NJIT Research Newsletter

Issue: ORN-2018-44

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

Grant Opportunity Alerts

Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: Mid-scale Research Infrastructure-1 (Mid-scale RI-1); National Robotics Initiative 2.0; Advanced Computing Systems & Services; Campus Cyberinfrastructure (CC*); Enabling Quantum Leap: Quantum Idea Incubator for Transformational Advances in Quantum Systems (QII - TAQS); Frontier Research in Earth Sciences (FRES); Ideas Lab: Cross-cutting Initiative in CubeSat Innovations; CNH2: Dynamics of Integrated Socio-Environmental Systems; Enabling Discovery through GEnomic Tools (EDGE); Materials Innovation Platforms (MIP); Training-based Workforce Development for Advanced Cyberinfrastructure (CyberTraining); EarthCube Office; NSF National Science Foundation Research Traineeship (NRT) Program; CyberCorps® Scholarship for Service (SFS); Methodology, Measurement, and Statistics (MMS); Harnessing the Data Revolution (HDR): Data Science Corps (DSC); Materials Research Science and Engineering Centers (MRSEC); Designing Materials to Revolutionize and Engineer our Future (DMREF); Ceramics (CER); Cybersecurity Innovation for Cyberinfrastructure (CICI); CISE Community Research Infrastructure (CCRI)

NIH: Research on Current Topics in Alzheimer's Disease and Its Related Dementias (R01); NIH Small Research Grant Program (R03); NIH Exploratory/Developmental Research Grant Program (Parent R21); NIH Research Project Grant (Parent R01); Computational Genomics and Data Science Opportunities for Small Business (R43/R44) NIH Small Research Grant Program (Parent R03); BRAIN Initiative: Research Resource Grants for Technology Integration and Dissemination (U24); BRAIN Initiative: Research on the Ethical Implications of Advancements in Neurotechnology and Brain Science (R01)

Department of Defense/US Army/DARPA/ONR: FY19 Office of Naval Research (ONR) Navy and Marine Corps Science, Technology, Engineering & Mathematics (STEM), Education and Workforce Program; Machine-Assisted Analytic Rapid-Repository System (MARS) Broad Agency Announcement; Electronic Warfare Technology; Microsystems Technology Office (MTO); AFRL/RXC Structural Materials Open BAA; BROAD AGENCY ANNOUNCEMENT (BAA) for Extramural Biomedical Research and Development; NRL Long Range Broad Agency Announcement (BAA) for Basic and Applied Research

Department of Education: Institute of Education Sciences (IES)

EPA: A National Student Design Competition Focusing on People, Prosperity and the Planet - Safe and Sustainable Water Resources

Department of Energy: Science Undergraduate Laboratory Internship (SULI); Transformational Sensing Capabilities for Monitoring the Subsurface; Advanced Systems Integration for Solar Technologies

NASA: Second Heliophysics Space Weather Operations to Research; Use of the NASA Physical Sciences Informatics System - Appendix E National Endowment of Humanities: Humanities Connections Implementation Grants

National Endowment of Humanities: Digital Humanities Advancement Grants; Summer Seminars and Institutes; Collaborative Research Grants

Environment Research and Education Foundation: Research on Research on Sustainable Solid Waste Management and Recycling

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Special Announcements

President's Forum
Inauguration of the Institute of Space Weather Sciences
2018 NJIT Research Institutes, Centers and Laboratories Showcase

November 27, 2018
Ballroom A/B, Campus Center

11.00 AM – 11.15 AM: Program Schedule Announcement
  Atam Dhawan, Senior Vice Provost for Research

11.15 AM – 12.15 PM: Research Centers and Institutes e-Poster Session

12.15 PM – 1.00 PM: Lunch and Networking Session

1.00 PM – 1.15 PM: Welcome Remarks: Inauguration Institute of Space Weather Sciences
  Joel Bloom, President
  Vince DeCaprio, Vice Chair, BOT
  Fadi Deek, Provost and Senior Executive VP
  Atam Dhawan, Senior Vice Provost for Research

1.15 PM – 1.30 PM: Institute Mission and Introduction of Keynote Speaker
  Haimin Wang, Director, Institute of Space Weather Sciences Research

1.30 PM – 2.30 PM: President's Forum: Keynote Speaker
  Mona Kessel, PhD, Program and Research Scientist, NASA GSFC

2.30 PM – 3.00 PM: Concluding Remarks and Networking with e-Poster Session

NJIT Institute for Space Weather Sciences Research: Research in space weather understanding and forecasting is critically important for national security and the economy. This is reflected in the 2015 National Space Weather Strategy and Action Plan issued by the National Science and Technology Council of the Executive Office of the President. The source of space weather at Earth is

activity from the Sun. Integrated research of the solar interior, solar atmosphere, solar eruptions, the propagation of disturbances through the heliosphere to Earth, and subsequent effects at Earth, requires the use of advanced observations, modeling, and big data analysis tools. Such integrated research is essential to investigate this complicated but vitally important science and engineering topic.   The establishment of the Institute for Space Weather Sciences (ISWS) is targeted at the organization of coordinated efforts in this strategic research and education direction, using unique capabilities existent at NJIT. The Institute will allow and encourage interdisciplinary and transdisciplinary collaborations to further foster national and international research and academic programs with exceptional synergy to unfold the technical challenges of space weather The Institute will also educate future scientists and workforce participants on the development of next generation technologies in many areas including solar and terrestrial sciences, telecommunications, and big data analytics and modeling.

About the Keynote Speaker: Dr. Mona Kessel has been a scientist at NASA for 27 years, the first 15 years at Goddard Space Flight Center in Maryland and the last 12 at NASA Headquarters in Washington, DC. She has extensive knowledge of the sun and the interaction of the sun with the Earth and the solar system. She has performed fundamental research on processes in the solar wind and within Earth's magnetosphere including plasma transport, energization and loss, and vortices and instabilities. She is recognized as an authoritative source for the science of Earth's radiation belts and the Van Allen Probes mission; her Van Allen related papers have been cited more than 500 times. Dr. Kessel has crossed traditional research lines and explored uncommon paths – like understanding our Milky Way galaxy with invisible light and sonifying data for an alternate viewpoint.

On a personal level, Dr. Kessel's first connection to space was looking at Comet Halley in 1986 through a telescope on several clear nights in the Kansas prairie. She ended up in the space program because an opportunity appeared at the right time and she was able to grasp it. Some of her favorite moments have been mentoring early career scientists, especially young women who are now no longer rare compared to when Dr. Kessel got started. Her advice is to pursue a career in space physics if you really love it, but also learn how to write and how to speak – you'll be doing both often.

Dr. Kessel is also an avid cyclist and enjoys commuting to work by bike and going on multi-day rides with her daughter. In retirement, she plans to cycle from Florida to Maine along the East Coast Greenway.

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

Limited Submission Internal Competition for NSF MRI Programs

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 $100,000[1] 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, 2019 - January 22, 2019

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 $100,000[1] 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 vol untary 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, 2018: Please submit up to 5 pages pre-proposal white paper to your respective Dean by November 1, 2018 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, 2018. The final selection will be announced by November 15, 2018. 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.

Recent Research Grant and Contract Awards

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

PI: Xin Di (PI)
Department: Biomedical Engineering
Grant/Contract Project Title: Cognitive and Brain Network Dynamics in Aging
Funding Agency: NIH
Duration: 03/01/18-02/28/19

PI: Dale Gary (PI), Haimin Wang (Co-PI), Ju Jing (co-PI), Grehory Fleishman (Co-PI), Gelu Nita (Co-PI) and Yan Xu (Co-PI)
Department: Center for Solar Terrestrial Research
Grant/Contract Project Title: Spatial Distribution of Flare-Accelerated Particles and Their Role as Seed Particles for SEPs
Funding Agency: NASA
Duration: 10/24/18-10/23/22

PI: Xuan Liu (Co-PI)
Department: Electrical and Computer Engineering
Grant/Contract Project Title: Compressive Optical Coherence Tomography
Funding Agency: Nokia Bell Labs
Duration: 05/01/18-04/31/19

PI: Simon Garnier (PI)
Department: Biological Sciences
Grant/Contract Project Title: Collaborative Research: ABI Development: A User-friendly Tool for Highly Accurate Video Tracking
Funding Agency: NSF
Duration: 08/01/18-07/31/19

In the News…

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

Pentagon Urged to Tap Outside Sources of Innovation: The congressionally authorized Commission on the National Defense Strategy for the United States says the Defense Department "should broaden its efforts to find and incorporate new technologies developed commercially by the private sector. Established organizations like the Defense Advanced Research Projects Agency (DARPA), as well as the newer Defense Innovation Unit (DIU) and Defense Innovation Board, are focused on this task. The government R&D labs, University Affiliated Research Centers (UARCs), and Federally Funded Research and Development Centers (FFRDCs) can play a greater role as well." The commission notes a trend of "more innovation taking place outside of the government in our commercial sector, universities, and R&D labs."

Social Challenges of AI: The National Science Foundation and the Partnership on AI "will jointly support high-risk, high-reward research at the intersection of the social and technical dimensions of AI. Priority will be given to collaborative projects that integrate computer/computational science with the social, behavioral, and economic sciences." The aim of these EArly-concept Grants for Exploratory Research (EAGERs) is "to understand the social challenges arising from AI technology and enable scientific contributions to overcome them." **Read the Dear Colleague letter.**

CISE Community Research Infrastructure (CCRI): These represent the high end of infrastructure projects to be funded by NSF's Computer and Information Science and Engineering (CISE) directorate, which will also fund "medium" ensembles and planning. The infrastructure is intended to "support diverse communities of CISE researchers pursuing focused research agendas (and) developing the accompanying user services and engagement needed to attract, nurture, and grow a robust research community that is actively involved in determining directions for the infrastructure as well as management of the infrastructure." For more information, please see the RFP details in the Grant Opportunity section or https://www.nsf.gov/pubs/2019/nsf19512/nsf19512.htm?org=NSF

Convergence, Inclusion, and Societal Impact: These are the priorities spelled out in the long-awaited Gen-4 Engineering Research Centers solicitation from the National Science Foundation. The agency anticipates spending $14 million in the current fiscal year on four awards, each lasting five years. Letters of intent are due November 30, 2018 and the full proposals are due July 12, 2019. Awardees would get $3.5 million the first year, with the amount rising to $6 million by years 3, 4, and 5. Gen-4 reflects recommendations in a National Academies study "as well as other sources," NSF says. Click here for an explanation of convergence. "[P]participation from members of groups traditionally underrepresented in engineering as well as diverse scientific and other perspectives is required," the solicitation says. "ERCs enable society to be more resilient, productive, and safe. . . . [N]ew strategies, concepts, ideas and/or re-organizations may be needed to shore-up, extend, or strengthen society." Please see the Grant Opportunities section below for more information.

Bridging the Gap: Building a Sustained Approach to Mid-scale Research Infrastructure and Cyberinfrastructure at NSF: This report responds to U.S. House Appropriations Committee Fiscal Year (FY) 2018 Report language that directs the National Science Board (NSB), in collaboration with the National Academies of Science, Engineering, and Medicine (NASEM), to consider steps to bridge

the gap between the NSF's Major Research Instrumentation Program (MRI) and the agency's Major Research Equipment and Facility Construction (MREFC) account and to develop appropriate processes to address this matter through the MREFC account within a restricted funding environment. The timing of this request from Congress is welcome, following NSF's October 2017 Request for Information (RFI) on existing and future needs for research infrastructure projects in the $20 million-$100 million-dollar range. It also comes at a time of increased NSF efforts to strategically prioritize mid-scale research infrastructure as one of the Agency's Big Ideas, as seen in NSF's 2019 Budget Request. The research community has identified mid-scale research infrastructure as a key enabler of scientific advances on shorter timescales than required for the larger projects funded within the MREFC account. Mid-scale research infrastructure can also provide the foundations for new innovative large facilities, and, in the process, train early-career researchers in the development, design, construction, and effective use of cutting-edge infrastructure. Likewise, cyberinfrastructure is key to solving the challenges of collecting, processing, and distributing the big data so prevalent in today's science and engineering endeavors. Infrastructure investments at the required mid-level can also help maintain the United States' standing among global partners and competitors. Full report is posted on the website https://www.nsf.gov/nsb/publications/2018/NSB-2018-40-Midscale-Research-Infrastructure-Report-to-Congress-Oct2018.pdf

National Science Foundation Directorate for Engineering EMERGING FRONTIERS IN RESEARCH AND INNOVATION (EFRI): The EFRI Program aims to focus the engineering community on important emerging areas in a timely manner. EFRI evaluates, recommends, and funds interdisciplinary initiatives at the emerging frontiers of engineering research and innovation. These transformative opportunities may lead to: new research directions; new industries or capabilities that result in a leadership position for the country; and/or significant progress on a recognized national or societal need, or grand challenge. The EFRI Program is the signature activity of the Office of Emerging Frontiers and Multidisciplinary Activities (EFMA) in the Directorate for Engineering. EFRI invests in high-risk multidisciplinary opportunities with high-potential payoff. Its role is to support research areas that would not fit within the scope of an existing program. These frontier ideas cannot be pursued by one researcher or within one field of expertise. They are "frontier" because they not only push the limits of knowledge of one field, but are actually at the convergence of multiple fields. The EFRI funding process is designed to both inspire and enable a group of researchers with diverse technical expertise to work together on a single frontier idea.

The EFRI Program continuously gathers information for use in deciding future research topic areas to support. This rolling process ensures input and feedback from the engineering community on promising upcoming research opportunities. Input comes from diverse sources including workshops, advisory committees, proposals and awards, technical meetings, and professional societies, as well as from individual engineering researchers. From this comprehensive input, the EFRI team identifies, evaluates, and prioritizes those frontier topics that best match EFRI criteria.

Through this DCL, the NSF EFRI team is providing a direct opportunity for the research community to offer input on potential topic ideas for FY 2020, by inviting the community to submit emerging frontier Topic Idea suggestions for consideration. Submit Your Ideas at: https://www.surveymonkey.com/r/efritopicideasFY2020.

NSF Implements 10 Big Ideas Plan for Transformative Research: NSF's strategic plan for FY 2018-2022 emphasizes on innovative and transformative research in many areas from transportation to manufacturing and agriculture. From the NSF strategic plan 2018-2022

(https://www.nsf.gov/pubs/2018/nsf18045/nsf18045.pdf): "Scientific breakthroughs start with a question, a big idea, about the nature of things that often leads to a fundamental shift in thinking. The ability to pursue and investigate that question, and to innovate along the way, is what enables the discoveries that ultimately transform the world. This plan illustrates the opportunities ahead with examples from some of NSF's "10 Big Ideas" for future investment. These bold, long-term research questions consider critical societal challenges and important lines of scientific inquiry where NSF aims to catalyze new breakthroughs. Partnerships with other federal agencies, nonprofits, private-sector collaborators, industry partners and the public will help advance these research areas. This plan also underscores where greater investments are needed; for example, in research infrastructure and broadening participation in the science, technology, engineering and mathematics (STEM) workforce. As highlighted in the 2018 Science and Engineering Indicators report, the number of non-STEM jobs requiring STEM skills is now on par with the number of STEM jobs in the U.S. As societies around the world transition to more knowledge-based economies, NSF is committed to preparing a 21st century workforce and ensuring that talented individuals from all sectors of our society have access to STEM learning.". The ten big ideas for NSF investments are:

- **Harnessing the Data Revolution**
- **The Future of Work at the Human-Technology Frontier**
- **Navigating the New Arctic**
- **Windows on the Universe: The Era of Multi-Messenger Astrophysics**
- **The Quantum Leap: Leading the Next Quantum Revolution**
- **Understanding the Rules of Life: Predicting Phenotype**
- **Mid-scale Research Infrastructure**
- **NSF 2026: Seeding Innovation**
- **Growing Convergence Research at NSF**
- **NSF INCLUDES (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science): Enhancing STEM through Diversity and Inclusion**

Webinar and Events

Event: Training-based Workforce Development for Advanced Cyberinfrastructure (CyberTraining) Webinar
Sponsor: NSF
When: November 26, 2018; 2.00 PM – 3.00 PM
Website: http https://www.nsf.gov/events/event_summ.jsp?cntn_id=297242&org=NSF
Brief Description: This program seeks to prepare, nurture, and grow the national scientific research workforce for creating, utilizing, and supporting advanced cyberinfrastructure (CI) to enable and potentially transform fundamental science and engineering research and contribute to the Nation's overall economic competitiveness and security. The goals of this solicitation are to (i) ensure broad adoption of CI tools, methods, and resources by the research community in order to catalyze major research advances and to enhance researchers' abilities to lead the development of new CI; and (ii) integrate core literacy and discipline-appropriate advanced skills in advanced CI as well as computational and data-driven science and engineering into the Nation's educational curriculum/instructional material fabric spanning undergraduate and graduate courses for advancing fundamental research.

This solicitation calls for innovative, scalable training, education, and curriculum/instructional materials—targeting one or both of the solicitation goals—to address the emerging needs and unresolved

bottlenecks in scientific and engineering research workforce development, from the postsecondary level to active researchers.

To Register: Please register for the webinar
at: https://nsf2.webex.com/nsf2/onstage/g.php?MTID=e69b80ded0ab4a39815de9235b6a64b2b

Event: CISE Community Research Infrastructure (CCRI) Webinar
Sponsor: NSF
When: November 27, 2018; 2.00 PM – 3.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=297243&org=NSF
Brief Description: The Computer and Information Science and Engineering (CISE) Community Research Infrastructure (CCRI) program drives discovery and learning in the core CISE disciplines of the three participating divisions [(Computing and Communication Foundations (CCF), Computer and Network Systems (CNS), and Information and Intelligent Systems (IIS)] by funding the creation and enhancement of world-class research infrastructure. This research infrastructure will specifically support diverse communities of CISE researchers pursuing **focused research agendas in computer and information science and engineering**. This support involves developing the accompanying user services and engagement needed to attract, nurture, and grow a robust research community that is actively involved in determining directions for the infrastructure as well as management of the infrastructure. This should lead to infrastructure that can be sustained through community involvement and community leadership, and that will enable advances not possible with existing research infrastructure. Further, through the CCRI program, CISE seeks to ensure that researchers from a diverse range of academic institutions, including minority-serving and predominantly undergraduate institutions, as well as researchers from non-profit, non-academic organizations, have access to such infrastructure.
The CCRI program supports two classes of awards:
·   **New** awards support the creation of new CISE community research infrastructure with integrated tools, resources, user services, and community outreach to enable innovative CISE research opportunities to advance the frontiers of the CISE core research areas. The **New** award class includes **Grand Ensemble (Grand)**, **Medium Ensemble (Medium)**, and **Planning** awards.
·   **Enhance/sustain (ENS)** awards support the **enhancement** and **sustainment** of an existing CISE community infrastructure to enable world-class CISE research opportunities for broad-based communities of CISE researchers that extend well beyond the awardee organization(s).
To Register: Please register for the webinar
at: https://nsf2.webex.com/nsf2/onstage/g.php?MTID=e557035ae93dbb83cbbe1e642d4f3d00e

Event: Webinar - Updates to the NSF Proposal & Award Policies & Procedures Guide (PAPPG)
Sponsor: National Academies
When: November 27, 2018; 2.00 PM – 3.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=297145&org=NSF
Brief Description: The National Science Foundation is pleased to announce that it will offer a *Proposal & Award Policies & Procedures Guide* (PAPPG) Update Webinar to the public on **Tuesday, November 27, 2018 at 2:00 PM EST**.
The webinar will provide an overview of significant changes and clarifications to the PAPPG that will take effect for proposals submitted, or due, on or after January 28, 2019. The PAPPG details NSF's proposal preparation and submission guidelines, and provides guidance on managing and monitoring the award and administration of grants and cooperative agreements made by the Foundation.
To Register: Go to webinar registration site.

Event: NSF SBIR/STTR Webinar Series
Sponsor: NSF
When: November 28, 2018; 2.00 PM – 4.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=296947&org=NSF

Brief Description: [America's Seed Fund powered by the National Science Foundation](#) (NSF) awards $200 million annually to startups and small businesses, transforming scientific discovery into products and services with commercial and societal impact. Startups working across almost all areas of science and technology can receive up to $1.5 million in non-dilutive funds to support research and development (R&D), helping de-risk technology for commercial success. America's Seed Fund is Congressionally mandated through the Small Business Innovation Research (SBIR) program. Join this webinar to learn more about the program and how to apply. The next Phase I proposal deadline is December 4, 2018.
To Register: [Register on WebEx for the November 28 webinar.](#)

Event: Partnerships for Innovation Webinar
Sponsor: NSF
When: November 29, 2018; 2.00 PM – 4.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=297047&org=NSF
Brief Description: Scientists and engineers increase the impact of their NSF-funded research discoveries by developing their technology into a prototype or proof-of-concept through the Partnerships for Innovation (PFI) program, one of the National Science Foundation's technology translation programs. The PFI program selects projects that will transition the technology out of the lab and into the market for societal benefit. Only NSF-funded research and researchers who either have received NSF funding in the last seven years or have participated in NSF Innovation Corps (I-Corps™) Teams program in the last four years are eligible. Join this webinar to learn more about the program and how to apply.
To Register: [Register for the November 29 webinar on WebEx.](#)

Event: Math Frontiers Monthly Webinar Series: Why Machine Learning Works
Sponsor: National Academies
When: December 11, 2018 from 2.00 PM
Website: http://sites.nationalacademies.org/deps/bmsa/deps_183972
Brief Description: Join the National Academies of Sciences, Engineering, and Medicine for a webinar series on exciting and upcoming mathematics research across an array of topics. Webinars will take place on the **second Tuesday of each month from 2-3 p.m. ET,** with two speakers and live Q&A. See below for the list of dates and themes for each webinar. ***When registering, please make sure you select all the webinars you would like to attend.***
December 11, 2018: *Mathematics of Epidemics*
Professors [Calistus Ngonghala](#) and [Folashade B. Agusto](#) will discuss mathematical approaches to studying biology, including ecology and infectious disease.
To join the webinar: Please register at http://sites.nationalacademies.org/deps/bmsa/deps_183972

Grant Opportunities

National Science Foundation

Grant Program: Mid-scale Research Infrastructure-1 (Mid-scale RI-1)
Agency: National Science Foundation NSF 19-537
RFP Website: https://www.nsf.gov/pubs/2019/nsf19537/nsf19537.htm
Brief Description: In 2016, the National Science Foundation (NSF) unveiled a set of "Big Ideas," 10 bold, long-term research and process ideas that identify areas for future investment at the frontiers of science and engineering (see https://www.nsf.gov/news/special_reports/big_ideas/index.jsp). The Big Ideas represent unique opportunities to position our Nation at the cutting edge of global science and engineering leadership by bringing together diverse disciplinary perspectives to support convergence research. As such, when responding to this solicitation, even though proposals must be submitted to the

Office of Integrative Activities, once received, the proposals will be managed by a cross-disciplinary team of NSF Program Directors.

Please consult NSF's [Large Facilities Manual](#) (LFM) and its successor to be published as the Major Facilities Guide (MFG) for definitions of terms used in this solicitation, such as the Project Execution Plan. Note that Project Execution Plans should be appropriate for the complexity of the project, and may not require all of the elements described in the LFM/MFG.

NSF-supported science and engineering research increasingly relies on cutting-edge infrastructure. With its Major Research Instrumentation (MRI) program and Major Research Equipment and Facilities Construction (MREFC) projects, NSF supports infrastructure projects at the lower and higher ends of infrastructure scales across science and engineering research disciplines. The Mid-scale Research Infrastructure Big Idea is intended to provide NSF with an agile, Foundation-wide process to fund experimental research capabilities in the mid-scale range between the MRI and MREFC thresholds. Within Mid-scale RI-1, proposers may submit two types of projects, "Implementation" and "Design". Design and Implementation projects may comprise any combination of equipment, infrastructure, computational hardware and software, and necessary commissioning. Design includes planning (preliminary and final design) of research infrastructure with an anticipated total project cost that is appropriate for future Mid-scale RI-1, Mid-scale RI-2 or MREFC-class investments. Mid-scale RI-1 uses an inclusive definition of implementation, which can include traditional stand-alone construction or acquisition and can include a degree of advanced development leading immediately to final system acquisition and/or construction.

Mid-scale RI-1 "Implementation" projects may have a total project cost ranging from $6 million up to below $20 million. Projects must directly enable advances in fundamental science, engineering or science, technology, engineering and mathematics (STEM) education research in one or more of the research domains supported by NSF. Implementation projects may support new or upgraded research infrastructure. Only Mid-scale RI-1 "Design" projects may request less than $6 million, with a minimum request of $600,000 and a maximum request below $20 million as needed to prepare for a future mid-scale or larger infrastructure implementation project. (Successful award of a Mid-scale RI-1 design project does not imply NSF commitment to future implementation of that project.)

Awards: Standard Grants or Cooperative Agreements. Anticipated Funding: $60,000,000
Letter of Intent: See Below
Proposal Submission Deadline:
Preliminary Proposal Due Date(s) *(required)* (due by 5 p.m. submitter's local time):
    February 19, 2019
Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):
    May 20, 2019 (by invitation only)
Contacts: Randy L. Phelps, OIA, telephone: (703) 292-8040, email: rphelps@nsf.gov
- Robert D. Fleischmann, BIO, telephone: (703) 292-7191, email: rfleisch@nsf.gov
- Deepankar (Deep) Medhi, CISE, telephone: (703) 292-8950, email: dmedhi@nsf.gov

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Grant Program: National Robotics Initiative 2.0: Ubiquitous Collaborative Robots (NRI-2.0)
Agency: National Science Foundation NSF 19-536
RFP Website: https://www.nsf.gov/pubs/2019/nsf19536/nsf19536.htm
Brief Description: The NRI-2.0 program builds upon the original National Robotics Initiative (NRI) program to support fundamental research in the United States that will accelerate the development and use of collaborative robots (co-robots) that work beside or cooperatively with people. The focus of the NRI-2.0 program is on **ubiquity**, which in this context means seamless integration of co-robots to assist humans in every aspect of life.

The program supports four main research thrusts that are envisioned to advance the goal of ubiquitous co-robots: **scalability**, **customizability**, **lowering barriers to entry**, and **societal impact**. Topics addressing **scalability** include how robots can collaborate effectively with multiple humans or

other robots; how robots can perceive, plan, act, and learn in uncertain, real-world environments, especially in a distributed fashion; and how to facilitate large-scale, safe, robust and reliable operation of robots in complex environments. **Customizability** includes how to enable co-robots to adapt to specific tasks, environments, or people, with minimal modification to hardware and software; how robots can personalize their interactions with people; and how robots can communicate naturally with humans, both verbally and non-verbally. Topics in **lowering barriers to entry** should focus on lowering the barriers for conducting fundamental robotics research and research on integrated robotics application. This may include development of open-source co-robot hardware and software, as well as widely-accessible testbeds. Outreach or using robots in educational programs do not, by themselves, lower the barriers to entry for robotics research. Topics in **societal impact** include fundamental research to establish and infuse robotics into educational curricula, advance the robotics workforce through education pathways, and explore the social, economic, ethical, and legal implications of our future with ubiquitous collaborative robots.

Collaboration between academic, industry, non-profit, and other organizations is encouraged to establish better linkages between fundamental science and engineering and technology development, deployment, and use.

The NRI-2.0 program is supported by multiple agencies of the federal government including the National Science Foundation (NSF), the U.S. Department of Agriculture (USDA), the U.S. Department of Energy (DOE), the National Aeronautics and Space Administration (NASA), and the U.S. Department of Defense (DOD). Questions concerning a particular project's focus, direction and relevance to a participating funding organization should be addressed to that agency's point of contact, listed in section VIII of this solicitation.

Awards: Standard Grants or Cooperative Agreements. Anticipated Funding: $35,000,000
Letter of Intent: Not required
Proposal Submission Deadline: February 19, 2019
Contacts: David Miller, CISE/IIS, telephone: (703) 292-4914, email: damiller@nsf.gov
- Radhakisan Baheti, ENG/ECCS, telephone: (703) 292-8339, email: rbaheti@nsf.gov
- Jordan Berg, telephone: (703) 292-5365, email: jberg@nsf.gov

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Grant Program: Advanced Computing Systems & Services: Adapting to the Rapid Evolution of Science and Engineering Research
Agency: National Science Foundation NSF 19-534
RFP Website: https://www.nsf.gov/pubs/2019/nsf19534/nsf19534.htm
Brief Description: The intent of this solicitation is to request proposals from organizations willing to serve as service providers (SPs) within the NSF Innovative High-Performance Computing (HPC) program to provide advanced cyberinfrastructure (CI) capabilities and/or services in production operations to support the full range of computational- and data-intensive research across all of science and engineering (S&E). The current solicitation is intended to complement previous NSF investments in advanced computational infrastructure by provisioning resources, broadly defined in this solicitation to include systems and/or services, in two categories:
- Category I, Capacity Systems: production computational resources maximizing the capacity provided to support the broad range of computation and data analytics needs in S&E research; and
- Category II, Innovative Prototypes/Testbeds: innovative forward-looking capabilities deploying novel technologies, architectures, usage modes, etc., and exploring new target applications, methods, and paradigms for S&E discoveries.

Resources supported through awards from this solicitation will be incorporated into and allocated as part of NSF's Innovative HPC program. This program complements investments in leadership-class computing and funds a federation of nationally-available HPC resources that are technically diverse and intended to enable discoveries at a computational scale beyond the research of individual or regional academic institutions. NSF anticipates that at least 90% of the provisioned system or services will be

available to the S&E community through an open peer-reviewed national allocation process and be supported by community and other support services [such as those currently supported through eXtreme Science and Engineering Discovery Environment (XSEDE) 2.0 project-managed allocations recommended by the XSEDE Resource Allocation Committee (XRAC), and other activities intended to foster efficient coordination across resources], or an NSF-approved alternative that may emerge. If this is not feasible for the proposed system/services, proposers must clearly explain in detail why this is the case and how they intend to make the proposed system/services available to the national S&E community.
Awards: Cooperative Agreements. Anticipated Funding: $10,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: March 04, 2019
Contacts: Robert Chadduck, Program Director, CISE/OAC, telephone: (703) 292-8970, email: rchadduc@nsf.gov
- Edward Walker, Program Director, CISE/OAC, telephone: (703) 292-4863, email: edwalker@nsf.gov
- Alejandro M. Suarez, Assistant Program Director, CISE/OAC, telephone: (703) 292-7092, email: alsuarez@nsf.gov

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Grant Program: Campus Cyberinfrastructure (CC*)
Agency: National Science Foundation NSF 19-533
RFP Website: https://www.nsf.gov/pubs/2019/nsf19533/nsf19533.htm
Brief Description: The Campus Cyberinfrastructure (CC*) program invests in coordinated campus-level networking and cyberinfrastructure improvements, innovation, integration, and engineering for science applications and distributed research projects. Learning and workforce development (LWD) in cyberinfrastructure is explicitly addressed in the program. Science-driven requirements are the primary motivation for any proposed activity.
Awards: Standard Grant. Anticipated Funding: $17,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: February 20, 2019
Contacts: Kevin Thompson, Program Director, CISE/OAC, telephone: (703) 292-4220, email: kthompso@nsf.gov
- Deepankar (Deep) Medhi, Program Director, CISE/CNS, telephone: (703) 292-8950, email: dmedhi@nsf.gov

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Grant Program: Enabling Quantum Leap: Quantum Idea Incubator for Transformational Advances in Quantum Systems (QII - TAQS)
Agency: National Science Foundation NSF 19-532
RFP Website: https://www.nsf.gov/pubs/2019/nsf19532/nsf19532.htm
Brief Description: The **Quantum Idea Incubator for Transformational Advances in Quantum Systems (QII - TAQS)** program is designed to support interdisciplinary teams that will explore highly innovative, original, and potentially transformative ideas for developing and applying quantum science, quantum computing, and quantum engineering. Proposals with the potential to deliver new concepts, new platforms, and/or new approaches that will accelerate the science, computing, and engineering of quantum technologies are encouraged. Breakthroughs in quantum sensing, quantum communications, quantum simulations, or quantum computing systems are anticipated. This Quantum Idea Incubator solicitation aims to support the process of translating such ideas into reality.

This solicitation calls for proposals focused on interdisciplinary research that includes elements from the following thrust areas: (i) fundamental science such as, but not limited to, physics, chemistry, materials science, mathematics, biology, or geoscience, as well as foundational concepts and techniques in quantum information science and engineering; (ii) communication, computation, and modeling; and

(iii) devices and engineered systems. Proposals must articulate how the project leverages and/or promotes advances in knowledge in the selected thrust areas. Proposals should be innovative and must focus on quantum functionality and must result in experimental demonstrations and/or transformative advances towards quantum systems and/or proof-of-concept validations. Competitive proposals will come from an interdisciplinary research team led by at least three investigators who collectively contribute synergistic expertise from one or more engineering domains, from mathematics, computational and/or computer and information science, and from one or more physical, chemical, biological, or materials science domains. Proposals will be judged on how likely the integrated effort is to lead to transformative advances in quantum systems. Both fundamental and applied topics are encouraged.

Awards: Standard Grants. Anticipated Funding: $26,000,000
Letter of Intent: Required: January 07, 2019
Proposal Submission Deadline:
- **Preliminary Proposal Due Date(s)** *(required)* (due by 5 p.m. submitter's local time): February 21, 2019
- **Full Proposal Deadline(s)** (due by 5 p.m. submitter's local time): May 24, 2019

Contacts: Tania M. Paskova, telephone: (703) 292-2264, email: tpaskova@nsf.gov
- Dominique Dagenais, telephone: (703) 292-2980, email: ddagenai@nsf.gov
- Alexander Cronin, telephone: (703) 292-5302, email: acronin@nsf.gov

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Grant Program: Frontier Research in Earth Sciences (FRES)
Agency: National Science Foundation NSF 19-531
RFP Website: https://www.nsf.gov/pubs/2019/nsf19531/nsf19531.htm
Brief Description: The FRES program will support research in Earth systems from its core through the critical zone. The project may focus on all or part of the surface, continental lithospheric, and deeper Earth systems over the entire range of temporal and spatial scales. FRES projects will typically have a larger scientific scope and budget than those considered for funding by core programs in the Division of Earth Sciences (EAR). FRES projects may be interdisciplinary studies that do not fit well within the core programs or cannot be routinely managed by sharing between core programs. Innovative proposals within a single area with results that will have broad relevance to Earth Science research are also encouraged. Investigations may employ any combination of field, laboratory, and computational studies with observational, theoretical, or experimental approaches. Projects should be focused on topics that meet the guidelines for research funded by the Division of Earth Sciences.

Awards: Standard Grants. Anticipated Funding: $12,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: February 20, 2019
Contacts: Dennis Geist, telephone: (703) 292-4361, email: dgeist@nsf.gov
- Margaret Benoit, telephone: (703) 292-7233, email: mbenoit@nsf.gov
- Richard F. Yuretich, telephone: (703) 292-4744, email: ryuretic@nsf.gov

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Grant Program: Ideas Lab: Cross-cutting Initiative in CubeSat Innovations
Agency: National Science Foundation NSF 19-530
RFP Website: https://www.nsf.gov/pubs/2019/nsf19530/nsf19530.htm
Brief Description: CubeSat constellations and swarms have been identified as a new paradigm for space-based measurements to address high-priority science questions in multiple disciplines. However, the full potential of CubeSat constellations and swarms for scientific studies has not yet been realized because of: i) the limitations of some of the existing key CubeSat technology, ii) knowledge gaps in the design and optimization of CubeSat technology for swarms and constellations, and iii) the increasing cost of more sophisticated CubeSat technology. The technology challenges include high bandwidth communications

in CubeSat-to-CubeSat and CubeSat-to-ground scenarios, circuits and sensors miniaturization, on-board signal processing, and power generation. The vision of a satellite mission consisting of 10-100 CubeSats will require focused investment and development in a myriad of CubeSat-related technologies to build a cost-effective constellation or swarm of CubeSats. This will require transformative approaches for designing and building CubeSat subsystems and sensors, and innovative production approaches that will reduce the cost of implementing large-scale constellation missions. Spectrum allocations for data transmission and possible electromagnetic interference between or within constellations of CubeSats are issues that also will need to be considered.

This solicitation describes an Ideas Lab focused on CubeSat Innovations to push the envelope of space-based research capabilities by simultaneously developing enabling technologies in several domains, including propulsion systems, sensor design, electronic circuits, antennas, satellite-to-ground and satellite-to-satellite communications and wireless networking, and power management. The vision of this Ideas Lab is to support research and engineering technology development efforts that will lead to new science missions in geospace and atmospheric sciences using self-organizing CubeSat constellations/swarms. The resulting new crosscutting concepts in CubeSat technology are expected to transform and stimulate CubeSat-enabled science and engineering research supported by NSF. The realization of self-organizing CubeSats will also require innovative approaches in educating, training, and developing a cross-disciplinary workforce with the relevant expertise spanning propulsion systems, sensors, circuits, antennas, wireless communications and networking, radio-frequency interference issues, and power management. It is anticipated that these innovations in CubeSat technology and education will enable new mission concepts for Cube-Sat based science investigations.

Awards: Continuing Grants. Anticipated Funding: $8,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: February 08, 2019

Contacts: S. Irfan Azeem, telephone: (703) 292-8529, email: sazeem@nsf.gov
- Monisha Ghosh, telephone: (703) 292-8746, email: mghosh@nsf.gov
- Jenshan Lin, telephone: (703) 292-8339, email: jenlin@nsf.gov

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Grant Program: CNH2: Dynamics of Integrated Socio-Environmental Systems
Agency: National Science Foundation NSF 19-528
RFP Website: https://www.nsf.gov/pubs/2019/nsf19528/nsf19528.htm
Brief Description: The CNH2 Program supports research projects that advance basic scientific understanding of integrated socio-environmental systems and the complex interactions (dynamics, processes, and feedbacks) within and among the environmental (biological, physical and chemical) and human ("socio") (economic, social, political, or behavioral) components of such a system. The program seeks proposals that emphasize the truly integrated nature of a socio-environmental system versus two discrete systems (a natural one and a human one) that are coupled. CNH2 projects must explore a connected and integrated socio-environmental system that includes explicit analysis of the processes and dynamics between the environmental and human components of the system.

PIs are encouraged to develop proposals that push conceptual boundaries and build new theoretical framings of the understanding of socio-environmental systems. Additionally, we encourage the exploration of multi-scalar dynamics, processes and feedbacks between and within the socio-environmental system.

Awards: Standard Grants. Anticipated Funding: $18,000,000

Letter of Intent: Required December 17, 2018

Proposal Submission Deadline: February 14, 2019

Contacts: Elizabeth R. Blood - Lead PO, telephone: (703) 292-4349, email: CNH2@nsf.gov
- Antoinette M. WinklerPrins - Lead PO, telephone: (703) 292-7266, email: CNH2@nsf.gov
- Richard F. Yuretich - Lead PO, telephone: (703) 292-4744, email: CNH2@nsf.gov

Grant Program: Enabling Discovery through GEnomic Tools (EDGE)
Agency: National Science Foundation NSF 19-527
RFP Website: https://www.nsf.gov/pubs/2019/nsf19527/nsf19527.htm
Brief Description: The Division of Integrative Organismal Systems (IOS) recognizes that a lack of methods for analysis of gene function represents an obstacle to progress in a range of diverse non-model organisms. These organisms are important for understanding numerous basic science questions in organismal biology as funded through the Division's core programs. Enabling Discovery through Genomic Tools (EDGE) is designed to provide support for development of tools, approaches and infrastructure necessary for direct tests of cause and effect hypotheses between gene function and phenotypes in diverse plants, animals, microbes, viruses and fungi for which these methods are presently unavailable. Such approaches are essential to advance understanding of the genomes-to-phenomes relationship, an area relevant to Understanding the Rules of Life: Predicting Phenotype , one of the 10 Big Ideas for future NSF investment.

To meet the goal of catalyzing communities to enable direct tests of cause-and-effect hypotheses about genes and phenotypes in organisms for which such tools and infrastructure are presently lacking, EDGE proposals **must** include training and rapid dissemination plans enabling larger communities of investigators to utilize the newly-developed tools quickly, thereby catalyzing an increase in the capacity of research communities to test cause-and-effect hypotheses about genes and phenotypes in organisms for which such tools and infrastructure are presently lacking.

Awards: Standard Grants. Anticipated Funding: $8,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: February 12, 2019
Contacts: Michelle Elekonich, telephone: (703) 292-7202, email: melekoni@nsf.gov
- Diane Jofuku Okamuro, telephone: (703) 292-4508, email: dokamuro@nsf.gov
- Edda (Floh) Thiels, telephone: (703) 292-8421, email: ethiels@nsf.gov

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Grant Program: Materials Innovation Platforms (MIP)
Agency: National Science Foundation NSF 19-526
RFP Website: https://www.nsf.gov/pubs/2019/nsf19526/nsf19526.htm
Brief Description: Materials Innovation Platforms (MIP) is a mid-scale infrastructure program in the Division of Materials Research (DMR) designed to accelerate advances in materials research. MIPs respond to the increasing complexity of materials research that requires close collaboration of interdisciplinary and transdisciplinary teams and access to cutting edge tools. These tools in a user facility benefit both a user program and in-house research, which focus on addressing grand challenges of fundamental science and meet national needs. MIPs embrace the paradigm set forth by the Materials Genome Initiative (MGI), which strives to "discover, manufacture, and deploy advanced materials twice as fast, at a fraction of the cost," and conduct research through iterative "closed-loop" efforts among the areas of materials synthesis/processing, materials characterization, and theory/modeling/simulation. In addition, they are expected to engage the emerging field of data science in materials research. Each MIP is a scientific ecosystem, which includes in-house research scientists, external users and other contributors who, collectively, form a community of practitioners and share tools, codes, samples, data and know-how. The knowledge sharing is designed to strengthen collaborations among scientists and enable them to work in new ways, fostering new modalities of research and education/training, for the purpose of accelerating discovery and development of new materials and novel materials phenomena/properties, as well as fostering their eventual deployment.

The scientific focus of the MIP program is subject to change from competition to competition. The first MIP competition in 2015 focused on developing new bulk and thin-film crystalline hard

materials. **The second MIP competition, in 2019, focuses on the convergence of materials research with biological sciences for developing new materials**.

Limit on Number of Proposals per Organization: 1

One (1) per organization as lead institution. Potential PIs are advised to contact their Sponsored Projects Office regarding processes used to select proposals for submission.

The institutions that were awarded a MIP in the 2015 competition as the lead institution are not eligible to submit a MIP proposal as a lead institution in the 2019 competition.

If you are interested in submitting a proposal, please submit a pre-proposal with list of all key investigators, extended summary, intellectual merit, broader impact, PI's NSF format biosketch and budget to Atam Dhawan at dhawan@njit.edy with a copy of dean of the respective college(s) by **December 1, 2018**. In case of multiple pre-proposal, the institutional response on the selection of the proposal will be provided by December 7, 2018.

Awards: Cooperative Agreement. Anticipated Funding: $12,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: February 04, 2019

Contacts: Z Charles Ying, Lead MIP Program Director, telephone: (703) 292-8428, email: cying@nsf.gov

- Guebre X. Tessema, Program Director, telephone: (703) 292-4935, email: gtessema@nsf.gov
- Leonard Spinu, Program Director, telephone: (703) 292-2665, email: lspinu@nsf.gov

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Grant Program: Training-based Workforce Development for Advanced Cyberinfrastructure (CyberTraining)

Agency: National Science Foundation NSF 19-524

RFP Website: https://www.nsf.gov/pubs/2019/nsf19524/nsf19524.htm

Brief Description: This program seeks to prepare, nurture, and grow the national scientific *research*workforce for *creating, utilizing, and supporting* advanced cyberinfrastructure (CI) to enable and potentially transform fundamental science and engineering research and contribute to the Nation's overall economic competitiveness and security. The goals of this solicitation are to **(i) ensure broad adoption of CI tools, methods, and resources by the research community in order to catalyze major research advances and to enhance researchers' abilities to lead the development of new CI; and (ii) integrate core literacy and discipline-appropriate advanced skills in advanced CI as well as computational and data-driven science and engineering into the Nation's educational curriculum/instructional material fabric spanning undergraduate and graduate courses for advancing fundamental research.** *Pilot* and *Implementation*projects may target one or both of the solicitation goals, while *Large-scale Project Conceptualization* projects must address both goals. For the purpose of this solicitation, advanced CI is broadly defined as the set of resources, tools, methods, and services for advanced computation, large-scale data handling and analytics, and networking and security for large-scale systems that collectively enable potentially transformative fundamental research.

This solicitation calls for innovative, scalable training, education, and curriculum/instructional materials—targeting one or both of the solicitation goals—to address the emerging needs and unresolved bottlenecks in scientific and engineering research workforce development, from the postsecondary level to active researchers. The funded activities, spanning targeted, multidisciplinary communities, will lead to transformative changes in the state of research workforce preparedness for advanced CI-enabled research in the short- and long-terms. As part of this investment, this solicitation also seeks to broaden CI access and adoption by (i) increasing or deepening accessibility of methods and resources of advanced CI and of computational and data-driven science and engineering by a wide range of *scientific disciplines* and *institutions* with lower levels of CI adoption to date; and (ii) harnessing the capabilities of larger segments of diverse underrepresented groups. Proposals from, and in partnership with, the aforementioned communities are especially encouraged.

Awards: Standard Grants. Anticipated Funding: $6,000,000

Letter of Intent: Not Required
Proposal Submission Deadline: February 06, 2019
Contacts: Sushil K. Prasad, CISE/OAC, telephone: (703) 292-5059, email: sprasad@nsf.gov
- Almadena Y. Chtchelkanova, CISE/CCF, telephone: (703) 292-8910, email: achtchel@nsf.gov
- Victor P. Piotrowski, EHR/DGE, telephone: (703) 292-8670, email: vpiotrow@nsf.g

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Grant Program: EarthCube Office
Science Office for a Community-Driven Data and Knowledge Environment for the Geosciences)
Agency: National Science Foundation NSF 19-523
RFP Website: https://www.nsf.gov/pubs/2019/nsf19523/nsf19523.htm
Brief Description: EarthCube is a community-driven activity to transform the conduct of geosciences research and education, sponsored through a partnership between the NSF Directorate of Geosciences and the Office of Advanced Cyberinfrastructure in the Directorate for Computer and Information Science and Engineering.
EarthCube aims to accelerate the ability of the geosciences community to understand and predict the Earth system by enabling access to geosciences data. EarthCube will require a long-term dialog between NSF and the interested scientific communities to develop new modes for sharing data that is thoughtfully and systematically built to meet the current and future needs of geoscientists.
This solicitation seeks the services of a qualified organization to act as the EarthCube Office. This organization will provide the services required to maintain and manage the community governance structures and to carry out activities consistent with EarthCube priorities as guided by community governance. The award, to be administered as a Cooperative Agreement, is intended to cover an initial 3-year period.
Awards: Cooperative Agreements. Anticipated Funding: $2,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: February 11, 2019
Contacts: Eva Zanzerkia, Directorate for Geosciences, telephone: (703) 292-4734, email: ezanzerk@nsf.gov

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Grant Program: NSF National Science Foundation Research Traineeship (NRT) Program
Agency: National Science Foundation NSF 19-522
RFP Website: https://www.nsf.gov/pubs/2019/nsf19522/nsf19522.htm
Brief Description: The NSF Research Traineeship (NRT) program is designed to encourage the development and implementation of bold, new, and potentially transformative models for science, technology, engineering and mathematics (STEM) graduate education training. The NRT program seeks proposals that explore ways for graduate students in research-based master's and doctoral degree programs to develop the skills, knowledge, and competencies needed to pursue a range of STEM careers.
The program is dedicated to effective training of STEM graduate students in high priority interdisciplinary or convergent research areas, through the use of a comprehensive traineeship model that is innovative, evidence-based, and aligned with changing workforce and research needs. Proposals are requested in any interdisciplinary or convergent research theme of national priority, with special emphasis on the research areas in NSF's 10 Big Ideas. The NSF research Big Ideas are Harnessing the Data Revolution (HDR), The Future of Work at the Human-Technology Frontier (FW-HTF), Navigating the New Arctic (NNA), Windows on the Universe: The Era of Multi-Messenger Astrophysics (WoU), The Quantum Leap: Leading the Next Quantum Revolution (QL), and Understanding the Rules of Life: Predicting Phenotype (URoL).
The NRT program addresses workforce development, emphasizing broad participation, and institutional capacity building needs in graduate education. Strategic collaborations with the private

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sector, non-governmental organizations (NGOs), government agencies, national laboratories, field stations, teaching and learning centers, informal science centers, and academic partners are encouraged. NRT especially welcomes proposals that will pair well with the efforts of NSF Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES) to develop STEM talent from all sectors and groups in our society (https://www.nsf.gov/news/special_reports/nsfincludes/index.jsp). Collaborations are encouraged between NRT proposals and existing NSF INCLUDES projects, provided the collaboration strengthens both projects.

Limited Number of Submission: 2: An eligible organization may participate in two proposals per competition. **Participation includes serving as a lead organization, non-lead organization, or subawardee on any proposal.** Organizations participating solely as evaluators on projects are excluded from this limitation. Proposals that exceed the organizational eligibility limit (beyond the first two submissions based on timestamp) will be returned without review regardless of the organization's role (lead organization, non-lead collaborative, or subawardee) in the returned proposal. Only US IHEs are eligible to submit as a lead or non-lead organization.

Limit on Number of Proposals per PI or Co-PI: 1: An individual may serve as Lead Principal Investigator (PI) or Co-PI on only one proposal submitted to the NRT program per annual competition. Proposals that exceed the PI/Co-PI eligibility limit (beyond the first submission based on timestamp), will be returned without review regardless of the individual's role (PI or co-PI) in the returned proposal.

Awards Range: Standard Grant; **Anticipated Funding Amount:** $45,000,000

Letter of Intent: Submission of Letters of Intent is required. Please see the full text of this solicitation for further information.

Submission Deadline: Letter of Intent Due Date(s) *(required)* (due by 5 p.m. submitter's local time): November 25, 2018 - December 06, 2018

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time): February 06, 2019

Contact: Laura B. Regassa, telephone: (703) 292-2343, email: lregassa@nsf.gov
- Tara L. Smith, telephone: (703) 292-7239, email: tsmith@nsf.gov

Internal Competition Deadline to College Dean's Office: November 15, 2018: Please submit a pre-proposal for internal competition in the following format to your Dean. Dens are requested to forward the pre-proposals with their recommendations to the Office of Research for institutional review by November 22, 2018. The pre-proposal should include:

Section 1. Letter of Intent (NSF Format): Submit a one-page LOI through FastLane during the open submission window with the following information:
- The name and departmental affiliation of the Principal Investigator (PI).
- The name(s) and departmental affiliation(s) of the Co-PI(s) and others composing the Core Participants (maximum 10).
- The names(s) of any other (non-lead) participating institutions or organizations. If the sole contribution of the partner is evaluation, then designate as "*Evaluation: institutional or organizational name*"; evaluators are exempt from institutional eligibility limits (see section IV). If there are partnering institutions, then the LOI MUST include the appropriate mandatory statement at the end of the project synopsis (see Project Synopsis below).
- Project Title: The title must begin with "NRT-HDR:" or "NRT-INFEWS:" for projects targeting the Harnessing the Data Revolution or Nexus of Food, Energy, and Water Systems research areas, respectively. Titles for projects addressing another interdisciplinary theme of national importance must begin with "NRT:". Any collaborative project with proposals from multiple institutions should begin with "Collaborative Research:". For example, a collaborative proposal in INFEWS would have a title beginning "Collaborative Research: NRT-INFEWS:"
- Project Synopsis (up to 2500 text characters including required organizational statement): Provide a brief summary of the vision and goals of the proposed training program, including a brief description of the interdisciplinary research theme, the main training elements, the integration of the research and training, and the need for the program. Add the appropriate **required partner**

organization statement at the end of the project synopsis. If the project has a partner institution that is not solely an evaluator, then the following text must appear at the end of the project synopsis: "*The participating institutions and organizations have agreed to partner on this NRT project. The NRT-eligible institutions have been informed by the lead organization that serving as a non-lead organization or subawardee on a proposal where the institution appears in the budget will count toward their institutional eligibility limit of two NRT proposals per annual competition.*" NRT-eligible institutions are universities and colleges accredited in and having a campus located in the U.S. that award a research-based master's degree and/or a doctoral degree in a STEM discipline supported by the National Science Foundation. If the project has no NRT-eligible partner institutions or if the only NRT-eligible institution solely has an evaluation role (and has been designated as such, see participating institution instructions above), then the following text is required at the end of the project synopsis: "*There are no NRT-eligible institutions partnering on this project outside of an evaluation role.*"

- Target Disciplines: List up to 5 primary disciplinary areas contributing to the research focus.

Section 2. Tentative Budget Summary: Please provide itemized budget for the entire duration

Section 3. Biographical Sketch of the PI (NSF Format)

Grant Program: CyberCorps® Scholarship for Service (SFS)
Agency: National Science Foundation NSF 19-521
RFP Website: https://www.nsf.gov/pubs/2019/nsf19521/nsf19521.htm
Brief Description: Cyberspace has transformed the daily lives of people. Society's overwhelming reliance on cyberspace, however, has exposed its fragility and vulnerabilities: corporations, agencies, national infrastructure and individuals continue to suffer cyber-attacks. Achieving a truly secure cyberspace requires addressing both challenging scientific and engineering problems involving many components of a system, and vulnerabilities that stem from human behaviors and choices. Examining the fundamentals of security and privacy as a multidisciplinary subject can lead to fundamentally new ways to design, build and operate cyber systems, protect existing infrastructure, and motivate and educate individuals about cybersecurity. The Cybersecurity Enhancement Act of 2014, as amended by the National Defense Authorization Act for FY 2018, authorizes the National Science Foundation, in coordination with the Office of Personnel Management and the Department of Homeland Security, to offer a scholarship program to recruit and train the next generation of information technology professionals, industry control system security professionals and security managers to meet the needs of the cybersecurity mission for federal, state, local, and tribal governments.

The goals of the CyberCorps®: Scholarship for Service (SFS) program are aligned with the U.S. National Cyber Strategy to develop a superior cybersecurity workforce. The SFS program welcomes proposals to establish or to continue scholarship programs in cybersecurity. All scholarship recipients must work after graduation for a federal, state, local, or tribal Government organization in a position related to cybersecurity for a period equal to the length of the scholarship. A proposing institution must provide clearly documented evidence of a strong existing academic program in cybersecurity. Such evidence can include designation by the National Security Agency and the Department of Homeland Security as a Center of Academic Excellence in Cyber Defense (CAE-CD), in Cyber Operations (CAE-CO) or in Research (CAE-R); or equivalent evidence documenting a strong program in cybersecurity.

The SFS program also supports efforts leading to an increase in the ability of the United States higher education enterprise to produce cybersecurity professionals. Funding opportunities in this area are provided via the Secure and Trustworthy Cyberspace - Education Designation (SaTC-EDU) and other programs (see the section "Increasing National Capacity in Cybersecurity Education" for more details.).

Awards: Standard Grants. Anticipated Funding: $15,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: February 04, 2019

Contacts: Victor P. Piotrowski, Lead Program Director, telephone: (703) 292-5141, email: vpiotrow@nsf.gov
- Chun-Hsi (Vincent) Huang, Program Director, telephone: (703) 292-7877, email: chuang@nsf.gov

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Grant Program: Methodology, Measurement, and Statistics (MMS)
Agency: National Science Foundation NSF 19-520
RFP Website: https://www.nsf.gov/pubs/2019/nsf19520/nsf19520.htm
Brief Description: The Methodology, Measurement, and Statistics (MMS) Program is an interdisciplinary program in the Directorate for Social, Behavioral, and Economic Sciences that supports the development of innovative analytical and statistical methods and models for those sciences. MMS seeks proposals that are methodologically innovative, grounded in theory, and have potential utility for multiple fields within the social, behavioral, and economic sciences. As part of its larger portfolio, the MMS Program partners with a consortium of federal statistical agencies to support research proposals that further the production and use of official statistics.
The MMS Program provides support through a number of different funding mechanisms. The following mechanisms are addressed in this solicitation:
- Regular Research Awards
- Awards for conferences and community-development activities
- Doctoral Dissertation Research Improvement (DDRI) Grants
- Research Experience for Undergraduates (REU) Supplements

MMS also supports Faculty Early Career Development (CAREER) awards. Please see the CAREER Program Web Site for more information about this activity.
Awards: Standard Grants. Anticipated Funding: $3,760,000
Letter of Intent: Not Required
Proposal Submission Deadline: January 31, 2019;   August 29, 2019
Contacts: Cheryl L. Eavey - Program Director, telephone: (703) 292-7269, email: ceavey@nsf.gov
- Liana A. Denola - Social Scientist, telephone: (703) 292-2675, email: ldenola@nsf.gov
- Robbie W. Brown - Program Specialist, telephone: (703) 292-7264, email: rbrown@nsf.gov

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Grant Program: Harnessing the Data Revolution (HDR): Data Science Corps (DSC)
Building Capacity for HDR
Agency: National Science Foundation NSF 19-518
RFP Website: https://www.nsf.gov/pubs/2019/nsf19518/nsf19518.htm
Brief Description: In 2016, the National Science Foundation (NSF) unveiled a set of "Big Ideas," 10 bold, long-term research and process ideas that identify areas for future investment at the frontiers of science and engineering (see https://www.nsf.gov/news/special_reports/big_ideas/index.jsp). The Big Ideas represent unique opportunities to position our Nation at the cutting edge of global science and engineering leadership by bringing together diverse disciplinary perspectives to support convergence research. As such, when responding to this solicitation, even though proposals must be submitted to **the Division of Information and Intelligent Systems (IIS) within the Directorate for Computer and Information Science and Engineering (CISE)**, once received, the proposals will be managed by a cross-disciplinary team of NSF Program Directors.
NSF's *Harnessing the Data Revolution (HDR)* Big Idea is a visionary, national-scale activity to enable new modes of data-driven discovery, allowing fundamentally new questions to be asked and answered in science and engineering frontiers, generating new knowledge and understanding, and accelerating discovery and innovation. The HDR vision is realized via a coordinated set of program solicitations resulting in an ecosystem of interrelated activities enabling (i) research in the foundations of data science; frameworks, algorithms, and systems for data science; and data-driven research in science and

engineering; (ii) advanced cyberinfrastructure; and (iii) education and workforce development—all of which are designed to amplify the intrinsically multidisciplinary nature of the data science challenge. The HDR Big Idea will establish theoretical, technical, and ethical data science frameworks, and apply them to practical problems in science and engineering, and in society more generally.

The *Data Science Corps* is one of the components of the HDR ecosystem, focusing on building capacity for harnessing the data revolution at the local, state, national, and international levels to help unleash the power of data in the service of science and society. The *Data Science Corps* will provide practical experiences, teach new skills, and offer teaching opportunities, in a variety of settings, to data scientists and data science students. It will also strive to promote data literacy and provide basic training in data science to the existing workforce across communities.

As a first step in establishing the *Data Science Corps*, this solicitation focuses specifically on enabling participation by undergraduate students in the *Data Science Corps,* by supporting student stipends for participation in data science projects and supporting integration of real-world data science projects into classroom instruction.

Awards: Standard Grants. Anticipated Funding: $10,000,000
Limit on Number of Proposals per Organization: 1
NJIT Institutional Internal Review: Only one proposal is permitted per organization. If you are interested in submitting a proposal, please submit a pre-proposal with list of all key investigators, extended summary, intellectual merit, broader impact, PI's NSF format biosketch and budget to Atam Dhawan at dhawan@njit.edy with a copy of dean of the respective college(s) by **December 1, 2018**. In case of multiple pre-proposal, the institutional response on the selection of the proposal will be provided by December 7, 2018.
Letter of Intent: Not Required
Proposal Submission Deadline: January 28, 2019 - February 04, 2019
Contacts: Aidong Zhang, Program Director, CISE/IIS, telephone: (703) 292-5311, email: azhang@nsf.gov

- Stephanie August, Program Director, EHR/DUE, telephone: (703) 292-5128, email: saugust@nsf.gov
- Nandini Kannan, Program Director, MPS/DMS, telephone: (703) 292-8104, email: nakannan@nsf.gov

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Grant Program: Materials Research Science and Engineering Centers (MRSEC)
Agency: National Science Foundation NSF 19-517
RFP Website: https://www.nsf.gov/pubs/2019/nsf19517/nsf19517.htm
Brief Description: The Materials Research Science and Engineering Centers (MRSECs) program provides sustained support of interdisciplinary materials research and education of the highest quality while addressing fundamental problems in science and engineering. Each MRSEC addresses research of a scope and complexity requiring the scale, synergy, and multidisciplinarity provided by a campus-based research center. The MRSECs support materials research infrastructure in the United States, promote active collaboration between universities and other sectors, including industry and international organizations, and contribute to the development of a national network of university-based centers in materials research, education, and facilities. A MRSEC may be located at a single institution, or may involve multiple institutions in partnership, and is composed of up to three Interdisciplinary Research Groups, IRGs, each addressing a fundamental materials science topic aligned with the Division of Materials Research, DMR.

The nature of materials research demands mechanisms to support interdisciplinary collaboration for the conception and execution of ideas, and for developing the capabilities to sustain our nation's competitiveness in the production of new technology and products based on advances in materials research. Materials Research Science and Engineering Centers (MRSECs) are expected to contribute to

the development of a diverse and globally competitive scientific workforce for increased economic competitiveness of the United States.

MRSECs support multidisciplinary materials research and education of the highest quality while addressing fundamental problems in materials science of a scope and complexity requiring the scale and synergy provided by a campus-based research center. MRSECs require outstanding research quality, intellectual breadth, multidisciplinarity, flexibility in responding to new research opportunities, support for research infrastructure, and foster the integration of research and education in the materials field. They are expected to have strong links to industry and other sectors, as appropriate, and to contribute to the development of a national network of university-based centers in materials research.

Specifically, it should be stressed that DMR plays an important role in the following NSF Big Ideas:

- *Harnessing the Data Revolution;*
- *The Future of Work at the Human-Technology Frontier;*
- *Understanding the Rules of Life;*
- *The Quantum Leap.*

In addition, potential research topics to broaden the current MRSEC portfolio include, but are not limited to:

- Use of supervised and unsupervised *Machine Learning* addressing materials science complex problems, and in particular as applied to traditional materials science problems in *ceramics, metals, metallic alloys* and others.

Finally, a few additional strategic research areas of DMR interest have also been identified:

- *Synthetic Materials Biology*: in such an effort biologists and system engineers work with materials scientists to identify materials challenges hindering advancements of Synthetic Biology, as well as to generate new Synthetic Biology approaches to materials development i.e., "Materials Biology";
- *Structural Materials under Extreme Conditions*: this effort addresses fundamental challenges in ceramic, metallic, and polymeric materials and their composites for applications under extreme conditions;
- *Recyclable Plastics and Alternative Materials for Sustainable Development*: these efforts could include the development of intrinsically recyclable polymers, a better understanding of mechanical properties of recycled plastic products, strategies to improve the properties of recycled plastics, and materials alternatives for plastics.

A MRSEC may address any area of research supported by the NSF Division of Materials Research which include 8 programs (known as Topical Materials Research Programs, TMRP): Biomaterials (BMAT), Ceramics (CER), Condensed Matter Physics (CMP), Condensed Matter and Materials Theory (CMMT), Electronic and Photonic Materials (EPM), Metals and Metallic Nanostructures (MMN), Polymers (POL), and Solid State and Materials Chemistry (SSMC). For a detailed description of the research supported by the 8 TMRP visit https://www.nsf.gov/materials. IRGs not well aligned with DMR supported research will not be reviewed. Proposers are strongly encouraged to contact the Program Director listed in this solicitation to ascertain that the planned research fits the scope of the DMR role in the suggested topical areas. IRGs not appropriate for consideration by DMR may be returned without review.

In addition to research excellence, these centers provide the infrastructure of equipment, education and outreach needed to ensure that the program as a whole meets its objectives and provides for effective coordination within and beyond the center community. Centers are required to contribute to the network addressing common problems and applications. Center shared experimental and computational facilities constitute the Materials Research Facility Network, a network of facilities that help to maintain and advance materials research infrastructure in the United States. More information about the network may be found at http://www.mrfn.org.

Awards: Cooperative Agreement. Anticipated Funding: $31,500,000

Limit on Number of Proposals per Organization: 1

NJIT Institutional Internal Review: Only one proposal is permitted per organization. If you are interested in submitting a proposal, please submit a pre-proposal with list of all key investigators, extended summary, intellectual merit, broader impact, PI's NSF format biosketch and budget to Atam Dhawan at dhawan@njit.edy with a copy of dean of the respective college(s) by **January 15, 2019**. In case of multiple pre-proposal, the institutional response on the selection of the proposal will be provided by February 1, 2019.

Preliminary Proposal Deadline: June 24, 2019
Proposal Submission Deadline: November 26, 2019
Contacts: Daniele Finotello,1065 N, telephone: (703) 292-4676, email: dfinotel@nsf.gov

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Grant Program: Designing Materials to Revolutionize and Engineer our Future (DMREF)
Agency: National Science Foundation NSF 19-516
RFP Website: https://www.nsf.gov/pubs/2019/nsf19516/nsf19516.htm
Brief Description: DMREF is the primary program by which NSF participates in the Materials Genome Initiative (MGI) for Global Competitiveness. MGI recognizes the importance of materials science and engineering to the well-being and advancement of society and aims to "deploy advanced materials at least twice as fast as possible today, at a fraction of the cost." MGI integrates materials discovery, development, property optimization, and systems design with a shared computational framework. This framework facilitates collaboration and coordination of research activities, analytical tools, experimental results, and critical evaluation in pursuit of the MGI goals. Consistent with the MGI Strategic Plan, DMREF highlights four sets of goals:

- Leading a culture shift in materials science and engineering research to encourage and facilitate an integrated team approach;
- Integrating experimentation, computation, and theory and equipping the materials science and engineering communities with advanced tools and techniques;
- Making digital data accessible, findable, and useful to the community; and
- Creating a world-class materials science and engineering workforce that is trained for careers in academia or industry.

Accordingly, DMREF will support activities that significantly accelerate materials discovery and/or development by building the fundamental knowledge base needed to design and make materials and/or devices with specific and desired functions or properties. This will be accomplished through forming interdisciplinary teams of researchers working synergistically in a "closed loop" fashion, building a vibrant research community, leveraging data science, providing ready access to materials data, and educating the future MGI workforce. Specifically, achieving this goal will involve modeling, analysis, and computational simulations, validated and verified through sample preparation, characterization, and/or device demonstration.

Computational efforts will begin at the smallest appropriate length scale, such as electronic, atomic, molecular, nano-, micro-, and meso-scale, appropriately informed by data or models to provide predictive or fundamental insight that will work effectively in concert with data-centric, experimental, and theoretical efforts to discover new materials, new states of matter, or advance understanding of materials properties and phenomena and their control through structure, applied fields, or other means. Computational efforts may include models that apply across or at multiple scales of length or time, and may include different chemistry or physics models to capture specific processes or phenomena. Creativity and innovation are encouraged to obtain the maximum predictive power or insight through computation, data-centric methods, and theory to achieve the goals of DMREF.

DMREF will enable the development of new data analytic tools and statistical algorithms; advanced simulations of material properties in conjunction with new device functionality; advances in predictive modeling that leverage machine learning, artificial intelligence, data mining, and sparse approximation; data infrastructure that is accessible, extensible, scalable, and sustainable; the development, maintenance, and deployment of reliable, interoperable, and reusable software for the next-

generation design of materials; and new collaborative capabilities for managing large, complex, heterogeneous, distributed data supporting materials design, synthesis, and longitudinal study. Incorporation of cyberinfrastructure developed through NSF investments including the OpenKIM Knowledge-base of Inter-atomic Models, Software Infrastructure for Sustained Innovation (SI2), Data Infrastructure Building Blocks (DIBBs), and Cyberinfrastructure for Sustained Scientific Innovation (CSSI), is encouraged where appropriate.

Awards: The multidisciplinary character of this effort dictates the involvement of programs in the NSF Directorates of Mathematical and Physical Sciences, Engineering, and Computer and Information Science and Engineering. Awards are expected to range from $1,000,000 – $1,750,000 over four years. To cover the breadth of this endeavor, it is expected that proposed projects will be directed by a team of at least two Senior Personnel with complementary expertise. **Anticipated Funding Amount:** $36,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: January 28, 2019 - February 04, 2019

Contacts: John A. Schlueter, Team Lead,MPS/DMR, telephone: (703) 292-7766, email: jschluet@nsf.gov

- Micah Beck,CISE/OAC, telephone: (703) 292-2932, email: mbeck@nsf.gov
- Marian Bocea,MPS/DMS, telephone: (703) 292-2595, email: mbocea@nsf.gov

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Grant Program: Ceramics (CER)
Agency: National Science Foundation NSF 19-515
RFP Website: https://www.nsf.gov/pubs/2019/nsf19515/nsf19515.htm
Brief Description: This program supports fundamental scientific research in ceramics (e.g., oxides, carbides, nitrides and borides), glass-ceramics, inorganic glasses, ceramic-based composites and inorganic carbon-based materials. Projects should be centered on experiments; inclusion of computational and theory components are encouraged. The objective of the program is to increase fundamental understanding and to develop predictive capabilities for relating synthesis, processing, and microstructure of these materials to their properties and ultimate performance in various environments and applications. Research to enhance or enable the discovery or creation of new ceramic materials is welcome. Development of new experimental techniques or novel approaches to carry out projects is encouraged. Topics supported include basic processes and mechanisms associated with nucleation and growth of thin films; bulk crystal growth; phase transformations and equilibria; morphology; surface modification; corrosion, interfaces and grain boundary structure; and defects.

Awards: Standard Grants. Anticipated Funding: $10,000,000

Letter of Intent: Not Required

Proposal Submission Deadline: Proposals Accepted Anytime

Contacts: Dr. Lynnette D. Madsen, Program Director (CER), telephone: (703) 292-4936, fax: (703) 292-9035, email: lmadsen@nsf.gov

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Grant Program: Cybersecurity Innovation for Cyberinfrastructure (CICI)
Agency: National Science Foundation NSF 19-514
RFP Website: https://www.nsf.gov/pubs/2019/nsf19514/nsf19514.htm
Brief Description: The objective of the Cybersecurity Innovation for Cyberinfrastructure (CICI) program is to develop, deploy and integrate security solutions that benefit the scientific community by ensuring the integrity, resilience and reliability of the end-to-end scientific workflow. CICI seeks three categories of projects:

1. **Secure Scientific Cyberinfrastructure (SSC):** These awards seek to secure the scientific workflow by encouraging novel and trustworthy architectural and design approaches, models and frameworks for the creation of a holistic, integrated security environment that spans the entire scientific CI ecosystem.

2. **Research Data Protection (RDP):** These awards provide solutions that both ensure the provenance of research data and reduce the complexity of protecting research data sets regardless of funding source.
3. **Cybersecurity Center of Excellence (CCoE):** This award seeks to provide the NSF community with a centralized resource of expertise and leadership in trustworthy cyberinfrastructure.

Awards: Standard Grants. Anticipated Funding: $19,000,000
Letter of Intent: Not Required
Proposal Submission Deadline: January 23, 2019

Contacts: Kevin Thompson, Program Director, CISE/OAC, telephone: (703) 292-4220, email: kthompso@nsf.gov

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Grant Program: CISE Community Research Infrastructure (CCRI)
Agency: National Science Foundation NSF 19-512
RFP Website: https://www.nsf.gov/pubs/2019/nsf19512/nsf19512.htm
Brief Description: The Computer and Information Science and Engineering (CISE) Community Research Infrastructure (CCRI) program drives discovery and learning in the core CISE disciplines of the three participating divisions [(Computing and Communication Foundations (CCF), Computer and Network Systems (CNS), and Information and Intelligent Systems (IIS)] by funding the creation and enhancement of world-class research infrastructure. This research infrastructure will specifically support diverse communities of CISE researchers pursuing **focused research agendas in computer and information science and engineering**. This support involves developing the accompanying user services and engagement needed to attract, nurture, and grow a robust research community that is actively involved in determining directions for the infrastructure as well as management of the infrastructure. This should lead to infrastructure that can be sustained through community involvement and community leadership, and that will enable advances not possible with existing research infrastructure. Further, through the CCRI program, CISE seeks to ensure that researchers from a diverse range of academic institutions, including minority-serving and predominantly undergraduate institutions, as well as researchers from non-profit, non-academic organizations, have access to such infrastructure.
The CCRI program supports two classes of awards:
- **New** awards support the creation of new CISE community research infrastructure with integrated tools, resources, user services, and community outreach to enable innovative CISE research opportunities to advance the frontiers of the CISE core research areas. The **New** award class includes **Grand Ensemble (Grand)**, **Medium Ensemble (Medium)**, and **Planning** awards.
- **Enhance/sustain (ENS)** awards support the **enhancement** and **sustainment** of an existing CISE community infrastructure to enable world-class CISE research opportunities for broad-based communities of CISE researchers that extend well beyond the awardee organization(s).

Each CCRI **New** or **ENS** award may support the operation of such infrastructure, ensuring that the awardee organization(s) is (are) well positioned to provide a high quality of service to CISE community researchers expected to use the infrastructure to realize their research goals.
Awards: Standard Grants. Anticipated Funding: $25,000,000
Letter of Intent: January 08, 2019; November 12, 2019
Proposal Submission Deadline: February 20, 2019; January 09, 2020
Contacts: Harriet Taylor, Lead Program Director, CNS, telephone: (703) 292-8950, email: htaylor@nsf.gov
- Sankar Basu, Program Director, CCF, telephone: (703) 292-7843, email: sabasu@nsf.gov
- Mimi McClure, Associate Program Director, CNS, telephone: (703) 292-8950, email: mmcclure@nsf.gov

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National Institutes of Health

Grant Program: Research on Current Topics in Alzheimer's Disease and Its Related Dementias (R01 Clinical Trial Optional)
Agency: National Institutes of Health PAR-19-070
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-19-070.html
Brief Description: This Funding Opportunity Announcement (FOA) is inviting applications proposing research on current topics in Alzheimer's disease and its related dementias. Further information on the high-priority topics of interest will be announced through a series of Notices published subsequent to this FOA.

Applications proposing research on topics beyond those specified in the notices will not be prioritized for funding under this FOA. Investigators proposing applications on topics that are not high priority are encouraged to apply to the parent R01 grant or to explore whether their topic would be appropriate for NIA's other AD-focused FOAs.
Award: Application budgets are not limited but need to reflect the actual needs of the proposed project.
Letter of Intent: Not Required
Deadline: March 11, 2019; July 9, 2019; November 12, 2019; March 11, 2020; July 9, 2020; November 12, 2020; March 11, 2021; July 9, 2021; and November 12, 2021, by 5:00 PM local time of applicant organization. All types of non-AIDS applicationsallowed for this funding opportunity announcement are due on these dates.

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

Grant Program: NIH Small Research Grant Program (Parent R03 Clinical Trial Not Allowed)
Agency: National Institutes of Health PA-19-052
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PA-19-052.html
Brief Description: The NIH Small Research Grant Program supports discrete, well-defined projects that realistically can be completed in two years and that require limited levels of funding. This program supports different types of projects including, but not limited to, the following:
- o Pilot or feasibility studies;
- o Secondary analysis of existing data;
- o Small, self-contained research projects;
- o Development of research methodology; and
- o Development of new research technology.

Applications are assigned to participating Institutes and Centers (ICs) based on receipt and referral guidelines and applications may be assigned to multiple participating ICs with related research interests. Applicants are encouraged to identify a participating IC that supports their area of research via the R03 IC-Specific Scientific Interests and Contact website and contact Scientific/Research staff from relevant ICs to inquire about their interest in supporting the proposed research project.
Award: Application budgets are limited to $50,000 in direct costs per year.
Letter of Intent: Not Required
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 February 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: NIH Exploratory/Developmental Research Grant Program (Parent R21 Clinical Trial Not Allowed)

Agency: National Institutes of Health PA-19-053
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PA-19-053.html
Brief Description: The evolution and vitality of the biomedical, behavioral, and clinical sciences require a constant infusion of new ideas, techniques, and points of view. These may differ substantially from current thinking or practice and may not yet be supported by substantial preliminary data. Through the NIH Exploratory/Developmental Research Grant Program, the NIH seeks to foster the introduction of novel scientific ideas, model systems, tools, agents, targets, and technologies that have the potential to substantially advance biomedical, behavioral, and clinical research.

This program is intended to encourage new exploratory and developmental research projects. For example, such projects could assess the feasibility of a novel area of investigation or a new experimental system that has the potential to enhance health-related research. Another example could include the unique and innovative use of an existing methodology to explore a new scientific area. These studies may involve considerable risk but may lead to a breakthrough in a particular area, or to the development of novel techniques, agents, methodologies, models, or applications that could have a major impact on a field of biomedical, behavioral, or clinical research.

Applications for Exploratory/Developmental Research Grant awards should include projects distinct from those supported through the traditional R01 activity code. For example, long-term projects, or projects designed to increase knowledge in a well-established area, are not appropriate for this FOA. Applications submitted to this FOA should be exploratory and novel. These studies should break new ground or extend previous discoveries toward new directions or applications. Projects of limited cost or scope that use widely accepted approaches and methods within well-established fields are better suited for the NIH Small Research Grant Program.
Award: The combined budget for direct costs for the two-year project period may not exceed $275,000. No more than $200,000 may be requested in any single year.
Letter of Intent: Not Required
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 February 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: NIH Research Project Grant (Parent R01 Clinical Trial Not Allowed)
Agency: National Institutes of Health PA-19-056
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PA-19-056.html
Brief Description: The NIH Research Project Grant supports a discrete, specified, circumscribed project in scientific areas that represent the investigators' specific interests and competencies and that fall within the mission of the participating NIH Institutes and Centers (ICs). The R01 is the original, and historically the oldest, grant mechanism used by the NIH to support health-related research and development.

Research grant applications are assigned to participating ICs based on receipt and referral guidelines and applications may be assigned to multiple participating ICs with related research interests. Applicants are encouraged to identify a participating IC that supports their area of research via the R01 IC-Specific Scientific Interests and Contact website and contact Scientific/Research staff from relevant ICs to inquire about their interest in supporting the proposed research project.

This Funding Opportunity Announcement does not accept applications proposing clinical trial(s). For specific information about the mission of each NIH IC, visit the List of NIH Institutes, Centers, and Offices website.
Award: Application budgets are not limited but need to reflect the actual needs of the proposed project.
Letter of Intent: Not Required
Deadline: Standard dates apply, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.

The first standard application due date for this FOA is February 5, 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: Computational Genomics and Data Science Opportunities for Small Business (R43/R44 Clinical Trial Not Allowed)
Agency: National Institutes of Health PAR-19-061
PAR-18-843, **R21** Exploratory/Developmental Research Grant
PAR-18-844, **R01** Research Project Grant
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-19-061.html
Brief Description: Through this FOA, NHGRI seeks to fund innovative commercial product development in computational genomics, data science, statistics, and bioinformatics for basic or clinical genomic sciences and broadly applicable to human health and disease, as well as commercial product development stemming from improvement of existing software or approaches demonstrated to be in broad use by the genomics community.

Research topics appropriate for this FOA include, but are not limited to, development of commercial computational, bioinformatics, statistical, or analytical approaches, tools, or software for:

- o Interactive analysis and visualization of large genomic data sets.
- o Identification or prioritization of disease-causal genetic variants.
- o Causal statistical modeling related to genomic research.
- o Analysis of single-cell or sub-cellular genomic data both in situ and in dissociated cells.
- o Integrating model organism data with human data to derive biomedical insight.
- o Integrating and interpreting various genomic data types, including sequence data, functional data, phenotypic data, and clinical data.
- o Processing and integrating genome sequence data to enhance representation of population variation.
- o Processing sequence data for sequence assembly, variant detection (SNPs and SVs), imputation, and resolution of haplotypes.
- o Development of efficient and scalable algorithms for compute-intensive genomic applications, or otherwise achieving major cost reductions in genomic data processing and analysis.
- o Enabling scalable and cost-effective curation of FAIR metadata for genomic and phenotypic data.
- o Enhancing secure sharing and use of genomic data in combination with clinical data.
- o Processing or analyzing new genomic data types, or major improvement in processing or analyzing existing genomic data types.
- o Hardening an existing widely-used genomic data processing pipeline to enable its reproducible implementation by the biomedical research community.
- o Improved and novel methods for integrating prior biological knowledge into machine learning models.

This FOA does not support:

- o Development, maintenance, or curation of genomic databases and other genomic data resources. Applicants considering developing such resources are directed to the Genomic Community Resources (U24) program: https://grants.nih.gov/grants/guide/pa-files/PAR-17-273.html.
- o Research not generalizable beyond one or a small number of diseases or biological systems. Research utilizing a small number of disease models or biological systems for proof-of-concept studies may be acceptable when the resulting methods, tools, approaches, or software are generalizable.

- o Development and application of ontologies or controlled vocabularies, or manual curation efforts.
- o Basic data science research that is not developed for genomics.
- o Significant experimental work. Applicants may propose limited experimental work to test predictions generated as a result of computational approaches and/or inform modeling efforts, but this should not be a major focus of the application.
- o Approaches not clearly pertaining to computational genomics and data science and/or lacking relevance to human health and disease.
- o Work focused on microbial genomics or the microbiome.

In addition to this PAR, NHGRI participates in several funding opportunities https://www.genome.gov/10000991/nhgri-funding-opportunities-research/, including the parent R01 and R21 announcements.

Award: According to statutory guidelines, total funding support (direct costs, indirect costs, fee) normally may not exceed $150,000 for Phase I awards and $1,000,000 for Phase II awards. With appropriate justification from the applicant, Congress will allow awards to exceed these amounts by up to 50% as a hard cap ($225,000 for Phase I and $1,500,000 for Phase II). However, NIH has received a waiver from SBA, as authorized by statute, to exceed the hard cap of $225,000 for Phase I or $1,500,000 for Phase II for specific topics.

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

Deadline: Standard dates apply, by 5:00 PM local time of applicant organization.

*** Note new SBIR/STTR Standard Due Dates.

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

Grant Program: NIH Small Research Grant Program (Parent R03 Clinical Trial Not Allowed)
Agency: National Institutes of Health PA-19-052
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PA-19-052.html
Brief Description: The NIH Small Research Grant Program supports discrete, well-defined projects that realistically can be completed in two years and that require limited levels of funding. This program supports different types of projects including, but not limited to, the following:

- o Pilot or feasibility studies;
- o Secondary analysis of existing data;
- o Small, self-contained research projects;
- o Development of research methodology; and
- o Development of new research technology.

Applications are assigned to participating Institutes and Centers (ICs) based on receipt and referral guidelines and applications may be assigned to multiple participating ICs with related research interests. Applicants are encouraged to identify a participating IC that supports their area of research via the R03 IC-Specific Scientific Interests and Contact website and contact Scientific/Research staff from relevant ICs to inquire about their interest in supporting the proposed research project.

This Funding Opportunity Announcement does not accept applications proposing clinical trial(s)

Award: Application budgets are limited to $50,000 in direct costs per year.

Letter of Intent: Not Required

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 February 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: BRAIN Initiative: Research Resource Grants for Technology Integration and Dissemination (U24 Clinical Trial Not Allowed)
Agency: National Institutes of Health RFA-NS-19-006
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-NS-19-006.html
Brief Description: The BRAIN Initiative: The Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative® is aimed at revolutionizing our understanding of the human brain. By accelerating the development and application of innovative technologies, researchers will be able to produce a new dynamic picture of the brain that, for the first time, will show how individual cells and complex neural circuits interact in both time and space. It is expected that the application of these new tools and technologies will ultimately lead to new ways to treat and prevent brain disorders.

NIH is one of several federal agencies involved in the BRAIN Initiative. Planning for the NIH component of the BRAIN initiative is guided by the long-term scientific plan, "BRAIN 2025: A Scientific Vision," which details seven high-priority research areas and calls for a sustained federal commitment of $4.5 billion over 12 years. This FOA and other FOAs issued in Fiscal Year 2018 are based on careful consideration by the NIH of the recommendations of the BRAIN 2025 Report, and input from the NIH BRAIN Multi-Council Working Group. Videocasts of the NIH BRAIN Multi-Council Working Group are available at http://www.braininitiative.nih.gov/about/mcwg.htm.

The overall goal of this FOA is to accelerate the scientific impact of the BRAIN Initiative through rapid dissemination of developed and validated technologies and resources broadly to the neuroscience research community. Projects may accomplish this goal by engaging in one or more of the following types of activities:

- Production and distribution of reagents (e.g., viral vectors or transgenic lines) using quality control manufacturing processes
- Services providing customized instrumentation based on end user needs
- Provision of state-of-art components, devices, or integrated systems (e.g., for assaying neural activity and/or connectivity) either distributed to end users or operated as specialized core facilities with user engagement
- Resources focused on enabling the translation of neurotechnologies for human use
- Maintenance, minor enhancements, and distribution of open source computational models and software packages
- User facilities that enable scientists from outside institutions to utilize specialized tools or techniques
- Training in usage of the resource

Award: The NIH anticipates providing $10M per year to fund an estimated 10 to 20 awards.
Letter of Intent: 30 days prior to the application due dates
Deadline: January 4, 2019, June 27 2019, February 27, 2020, November 27, 2020, June 27, 2021,
by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

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Grant Program: BRAIN Initiative: Research on the Ethical Implications of Advancements in Neurotechnology and Brain Science (R01 Clinical Trial Optional)
Agency: National Institutes of Health RFA-MH-19-400
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-MH-19-400.html
Brief Description: This FOA seeks to provide opportunities to directly consider the integration of ethical issues with BRAIN-supported scientific advances. Specifically, this FOA seeks to support efforts addressing core ethical issues associated with research focused on the human brain and resulting from emerging technologies and advancements in research and development supported by the BRAIN Initiative. The hope is that efforts supported under this initiative might be both complimentary and

integrative with the transformative, breakthrough neuroscience discoveries supported through the BRAIN Initiative.

While there are many ethical topics that might be suitable for leveraging an integrated research approach, input from the Neuroethics Working Group (https://braininitiative.nih.gov/about/neuroethics.htm) of the BRAIN Multi-Council Working Group and feedback from a Request For Information (RFI) on BRAIN Neuroethics has helped inform priority areas of ethics best suited for this FOA. Indeed, the BRAIN Initiative currently supports several research project grants focused on neuroethics. For this FOA, applications that focus on the following areas relevant to the BRAIN Initiative would be considered of particular interest:

- Research on risk/benefit analyses and informed consent practices in human neuroscience research with neural devices, and long-term obligations to patient populations
- Studies that probe the ethical implications/considerations of both collecting large volumes of brain data and the sharing of such for broader scientific purposes
- Studies that explore the evolving richness of collected human neural data and considerations such as data ownership, access, de-identification and re-use practices, privacy, and unintended uses
- Studies that consider the ethical implications of evolving neuromodulation and neuroimaging technologies, specifically as they pertain to the infrastructure of these technologies (activation and monitoring of devices, long-term maintenance, data security, intended and unintended use of these new technologies)
- Studies that empirically consider different perspectives on the distinction between invasive versus non-invasive brain imaging and/or neuromodulation; particularly as those views are similar or different between groups such as participants, researchers, physicians, families, and the broader public view
- The ethical implications of access to and use of emerging neurotechnologies and their relationship to informed consent (participant perspective on the consent process, consent with special populations, changes in consent capacity associated with disease progression)
- Ethical issues unique to research that leverages opportunities with human brain tissue
- Ethical issues associated with predictive/diagnostic research related to brain disorders
- Public, researcher, and/or research participant attitudes and decision-making about monitoring or modulating brain function for purposes of improving our understanding of human brain function and/or reducing illness and disability due to brain diseases and disorders
- Cybersecurity/privacy considerations, such as effective security and safeguards for human brain data and wireless transmissions to/from neural devices; gaps/provisions needed in existing regulatory models
- Studies focused on the advances in neural recording and/or neuromodulation specifically for use in children
- Research efforts to link neural data with behavioral data to better understand and/or diagnose brain diseases and disorders

Award: Application budgets are limited to $300,000 in direct costs in any project year and need to reflect the actual needs of the proposed project.

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

Deadline: February 4, 2019, October 9, 2019 and October 9, 2020, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates. No late applications will be accepted for this Funding Opportunity Announcement. Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Department of Defense/US Army/DARPA/ONR

Grant Program: FY19 Office of Naval Research (ONR) Navy and Marine Corps Science, Technology, Engineering & Mathematics (STEM), Education and Workforce Program
Agency: Department of Defense Office of Naval Research N00014-19-S-F003
Website: https://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx
Brief Description: The ONR seeks a broad range of applications for augmenting existing or developing innovative solutions that directly maintain, or cultivate a diverse, world-class STEM workforce in order to maintain the U.S. Navy and Marine Corps' technological superiority. The goal of any proposed effort must provide solutions that will establish and maintain pathways of diverse U.S. citizens who are interested in uniformed or civilian DoN (or Navy and Marine Corps) STEM workforce opportunities. As the capacity of the DoN Science and Technology (S&T) workforce is interconnected with the basic research enterprise and STEM education system, ONR recognizes the need to support efforts that can jointly improve STEM student outcomes and align educational efforts with Naval S&T current and future workforce needs. This announcement explicitly encourages projects that improve the capacity of education systems and communities to create impactful STEM educational experiences for students and workers. Submissions are encouraged to consider including active learning approaches and incorporating 21st century skill development. Projects must aim to increase student and worker engagement in STEM and enhance people with needed Naval STEM capabilities. ONR encourages applications to utilize current STEM educational research for informing project design and advancing our understanding of how and why people choose STEM careers and opportunities of naval relevance.
Awards: ONR's total STEM funding effort is $6,250,000 per year, subject to the availability of funds. Under this FOA competition, ONR intends to award approximately twenty-five (25) awards for a maximum of $250,000 per year for each award, with one-year (1) option periods for up to three (3) years.
Proposal Deadline:
White Paper Inquiries and Questions 17 June 2019 (Monday) White Papers must be received between 1 April 2019 (Monday) with a deadline of 28 June 2019 (Friday) at 5:00 PM Eastern Time Application Inquiries and Questions 16 September 2019 (Monday) Applications must be received no later than 27 September 2019 (Friday) at 11:59 PM Eastern Time
Contact Information: David Broadwell Grant Management Specialist Phone 703-588-2866

Grant Program: Machine-Assisted Analytic Rapid-Repository System (MARS) Broad Agency Announcement
Agency: Department of Defense Defense Intelligence Agency HHM402-18-S-MARS
Website: http://www.federalgrants.com/MARS-Broad-Agency-Announcement-74264.html
Brief Description: A key DIA mission is providing foundational intelligence to the military and decision makers. Foundational intelligence is the essential advantage we provide for a comprehensive understanding of foreign military capabilities, infrastructure and materiel in all operational domains - land, air, sea, space and cyber. Since the mid-1990s, this global foundational intelligence dataset has been housed in the Modernized Integrated Database (MIDB). MIDB contains the military and civilian infrastructure supporting those capabilities; characteristics and performance of foreign weapons, platforms, and sensors; and the military operating environment. This intelligence supports every aspect of military planning and operations, as well as the long-term planning and shaping of the joint force.

MARS will transform the existing MIDB into a data-centric knowledge repository at a significantly larger scale and with a transactional throughput capability. MARS will:

Allow analysts and operators to absorb and process large amounts of data to find new relationships, ensuring DIA provides the level of detail necessary to conduct agile, precise and more sophisticated analysis in support of military operations.

Capture new sources of data that provide deeper understanding of global technological developments, allowing us to better inform the acquisition community (support intelligence mission data

development) as they develop, test, operate and sustain systems to ensure continued U.S. military dominance.

Provide the ability to track both static and mobile military forces, ensuring a holistic understanding of foreign military operational readiness and disposition, and enhancing indications and warning of potential threats to joint force operations.

Enable an exponential increase of data ingested on military and civilian infrastructure in the operating environment.

Leverage commercial best practices and industry technological advances to scale, respond and adapt MARS at pace with future mission-driven data demands for the military.

Awards: Various

Proposal Deadline: Proposal Due Date for Initial Round of Selections for Technical Capability Areas 1-4: December 10, 2018

Contact Information: Mishelle Miller Grants and Contracting Officer
diacfo4mars@dodiis.mil

Grant Program: Accelerated Molecular Discovery (AMD)
Agency: Department of Defense DARPA HR001119S0003
Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=dce9a69eca4f0f4d0c789ed6dcc2475c&tab=core&_cview=1

Brief Description: The Defense Sciences Office (DSO) at the Defense Advanced Research Projects Agency (DARPA) is soliciting innovative research proposals in the area of autonomous molecular design to accelerate the discovery, validation and optimization of new, high-performance molecules for Department of Defense (DoD) needs. Specifically, DARPA seeks to develop new, systematic approaches that increase the pace of discovery and optimization of high-performance molecules through development of closed-loop systems that exploit, build and integrate tools for: 1) extracting existing data from databases and text; 2) executing autonomous experimental measurement and optimization; and 3) incorporating computational approaches to develop physics-based representations and predictive tools. Such methods will ultimately enable AI-based design and discovery of completely new molecules that are optimized across multiple molecular properties for specific DoD applications. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, and systems related to small organic molecules. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

Awards: Multiple

Proposal Deadline:
Abstract Due Date: November 1, 2018, 4:00 p.m. o FAQ Submission Deadline: January 3, 2019, 4:00 p.m. See Section VIII.A. o Full Proposal Due Date: January 14, 2019, 4:00 p.m.

Contact Information: Anne Fischer, Program Manager, DARPA/DSO; BAA Email: AMD@darpa.mil

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Grant Program: Electronic Warfare Technology
Agency: Department of Defense ONR N00014-19-R-S002
Website: https://www.onr.navy.mil/en/Contracts-Grants/Funding-Opportunities/Special-Notices

Brief Description: The proposed topic will explore and exploit the technical opportunities for discovery and invention in the area of Electronic Warfare (EW). The goal of EW is to control the Electromagnetic Spectrum (EMS) by exploiting, deceiving, or denying enemy use of the spectrum while ensuring its use by friendly forces. To that end, the Office of Naval Research (ONR) EW Discovery and Invention (D&I) program invests in Science and Technology (S&T) initiatives that will provide naval forces (including Navy and Marine Corps) with improved threat warning systems; Electronic warfare Support (ES); decoys and countermeasures against weapon tracking and guidance systems; Electronic Attack (EA) against

adversary Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR); and Electronic Protection (EP) of our own weapons and C4ISR from intentional and unintentional interference.

ONR Code 312 Electronic Warfare (312EW) seeks proposals to develop and demonstrate technologies for the next generation systems in electronic warfare. White papers and subsequent proposals should address technology developments in one or more of the following Research Opportunity Technical Areas (TA) 1-4.

Awards: Multiple

Proposal Deadline:

White Paper Submission Date 12/07/2018 4:00pm Eastern Local Time Notification of White Paper Evaluation* 01/10/2019 Oral Presentation - Invitation Only 01/23/2019 – 01/24/2019 Notification of Oral Presentation Evaluation 01/29/2019 Full Proposal Submission Date 02/28/2019 4:00pm Eastern Local Time

Contact Information: Stephen Hughes Contracting Officer

Grant Program: Microsystems Technology Office (MTO)
Agency: Department of Defense DARPA HR001118S0060
Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=68dfd959363ffdeb96f61c065e212ef7&tab=core&_cview=1

Brief Description: Since its inception in 1991, MTO has helped create and prevent strategic surprise through investments in compact microelectronic components such as microprocessors, microelectromechanical systems (MEMS), and photonic devices. MTO's revolutionary work applying advanced capabilities in areas such as wide-band gap materials, phased array radars, high-energy lasers, and infrared imaging have helped the United States establish and maintain technological superiority for more than two decades. MTO seeks to develop high-risk, high-reward technologies that continue DARPA's mission of creating and preventing strategic surprise, help to secure the Department of Defense's (DoD) technological superiority, and address the complex threats facing U.S. national security. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice. As MTO evolves to address future microsystems-related challenges, the office has identified three target thrust areas: (1) Electronics: Managing Moore's Inflection, (2) Spectrum: Enhancing Our Advantage with Agility and Autonomy, and (3) Sensors: Decentralized Sensors for the DoD.

Awards: Multiple

Proposal Deadline:

Abstract Due Date: Abstracts may be submitted on a rolling basis until 1:00PM on May 26, 2020. o Proposal Due Date: Proposals may be submitted on a rolling basis until 1:00PM on June 26, 2020.

Contact Information: Dr. William Chappell Director, Microsystems Technology Office BAA Coordinator: HR001118S0060@darpa.mil

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Grant Program: AFRL/RXC Structural Materials Open BAA
Agency: Department of Defense Air Force -- Research Lab FA8650-18-S-5010
Website: http://cdmrp.army.mil/funding/dmrdp

Brief Description: Air Force Research Laboratory, Materials & Manufacturing Directorate, Structural Materials Division, AFRL/RXC, is soliciting white papers and potentially technical and cost proposals under this announcement that support the needs of its Structural Materials and Applications mission. Structural Materials technologies that range from materials and scientific discovery through technology development and transition are of interest. Descriptors of Materials and Manufacturing Directorate

technology interests are presented in two contexts in the Statement of Objectives (BAA Attachment 1); that of structural materials science and engineering academic "competencies," and that of Air Force application area needs.
Awards: Up to $5,000,000; Available program funding: $99,500,000
Proposal Deadline:
White Paper Submission: 20 September 2023
Proposal Submission: Due followed by white paper submission and review
Contact Information: Adrianna Menker Contracting/Grants Officer Phone 937-713-9924

Grant Program: NRL Long Range Broad Agency Announcement (BAA) for Basic and Applied Research
Agency: Department of Defense Naval Research Laboratory N00173-18-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/. This announcement is an expression of interest only and does not commit the Government to make any award or to pay for any proposal preparation costs. The cost of proposal preparation for response to a BAA is not considered an allowable direct charge to any resultant contract or any other contract; however, it may be an allowable expense to the normal bid and proposal indirect cost specified in FAR 31.205-18.
Awards: Various
Proposal Deadline: May 9, 2019
Contact Information: Mary Johnson Contract Specialist Phone 202-767-2021

Department of Education

Grant Program: Institute of Education Sciences (IES): Education Research CFDA Number 84.305A
Agency: Department of Education ED-GRANTS-052118-001
Website: https://www.gpo.gov/fdsys/pkg/FR-2018-05-21/pdf/2018-10802.pdf
Brief Description: Each funding opportunity description is a synopsis of information in the Federal Register application notice. For specific information about eligibility, please see the official application notice. The official version of this document is the document published in the Federal Register. Free Internet access to the official edition of the Federal Register and the Code of Federal Regulations is available on GPO Access at: http://www.access.gpo.gov/nara/index.html. Please review the official application notice for pre-application and application requirements, application submission information, performance measures, priorities and program contact information.
For the addresses for obtaining and submitting an application, please refer to our Common Instructions for Applicants to Department of Education Discretionary Grant Programs, published in the Federal

Register on February 12, 2018 (83 FR 6003) and available at www.gpo.gov/fdsys/pkg/FR-2018-02-12/pdf/2018-02558.pdf.

The dates when applications are available and the deadlines for transmittal of applications invited under this notice are indicated in the chart at the end of this notice and in the Requests for Applications (RFAs) that are posted at the following websites: https://ies.ed.gov/funding, https://www.ed.gov/programs/edresearch/index.html, and https://www.ed.gov/programs/specialedresearch/index.html.

Purpose of Program: In awarding these grants, the Institute of Education Sciences (Institute) intends to provide national leadership in expanding fundamental knowledge and understanding of (1) developmental and school readiness outcomes for infants and toddlers with or at risk for a disability, (2) education outcomes for all students from early childhood education through postsecondary and adult education, and (3) employment and wage outcomes when relevant (such as for students who engaged in career and technical, postsecondary, or adult education). The Institute's research grant programs are designed to provide interested individuals and the general public with reliable and valid information about education practices that support learning and improve academic achievement and access to education opportunities for all students. These interested individuals include parents, educators, students, researchers, and policymakers. In carrying out its grant programs, the Institute provides support for programs of research in areas of demonstrated national need.

Competitions in This Notice: The Institute will conduct nine research competitions in FY 2019 through two of its centers: The Institute's National Center for Education Research (NCER) will hold a total of five competitions--one competition in each of the following areas: Education research; education research and development centers; statistical and research methodology in education; partnerships and collaborations focused on problems of practice or policy; and low-cost, short-duration evaluation of education interventions.

Catalog of Federal Domestic Assistance (CFDA) numbers 84.305A, 84.305C, 84.305D, 84.305H, 84.305L, 84.324A, 84.324B, 84.324L, and 84.324N.

Awards: Up to $4,000,000. Estimated total funding: $115,000,000

Proposal Deadline: Aug 23, 2018 Application Package Available: June 21, 2018. Deadline for Transmittal of Applications: August 23, 2018

Contact Information: Julius Cotton ED Grants.gov FIND Systems Admin. Phone 202-245-6288 EducationGrantInquiries@ed.gov

Program Manager: Molly Faulkner-Bond e-Mail: Molly.Faulkner-Bond@ed.gov .

EPA

Grant Program: 16th Annual P3 Awards: A National Student Design Competition Focusing on People, Prosperity and the Planet - Safe and Sustainable Water Resources
EPA-G2019-P3-Q1 – Air Quality
EPA-G2019-P3-Q2 – Safe and Sustainable Water Resources
EPA-G2019-P3-Q3 – Sustainable and Healthy Communities
EPA-G2019-P3-Q4 – Chemical Safety
Agency: Environmental Protection Agency
Website: https://www.epa.gov/research-grants/16th-annual-p3-awards-national-student-design-competition-focusing-people-prosperity
Brief Description: The U.S. Environmental Protection Agency (EPA) – as part of its People, Prosperity and the Planet (P3) Award Program – is seeking applications proposing to research, develop, design, and demonstrate solutions to real world challenges. The P3 competition highlights the use of scientific principles in creating innovative technology-based projects that achieve the mutual goals of improved quality of life, economic prosperity, and protection of the planet – people, prosperity, and the planet. The EPA offers the P3 competition to respond to the needs of people in the United States (U.S.)—e.g., those

in small, rural, tribal, and disadvantaged communities. Please see the People, Prosperity and the Planet (P3) Student Design Competition website for more details about this program. Proposed projects must embody the P3 approach, which is that they have the intention and capability to simultaneously improve the quality of people's lives, provide economic benefits, and protect the environment.

This solicitation provides the opportunity for the submission of applications for projects that may involve human subjects research. Human subjects research supported by the EPA is governed by EPA Regulation 40 CFR Part 26 (Protection of Human Subjects). This includes the Common Rule at subpart A and prohibitions and additional protections for pregnant women and fetuses, nursing women, and children at subparts B, C, and D. Research meeting the regulatory definition of intentional exposure research found in subpart B is prohibited by that subpart in pregnant women, nursing women, and children. Research meeting the regulatory definition of observational research found in subparts C and D is subject to the additional protections found in those subparts for pregnant women and fetuses (subpart C) and children (subpart D). All applications must include a Human Subjects Research Statement (HSRS, as described in Section IV.C.5.b of this solicitation), and if the project involves human subjects research, it will be subject to an additional level of review prior to funding decisions being made as described in Sections V.C and V.D of this solicitation.

Awards; The first phase is a competition for one-year grants of up to $25,000 to test, research, and develop innovative scientific projects or engineering designs that use the P3 approach. In the spring of 2020, the Phase I grantees awarded from this solicitation are required to present their projects/designs at the National Student Design Expo. EPA will provide teams with information about the Expo during the award year. At the end of Phase I, teams will submit a *Project Report* that will serve as an application for a Phase II grant award of up to $100,000. The Phase II grant awards are intended to support the further development and demonstration of the projects/designs created in Phase I. The competitors for 2020 P3 Phase II grants are limited to recipients of Phase I grant awards from this solicitation.

Submission Deadline: December 11, 2018, 11:59:59 pm Eastern Time

Contact Information: Technical Contact: Angela Page (page.angelad@epa.gov), Phone: 202-564-7957; Eligibility Contact: Ron Josephson (josephson.ron@epa.gov), Phone: 202-564-7823; Electronic Submissions: Debra M. Jones (jones.debram@epa.gov), Phone: 202-564-7839

Department of Energy

Grant Program: Science Undergraduate Laboratory Internship (SULI)
Agency: Department of Energy
Website: https://science.energy.gov/wdts/suli/
Brief Description: The Science Undergraduate Laboratory Internship (SULI) program encourages undergraduate students and recent graduates to pursue science, technology, engineering, and mathematics (STEM) careers by providing research experiences at the Department of Energy (DOE) laboratories. Selected students participate as interns appointed at one of 17 participating DOE laboratories/facilities. They perform research, under the guidance of laboratory staff scientists or engineers, on projects supporting the DOE mission. The SULI program is sponsored and managed by the DOE Office of Science's, Office of Workforce Development for Teachers and Scientists (WDTS) in collaboration with the DOE laboratories/facilities.

Applications for the SULI program are solicited annually for three separate internship terms. Internship appointments are 10 weeks in duration for the Summer Term (May through August) or 16 weeks in duration for the Fall (August through December) and Spring (January through May) Terms. Each DOE laboratory/facility offers different research opportunities; not all DOE laboratories/facilities offer internships during the Fall and Spring Terms.

Awards: Various
Submission Deadline: January 10, 2019 at 5:00 PM ET.

Grant Program: Transformational Sensing Capabilities for Monitoring the Subsurface
Agency: Department of Energy   DE-FOA-0001998
Website: https://www.fedconnect.net/FedConnect/default.htm
Brief Description: The purpose of this Request for Information (RFI) is to seek information from stakeholders such as industry, academia, nonprofits, and research institutions about Research and Development (R&D) activities that could lead to development of transformational sensing capabilities for monitoring parameters associated with CO_2 injection throughout the storage complex, including: overburden, reservoir, and underburden. This includes fluid flow throughout the reservoirs into the far field through critical but difficult-to-detect features such as faults and integrated fracture networks. Of particular interest are transformational sensors or sensing systems that will improve the ability to monitor movement of fluids in the subsurface and the ability to measure critical subsurface properties throughout a commercial-scale (greater than 50 million metric tons CO_2 stored) storage complex. A storage complex consists of: (1) one or more storage reservoirs, with permeability and porosity that allow injection and storage of CO_2; and (2) one or more low-permeability seals, which enclose the reservoir(s) and serve as barriers to migration of CO_2 out of the reservoir.
Awards: Various
Submission Deadline: Responses to this RFI must be submitted electronically to: DE-FOA0001998@netl.doe.gov with the subject line "DE-FOA0001998 - RFI" no later than 8:00 PM (ET) on December 3, 2018.
Contact Information: John R. Hatfield John.Hatfield@netl.doe.gov

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Grant Program: Advanced Systems Integration for Solar Technologies
Agency: Department of Energy   DE-FOA-0001987
Website: https://eere-exchange.energy.gov/#FoaId3c598467-b778-45b1-b2a0-7fc4a14e1456
Brief Description: The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Solar Energy Technology Office, a Funding Opportunity Announcement (FOA) entitled "Advanced Systems Integration for Solar Technologies".
This FOA supports the mission of the Solar Energy Technologies Office (SETO) which is to support early-stage research and development to improve the performance and flexibility of solar technologies that contribute to a reliable and resilient U.S. electric grid. The office invests in innovative research efforts that securely integrate more solar energy into the grid, enhance the use, storage and dispatch of solar energy, and lower solar electricity costs.
DOE is committed to improving the affordability of energy technologies and strengthening the Energy Sector's capability to withstand cyber and physical threats, including natural disasters. Improving the strategic location and situational awareness of solar systems can help ensure continuity of service in the face of widespread and coordinated threats. Developing innovative approaches to accelerate the transfer of solar system solutions that will improve Energy Sector resilience is also a priority.
Awards: Various
Submission Deadline: Letter of Intent Deadline: 11/14/2018 5:00 PM ET
- Full Application Submission Deadline: 12/7/2018 5:00 PM ET
Contact Information: Maureen.Davison@NETL.DOE.GOV

NASA

Grant Program: Second Heliophysics Space Weather Operations to Research
Agency: NASA NNH18ZDA001N-2HSWO2R

Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B42510C5A-BC75-3943-5FD4-C4C2C63B540E%7D&path=open&method=init

Brief Description: NSF's primary role in developing space weather readiness for the nation is in the support of basic research that advances fundamental understanding of space weather and related processes, specifically, the generation of solar storms, their propagation through the interplanetary medium, and the generation of disturbances in the near-Earth space environment and atmosphere. NSF-supported community members use that fundamental understanding in the development of models for these space weather processes, which draw on observations from NSF's persistent ground-based observational platforms, among others, to test and further refine our community's understanding. The goals of these NSF funded research activities are to benefit society and contribute to the achievement of specific, desired societal outcomes, such as improving space weather predictive capability.

For this opportunity, NASA, NOAA, and NSF have identified the following focus area for research and development to advance forecast models of energetic particles in the heliosphere: • Improve forecasts of the energetic proton and/or heavy ion conditions in the heliosphere due to solar eruptions. 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 forecasting capabilities and which could also lead to improved scientific understanding. Effective utilization of available data is encouraged. Employing data assimilation, ensemble, and/or machine-learning techniques is also encouraged. Improved forecast capabilities could include, for example, forecasts of solar event probabilities and enhanced energetic particle levels one or more days prior to a solar eruption, as well as probabilities of event duration, peak flux levels, and integrated event fluence following the initiation of a solar eruption. Improved forecasts of solar energetic particles can support numerous applications, including human and robotic exploration beyond low-Earth orbit, satellite launch and on-orbit operations, aviation operations, and radio communication.

Awards: Various

Proposal Deadline: Step-1 Proposal due on February 1, 2019

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

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Grant Program: Use of the NASA Physical Sciences Informatics System - Appendix E
Agency: NASA NNH17ZTT001N-17PSI-E
Website: https://nspires.nasaprs.com/external/solicitations/summary!init.do?solId={2AF0A877-0C3F-8E34-5954-223EAAD4CBB4}&path=open

Brief Description: This National Aeronautics and Space Administration (NASA) Research Announcement (NRA) solicits ground-based research proposals using an open science approach to develop new analyses and generate new scientific insights by utilizing experimental data residing in NASA's Physical Sciences Informatics (PSI) system (https://psi.nasa.gov), an online database of completed physical science reduced-gravity flight experiments conducted on the International Space Station (ISS), on Space Shuttle flights, or on Free Flyers, and related ground-based studies. The goals of this NRA are to: a) promote investigations making use of currently available experimental data resulting in more scientists participating in reduced-gravity research; b) allow new areas of research and discovery to occur more quickly through open access; and c) accelerate the "research to product or publication" timeline through the rapid sharing of data. The PSI system allows researchers to data mine information generated by experiments conducted as part of NASA's Physical Sciences Research Program in support of NASA's Space Life and Physical Sciences Research and Applications (SLPSRA) Division. In this manner PSI meets the requirements of the nation's Open Data Policy, which states that "Government information shall be managed as an asset throughout its life cycle to promote interoperability and openness, and, wherever possible and legally permissible, to ensure that data are released to the public in ways that make the data easy to find, accessible, and usable." (Executive Order May 9, 2013, "Making Open and Machine Readable the New Default for Government Information"). In accordance with this

policy, all awardees from this NRA must upload data, new analytical or numerical models, tools, and software produced from the funded research into the PSI system. This solicitation is open to researchers from all categories of U.S. and non-U.S. organizations, including educational institutions, industry, nonprofit organizations, NASA Centers, and other U.S. Government agencies. This NRA is soliciting proposals from two types of investigators: 1) established researchers from all categories of U.S. and non-U.S. organizations; 2) graduate students (with advisors) from accredited U.S. postsecondary institutions and programs. The proposals from graduate students must be submitted by their advisor.

Awards: Various
Notice of Intent: Not Required
Proposal Deadline: December 14, 2018
Contact: Dr. Francis Chiaramonte, Program Scientist for Physical Sciences
NASA Headquarters
E-mail: francis.p.chiaramonte@nasa.gov
Phone: 202-358-0693

National Endowment of Humanities

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

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

Digital Humanities Advancement Grants may involve
*   creating or enhancing experimental, computationally-based methods, techniques, or infrastructure that contribute to the humanities;
*   pursuing scholarship that examines the history, criticism, and philosophy of digital culture and its impact on society; or
*   conducting evaluative studies that investigate the practices and the impact of digital scholarship on research, pedagogy, scholarly communication, and public engagement.

Awards: Maximum award amount $325,000 in outright, $50,000 in match
Deadline: January 15, 2019
Contact: Contact the Office of Digital Humanities Team odh@neh.gov

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Grant Program: **Summer Seminars and Institutes**
Agency: National Endowment for the Humanities
 Website: https://www.neh.gov/grants/education/summer-seminars-and-institutes
Brief Description: NEH Summer Seminars and Institutes grants broaden and deepen understanding of the humanities in supporting professional development programs, specifically designed for a national

audience of K-12 educators or college and university faculty. The programs provide one- to four-week opportunities for participants (NEH Summer Scholars) to explore a variety of topics relevant to K-12 or undergraduate education in the humanities.

NEH Summer Seminars and Institutes
- focus on the study and teaching of significant texts and other resources;
- provide models of excellent scholarship and teaching;
- contribute to the intellectual growth of the of participants; and
- build lasting communities of inquiry.

An NEH Summer Seminar or Institute may be hosted by a college, university, learned society, center for advanced study, library or other repository, cultural or professional organization, or school or school system. The host site must provide facilities for collegial interaction and scholarship. The program must be held only in the United States and its territories.

Seminars and Institutes are designed either for K-12 educators or for college and university faculty. Programs for K-12 educators must involve someone with significant K-12 experience in both project planning and implementation and must respond to K-12 curricular needs.

Awards: Maximum award amount
 Seminars: $125,000
Institutes: $200,000
Deadline: February 14, 2019
Contact: Contact the Division of Education Programs Team 202-606-2324 sem-inst@neh.gov

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Grant Program: Collaborative Research Grants
Agency: National Endowment of Humanities
Website: https://www.neh.gov/grants/education/humanities-connections-implementation-grants
Brief Description: Collaborative Research grants support groups of two or more scholars engaging in significant and sustained research in the humanities. The program seeks to encourage projects in a single field of study, as well as interdisciplinary work, both within the humanities and beyond. Projects that include partnerships with researchers from the natural and social sciences are encouraged, but they must remain firmly rooted in the humanities and must employ humanistic methods. Collaborators may be drawn from a single institution or several institutions across the United States; up to half of the collaborators may be based outside of the U.S. Partnerships among different sorts of institutions are welcome: for example, research universities might partner with teaching colleges, libraries, museums, or independent research institutions.

Eligible projects must propose tangible and sustainable outcomes such as co-authored or multi-authored books; born-digital publications; themed issues of peer-reviewed journals; and open-access digital resources. All project outcomes must be based on and must convey interpretive humanities research. All award recipients are expected to disseminate the results of their work to scholarly audiences and/or general audiences.

Funding is available for sustained full-time or part-time activities during the period of performance to facilitate collaboration. Funds may be requested to cover, where appropriate, salary replacement; compensation of collaborators, consultants, and research assistants; fringe benefits; and travel, lodging, and per diem costs. Indirect costs can be included. NEH is rarely able to cover the full cost of a project. For that reason, funding from other sources and cost sharing are expected but not required. (See the budget instructions below for additional information.)

Award: Collaborative Research offers three types of awards to address different sorts of projects and stages of development.

Type 1: Convening Grants – up to $50,000
Convening grants last one year and typically fund conferences and working group meetings to sharpen the chosen research topic and discuss and plan subsequent publication.

Type 2: Publication Grants – up to $250,000 (no more than $100,000 per year)

Publication grants last one to three years and support the project toward completion of its publication goals. Publications can appear in traditional print or in digital form. Note that costs paid to publishers and subventions are not supported.

A Type 1 Convening Grant can be used to plan and prepare for a Type 2 Publication Grant in a subsequent year. A Type 1 grant is not, however, a prerequisite for a Type 2 grant. Collaborators who have done their planning and are ready to work toward completion and publication can apply directly for a Type 2 Publication grant.

Type 3: Archaeology Grants – up to $250,000 (no more than $100,000 per year)
Archaeology grants last one to three years and support projects that lead to publication. Excavation is not required.

Proposal Deadline: Application available: October 5, 2018
Application due: December 5, 2018
Project start date: October 1, 2019
Contact: Contact the Division of Research Programs Team 202-606-8200 collaborative@neh.gov.

Environment Research and Education Foundation

Grant Program: Research on Research on Sustainable Solid Waste Management and Recycling
Agency: Environment Research and Education Foundation
Website: https://erefdn.org/research-grants-projects/how-to-apply-for-grant/
Brief Description: The sustainability movement has reached the business models of nearly every industry in the United States, and many companies, municipalities and states have set aggressive sustainability goals that include how waste streams are being managed. The EREF Board of Directors has set an initiative to ensure research funded reflects EREF's long-term strategic plan to address all areas of integrated solid waste management, with a strong focus towards research that increased sustainable solid waste management practices.

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

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

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

Proposal Deadline: EREF has two deadlines per year for pre-proposals:
December 1
May 1
Contact: If interested, please send an email to Eric Blitz (eric.blitz@njit.edu) and Atam Dhawan (dhawan@njit.edu).

Streamlyne Question of the Week

Question: I need to change my budget - Do I need to change it in Streamlyne?
Answer: You can change your budget at any point before submitting the proposal into workflow approval. For more information, please contact your college ambassador, or see New User Manual posted on the Research website http://www.njit.edu/research/sites/research/files/StreamlyneNewUserManualCommonElements.pdf).
More FAQs on Streamlyne: Please visit http://www.njit.edu/research/streamlyne/

Streamlyne Information

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

Steamlyne_NewUserManual_CommonElements.docx : This manual provides a reference to all the common elements of Streamlyne Research. This user manual is a good document to review each module's functionality.
Steamlyne_NewUserManual_PD&PDBudget.docx: This is a user manual on proposal and budget development in Streamlyne. The content herein explain the use and functionality of this module. This is the most useful Streamlyne document for PIs and users new to Streamlyne.

How-to-do-Videos

New "How to Do" videos have been posted on the research website http://www5.njit.edu/research/streamlyne/. The videos show step-by-step process on the following tasks:
♦ How to Begin Proposal Submission in Streamlyne
♦ How to Input Proposal Budget
♦ How to Process Approvals
♦ How to Upload Proposal Attachments
♦ How to Search for a Proposal that is in Route
♦ Difference Between "Prime Sponsor Code" and "Sponsor Code"
♦ How to Select an RR Budget, RR Sub-award or Modular Budget
♦ How to Add a Student/Summary
♦ Participant Support Categories
♦ Supplies Specific Category Materials
♦ How to Create a Modular Budget

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.