics, induced pluripotent stem cells (iPSC), microfluidics, single cell analysis, or systems biology) to evaluate the role of the blood/vascular components across the Blood-Brain Interface. The second phase (R33) will seek to characterize potential mechanisms underlying human BBB function using the model(s) developed in the first phase.

Award: Up to 5 new awards are expected to be funded in FY2020, and up to 5 new awards in FY 2021, for a total of up to 10 new awards. Application budgets are limited to \$425,000 direct costs per year.

Letter of Intent: February 10, 2020

Deadline: December 2, 2019, October 19, 2020

All applications are due by 5:00 PM local time of applicant organization. All [types of non-AIDS applications](#) allowed for this funding opportunity announcement are due on the listed date(s).

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

Grant Program: SBIR/STTR Commercialization Readiness Pilot (CRP) Program Technical Assistance (SB1, R44) Clinical Trial Not Allowed

Agency: National Institutes of Health PAR-19-334 [SB1](#) Commercialization Readiness Pilot Program (CRP)

RFP Website: <https://grants.nih.gov/grants/guide/pa-files/PAR-19-334.html>

Brief Description: The SBIR and STTR programs were reauthorized and extended through 2022 under Public Law 114-328, Section 1834 and Public Law 115-232, including the reauthorization of the Commercialization Readiness Pilot (CRP) Program to the NIH. This funding opportunity announcement (FOA) aims to re-implement the CRP Program at NIH and CDC. The goal of this FOA is to facilitate the transition of previously funded SBIR/STTR Phase II projects to the commercialization stage by providing additional support for later stage technical assistance activities not typically supported through Phase II or Phase IIB grants or contracts. Only those applicants who have recently received Phase II or Phase IIB funding from one of the participating NIH Institutes/Centers or CDC are eligible for this program, as described in Section III.1.

CRP awards can either be a "Type 3" Revision (Competitive Revision/Supplement) to a currently active Phase II or Phase IIB award or can be a "Type 2" Renewal of a Phase II or IIB SBIR/STTR award that has ended and is closed out.

Scientific/Technical Scope

NIH and CDC ICs participating in this FOA may accept applications based on any topic within their mission or based on specific topics. While general topic areas are listed below, applicants should read the specific interests of the ICs carefully prior to submission.

Topic areas appropriate for this FOA include, but are not limited to the following:

Development of regulatory strategy, including assembling the documentation needed for the Investigational New Drug (IND) or Investigational Device Exemption (IDE) submission to the Federal Drug Administration (FDA).

Development of reimbursement strategy.

Design and planning for a clinical trial including: Preparation of documents required to support a clinical trial (e.g., case report forms, pharmacy manual, study coordinator manual, monitoring plan), preparation of clinical trial protocol, and preparation of investigator's brochure.

Development of an intellectual property strategy, including analysis of the patent landscape in the US and abroad.

Technical assistance associated with manufacturing.

Other technical assistance offered through a third-party technical assistance provider, including market research.

Unlike SBIR and STTR research and development grants or contracts, companies have the option of out-sourcing a significant portion of the work requested through the CRP, provided the expert services are appropriate for the work proposed and well justified in the application. The SBC should perform a substantive role in the oversight and management of the R&D proposed, including appropriate oversight of all scientific, programmatic, financial, and administrative matters related to the grant.

CRP awards cannot be used to pay filing fees associated with filing patents or FDA submissions.

CRP applicants cannot request Technical and Business Assistance (TABAs) funding.

Research and development activities outside of technical assistance, such as clinical and vertebrate animal research, are not permitted through this FOA. Applicants should consider some NIH Institutes/Centers participate in the following:

The Commercialization Readiness Pilot (CRP) Program: Technical Assistance and Late Stage Development Clinical Trial Required FOA ([PAR-19-335](#)) supports both technical assistance and late stage research and development activities for Phase II and Phase IIB awardees that involve clinical trials. The Commercialization Readiness Pilot (CRP) Program: Technical Assistance and Late Stage Development Clinical Trial Not Allowed FOA ([PAR-19-333](#)) supports both technical assistance and late stage research and development activities for Phase II and Phase IIB awardees that do not involve clinical trials.

Award: Budgets up to \$300,000 total funding support (direct costs, indirect costs, fee) for the entire budget period may be requested except for the CRP applications associated with the Institutes listed below:

National Cancer Institute (NCI): total funding support may not exceed \$250,000 in total costs (direct costs, indirect costs, fee)

Applicants are strongly encouraged to contact program officials prior to submitting any application in excess of the hard caps listed above and early in the application planning process. In all cases, applicants should propose a budget that is reasonable and appropriate for completion of the research project.

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

Deadline: [Standard dates](#) apply. All applications are due by 5:00 PM local time of applicant organization.

All types of applications allowed for this funding opportunity announcement are due on the listed date(s).

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

Grant Program: Explainable Artificial Intelligence for Decoding and Modulating Neural Circuit Activity Linked to Behavior (R01 Clinical Trial Optional)

Agency: National Institutes of Health PAR-19-344

RFP Website: <https://grants.nih.gov/grants/guide/pa-files/PAR-19-344.html>

Brief Description: Despite the rapid growth and adoption of machine learning and artificial intelligence (AI) techniques to scientific questions, the lack of insight into the inner workings of these approaches has impeded full scientific understanding. For NIMH, the ultimate goal is a deep mechanistic understanding of normative brain functions and the pathophysiology of psychiatric disorders. However, machine learning techniques have often been applied to categorize and predict neural and behavioral outcomes without providing an understanding of what drives those predictions and classifications. Without knowing the factors critical to a machine-learning based outcome, it is difficult to optimize these approaches for novel conditions or to identify targets for further study or intervention development.

eXplainable Artificial Intelligence (XAI) consists of artificial intelligence algorithms in which the processes of arriving at final actions (e.g., predictions, classifications, and recommendations) can be easily understood by its users. XAI aims to overcome limitations of classical machine learning, including a lack of transparency and non-generalizability. In optimizing computations to maximize accuracy or performance, a standard AI may learn useful rules from the specific training set. However, it may also learn inappropriate or non-generalizable rules. XAI provides methods to examine existing machine learning models more closely and new approaches that are explicitly designed to provide greater transparency. In an open and transparent XAI, users should have the ability to audit rules to discover how likely it is that the system will generalize outside a specific training-set to future real-world data.

NIMH is interested in transforming classical ‘black box’ machine learning models into XAI ‘glass box’ models, without significantly sacrificing performance. The goal of this FOA is to encourage investigators to apply XAI techniques to further our understanding of the neural circuitry linked to behavior and to improve our understanding of therapeutic strategies to enhance cognitive, affective, or social function. To develop new treatments for mental illness, a better understanding of how to modulate neural dynamics responsible for complex functional domains and/or maladaptive behaviors is critical. In order to achieve this understanding using XAI techniques, collaborations between computational and experimental investigators are strongly encouraged. In the context of mental health, the amount and type of explanatory information accessed may vary based on the stakeholder (clinicians, patients, or researchers) interacting with the AI system.

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

Letter of Intent: February 10, 2020

Deadline: March 10, 2020, March 10, 2021, March 10, 2022

All applications are due by 5:00 PM local time of applicant organization. All [types of non-AIDS applications](#) allowed for this funding opportunity announcement are due on the listed date(s). Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: 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.

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

Grant Program: NRL Long Range Broad Agency Announcement (BAA) for Basic and Applied Research

Agency: Department of Defense Naval Research Laboratory N00173-19-S-BA01

Website: <https://www.nrl.navy.mil/doing-business/Current-NRL-BAA>

Brief Description: The Naval Research Laboratory (NRL) The Naval Research Laboratory (NRL) is the Navy's corporate laboratory. NRL conducts basic and applied research for the Navy in a variety of scientific and technical disciplines. The basic research program is driven by perceptions about future requirements of the Navy. NRL conducts most of its research program at its own facilities but also funds some related research such as anticipated by this announcement. More extensive research support

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

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

Awards: Various

Proposal Deadline: September 05, 2020

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

[General Inquiries](#)

Grant Program: DARPA Young Faculty Award

Agency: Department of Defense DARPA DARPA-RA-19-01

Website:

https://www.fbo.gov/index?s=opportunity&mode=form&id=74f9691bce51a95c5a2380dad5c787b5&tab=core&_cview=1

Brief Description: The Defense Advanced Research Projects Agency (DARPA) Young Faculty Award (YFA) program aims to identify and engage rising stars in junior faculty positions in academia and equivalent positions at non-profit research institutions and expose them to Department of Defense (DoD) and National Security challenges and needs. In particular, this YFA will provide high-impact funding to elite researchers early in their careers to develop innovative new research directions in the context of enabling transformative DoD capabilities. The long-term goal of the program is to develop the next generation of scientists and engineers in the research community who will focus a significant portion of their future careers on DoD and National Security issues. DARPA is particularly interested in identifying outstanding researchers who have previously not been performers on DARPA programs, but the program is open to all qualified applicants with innovative research ideas.

Awards: Various

Executive Summary Due Date: September 18, 2019, 4:00 p.m.

FAQ Submission Deadline: November 9, 2019, 4:00 p.m. See Section VIII.A.

Full Proposal Due Date: November 19, 2019, 4:00 p.m.

Contact Information: RA Email: YFA2020@darpa.mil

Grant Program: Semantic Forensics (SemaFor)

Agency: Department of Defense DARPA HR001119S0085

Website:

https://www.fbo.gov/index?s=opportunity&mode=form&id=480a2d882750ff2349bf79d166f74498&tab=core&_cview=1

Brief Description: The Semantic Forensics (SemaFor) program will develop technologies to automatically detect, attribute, and characterize falsified multi-modal media assets (text, audio, image, video) to defend against large-scale, automated disinformation attacks. Statistical detection techniques have been successful, but media generation and manipulation technology is advancing rapidly. Purely statistical detection methods are quickly becoming insufficient for detecting falsified media assets. Detection techniques that rely on statistical fingerprints can often be fooled with limited additional resources (algorithm development, data, or compute). However, existing automated

media generation and manipulation algorithms are heavily reliant on purely data driven approaches and are prone to making semantic errors. For example, GAN-generated faces may have semantic inconsistencies such as mismatched earrings. These semantic failures provide an opportunity for defenders to gain an asymmetric advantage. A comprehensive suite of semantic inconsistency detectors would dramatically increase the burden on media falsifiers, requiring the creators of falsified media to get every semantic detail correct, while defenders only need to find one, or a very few, inconsistencies. SemaFor seeks to develop innovative semantic technologies for analyzing media. Semantic detection algorithms will determine if media is generated or manipulated. Attribution algorithms will infer if media originates from a particular organization or individual. Characterization algorithms will reason about whether media was generated or manipulated for malicious purposes. These SemaFor technologies will help identify, deter, and understand adversary disinformation campaigns.

Awards: Various

Abstract Due Date: September 11, 2019, 12:00 noon (ET)

Proposal Due Date: November 21, 2019, 12:00 noon (ET)

Contact Information: Matt Turek, Program Manager, DARPA/I2O BAA Email: SemaFor@darpa.mil

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&_cvview=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-with-us/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: 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;

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

- 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 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: Minority Education, Workforce, and Training Program

Agency: Department of Energy DE-FOA-0002042

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

Brief Description: The MEWT Program is designed to foster collaboration amongst MSIs, MBEs, DOE program offices, industry, state and local government agencies and other federal agencies to increase engagement and capabilities of underserved communities within STEM and energy fields.

Awards: Various; Available Funding: \$4,000,000

Proposal Submission Deadline: October 07, 2019

Contact: Grant Specialist Obiajulum Diei-Anene 202-287-1885 obiajulum.diei-anene@hq.doe.gov

Grant Program: Stewardship Science Academic Alliances (SSAA) Program

Agency: Department of Energy DE-FOA-0002149

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

Brief Description: The Stewardship Science Academic Alliances (SSAA) Program was established in 2002 to support state-of-the-art research at U.S. academic institutions in areas of fundamental physical science and technology of relevance to the SSP mission. The SSAA Program provides the research experience necessary to maintain a cadre of trained scientists at U.S. universities to meet the nation's current and future SSP needs, with a focus on those areas not supported by other federal agencies. It supports the DOE/NNSA's priorities both to address the workforce specific needs in science, technology, engineering, and mathematics and to support the next generation of professionals who will meet those needs.

Awards: Various; Available Funding: \$10,000,000

Proposal Submission Deadline: October 29, 2019

Contact: FedConnect.net

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: NASA Space Technology Graduate Research Opportunities - Fall 2020

Agency: NASA 80HQTR19NOA01-20NSTGRO_B4

Website: <https://nspires.nasaprs.com/external/solicitations/summary!init.do?solId=%7B3691C1EE-588D-6D31-4DF0-361AFE16E9E9%7D&path=open>

Brief Description: This call for graduate student space technology research proposals, titled NASA Space Technology Graduate Research Opportunities – Fall 2020 (NSTGRO20), solicits proposals on behalf individuals pursuing or planning to pursue master's or doctoral (Ph.D.) degrees in relevant space technology disciplines at accredited U.S. universities. NASA Space Technology Graduate Researchers will perform innovative space technology research and will improve America's technological competitiveness by providing the Nation with a pipeline of innovative space technologies. NASA Space Technology Graduate Researchers will perform research at their respective campuses and at NASA Centers. In addition to their faculty advisor, each recipient will be matched with a technically relevant and community-engaged NASA researcher who will serve as the research collaborator on the award. Through this collaboration, graduate students will be able to take advantage of broader and/or deeper space technology research opportunities directly related to their academic and career objectives, acquire a more detailed understanding of the potential end applications of their space technology efforts, and directly disseminate their research results within the NASA community.

Awards: Awards resulting from this solicitation will be made in the form of grants to accredited U.S. universities with the faculty advisor as the Principal Investigator (PI).

Proposal Deadline: November 5, 2019

Contact: Claudia M Meyer NASA Space Technology Research Grants Phone: 202-358-4717 Fax: 202-358-3602

[STRG Program Exec](#)

Grant Program: Use of the NASA Physical Sciences Informatics System

Agency: NASA NNH17ZTT001N-17PSI-F

Website: <https://nspires.nasaprs.com/external/>

Brief Description: NASA plans to host a proposers' conference via Webex shortly after the release of the Appendix to provide more information and to answer questions about the NRA and the PSI system. NASA's Physical Sciences Research Program conducts fundamental and applied physical sciences research, with the objective of enabling exploration and pioneering scientific discovery. NASA's experiments in the various disciplines of physical science reveal how physical systems respond to the near absence of gravity. They also reveal how other forces that on Earth are small, as compared to gravity, can dominate system behavior in space.

The PSI system (<http://psi.nasa.gov>) is an online, publicly accessible database of completed physical science reduced-gravity flight experiments conducted on the ISS, on Space Shuttle flights, on Free Flyers, or on commercial cargo flights to and from the ISS, and related ground-based studies. It is a tool designed for researchers to data mine information from reduced-gravity physical sciences experiments and use it to further science in accordance with the open science approach, while also meeting the requirements of the nation's Open Data Policy. This NRA solicits ground-based research proposals that present a compelling case on how the experimental data from the PSI system will be used to promote the advancement of further research. Proposers must show a clear path from the scientific data obtained from the PSI system to the proposed investigation. In addition, the project must address an important problem in the proposed area of research and advance scientific knowledge or technology.

This NRA will remain open until 2022, with planned annual opportunities to propose to be provided through a series of appendices. This announcement is for the release of Appendix F, which solicits proposals in the following five research areas: Combustion Science, Complex Fluids, Fluid Physics, Fundamental Physics and Materials Science. The Appendix specifically solicits proposals that utilize data from eligible investigations in the PSI; see the full Appendix F for the list of the eligible PSI investigations.

Awards: Various

Proposal Deadline: Proposals for Appendix F are due on or about December 16, 2019.

Contact: Koushik Datta Dr. Francis Chiamonte, Program Scientist for Physical Sciences

[Contact email](#)

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-DD75-0230277DDDAC%7D&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?sollId={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**Simons and Moore Foundations****Grant Program: Origin of the Eukaryotic Cell Solicitation****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.

Proposal Deadline: September 30, 2019

Streamlyne Question of the Week

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

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

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

Streamlyne Information

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

New "How to Do" videos: <http://www5.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.

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.
