NJIT Research Newsletter

Issue: ORN-2020-09

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

Special Announcements

NJIT Research Challenges and Big Ideas Update: Steering Committees

Thank you all for your input to develop NJIT Research Challenges and Big Ideas plan over past 10 months including your participation at the Open Forum and Workshop held on December 6, 2019. The draft summary sent out earlier to all faculty and staff was discussed with research cluster group co-chairs, chairs and deans.

We are very pleased to present NJIT Research Challenges summary draft version-5 with three research challenges and their respective steering committees for your review and comments. The ppt files of the NJIT Research Challenges summary with steering committee information is posted on the Google shared drive https://drive.google.com/file/d/1r6HI8TVxLLB6VBPuQG9ZC7Eya54NsgT3/view?usp=sharing (the file name is NJIT Research Challenges Summary for SC Draft V5 03-08-2020).

The steering committee will further develop the vision, objectives and strategic action plan with expected key results for the next five years. Steering committees will provide recommendations for strategic directions (with respect to tactics and resources) to promote multidisciplinary and trans-disciplinary collaborative research in basic, applied and translational areas, and enhance external funding and collaborative partnerships to impact the visibility at the regional and national levels towards establishing prominence in select areas as outlined in the 2025 strategic plan.

Overall Objective: Develop a robust and actionable roadmap to align NJIT research expertise and enterprise with the select Global Challenges and Big Ideas. The roadmap will form the foundation for NJIT's strategic direction to drive partnerships and collaborative research and development for sustained societal impact.

Steering Committee of Research Challenges and Big Ideas at NJIT-1: Improve healthcare with physiology based innovations

Bryan Pfister, BME (Chair)
Jorge Golowasch, BIOL (Co-Chair)
Treena Arinzeh, BME
Eon Soo Lee, MIE
Kathleen McEnnis, CME
Saikat Pal, BME
Edgardo Farinas, CES
Sagnik Basuray, CME
Brooke Flammang-Locker, BIOL
Student-TBA

Steering Committee: NJIT Research Challenges and Big Ideas - 2
Develop innovative solutions for sustainable societies improving environment and infrastructure

Gareth Russell, Biol (Chair)
Michel Boufadel, CEE (Co-Chair)
Wunmi Sadik, CES
Nancy Steffen, HUM
Michael Ehrilch, MTSM
Haimin Wang, PHY
Deane Evans, CoAD
Sam Lieber, SAET
Katherine Ji (Student)
Graduate Student (TBA)

Steering Committee: NJIT Research Challenges and Big Ideas - 3
Develop next-generation computing, artificial intelligence and cyber-infrastructure technologies

David Bader, CS (Chair)
Shahriar Afkhami, MATH (Co-Chair)
Senjuti Basu Roy, CS
Nirwan Ansari, ECE
Amy Hoover, INF
Cong Wang, ECE
Junmin Shi, MTSM
Branislav Dimitrijevic, CEE
Taro Narahara, CoAD
Student (TBA)

I would appreciate your input and feedback to the steering committee chairs and members.

2020 NJIT President's Forum and Faculty Research Showcase

April 23, 2020; Ballroom A and B, Campus Center

We are pleased to introduce new faculty members and recipients of 2019 Faculty Seed Grants at the 2020 President's Forum and Faculty Research Showcase to be held on April 23, 2020. The showcase will start with the President's Forum Keynote Lecture from 10.00 AM to 11.30 AM in Ballroom A, Campus Center. The Keynote Speaker is Dr. Colin Brenan, Program Director Biosensing, Chemical, Bioengineering, Environmental and Transport Systems (CBET) Division at the National Science Foundation.

The showcase will feature new faculty presentations starting at 11.00 AM in Ballroom A, Campus Center. After the oral session, the electronic poster and networking session will include electronic poster presentations by new faculty, faculty seed grant and TITA seed grant recipients. Each presenter in the poster session will have a table with a laptop and LCD HD monitor displaying the research work.

All faculty, staff and students are invited to attend to learn and discuss ongoing research projects at NJIT for future collaborations.

Agenda

10.00 AM - 10.10 AM: Welcome Remarks
Fadi Deek, Provost and Senior Executive VP
Vince DeCaprio, Vice Chair, BOT
Atam Dhawan, Senior Vice Provost for Research

10.10 AM - 11.00 AM: President's Forum: Keynote Lecture
Dr. Colin Brenan, Founder/CEO and Director of the single cell instrumentation company 1CellBio Inc. (www.1cell-bio.com)

11.00 AM - 12.30 PM: New Faculty Presentations: Session-1 (NCE, CSLA)

12.30 PM – 1.00 PM: Lunch and Networking

1.00 PM - 2.00 PM: New Faculty Presentations: Session-2 (YWCC, MTSM and CoAD)
TITA Seed Grant Recipients

2.00 PM - 3.00 PM: Poster Presentations and Networking Session:
New Faculty, Faculty Seed Grant and TITA Seed Grant Recipients

Biographical Sketch: Colin J.H. Brenan is a serial life sciences entrepreneur and senior executive with over 30 years of experience in building high growth, early-stage life science companies based on in-licensed university research. Dr. Brenan is presently Founder/CEO and Director of the single cell instrumentation company 1CellBio Inc. (www.1cell-bio.com); formerly Founder/Chief Commercial Officer and Director of antibody drug developer HiFiBiO Ltd (www.hifibio.com); and, a Managing Partner of the seed stage investment fund 7Pines Holding BV. Previously he was Managing Director of the Monsanto-Atlas Seed Fund Alliance at Atlas Venture (Cambridge, USA) where he identified and invested in seed and early-stage life science companies. Prior to Atlas, Dr. Brenan was Director of

Strategic Relationships for the Center for Integration of Medicine and Innovative Technology (CIMIT) – a Partners Healthcare innovation center (Boston, MA).

Before joining CIMIT, Dr. Brenan was the Founder, Chief Technology Officer, SVP, Business Development and a Director of BioTrove Inc. (Woburn, USA), a life science nanofluidic tools company spun-out from the Massachusetts Institute of Technology (MIT) and acquired by Life Technologies Inc. (LIFE:NASDAQ); and a Founder of Biocius Inc., a drug discovery instrument and service provider spun-out from BioTrove and acquired by Agilent Inc. (A:NYSE).

Dr. Brenan is the inventor on 26 US patents, 27 non-US patents, +60 patent applications and published +50 peer-reviewed journal articles, book chapters and reports in the fields of bio-microsystems, confocal microscopy, spectroscopic imaging, drug discovery and microsurgical robotics. He has over a decade of experience in consulting for the US National Institutes of Health and is a reviewer for IEEE, IEE, and AIP journals.

Dr. Brenan is an IEEE Senior Member, serves currently as the IEEE-EMBS VP of Technical Activities and is formerly Editor-in-Chief of IEEE PULSE Magazine. He received his B.Sc. (Honors Physics), M. Eng. (Electrical), and Ph.D. (Biomedical Engineering) from McGill University (Montreal, Canada) and completed postdoctoral training at MIT (Cambridge, USA).

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.

Call for Proposals
2020 Provost Undergraduate Research and Innovation (URI) Summer Fellowships
Stipend: $3,000 each
Online Submission Deadline: March 27, 2020

https://www5.njit.edu/provost/events/undergrad_research.php

SUBMISSION FORMS/APPLICATION LINKS
Students: Application Form
Faculty: Faculty Letter of Submission
Questions: Frequently Asked Questions
Program Information: Undergraduate Research Program Summer Provost Fellowship

For additional information, please visit the URI website http://centers.njit.edu/uri/programs/provost-fellowship.php. Any questions should be directed to Ms. Brenda Herman, Undergraduate Research and Innovation Programs Coordinator at brenda.g.herman@njit.edu.

Grant Opportunity Alerts

Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: **Program: Gen-4 Engineering Research Centers (ERC); Future Manufacturing (FM); Engineering Research Visioning Alliance (ERVA);** Navigating the New Arctic Community Office (NNA-CO); Signals in the Soil; Human-Environment and Geographical Sciences Program (HEGS);

Small Business Technology Transfer Program Phase II (STTR Phase II); Small Business Innovation Research Program Phase II (SBIR Phase II); Foundational Research in Robotics; Reproducible Cells and Organoids via Directed- Differentiation Encoding (RECODE); NSF-Simons Research Collaborations on the Mathematical and Scientific Foundations of Deep Learning (MoDL)
NIH: NICHD Resource Program Grants in Bioinformatics (P41); Maximizing Investigators' Research Award (MIRA) for Early Stage Investigators (R35); High-End Instrumentation (HEI) Grant Program (S10); Shared Instrumentation Grant (SIG) Program (S10); Optimizing Natural Systems for Remediation: Utilizing Innovative Materials Science Approaches to Enhance Bioremediation (R01); Collaborative Program Grant for Multidisciplinary Teams (RM1); IDeA Networks of Biomedical Research Excellence (INBRE) (P20); Environmental Health Sciences Core Centers (EHSCC) (P30)
Department of Defense/US Army/DARPA/ONR: **Atmosphere as a Sensor (AtmoSense);** FY 2021 Multidisciplinary Research Program of the University Research Initiative (MURI); FY 2021 Defense University Research Instrumentation Program (DURIP); Quantum Information Sciences; Synthetic Biology (SynBio) Manufacturing Innovation Institute (MII); NRL Long Range Broad Agency Announcement (BAA) for Basic and Applied Research; C4ISR, Information Operations, Cyberspace Operations and Information Technology System Research, Air Superiority Technology Broad Agency Announcement; DSO Office-wide Broad Agency Announcement
Department of Transportation: FY 2020 National Infrastructure Investments
Department of Agriculture: Scientific and Cooperative Research Program; Biotechnology Risk Assessment Grants Program; Agriculture and Food Research Initiative - Foundational and Applied Science; REAP-Renewable Energy Systems and Energy Efficiency Improvements
Department of Labor: Apprenticeships: Closing the Skills Gap
EPA: Source Reduction Assistance Grant Program; National Environmental Education and Training Program; Community-Scale Air Toxics Ambient Monitoring
Department of Energy: **Scientific Discovery through Advanced Computing: Scientific Machine Learning and Artificial Intelligence for Fusion Energy Sciences; Theoretical Research in Magnetic Fusion Energy Science;** Notice of Intent to Issue Funding Opportunity Connected Communities; Solar Energy Technologies Office Fiscal Year 2020 Funding Program
NASA: ROSES 2020: Heliophysics Supporting Research; Astrophysics Data Analysis; HELIOPHYSICS - Early Career Investigator Program; Astrophysics Research and Analysis; Early Career Faculty; ROSES 2019: Sustainable Land Imaging-Technology
National Endowment of Humanities: Advanced Topics in the Digital Humanities; Fellowships
Whitehall Foundation: Bioscience Research

Recent Research Grant and Contract Awards

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

PI: Chang Liu (PI), Haimin Wang (Co-PI) and Ju Jing (Co-PI)
Department: Center for Solar Terrestrial Research
Grant/Contract Project Title: Study of Structural Properties of Core and Strapping Fields in Relation to Confined and Ejective Solar Eruptions
Funding Agency: NASA
Duration: 04/01/18-03/31/21

PI: Aritra Dasgupta (PI)
Department: Informatics
Grant/Contract Project Title: Data Visualization and Data Privacy Training for Hearst, Inc.
Funding Agency: Hearst, Inc.
Duration: 02/17/20-06/30/20

PI: Branislav Dimitrijevic (PI)
Department: Civil and Environmental Engineering
Grant/Contract Project Title: Houston-Galveston Area Council TELUS Upgrades
Funding Agency: Houston-Galveston Area Council
Duration: 01/01/20-12/31/22

In the News…

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

$8.3 Billion Corona Virus Package Reserves Large Share for R&D: The supplemental appropriation quickly passed by Congress and signed into law by President Trump calls for more than $3 billion for research and development of "of vaccines, therapeutics, and diagnostics to prevent or treat the effects of coronavirus," according to a House summary. Here's a breakdown of where the money's going:

- The bill includes more than $3 billion for research and development of vaccines, as well as more than $800 million for research for treatments.
- More than $2 billion is slated for the Centers for Disease Control and Prevention, and $61 million to the U.S. Food and Drug Administration.
- The U.S. Agency for International Development would receive more than $1 billion.
- More than $1 billion will go to the state and local public heath efforts including community health centers and state and local governments.
- It also authorizes roughly $500 million to allow for Medicare providers to administer telehealth services.

The bill summary is posted on the website https://www.congress.gov/bill/116th-congress/house-bill/6074

NSF Action on Research Security: The National Science Foundation has tapped Rebecca Spyke Keiser as chief of research security strategy and policy "as part of its continuing effort to ensure the security of federally funded research while maintaining an open international collaboration." Creation of the new position comes in response to recommendations in a study by the JASON advisory group, which "was clear that the U.S. science community faces threats to its longstanding position of openness and transparency of research and its results," Director France Córdova said. NSF is seeking to mitigate risks to the research ecosystem thought the following actions:

- In March 2020, the agency appointed Rebecca Spyke Keiser to the newly created position of chief of research security strategy and policy (CoRSSP). The CoRRSP is tasked with advising the NSF director on research security strategy, leading NSF's efforts to develop and implement research security strategy, and managing coordination with other federal agencies and the White House.
- At the beginning of 2020, NSF will issue a clarification to its longstanding policy requiring researchers seeking NSF funding to disclose their other sources of support. NSF has long required

researchers to disclose all other sources of support, both foreign and domestic. The clarification to NSF's guidance will ensure proposers and awardees understand these requirements.

- In 2019, NSF issued a policy stating that members of its workforce may not participate in foreign government talent recruitment programs.
- To ensure expert input into issues related to open science and the security of science, in 2019 NSF commissioned and received a study from the independent JASON advisory group assessing risks to fundamental research. The study includes recommendations for NSF and grantee institutions to maintain balance between openness and security of science. In March 2020, NSF published responses agreeing with the report's recommendations and noting where the agency has already taken action or plans to do so.

A summary of NSF initiatives is posted on the website
https://nsf.gov/news/special_reports/jasonsecurity/

NSF Future Manufacturing Initiative: The National Science Foundation is offering various types of awards, one of them up to $2 million per year for five years, for "fundamental research and education of a future workforce that will enable . . . manufacturing that either does not exist today or exists only at such small scales that it is not viable. Future Manufacturing will require the design and deployment of diverse new technologies for synthesis and sensing, and new algorithms for manufacturing new materials, chemicals, devices, components and systems. It will require new advances in artificial intelligence and machine learning, new cyber infrastructure, new approaches for mathematical and computational modeling, new dynamics and control methodologies, new ways to integrate systems biology, synthetic biology and bioprocessing, and new ways to influence the economy, workforce, human behavior, and society." The Future Manufacturing RFP is included in the Grant Opportunities section below and also posted on the website https://www.nsf.gov/pubs/2020/nsf20552/nsf20552.htm?

Energy Bill: Combining some 50 measures, the 555-page American Energy Innovation Act of 2020 includes a range of R&D provisions, from energy storage to carbon capture and smart manufacturing. Introduced by fossil fuel-state senators Lisa Murkowski (R-Alaska) and Joe Manchin (D-W.Va.), it would set up a program to ensure "the continued use of the abundant domestic coal and natural gas" but also boosts renewable wind, solar, and marine energy. Of note: the University Nuclear Leadership Program, which would provide scholarships, fellowships, and R&D in advanced nuclear reactor technology. S. 2657, the American Energy Innovation Act (AEIA), is a compilation of more than 50 energy-related measures considered and individually reported by the Senate Energy and Natural Resources Committee (ENR) last year. Policy Highlights:

Keeping Energy Affordable – Our economy grows, and American families and businesses benefit, when energy prices are reasonable. While current market conditions have ushered in historically low prices for many resources, technological innovation made that possible and it is critical to plan for the future. With the world projected to use nearly 50 percent more energy by 2050, continued innovation is key to keeping energy affordable, and AEIA recognizes that both government and industry have important roles to play.

Making Energy Cleaner – AEIA will help keep energy affordable and simultaneously deliver what Americans want – cleaner energy that is better for human health and the environment. Instead of costly mandates or tax increases, AEIA takes a technology-oriented but technology-neutral approach that will boost energy efficiency and lead to the development of a wide range of low and zero-emissions energy options. This will lead to cleaner air, cleaner water, and help reduce the impacts of climate change.

Strengthening Our Security – Innovation helped America overcome its foreign oil dependence but our mineral, cyber, and grid security all remain critical threats. AEIA recognizes that a supply chain disruption or a cyberattack, particularly on the electric grid, could have devastating consequences and takes meaningful steps to protect Americans against them.

Increasing Our Competitiveness – The strength of our economy is determined by our ability to compete with nations around the world. While often taken for granted, a steady supply of energy and raw materials is fundamental to our ability to grow and prosper. AEIA will help ensure that American manufacturers can utilize domestic energy and materials for their products – and it will help ensure those resources are produced safely and responsibly by a well-trained and highly-skilled workforce.
The bill is posted on the website
https://www.energy.senate.gov/public/index.cfm?a=files.serve&File_id=09AF16B7-1920-4C22-96E2-26039A24B55D

Solar Projects with Batteries: Multiple deals shook up the renewable energy storage business last year. What had started as an experiment with solar energy and large storage batteries in Hawaii in 2016 appears to have inspired a $2.8 billion global explosion of investments and mergers in 2019 — an increase of 103%. Both the House and Senate are moving ahead with bipartisan legislation calling for more research on energy storage. The Senate Energy and Commerce Committee cleared the Better Energy Storage Technology (BEST) Act--introduced by Susan Collins (R-Maine) but merged with other measures. In the House, two Illinois Democrats, Bill Foster, a physicist, and engineer Sean Casten have bills pending, as does Rep. Mark Takano (D-Calif.). **See how five bills fared** before the Science Committee February 12. While the Trump White House champions fossil fuels, including coal, the Department of Energy has launched the Energy Storage Grand Challenge, and its goal is to develop "a secure domestic manufacturing supply chain that is independent of foreign sources of critical materials by 2030," A report is posted on the website https://www.eenews.net/stories/1062204723

Webinar and Events

Event: QED Proof-of-Concept Program Overview at NJIT
Sponsor: Science Center
When: March 12, 2020 11.00 AM – 12.00 PM
Website: https://sciencecenter.org/discover/qed
Brief Description: Sharon Ross, QED Program Manager, will be at NJIT on 3/12 at 11:00 am (NJII CKB Agile Strategy Lab) to share and answer questions related to the Science Center's current QED Program application. **The QED Proof-of-Concept Program** (from the Latin *Quod Erat Demonstrandum* – "that which is demonstrated") invites academic researchers developing medical and life science technology with high commercial potential to apply for the 2020 annual competition.
QED provides key resources to facilitate the commercial development of early-stage technologies, including customized business mentorship, preparation of a funding plan, exposure to investors and industry representatives, and access to regulatory and legal specialists.
At the completion of the program, up to four selected academic research teams will be awarded one-year support of up to $200,000 each. Funding for each awarded project is contributed equally by the Science Center and the researcher's home institution. Technologies can be at any stage of development (ideation, pre-clinical, or clinical), but should have applied for patent protection, via the Technology Transfer Office of their institution.
Contact: Please reply to Takeyah Young, NJIT Technology Transfer Officer, at tyoung@njit.edu to let us know if you will be in attendance.

Event: NSF Funding for Startups and Small Businesses
Sponsor: NSF
When: March 9, 2020 2:00 PM – 3.00 PM
Other Dates:
March 9, 2020 2:00 PM – 3.00 PM: Artificial Intelligence
March 12, 2020 2:00 PM – 3.00 PM: Pharmaceutical Technologies
March 16, 2020 2:00 PM – 3.00 PM: Biological Technologies
March 19, 2020 2:00 PM – 3.00 PM: Cybersecurity
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=300040&org=NSF
Brief Description: Did you know that the National Science Foundation (NSF) offers funding to help turn discoveries into products or services?
Join an upcoming webinar if you are interested in translating your technology, testing if it has market potential or just learning about NSF funding opportunities.
In each webinar, a Small Business Innovation Research (SBIR) program director will discuss one of the many specific scientific topics funded through the NSF Division of Industrial Innovation and Partnerships. Look for future webinars and read more about the full range of technology topics at America's Seed Fund powered by NSF.
To Join the Webinar: Visit the above URL.

Event: Webinar: How Corporate Demand Can Drive Renewable Energy and Economic Growth, State by State
Sponsor: Advanced Energy Economy
When: March 10, 2020; 3:00 PM – 4.00 PM
Website: https://info.aee.net/ci-demand-and-its-potential-for-renewable-energy-development-and-economic-growth?utm_campaign=Webinars&utm_medium=email&_hsenc=p2ANqtz-_EhY-fITJtiKhzSDHSL1cyo8GvDDIZIwZ8rpPxxhk00IDJ631ZQmnF2tzneLgF1UF4V7tDnoZ7pFXVHqFA_7sxebtmew&_hsmi=83944724&utm_source=hs_email&utm_content=83944724&hsCtaTracking=d6e7cce3-e768-42ec-a486-9300a17a3840%7C39753c45-e612-4898-89c3-fdbdba145f4c
Brief Description: Utility renewable energy programs for C&I customers are no longer a new concept, but they're still not meeting the potential demand in many vertically integrated states, where customers don't have the options they need to meet their renewable energy goals. This webinar will look at the potential C&I renewable energy demand in vertically integrated states based on analysis of two very different states, Florida and Indiana, and the economic benefits that would come from meeting that demand; trends in utility programs across the country; and how customer perspectives and preferences have shifted as the concept of utility renewable energy programs matures.
To Join the Webinar: Visit the above URL.

Event: NSF Interactive Discussion: Computer Science Undergraduate Education in 2026 and Beyond
Sponsor: NSF
When: March 11, 2020 8.30 PM – 12.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=299394&org=NSF
Brief Description: If you could redesign STEM higher education in general and undergraduate computing sciences education specifically, what would you do differently? Join your colleagues and NSF for a highly interactive session in which participants are presented with a problematic scenario and collaborate to construct the future of computing sciences education. Participants will identify the structures, knowledge, skills and experiences, networks and relationships that are essential to achieving the well-prepared and innovative science, technology, engineering, and mathematics (STEM) workforce

that is crucial to the Nation's prosperity and security. Collectively the group will create a vision of what we hope undergraduate computing education will look like in 2026 or 2050. Ideas gathered in this workshop will inform a nationwide dialogue that that the National Science Foundation Division of Undergraduate Education is preparing to have the STEM communities and industry partners on this topic. Participants in previous versions of the workshop appreciated the new perspectives gained through their dialogue with colleagues.
This session will be held as a Pre-Symposium event at the SIGCSE Computer Science Education conference in Portland, Oregon

Event: NSF Distinguished Lecture Series in Mathematical and Physical Sciences for 2019-20
Sponsor: NSF
When: Various; Please see below.
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=299152&org=NSF
Brief Description: These lectures will be held at the National Science Foundation, 2415 Eisenhower Ave., Alexandria, VA 22314. Advance sign-up requests are required for preparation of visitor passes by emailing the contact below. Guidelines for visiting NSF are at https://www.nsf.gov/about/visit/
March 23, 2020 2:00 PM to March 23, 2020 3:00 PM
May 4, 2020 2:00 PM to May 4, 2020 3:00 PM
June 11, 2020 2:00 PM to June 11, 2020 3:00 PM
To Join the Webinar: Please register at the above URL.

Grant Opportunities

National Science Foundation

Grant Program: Gen-4 Engineering Research Centers (ERC)
Agency: National Science Foundation NSF 20-553
RFP Website: https://www.nsf.gov/pubs/2020/nsf20553/nsf20553.htm
Brief Description: The ERC program supports convergent research that will lead to strong societal impact. Each ERC has interacting foundational components that go beyond the research project, including engineering workforce development at all participant stages, a culture of diversity and inclusion where all participants gain mutual benefit, and value creation within an innovation ecosystem that will outlast the lifetime of the ERC. The logical reasoning that links the proposed activities to the identified goals for each ERC should be clear.
The ERC program is grounded by the four foundational components of the ERC: **Convergent Research, Engineering Workforce Development, Diversity and Culture of Inclusion, and the Innovation Ecosystem**
Awards: Cooperative Agreement; Anticipated Funding Amount: $26,000,000 to $130,000,000
Up to 5 depending on the quality of the proposals and the availability of funds. ERCs are generally funded for ten years, with an initial award for the first five years and second award based on performance and review of a renewal proposal.
Letters of Intent: Submission of Letters of Intent is required by September 02, 2020
Preliminary Proposals: October 02, 2020
Proposal Submission Deadline: May 07, 2021
Contacts: Sarit B. Bhaduri, telephone: (703) 292-2975, email: sbhaduri@nsf.gov

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

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Grant Program: Future Manufacturing (FM)
Agency: National Science Foundation NSF 20-552
RFP Website: https://www.nsf.gov/pubs/2020/nsf20552/nsf20552.htm
Brief Description: The *next* generation of technological competition in manufacturing will be dictated by inventions of new materials, chemicals, devices, systems, processes, machines, design and work methods, social structures and business practices. Fundamental research will be required in robotics, artificial intelligence, biotechnology, materials science, sustainability, education and public policy, and workforce development to take the lead in this global competition. The research supported under this solicitation will enhance U.S. leadership in manufacturing far into the future by providing new capabilities for established companies and entrepreneurs, improving our health and quality of life, and reducing the impact of manufacturing industries on the environment.

The goal of this solicitation is to support fundamental research and education of a future workforce that will enable Future Manufacturing: manufacturing that either does not exist today or exists only at such small scales that it is not viable. Future Manufacturing will require the design and deployment of diverse new technologies for synthesis and sensing, and new algorithms for manufacturing new materials, chemicals, devices, components and systems. It will require new advances in artificial intelligence and machine learning, new cyber infrastructure, new approaches for mathematical and computational modeling, new dynamics and control methodologies, new ways to integrate systems biology, synthetic biology and bioprocessing, and new ways to influence the economy, workforce, human behavior, and society. Among this array of technologies and potential research subjects, three thrust areas have been identified for support in FY 2020 under this solicitation:
Future Cyber Manufacturing Research,
Future Eco Manufacturing Research, and **Future Biomanufacturing Research**.
Awards: Standard Grant or Continuing Grant; Anticipated Funding Amount: $40,000,000
Future Manufacturing Research Grants (FMRG) - Two types of awards will be supported in FY 2020:
Type I: $500,000 to $750,000 per year for up to five years,
Type II: $750,000 to $2,000,000 per year for up to five years;
Future Manufacturing Seed Grants (FMSG) - Awards in this track will provide support for up to two years at a level not to exceed $250,000 per year; and
Future Manufacturing Networks (FMNet) - Awards in this track will provide up to five years of support at a total amount of $500,000.
Letter of Intent: Required by April 10, 2020
Proposal Submission Deadline: June 05, 2020
Contacts: William Olbricht, Program Director, (ENG/CBET), (703) 292-4842, email: wolbrich@nsf.gov
- Andrew B. Wells, Program Director, (ENG/CMMI), telephone: (703) 292-7225, email: awells@nsf.gov

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Grant Program: Engineering Research Visioning Alliance (ERVA): Future Research Directions for the Engineering Research Community
Agency: National Science Foundation NSF 20-551
RFP Website: https://www.nsf.gov/pubs/2020/nsf20551/nsf20551.htm
Brief Description: The National Science Foundation Directorate for Engineering (NSF/ENG) invites the engineering research community to establish an organization that will serve to identify and develop bold

and societally impactful new engineering research directions and thereby catalyze the engineering research community's pursuit of innovative, high-impact research. Specifically, NSF/ENG calls on the engineering research community to establish an Engineering Research Visioning Alliance (ERVA) that ENG will support to facilitate the articulation of compelling research visions that align with national and global challenges. This organization will be charged with obtaining and integrating input from all stakeholders with interest in engineering research, including academia, industry, societies, government agencies and the public. A reciprocal goal of the organization will be to communicate coordinated information on nascent opportunities and priorities in engineering research to these stakeholders. It is anticipated that through its activities the ERVA will strengthen connectivity across these diverse stakeholders, and increase coordination among engineering disciplinary communities.

The ERVA should have membership/representation of academic, industrial and other stakeholders, and should be inclusive of all engineering disciplines. Through its proposed activities, the ERVA should provide the engineering community with a process for identifying future research challenges and enable the engineering research community to speak with a unified voice.

FURTHER INFORMATION: An informational webinar will be presented on Wednesday, March 25th at 1:00pm Eastern to discuss the ERVA solicitation and answer questions. Details on how to join this webinar will be posted on the NSF/Engineering website (https://www.nsf.gov/dir/index.jsp?org=ENG).
Awards: Cooperative Agreement; Anticipated Funding Amount: $5,000,000 to $8,000,000
Letter of Intent: Required by July 08, 2020
Limit on Number of Proposals per Organization: 1
Proposal Submission Deadline: June 10, 2020
Contacts: Louise R. Howe, Program Director, ENG/EFMA, (703) 292-2548, email: lhowe@nsf.gov

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Grant Program: Navigating the New Arctic Community Office (NNA-CO)
Agency: National Science Foundation NSF 20-549
RFP Website: https://www.nsf.gov/pubs/2020/nsf20549/nsf20549.htm
Brief Description: NSF invites proposals to establish a Navigating the New Arctic Community Office (NNA-CO). Launched in 2016, NNA has been building a growing portfolio of research and planning grants at the intersection of the built, social, and natural environments to improve understanding of Arctic change and its local and global effects. Each NNA-funded project is responsible for its own performance, including its core research and broader impacts. However, an NNA community office is required to coordinate the activities of funded NNA projects; engage new PIs; and promote research, education, and outreach activities. The NNA-CO will also provide centralized representation of ongoing NNA activities to the broader scientific community and the public. The lead PI of the successful NNA-CO proposal will serve as the Office Director and will work with the research community to develop and implement appropriate communication networks and support for investigators, stakeholders, and research teams pursuing NNA research. NNA research is inherently convergent, seeking new knowledge at the intersection of the natural, built, and social environments. NNA research also inherently involves diverse stakeholders, from local to international. The NNA-CO will need to demonstrate the ability to work with these types of research teams and audiences.
Awards: Cooperative Agreement; Anticipated Funding Amount: $2,500,000 to $5,000,000
Letter of Intent: Not Required
Limit on Number of Proposals per Organization: 1
Proposal Submission Deadline: June 10, 2020
Contacts: NNA Working Group, telephone: (703) 292-8030, email: nna@nsf.gov

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Grant Program: Signals in the Soil
Agency: National Science Foundation NSF 20-548
RFP Website: https://www.nsf.gov/pubs/2020/nsf20548/nsf20548.htm
Brief Description: The National Science Foundation (NSF) Directorates for Engineering (ENG) and Geosciences (GEO), the Divisions of Integrative Organismal Systems (IOS) and Environmental Biology (DEB), in the Directorate for Biological Sciences (BIO), the Division of Computer and Network Systems in the Directorate Computer and Information Science and Engineering (CISE/CNS), and the Division of Chemistry (CHE) in the Directorate for Mathematical and Physical Sciences, in collaboration with the US Department of Agriculture National Institute of Food and Agriculture (USDA NIFA) encourage convergent research that transforms existing capabilities in understanding dynamic soil processes, including soil formation, through advances in sensor systems and modeling. The Signals in the Soil (SitS) program fosters collaboration among the two partner agencies and the researchers they support by combining resources and funding for the most innovative and high-impact projects that address their respective missions. To make transformative advances in our understanding of soils, multiple disciplines must converge to produce environmentally-benign novel sensing systems with multiple modalities that can adapt to different environments and collect and transmit data for a wide range of biological, chemical, and physical parameters. Effective integration of sensor data will be key for achieving a better understanding of signaling interactions among plants, animals, microbes, the soil matrix, and aqueous and gaseous components. New sensor networks have the potential to inform models in novel ways, to radically change how data is obtained from various natural and managed (both urban and rural) ecosystems, and to better inform the communities that directly rely on soils for sustenance and livelihood.
Each proposal must address **at least one** of the following five priorities. Systems approaches and attention to NSF's cross-cutting themes described below the 5 priorities are particularly encouraged.

1. **Development of novel sensors**
2. **Biological/ chemical/ physical interactions**
3. **Cross-disciplinary modeling**
4. **Data transmission and analysis**
5. **Cyber-infrastructure**

Awards: Standard Grant or Continuing Grant; Anticipated Funding Amount: $8,000,000 to $13,000,000
Letter of Intent: Required
Proposal Submission Deadline: May 20, 2020
Contacts: Brandi Schottel, Division of Chemical, Bioengineering, Environmental, and Transport Systems, telephone: (703) 292-4798, email: SitSquestions@nsf.gov

- Richard J. Fragaszy, Division of Civil, Mechanical, and Manufacturing Innovation, telephone: (703) 292-7011, email: SitSquestions@nsf.gov
- Mohammod Ali, Division of Electrical, Communications, and Cyber Systems, telephone: (703) 292-4632, email: SitSquestions@nsf.gov

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Grant Program: Human-Environment and Geographical Sciences Program (HEGS)
Agency: National Science Foundation NSF 20-547
RFP Website: https://www.nsf.gov/pubs/2020/nsf20547/nsf20547.htm
Brief Description: The objective of the Human-Environment and Geographical Sciences (HEGS) Program is to support basic scientific research about the nature, causes, and/or consequences of the spatial distribution of human activity and/or environmental processes across a range of scales. Projects about a broad range of topics may be appropriate for support if they enhance fundamental geographical knowledge, concepts, theories, methods, and their application to societal problems and concerns. Recognizing the breadth of the field's contributions to science, the HEGS Program welcomes proposals

for empirically grounded, theoretically engaged, and methodologically sophisticated geographical research. National Science Foundation's mandate is to support basic scientific research. Support is provided for projects that are most effective in grounding research in relevant theoretical frameworks relevant to HEGS, that focus on questions that emanate from the theoretical discussions, and that use scientific methods to answer those questions. HEGS supported projects are expected to yield results that will enhance, expand, and transform fundamental geographical theory and methods, and that will have positive broader impacts that benefit society.
Awards: Standard Grant or Continuing Grant; Anticipated Funding Amount: $5,000,000 to $6,000,000
Letter of Intent: Not Required
Proposal Submission Deadline:
August 18, 2020
Third Tuesday in August, Annually Thereafter
January 19, 2021
Third Tuesday in January, Annually Thereafter
Contacts: Jacqueline M. Vadjunec, Program Director, telephone: (703) 292-7064, email: jmvadjun@nsf.gov

- Scott M. Freundschuh, Program Director, telephone: (703) 292-7076, email: sfreunds@nsf.gov

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Grant Program: Small Business Technology Transfer Program Phase II (STTR Phase II)
Small Business Innovation Research Program Phase II (SBIR Phase II)
Agency: National Science Foundation NSF 20-546 NSF 20-545
RFP Website: https://www.nsf.gov/pubs/2020/nsf20546/nsf20546.htm
https://www.nsf.gov/pubs/2020/nsf20545/nsf20545.htm
Brief Description: A small business may apply for a National Science Foundation (NSF) Phase II Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) award only if it has been received a NSF Phase I award, and only for continued research toward commercialization of the technology developed under the Phase I award.
The Phase II funding amount has increased to a maximum of $1,000,000 to better support the nation's startups and small businesses, as part of the recent federal adjustment for inflation. This amount includes up to $50,000 to be used by the Phase II awardee for commercial assistance under the SBIR Technical and Business Assistance (TABA) legislation. See section A.5, line G.6 of this document for details.
Small businesses are eligible to submit a Phase II proposal between six and twenty-four months after the start date of their relevant NSF SBIR/STTR Phase I award. Reference the Phase I award notice for the exact start date of the Phase I award. Proposals submitted outside of their eligible Phase II timeframe may be returned without review. *The proposal submission system (Fastlane) will shut down at 5:00 pm "proposer's time" on the submission window closing date. See section V.A of this document for more details.*
The STTR program solicits proposals from the small business sector consistent with NSF's mission to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.
The SBIR program solicits proposals from the small business sector consistent with NSF's mission to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.
Awards: Fixed Amount Cooperative Agreement
SBIR Anticipated Funding Amount: $10,000,000 to $15,000,000
Anticipated Funding Amount: $110,000,000
Proposal Submission Window: February 14, 2020 - March 05, 2020; March 06, 2020 - June 04, 2020

June 05, 2020 - September 03, 2020; September 04, 2020 - December 03, 2020
Contacts: Contact Your NSF STTR Phase I Program Officer, telephone: 703-292-8050, email: sbir@nsf.gov
Contact Your NSF SBIR Phase I Program Officer, telephone: 703-292-8050, email: sbir@nsf.gov

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Grant Program: Foundational Research in Robotics
Agency: National Science Foundation NSF PD 20-144Y
RFP Website:
https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505784&org=NSF&sel_org=NSF&from=fund
Brief Description: The Foundational Research in Robotics (Robotics) program supports research on robotic systems that exhibit significant levels of both computational capability and physical complexity. For the purposes of this program, a robot is defined as intelligence embodied in an engineered construct, with the ability to process information, sense, and move within or substantially alter its working environment. Here intelligence includes a broad class of methods that enable a robot to solve problems or make contextually appropriate decisions. Research is welcomed that considers inextricably interwoven questions of intelligence, computation, and embodiment. Projects may also focus on a distinct aspect of intelligence, computation, or embodiment, as long as the proposed research is clearly justified in the context of a class of robots.
The focus of the Robotics program is on foundational advances in robotics. Robotics is a deeply interdisciplinary field, and proposals are encouraged that explore the full range of fundamental engineering and computer science research challenges arising in robotics. However, all proposals must convincingly explain how a successful outcome will enable transformative new robot functionality or substantially enhance existing robot functionality. The proposal should clearly articulate how the intellectual contribution of the proposed work addresses fundamental gaps in robotics. Meaningful experimental validation on a physical platform is strongly encouraged. Projects that do not represent a direct fundamental contribution to robotics should not be submitted to the Robotics program.
Potential investigators are strongly encouraged to discuss their projects with a Robotics Program Officer before submission. Non-compliant proposals may be returned without review.
Awards: Robotics proposals submitted to other program announcements or solicitations, including the Faculty Early Career Development Program (CAREER), must meet the respective deadlines of those programs; please refer to the deadline dates specified in the appropriate announcement or solicitation. Proposals for EArly-concept Grants for Exploratory Research (EAGER), Rapid Response Research (RAPID) or Research Advanced by Interdisciplinary Science and Engineering (RAISE) can be submitted at any time, but Principal Investigators (PIs) must contact the cognizant Program Officer prior to submission.
Letter of Intent: Required by March 20, 2020
Proposal Submission Deadline: Program Will Accept Proposals Anytime After August 1, 2020
Contacts: Christopher Radhakisan S. Baheti ENG/ECCS Jordan M. Berg ENG/CMMI David Corman CISE/CNS Irina Dolinskaya ENG/CMMI

Grant Program: Reproducible Cells and Organoids via Directed- Differentiation Encoding (RECODE)
Agency: National Science Foundation NSF 20-541
RFP Website: https://www.nsf.gov/pubs/2020/nsf20541/nsf20541.htm
Brief Description: The National Science Foundation (NSF) Division of Chemical, Bioengineering, Environmental and Transport Systems (CBET), seeks proposals that elucidate mechanisms of, and

develop strategies to, direct the differentiation of undifferentiated cells into mature, functional cells or organoids. Projects responsive to this solicitation must aim to establish a robust and reproducible set of differentiation design rules, predictive models, real-time sensing, control, and quality assurance methods, and integrate them into a workable differentiation strategy. They must develop a fundamental understanding of how cells develop, including mechanisms, molecular machinery, dynamics, and cell-cell interactions, and use this understanding to manipulate cells purposefully. Investigators can choose any undifferentiated cell type, from any animal species, as a starting point and choose any appropriate functional product (cell, organoid, etc.) with real-world relevance. This solicitation parallels NSF's investment in *Understanding the Rules of Life (URoL): Predicting Phenotype*, NSF's Big Idea focused on predicting the set of observable characteristics (phenotype) of an organism based on its genetic makeup and the nature of its environment and applies it to understanding and accomplishing the intentional and guided differentiation of an undifferentiated cell into cells, organoids or tissues with predetermined activities and functions.

The convergence of many disciplines is necessary to answer the fundamental questions and devise the tools needed to realize truly deterministic cell induction and differentiation strategies. As such, investigators are encouraged to form interdisciplinary teams with expertise in developmental biology, stem cell biology, cell biology, engineering, synthetic and systems biology, computation, sensing, and physics. Proposals will not be responsive to this solicitation if they address only one aspect of the differentiation process or aim to create a functional living product without improving our understanding of the mechanisms that underlie developmental processes. The solicitation will support teams of three or more PI/co-PIs and senior personnel. Proposals with only one PI or one PI with one other senior personnel are not permitted.

Awards: Standard grants. Anticipated Funding Amount: $5,000,000

Letter of Intent: Required by March 02, 2020

Proposal Submission Deadline: April 30, 2020

Contacts: Steven W. Peretti, telephone: (703) 292-7029, email: speretti@nsf.gov

- Aleksandr L. Simonian, telephone: (703) 292-2191, email: asimonia@nsf.gov
- Leon Esterowitz, telephone: (703) 292-7942, email: lesterow@nsf.gov

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Grant Program: NSF-Simons Research Collaborations on the Mathematical and Scientific Foundations of Deep Learning (MoDL)

Agency: National Science Foundation NSF 20-540

RFP Website: https://www.nsf.gov/pubs/2020/nsf20540/nsf20540.htm?org=NSF#budg_cst_shr_txt

Brief Description: The National Science Foundation Directorates for Mathematical and Physical Sciences (MPS), Computer and Information Science and Engineering (CISE), Engineering (ENG), and the Simons Foundation Division of Mathematics and Physical Sciences will jointly sponsor up to two new research collaborations consisting of mathematicians, statisticians, electrical engineers, and theoretical computer scientists. Research activities will be focused on explicit topics involving some of the most challenging questions in the general area of Mathematical and Scientific Foundations of Deep Learning. Each collaboration will conduct training through research involvement of recent doctoral degree recipients, graduate students, and/or undergraduate students from across this multi-disciplinary spectrum. Annual meetings of the Principal Investigators ("PIs") and other principal researchers involved in the collaborations will be held at the Simons Foundation in New York City. This program complements NSF's National Artificial Intelligence Research Institutes program by supporting collaborative research focused on the mathematical and scientific foundations of Deep Learning through a different modality and at a different scale.

Awards: Continuing grants. Anticipated Funding Amount: $20,000,000

NSF estimates that $10,000,000 will be available to support two projects of five years duration each. The Simons Foundation will contribute up to $10,000,000 to support the same two projects over the five-year duration of the awards. NSF and the Simons Foundation expect to co-fund each of the two projects, and that each project will have an annual budget of up to $2,000,000 combined from both sources.
Letter of Intent: Required by March 20, 2020
Proposal Submission Deadline: April 30, 2020
Contacts: Christopher W. Stark, MPS/DMS, telephone: (703) 292-4869, email: cstark@nsf.gov

- Radhakisan S. Baheti, ENG/ECCS, telephone: (703) 292-8339, email: rbaheti@nsf.gov
- Funda Ergun, CISE/CCF, telephone: (703) 292-2216, email: fergun@nsf.gov

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National Institutes of Health

Grant Program: NICHD Resource Program Grants in Bioinformatics (P41 Clinical Trial Not Allowed
Agency: National Institutes of Health PAR-20-126
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-20-126.html
Brief Description: The emergence and rapid evolution of high-resolution sequencing and other omics technologies have generated unprecedented quantities of molecular-level data from the analyses of biological systems. This rapid progress has been particularly significant in the areas of genomics and proteomics. This exponential increase of information has been augmented by increased computing power to digitally record, store, and analyze large amounts of molecular data. However, for the ever-increasing quantities of information to be maximally useful to biomedical scientists requires the establishment and maintenance of database resources that enable the compilation, annotation, storage, and dissemination of available data in compliance with the FAIR Data principles (Findable, Accessible, Interoperable, and Reusable). Additionally, corresponding tools in bioinformatics for data analysis and entry, as well as technical support and user training are required to efficiently utilize these database resources.
Objectives
These Resource Program Grants in Bioinformatics are intended to support the continued availability, operation, improvement and maintenance of databases, digital information, or bioinformatics tools and/or resources, user training and services, and wide dissemination of these tools or resources.
To qualify for support, bioinformatics resources such as software and algorithms, or knowledge resources must be of demonstrable value toward advancing research utilizing animal model systems in the biomedical sciences, and must also be of particular importance to those seeking to understand the biological basis of human and animal development and the etiology of structural birth defects.
The resources must be sufficiently mature to have verifiable support and utility for users within the developmental biology research community; operate according to FAIR data principles and have a demonstrable national and international impact.
Examples of activities that Resource Program Grants in Bioinformatics are intended to support include but are not limited to:

- Efforts to curate and annotate unique collections of data, information or knowledge that support learning and research utilizing animal model systems;
- Information and knowledge processing, including information extraction, integration of data from heterogeneous sources, event detection, and feature recognition within these data sets;

- Tools for analyzing large datasets, including genomic and proteomic data, data regarding gene and protein expression in relation to cellular, anatomical, and/or developmental coordinates;
- Data sets and tools for analysis of gene regulatory networks, protein-protein interaction networks, epigenetic regulatory mechanism, systems biological approaches, and other tools for understanding normal and abnormal biological function and/or development;
- Other unique data sets or information tools of demonstrable utility for biomedical research using animal models of developmental processes;
- Systems for knowledge representation, including vocabularies, ontologies, simulations and virtual reality, retrieval tools and intelligent agents for scientific information related to developmental processes.

Resource Program Grants in Bioinformatics are not intended to support:

- Research and development intended as proof of concept, to ascertain feasibility, or to underwrite the initial development of a tool or resource.
- Projects that utilize a tool or database being supported through these resource program grants. Such projects should seek funding through customary NIH research grant mechanisms.
- Tools and resources that duplicate activities of the National Library of Medicine or existing resources supported by other Institutes of the National Institutes of Health.

Applicants who wish to undertake biomedical informatics research, to develop and test novel information technologies, or to perform feasibility or proof-of-concept studies, should respond to other FOAs.
Awards: Requested direct costs cannot exceed $1,750,000 per year, are expected to range from $500,000 to no more than $1,750,000 per year and need to reflect the actual needs of the proposed project.
Letter of Intent: 30 days prior to the application due date
Deadline: Standard dates apply
The first standard application due date for this FOA is May 25, 2020.
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: Maximizing Investigators' Research Award (MIRA) for Early Stage Investigators (R35 - Clinical Trial Optional)
Agency: National Institutes of Health PAR-20-117
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-20-117.html
Brief Description: Supporting fundamental research by funding individual projects has a number of consequences that could reduce the efficiency and effectiveness of the biomedical research enterprise in the U.S. To address these issues and increase the efficiency and efficacy of grant funding, the NIGMS Maximizing Investigators' Research Award (MIRA) is a single grant to provide support for the NIGMS-relevant program of research in an investigator's laboratory. For this FOA, eligibility to apply is limited to PD/PIs who are NIH-defined Early Stage Investigators (ESIs) at the time of submission and the "program of research" is defined as a collection of projects in the PD/PI's lab that are within the mission of NIGMS. Applicants who receive R01, SC1, DP1, DP2, or any other type of disqualifying award prior to issuance of the ESI-MIRA become ineligible to receive the award.
In comparison to R01 funding of NIGMS ESI investigators, Maximizing Investigators' Research Award for Early Stage Investigators (ESI MIRA) benefits include:

- No requirement or expectation for preliminary data, which will

    - Enable investigators to apply earlier in their independent research career, allowing them to secure grant funding that will launch and sustain a successful research career, and
    - Enhance investigators' ability to move into research areas that are distinct from those of their postdoctoral mentors, which could increases chances for new scientific discoveries;
- Increased stability of funding for NIGMS-supported ESIs, improved success rates, and more graduated, rather than all-or-none, funding decisions for MIRA renewals;
- Larger award amount than the current average NIGMS R01 award to ESIs, while the project period will be similar;
- More flexibility to pursue new ideas and opportunities as they arise during the course of research because the award is not tied to specific aims;
- A reduction in administrative burden associated with managing multiple grants; and
- A reduction in required application writing.

In developing MIRA, NIGMS is committed to maintaining support for at least the current total number of NIGMS-funded early stage investigators and their associated programs of research. The Institute will also work to ensure that it maintains a broad and diverse research portfolio in terms of scientific areas, approaches, regions, institutions, and individuals. Such diversity will optimize returns on the Institute's investments by maximizing the ideas explored and the chances for important breakthroughs.
Awards: Applications may request up to $250,000 direct costs per year.
Letter of Intent: Not Required
Deadline: October 2, 2020; October 4, 2021; October 3, 2022
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: High-End Instrumentation (HEI) Grant Program (S10 Clinical Trial Not Allowed)
Agency: National Institutes of Health PAR-20-114
PAR-20-113 Shared instrumentation Grant (SIG) Program (Clinical Trial Not Allowed)
PAR-20-112 Shared Instrumentation for Animal Research (SIFAR) Grant Program (Clinical Trial Not Allowed)
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-ES-20-004.html
Brief Description: The High-End Instrumentation (HEI) Grant program encourages applications from groups of NIH-supported investigators to purchase or upgrade a single item of high-end, specialized, commercially available instruments or integrated systems. The minimum award is $600,001. There is no maximum price limit for the instrument; however, the maximum award is $2,000,000. Types of instruments supported include, but are not limited to: X-ray diffractometers, mass spectrometers, nuclear magnetic resonance (NMR) spectrometers, DNA and protein sequencers, biosensors, electron and light microscopes, cell sorters, high throughput robotic screening systems, and biomedical imagers.
Awards: Applications will be accepted that request a single, commercially available instrument or integrated system. The minimum award is $600,001. There is no upper limit on the cost of the instrument, but the maximum award is $2,000,000. Since the cost of the various instruments will vary, it is anticipated that the size of the award will also vary. S10 awards do not allow indirect costs.
Letter of Intent: Not Required
Deadline: June 1, 2020
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).

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

Grant Program: Shared Instrumentation Grant (SIG) Program (S10 Clinical Trial Not Allowed)
Agency: National Institutes of Health PAR-20-113
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-20-113.html
Brief Description: The purpose of this funding opportunity is to continue the Shared Instrumentation Grant (SIG) Program administered by ORIP. The objective of the Program is to make available to institutions high-priced research instruments that can only be justified on a shared-use basis and that are needed for NIH-supported projects in basic, translational or clinical biomedical and bio-behavioral research. The SIG Program provides funds to purchase or upgrade a single item of expensive, state-of-the-art, specialized, commercially available instrument or an integrated instrumentation system. An integrated instrumentation system is one in which the components, when used in conjunction with one another, perform a function that no single component can provide. The components must be dedicated to the system and not used independently.
The Shared Instrument Grant (SIG) Program encourages applications from groups of NIH-supported investigators to purchase or upgrade a single item of high-priced, specialized, commercially available instruments or integrated systems. The minimum award is $50,000. There is no maximum price limit for the instrument; however, the maximum award is $600,000. Types of instruments supported include, but are not limited to: X-ray diffractometers, mass spectrometers, nuclear magnetic resonance spectrometers, DNA and protein sequencers, biosensors, electron and light microscopes, cell sorters, and biomedical imagers.
The SIG Program will not support requests for:

- An instrument with a base cost of less than $50,000;
- Multiple instruments bundled together;
- Purely instructional equipment;
- Instruments used for clinical (billable) care;
- Institutional administrative management systems, clinical management systems;
- Software, unless it is integrated in the operation of the instrument and/or necessary for generation of high-quality output experimental data from the instrument;
- Stand-alone workstations for data processing, software licenses, and duplicate software items;
- General purpose equipment (such as standard machine shop equipment), instruments to furnish a research facility (such as autoclaves, hoods, equipment to upgrade animal facilities), equipment for routine sustaining infrastructure (such as standard computer networks or data storage systems);
- Disposable devices, office furniture, and supplies;
- Alteration or renovation of space to house the instruments.

Awards: Applications will be accepted that request a single, commercially available instrument or an integrated system. The minimum award is $50,000. There is no upper limit on the cost of the instrument, but the maximum award is $600,000. Since the cost of the various instruments will vary, it is anticipated that the amount of the award will also vary. S10 awards do not allow indirect costs.
Letter of Intent: Not Required
Deadline: June 1, 2020
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: Optimizing Natural Systems for Remediation: Utilizing Innovative Materials Science Approaches to Enhance Bioremediation (R01 Clinical Trial Not Allowed)
Agency: National Institutes of Health RFA-ES-20-004
RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-ES-20-004.html
Brief Description: The purpose of this FOA is to support innovative approaches to understand mechanisms of bioremediation. Bioremediation, for the purposes of this FOA, encompasses remediation using bacteria, archaea, algae, fungi, and/or plants to degrade, extract, or stabilize contaminants as part of a natural or constructed system. Applicants should assemble teams of researchers with expertise in bioremediation and materials science to propose integrated approaches to reduce the burden of contaminants in the environment. Through a transdisciplinary approach, applicants should elucidate mechanisms of bioremediation and use that knowledge to address challenging scenarios for which bioremediation may be a solution. It is expected the major outcomes of this program will be the elucidation of mechanisms impacting bioremediation success and stimulation of innovative transdisciplinary approaches incorporating materials science to optimize bioremediation. Overall, this program will facilitate cutting-edge transdisciplinary science needed to advance research in bioremediation relevant to the goals of the SRP.

Applicants are encouraged to propose advanced approaches that combine a mechanistic understanding of bioremediation and materials science including, but not limited to:

- Utilization of nanotechnology-enabled frameworks to understand the basic structural properties of microorganisms/plants and to enhance bioremediation of hazardous substances;
- Utilization of machine learning to predict optimal conditions and pathways to apply innovative materials that stimulate bioaugmentation or to customize the design of new materials to enhance mechanistic understanding and effectiveness of bioremediation;
- Integration and analysis of 'omics' data from across several hazardous sites to discover new options for development of innovative materials for bioaugmentation/biostimulation;
- Development of controlled, engineered microenvironments to overcome biogeochemical/ecological limitations of biodegradation, to prevent formation of unintended byproducts, or to accommodate biodegradation of multiple contaminants;
- Employment of nanotech-derived devices and materials to investigate the mechanisms underlying bioremediation so that more effective remediation strategies could be created;
- Integration of novel materials science-enhanced bioamendment delivery with advanced site models to better understand biogeochemical and ecological mechanisms of bioremediation.

Awards: Application budgets should reflect the actual needs of the proposed project and are limited to $200K direct costs per year.
Letter of Intent: March 20, 2020
Deadline: April 20, 2020. No late applications will be accepted for this Funding Opportunity Announcement.
All applications are due by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on the listed date(s).
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: Collaborative Program Grant for Multidisciplinary Teams (RM1 - Clinical Trial Optional)
Agency: National Institutes of Health PAR-20-103
RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-20-103.html

Brief Description: This funding opportunity announcement (FOA) encourages Collaborative Program Grant applications from institutions/organizations that propose to conduct research to address complex and challenging biomedical problems, important for the mission of NIGMS, through deeply integrated, multidisciplinary research teams. The Collaborative Program Grant is designed to support research in which funding a team of interdependent investigators offers significant advantages over support of individual research project grants. Applications should address critical issues and be sufficiently challenging, ambitious, and innovative that objectives could not be achieved by individual investigators.

Successful Collaborative Program Grant applications will bring together scientists to apply complementary approaches to work on an important and well-defined problem. Applications may address any area of science within the NIGMS mission, which is to support basic research that increases understanding of biological processes at a range of levels, from molecules and cells, to tissues, whole organisms, and populations. NIGMS also supports research in a limited number of clinical areas that affect multiple organ systems. Truly new interdisciplinary ideas for approaching significant biological problems are encouraged. Applications that bridge the research interests of more than one NIGMS division are also encouraged, but must remain within the scope of the NIGMS mission. Research with the overall goal to gain knowledge about a specific organ or organ system, or the pathophysiology, treatment, or cure of a specific disease or condition will, in most cases, be more appropriate for another Institute or Center. Consultation with NIGMS staff (see below) prior to preparing an application is strongly encouraged.

Applications submitted to this FOA are expected to propose a single, well-integrated research plan of sufficient scope, complexity, and impact to justify the investment of significant resources. Applicants are expected to describe a cohesive program with a single set of specific aims sufficient to accomplish program objectives that can be achieved within a maximum of ten years (one five-year program with one five-year competitive renewal). Program objectives that are unlikely to be achieved within ten years are not appropriate for this FOA.

Applications should be sufficiently challenging, ambitious, and innovative that the proposed research cannot be achieved by a single investigator or small group of investigators. Therefore, a multiple PD/PI application is required and applications must include a minimum of three and a maximum of six PD/PIs who are all necessary to provide sufficient research capacity and the relevant expertise to address the proposed scientific problem. Applications that propose extrapolations of a single line of research or propose parallel but independent advancement of different areas are not appropriate for this FOA.

Award: NIGMS anticipates supporting no more than 4-6 awards, corresponding to a total of $10,000,000 (total costs) for fiscal year 2021.

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

Deadline: May 27, 2020; January 27, 2021; May 27, 2021; January 27, 2022; May 27, 2022; January 27, 2023

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

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

Grant Program: IDeA Networks of Biomedical Research Excellence (INBRE) (P20 Clinical Trial Optional)

Agency: National Institutes of Health PAR-20-102

RFP Website: https://grants.nih.gov/grants/guide/pa-files/PAR-20-102.html

Brief Description: The National Institute of General Medical Sciences (NIGMS) of the National Institutes of Health (NIH) invites applications for Institutional Development Award (IDeA) Networks of

Biomedical Research Excellence (INBRE) grants within IDeA-eligible states to independent biomedical research institutes and/or research institutions that award doctoral degrees in health-related sciences. INBRE applications represent collaboration between research intensive institutions, primarily undergraduate institutions (PUIs), community colleges, and Tribally Controlled Colleges and Universities (TCCUs).

This Funding Opportunity Announcement (FOA) builds on the successes of the INBRE program to augment and strengthen the state's biomedical research capacity. The primary goals of the INBRE program are to: 1) build on the established multi-disciplinary research network to strengthen the lead and partner institutions' biomedical research expertise and infrastructure; 2) build and increase the research base and capacity by providing support to faculty, postdoctoral fellows, and graduate students at the participating institutions; 3) provide research opportunities for students from PUIs, community colleges, and TCCUs and serve as a "pipeline" for these students to continue in biomedical research careers within IDeA states; and 4) enhance the science and technology knowledge of the state's workforce.

For the purposes of this FOA, "primarily undergraduate institutions" include U.S. two-year, four-year, masters-level, and small doctoral-granting colleges and universities that (1) grant baccalaureate degrees in NIH-supported fields, or provide programs of instruction for students pursuing such degrees with institutional transfers (e.g., two-year schools); (2) have undergraduate enrollment exceeding graduate enrollment; and (3) award an average of no more than 10 Ph.D. or D.Sc. degrees per year in biomedical and behavioral sciences.

The INBRE program seeks to promote the development and expansion of unique, innovative, state-of-the-art biomedical and behavioral research at institutions in IDeA-eligible states, encompassing the full spectrum of basic, clinical, and translational sciences. The NIH recognizes that the contributions from the institutions in IDeA-eligible states are important and essential in fulfilling the promise of the NIH research agenda. The intent of this FOA is to continue assisting these institutions to implement and use the technologies and other resources needed to conduct state-of-the-art biomedical and behavioral research and provide research experiences to students at baccalaureate institutions, community colleges, and TCCUs.

Award: Direct costs are limited to $2.75 million per year, excluding facilities and administrative (F&A) costs on consortium arrangements. In addition, this FOA will provide one-time funds of up to $250,000 in direct costs in the first year of the award for alteration and renovation to improve existing core laboratories, research laboratories and/or animal facilities at the PUIs, community colleges, and TCCUs. **Only one award will be made per IDeA-eligible state**.

Letter of Intent: Not Required

Deadline: May 20, 2020; May 20, 2021; May 20, 2022

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

Grant Program: Environmental Health Sciences Core Centers (EHSCC) (P30 Clinical Trial Optional)

Agency: National Institutes of Health RFA-ES-20-006

RFP Website: https://grants.nih.gov/grants/guide/rfa-files/RFA-ES-20-006.html

Brief Description: The NIEHS Environmental Health Sciences Core Centers (EHS CC) Program is intended to bring together investigators currently funded by NIH or other Federal or non-Federal sources to enhance the effectiveness of existing research and extend the focus of research for the environmental health sciences. An EHS CC should support innovation and be on the cutting edge of science. It is

expected that research activities will cross a variety of disciplines to bring multiple perspectives and approaches to bear on significant problems. It is expected that the interdisciplinary nature of an EHS CC will have a synergistic effect that results in greater depth, breadth, quality, innovation and productivity beyond what individual scientists would be likely to attain by working independently and as such lead to translational research opportunities. As intellectual hubs for environmental health research, the membership of EHS CC's is expected to be the thought leaders for the field as well as advance the goals of the NIEHS Strategic Plan (http://www.niehs.nih.gov/about/strategicplan/.)

The overall goals for the EHS CC Program are to enhance the capabilities of existing programs in environmental health sciences, assist with building programmatic and scientific capacity, lead in the development of novel research directions, recruit and groom future leaders in the field, and pioneer efforts in community engagement. The EHS CC grant provides facilities and resources to accelerate research along the spectrum from basic mechanistic and toxicological science to population and public health and dissemination. Moreover, with the release of the translational research (TR) framework for the environmental health sciences (https://www.niehs.nih.gov/translation), it is expected that an EHS CC facilitate translational research that encompasses all aspects of an EHS CC. The TR framework is an innovative tool that incorporates the dynamic nature of environmental health research to inform and facilitate the use of scientific/public health advances across the translational spectrum to accelerate improving the health of individuals and the public.

Award: New or first-time applicants are limited to $850,000 Direct Costs per year. Renewal applications are limited to $1.0M Direct Costs per year. See Eligibility requirements.

Letter of Intent: April 18, 2020, March 16, 2021, March 14, 2022

Deadline: May 18, 2020, April 16, 2021, April 14, 2022.

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

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

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

Grant Program: Atmosphere as a Sensor (AtmoSense)

Agency: Department of Defense HR001120S0036

Website: https://beta.sam.gov/opp/c1e7a196007d4cdc9e47be0d722d11ef/view

Brief Description: AtmoSense seeks to develop the scientific understanding to exploit signatures for geolocation of natural sources that disturb the Earth's atmosphere, which are fundamentally different than those relied upon by direct observation approaches.

The ionospheric disturbances are thought to be due to acoustic and/or gravity waves that are produced by the interaction between the source and the atmosphere. The qualitative physical explanation for how this occurs is fairly straightforward. Ground based sources of disturbance such as mining operations or storm cells can launch mechanical waves spanning from the infrasonic to the ultrasonic. As these transient disturbances travel radially outward from the source, those wave components that propagate low in altitude along the surface of the Earth are dampened by the troposphere. However, those wave components that travel along the Earth's radial direction (i.e. higher in altitude) experience less dampening as the mean free path between atmospheric constituents increases due to decreasing air density. As this energy propagates, it can evolve into phenomena such as acoustic waves, gravity waves, or acoustic-gravity waves, as well as any non-linearly triggered transformations. Passing from the troposphere, through the stratosphere, and into the mesosphere, this energy eventually strikes the

ionosphere. Because the electrons in the ionosphere must follow the Earth's magnetic field lines, compression occurs, and the ionosphere responds by launching traveling disturbances.

AtmoSense will attempt to understand the fundamentals of energy propagation from the ground to the ionosphere in order to determine if the atmosphere can be used as a sensor. This entails developing new modeling and simulation capabilities as well as new sensing modalities that can be combined to answer a set of fundamental questions that will help determine the feasibility of the AtmoSense concept. Among these basic science questions to be answered are:

1. What is the nature of transmitted signals?
2. What mode structure (mechanical and electromagnetic) can the mesosphere and lower ionosphere support?
3. What dynamic variables are best measured and at what altitude to capture source disturbed information?

The AtmoSense approach will consist of three technical areas (TAs) designed to answer these general basic science questions in order to demonstrate the viability of the AtmoSense concept.

TA1 - Modeling and Simulation will develop the model and simulation (M&S) and analytical approximations to connect near-field disturbances to far-field mechanical and electromagnetic perturbations.

TA2 - Characterization of the Background will experimentally characterize the background and mode structure of the mesosphere and lower ionosphere.

TA3 - Sensing Modalities will develop new sensing modalities, use old sensing modalities in new ways, and/or exploit natural/non-natural emitters to detect mechanical and electromagnetic variations of the atmosphere.

Note that while there appears to be overlap between TA2 and TA3, TA2 is primarily focused on measuring the background or noise of the atmosphere, whereas TA3 is focused on measuring the transient signal through the noise background. Thus, there will be stricter requirements in TA3 regarding required sensitivities as well as a focus on developing innovative measurement techniques that are "noise resistant."

Awards: TBA
Proposal Deadline:
Abstract Due Date: 03/13/2020, 4:00 p.m.
Full Proposal Due Date: 04/22/2020, 4:00 p.m
Contact Information: BAA Coordinator AtmoSense@darpa.mil

Grant Program: FY 2021 Multidisciplinary Research Program of the University Research Initiative (MURI)
FY 2021 MURI- ARMY Submission
FY 2021 MURI -ONR Submission
FY 2021 MURI -AFOSR Submission
Agency: Department of Defense
ONR Announcement # N00014-20-S-F003 ARO Announcement # W911NF-20-S-0009 AFOSR Announcement # FOA-AFRL-AFOSR-2020-0002
Website: https://www.grants.gov/web/grants/search-grants.html
Brief Description: The MURI program supports basic research in science and engineering at U.S. institutions of higher education (hereafter referred to as "universities") that is of potential interest to DoD. The program is focused on multidisciplinary research efforts where more than one traditional discipline interacts to provide rapid advances in scientific areas of interest to the DoD. As defined in the DoD Financial Management Regulation: Basic research is systematic study directed toward greater

knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. It includes all scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs.
White papers and proposals addressing the following topics should be submitted to the Office of Naval Research (ONR):

ONR:

Topic 1: Molecular Qubits for Synthetic Electronics
Topic 2: A Brain-based Compositional Framework for Robust Computer Vision
Topic 3: Littoral Ocean Dynamics off Rocky Coasts and Shorelines
Topic 4: Fog and Turbulence
Topic 5: Dynamic Tuning of Thermal Transport
Topic 6: Chemically and Thermally Insensitive Super/Ultra-Hard Materials
Topic 7: Narrative, Moral and Social Foundations of Social Cyber-Attack in Social Media
Topic 8: A Dynamics and Control Theory of Safe, Cognitive and Learning Systems
Topic 9: Understanding Turbulence-Chemistry Interactions in Non-Equilibrium, High-Speed Flows
Topic 10: Predicting Organic Molecular Decomposition

White papers and proposals addressing the following topics should be submitted to the Army Research Office (ARO):

ARO:

Topic 11: Anomalous Dipole Textures in Engineered Ferroelectric Materials
Topic 12: Cyber Autonomy through Robust Learning and Effective Human/Bot Teaming
Topic 13: Highly Heterogeneous Meta-macrostructures Created via Fine-particle Interactions
Topic 14: Non-Silica Inorganic Material Phases Synthesized from Genetically Modified Diatoms
Topic 15: Novel Mechanisms of Neuro-Glio Bio-Computation and Reinforcement Learning
Topic 16: Quantum Network Science
Topic 17: The Same is Different: Integrating Multiple Phenomena in Single Materials
Topic 18: Tunable Dilute Anion III-Nitride Nanostructures for Stable Photocatalysis

White papers and proposals addressing the following topics should be submitted to the Air Force Office of Scientific Research (AFOSR):

AFOSR:

Topic 19: Mechanisms of Novel Reactivity in Aqueous Microdroplets
Topic 20: Topological Plasma Electromagnetics
Topic 21: Interfacial Engineering of Superconductors
Topic 22: Targeted Optical Stimulation of Individual Retinal Photoreceptors
Topic 23: Quantum Random Access Memory
Topic 24: Metasurface Edge Sensing, Processing and Computing
Topic 25: Non-Hermitian Programmable Materials at Exceptional Points
Topic 26: Mathematical Foundations for Enabling Robust Optimal Design of Hypersonic Systems

White papers and proposals addressing the following OSD topic should be submitted to the Air Force Office of Scientific Research (AFOSR):

OSD:

Topic 27: Advanced Modeling of Evolutionary Cyber Eco-Systems with Autonomous Intelligence

Award: Standard Grants; Typical annual funding per grant is in the $1.25M to $1.5M range. Available Funding: $180,000,000

Proposal Deadline:

White Papers due: 01 June 2020 (Monday) at 11:59 PM Eastern Time

Applications due: 14 September 2020 (Monday) at 11:59 PM Eastern Time
Contact Information:
Office of Naval Research Dr. Ellen Livingston Email: ellen.s.livingston@navy.mil
Army Research Office DR. LARRY RUSSELL, JR. Email: usarmy.rtp.ccdc-arl.mbx.aro-muri@mail.mil
Air Force Office of Scientific Research MS. KATIE WISECARVER Email: MURI@us.af.mil
DoD Liaison (for OSD topic) Dr. Jennifer Becker Email: jennifer.j.becker.civ@mail.mil

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Grant Program: FY 2021 Defense University Research Instrumentation Program (DURIP)- AFOSR Submission
FY 2021 Defense University Research Instrumentation Program (DURIP)- ARMY Submission
FY 2021 Defense University Research Instrumentation Program (DURIP)- ONR Submission
Agency: Department of Defense AFOSR: FOA-AFRL-AFOSR-2020-0001
Dept od Army W911NF-20-S-0006
Office of Naval Research FOA-AFRL-AFOSR-2020-0001
Website: https://www.grants.gov/web/grants/search-grants.html
https://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842111/afosr-funding-opportunities-university-research-initiative-uri/#anchor1
https://www.onr.navy.mil/en/Education-Outreach/Sponsored-Research/University-Research-Initiatives/DURIP
Brief Description: The Department of Defense (DoD) announces the Fiscal Year 2021 Defense University Research Instrumentation Program (DURIP). DURIP is designed to improve the capabilities of accredited United States (U.S.) institutions of higher education to conduct research and to educate scientists and engineers in areas important to national defense, by providing funds for the acquisition of research equipment or instrumentation. For-profit organizations are not eligible for DURIP funding. Proposing institutions should be seeking to purchase instrumentation in support of research areas of interest to the DoD, including areas of research supported by the administering agencies.
Army Research Office at **http://www.aro.army.mil**
Select "Broad Agency Announcements" in the "For the Researcher" section to see the most recent ARL or ARO Core Broad Agency Announcement for Basic and Applied Scientific Research.
Office of Naval Research at http://www.onr.navy.mil/ .
Select "Contracts and Grants" and then "Funding Opportunities" to see the Long Range Broad Agency Announcement for Navy and Marine Corps Science and Technology, BAA N00014-18-S-B001.
Air Force Office of Scientific Research at http://www.wpafb.af.mil/afrl/afosr/
Awards: DURIP funds will be used for the acquisition of major equipment to augment current or develop new research capabilities in support of DoD-relevant research. Proposals may request $50,000 to $1,500,000. Proposals for purely instructional equipment are not eligible. General-purpose computing facilities are not appropriate for DURIP funding, but requests for computers for DoD-relevant research programs are appropriate.
Proposal Deadline: May 15, 2020
Contact Information:
Army Research Office
DR. LARRY RUSSELL, JR.
Phone: (919) 549-4211
E-mail: usarmy.rtp.rdecom-aro.mbx.durip@mail.mil
Office of Naval Research
DR. ELLEN LIVINGSTON

Phone: (703) 696-4668
E-mail: ellen.s.livingston@navy.mil
Air Force Office of Scientific Research
MS. KATIE WISECARVER
Phone: (703) 696-9544
E-mail: durip@us.af.mil

Grant Program: Quantum Information Sciences
Agency: Department of Defense FA8750-20-S-7006
Website:
https://beta.sam.gov/opp/dd6cccb1a9424440b7f0ff1d60ba9b7b/view?keywords=intelligence&sort=-modifiedDate&index=opp&is_active=true&page=1
Brief Description: The Air Force Research Laboratory - Information Directorate (AFRL/RI) is soliciting white papers under this Broad Agency Announcement (BAA) for research, design, development, concept testing, evaluation, experimentation, integration and delivery of Quantum Information Sciences supporting the implementation and use of Command, Control, Communications, Computers & Intelligence (C4I)-related information and communications technologies and techniques. In particular, this effort seeks to advance and assess advanced algorithm designs and technologies harnessing emerging quantum computing techniques to support AFRL/RI's C4I mission.

AFRL/RI has established a Quantum Information and Science branch (RITQ). Research within this branch will include Quantum Algorithms and Computing, Memory-Node-Based Quantum Networking, Quantum Information Processing, Superconducting Hybrid Quantum Platforms, and Quantum Information Sciences. These technologies will have both in-house and contractual based requirements to support the overall mission of the RITQ branch.
Further, AFRL/RI is interested in developing a user community around this emerging technology, to consist of other U.S. Government organizations (federal, state, and local), U.S. Government contractors and commercial industry, and academia (both public and private).
Awards: Various. Total funding for this BAA is approximately $49.9M. Individual awards will not normally exceed 36 months with dollar amounts normally ranging from $0.5M to $2M.
Proposal Deadline: FY21 by 30 Sep 2020; FY22 by 30 Sep 2021
Contact Information: Kristi Mezzano
AFRL/RITQ
Telephone: (315) 330-2448 Email: AFRL.RIT.Quantum@us.af.mil

Grant Program: Synthetic Biology (SynBio) Manufacturing Innovation Institute (MII)
Agency: Department of Defense DEPT OF THE AIR FORCE AFMC FA8650-20-S-5028
Website: https://beta.sam.gov/opp/f87127393cb84157b8da1957ec686d16/view?keywords=FA8650-20-S-5028&sort=-relevance&index=&is_active=true&page=1
Brief Description: The purpose of this Notice of Intent is to announce the U.S. Government's intent to launch a competition for the ninth Manufacturing Innovation Institute (MII) led by the Department of Defense (DoD). The technical focus area for this Institute will be Synthetic Biology. Funding will be commensurate with the other DoD MIIs with similar expectations for cost-share from non-Federal sources of 1:1 or greater. DoD expects to release the formal solicitation in late February 2020. Proposer's Days will follow release of the formal solicitation around mid to late March 2020. The exact date and location will be confirmed in the solicitation release. Synthetic Biology (SynBio) promises to deliver a new class of manufacturing that will provide the United States with domestic capabilities to manufacture critical

resources, providing supply chain security. SynBio manufacturing also has the potential to create entirely new classes of products with defense applications, such as chemicals and materials with advanced properties that could be used in austere environments. The combination of defense priorities addressable by SynBio manufacturing and the commercial potential of these innovations in food, agriculture, fuel, pharmaceuticals, and other consumer products, will create new opportunities for U.S. manufacturers.
Awards: TBD
Proposal Deadline: TBD
Contact Information: MARY A. SHARITS, Contracting Officer/Grants & Agreements Officer
AFRL/RXKMC; 2130 8th STREET; WRIGHT PATTERSON AFB, OH 45433-7541
MARY.SHARITS@US.AF.MIL Phone: (937) 713-9898

Grant Program: NRL Long Range Broad Agency Announcement (BAA) for Basic and Applied Research
Agency: Department of Defense Naval Research Laboratory N00173-19-S-BA01
Website: https://www.nrl.navy.mil/doing-business/Current-NRL-BAA
Brief Description: The Naval Research Laboratory (NRL) The Naval Research Laboratory (NRL) is the Navy's corporate laboratory. NRL conducts basic and applied research for the Navy in a variety of scientific and technical disciplines. The basic research program is driven by perceptions about future requirements of the Navy. NRL conducts most of its research program at its own facilities but also funds some related research such as anticipated by this announcement. More extensive research support opportunities are available from the Naval Research Laboratory (NRL). NRL announcements may be accessed via the Internet at https://www.nrl.navy.mil/doingbusiness/contracting-division/baa.

NRL is interested in receiving proposals for Long-Range Science and Technology (S&T) Projects which offer potential for advancement and improvement of Navy and Marine Corps operations. Readers should note that this is an announcement to declare NRL's broad role in competitive funding of meritorious research across a spectrum of science and engineering disciplines. A brief description of the NRL Program Codes and the science and technology thrusts that NRL is pursuing is provided below. Additional information can be found at the NRL website at https://www.nrl.navy.mil/research/directorates-divisions/.
Awards: Various
Proposal Deadline: September 05, 2020
Contact Information: Mary A Johnson; Procurement Analyst; Phone 202-767-2021
General Inquiries

Grant Program: Air Superiority Technology Broad Agency Announcement
Agency: Department of Defense FA8651-20-S-0008
Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=dbdb4a35cb22a4a0d8414b652f0c74bb&tab=core&_cview=0
Brief Description: For purposes of this announcement, research is defined to be scientific study and experimentation directed at increasing knowledge and understanding in relation to long term national security needs. It is an enhancement to related exploratory and advanced development programs. A program should be designed to demonstrate well-defined and substantive research results, should not be overly ambitious or open-ended, and should not be a paper study that inherently requires a substantial testing effort.

RESEARCH AREA 1 – MODELING, SIMULATION, & ANALYSIS (MS&A): The objective of this work is to develop/modify and employ models used to analyze Air Superiority concepts and their related concepts of employment. The objective is to apply, modify and/or combine engineering, engagement (one-on-one), mission (few-on-few), systems-of-systems, campaign (many-on-many, military worth), level modeling techniques, tools, and analysis methods as well as virtual and constructive digital simulation which lend themselves to the quick and effective evaluation of air superiority concepts. Concepts include, but are not limited to, intercommunicative weapons, novel damage mechanisms, lethal and novel destruct mechanisms, multiple targeting, and time critical delivery. Detailed modeling includes, but is not limited to, sensors, aerodynamics, autopilots, navigation and guidance schemes, propulsion, warheads, fuzes, datalinks, fire control, launcher, suspension, carriage and release, error filters, environment (wind, fog, and dust), lethality, vulnerability, and threats.
RESEARCH AREA 2 – INNOVATIVE AIRCRAFT INTEGRATION TECHNOLOGIES The objective of this work is to design, develop, and demonstrate innovative aircraft integration technologies including but not limited to physical, electrical, and logical interfaces; and other aspects of aircraft integration that may be applicable.
RESEARCH AREA 3 –FIND-FIX-TARGET-TRACK (F2T2) & DATALINK TECHNOLOGIES The objective of this work is to design, develop, and demonstrate innovative Find, Fix, Target, and Track (F2T2) technologies for the detection of threats to aircraft. These F2T2 technologies should provide threat warning, threat characteristics, You Are The One (YATO) or You Are Not The One (YANTO) discrimination, highly accurate threat cueing, range and range rate, and other pertinent information required to analyze and coordinate a response to a threat.
RESEARCH AREA 4 – ENGAGEMENT MANAGEMENT SYSTEM TECHNOLOGIES The objective of this work is to design, develop, and demonstrate an innovative Engagement Management system to maximize aircraft survivability in increasingly contested environments while mining false positives and engagement costs. These technologies should interface with aircraft and other Find-Fix-Target-Track (F2T2) systems, determine the optimum counter measure response(s), respect keep-out or no-fire zones, and make other decisions required for aircraft survivability.
RESEARCH AREA 5 – HIGH VELOCITY FUZING The objective of this work is to design, develop, and demonstrate high velocity fuzing, including both Electronic Safe and Arm (ESAF) technologies that can safely initiate a warhead and Target Detection Devices (TDDs) that can provide miniaturized, fast-responding, highly accurate range and location information for high closure velocity intercepts.
RESEARCH AREA 6 – MISSILE ELECTRONICS The objective of this work is to investigate all aspects of Missile Power & Electronics as it applies to air-toair missiles. The following technologies and research areas are of particular interest: Power Conversion and Distribution, Power Generation and Storage Technologies (Advanced Missile Battery Technology and Ultracapacitors), Guidance Electronics, and Thermal Management.
RESEARCH AREA 7 – MISSILE GUIDANCE AND CONTROL TECHNOLOGIES The objective of this work is to investigate Missile Guidance and Control Technologies to include the following: Robust guidance algorithms against maneuvering targets, real time optimal lofting/energy management techniques, integrated guidance and control, reduced latency between seeker measurements and final control fin commands, highly accurate seeker technologies and algorithms, robust and novel target state estimators, third party queuing, optimal body orientation at endgame encounter, (reinforcement learning-adaptive control) approach, simultaneous learning and control, Hybrid (switched) guidance law selection based on the red-target strategy/maneuver, many-on-many engagement guidance laws, optimal pulse delay and propellant allocation, rapid flexible autopilot design process, robust control in aerodynamic cross coupling environments for various airframe designs from canard to tail control, robust control at high angles of attack, innovative autopilot architectures, efficient verification of safe separation over all flight regimes, Non-linear/adaptive control for agile maneuver, and advanced airframe control techniques.

RESEARCH AREA 8 – ADVANCED WARHEAD TECHNOLOGIES
More areas; Please see the BAA on above website.
Awards: Various
Proposal Deadline: This BAA will remain open through 31 October 2024 or until amended or superseded. It may be reissued and/or amended periodically, as needed.
Contact Information: Technical POC: Mr. David Hartline , AFRL, (850) 882-1324
david.hartline.1@us.af.mil

Grant Program: DSO Office-wide Broad Agency Announcement
Agency: Department of Defense DARPA HR001119S0071
Website: https://www.darpa.mil/work-with-us/opportunities?tFilter=&oFilter=2&sort=date
https://www.fbo.gov/index?s=opportunity&mode=form&id=22a346a8b55f0a7040d57a8fbc19e644&tab=core&_cview=1
Brief Description: The mission of the Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) is to identify and create the next generation of scientific discovery by pursuing high-risk, high-payoff research initiatives across a broad spectrum of science and engineering disciplines and transforming these initiatives into disruptive technologies for U.S. national security. In support of this mission, the DSO Office-wide BAA invites proposers to submit innovative basic or applied research concepts that address one or more of the following technical domains: (1) Frontiers in Math, Computation and Design, (2) Limits of Sensing and Sensors, (3) Complex Social Systems, and (4) Anticipating Surprise. Each of these domains is described below and includes a list of example research topics that highlight several (but not all) potential areas of interest. Proposals must investigate innovative approaches that enable revolutionary advances. DSO is explicitly not interested in approaches or technologies that primarily result in evolutionary improvements to the existing state of practice.
Awards: The total award value for the combined Phase 1 base and Phase 2 option is limited to $1,000,000. This total award value includes Government funding and performer cost share (if required).
Proposal Deadline: Executive Summary Due Date: June 12, 2020, 4:00 p.m. o Abstract Due Date: June 12, 2020, 4:00 p.m. o Full Proposal Due Date: June 12, 2020, 4:00 p.m.
Contact Information: BAA Email: HR001119S0071@darpa.mil

Department of Transportation

Grant Program: FY 2020 National Infrastructure Investments
Agency: Department of Transportation DTOS59-20-RA-BUILD
Website: https://www.transportation.gov/BUILDgrants/apply
Brief Description: Activities eligible for funding under BUILD Transportation planning grants are related to the planning, preparation, or design—including environmental analysis, feasibility studies, and other pre-construction activities—of eligible surface transportation capital projects described in Section C.3. (a). In addition, eligible activities related to multidisciplinary projects or regional planning may include: (1) Development of master plans, comprehensive plans, or corridor plans; (2) Planning activities related to the development of a multimodal freight corridor, including those that seek to reduce conflicts with residential areas and with passenger and non-motorized traffic; (3) Development of port and regional port planning grants, including State-wide or multi-port planning within a single jurisdiction or region; (4) Risk assessments and planning to identify vulnerabilities and address the transportation system's ability to withstand probable occurrence or recurrence of an emergency or major disaster.

Awards: The FY 2020 Appropriations Act specifies that BUILD Transportation grants may not be less than $5 million and not greater than $25 million, except that for projects located in rural areas (as defined in Section C.4.(a)) the minimum award size is $1 million. There is no minimum award size, regardless of location, for BUILD Transportation planning grants. Applicants are strongly encouraged to submit applications only for eligible award amounts.
Proposal Deadline: May 18, 2020 at 5:00pm Eastern Time.
Contact Information: For further information, please contact the BUILD Transportation grants program staff via e-mail at BUILDgrants@dot.gov, or call Howard Hill at 202-366-0301.

Department of Agriculture:

Grant Program: Scientific and Cooperative Research Program
Agency: Department of Agriculture USDA-FAS-10961-0700-10-20-0001
Website: https://www.grants.gov/web/grants/search-grants.html
Brief Description: The United States Department of Agriculture's (USDA) Foreign Agricultural Service (FAS) announces the availability of funding through cost reimbursable agreements for the Scientific Cooperation Research Program (SCRP) for fiscal year (FY) 2020.
SCRP will support applied research, extension, and education projects — lasting up to two years between U.S. researchers and researchers from selected emerging market economies - that create practical solutions to challenges faced by small farmers and build regional or global trade capacities in FAS countries. In general, applications should support one or more of the following strategies of the Global Food Security Act (Public Law No: 114-195):
1.Accelerate inclusive, agricultural-led economic growth that reduces global poverty, hunger, and malnutrition, particularly among women and children.
2.Increase the productivity, incomes, and livelihoods of small-scale producers, especially women, by working across agricultural value chains, enhancing local capacity to manage agricultural resources effectively, and expanding producer access to local and international markets.
3.Build resilience to food shocks among vulnerable populations and households while reducing reliance upon emergency food assistance.
4.Create an enabling environment for agricultural growth and investment, including through the promotion of secure and transparent property rights.
5.Improve the nutritional status of women and children, with a focus on reducing child stunting, including through the promotion of highly nutritious foods, diet diversification, and nutritional behaviors that improve maternal and child health;
6.Align with and leverage broader United States strategies and investments in trade, economic growth, science and technology, agricultural research and extension, maternal and child health, nutrition, and water, sanitation, and hygiene.
Awards: $500,000 total (up to $50,000 per award)
Proposal Deadline: Application Submission Deadline: March 2, 2020
Contact Information: Sintayehu Assefa Phone: +1-202-720-2200 Email: SINTAYEHU.ASSEFA@USDA.GOV

Grant Program: Biotechnology Risk Assessment Grants Program
Agency: Department of Agriculture USDA-NIFA-BRAP-007072
Website: https://nifa.usda.gov/funding-opportunity/biotechnology-risk-assessment-research-grants-program-brag

Brief Description: The purpose of the BRAG program is to support the generation of new information that will assist Federal regulatory agencies in making science-based decisions about the effects of introducing into the environment genetically engineered organisms (GE), including plants, microorganisms — such as fungi, bacteria, and viruses — arthropods, fish, birds, mammals and other animals excluding humans. Investigations of effects on both managed and natural environments are relevant. The BRAG program accomplishes its purpose by providing federal regulatory agencies with scientific information relevant to regulatory issues. See the Request for Applications (RFA) for details. View the Centers of Excellence (COE) webpage to access a factsheet on the COE designation process, including COE criteria, and a list of programs offering COE opportunities.
Awards: Up to $500,000; Anticipated available funding: $4,500,000
Proposal Deadline: Mar 18, 2020 FY 2020: March 18, 2020 FY 2021: February 24, 2021 Letter of Intent Deadline: February 12, 2020; January 21, 2021 Note: Letter of Intent encouraged but not required
Contact Information: Dr. Lakshmi Matukumalli lakskhmi.matukumalli@usda.gov (816)-926-1189

Grant Program: Agriculture and Food Research Initiative - Foundational and Applied Science
Agency: Department of Agriculture USDA-NIFA-AFRI-007052
Website: https://nifa.usda.gov/funding-opportunity/agriculture-and-food-research-initiative-foundational-applied-science-program
Brief Description: The AFRI Foundational and Applied Science Program supports grants in six AFRI priority areas to advance knowledge in both fundamental and applied sciences important to agriculture. The six priority areas are: Plant Health and Production and Plant Products; Animal Health and Production and Animal Products; Food Safety, Nutrition, and Health; Bioenergy, Natural Resources, and Environment; Agriculture Systems and Technology; and Agriculture Economics and Rural Communities. Research-only, extension-only, and integrated research, education and/or extension projects are solicited in this Request for Applications (RFA). See Foundational and Applied Science RFA for specific details.
Awards: Anticipated Funding: $192,600,000
Submission Deadline: Agricultural Innovation through Gene Editing - Letter of Intent required
Letter of Intent Deadline - February 19, 2020
Agricultural Microbiomes - Letter of Intent required
Letter of Intent Deadline - March 10, 2020
Tactical Sciences for Agricultural Biosecurity - Letter of Intent required
Letter of Intent Deadline - March 10, 2020
All Conference Grants - Letter of Intent required
Letter of Intent Deadline - Minimum of 135 days before the conference begins
Application Deadline Dates: Dates vary by program area priority
Contact: Technical Contact: Dr. Louis Tupas, Deputy Director, Institute of Bioenergy, Climate, and Environment Telephone: (202) 401-5022 Fax: (202) 401-6488 E-mail: AFRI@nifa.usda.gov

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Grant Program: REAP-Renewable Energy Systems and Energy Efficiency Improvements
Agency: Department of Agriculture RDBCP-11-REAP-RES-EEI-2020
Website: https://www.govinfo.gov/content/pkg/FR-2019-08-30/pdf/2019-18825.pdf
Brief Description: Eligible applicants are agricultural producers and rural small businesses. All agricultural producers, including farmers and ranchers, who gain 50% or more of their gross income from the agricultural operations are eligible. Small businesses that are located in a rural area can also apply. Rural electric cooperatives may also be eligible to apply. Additional Information on

Eligibility:Citizenship - To be eligible, applicants must be individuals or entities at least 51 percent owned by persons who are either: 1) citizens of the United States (U.S.),the Republic of Palau, the Federated States of Micronesia, the Republic of the Marshall Islands, or American Samoa; or 2) legally admitted permanent residents residing in the U.S.Project - The project must be to conduct a feasibility study for a renewable energy system. Eligible technologies include: projects that produce energy from wind, solar, biomass, geothermal, hydro power and hydrogen-based sources.
Awards: Up to $500,000; Anticipated Funding: $70 million
Submission Deadline: September 30, 2020
Contact: Technical Contact: Maureen Hessel, Energy Specialist, Phone 202-401-0142

Department of Labor

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

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

The purpose of this grant program is to promote apprenticeships as a significant workforce solution in filling current job vacancies and closing the skills gap between employer workforce needs and the skills of the current workforce. The overarching goals of this grant program are threefold: (1) to accelerate the expansion of apprenticeships to industry sectors and occupations that have not traditionally deployed apprenticeships for building a skilled workforce, such as cybersecurity, artificial intelligence, and health care; (2) to promote the large-scale expansion of apprenticeships across the nation to a range of employers, including small and medium-sized employers; and (3) to increase apprenticeship opportunities for all Americans. Recognizing that apprenticeship is a training strategy that operates on both the supply side and the demand side of the labor market, this grant program aims to increase both the number of apprenticeship positions and the ability of all Americans to gain access to this proven pathway to family-sustaining careers.
Awards: We will award up to $100 million in H-1B funds initially to fund approximately 16 to 30 apprenticeship grants, with awards ranging from $500,000 to $6 million.
Anticipated Funding: $100,000,000
Proposal Deadline: September 24, 2019 no later than 4:00:00 p.m. Eastern Time. Passed: FYI
Contact Information: Denise Roach Grants Management Specialist roach.denise@dol.gov

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EPA

Grant Program: FY 2020 – FY 2021 Source Reduction Assistance Grant Program
Agency: Environmental Protection Agency
Website: https://www.epa.gov/sites/production/files/2020-02/documents/general_sra_grant_guidance.pdf
Brief Description: EPA is announcing a grant competition to fund two-year Source Reduction Assistance (SRA) agreements that support research, investigation, study, demonstration, education and training using source reduction approaches (also known as "pollution prevention" and herein referred to as "P2"). P2 means reducing or eliminating pollutants from entering any waste stream or otherwise released into the environment prior to recycling, treatment, or disposal. EPA is particularly interested in receiving applications that offer hands on practical P2 tools, information and/or innovative P2 approaches to measurably improve the public health and the surrounding environment, by reducing the use of hazardous substances, reducing toxic pollutants, supporting efficiencies in reducing resource use (e.g., water and energy), and reducing business expenditures and liability costs.
Award: EPA plans to award a total of approximately $1.3 million in federal SRA grant funding issued over a twoyear funding cycle (approximately $658,000 in FY 2020 funds and approximately $658,000 in FY 2021 funds).
Submission Deadline: April 30, 2020
Contact: Michele Amhaz, 202-564-8857 amhaz.michele@epa.gov

Grant Program: National Environmental Education and Training Program
Agency: Environmental Protection Agency EPA-OA-EE-20-11
Website: https://www.epa.gov/education/national-environmental-education-and-training-program-solicitation-notice-2020-rfa
Brief Description: The purpose of the National Environmental Education and Training Program is to deliver environmental education (EE) training and long-term support to education professionals across the U.S. in the development and delivery of environmental education and training programs and studies.
Award: Under this competition, one cooperative agreement is expected to be awarded to a U.S. institution of higher education, a not-for-profit institution or a consortium of such institutions. The total estimated funding for the first year of the award (FY 2020) is $2,175,500. For planning purposes, funding for years two and three should be estimated to be $2,175,500 per year, subject to the availability of funds and other applicable considerations.
Submission Deadline: The closing date and time for receipt of application submissions is May 29, 2020 by 11:59 pm Eastern Time (ET).
Contact: Ginger Potter U.S. Environmental Protection Agency WJ Clinton North, potter.ginger@epa.gov

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Grant Program: Community-Scale Air Toxics Ambient Monitoring
Agency: Environmental Protection Agency EPA-OAR-OAQPS-20-05
Website: https://www.epa.gov/grants/community-scale-air-toxics-ambient-monitoring
Brief Description: EPA's Office of Air and Radiation (OAR) is soliciting applications from eligible entities for projects designed to assist state, local, and tribal air agencies in identifying and characterizing air toxics, also known as hazardous air pollutants (HAPs), through work that falls into one of four categories. Those categories are: 1) characterizing the impacts of air toxics in a community (community-scale monitoring); 2) assessing impacts of toxics emissions from specific sources (near-source

monitoring); 3) evaluating new and emerging testing methods for air toxics; and, 4) analyzing existing air toxics data and developing or enhancing analytical, modeling, and/or implementation tools. Air toxics of particular interest to EPA in this solicitation include ethylene oxide, chloroprene, benzene, 1,3-butadiene, and metals such as hexavalent chromium, nickel, and arsenic. The total estimated funding for this competitive opportunity is approximately $5,000,000. EPA anticipates awarding approximately 10 to 20 assistance agreements from this announcement, subject to the availability of funds, the quality of applications received, and other applicable considerations.
EPA will hold two information sessions on the 2020 competition February 19 and 20, 2020. Information about the sessions is available on the Community-Scale Air Toxics Ambient Monitoring website.
Award: Up to $750,000 per award; Anticipated available funding: $5,000,000
Submission Deadline: March 30, 2020
Contact: Nealson Watkins, watkins.nealson@epa.gov

Department of Energy

Grant Program: Scientific Discovery through Advanced Computing: Scientific Machine Learning and Artificial Intelligence for Fusion Energy Sciences
Agency: Department of Energy DE-FOA-0002224
Website: https://science.osti.gov/grants/lab-announcements/open
Brief Description: The DOE SC program in Fusion Energy Sciences (FES), and Advanced Scientific Computing Research (ASCR) invite applications under the Scientific Discovery through Advanced Computing (SciDAC) program in the area of Scientific Machine Learning and Artificial Intelligence for Fusion Energy Science. The goal of this announcement is to support research aiming to sustain and enhance the leadership position of the United States in Artificial Intelligence while addressing high-priority research opportunities identified in recent fusion community studies.

The FES mission is to expand the fundamental understanding of matter at very high temperatures and densities and to build the scientific foundations needed to develop a fusion energy source. This is accomplished through the study of plasma, the fourth state of matter, and how it interacts with its surroundings. High-performance computing (HPC) has been a traditional hallmark of the FES program, representing a world-leading U.S. strength and one of its competitive advantages. Its transformative potential was recognized in the recent FES decadal strategic directions report2 where "massively parallel computing with the goal of validated whole-fusion-device modeling" was among the key areas of emphasis. FES partners with the ASCR program in order to dramatically accelerate progress in computing and simulation in the area of fusion energy.

Recognizing the potential of ML/AI and data science more broadly, FES and ASCR cosponsored a community workshop to identify areas in fusion science where application of ML and AI can have transformative impacts, and to identify unique needs, research opportunities, and associated gaps in ML and AI that can be addressed through targeted partnerships. The final report4 identifies several high-level priority research opportunities that span DOE's Congressionally-authorized mission-space in fusion energy sciences.
Awards: Various; Estimated Total Program Funding: $8,000,000
Letter of Intent: 03/30/2020 at 5:00 PM Eastern Time
Proposal Submission Deadline: 04/30/2020 at 5:00 PM Eastern Time
Contact: Dr. John Mandrekas, Fusion Energy Sciences Phone: (301) 903-0552 John.Mandrekas@science.doe.gov

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Grant Program: Theoretical Research in Magnetic Fusion Energy Science
Agency: Department of Energy DE-FOA-0002226
Website: https://science.osti.gov/grants/FOAs/FOAs/2020/DE-FOA-0002226
Brief Description: The Magnetic Fusion Energy Sciences (MFES) theory program focuses on advancing the scientific understanding of the fundamental physical processes governing the behavior of magnetically confined plasmas. An important objective of the MFES theory program is to develop the predictive capability needed for a sustainable fusion energy source. The early-stage research supported by this FOA has the potential of creating significant public good by contributing to American energy dominance. The efforts supported by this program range from analytical work to the development and application of simulation codes capable of exploiting the potential of next generation high-performance computers. In addition to its scientific discovery mission, the MFES theory program provides the scientific grounding for the physics models implemented in the advanced simulation codes developed under the FES Scientific Discovery through Advanced Computing (SciDAC) portfolio.
Awards: Various; Estimated Total Program Funding: $13,000,000
Letter of Intent: March 27, 2020
Proposal Submission Deadline: May 01, 2020
Contact: Dr. John Mandrekas 301-903-4095 John.Mandrekas@science.doe.gov

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Grant Program: Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0002206 Connected Communities
Agency: Department of Energy DE-FOA-0002249
Website: https://eere-exchange.energy.gov/#FoaIdc01275fc-af09-43e7-a96b-86ccb83cb88a
Brief Description: The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Building Technologies Office (BTO), a Funding Opportunity Announcement (FOA) entitled "Connected Communities." The goal of this planned FOA would be to demonstrate the ability of efficient buildings to interact with the grid to provide demand flexibility. This includes the ability to shift and modulate load in both existing and new communities across diverse climates, geography, building types and grid/regulatory structures, while maintaining (if not enhancing) occupant satisfaction and productivity. This builds on BTO's current Grid-Interactive Efficient Buildings (GEB) work. Improving the energy efficiency and demand flexibility of buildings alleviates pressure on the electric grid and extends our energy resources.
Awards: Various; Estimated Total Program Funding: $42,000,000
Letter of Intent: N/A
Proposal Submission Deadline: N/A
Contact: Erika S. Gupta erika.gupta@ee.doe.gov

Grant Program: Solar Energy Technologies Office Fiscal Year 2020 Funding Program
Agency: Department of Energy DE-FOA-0002243
Website: https://eere-exchange.energy.gov/Default.aspx#FoaIdc8e280d2-b7bf-4138-810b-cad9ba1541ac
Brief Description: This funding opportunity announcement (FOA) is being issued by the U.S. Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) Solar Energy Technologies Office (SETO). SETO supports solar energy research and development (R&D) in three technology areas—photovoltaics (PV), concentrating solar-thermal power (CSP), and systems integration—with the goal of improving the affordability, reliability, and performance of solar technologies on the grid. This section describes the overall goals of the Solar Energy Technologies Office

Fiscal Year 2020 (SETO 2020) funding program and the types of projects being solicited for funding support through this FOA. The SETO 2020 funding program seeks to advance R&D of solar technologies that reduce the cost of solar, increase the competitiveness of American manufacturing and businesses, and improve the reliability of the grid. These projects will advance R&D in PV, CSP, and energy management technologies, while also working to improve cybersecurity, expand solar to new applications like agricultural solar, integrate solar and storage, and utilize artificial intelligence to address research challenges.
Informational webinars: February 12, 2020, at 2 PM Eastern Standard Time https://doe.webex.com/doe/onstage/g.php?MTID=e61dc56501622ba9e5a4429e90e70794d
Awards: Various; Estimated Total Program Funding: $125,500,000
Letter of Intent: Required by 3/9/2020 5:00 PM ET
Proposal Submission Deadline: Concept Paper Submission Deadline: 3/16/2020 5:00 PM ET

- Full Application Submission Deadline: 5/21/2020 5:00 PM ET

Contact: seto.foa@ee.doe.gov For questions regarding this FOA

NASA

Grant Program: ROSES 2020: Heliophysics Supporting Research
Agency: NASA NNH20ZDA001N-HSR
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7BBA3F017B-32B1-74F1-3DC5-0DC78AA76DB9%7D&path=&method=init
Brief Description: Heliophysics Supporting Research (SR) awards are research investigations of significant magnitude that employ a combination of scientific techniques. These must include an element of (a) theory, numerical simulation, or modeling, and an element of (b) data analysis and interpretation of NASA-spacecraft observations. HSR is a component of the Heliophysics Research Program and proposers interested in this program element are encouraged to see B.1, The Heliophysics Research Program Overview for Heliophysics-specific requirements. Common requirements for all ROSES elements and proposals are found in the ROSES Summary of Solicitation and the Proposer's Guidebook and the order of precedence for proposers.
Awards: Various; Available funding: $6.500.000
Notices of Intent Due: N/A
Proposal Deadline: November 18, 2020
Contact: Patrick Koehn; Email: patrick.koehn@nasa.gov

Grant Program: ROSES 2020: Astrophysics Data Analysis
Agency: NASA NNH20ZDA001N-ADAP
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7BEC4AFCE9-78E3-7164-00DC-5D3E325B4EA1%7D&path=&method=init
Brief Description: Over the years, NASA has invested heavily in the development and execution of an extensive array of space astrophysics missions. The magnitude and scope of the archival data from those missions enables science that transcends traditional wavelength regimes and allows researchers to answer questions that would be difficult, if not impossible, to address through an individual observing program. To capitalize on this invaluable asset and enhance the scientific return on NASA mission investments, this Astrophysics Data Analysis Program (ADAP) program in ROSES provides support for investigations whose focus is on the analysis of archival data from NASA space astrophysics missions.
Awards: Various; Available funding: $7,000,000

Notices of Intent Due: N/S
Proposal Deadline: March 19, 2020
Contact: Douglas M. Hudgins; Email: Douglas.M.Hudgins@nasa.gov

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Grant Program: HELIOPHYSICS - Early Career Investigator Program
Agency: NASA NNH20ZDA001N-ECIP
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7BBC6756FD-561A-B7A1-F68A-2A18E6851701%7D&path=&method=init
Brief Description: The Early Career Investigator Program (ECIP) in Heliophysics is designed to support outstanding scientific research and career development of scientists at the early stage of their professional careers. The program aims to encourage innovative research initiatives and cultivate diverse scientific leadership in Heliophysics. This program is designed to foster the empowerment, inspiration, and education of the next generation of space researchers, as part of the E of the DRIVE (Diversify, Realize, Integrate, Venture, Educate) initiative put forward as a high priority recommendation of the 2013 Solar and Space Physics Decadal Survey.
Awards: Various, Available funding: $1,500,000
Notices of Intent Due: N/A
Proposal Deadline: August 12, 2020
Contact: Katya Verner, Telephone: 202-358-1213 Email: Ekaterina.M.Verner@nasa.gov

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Grant Program: ROSES 2020: Astrophysics Research and Analysis
Agency: NASA NNH20ZDA001N-APRA
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7BD4C56B9D-7FF4-D128-D82D-6BB8F4306D00%7D&path=&method=init
Brief Description: The Astrophysics Research and Analysis Program (APRA) program solicits basic research proposals for investigations that are relevant to NASA's programs in astronomy and astrophysics and includes research over the entire range of photons, gravitational waves, and particle astrophysics. Awards may be for up to four years' duration (up to five years for suborbital investigations), but shorter-term proposals are typical; four-year or five-year proposals must be well justified. Proposals for suborbital investigations are particularly encouraged. APRA investigations may advance technologies anywhere along the full line of readiness levels, from Technology Readiness Level (TRL) 1 through TRL 9. The emphasis of this program element is on technologies and investigations that advance NASA astrophysics missions and goals.
Awards: Various
Notices of Intent Due: N/A
Proposal Deadline: December 17, 2020
Contact: Dominic J. Benford Astrophysics Division, Telephone: (202) 358-1261 Email: Dominic.Benford@nasa.gov

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Grant Program: Early Career Faculty
Agency: NASA 80HQTR20NOA01-20ECF-B1
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7BACAD5344-C2D1-8304-D57E-2FE90D346946%7D&path=&method=init
Brief Description: The STRG Program within STMD is fostering the development of innovative, low-TRL technologies for advanced space systems and space technology. The goal of this lowTRL endeavor

is to accelerate the development of groundbreaking, high-risk/high-payoff space technologies, not necessarily directed at a specific mission, to support the future space science and exploration needs of NASA, other government agencies, and the commercial space sector. Such efforts complement the other NASA Mission Directorates' focused technology activities which typically begin at TRL 3 or higher. The starting TRL of the efforts to be funded as a result of this Appendix will be TRL 1 or TRL 2; typical end TRLs will be TRL 2 or TRL 3. See Attachment 2 of the NRA for TRL descriptions.

This Appendix seeks proposals to develop unique, disruptive, or transformational space technologies that have the potential to lead to dramatic improvements at the system level — performance, weight, cost, reliability, operational simplicity, or other figures of merit associated with space flight hardware or missions. Although progress under an award may be incremental, the projected impact at the system level must be substantial and clearly defined.

Awards: $200K/per year for maximum 3 years
Notices of Intent Due: February 26, 2020
Proposal Deadline: March 25, 2020
Contact: Claudia Meyer Space Technology Research Grants Program Executive hq-ecf-call@mail.nasa.gov

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Grant Program: ROSES 2019: Sustainable Land Imaging-Technology
Agency: NASA NNH19ZDA001N-SLIT
Website: https://nspires.nasaprs.com/external/solicitations/summary.do?solId=%7B628D67E6-7DF9-6DE8-B052-940659BC37F4%7D&path=&method=init
Brief Description: The aim of the Sustainable Land Imaging-Technology (SLI-T) program is to develop next-generation technology for a long-term programmatically sustainable system that as a minimum continues the historical measurement capability, and potentially improves this capability. Technology developed under this program will be considered for infusion over the lifetime of the program as a potential contributing element of the long-term sustainable program.
Awards: Various; Available funding: $1,250,000
Proposal Deadline: April 07, 2020; Pre-proposal deadline may be earlier. Please check with program officer.
Contact: Prospective proposers are requested to submit any questions in writing to sachidananda.r.babu@nasa.gov no later than 30 days before the proposal due date.

National Endowment of Humanities

Grant Program: Fellowships
Agency: National Endowment for the Humanities 20200408-FEL
Website: https://www.neh.gov/grants/research/fellowships
Brief Description: NEH Fellowships are competitive awards granted to individual scholars pursuing projects that embody exceptional research, rigorous analysis, and clear writing. Applications must clearly articulate a project's value to humanities scholars, general audiences, or both.
Fellowships provide recipients time to conduct research or to produce books, monographs, peer-reviewed articles, e-books, digital materials, translations with annotations or a critical apparatus, or critical editions resulting from previous research. Projects may be at any stage of development.

NEH invites research applications from scholars in all disciplines, and it encourages submissions from independent scholars and junior scholars.
Awards: Maximum award amount: $60,000
Deadlines: April 8, 2020
Contact: Contact the Division of Research Programs Team 202-606-8200 fellowships@neh.gov

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Whitehall Foundation

Grant Program: Bioscience Research
Agency: Whitehall Foundation
Website: http://philanthropynewsdigest.org/rfps/rfp10976-whitehall-foundation-invites-lois-for-bioscience-research-projects?utm_medium=email&utm_source=PND%20RFP%20-%20All%20Subscribers&utm_campaign=rfp20200306
Brief Description: The Whitehall Foundation supports scholarly research in the life sciences through its research grants and grants-in-aid programs. It is the foundation's policy to support dynamic areas of basic biological research that are not heavily supported by federal agencies or other foundations with a specialized mission. The foundation emphasizes the support of young scientists at the beginning of their careers and productive senior scientists who wish to move into new fields of interest.
To that end, the foundation welcomes LOIs for two grant programs:
Research — Grants of up to $225,000 over three years will be awarded to established scientists of all ages working at an accredited institution in the United States. Grants will not be awarded to investigators who have already received, or expect to receive, substantial support from other sources, even if it is for an unrelated purpose.
Grants-in-Aid — One-year grants of up to $30,000 will be awarded to researchers at the assistant-professor level who experience difficulty in competing for research funds because they have not yet become firmly established. Grants-in-Aid can also be made to senior scientists.
The foundation is interested in basic research in neurobiology, defined as follows: invertebrate and vertebrate (excluding clinical) neurobiology, with a focus on investigations of neural mechanisms involved in sensory, motor, and other complex functions of the whole organism as these relate to behavior. The overall goal should be to better understand behavioral output or brain mechanisms of behavior.
To be eligible, applicants must hold the position of assistant professor or higher, have principal investigator status, and be considered an "independent investigator" with his/her own dedicated lab space or with lab space independent of another investigator.
Awards: Research — Grants of up to $225,000 over three years
Grants-in-Aid — One-year grants of up to $30,000
Letters of Intent: April 15, 2020
Submission Deadlines: September 1, 2020
Contact: Please contact Richard Rosenberg at rmr@njit.edu if you are interested in submitting a proposal.

Streamlyne Question of the Week

Question: **How do I enter a cost share? For my salary? For other personnel and expenses?**
Answer: Cost Share for personnel other than faculty is very similar to release time –

- add the person under Key personnel

- select the period (start and end dates) that the staff/admin will be devoted to the project
- select percentage.

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

Proposal Submission and Streamlyne Information

Internal Timeline for Successful and Timely Proposal Submission

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

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

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

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

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

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

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

Need Information about Funding?

Finding Research Opportunities and Collaborations (FROC)
***Walk-In* Open-Hour Discussion with SVPR Over Tea**
Every Thursday: 2.00 PM-3.00 PM; 340 Fenster Hall

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

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

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

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

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