

NJIT Research Newsletter

Issue: ORN-2016-043

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

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NJIT Office of Research Event Calendar Save the Date

Undergraduate Student Seed Grants Workshop:

December 8, 2016; 2.00 PM – 6.00 PM; Ballroom A

Grant Opportunity Alerts

Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES) Design and Development Launch Pilot; Cyberlearning and Future Learning Technologies; Algorithms for Modern Power Systems (AMPS)

NIH: Summer Research Experiences for Students and Science Teachers (Admin Supp); Research Education: Initiative for Maximizing Student Development (IMSD) Program (R25); Leveraging Existing Cohort Studies to Clarify Risk and Protective Factors for Alzheimer’s Disease and Related Dementias (R01); Exploratory Research for Technology Development (R21)

Department of Defense/US Army/DARPA/ONR: Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology

Department of Energy: Fuel Cells Technologies Office Annual Funding Opportunity Announcement; Request for Information (RFI): Hydrogen and Fuel Cell Manufacturing

NASA: ROSES 2016: Solar System Working

National Endowment of Humanities: Public Humanities Projects; Creating Humanities Communities

Recent Research Grant and Contract Awards

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

PI: Maggie Cheng (PI)

Department: School of Management

Grant/Contract Project Title: EAGER: Factoring User Behavior into Network Security Analysis

Funding Agency: NSF

Duration: 10/01/16-08/31/17

Agency Announcements and In the News...

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

NIH Announcement: NIH Request for Information (RFI): Strategies for NIH Data Management, Sharing, and Citation: NOT-OD-17-015:

Release Date: November 14, 2016

Response Date: December 29, 2016

This Request for Information (RFI) seeks public comments on data management and sharing strategies and priorities in order to consider: (1) how digital scientific data generated from NIH-funded research should be managed, and to the fullest extent possible, made publicly available; and, (2) how to set standards for citing shared data and software.

Response to this RFI is voluntary. Responders are free to address any or all of the items in Sections I and II, delineated below, or any other relevant topics respondents recognize as important for NIH to consider. Respondents should not feel compelled to address all items. Instructions on how to respond to this RFI are provided in "Concluding Comments."

Section I. Data Sharing Strategy Development
Section II. Inclusion of Data and Software Citation in NIH Research Performance Progress Reports (RPPR) and Grant Applications

Background

NIH has maintained the principle that "data sharing is essential for expedited translation of research results into knowledge, products, and procedures to improve human health." [1] The agency has a long history and continued commitment to ensure that, to the fullest extent possible, the results of federally-funded scientific research are made available to and are useful for the general public, industry, and the scientific community (<https://grants.nih.gov/policy/sharing.htm>). Further, effective data sharing relies upon appropriate identification, adoption, and crediting of good data management and sharing practices, thus, NIH is adopting principles to make data "FAIR" (Findable, Accessible, Interoperable, and Reusable; <http://www.nature.com/articles/sdata201618>).

On February 22, 2013, the White House Office of Science and Technology Policy (OSTP) released its memorandum entitled Increasing Access to the Results of Federally Funded Scientific Research (http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf). This memorandum directs federal agencies and offices to develop plans to ensure peer-reviewed publications and digital scientific data resulting from federally-funded scientific research are accessible to the public, industry, and the scientific community to the extent feasible and consistent with applicable laws and policies. In coordination with the U.S. Department of Health and Human Services (HHS) ([2](http://www.hhs.gov/open/public-access-guiding-</p></div><div data-bbox=)

[principles/index.html](#)), NIH responded to the memorandum by developing the National Institutes of Health Plan for Increasing Access to Scientific Publications and Digital Scientific Data from NIH Funded Scientific Research (“NIH Plan”), released in February 2015.[1] In order to implement the NIH Plan and move forward with ongoing commitments to the data sharing enterprise, NIH is considering priorities for data management and sharing (e.g., which data types have the greatest value for sharing, the costs and value of sharing different data types, including the long-term resource implications), and how to expand upon its 2003 Data Sharing Policy.[2]

Data and software citation allows important products of scientific research programs to be recognized and may enable more quantitative assessment of both effective sharing approaches and valuable data and software resources. Citation of data and software may provide additional incentives, as data and software sharing citation metrics could help to quantify these activities. Such data citation metrics would help to identify valuable data or software, to ensure that the researchers who produced them are appropriately attributed, and to facilitate broader re-use of valuable data and software by the broad research community.

Scholarly publications typically include citations to previously published research articles where these citations provide context for the motivation of the current study and the interpretation of the results presented in the publication. Nonetheless, citations in many research articles are limited to previous publications and the concepts within them, and do not cite the specific scientific data, software tools, or workflows that underlie them. However, expectations of scholarly citation are evolving, and there is an apparent groundswell of support for data and software citation among the scientific research community.[3]

Feedback obtained through this RFI is intended to be used to inform the development of NIH policies pertaining to the management and sharing of digital scientific data generated from NIH-supported research, including how these data and software should be cited, and other applicable NIH activities. Additionally, to support the long-term preservation of data and sustainability of repositories holding such data, NIH released the related “Request for Information (RFI): Metrics to Assess Value of Biomedical Digital Repositories” (<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-16-133.html>).

Information Requested

SECTION I.

Data Sharing Strategy Development

NIH recognizes that many factors must be considered when determining what, when, and how data should be managed and shared. These factors include, for example, the purpose for sharing, supporting data re-use and reproducibility, maturity of the science, the infrastructure uniqueness of the data, and ethical considerations.

The NIH seeks comment on any or all of the following topics to help formulate strategic approaches to prioritizing its data management and sharing activities:

- The highest-priority types of data to be shared and value in sharing such data;
- The length of time these data should be made available for secondary research purposes, the appropriate means for maintaining and sustaining such data, and the long-term resource implications;
- Barriers (and burdens or costs) to data stewardship and sharing, and mechanisms to overcome these barriers; and
- Any other topics respondents recognize as important for NIH to consider.

SECTION II.

Inclusion of Data and Software Citation in NIH Research Performance Progress Reports (RPPR) and Grant Applications

Currently, NIH grantees are required to report “other products of the research,” including data, databases, and software, in section C5a of their annual RPPR submission

(http://grants.nih.gov/grants/rppr/rppr_instruction_guide.pdf). However, limited guidance is available on how data, databases, and software should be reported or cited.

NIH recognizes that data and software citation indicates proof of productivity that translates to publications and patents. More thorough reporting of data and software products in the RPPR and in Competitive Grant Renewal applications may strengthen documentation of productivity and may also identify projects and investigators who most effectively share data and software.

The NIH seeks comment on any or all of the following topics:

- The impact of increased reporting of data and software sharing in RPPRs and competing grant applications to enrich reporting of productivity of research projects and to incentivize data sharing;
- Important features of technical guidance for data and software citation in reports to NIH, which may include:
 - Use of a Persistent Unique Identifier within the data/software citation that resolves to the data/software resource, such as a Digital Object Identifier (DOI) (<https://www.iso.org/obp/ui/#iso:std:iso:26324:ed-1:v1:en>)
 - Inclusion of a link to the data/software resource with the citation in the report
 - Identification of the authors of the data/software products
 - Granularity of data citations: when might citations point to an aggregation of diverse data from a single study and when might each distinct data set underlying a study be cited and reported separately
 - Consideration of unambiguously identifying and citing the digital repository where the data/software resource is stored and can be found and accessed;
- Additional routes by which NIH might strengthen and incentivize data and software sharing beyond reporting them in RPPRs and Competitive Grant Renewals applications;
- Any other topics respondents recognize as important for NIH to consider.

Submitting a Response

Comments on the topic areas of interest should be submitted electronically to the following webpage: <http://osp.od.nih.gov/content/nih-request-information-strategies-nih-data-management-sharing-and-citation> or mailed to: Office of Science Policy (OSP), National Institutes of Health, 6705 Rockledge Drive, Suite 750, Bethesda, MD 20892, or by fax to: 301-496-9839 by **December 29, 2016**.

Notice on the website: http://grants.nih.gov/grants/guide/notice-files/NOT-OD-17-015.html?utm_source=dlvr.it&utm_medium=twitter.

White House Issues Guidelines for IoT Cybersecurity: The Department of Homeland Security separately [released](#) its own cybersecurity policy for IoT devices on Tuesday, delineating six strategic principles that it believes will help stakeholders stop hackers from tampering with connected devices. Ron Ross, the first document's point man and a fellow at the National Institute of Standards and Technology, said the goal is to build public trust in the IoT devices that connect home appliances and medical monitors to the internet. "Really what we're trying to do is get the same trustworthiness that you have when you cross a bridge or fly on an airplane," he said Tuesday at a cybersecurity firm Splunk Inc.'s annual summit in Washington. "That trustworthiness doesn't happen by accident. You have to engineer it into the system." The voluntary guidance was developed by NIST over a four-year period.

The growth of network-connected devices, systems, and services comprising the Internet of Things (IoT)¹ creates immense opportunities and benefits for our society. IoT security, however, has not kept up with the rapid pace of innovation and deployment, creating substantial safety and economic risks. This document explains these risks and provides a set of non-binding

principles and suggested best practices to build toward a responsible level of security for the devices and systems businesses design, manufacture, own, and operate.

Growth and Prevalence of the Internet of Things: Internet-connected devices enable seamless connections among people, networks, and physical services. These connections afford efficiencies, novel uses, and customized experiences that are attractive to both manufacturers and consumers. Network-connected devices are already becoming ubiquitous in, and even essential to, many aspects of day-to-day life, from fitness trackers, pacemakers, and cars, to the control systems that deliver water and power to our homes. The promise offered by IoT is almost without limit.

Prioritizing IoT Security: While the benefits of IoT are undeniable, the reality is that security is not keeping up with the pace of innovation. As we increasingly integrate network connections into our nation's critical infrastructure, important processes that once were performed manually (and thus enjoyed a measure of immunity against malicious cyber activity) are now vulnerable to cyber threats. Our increasing national dependence on network-connected technologies has grown faster than the means to secure it. The IoT ecosystem introduces risks that include malicious actors manipulating the flow of information to and from network-connected devices or tampering with devices themselves, which can lead to the theft of sensitive data and loss of consumer privacy, interruption of business operations, slowdown of internet functionality through large-scale distributed denial-of-service attacks, and potential disruptions to critical infrastructure. More information with full report on: https://www.dhs.gov/sites/default/files/publications/Strategic_Principles_for_Securing_the_Internet_of_Things-2016-1115-FINAL....pdf

Congressionally Directed Medical Research Program (CDMRP): Each year the United States spends billions of dollars on medical research. The largest government funder is the National Institutes of Health (NIH), which received more than \$31 billion in 2016. The second largest funder is the Department of Defense (DoD) through its Congressionally Directed Medical Research Programs (CDMRP). In 2016, CDMRP received Congressional appropriations of almost \$1.5 billion to support 29 individual research programs ranging from breast cancer to military burns. Annual appropriations for most of the research programs have been relatively consistent since their inception, although the number of programs and the CDMRP overall budget have grown over the years.

The origins of CDMRP are in the 1993 Defense Appropriations Act, in which the U.S. Congress gave DoD \$210 million to establish a breast cancer research program. Subsequently, DoD asked the Institute of Medicine (IOM; now part of the National Academies of Sciences, Engineering, and Medicine) to advise it on the best approach for establishing and managing the new program. The IOM responded with guidance on a funding strategy for the program. It also recommended that CDMRP adopt a scientific peer review process modeled on the process used by NIH. In 1997, the IOM reviewed the DoD's progress in implementing the 1993 recommendations and provided additional guidance on enhancing the program's areas of research and its review processes. The current committee reviewed the conclusions and recommendations from both those earlier committees. It found that many of the earlier recommendations have been implemented by CDMRP, including the establishment of a two-tiered review process for scientific merit and for program relevance, the provision of peer review summary statements to applicants, communicating to the scientific community about the role of consumer reviewers, and the inclusion of programmatic evaluation criteria in program announcements. More information with full report on: <https://www.nap.edu/download/23652>

National Science Foundation: Dear Colleague Letter: Advanced Manufacturing Research to Address Basic Research Enabling Innovation at Manufacturing USA Institutes: The National Science Foundation (NSF) is announcing interest in research proposals to address critical fundamental research needs in advanced manufacturing, especially proposals that will enable innovations in one or more of the Manufacturing USA institutes' focus areas and leverage the facilities, infrastructure and member companies of an institute.

Since 2001, close to six million manufacturing jobs have been lost in the United States, compelling the development of a robust innovation policy as outlined in the Administration's *A National Strategic Plan for Advanced Manufacturing*.¹ One fundamental and far-reaching development is Manufacturing USA (formerly the National Network for Manufacturing Innovation), intended to secure advantage in advanced manufacturing, with particular emphasis on domestic manufacturing. A key component of Manufacturing USA is the creation of public-private partnerships to accelerate investment in and deployment of advanced manufacturing technologies. The Manufacturing USA Institutes have been established in topic areas that exemplify the challenging and high-tech world of advanced manufacturing, from the use of 3D printing to the production of flexible electronics. The National Science Foundation is part of the multi-agency team that has guided the formation of Manufacturing USA and continues its support through this Dear Colleague Letter (DCL).

Basic research in advanced manufacturing forms the foundation for many breakthrough technologies and innovations with significant economic and societal impact. This DCL encourages proposals that address critical fundamental research needs in advanced manufacturing in one or more of the Manufacturing USA institutes' focus areas. The resulting knowledge can, in turn, enable new technologies that feed into the innovation pipelines of one or more of the Manufacturing USA Institutes. Proposals that include a collaboration with an Institute and leverage the facilities, infrastructure and member companies of that Institute are particularly encouraged. A summary of the Institute focus areas can be found at <https://www.manufacturing.gov/nnmi-institutes/>

Energy Department Announces \$30 Million Investment for Innovation in Hydrogen and Fuel Cell Technologies: The Energy Department (DOE) announced approximately \$30 million in available funding, subject to appropriations, for research and development of low-cost hydrogen production, onboard hydrogen storage, and proton exchange membrane fuel cells to advance the widespread commercialization of fuel cell electric vehicles. Selected projects will leverage national lab consortia launched under DOE's [Energy Materials Network](#) (EMN) this past year, in support of DOE's materials research and advanced manufacturing priorities.

The fuel cells market is growing rapidly, and has seen an annual growth rate of 30% every year since 2010 as well as \$2 billion annual revenue in 2014. Light duty vehicles are an emerging application for fuel cells that already enable 95% lower petroleum consumption per mile than conventional internal combustion engine vehicles.

Applicants to this [funding opportunity announcement](#) (FOA) will collaborate with national lab consortia launched within the EMN. The EMN consortia have been established to make unique, world-class capabilities at the national laboratories more accessible to industry, facilitating collaborations that will expedite the development and manufacturing of advanced materials for commercial markets. More information on the website <https://eere-exchange.energy.gov/default.aspx#FoaIdf5ced284-2764-4570-977a-a9187a8e7be7> and also in the Grant Opportunity section below.

ATTENTION, WOMEN POST-DOCS: The L'Oréal USA For Women In Science fellowship program awards five post-doctoral women scientists annually with grants of \$60,000 each. Applicants are

selected from a variety of fields, including the life and physical/material sciences, technology (including computer science), engineering, and mathematics. Applications will open on November 28, 2016 and are due by February 3, 2017. The application and more information about the L'Oréal USA For Women in Science program can be found at www.lorealusa.com/forwomeninscience.

Webinar and Events

Event: NSF Webinar: Introduction to I-Corps Teams

When: December 6, 2016 2.00 PM – 4.00 PM

Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=189701&org=NSF

Brief Description: Curious about the NSF I-Corps program? Join this monthly introductory webinar to learn more about I-Corps Teams and how they contribute to the innovation ecosystem. During the webinar, I-Corps program directors will answer questions about I-Corps and provide updated information about I-Corps contacts, the [curriculum](#), important dates and other aspects of I-Corps. The I-Corps curriculum provides real-world, hands-on, immersive learning about what it takes to successfully transfer knowledge into products and processes that benefit society.

Event: 2016 NRT (NSF Research Traineeship) Program Information Webinar

When: November 9, 2015 1:00 AM to December 9, 2016 11:45 PM

Website: http://www.nsf.gov/events/event_summ.jsp?cntn_id=134466&org=NSF

Brief Description: The NSF Research Traineeship program (NRT) prerecorded informational videos to provide an overview of the NRT program and describe the key similarities and differences of the two tracks. The aim of these webinars was to give potential principal investigators information on program announcement [16-503](#) by emphasizing several key features and requirements of each track.

Grant Opportunities

National Science Foundation

Grant Program: Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES) Design and Development Launch Pilot

Agency: National Science Foundation NSF 17-522

RFP Website: <https://www.nsf.gov/pubs/2017/nsf17522/nsf17522.htm>

Brief Description: Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES) is a comprehensive national initiative designed to enhance U.S. leadership in science, technology, engineering and mathematics (STEM) discoveries and innovations focused on NSF's commitment to diversity, inclusion, and broadening participation in these fields. NSF INCLUDES supports efforts to create networked relationships among organizations whose goals include developing talent from all sectors of society to build the STEM workforce. This initiative seeks to improve collaborative efforts aimed at enhancing the preparation, increasing the participation, and ensuring the contributions of individuals from groups that have traditionally been underrepresented and underserved in the STEM enterprise: women, persons with disabilities, African Americans/Blacks, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians, Native Pacific Islanders, and persons from economically

disadvantaged backgrounds. Significant advancement in the inclusion of these groups will result in a new generation of STEM talent and leadership to secure our nation's future and long-term economic competitiveness.

The grand challenge of broadening participation in STEM is to transform the STEM enterprise at all levels in order to fully engage the nation's talent for the ultimate improvement of the STEM enterprise. As a comprehensive national initiative, NSF INCLUDES aims to address the various complex equity and inclusion-related challenges and opportunities that characterize the nation's cultural and linguistic diversity, with a specific emphasis on the aforementioned groups. The goal is to achieve impact at the national level. Viewing inclusion as an asset and opportunity for social innovation, NSF is particularly interested in using approaches to scaling and growth, such as collective impact, networked improvement communities, and strategic partnerships. The objective is to develop networks that involve representative organizations and consortia from different sectors that are committed to a common agenda that comprehensively solves a specific STEM-inclusion problem. The long-term goal of NSF INCLUDES is to support innovative models, networks, partnerships, technical capabilities and research that will enable the U.S. science and engineering workforce to thrive by ensuring that traditionally underrepresented and underserved groups are represented in percentages comparable to their representation in the U.S. population. Researchers and practitioners at minority serving institutions are strongly encouraged to participate in this activity given their experience and expertise in broadening participation.

Awards: Standard Grants. Anticipated funding amount: \$7,500,000 in FY17.

Preliminary Proposals: Submission of Preliminary Proposals is required by February 14, 2017. Please see the full text of this solicitation for further information.

Full Proposal Submission Due Date: May 16, 2017

Limit on Number of Proposals per Organization: 1

An organization may serve as the lead institution on only one Design and Development Launch Pilot preliminary or full proposal, although it may serve as a collaborating partner on other proposals.

Contacts:

- General Inquiries may be addressed to, telephone: (703) 292-7303, email: nsfincludes@nsf.gov
- Jolene K. Jesse, EHR, telephone: (703) 292-7303, email: jjesse@nsf.gov

Grant Program: Algorithms for Modern Power Systems (AMPS)

Agency: National Science Foundation NSF 17-521

RFP Website: <https://www.nsf.gov/pubs/2017/nsf17521/nsf17521.htm>

Brief Description: The Algorithms for Modern Power Systems (AMPS) program will support research projects to develop the next generation of mathematical and statistical algorithms for improvement of the security, reliability, and efficiency of the modern power grid. The program is a partnership between the Division of Mathematical Sciences (DMS) at the National Science Foundation (NSF) and the Office of Electricity Delivery & Energy Reliability (OE) at the U.S. Department of Energy (DOE).

Awards: Standard Grants. Anticipated funding amount: \$1,200,000 in FY17.

Letter of Intent: Not Required

Full Proposal Submission Due Date: February 13, 2017

Contacts:

- Leland M. Jameson, telephone: (703) 292-4883, email: ljameson@nsf.gov
- Michael Steuerwalt, telephone: (703) 292-4860, email: msteuerw@nsf.gov

Grant Program: Cyberlearning and Future Learning Technologies (Cyberlearning)

Agency: National Science Foundation NSF 17-520

RFP Website: <https://www.nsf.gov/pubs/2017/nsf17520/nsf17520.htm>

Brief Description: The purpose of the *Cyberlearning and Future Learning Technologies* program is to integrate opportunities offered by emerging technologies with advances in what is known about how people learn to advance three interconnected thrusts:

- **Cyber innovation:** Developing next-generation cyberlearning approaches through high-risk, high-reward advances in computer and information science and engineering;
- **Learning innovation:** Inventing and improving next-generation genres (types) of learning technologies, identifying new means of using technology for fostering and assessing learning, and proposing new ways of integrating learning technologies with each other and into learning environments to foster and assess learning; and
- **Advancing understanding of how people learn in technology-rich learning environments:** Enhancing understanding of how people learn and how to better foster and assess learning, especially in technology-rich learning environments that offer new opportunities for learning and through data collection and computational modeling of learners and groups of learners that can be done only in such environments.

The intention of this program is to advance technologies that specifically focus on the experiences of learners; innovations that simply focus on making teaching easier will not be funded. Proposals that focus on teachers or facilitators as learners are invited; the aim in these proposals should be to help teachers and facilitators capitalize on the affordances of technology and fundamental knowledge about how people learn to make the learning experiences of learners more effective.

Proposals are expected to address all three of the program's thrusts. Of particular interest are technological advances that (1) foster deep understanding of content coordinated with masterful learning of practices and skills; (2) draw in and encourage learning among populations not served well by current educational practices; and/or (3) provide new ways of assessing understanding, engagement, and capabilities of learners. It is expected that research funded by this program will shed light on how technology can enable new forms of educational practice. This program does not support proposals that aim simply to implement and evaluate a particular software application or technology in support of a specific course.

Awards: Standard Grants. Anticipated funding amount: \$6,000,000 in FY17.

Letter of Intent: Not Required

Full Proposal Submission Due Date: February 10, 2017

Contacts:

- Tatiana Korelsky, co-lead CISE, Program Officer, CISE/IIS, telephone: (703)292-8930, email: tkorelsk@nsf.gov
- Amy L. Baylor, co-lead EHR, Program Officer, EHR/DRL, telephone: (703) 292-5126, email: abaylor@nsf.gov
- William Bainbridge, Program Officer, CISE/IIS, telephone: (703)292-7470, email: wbainbri@nsf.gov

National Institutes of Health

Grant Program: Summer Research Experiences for Students and Science Teachers (Admin Supp)

Agency: National Institutes of Health PA-17-055

RFP Website: <http://grants.nih.gov/grants/guide/pa-files/PA-17-055.html>

Brief Description: Awards under this program are limited to summer participants who are citizens, non-citizen nationals, or legal permanent residents of the United States (i.e., in possession of an Alien Registration Receipt Card or some other legal evidence of admission for permanent residence at the time of application). Non-citizen nationals are generally persons born in possessions of the United States (i.e., American Samoa and Swains Island). Individuals on temporary or student visas are not eligible to be supported as a summer participant.

Any NIEHS-supported R01, R21, R15, R35, R37, or P01 award that is active during the summer period covered is eligible for this supplement program. A PD/PI may have only one summer participant funded through this program at any given time. The summer participant must be newly recruited and not currently funded in any way by the PD/PI. A participant may be supported for a second summer provided they have not been supported by the PD/PI during the intervening months. Applications are for one summer of funding at a time (i.e., the PD/PI must reapply for subsequent summer funding).

Eligible Participants

Participants eligible for support under this supplement program include high school students who have completed the 9th grade; undergraduate students, in good academic standing, who will have completed at least one year at an accredited school or university (including baccalaureate schools of nursing) at the time their research experience would begin; master's degree level (e.g., M.S., M.P.H.) candidates enrolled in a relevant science or health-related program; medical students; secondary school science teachers; and science professors from R15/AREA grant eligible institutions. Institutions must adhere strictly to these requirements when selecting participants.

Awards: The salary for the summer research participant should be consistent with the institutional salary policies. Institutional salary rates for high school students that exceed the hourly minimum wage must be justified. Institutional rates for undergraduate salary that exceed \$10 per hour must be justified. Participants may only receive funding for the period they participate in the program. The institution may request up to \$1000 per research participant to cover the costs of laboratory supplies and research-related expenses. Equipment may not be purchased with these funds.

Letter of Intent: Not required

Deadline: January 31, 2017; January 31, 2018, and January 31, 2019 by 5:00 PM local time of applicant organization.

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: Research Education: Initiative for Maximizing Student Development (IMSD) Program (R25)

Agency: National Institutes of Health PAR-17-053

RFP Website: <http://grants.nih.gov/grants/guide/pa-files/PAR-17-053.html>

Brief Description: The goal of the IMSD program is to provide research experiences for students in the institution and to enhance the pool of students from underrepresented groups who successfully complete Ph.D. degrees in biomedical sciences. In doing so, the expectation is that by supporting new and ongoing institutionally-designed student developmental programs, the IMSD program will help reduce the gap in the completion of Ph.D. degrees between underrepresented and non-underrepresented students in the biomedical sciences at the national level. The IMSD program should make available structured, career development advising and learning opportunities (e.g., workshops, discussions, Individual Development Plans). Through such opportunities, all students are expected to obtain a working knowledge of various potential career paths that would make strong use of the knowledge and skills gained during research experience

and the steps required to transition successfully to the next stage of their chosen career. At the institutional level, the IMSD program should develop undergraduate and/or graduate students who are proficient in biomedical science for the purpose of training the next generation of the modern research workforce. Furthermore, the institution is expected to identify and address the barriers that might impede the participation and retention of all students, with attention to the types of issues that students from underrepresented backgrounds face. Specifically, it is expected that the following objectives will be achieved:

- Enhancement of the pool of underrepresented students that complete a Ph.D. and continue in biomedical research careers.
- At least 60% of IMSD-supported undergraduate and 80% of Ph.D. students will complete the Ph.D. degree.
- Contribute to ongoing student and faculty efforts to reduce the gap in the completion of Ph.D. degrees between underrepresented students and those from other backgrounds in participating departments.

Research education programs may complement ongoing research training and education occurring at the applicant institution, but the proposed educational experiences must be distinct from those training and education programs currently receiving Federal support. R25 programs may augment institutional research training programs (e.g., T32, T90) but cannot be used to replace or circumvent Ruth L. Kirschstein National Research Service Award (NRSA) programs.

Awards: Although the size of award may vary with the scope of the research education program proposed and there are no specific budget limitations, the requested direct costs must be reasonable, well documented, fully justified and commensurate with the scope of the proposed program. All awards are subject to the availability of funds. The total amount to be awarded is approximately \$5 million (total costs) per year. Awards issued under this FOA are contingent upon the availability of funds and the submission of a sufficient number of meritorious applications.

Letter of Intent: Not required

Deadline: January 27, 2017; January 26, 2018; and January 28, 2019, by 5:00 PM local time of applicant organization. All [types of non-AIDS applications](#) allowed for this funding opportunity announcement are due on these dates.

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: Leveraging Existing Cohort Studies to Clarify Risk and Protective Factors for Alzheimer's Disease and Related Dementias (R01)

Agency: National Institutes of Health PAR-17-054

RFP Website: <http://grants.nih.gov/grants/guide/pa-files/PAR-17-054.html>

Brief Description: Many putative risk and protective factors for AD/ADRD have been previously identified. Assigning risk to specific factors, however, has been difficult because many of them are correlated with each other and difficult to disentangle. Although new statistical techniques can help elucidate the potential causal pathways given enough data, progress has been hampered by the relatively small sample sizes in single longitudinal cohorts. Reasons for reduced statistical power include the relatively low prevalence of dementia or risk factors in individual studies, and the lack of consistency in measurement between studies. Moreover, interactions that could be very informative about disease processes may be difficult or impossible to detect due to modest sample sizes. Because NIH already supports many cohorts with relevant measures, we can improve our understanding of the risk and protective factors for AD/ADRD by leveraging those resources. In some situations, combined cohorts could also serve as a pool of well-characterized

and properly consented participants for advanced genetic and genomic studies as well as clinical trials.

This FOA encourages combined cohorts (or consortia) to use and/or harmonize existing data, to collect data on new variables not present in all cohorts, to add new participants, or to link participants to administrative data. By “existing cohorts” we mean groups of participants on whom substantial longitudinal data have already been collected. By “leveraging” we mean engaging in any activities that will improve statistical power of the combined cohorts. Approaches that could elucidate the etiology of AD/ADRD or cognitive resilience are especially encouraged (e.g., “-omics” based approaches).

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

Letter of Intent: Not required

Deadline: [Standard dates](#) apply, by 5:00 PM local time of applicant organization. All [types of non-AIDS applications](#) allowed for this funding opportunity announcement are due on these dates.

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: Exploratory Research for Technology Development (R21)

Agency: National Institutes of Health PAR-17-046

RFP Website: <http://grants.nih.gov/grants/guide/pa-files/PAR-17-046.html>

Brief Description: For the purpose of this FOA, technology refers to tools that enable research. This includes laboratory instruments and other devices, algorithms and software, chemical reagents and processes by which biomedically related molecules are produced and modified, and the manipulation of biological systems to produce or become research tools. This FOA calls for exploratory technology development predicated on a broad need or challenge in biomedical research that can be described explicitly. This need should be beyond the ability of the current technology development regime to meet. It should be clear that something fundamentally different is needed. The proposed technology should have the potential to address basic biomedical research needs or technical problems that occur broadly across multiple systems or diseases. Specific examples may be cited. Exploratory research into technologies specific to only one disease or system are not appropriate for this FOA.

No Preliminary Data: Availability of preliminary data is an indication that the proposed project has advanced beyond the exploratory stage defined by this program, and will make the application unsuitable for this funding opportunity. Consideration should be given to submitting such projects to the companion R01 program ([PAR-17-045](#)).

High-Risk Exploratory Research: Applications through this FOA for exploratory research projects may propose a single specific solution to a broadly stated biomedical research need, with the goal of determining the feasibility of that approach. Alternatively, a proposed project may take a broader approach that will explore several possible solutions, leading to an improved understanding of the best technical avenues to pursue in order to create a new capability. This less directed approach may lead to a better understanding of the relative merits or likelihood of success of multiple potential approaches to be pursued in developing a technology.

This program will support proof-of-principle research leading to advances in technology. Because new ideas are essential to this process, the projects will entail a high degree of risk or novelty, which will be offset by a correspondingly high potential impact. However, the possible impact is unlikely to be immediate. Substantial additional development of the technology after completion of the project is likely to be necessary. The program will recognize and reward high risk approaches with the potential for significant impact.

No Biological Aims: Biomedical relevance is an essential element of NIH research. However, the exploratory stage of technology development should not include immediate short-term application of nascent technologies to challenging biomedical research questions because an insistence on explicit linkage to a specific research problem and the immediate demonstration of an immature technology's effectiveness in that context can distort the technology development process. It can also diminish focus on development of genuinely innovative technology in favor of incremental improvements to existing technologies. In the early stages of technology development, insistence on biomedical applications is counterproductive. Therefore, in this program, application to specific biomedical questions in the timeframe of the proposed project is considered beyond the scope of the program, and should not be included.

Milestones: A milestone is a defined event, achievement, or important stage that is used to indicate the progress of a project. Milestones should be descriptive of what will be done and when it will be completed.

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

Letter of Intent: Not Required

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

Department of Defense/US Army/DARPA/ONR

Grant Program: Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology

Agency: Office of Naval Research ONR BAA N00014-17-S-B001

Website: <http://www.onr.navy.mil/~media/Files/Funding-Announcements/BAA/2017/N00014-17-S-B001.ashx>

Brief Description: The ONR seeks a broad range of proposals for augmenting existing or developing innovative solutions that directly maintain, or cultivate a diverse, world-class STEM workforce in order to maintain the U.S. Navy and Marine Corps' technological superiority. The goal of any proposed effort must provide solutions that will establish and maintain pathways of diverse U.S. citizens who are interested in uniformed or civilian DoN (or Navy and Marine Corps) STEM workforce opportunities. As the capacity of the DoN Science and Technology (S&T) workforce is interconnected with the basic research enterprise and STEM education system, ONR recognizes the necessity to support efforts that can jointly improve STEM student outcomes and align with Naval S&T current and future workforce needs. This announcement explicitly encourages projects that improve the capacity of education systems and communities to create impactful STEM educational experiences for students including active learning approaches and incorporating 21st century skills. Projects must aim to increase student engagement in STEM and persistence of students in STEM degrees, while improving student technical capacity. ONR encourages proposals to utilize current STEM educational research for informing project design and advancing our understanding of how and why students choose STEM careers and opportunities of naval relevance. While this announcement is relevant for any stage of the STEM educational system, funding efforts will be targeted primarily toward the future and current DoN (naval) STEM workforce in High School, all categories of Post-Secondary institutions, the STEM research enterprise, and efforts that enhance the current naval STEM workforce and its mission readiness.

Awards: Various

Full Proposal Deadline:

Grant proposals submitted Use this start date

October 1 through December 31, 2016 March 1, 2017

January 1 through March 31, 2017 July 1, 2017

April 1 through June 30, 2017 September 1, 2017

July 1 through September 30, 2017 January 1, 2018

Contact Information:

Further information may be found at

(<http://www.onr.navy.mil/ScienceTechnology/Departments/Code-30/All-Programs/C4.aspx>).

Department of Energy

Grant Program: Fuel Cells Technologies Office Annual Funding Opportunity Announcement

Agency: Department of Energy DE-FOA-0001647

Website: <https://eere-exchange.energy.gov/default.aspx#Foaldf5ced284-2764-4570-977a-a9187a8e7be7>

Brief Description: This Funding Opportunity Announcement (FOA) is for the research and development of low-cost hydrogen production, onboard hydrogen storage, and proton exchange membrane fuel cells to advance the widespread commercialization of fuel cell electric vehicles. Selected projects will leverage national lab consortia launched under DOE's Energy Materials Network (EMN) this past year, in support of DOE's materials research and advanced manufacturing priorities. The fuel cells market is growing rapidly, and has seen an annual growth rate of 30% every year since 2010 as well as \$2 billion annual revenue in 2014. Light duty vehicles are an emerging application for fuel cells that already enable 95% lower petroleum consumption per mile than conventional internal combustion engine vehicles. Applicants to this funding opportunity announcement (FOA) will collaborate with national lab consortia launched within the EMN. The EMN consortia have been established to make unique, world-class capabilities at the national laboratories more accessible to industry, facilitating collaborations that will expedite the development and manufacturing of advanced materials for commercial markets. The FOA topics include: • Topic 1: PGM-free Catalyst and Electrode R&D – this topic will leverage the Electrocatalysis Consortium (ElectroCat) to accelerate the development of catalysts made without platinum group metals (PGM-free) for use in fuel cells for transportation. • Topic 2: Advanced Water Splitting Materials – this topic will leverage the HydroGEN Consortium to accelerate the development of advanced water splitting materials for hydrogen production, with an initial focus on advanced electrolytic, photoelectrochemical, and solar thermochemical pathways. • Topic 3: Hydrogen Storage Materials Discovery – this topic will leverage the Hydrogen Materials—Advanced Research Consortium (HyMARC) to address unsolved scientific challenges in the development of viable solid-state materials for hydrogen storage onboard fuel cell electric vehicles (FCEVs). • Topic 4: Precursor Development for Low-Cost, High-Strength Carbon Fiber for Use in Composite Overwrapped Pressure Vessel Applications – this topic will aim to reduce the cost of onboard hydrogen storage necessary for FCEVs. Applicants for this topic will be encouraged to collaborate with LightMAT, a consortium launched by the DOE Vehicle Technologies Office to enable light-weighting of vehicles through the development of high-strength steels and carbon fiber. The full FOA is posted on the EERE Exchange website at <https://eere-exchange.energy.gov>. To apply to this FOA, Applicants must register with and submit application materials through EERE Exchange, EERE's online application portal. Information on where to submit questions regarding the content of the announcement and where to submit

questions regarding submission of applications is found in the full FOA posted on the EERE Exchange website. The Exchange system enforces hard deadlines for Concept Paper and Full Application submissions. The APPLY and SUBMIT buttons automatically disable at the defined submission deadlines. The intention of this design is to consistently enforce a standard deadline for all applicants. Applicants that experience issues with submissions PRIOR to the FOA Deadline: In the event that an Applicant experiences technical difficulties with a submission PRIOR to the deadline, the Applicant should contact the eXCHANGE helpdesk for assistance (EERE‐ExchangeSupport@hq.doe.gov). The eXCHANGE helpdesk &/or the EERE Exchange System Administrators (Exchange@ee.doe.gov) will assist the Applicant in resolving all issues. Applicants that experience issues with submissions that result in a late submission: In the event that an Applicant experiences technical difficulties with a submission that results in a late submission, the Applicant should contact the Exchange helpdesk for assistance (EERE‐ExchangeSupport@hq.doe.gov). The eXCHANGE helpdesk &/or the EERE eXCHANGE System Administrators (eXCHANGE@ee.doe.gov) will assist the Applicant in resolving all issues (including finalizing the submission on behalf of and with the Applicant's concurrence). DOE will only accept late applications when the Applicant has a) encountered technical difficulties beyond their control; b) has contacted the Exchange helpdesk for assistance, and c) has submitted the application through Exchange within 24 hours of the FOA's posted deadline..

Awards: Various

Concept Paper Deadline: December 20, 2016; 5:00pm ET

Full Proposal Deadline: February 21, 2017; 5:00pm ET

Contact Information:

- EERE-ExchangeSupport@hq.doe.gov

For technical issues related to the EERE Exchange website.

- FY17FCTOofficewidefoa@ee.doe.gov

For questions regarding the content of this FOA.

Grant Program: Request for Information (RFI): Hydrogen and Fuel Cell Manufacturing: Identifying Specific Components for Manufacturing Standardization

Agency: Department of Energy DE-FOA-0001700

Website: <https://arpa-e-foa.energy.gov/#Foaldbd858bf1-0a35-4ab2-9a64-6490fd8ec1c7>

Brief Description: The mission of the U.S. Department of Energy's (DOE's) Hydrogen and Fuel Cells Program is to enable the widespread commercialization of a portfolio of hydrogen and fuel cell technologies through basic and applied research, technology development and demonstration, and diverse efforts to overcome institutional and market challenges. The Fuel Cell Technologies Office (FCTO) operates within the Hydrogen and Fuel Cells Program. The FCTO seeks input from industry, academia, research laboratories, government agencies, and other stakeholders on how and which components in the hydrogen and fuel cell manufacturing process can and should be standardized. It also seeks to identify manufacturing pathways to reduce costs in both the near and longer-term, as well as how to address any critical barriers regarding manufacturability and supply chain development. This RFI is not a Funding Opportunity Announcement (FOA); therefore, EERE is not accepting applications at this time. EERE may issue a FOA in the future based on or related to the content and responses to this RFI; however, EERE may also elect not to issue a FOA. There is no guarantee that a FOA will be issued as a result of this RFI. Responding to this RFI does not provide any advantage or disadvantage to potential applicants if EERE chooses to issue a FOA regarding the subject matter. Final details, including the anticipated award size, quantity, and timing of EERE funded awards, will be subject to Congressional appropriations and direction. Any information obtained as a result of this RFI is

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

Response Deadline: Responses to this RFI must be submitted electronically to fctomanufacturing@ee.doe.gov no later than 5:00pm (ET) on December 30, 2016. Responses must be provided as attachments to an email. It is recommended that attachments with file sizes exceeding 25MB be compressed (i.e., zipped) to ensure message delivery. Responses must be provided as a Microsoft Word (.docx) attachment to the email, and no more than 5 pages in length, 12 point font, 1 inch margins. Only electronic responses will be accepted. Please identify your answers by responding to a specific question or topic if applicable. Respondents may answer as many or as few questions as they wish. The full Request for Information (RFI) is posted on the EERE eXCHANGE website at <https://eere-exchange.energy.gov>.

Contact Information:

- EERE-ExchangeSupport@hq.doe.gov

For technical issues related to the EERE Exchange website.

- fctomanufacturing@ee.doe.gov

For responses to this RFI.

NASA

Grant Program: ROSES 2016: Solar System Working

Agency: NASA NNH16ZDA001N-SSW

Website:

<https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={BA231B0B-067C-9D42-D770-848B361FC4CA}&path=init>

Brief Description: The Solar System Workings program solicits proposals for innovative scientific research related to understanding the atmospheric, climatological, dynamical, geologic, physical, and chemical processes occurring within the Solar System. This program is open to investigations relevant to surfaces and interiors of planetary bodies, planetary atmospheres, rings, orbital dynamics, and exospheres and magnetospheres. The Solar System Workings program values the potential of interdisciplinary efforts to solve key scientific questions. The program also values research in comparative planetology. Research supported by this call may include data synthesis, laboratory studies that examine physical or chemical properties and processes, studies of sample or analog materials of other Solar System bodies, field studies of terrestrial analogs of planetary environments, or theoretical and numerical modeling of physical or chemical processes. This program seeks to understand processes that occur throughout the Solar System, as well as those specific to individual objects and systems, but inform our understanding of the fundamental processes at work. A nonexhaustive list of areas of research called for in this solicitation follows. For conciseness in this list, the term ‘planetary’ refers to Solar System objects other than the Sun (ranging in size from small objects, like comets and asteroids, through natural satellites, and up to planets) and structures (such as atmospheres, ionospheres, and ring systems).

Awards: \$9 - \$10M

Proposal Deadline: Step-1 Proposal: November 17, 2016

Contact: hq-ssw@mail.nasa.gov

National Endowment of Humanities

Grant Program: Public Humanities Projects

Agency: National Endowment of Humanities

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

Brief Description: Public Humanities Projects grants support projects that bring the ideas and insights of the humanities to life for general audiences. Projects must engage humanities scholarship to analyze significant themes in disciplines such as history, literature, ethics, and art, or to address challenging issues in contemporary life. NEH encourages projects that involve members of the public in collaboration with humanities scholars or that invite contributions from the community in the development and delivery of humanities programming. This grant program supports a variety of forms of audience engagement. Applications should follow the parameters set out below for one of the following three formats:

- **Community Conversations:** This format supports one- to three-year-long series of community-wide public discussions in which diverse residents creatively address community challenges, guided by the perspectives of the humanities.
- **Exhibitions:** This format supports permanent exhibitions that will be on view for at least three years, or travelling exhibitions that will be available to public audiences in at least two venues in the United States (including the originating location).
- **Historic Places:** This format supports the interpretation of historic sites, houses, neighborhoods, and regions, which might include living history presentations, guided tours, exhibitions, and public programs. NEH encourages projects that explore humanities ideas through multiple formats. Proposed projects may include complementary components that deepen an audience's understanding of a subject: for example, a museum exhibition might be accompanied by a website, mobile app, or discussion programs. Your application must identify one primary format for your project and follow the application instructions for that format.

Awards: Applicants may also request a combination of outright and federal matching funds. For example, if an applicant is requesting \$40,000 in NEH funds, and the applicant includes in its cost sharing \$5,000 from an eligible third-party donor, the applicant should request \$5,000 in federal matching funds. The balance of the NEH request (\$35,000) would then be for outright funds. NEH may offer funding at a different level than that requested. In some instances, NEH may offer federal matching funds only, or it may offer a combination of federal matching and outright funds in response to a request for outright funds.

Proposal Deadline: January 11, 2017

Contact: Division of Public Programs National Endowment for the Humanities 400 Seventh Street, SW Washington, DC 20506 202-606-8269 publicpgms@neh.gov publicpgms@neh.gov

Grant Program: Creating Humanities Communities

Agency: National Endowment of Humanities

Website: <https://www.neh.gov/grants/challenge/creating-humanities-communities>

Brief Description: The Creating Humanities Communities program provides matching grants to help stimulate and proliferate meaningful humanities activities in states and U.S. territories underserved by NEH's grantmaking divisions and offices. Grantees will use the funds to establish and undertake new humanities programs. The goal of these grants is to make connections

between organizations that will foster community cohesion on a local or regional level. Applicants may define community in a variety of ways (by focusing, for example, on a place such as a village or town, or on a common interest or a common theme), and the programs that the cooperating institutions carry out together must aim to enhance the importance of the humanities in people's lives.

Projects to create a humanities community might include, for example, collaborations linking

- a public library and a nearby community college to research, write, and produce a series of video biographies of the town's important personalities (to be presented in public programs at the local historical movie palace);

- several railroad museums throughout a state that join forces to write a transportation-based curriculum module for use in fourth-grade social studies classes;

- three Native American tribes to establish a cultural heritage trail highlighting important sites and collections;

- a veterans' group and a high school in developing intergenerational family programs at local historic sites; and

- a public radio station and the philosophy department at a local college to host public programs discussing industry and ethics to commemorate the hundredth anniversary of the town's paper mill.

Applicants to this program must form collaborative partnerships with at least two and at most five institutions (including the applicant organization). These partnerships may involve organizations such as public libraries, cultural centers, museums, historical societies, colleges (including community colleges) and universities, archival repositories, historic houses, school districts, civic centers, or other cultural entities.

Awards: Select the amount you wish to request from NEH from the drop-down menu. The options are \$30,000, \$60,000, \$90,000, and \$150,000. Your selection will cause other fields on the form to automatically populate, including the section titled Breakdown by Year.

Proposal Deadline: February 15, 2017

Contact: Office of Challenge Grants National Endowment for the Humanities 400 Seventh Street, SW Washington, DC 20506 202-606-8309 challenge@neh.gov challenge@neh.gov