Research Development & Grant Writing Newsletter

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Mike Cronan, PE, has 23 years of experience developing and writing successful team proposals at Texas A&M University. He was named a Texas A&M University System Regents Fellow (2001-2010) for developing and writing A&M System-wide grants funded at over $100 million by NSF and other funding agencies. He developed and directed two research development and grant writing offices, one for Texas A&M's VPR and the other for the Texas A&M Engineering Experiment Station (15 research divisions state-wide), including the Texas A&M College of Engineering.

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Lucy Deckard (BS/MS Materials) worked in research development and grant writing at Texas A&M University and across the A&M System for nine years. She directed A&M's New Faculty Research Initiative (2004-09), helping junior faculty System-wide jumpstart their research careers with federal agency funding. She served as associate director of two research development and grant writing offices. She founded ARFS in 2010.

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Katherine E. Kelly, Ph.D., a retired English professor from Texas A&M University, is the author of several books and numerous articles supported by research grants and served as a contributing editor for an academic journal for five years. She provides ARFS clients editorial services on proposals, journal articles, and manuscripts and presents seminars on grant writing and funding in the humanities.

About Us

Research Development & Grant Writing News © has been published monthly since 2010 for faculty and research professionals by Academic Research Funding Strategies, LLC

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- EERE: https://www.energy.gov/eere/funding/eere-funding
- DOE: https://www.energy.gov/energy-economy/funding-financing
- USDA: https://www.nal.usda.gov/waic/funding
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- NCER: http://epa.gov/ncer/listserv/
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November 2022 Select List of Humanities, HSS, and Arts Opportunities & News

by Katherine E. Kelly, PhD [article subtitle style]

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Check with organizations' websites for most current information

Due Date	Opportunity
12/1/22 **American Council of Learned Societies (ACLS) Summer Institute for the Study of East Central and Southeastern Europe (SISECSE).**	This two-week residential fellowship provides scholars of Eastern Europe time and space to dedicate to their own research and writing in a collaborative and interdisciplinary setting. ACLS in partnership with the Centre for Advanced Study Sofia (CAS) will convene leading scholars from Eastern Europe and North America for a two-week residency in Blagoevgrad, Bulgaria from June 1, 2023 to June 15, 2023. SISECSE will also provide participating scholars with the opportunity to undertake local fieldwork, including archival research, work in museum collections, interviews, site surveys, or other forms of data collection. (Fieldwork is not required for participation in the institute.) NB: ACLS requires an ORCID iD https://info.orcid.org/what-is-orcid/ https://www.acls.org/competitions/summer-institute-east-central-southeastern-europe/
12/7/22 **NEH Public Projects Planning Grant Optional Draft Due; final deadline 1/11/23**	If you're thinking about working on a new exhibition or interpretation of a historic site, consider starting with an NEH Public Humanities Projects Planning grant. This grant provides time and funds so that you can problem solve and enlist consultants to help develop your project. Planning proposals must convey the analytical ideas you plan for your final exhibition or historic site interpretation to communicate to audiences. These concepts will be further developed during your planning grant period, but enough research and consultation with scholars must be completed for you to provide a clear understanding of the direction in which your analysis is headed. You must also explain the possible methods of interpretation to be employed in your historic place or exhibition. The planning period can be used to test, experiment with, and work through these techniques, as well as hone the intellectual content and themes with your advising scholar. Note: Humanities Discussions are not funded at this level. For more information, go to: https://www.neh.gov/grants/public/public-humanities-projects?utm_medium=email&utm_source=govdelivery. You can also send an email to publicpgms@neh.gov and check out the blog post: https://www.neh.gov/blog/neh-public-humanities-projects-grants-which-

	level-funding-right-your-project?utm_medium=email&utm_source=govdelivery
12/7/22 **NEH Media Projects Optional Draft Due; final deadline 1/11/23**	The Media Projects program supports the development, production, and distribution of radio programs, podcasts, documentary films, and documentary film series that engage general audiences with humanities ideas in creative and appealing ways. Projects must be grounded in humanities scholarship and demonstrate an approach that is thoughtful, balanced, and analytical. Media Projects offers two levels of funding: Development and Production. To view a webinar with tips and ideas related to the application process, go to: https://www.youtube.com/watch?v=vYC91rWXLfs. Application Materials, including sample narratives in the areas of both development and production as well as frequently asked questions can be found here: https://www.neh.gov/program/media-projects?utm_medium=email&utm_source=govdelivery
12/15/22 **NEH Landmarks of American History and Culture Optional Draft Due; final deadline 2/1/23 (organizations) New For the 2022-2023 Cycle**	Landmarks now offers two grant program options: One for K-12 educators and one for higher education faculty and humanities professionals. Previously awarded projects are no longer required to change the focus of their program to apply again. The Landmarks of American History and Culture program supports a series of one-week residential, virtual, and combined format workshops across the nation that enhance and strengthen how K-12 educators, higher education faculty, and humanities professionals study sites, areas, or regions of historic and cultural significance and incorporate place-based teaching and learning in the humanities. **Optional Draft Review:** Submit a draft of your project or contact us to schedule a conversation about your project at landmarks@neh.gov by December 15, 2022. Drafts do not need to be near complete applications to be submitted for review and feedback. A pre-recorded webinar will be posted to the program resource page by November 9, 2022. **Live Q&A Session**: Visit the website for this award to participate in a live Q&A session at 12:00pm Eastern Time on Wednesday, December 6, 2022. Or call in (audio only) Meeting ID: 234 115 288 818 Audio: +1 202-600-8430 Phone Conference ID: 817124610# https://www.neh.gov/grants/education/landmarks-american-history-and-culture-workshops-school-teachers
1/12/23 **NEH Sustaining Cultural Heritage Collections (organizations).**	This program helps cultural institutions meet the complex challenge of preserving large and diverse holdings of humanities materials for future generations by supporting sustainable conservation measures that mitigate deterioration, prolong the useful life of collections, and support institutional resilience: the ability to anticipate and respond to disasters resulting from natural or human activity. Preventive conservation encompasses managing relative humidity, temperature, light, and pollutants in collection spaces; providing protective storage enclosures and systems for collections; and

	safeguarding collections from theft, fire, floods, and other disasters. https://www.neh.gov/grants/preservation/sustaining-cultural-heritage-collections
NEH Landmarks of American History and Culture (organizations). Applicants are required to sign in to Grants.gov with Login.gov credentials.	To create and link your account, go to: https://grantsgovprod.wordpress.com/2020/10/08/new-sign-in-to-grants-gov-with-your-login-gov-credentials/#Linking-Steps Until updated guidelines are posted on the NEH website, use these guidelines currently posted to get a sense of what is involved in assembling an application. This program supports residential, virtual, and combined format projects that situate the study of topics and themes in K-12 humanities within sites, areas, or regions of historic and cultural significance. Projects aim to expand participants' knowledge of and approaches to teaching about diverse histories, cultures, traditions, languages, and perspectives in the United States and its jurisdictions. Landmarks projects may support activities such as interpreting monuments, markers, and memorials erected across the country to consider how events, eras, individuals, and/or groups are commemorated, remembered, and engaged with at national, regional, and local levels; in-person and/or virtual exploration of physical, natural, and/or cultural landscapes while studying art history, literature, environmental humanities, anthropology, archaeology, architecture, and other related fields, and more. Each Landmarks project includes two one-week sessions and accommodates thirty-six participants each time (for a total of seventy-two participants). The program of study may include time before, during, and/or after the summer. See the website for a video recording offering an overview and tips for writing an application.
15 Feb 2023Luce/ACLS Program in Religion, Journalism & International Affairs Collaborative Programming Grants.	Project's principal investigator must be a scholar in a field of the humanities or social sciences or journalism. Proposed grant activities must connect humanities and social science programs with journalism departments, schools, or initiatives on the same campus, or with the work of an external media organization. Projects must be hosted by a US-based accredited institution of higher education. Term: 12-18 months, to be initiated between July 1 and August 31, 2023. https://www.acls.org/competitions/luce-acls-program-in-religion-journalism-international-affairs-collaborative-programming-grants/
Approx. 15 Feb. 2023 ACLS/Andrew Mellon Digital Justice Seed Grants.	These awards are made possible by The Andrew W. Mellon Foundation. ACLS Digital Justice Seed Grants are designed to promote and provide resources for newly formulated projects that diversify the digital domain, advance justice and equity in digital scholarly practice, and/or contribute to public understanding of racial and social justice issues. This program addresses the inequities in the distribution of access to tools and support for digital work among scholars across various fields, those working with under-

	utilized or understudied source materials, and those in institutions with less support for digital projects. Activities may include: Engaging with the interests and histories of people of color and other marginalized communities; exploring or experimenting with new materials, methodologies, and research agendas by way of planning workshops, prototyping, and/or testing products; cultivating greater openness to new sources of knowledge and strategic approaches to content building and knowledge dissemination. Term: 12-18 months. For more information, go to: https://www.acls.org/competitions/acls-digital-justice-seed-grants/
Approx. 15 Feb. 2023 ACLS/Andrew Mellon Digital Justice Development Grant.	This program addresses the inequities in access to tools and support for digital work among scholars across various fields, those working with under-utilized or understudied source materials, and those in institutions with less support for digital projects. It promotes inclusion and sustainability by extending the opportunity to participate in the digital transformation of humanistic inquiry to a greater number of humanities scholars and projects at various stages of development. Finally, ACLS Digital Justice Development Grants offer scholars and project leaders the opportunity to receive tailored coaching from the Nonprofit Finance Fund in order to plan for the long-term stewardship and sustainability of their projects. For more information, go to: https://www.acls.org/competitions/acls-digital-justice-development-grants/

NEWS

ACLS Announces Informational Webinars for 2022-23 Fellowships

The American Council of Learned Societies (ACLS) is pleased to offer information sessions for potential applicants to our fellowship and grant programs, hosted by ACLS program officers. Register for upcoming webinars focusing on programs with September and October deadlines below.

https://www.acls.org/news/2022-applicant-webinars/

NSF Reproducibility and Replicability in Science

By Mike Cronan, PE, co-publisher

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The October 25 NSF Dear Colleague Letter focuses on advancing reproducibility and replicability in science. **NSF seeks proposals that address one or more of the following topics** (e.g., Award # 1743856 - *Reproducibility and Replicability in Science*):

1. **Advancing the science of reproducibility and replicability.** Understanding current practices around reproducibility and replicability, including ways to measure reproducibility and replicability, what reproduction and replication mean in practice, the right degree of replicability to target, quantitative measures of progress to understand the effectiveness of interventions to improve reproducibility and replicability, and exploration of reasons why studies may fail to replicate.

2. **Research infrastructure for reproducibility and replicability.** Developing and facilitating adoption of cyberinfrastructure tools and/or research methods that enable use of reproducible and replicable practices across one or more science and engineering communities.

3. **Educational efforts to build a scientific culture that supports reproducibility and replicability.** Enabling training in science and engineering communities to identify and encourage best practices for reproducibility and replicability, providing community-building and institutional support, and supporting broad public outreach about rigor, reproducibility, and replicability in science.

This DCL is based on a 2019 report by the National Academies of Sciences, Engineering, and Medicine (NASEM) that addressed the meaning of the terms **replicability and reproducibility** and identified approaches for researchers, academic institutions, journals, and funders to improve reproducibility and replicability in science (free pdf download). In July 2021, NASEM convened an expert meeting focused on NSF policies and investments "***to make reproducible and replicable science easier for scientific communities to understand and execute and to embed reproducibility and replicability within the fundamental scientific method***."

The latter is a key point to understand, particularly for research offices that assist faculty with proposal development and editing, in that ***how well reproducibility, replicability, and generalizability are addressed in the research project description will be a factor in the review process***. **Bottom line**: It may not be explicit in the funding solicitation, but it is **clearly implicit** from this NSF DCL that ***reproducibility and replicability must be woven into the research plan and addressed clearly in the proposal.***

Moreover, keep in mind that these terms may populate the discussion on research misconduct in various ways (*NSF's Semi-Annual Shout Out to Those Guilty of Research Misconduct and Plagiarism*, June 2022). The inability of others to reproduce, replicate, or generalize research ***may trigger or call into question the quality of the research***. Issues related to reproducibility and replicability in science and research misconduct in science in the context of grant writing certainly rhyme in many cases where data fabrication, data falsification, data cherry picking, intentional or unintentional violations of

accepted research standards and best practices, etc. find their way into the research narrative in one way or another.

The report "defines reproducibility and replicability and ***examines the factors that may lead to non-reproducibility and non-replicability in research***. Unlike the typical expectation of reproducibility between two computations, **expectations about replicability are more nuanced**, and in some cases a lack of replicability can aid the process of scientific discovery. **This report provides recommendations to researchers, academic institutions, journals, and funders on steps they can take to improve reproducibility and replicability in science**."

Whether and how these factors ultimately affect the fundability of a research proposal is difficult to determine. It's also hard to say how these factors might affect a funded proposal when issues related to scientific integrity are raised post-award. However, the key point for **research offices** addressing these issues is to make new faculty aware that ***the first tell-tale signs of possible issues of reproducibility and replicability and research misconduct in a proposal may appear first in the writing of the proposal narrative***.

The report notes that "the terms reproducibility and replicability have different meanings and uses across science and engineering, which has **led to confusion** in collectively understanding problems in reproducibility and replicability. The committee adopted specific definitions for the purpose of this report to **clearly differentiate between the terms**, which are otherwise interchangeable in everyday discourse, as below."

"Reproducibility is obtaining consistent results using the same input data; computational steps, methods, and code; and conditions of analysis. This definition is synonymous with 'computational reproducibility,' and the terms are used interchangeably in this report.

Replicability is obtaining consistent results across studies aimed at answering the same scientific question, each of which has obtained its own data. Two studies may be considered to have replicated if they obtain consistent results given the level of uncertainty inherent in the system under study.

Generalizability refers to the extent that results of a study apply in other contexts or populations that differ from the original one."

Moreover, given the attention now focused on these issues among the scientific community nationally and the federal research funding agencies, particularly NIH and NSF, it is ***a sure bet that greater scrutiny of the research narrative by program officers and reviewers in an attempt to identify these issues will increasingly become standard practice in considering a proposal for funding going forward***.

While these issues may seem extraneous to research offices assisting faculty in proposal development and grant writing, ***they are increasingly relevant to how proposals will be reviewed; in turn, anything relevant to how a proposal will be reviewed becomes a significant factor in the funding decision***.

NIH, for example, addresses these issues in several ways, as below:

- New Grant Guidelines for Rigor and Reproducibility for NIH Applications
- Rigor and Reproducibility in NIH Applications – Resource Chart

- Reviewer Guidance on Rigor and Transparency
- Principles and Guidelines for Reporting Preclinical Research
- Enhancing Reproducibility through Rigor and Transparency
- NIH Data Sharing Policy

Commissioned Papers

- Reproducibility and Replicability in Science, A Metrology Perspective
- Public Perceptions of Scientific Uncertainty and Media Reporting of Reproducibility and Replication in Science
- Perspectives on Reproducibility and Replication of Results in Climate Science
- Reproducibility and Replicability in Economics
- Reproducibility and Replicability in Large Scale Genetic Studies

The following NSF reports also address these issues:

Reproducibility, Replicability, and Generalization in the social, Behavioral, And Economic Sciences. Report of the Subcommittee on Replicability in Science of the SBE Advisory Committee to the National Science Foundation 13 May 2015 Presentation at SBE AC Spring Meeting by K. Bollen.

Companion Guidelines on Replication & Reproducibility in Education Research. A Supplement to the *Common Guidelines for Education Research and Development* A Report from the National Science Foundation and The Institute of Education Sciences, U.S. Department of Education Nov 28, 2018

NSF Data Sharing Policy

Finally, NSF notes in the DCL that investigators who wish to submit proposals on any of these topics, or others related to advancing reproducibility and replicability in research, are encouraged to reach out to NSF programs and program officers to discuss the fit of their ideas to existing funding opportunities.

NSF Webinar Report: The New NSF ExLENT Program

By Lucy Deckard, co-publisher

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NSF held an informational webinar on their new Experiential Learning for Emerging and Novel Technologies (ExLENT) program on November 1, 2022. Below we describe the highlights and then provide some commentary for those considering applying.

Program Basics

- NSF has committed $30M annually to support this program with each award being up to $1M for up to 3 years (they anticipate awarding 25 – 35 grants each year).
- The program will have three tracks, only two of which will be available in the **first round** of competition (proposals due March 2, 2023), and all three available in the **second round** (proposals due September 14, 2023). **Starting in 2024**, proposals for all tracks will be due annually the second Thursday in September.
- This program funds project to provide experiential learning experiences in **emerging technical fields** (i.e., novel technologies, not just broadly STEM).
- The tracks are as follows:
    - **Pivots Track:** Aims to attract ***current professionals in any field*** who are interested in pivoting into a career in an emerging technology. (Available in the first round.)
    - **Beginnings Track:** Focuses on participants who ***have STEM training*** (e.g., an Associates Degree or stackable credentials) and provides them with resume-building experiences in an emerging technology. (Available in the first round.)
    - **Explorations Track:** Aims to build interest in STEM among participants with limited knowledge of an emerging technology. Participants should have an interest in exploring career paths but have ***limited or no prior STEM*** education. (First proposals accepted in the second round, due September 2023.)

Why ExLENT?

The funding for this program comes from the CHIPS and Science Act (a total of $81B was authorized for NSF funding from 2022-27 in the Act), signed into law August 26, 2022. The CHIPS act focuses on R&D, commercialization and workforce development to improve U.S. competitiveness in semiconductor manufacturing, leading-edge technologies, chip production and wireless supply chains. The ExLENT program focuses on the workforce development piece. Motivated by pandemic-related semiconductor supply chain disruptions and increasing unease with the U.S.'s dependence on China, the main manufacturer of integrated chips, the CHIPS Act is part of an effort to help move semiconductor manufacturing and other advanced technologies back to the U.S. The concern has been through funding of fundamental research by NSF and other federal agencies, the U.S. has led the world in scientific innovation, but those innovations have been commercialized overseas.

An important barrier to building manufacturing capacity in the U.S. is the lack of a qualified workforce. ExLENT is part of the effort to address that barrier. NSF already funds a number of programs focused on STEM workforce development, and most NSF proposals, regardless of the program, are expected to include education and workforce development components. These activities typically focus on enticing students to major in STEM fields as they enter undergraduate or community college studies,

and promoting their success in those studies. ExLENT is different in two key ways. First, in alignment with the goals of the CHIPS Act, ExLENT focuses on workforce development for ***emerging technology fields***, not all STEM fields. The solicitation gives the following examples of emerging technology fields: advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, semiconductors, and microelectronics. In the webinar, the program officer stated that this is not an exclusive list, but any proposals that focus on other technologies must make the case for why the technology of focus is an emerging technology. Generally, emerging technology fields are relatively new and rapidly changing, with the result that even workers with scientific/technical training are unlikely to have the specific training needed to work in those fields. In addition, emerging fields are likely to be growing quickly, providing job opportunities for those with the needed skills. However, since the fields are relatively new, there may not be many established training programs to help workers develop those skills.

This brings us to the second big difference in the ExLENT program. The focus is on ***experiential learning***, with the idea that future employers with workforce needs in the emerging technology will have a large role in providing many of those experiences. Figure 1 in the solicitation lists example experiential learning experiences along two axes: age, and commitment to pursuing an emerging tech career. In the webinar, it was emphasized that these are two independent axes, so an adult might only be exploring the possibility of pursuing an emerging tech career, while a younger student could have already developed a strong intention to pursue an emerging tech career. Along these two axes, possible experiential learning activities listed in the figure include rotational micro-internships, research & development experiences, extended co-ops, STEM camps, and interdisciplinary workplace course-based problem solving, among others.

Importantly, new and growing emerging technology fields offer the opportunity to promote diversity and broaden participation in the emerging technology workforce. It's therefore essential that proposed projects describe strategies to promote diversity, equity, inclusion, and accessibility, effectively engage participants and stakeholders from communities that are underrepresented in STEM.

What is NSF Looking For in an ExLENT Proposal?

In the solicitation, NSF states that it's seeking to fund projects that provide engaging activities that provide individuals with:

(1) the opportunity to gain new skills and
(2) the resources necessary to successfully navigate a career path into emerging technology fields, whether they are exploring new careers, striving toward career entry, or seeking to upskill or reskill their capabilities.

In contrast to gaining new skills, the second category – resources – may not be as familiar to most NSF applicants, although it is typical of many workforce development programs funded by other agencies, such as the Department of Labor (see, for example, the recently funded $500M Good Jobs Challenge). Many of the barriers to training or re-training of adults who are already in the workforce involve issues such as lack of transportation, childcare, or funds to purchase a computer. A strong ExLENT proposal should identify the type of participants they are targeting and clearly describe the barriers that those participants face, and how the program will help them overcome those barriers. This means applicants should do their research, engage with their target participants, and explore their experiences and challenges.

As is typical for NSF, they are looking for "evidence-based" practices. These means that a strong proposal will discuss the literature and any prior work, and describe how the insights gained from the current body of knowledge inform the proposed project. However, it was emphasized in the webinar that there is no research component in this program. That is, lessons should be learned from the program evaluation, and personnel with expertise in STEM education and learning, workforce development, and/or social science should be included, but they are not looking to fund fundamental research on experiential learning, for example.

According to the solicitation, ExLENT proposals should have the following characteristics (emphasis ours):

> Proposals should leverage ***evidence-based best practices*** in experiential learning to attract diverse learners to emerging technology careers; establish pathways into emerging technology fields for ***individuals historically underrepresented in STEM fields***; and to further develop and hone the talent of workers in these rapidly evolving fields. Successful proposals will outline a comprehensive program curriculum that includes:
>
> - ***Experiential learning opportunities*** that provide participants with an enhanced understanding of the emerging technology landscape and training in the STEM entrepreneurial and technical skills that increase their employability.
> - ***Workplace driven career exploration activities*** that allow participants varied pathways into, and job opportunities in, emerging technology fields.
> - ***Mentorship*** to support participants' professional development and pursuit of careers in emerging technology fields, providing them with paths beyond the ExLENT program.
> - Establishment of a ***participant cohort*** designed to help participants develop a STEM career identity and a sense of community within the emerging technology fields.
> - ***Intentional support*** in diversity, equity, inclusion, and accessibility for all stakeholders to create environments that value diverse perspectives critical for innovation and that promote a competitive, resilient emerging technology workforce.

As with any solicitation, a key to understanding what reviewers will be looking for is the "Review Criteria" section. In addition to the universal Intellectual Merit and Broader Impacts criteria, the ExLENT solicitation lists the following review criteria:

> 1. To what extent does the project ***create on-ramps for diverse individuals*** into careers in emerging technology fields and to what extent does the project provide participants with ***a path beyond the ExLENT program***?
> 2. To what extent does the project ***reduce barriers so that members of groups historically underrepresented or underserved in STEM*** can acquire the training and learning needed for careers in emerging technology?
> 3. To what extent does the project ***develop the interests, motivations, skills, knowledge and/or proficiencies of workers in emerging technology***?

Read the ExLENT Solicitation carefully for detailed requirements and instructions.

Other points made in the webinar:

- It is expected that teams will involve partnerships across sectors. NSF recognizes that many small businesses and entrepreneurs engaged in emerging technologies don't have funds to support internships. This program could help provide the needed support to do that.
- Community colleges are considered especially well positioned as potential applicants.

- Related to the above bullet, NSF's Advanced Technology Education (ATE) program is complementary to the ExLENT program since much of ATE is focused on curriculum development, but it doesn't fund experiential learning.
- Funding can be used for stipends and wrap-around services to reduce barriers to participation, including funds for childcare and transportation.

Our Additional Observations

It's important for applicants from institutions of higher education to understand how different this program is from NSF's usual education-focused programs. The emphasis on experiential learning in the workplace is a departure from most programs and demands a different approach compared to NSF programs such as Research Experiences for Undergraduates or Improving Undergraduate STEM Education, with more involvement of potential employers. In addition, the focus on engaging adults who are already in the workplace (in the Pivots Track) or who have at least had STEM training is a significant departure from NSF's typical focus on students of various ages.

All of these differences means that successful teams must avoid falling into their standard approaches for training and workforce development if they don't fit this program. Many teams will have to recruit new industry partners. They may also need to involve organizations, such as non-profits, with the community connections and workforce development expertise required. On the other hand, some teams may already be well-positioned by virtue of prior experience with experiential learning (e.g., extensive co-op programs) or access to target communities.

We suspect that a key to success will be willingness to approach these problems with an open mind, avoiding falling into preconceived strategies that may not fit. Be sure to determine the emerging technology on which you will focus; clearly identify your target pool; research the needs, challenges and opportunities of your target pool (rather than assuming you already know what they are); think beyond the classroom/lab; engage your stakeholders early; and recruit team members with the expertise you need. It's also important to avoid reinventing the wheel. Explore the literature on best practices for experiential learning, on-the-job training, apprenticeships, and other similar models.

More Resources to Understand ARPA-H

- **NSF ExLENT Program Page**
- **ExLENT webinar recording**
- **ExLENT webinar slides**
- **ExLENT Solicitation**

Connect Funding Opportunities to Societal Challenges

By Mike Cronan, PE, co-publisher

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To gain a better insight into what a competitive proposal looks like in NSF's initiative, *Connecting Funding Opportunities to Societal Challenges* (due February 15), it is helpful to pay close attention to the **distinctions** made in NSF's program description (emphases added): "As NSF considers ways to promote **use-inspired research that reaches beyond curiosity-driven science**, we seek multidisciplinary, community feedback on how researchers can **use the emerging Rules of Life to address societal challenges** by combining approaches from among **all the scientific disciplines**, including engineering; mathematics; physical sciences; computer science; geosciences; social, behavioral, and economic sciences; as well as the breadth of biological sciences.

NSF has been historically all about **curiosity-driven** science, but more recently, the increasing focus on **use-inspired science to address societal challenges** has significantly transformed the funding landscape and research expectations at that agency. With this in mind, this solicitation differs in **key respects** from previous solicitations associated with the Understanding the Rules of Life Big Idea (emphases added).

- First, rather than a focus on discovering rules of life, here we seek **ideas about how such rules might be used for societal benefit**.
- Second, underscoring this shift in focus, **proposals should begin with a description of the expected outcomes of the research**, e.g., the broader impacts, followed by details on the intellectual underpinnings of the convergent research plan.
- Third, proposers must adopt a **co-production strategy that involves both producers and users of the research outcomes** in all phases of the research, e.g., in the design, implementation, evaluation, and dissemination of the research impacts (see NSF Strategic Plan).
- Fourth, projects must **integrate innovative education and training activities** aimed at fostering convergent research.
- Fifth, projects should **actively promote diversity** (see National Science Board Vision 2030 Report).

Societal challenges include but are not limited to: climate change and associated risks, including geohazards; extreme events, and loss of biodiversity; environmental degradation, including impacts on land and water resources; inequalities in availability of and access to essential natural assets; lack of sustainability, including for food, energy, and waste production; and threats from pandemic disease, among others. An important goal of this solicitation is to **use the predictive capability** of rules of life to address some of the greatest challenges we currently face as a society.

NSF has launched new webpages (below) to help the research community connect funding opportunities with the societal challenge the research they support can help address -- something like a translational lens through which to view solicitations and Dear Colleague Letters.

Bioeconomy & Advanced Biotechnology Research at NSF

This website will allow you to browse a diversity of biotechnology-related topic areas supported by NSF, quickly find a program that best fits your proposal idea, and get contact information for Program Directors who can help you further. Biotechnology is transforming our world by enabling **nature-inspired solutions** to societal and environmental challenges, ranging from lifesaving vaccines to sustainable, essential products like food and biofuels. NSF investments in biotechnology play a key role in accelerating scientific discovery and provide the tools and methods to use those discoveries to create goods and services that contribute to multiple sectors of the U.S economy, including agriculture, health, security, manufacturing, energy, and the environment. ***NSF supports biotechnology research at all biological scales--from molecular to organismal, evolutionary, ecosystem, and biome***--and across all scientific disciplines through its core programs across all the directorates and through integrative activities and interdisciplinary partnerships, as highlighted below.

Emerging Infectious Diseases

This website will allow you quickly to browse a diversity of Emerging Infectious Disease-related topic areas supported by NSF, find a program that best fits your proposal idea, and get contact information for Program Directors who can help you further.

NSF supports crucial, multidisciplinary EID research across its Directorates. This research examines the global distribution of potential pathogens, reservoirs, vectors, and hosts; provides insight into the molecular and physical mechanisms of pathogenesis and virulence in non-human hosts; identifies host responses key to controlling or resolving infections; identifies host and microbe mechanisms that control symbiotic interactions versus pathogenic outcomes; develops a quantitative understanding of the transmission dynamics of rapidly evolving pathogens; aids in creation of sensors and methods of detecting pathogens; and investigates the cultural, social, behavioral, and economic dimensions of pathogen transmission. Despite ongoing investment in EID research, **scientific challenges remain, including** the ability to use a pathogen's genome to predict its potential transmissibility or lethality; understanding principles of host physiology and behavior, as well as the interactions between these systems and infectious agents that contribute to resistance or susceptibility to infection; understanding the underlying mechanisms responsible for an increase in pathogen host range and transmission rates, and discovering how human-built, environmental, ecological, or evolutionary processes mediate these changes.

Life on a Warming Planet

This website will allow you to browse a diversity of Life on a Warming Planet-related topic areas supported by NSF, quickly find a program that best fits your proposal idea, and get contact information for Program Directors who can help you further.

A crucial scientific challenge lies in advancing our **predictive understanding** of the response of living systems at all scales (cellular, organismal, species, ecosystems, biomes) to climate warming and developing a manipulative capability to mitigate negative impacts. This LoWP research includes foundational studies of living systems' responses to climate change, from the impact on cellular metabolism, microbial and biogeochemical processes, ecological relationships, evolutionary processes, biodiversity, food production, fisheries, agricultural systems, and ecosystem structure and function. It also includes development of new data analytic and modeling tools, observing systems, and other infrastructure to study climate-driven changes in the biosphere from local to global scales.

Bottom line, especially for research offices, ***future NSF funding solicitations will increasingly incorporate societal challenges into research and educational objectives***. As Wayne Gretzky famously noted "*Skate to where the puck is going to be, not where it has been*." This is particularly apt advice when planning long-term funding strategies for NSF. Fortunately, NSF often telegraphs where

the successful funding puck will be going forward. A close reading of Using the Rules of Life to Address Societal Challenges (URoL:ASC) **will help you understand what future success looks like at NSF**.

DOE Guide for the Submission of Unsolicited Proposals

By Mike Cronan, PE, co-publisher

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Programmatic changes at DOE over the past two years have been dramatic across the board in areas of research emphasis ***as well as areas of deemphasis***. In addition, major new funding is being aligned with new energy policies (see table at end of text of **25 new DOE programs** posted to Grants.gov over past two months). In many ways, DOE's current new research directions are unrecognizable from their appearance under the prior administration. (See Some labs, projects win big as Department of Energy disburses extra funds: Department's Office of Science divvies up one-time infusion of **$1.55 billion** from Inflation Reduction Act)

With this in mind, it is a good time to review an additional avenue to obtaining DOE funding for research in addition to the posted solicitations on Grants.gov. Specifically, while DOE makes most awards through competitive announcements and solicitations, the agency may consider an **unsolicited proposal** if it represents a **unique or innovative idea that would not otherwise be eligible under a known agency competitive announcement.** DOE encourages the submission of **unsolicited proposals** that **contribute to its mission objectives**. The process is **abbreviated in the summary** below. The full 24-page document can be reviewed here.

An unsolicited proposal may be accepted by DOE if it: Demonstrates a unique and innovative concept, or demonstrates a unique capability of the submitter; offers a concept or services not otherwise available to the government; does not resemble the substance of a recent, current, or pending competitive solicitation/announcement; and is independently originated by the proposer without government supervision. Proposals must be limited to 25 pages excluding appendices.

An unsolicited proposal must persuade the DOE staff (Guide for the Submission of Unsolicited Proposals) that the project investigates an **important problem relevant to the DOE mission NOT ADDRESSED** in a published DOE solicitation. Specifically, the proposer must present objectives together with the **relevance** of the proposed work to DOE, the **rationale** of the approach, the **methods** to be pursued, the **qualifications** of the investigators and the institution, if applicable, and the level of funding required to attain the objectives.

The proposer may inquire informally **via an abstract submission** regarding the **possible interest** of DOE in the research and development area involved **prior to the formal submittal of a proposal**. This approach will determine whether the work proposed is sufficiently related to the current **DOE mission goals** to warrant a formal submission, the level of funding support currently being expended in that field, and whether DOE has any programmatic interest in the type of work being proposed.

To determine whether your project has relevance to DOE's program objectives, **you must submit by e-mail a structured and detailed technical abstract/summary of at least 500 words.** The abstract should briefly describe your technology. *If your abstract does not include the (3) criteria below, it will be returned for re-submittal.* DOE will NOT accept abstracts/proposals by US Mail. **Required abstract format:** (3 separate paragraphs): 1. What you propose to do and how (summary of at least 500 words); 2. Why it is beneficial to DOE; and 3. How the technology meets DOE's mission (www.doe.gov/about/index.htm). **Abstract submissions must be sent via e-mail to DOEUSP@NETL.DOE.GOV.**

There are no specific dates for the submission of unsolicited proposals. However, because a comprehensive review is required before a proposal can be acted upon, new proposals should be submitted as early as possible**, usually six months in advance of the desired beginning of support**. The unsolicited proposal forms the basis for further technical evaluation and potentially a contract or grant award. The DOE does not welcome **elaborate proposals or presentations.** The following list contains essential items that an unsolicited proposal should contain.

Technical Information to Include in Unsolicited Proposal

1. **A concise title and an approximately 500-word abstract of the proposed research**. The abstract should be informative to other researchers in the same field, but in **language that can be understood by an intelligent layperson.** It should be kept in mind that the abstract is the reviewer's introduction to the proposed research.

2. **The body of the proposal should contain a statement of the work plan** with sufficient technical detail to permit a meaningful evaluation: the **phase-by-phase procedures** to be followed; the **objectives and expected significance**; the **method of approach** and extent of the effort employed; the nature and extent of the **anticipated results**; the manner in which the work will help to **support accomplishment of the DOE's mission** (**www.doe.gov/about/index.htm**); the relation of the study both to the **present state of knowledge in the field and to comparable work in progress elsewhere**; and a **bibliography** of pertinent literature. The proposer should include references authored by the proposer. The general **plan of approach should be outlined**. **Experimental methods and procedures** should be adequately described. An appraisal of the **scientific merit of the proposed research** will be influenced in **large measure by this presentation**.

3. **Available facilities and major items of equipment especially adapted or suited to the proposed research should be described**. If all or any part of the project is to be performed away from the proposer's facility, this should be explained in full.

4. **Names of key project personnel,** including the principal investigator or project leader, along with brief biographical information on each, clearly showing the investigator's experience and expertise in the technical area(s) of the proposal.

The principal elements considered in evaluating a proposal are: (1) Unique and innovative methods, approaches, or concepts demonstrated by the proposal; (2) Overall scientific/technical or socioeconomic **merit** of the proposed activity; (3) Potential contribution of the effort to the **DOE's specific mission**; (4) The proposer's **capabilities**, related experience, facilities, techniques, or unique combinations of these that are integral factors for achieving the proposal objectives; (5) The **qualifications**, capabilities, and experience of the proposed principal investigator, team leader, or key personnel who are critical in achieving the proposal objectives; (6) The realism of the **proposed costs**; and (7) The **availability of funding** to support the proposed project and the relative merit of the project to other that could be supported with the same funds.

In conclusion, an unsolicited proposal is a possible mechanism for seeking funding relevant to the DOE mission that is not addressed in a current solicitation. For example, if your proposed research project is fundable under currently open solicitations as below, then it is not a candidate for a possible submit as an unsolicited proposal.

25 new DOE programs posted to Grants.gov over past two months

1 - 25 OF 47 MATCHING RESULTS: « Previous **1** 2 Next »

Opportunity Number	Opportunity Title	Agency	Opportunity Status	Posted Date ↓	Close Date
DE-FOA-0002774	CLEAN ENERGY TECHNOLOGY DEPLOYMENT ON TRIBAL LANDS - 2022	DOE-GFO	Posted	11/01/2022	02/09/2023
DE-FOA-0002771	POWERING UNELECTRIFIED TRIBAL BUILDING(S) - 2022	DOE-GFO	Posted	11/01/2022	02/23/2023
DE-FOA-0002801	Advancing Fish Passage and Protection Technologies	DOE-GFO	Posted	10/31/2022	03/27/2023
DE-FOA-0002858	Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0002756 Renew America's Schools	DOE-GFO	Posted	10/27/2022	11/28/2022
DE-FOA-0002787	Notice of Intent to issue Funding Opportunity Announcement No. DE-FOA-0002788 entitled Buildings Energy Efficiency Frontiers & Innovation Technologies (BENEFIT) - 2022	DOE-GFO	Posted	10/27/2022	01/06/2023
DE-FOA-0002841	Bipartisan Infrastructure Law (BIL), Request for Information (RFI): Energy Improvements in	DOE-GFO	Posted	10/27/2022	11/28/2022

	Rural or Remote Areas				
DE-FOA-0002874	Request for Information (RFI): Enabling Technologies for Improving Fusion Power Plant Performance and Availability	DOE-ARPAE	Posted	10/21/2022	11/21/2022
DE-FOA-0002877	Request for Information on Improving Cybersecurity Posture of Rural and Municipal Utilities	DOE-NETL	Posted	10/20/2022	12/19/2022
DE-FOA-0002802	Bipartisan Infrastructure Law Section 40334: Pumped Storage Hydropower Wind and Solar Integration and System Reliability Initiative	DOE-GFO	Posted	10/19/2022	12/15/2022
DE-FOA-0002800	Bipartisan Infrastructure Law Section 41006(a)(1). Water Power Projects: Stakeholder Insight into Hydropower R&D Issues	DOE-GFO	Posted	10/19/2022	11/18/2022
DE-FOA-0002731	Bipartisan Infrastructure Law Section 41006. Water Power Projects: Innovative Technologies to Enable Low Impact Hydropower and Pumped Storage	DOE-GFO	Posted	10/19/2022	03/05/2023

	Hydropower Growth				
DE-FOA-0002847	Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0002845: Bipartisan Infrastructure Law (BIL), Section 41006(a)(2): U.S. Tidal Energy Advancement	DOE-GFO	Posted	10/18/2022	02/17/2023
DE-FOA-0002840	Notice of Intent to issue DE-FOA-0002828 Bipartisan Infrastructure Law (BIL) FOA to Address Key Deployment Challenges for Offshore, Land-Based, and Distributed Wind	DOE-GFO	Posted	10/18/2022	11/30/2022
DE-FOA-0002819	Bipartisan Infrastructure Law (BIL): Request for Information (RFI) DE-FOA-0002819 Floating Offshore Wind Energy Mooring and Anchoring	DOE-GFO	Posted	10/18/2022	12/19/2022
DE-FOA-0002865	Notice of Intent to issue FY22 Advanced Materials and Manufacturing Technologies– Building Technologies Office Multi-topic Funding	DOE-GFO	Posted	10/14/2022	03/10/2023

	Opportunity Announcement				
DE-FOA-0002876	Performance Data for Solar Photovoltaic Systems: Acquisition, Access, and Sharing RFI	DOE-GFO	Posted	10/14/2022	11/18/2022
DE-FOA-0002846	This is a Notice of Intent to issue Funding Opportunity Announcement No. DE-FOA-0002854	DOE-NETL	Posted	10/12/2022	01/31/2023
DE-FOA-0002797	Request for Information on Request for Information on Electric Vehicle No-Charge Events, including Interoperability	DOE-NETL	Posted	10/04/2022	11/18/2022
DE-FOA-0002793	Funding Opportunity Announcement (FOA) Marine Energy Systems Innovation at Sea	DOE-GFO	Posted	09/30/2022	02/24/2023
DE-FOA-0002779	Bipartisan Infrastructure Law: Additional Clean Hydrogen Programs (Section 40314): Regional Clean Hydrogen Hubs Funding Opportunity Announcement (FOA)	DOE-GFO	Posted	09/22/2022	04/07/2023

DE-FOA-0002730	BIL: CARBON CAPTURE TECHNOLOGY PROGRAM, FRONT-END ENGINEERING AND DESIGN FOR CARBON DIOXIDE (CO2) TRANSPORT	DOE-NETL	Posted	09/22/2022	11/28/2022
DE-FOA-0002738	BIL: Carbon Capture Demonstration Projects Program FRONT-END ENGINEERING DESIGN STUDIES FOR INTEGRATED CARBON CAPTURE, TRANSPORT and STORAGE SYSTEMS	DOE-NETL	Posted	09/22/2022	12/05/2022
DE-FOA-0002711	Bipartisan Infrastructure Law (BIL): Storage, Validation and Testing (Section 40305): Carbon Storage Assurance Facility Enterprise (CarbonSAFE): Phases III, III.5, and IV	DOE-NETL	Posted	09/21/2022	11/28/2022
DE-FOA-0002575	Consent-Based Siting for Interim Storage Program -- Community Engagement Opportunities	DOE-ID	Posted	09/20/2022	12/19/2022
DE-FOA-0002618	BIL - Rare Earth Element Demonstration Facility	DOE-NETL	Posted	09/19/2022	11/21/2022

Telling Your Reviewers What They Need to Know

Reprinted from July 2015

By Lucy Deckard, co-publisher

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When writing a research proposal, it's extremely important to explain to reviewers **how your research builds on, and will advance, the current state of the art**. This discussion is often included as a "Background," "Innovation," "Significance," or "State of the Art" section. As you develop this section of your proposal, it's important to have a clear understanding of what this section of the proposal must accomplish:

- It provides needed information to help reviewers who may not be experts in the topic of your research understand what you are proposing and why it is significant.
- It points out opportunities that your research will exploit and gaps in knowledge that your research project will fill.
- It demonstrates to reviewers (who may or may not be experts in the topic) that you are well acquainted with the literature and are building on the most recent work on the topic.

Understanding What Your Reviewer Needs To Know

When you are describing the current state of the art in order to bring your reviewers up to speed, it's critically important that you understand how much your reviewers are already likely to know. This seems an obvious point, but it is one that PIs often forget. During the planning process, do all you can to find out the likely backgrounds of your reviewers. The broader and more interdisciplinary the program or solicitation to which you're applying, the more varied the backgrounds of the reviewers are likely to be. Even if you're applying to a core program at NSF, some programs are much broader than others. If you are able to talk to the Program Officer, ask about the likely composition of the review panel in terms of expertise and backgrounds. If you're applying to a standing study section or panel, look up the roster and investigate the backgrounds of the members.

Clearly, if you are likely to have reviewers with backgrounds far removed from your research topic, you will need to explain your ideas and the current state of the art at a different level than if your reviewers are experts in your field. However, you need to be very careful to avoid the common trap of using this section to provide a several-page tutorial or the equivalent of a first-year graduate seminar on your topic. This approach is seductive because many faculty (who have been teaching classes and seminars related to their research topic) find such a discussion very easy to write, but there are several reasons that using the "tutorial" approach is a mistake. First, it will bore reviewers who are well-informed about the topic of your research. Second, it will bore reviewers who are not well-informed about the topic of your research. Third, the material will seem generic and disconnected from your proposed project. Fourth, it will use critical proposal real estate that you need to make the case for why your research is innovative, significant, and should be funded.

Instead, look at your specific research questions, hypotheses and objectives, and think about what your reviewer needs to know in order to understand:

- What is known now and what are the gaps you will fill?

- How will your research build on what is already known?
- How will your proposed research advance the state of the art, and what will be the impact of those advancements?

If you are addressing reviewers from outside your field, you will need to explain terms, methodologies and challenges in a way that is accessible to them, but avoid lengthy discourses on the basics of your field. If you feel that in order to understand your proposed project, reviewers will need detailed background on a specific methodology or concept, make the description as concise as possible and put it in a separate subsection with a clear heading so that reviewers understand why they are reading the section, and reviewers who already have the required background can skip over it.

Connecting to Your Project

As you discuss the background and relevant work in the literature, be sure to continually connect those discussions to your own project. How is the work you're describing relevant to your project? Does it present interesting results on which you will build? Does it illustrate a gap that you will fill? Does it demonstrate feasibility of a method you will employ? Explaining this relevance is especially important when you have reviewers who are not well-versed in your topic since those connections may not be clear to them unless you discuss them explicitly.

As you discuss relevant literature, be sure that you are focusing specifically on work related to the specific research challenges and objectives of your project, not just on the general scientific area or application. So, for example, if you are proposing to investigate an approach to improve the efficiency of a specific step in synthesizing a biofuel from switchgrass, you should focus specifically on what others have done to address this problem step, other work that employed a similar strategy, etc. Don't use this section to provide a lengthy tutorial on the various types of biofuels and how they are synthesized.

Demonstrating Your Knowledge of the Literature

Remember also that, particularly if you are a relatively early career researcher, you need to reassure the reviewers that you are familiar with the latest developments in your research topic and know the literature well. It is quite common for reviewers to fault a proposal for failing to refer to seminal publications on the topic or work that they feel is relevant. In your discussion of the state of the art, it's a good idea to discuss papers on your specific topic even if their methodology is different, or you feel there are important shortcomings in the work. Briefly and diplomatically mention how your approach will be different or how it will go beyond the reported work. Moreover, if you suspect that colleagues doing similar work are likely to be reviewers, it's wise to respectfully cite their work.

All of these approaches will help to orient your reviewers and demonstrate your knowledge without boring them or using too much critical space in your proposal.

The Dos and Don'ts of Writing the Statement of Purpose for a Humanities/Social Sciences Funding Application

Reprinted from July 15, 2020

By Katherine Kelly, Humanities Editor

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Perhaps the most critical section in a proposal—the statement of purpose—tells reviewers what the applicant wants to do with the funds being requested. It's essential to a proposal's success that this statement be compelling, expressed in clear language without jargon, and that ***it should encourage the reviewer to read the rest of the proposal***. The precise statement may occupy one or maybe two sentences, but it will be preceded and followed by important contextualizing information. Described in a slightly different way, the statement of purpose conveys the most pointed description of the applicant's idea. No amount of eloquence, fashionable references, or relevant evidence can make up for a weak idea—i.e., an idea already investigated, a poorly conceived and described idea, or an impossibly ambitious idea that would require years to realize. The effective statement of purpose must, therefore, strike the reviewers as a realistic idea worthy of an agency's investment. And agencies have their own sets of interest that the savvy applicant will learn by studying the titles and abstracts of recently funded proposals along with statements of strategic plans and other documents conveniently posted online. In addition, applicants can increase the likelihood of formulating a worthwhile idea by studying the criteria reviewers use to judge a research proposal's merits, and by recognizing that a proposal is an attempt to persuade peer reviewers that an idea of interest to the applicant should ***also be of interest to other humanities scholars and perhaps even to the general public***. It therefore makes sense to review those criteria, especially how to interpret them, to prepare for writing a proposal with a fighting chance of success.

The NEH's five criteria closely resemble those of many funders. NEH first asks the applicant to explain the intellectual significance of the project, including its value to humanities scholars, general audiences, or—even better--to both. Reviewers will be looking for a clear, jargon-free description of what will be done with the funds requested and why it should be done. ***Be sure to write this statement for a humanities generalist rather than for a specialist in your field or subfield, and situate your idea in the larger context of humanities or social science research***. As you think about how to answer this, consider the question: how will my project change the scholarship in my field by creating a new way to think about the topic? And what differences might this make to a wider area of study? Here, it's essential to broaden out the implications of the project, linking it to trends in recent, allied fields, so that its significance is seen to ripple out from the smaller core of the research. Review the funded examples on the NEH website to see how others have attempted this difficult but essential move. Answering these questions calls for a brief review of the relevant scholarly literature on the same or related topics. Stress how your own idea adds to, contradicts, or revises current studies.

The second criterion is the quality of the concept, definition, organization, and description of the project, along with its clarity of expression. This criterion judges how coherently the idea has been conceived and links conceptual clarity to clarity of written expression. Use of technical terms or disciplinary jargon will count against the applicant under this criterion, ***as will failing to lay out a step-by-step description of how the project will be organized and completed***. Again, a quick review of samples on the NEH website can offer some ideas for avoiding jargon and presenting a clear description of how the project will be organized and completed. By the time a reviewer has judged the

merits of these first two criteria, ***s/he may have made a global judgment about the project's merits***. But three more criteria will be applied before the review is complete.

The third criterion describes the work plan. Here, the reviewers want to know how the applicant will organize her time and undertake a series of tasks in a specific order to complete the project. Reviewers will want to know the physical location of the applicant at various times during the project's duration. Will the project be completed during the grant period (not necessary for receiving an award)? Or will some percent of it get accomplished with the remainder to be completed in the future. Here, providing organizational detail will benefit the applicant by ensuring the reviewers that the entire project has been forecast and carefully planned over time.

The fourth criterion considers the quality of the applicant's work as an interpreter of the humanities. ***In other words, does the applicant's resume predict that he will complete this project?*** What has he done before that suggests he will or will not? Here, ancillary skills such as language proficiency or technical know-how needed to complete the research can be described.

Finally, NEH asks the reviewers to assess whether the applicant will complete the project—again, not necessarily during the period of performance. Reviewers will also want to be told here about plans for disseminating the project's results, such as publication and/or other forms for circulating the final results. Applicants should therefore mention the expected outcomes of the project, if they exist, to ensure the reviewers that the project will be both completed and shared widely.

Succeeding as an applicant to a national grant competition calls for ***strategic planning and careful preparation of a research project***. As in any other kind of contest, the more thorough the preparation for entering a research competition, the better the applicant can expect to perform.

Make Your Case for Value-Added Benefits

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By Mike Cronan, co-publisher

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How well you describe the value-added benefits and impacts of your proposed research to the mission of the funding agency and/or the research field will be a principal factor in the decision to fund or not fund your proposal. Regardless of whether your proposed research is basic or applied, or to which federal research agency you submit your proposal, your funding fate will be determined by ***how well you make a compelling and convincing case for the value-added benefits of your research***.

Sometimes research agencies are very explicit in characterizing the meaning of "value-added benefits," while in other cases their importance will be addressed more generally in the review criteria. In still other cases, the importance of addressing value-added benefits in the research narrative will be implicit in the mission of the agency itself, e.g., from reports, strategic plans, workshops, funding patterns, etc.

In all cases, a competitive research narrative needs to present a thoughtful, convincing, and informed case for the value-added benefits of the proposed research. ***There are typically four overarching backdrops or domains to which you will map the value-added benefits description in your research narrative: (1) agency mission, (2) research context/state of the field, (3) research synergies, and (4) broader impacts/dissemination, the latter meant in the generic sense and not necessarily in the NSF "broader impacts" specific sense***.

Moreover, mapping your value-added benefits description to one or more of these core domains is not a trivial task, although it need not be an onerous one if you have a thoughtful strategy for organizing your key arguments. Too often, however, ***proposals are declined for funding as the result of failing to address the value-added benefits requirement at all, i.e., it is simply overlooked***, regardless of whether that requirement was explicit or implicit in the solicitation. In other cases, the value-added benefits discussion in a declined proposal were inadequately addressed, ***most commonly by overly general narrative claims unsupported by sufficiently convincing details and specifics***. This is a common error in grant writing overall-- ***making generalized claims without convincing validation grounded in specificity***.

Excessive narrative generalizations lacking specifics are a tell-tale sign that the author(s) has not done the hard work of conceptualizing the proposed research in the ***core value-added/impacts contexts*** defined above, or is unable to do so. Either way, absent a credible and convincing value-added benefits description in the narrative, program officers and reviewers will find little reason to fund the research.

The four components above ***form a narrative platform or structure for your value-added benefits descriptions in your research narrative*** and each requires a thoughtful and informed response to be compelling and convincing to program officers and reviewers.

For example, at mission agencies, the value-added benefits of your proposed research to the agency's mission are ***paramount in the funding decision***. Unfortunately, many proposal authors fail

to become ***sufficiently informed about the agency mission***. And it stands to reason that t will be impossible to make a convincing case for the value and impact of your research ***if first you do not clearly understand the agency's mission-critical research priorities to which your proposed research must map***. To belabor the point, since it is an important one to funding success, if you don't understand the mission of the funding agency, ***how can you possibly indicate how your proposed research advances that mission***?

This is a surprisingly common oversight, given the simplicity of resolving it, i.e., take the time to read through the solicitation and the review criteria carefully to understand the reasons the agency is funding the proposed work and what motivates the solicitation itself. In addition, review any referenced documents, reports, technical workshops, agency or program area strategic plans, etc., noted in the solicitation and seen by the agency as important influences on why the research is being funded and further elaborating on its importance to the agency mission.

Agencies reference documents in solicitations for a reason—they want you to knowledgably propose research that will advance their mission in some important way(s) and ***not waste your time or theirs on writing and reviewing proposals that have no significant relevance to the agency mission***. For example, those submitting a preliminary proposal October 23 for an NSF ERC, at least those who will be competitive, will likely be well versed in the Engineering Grand Challenges promulgated by the National Academy of Engineering, along with other references in the solicitation.

At both mission agencies and basic research agencies, the value-added benefits of your proposed research will often have to be described in the ***research context/state of the field***, i.e., your proposed research must advance, impact, or transform the research field in some significant way. Similar to understanding an agency's mission in order to make claims about how your research brings value-added benefits to that mission, in this case you must be sufficiently knowledgeable about the research context/state of the field in order to make credible claims about how your proposed research advances the field in some important ways.

A common requirement in research solicitations will state that ***the agency will only be funding research that is novel, innovative, and transformative***. Implicit in this statement is the requirement that the author(s) of the research narrative do more than merely echo, without detailed elaboration, the agency language about proposing novel, innovative, and transformative research. Making unsubstantiated claims for the novelty of the proposed research is a common failing of declined proposals. Think of program officers and reviewers as all being from Missouri—the Show Me State, or the elderly lady in the Wendy's commercial that asks "**Where's the beef!?**" ***Merely claiming your research to be novel does not make it so***. You must demonstrate why the proposed research is novel in a credible way, ***including appropriate references to the literature***. Here again, you cannot make a credible claim that your proposed research is novel and at the frontiers of your field, as NSF likes to describe it, without knowing the state of that frontier and the context in which your proposed research fits.

In other cases, the value-added benefits of your proposed research lie in the ***research synergies*** created. Success in research funding is all about being able to convincingly describe the research synergies that will occur if your research is funded. Moreover, keep in mind when writing your description of the ***value-added benefits derived from project synergies,*** that ***research synergies occur at various scales***. For example, first and foremost, particularly on interdisciplinary research and team proposals, you must clearly describe the project's core synergies that come about

from multiple research strands that, in aggregate, comprise your overall research goals and objectives. Of course the common flaw in unfunded proposals is that the research strands are siloed rather than integrated in a way that promotes the value-added benefits of synergy. At the next scale, you may describe how these research synergies impact the agency mission, the field, and possibly other fields. ***Convincing descriptions of research synergies at multiple scales make for a very compelling research narrative and one likely to be funded***.

Lastly, the value-added ***benefits that accrue from your description of the broader impacts of your proposed research cast a very broad net*** that goes well beyond the direct benefits to the agency, the field, and the research synergies, and encompasses such domains as STEM education, societal benefits, training and innovation, among many others that you will argue are specific to your proposed research.

Thinking about the value-added benefits of your proposed research in a structured, well organized, specific, and detailed way when writing the research narrative will go a long way towards ensuring you funding success.

Research Grant Writing Web Resources

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Parent Announcements (For NIH Unsolicited or Investigator-Initiated Applications)

Parent announcements are broad funding opportunity announcements allowing applicants to submit investigator-initiated applications for specific activity codes. They are open for up to 3 years and use standard due dates. Not all NIH Institutes and Centers participate on all parent announcements. Before submitting your application, make sure the NIH Institute or Center that might be interested in your research is listed as a participating organization in the announcement.
https://grants.nih.gov/grants/guide/parent_announcements.htm

Unsolicited, Investigator-Initiated Research

Investigator-initiated means you create an application in any area of science NIH supports. **Most of the applications researchers submit—and most of the research NIAID funds—is investigator-initiated**. Program announcements (PAs) are investigator-initiated funding opportunities.

Grant Writing Webinar Series for Institutions Building Research and Research Training Capacity

These resources address frequently asked questions from the webinar series and provide additional helpful information.

NIH Grants Process Overview

- Video tutorials and helpful information
- The NIH Guide for Grants and Contracts
- List of all Parent Announcements
- The Annotated FOA - help understanding Funding Opportunity Announcements (FOAs)
- The NIH Application Guide
- Submitting an Application
- Write an Application
- YouTube Videos on NIH Grants from the NIH Office of Extramural Research

The NIH Peer Review Process

- Center for Scientific Review (CSR) Information for Applicants
- CSR Insider's Guide to Peer Review for Applicants
- Video: Top 10 Peer Review Q&As for NIH Applicants
- Video: Live Mock Study Section with Q&A
- FAQs about next steps after application review
- Blog post: Are you on the fence about whether to resubmit?

Becoming a Peer Reviewer for NIH

- Overview of how to become a peer reviewer
- Early Career Reviewer Program

About the Use of Hyperlinks

- NOT-OD-20-174: Reminder NIH Policy on Use of Hypertext in NIH Grant Applications
- Hyperlink and URL Format from the NIH Application Guide

For Foreign Applicants

- Information For Foreign Grants
- The Fogarty International Center of NIH

The R15 and R16 Funding Opportunities

- R15 - AREA and REAP
- R16 - SuRE and SuRE First

Published Articles

Monte, A.A., & Libby, A.M. (2018). Introduction to the Specific Aims Page of a Grant Proposal. *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine, 25*(9), 1042. https://doi.org/10.1111/acem.13419

Impact of insects and diseases on forest health

Hosted by Purdue University, the Alien Forest Pest Explorer combines information from multiple sources to show the impact of different forest insects and diseases – and the potential for further damage. The dashboards, also supported by the U.S. Forest Service, overlay pest data with related data about the status and health of the host tree species in forests and has resolution down to the county level.

"We want to better understand the relationship between pests and tree hosts, as well as assess the vulnerability of our forests, so that we can make the best decisions to preserve and protect them," said Songlin Fei, a professor in Purdue's College of Agriculture and lead on the NSF-funded effort. "This was designed for everyone, not only for the professionals. Pest and disease prevention begins in your backyard. We want to put this tool in the hands of anyone who cares for trees so they understand what pests they may face, how to identify them and how to protect their trees and forests."

Educational Grant Writing Web Resources

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The Pathway to STEM Convergence Education

The five-year Federal STEM Strategic Plan recommended that STEM education should move through a pathway where disciplines "converge" and that STEM teaching and learning move from disciplinary to transdisciplinary. Members of the Federal Coordination in STEM Education (FC-STEM) Convergence Interagency Working Group, led a session titled "Convergence Education: A Framework to Help K-12 STEAM Educators Teach about Real-World Transdisciplinary Problems and Phenomena**"** during the Smithsonian National Education Summit. During the session, expert teachers presented their examples of "convergence education." Driven by complex real-world transdisciplinary problems and phenomena, learners apply knowledge and skills in a blended approach integrated across multiple disciplines to create and innovate new solutions. This Smithsonian blog also describes Convergence Education. Feel free to share these resources with your colleagues.

The National Center for Science and Engineering Statistics, part of the U.S. National Science Foundation, also creates dashboards like the Science & Engineering State Indicators which compile information on the U.S. STEM enterprise. This dashboard, produced in collaboration with the National Science Board, compiles state-level information for 60 different indicators across six broad categories: elementary and secondary education; higher education; workforce; financial research and development inputs; research and development outputs; and science and technology in the economy.

Agency Research News

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NIH launches Bridge2AI program to expand the use of artificial intelligence in biomedical and behavioral research

The National Institutes of Health will invest $130 million over four years, pending the availability of funds, to accelerate the widespread use of artificial intelligence (AI) by the biomedical and behavioral research communities. The NIH Common Fund's Bridge to Artificial Intelligence (Bridge2AI) program is assembling team members from diverse disciplines and backgrounds to generate tools, resources, and richly detailed data that are responsive to AI approaches. At the same time, the program will ensure its tools and data do not perpetuate inequities or ethical problems that may occur during data collection and analysis. Through extensive collaboration across projects, Bridge2AI researchers will create guidance and standards for the development of ethically sourced, state-of-the-art, AI-ready data sets that have the potential to help solve some of the most pressing challenges in human health – such as uncovering how genetic, behavioral, and environmental factors influence a person's physical condition throughout their life.

Some labs, projects win big as Department of Energy disburses extra funds: Department's Office of Science divvies up one-time infusion of $1.55 billion from Inflation Reduction Act

Funding just became a little flusher for thousands of researchers supported by the Department of Energy (DOE). The department's Office of Science last week announced how it will distribute **a one-time infusion of $1.55 billion** provided by Congress under the Inflation Reduction Act (IRA), which President Joe Biden signed into law in August. The office will spread the money over 52 projects already in the works, in amounts ranging from $650,000 to $256 million.

Notice of Intent to Publish a Funding Opportunity Announcement for Maximizing Investigators' Research Award (MIRA) for Early Stage Investigators (ESI)

The purpose of this Notice is to inform the biomedical research community that NIGMS is planning to issue a Funding Opportunity Announcement (FOA) to continue the Maximizing Investigators' Research Award for Early Stage Investigators (MIRA-ESI) (R35) program. The FOA is intended for new applications from Early Stage Investigators. This Notice is being provided to allow potential applicants sufficient time to develop responsive projects. **The FOA is expected to be published in Spring 2023 with an expected first application due date in October 2023**. This FOA will utilize the R35 activity code. **Research Initiative Details**: The NIGMS MIRA-ESI FOA is intended to provide support for the program of research in an ESI's laboratory that falls within the mission of NIGMS. ESIs are encouraged to submit an application early in their independent research careers and to move into research areas that are distinct from those of their postdoctoral mentors. Applicants who have not yet received independent research funding are encouraged to apply, as are those who have not had sufficient time and/or resources to generate independent senior author publications. Preliminary data are neither required nor expected, but if provided will be evaluated during the review process. Because the MIRA is intended to support a significant and ambitious program of research, the PD/PI is required to devote at least 51% of his/her total research effort to this award. MIRA-ESI applications are reviewed separately from established investigator MIRA applications.

Anticipated changes in this FOA reissuance include: (1) providing two application receipt dates per year - February and October; and (2) requiring a Plan for Enhancing Diverse Perspectives. Review criteria will be revised accordingly, and reviewers will be oriented to these new FOA goals.

Notice of Informational Webinar for the NIGMS Postbaccalaureate Research Education Program (PREP) (R25)

The National Institute of General Medical Sciences (NIGMS) will host an informational webinar to provide advice and respond to questions from prospective applicants to PAR-22-220 "Postbaccalaureate Research Education Program (PREP) (R25)" on Friday, December 9, 2022, at 1:00 p.m. ET. The goal of PREP is to develop a diverse pool of well-trained postbaccalaureates who transition into and complete rigorous biomedical, research-focused doctoral degree programs (e.g., Ph.D. or M.D./Ph.D.) in biomedical fields relevant to the NIGMS mission. PREP is limited to research-intensive institutions, i.e., those with an average of NIH Research Project Grant (RPG) funding greater than or equal to $7.5 million total costs per year over the past 3 fiscal years (RPG data are available through NIH RePORTER).

Congressional Science Policy Fellowships Seeking Applicants

Several scientific societies are now accepting applications for their 2023-2024 Congressional Science Fellowships programs, including the American Institute of Physics, American Physical Society, Optica, American Association for the Advancement of Science, American Geophysical Union, and American Geosciences Institute, among others. Fellows will spend a year working for a congressional office or committee in Washington, D.C., gaining experience in the policymaking process. Application deadlines vary by society.

Agency Reports, Workshops & Research Roadmaps

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Cryptography and the Intelligence Community

Encryption is a process for making information unreadable by an adversary who does not possess a specific key that is required to make the encrypted information readable. The inverse process, making information that has been encrypted readable, is referred to as decryption. Cryptography has become widespread and is used by private as well as governmental actors. It also enables authentication and underlies the safe use of the Internet and computer systems by individuals and organizations worldwide. Emerging cryptographic technologies offer capabilities such as the ability to process encrypted information without first decrypting it. At the request of the Office of the Director of National Intelligence, this report identifies potential scenarios that would describe the balance between encryption and decryption over the next 10 to 20 years and assesses the national security and intelligence implications of each scenario. For each of these scenarios, Cryptography and the Intelligence Community identifies risks, opportunities, and actions. Attention to the findings should enable the Intelligence Community to prepare for the future and to recognize emerging trends and developments and respond appropriately.

To Improve Research Collaboration Among Land-Grant Universities, Congress Should Facilitate Participation of Historically Black and Tribal Colleges and Universities, Says New Report

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Land-grant colleges and universities play a crucial role in addressing the complex challenges facing the U.S. agricultural system and global food security. Multidisciplinary collaboration involving a diversity of land-grant institutions has the potential to accelerate scientific progress on those challenges. However, historical and current funding disparities have prevented Historically Black Colleges and Universities and Tribal Colleges and Universities from being full partners in multi-institutional collaborations. This report, produced by request of the U.S. Department of Agriculture National Institute of Food and Agriculture acting on a congressional directive, examines how enhanced cooperation across the land-grant system could deepen and expand the impact of its agricultural work, which is critical to address evolving industry and environmental challenges, as well as demands from consumers. The report concludes that many investigators are unaware of potential partners with complementary expertise across the system. The report states that adopting a culture of collaboration could improve the coordination in the land-grant system. Key report recommendations include improving systems and incentives for facilitating academic partnerships, providing dedicated support for collaboration across the land-grant system, and enhancing outreach strategies for communicating about the beneficial outcomes of collaborative research.

NSF Efforts to Achieve the Nation's Vision for the Materials Genome Initiative: Designing Materials to Revolutionize and Engineer Our Future (DMREF)

The Materials Genome Initiative (MGI) was launched in 2011 by the White House Office of Science and Technology Policy to help accelerate the design, discovery, development and deployment of advanced materials and to reduce costs through the integration of advanced computation and data management with experimental synthesis and characterization. A broad range of federal agencies -

including the National Science Foundation (NSF), the Department of Energy, and the Department of Defense - are part of the MGI effort and have invested more than $1 billion in resources and infrastructure accumulative since the start. The efforts of NSF have been focused largely within the Designing Materials to Revolutionize and Engineer Our Future (DMREF) program, which supports the development of fundamental science, computational and experimental tools for generating and managing data, and workforce that enable industry and other government agencies to develop and deploy materials that meet societal needs and national priorities. At the request of NSF, this report evaluates the goals, progress, and scientific accomplishments of the DMREF program within the context of similar efforts both within the United States and abroad. The recommendations of this report will assist NSF as it continues to increase its engagement with industry and federal agencies to transition the results from fundamental science efforts to reach the MGI goal of deploying advanced materials at least twice as fast as possible today, at a fraction of the cost that meet national priorities.

Environmental Challenges and Prospects for Community Relocation in Houston and Port Arthur, Texas: Proceedings of a Workshop

Strategically moving communities and infrastructure—including homes and businesses—away from environmentally high-risk areas, such as vulnerable coastal regions, has been referred to as "managed retreat." Of all the ways humans respond to climate-related disasters, managed retreat has been one of the most controversial due to the difficulty inherent in identifying when, to where, by whom, and the processes by which such movement should take place. In 2021, the Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine sponsored a two-year consensus study, Managed Retreat in the U.S. Gulf Coast Region, to learn about and respond to the unique challenges associated with managed retreat. As part of this study, the committee convened a series of three public workshops in 2022 in the Gulf Coast region to gather information for the consensus report. Each workshop focused on policy and practice considerations, research and data needs, and community engagement strategies. This proceedings recounts the first workshop in Houston and Port Arthur, Texas.

Relocation and Other Climate Adaptations on Florida's Gulf Coast: Proceedings of a Workshop—in Brief

Strategically moving communities and infrastructure - including homes and businesses - away from environmentally high-risk areas, such as vulnerable coastal regions, has been referred to as managed retreat. Of all the ways humans respond to climate-related hazards, managed retreat has been one of the most controversial due to the difficulty inherent in identifying when, to where, by whom, and the processes by which such movement should take place. To understand and respond to the unique challenges associated with managed retreat, the Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine sponsored a committee of experts to provide in-depth analysis and identify short- and long-term next steps for Gulf Coast communities that may need to relocate. The committee convened a series of three public workshops in the Gulf Coast region to gather information about on policy and practice considerations, research and data needs, and community engagement strategies. The workshops focused on elevating the voices of communities and individuals contemplating, resisting, undertaking, or facing barriers to relocation (including systemic issues such as structural racism), as well as individuals who have resettled and communities that have received such individuals. Each workshop included community testimonials and panels of local decision makers and experts discussing study-relevant processes and obstacles faced by communities. The first workshop was held in two parts in Houston and Port Arthur, Texas; the second workshop was held in

St. Petersburg, Florida; and the third workshop was held in two parts in Thibodaux and Houma, Louisiana. This Proceedings of a Workshop-in Brief recounts the second workshop, held in July 2022 in St. Petersburg, Florida.

New Funding Opportunities

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Content Order

New Funding Posted Since October 15 Newsletter
URL Links to New & Open Funding Solicitations
Solicitations Remaining Open from Prior Issues of the Newsletter
Open Solicitations and BAAs

User Note: URL links are active on date of publication, but if a URL link breaks or changes a Google search on the key words will typically take you to a working link. Also, entering a grant title and/or solicitation number in the Grants.gov search box will work as well.

New Funding Solicitations Posted Since September 15 Newsletter

John Lewis NIMHD Research Endowment Program (S21 Clinical Trial Not Allowed)

The purpose of the *John Lewis* NIMHD Research Endowment Program is to strengthen the research infrastructure and training capacity at eligible institutions of higher education to facilitate minority health and health disparities research and enhance the diversity of the scientific workforce. Specific activities may be designed to include, but are not limited to:

- Enhancement of facilities through minor renovations and alterations, acquisition of instruments and equipment, or administrative research stewardship
- Development of resources such as faculty-level expertise in research methodology, study design, specialized laboratory techniques, biostatistics, data science, health informatics, research ethics, and/or community-engaged research methods.
- Enhancements to the academic environment through the creation of challenging courses or programs in such topics as research methodology, grant writing course, and health disparities science as additions to the curriculum
- Structured engagement of scientists with communities that fosters participation in minority health and health disparities research
- Implementation of institutional efforts to support individuals from diverse backgrounds, including those from groups underrepresented in the scientific workforce
- Recruitment and career development of established scientific faculty with exceptional expertise in the clinical, behavioral, social, and population sciences or facilitate the recruitment of new scientists in these disciplines. **Due Dec. 17.**

Engineering Next-Generation Human Nervous System Microphysiological Systems (R01 Clinical Trials Not Allowed)

This Funding Opportunity Announcement (FOA) encourages research grant applications directed toward developing next-generation human cell-derived microphysiological systems (MPS) and related assays that replicate complex nervous system architectures and physiology with improved fidelity over

current capabilities. Supported projects will be expected to enable future studies of complex nervous system development, function, and aging in healthy and disease states. This FOA is intended to encourage the further development of projects with feasibility support for the line of investigation. Applicants proposing exploratory research at the early and conceptual stages of project development may instead wish to apply to the companion R21 FOA (PAR-23-047). **Due January 5.**

Transformative Educational Advancement and Mentoring Network (TEAM)

The NIH Research Education Program (R25) supports research education activities in the mission areas of the NIH. The overarching goal of this R25 program is to support educational activities that complement and/or enhance the training of a workforce to meet the nation's biomedical, behavioral and clinical research needs. To accomplish the stated over-arching goal, this FOA will support creative educational activities with a primary focus on:

- Courses for Skills Development
- Mentoring Activities

The Transformative Educational Advancement and Mentoring (TEAM) Network will pilot test the use of training champions (TCs) at minority serving institutions (MSIs) (as defined in Section III), to support the development of educational activities and scientific career development programs and promote the diversity of the cancer research workforce. Examples of underrepresented groups are provided in the Notice of NIH's Interest in Diversity, NOT-OD-20-031. The career development levels of focus for this FOA will include predoctoral and postdoctoral fellows, and early-stage investigators (ESIs). TCs are defined as personnel located within the MSI who can assist potential scholars with their plans to apply, attain, or transition to an independent grant award. This RFA will leverage TCs to assist scholars in identifying funding opportunities, networking with appropriate NCI/NIH program directors, and locating resources for competitive application preparation. TCs will also provide additional training support, navigation, and resources to enhance the skills required to successfully identify, prepare, submit, and obtain grants and career development opportunities. **Due January 10.**

Engineering Next-Generation Human Nervous System Microphysiological Systems (R21 Clinical Trials Not Allowed)

This Funding Opportunity Announcement (FOA) encourages research grant applications directed toward developing next-generation human cell-derived microphysiological systems (MPS) and related assays that replicate complex nervous system architectures and physiology with improved fidelity over current capabilities. Supported projects will be expected to enable future studies of complex nervous system development, function and aging in healthy and disease states. The R21 grant mechanism is intended to encourage exploratory/developmental research by providing support for the early and conceptual stages of project development. High risk/high reward projects that lack preliminary data may be most appropriate for this FOA. Applicants with preliminary data may instead wish to apply to the companion R01 mechanism (PAR-23-046). **Due January 16.**

Development and Implementation of School Food System Transformation Challenge Sub-Grants

In June of 2022, the USDA launched the **Food System Transformation** framework which aims to build a more resilient food supply chain, create a fairer food system, and make nutritious food more

accessible and affordable for consumers, with a particular focus on equity. Under this RFA, the School Food System Transformation Challenge Sub-Grant Cooperative Agreement will reflect FNS' commitment to encourage the offering of healthier food products in the marketplace for school meals through engagement with the food industry and incentivizing innovation and partnerships. Increasing access to nutritious and appealing foods for kids is critical to the success of strong school meal standards. The selected Cooperator(s) will collaborate with food industry partners to support school districts, food producers, suppliers, distributors, and community partners. The goal of this RFA is to select a Cooperator or Cooperators who will implement and manage the School Food System Transformation Challenge Sub-Grants. The Healthy Meals Incentives Recognition Awards for SFAs, the Healthy Meals Incentives Sub-Grants for Small and/or Rural SFAs, and the Healthy Meals Summits were released under another RFA and are not included herein. The School Food System Transformation Challenge Sub-Grants described in this RFA were created to focus efforts to stimulate innovation in strengthening the availability of and access to nutritious food products in the K-12 school food marketplace. In addition, these sub-grants will support a more resilient food system through expanding manufacturing and purchasing capacity at the local and regional level. This, in turn, increases equitable access to healthy food products both in schools and in communities by way of support for agricultural producers, growers, and processors impacted by COVID-19. **Due Feb. 1.**

MCH Nutrition Training Program

This notice announces the opportunity to apply for funding under the Maternal and Child Health (MCH) Nutrition Training Program. The purpose of this program is to promote the healthy nutrition of mothers, children, and families by establishing and enhancing nutrition centers of excellence to train future and current MCH nutrition professionals. MCH Nutrition Training Programs provide interdisciplinary graduate-level training in MCH nutrition and collaborate with the Title V Maternal and Child Health (MCH) Block Grant Program and other MCH programs to provide continuing education (CE) and technical assistance (TA) to local, state, and national organizations serving MCH populations. The program provides training in nutrition science, social determinants of health, primary prevention and population-based environmental and policy interventions, life course initiatives, program planning and links between epidemiology and public health practice. The program develops a well-trained, diverse workforce that can effectively design, manage, and deliver nutrition interventions that address population health goals and objectives; provide care in diverse clinical, community, and public health settings; and meet the emerging needs of the MCH population. The overall MCH Nutrition Training Program will accomplish this purpose through four overarching objectives: 1) Increase the number of graduate-level trainees (long-, medium-, and short-term) trained in MCH nutrition leadership with a focus on MCH systems, populations, and services. 2) Increase the number of practicing providers who receive CE related to emerging issues in MCH nutrition. 3) Increase the number of TA activities each year to support state Title V agencies and other local, state, and national organizations serving MCH populations. 4) Increase the number of trainees that are from backgrounds that are underrepresented in the current nutrition workforce. For more details, see Program Requirements and Expectations. The purpose of the optional Nutrition Workforce Equity Enhancement is to increase diversity in the nutrition workforce through partnerships with Minority Serving Institutions (MSIs) to recruit and support nutrition professionals and students from underrepresented groups. For the purposes of this NOFO, "MSI" is defined as an institution that has a demonstrated record of or historical commitment to serving underrepresented or disadvantaged students, including but not limited to, Historically Black Colleges and Universities (HBCUs), Tribal Colleges and Universities (TCUs), Hispanic Serving Institutions, Asian

American and Pacific Islander Serving Institutions and Alaska Native and Native Hawaiian Serving Institutions. **Due February 2.**

Research and Mentoring for Postbaccalaureates in Biological Sciences

The Research and Mentoring for Postbaccalaureates (RaMP) in Biological Sciences program invites the submission of proposals to establish networks to support full-time research, mentoring, and training for recent college graduates who have had few or no research or training opportunities during college in research fields typically supported by the Directorate of Biological Sciences (BIO). A strategic focus of the National Science Foundation is to foster the growth of a globally-competitive and diverse research workforce. To that end, proposals submitted to this program are expected to create strong evidence-based, inclusive and culturally-aware mentorship programs that will advance the goal of creating a competitive and highly representative science, technology, engineering and mathematics (STEM) workforce in the U.S. with a focus on the biological sciences. Projects are expected to train individuals for a range of potential career pathways in the biological sciences including: research-focused M.S. or Ph.D. graduate programs; entry-level positions in industry, federal, tribal, or state agencies, education and research centers, or not-for-profit science-based organizations; or other STEM careers. Individuals from groups underrepresented in STEM, first generation college students, and students at under-resourced institutions frequently have limited opportunities to participate in the undergraduate research experiences that are necessary to be competitive for graduate programs or other STEM career pathways. This program will provide postbaccalaureate research experiences for cohorts of trainees, either in ongoing research programs, existing research networks, or in new research projects designed specifically for the RaMP networks. Studies of capacity-building and training across diverse disciplines have emphasized the importance of inclusive training via cohort mentoring and networks of individuals working together towards a common purpose. **Due Feb. 16.**

Solicitations Remaining Open from Last Newsletter

NIAID Investigator Initiated Program Project Applications

This Funding Opportunity Announcement (FOA) invites submission of investigator-initiated Program Project (P01) applications. The proposed programs should address scientific areas relevant to the NIAID mission including: biology and pathogenesis of infectious microbes, including HIV; host-microbe interactions; mechanisms regulating immune system development and function across the lifespan, and in response to infectious pathogens; immune dysfunction resulting in allergy, asthma, autoimmunity, immunodeficiency, or transplant rejection; and translational research to develop vaccines, therapeutics, and diagnostics to prevent and treat infectious and immune-mediated diseases. Each P01 application submitted to this FOA must include at least two related, synergistic research projects that share a common central theme, focus, and/or overall objective; and an administrative core. A P01 may include scientific cores, if needed for the proposed research. **Due December 11.**

Cyberinfrastructure for Sustained Scientific Innovation (CSSI)

The Cyberinfrastructure for Sustained Scientific Innovation (CSSI) program seeks to enable funding opportunities that are flexible and responsive to the evolving and emerging needs in cyberinfrastructure (CI). The program continues to emphasize integrated CI services, quantitative

metrics with targets for delivery and usage of these services, and community creation. The CSSI program anticipates three classes of awards: **Elements:** These awards target small groups that will create and deploy robust services for which there is a demonstrated need, and that will advance one or more significant areas of science and engineering; **Framework Implementations:** These awards target larger, interdisciplinary teams organized around the development and application of services aimed at solving common research problems faced by NSF researchers in one or more areas of science and engineering, and resulting in a sustainable community framework providing CI services to a diverse community or communities; **Transition to Sustainability:** These awards target groups who would like to execute a well-defined sustainability plan for existing CI with demonstrated impact in one or more areas of science and engineering supported by NSF. The sustainability plan should enable new avenues of support for the long-term sustained impact of the CI. This solicitation continues the CSSI program's emphasis on integrated cyberinfrastructure services while also recognizing the importance of adaptation to the evolving research community needs as well as the continuing evolution of the computing landscape. Revisions are noted below:

- The CI Professional Mentoring and/or Professional Development Plan section has been revised to further clarify the definition of a CI Professional and the activities that fall under this category. Also, the page limitation for the plan has been increased to 2 pages.
- The Program Synopsis and the Program Description sections have been updated to include clarifications about extensions of existing CSSI Elements and Frameworks projects.
- The Proposal Preparation and Submission Instructions section has been revised to clarify the expected content of the prior support section when the team has received past CSSI funding.
- The Programmatic Areas of Interest section has been revised to reflect the most recent programmatic priority areas for the collaborating NSF directorates and divisions with respect to the CSSI solicitation. PIs are strongly encouraged to contact program officer(s) from the list of Cognizant Program Officers in the division(s) that typically support the scientists and engineers who would make use of the proposed cyberinfrastructure, to gain insight into the priorities for the relevant areas of science and engineering to which their proposals may be responsive.
- The criteria for proposals to be returned without review have been clarified. **Due December 16.**

Agriculture and Food Research Initiative - Foundational and Applied Science Program

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 detail. **Due Dec. 22.**

Enhancing Rigor, Reproducibility, and Translatability of Animal Models in Biomedical Research (R01)

The Office of Research Infrastructure Programs (ORIP) encourages grant applications aimed at developing and implementing broadly applicable technologies, tools, and resources for validating animal models and enhancing rigor, reproducibility, and translatability of animal research. Proposed studies, models, resources, or technologies under this FOA must either address research interests of multiple NIH ICs, explore multiple body or organ systems, or be applicable to diseases and processes that impact multiple body or organ systems in order to align with ORIP's NIH-wide mission and programs. Applications should aim to enhance the rigor, reproducibility, and translatability of animal research through the development and implementation of technologies, tools, and resources that have significant impact across a broad range of research areas using animal models. Applications must demonstrate how the proposed resources and technologies impact rigor and reproducibility of animal studies. Applications for developing a limited number of resources are not suitable for this funding opportunity announcement (FOA). **Due January 6.**

Formal Methods in the Field (FMitF)

The Formal Methods in the Field (FMitF) program aims to bring together researchers in formal methods with researchers in other areas of computer and information science and engineering to jointly develop rigorous and reproducible methodologies for designing and implementing correct-by-construction systems and applications with provable guarantees. FMitF encourages close collaboration between two groups of researchers. The first group consists of researchers in the area of formal methods, which, for the purposes of this solicitation, is broadly defined as principled approaches based on mathematics and logic to system modeling, specification, design, analysis, verification, and synthesis. The second group consists of researchers in the "field," which, for the purposes of this solicitation, is defined as any area within computer and information science and engineering that currently does not benefit from having established communities already developing and applying formal methods in their research. All proposals must make a strong case for why formal methods is appropriate for the field area, and why it is one that does not currently benefit from formal methods. **Due February 15.**

FOA-AFRL-AFOSR-2022-0007 FY22 DEFENSE ESTABLISHED PROGRAM TO STIMULATE COMPETITIVE RESEARCH (DEPSCoR) – CAPACITY BUILDING (CB) Department of Defense Air Force Office of Scientific Research

The Department of Defense (DoD) announces the fiscal year 2022 (FY22) Defense Established Program to Stimulate Competitive Research (DEPSCoR) – Capacity Building. The program is sponsored and managed by the Basic Research Office, Office of the Under Secretary of Defense for Research and Engineering (OUSD [R&E]), awarded by the Air Force Office of Scientific Research (AFOSR), and administered through the Office of Naval Research (ONR). The DoD plans to award FY22 DEPSCoR appropriations through this announcement.

DEPSCoR's objectives are to:

(1) increase the number of university researchers in eligible States/Territories capable of performing science and engineering (S&E) research responsive to the needs of the DoD; and

(2) enhance the capabilities of institutions of higher education (IHE) in eligible States/Territories (listed below) to develop, plan, and execute S&E research that is relevant to the mission of the DoD, and competitive under the peer-review systems used for awarding Federal research assistance;

(3) increase the probability of long-term growth in the competitively awarded financial assistance that IHE in eligible States/Territories receive from the Federal Government for S&E research.

Consistent with these long-term objectives of building research infrastructure, the DoD intends to competitively make, and fund from fiscal year 2022 appropriations, multiyear awards for capacity building in IHEs with research areas relevant to the DoD's mission and which are important to national security. The Basic Research Office anticipates up to $4 million in total funding will be made available for this program to fully fund and award between one to four grants up to $1 million (total cost) each. Each grant award will be funded up to $500,000 (total cost) per year for two (2) years. The award is subject to funding availability. The Basic Research Office reserves the right to select and fund for award all, some, part, or none of the proposals received. There is no guarantee of an award. **Closing Date for Applications: Feb 21, 2023**

Global Emergency Response and Recovery Partner Engagement: Expanding Efforts and Strategies to Improve Rapid Response to Public Health Emergencies Globally

This NOFO supports the implementation of programs and activities targeted at increasing the capacity of public health emergency partners to rapidly respond to support populations affected by humanitarian emergencies and conflict settings. Its purpose is to improve the ability to detect and respond to threats early and develop long-term, sustainable programs to rebuild resilience during and after an emergency. This NOFO will establish an Approved-But-Unfunded (ABU) list of recipients, providing a portfolio of partners that can work anywhere in the world. CDC will fund partners to respond to emergencies that require federal support to effectively respond to, manage, and address identified public health threats. **Due March 4.**

Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0002779 - Bipartisan Infrastructure Law: Additional Clean Hydrogen Programs (Section 40314): Regional Clean Hydrogen Hubs Department of Energy Golden Field Office Closing Date for Applications

Close **March 10, 2023; Estimated Total Program Funding: $8,000,000,000**

The Department of Energy (DOE) Office of Clean Energy Demonstrations (OCED) intends to issue a Funding Opportunity Announcement (FOA) entitled "Regional Clean Hydrogen Hubs" (H2Hubs) in collaboration with the Energy Efficiency and Renewable Energy's (EERE) Hydrogen and Fuel Cell Technologies Office (HFTO) and the DOE Hydrogen Program, which includes multiple offices engaged in hydrogen related technologies across DOE. OCED anticipates issuing the FOA in the September/October 2022 timeframe, and the FOA will be funded by the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law (BIL). The specific provisions for regional clean hydrogen hubs are set forth in Section 40314 of the BIL, which amends Title VIII EPAct 2005 by adding a new "Section 813 – Regional Clean Hydrogen Hubs." Section 813(a) defines the term "regional clean hydrogen hub" as "a network of clean hydrogen producers, potential clean hydrogen consumers, and connective infrastructure located in close proximity." Investment in building out the hydrogen (H2) economy is a significant portion of the BIL funding at DOE. The BIL authorizes and appropriates $8.0 billion over the five-year period encompassing fiscal years 2022 through 2026 to

support the development of at least four H2Hubs that: - Demonstrably aid achievement of the clean hydrogen production standard developed under section 822(a) of Energy Policy Act of 2005 (EPAct 2005); - Demonstrate the production, processing, delivery, storage, and end use of clean hydrogen; and - Can be developed into a national clean hydrogen network to facilitate a clean hydrogen economy. The FOA will incorporate a range of equity considerations including energy and environmental justice, labor and community engagement, consent-based siting, quality jobs, and inclusive workforce development to support the Biden Administration's decarbonization goals of a 50-52% reduction in greenhouse gas (GHG) emissions from 2005 levels by 2030, a carbon-pollution-free power sector by 2035, and a net-zero GHG emissions economy by 2050. The H2Hubs will be a key part of the National Clean Hydrogen Strategy and Roadmap, also required in the BIL, and will be instrumental in meeting national decarbonization goals, including the development and deployment of clean hydrogen technologies. **Close March 10, 2023.**

Strengthening Global Capacity for Molecular Surveillance and Outbreak Response for Foodborne, Waterborne, and Fungal Diseases

The purpose of this NOFO is to strengthen global capacity for molecular surveillance and outbreak response for foodborne, waterborne, and fungal diseases. The Surveillance and Outbreak Response strategy will include the following activities: 1) Waterborne Disease Surveillance Strengthening and Outbreak Response; 2) Genomic surveillance, data systems and outbreak response for fungal diseases; 3) Enteric disease surveillance strengthening, including case confirmation. The Capacity Building strategy will include the following activities: 1) Country-level Water, Sanitation, and Hygiene (WASH) programs capacity building; 2) Wastewater and Environmental Surveillance capacity building; 3) Regional capacity building for Whole Genome Sequencing (WGS), bioinformatics, lab diagnosis and outbreak preparedness; 4) Country-level WGS and lab diagnosis capacity building and 5) Epidemiology and Laboratory Workforce development for foodborne, waterborne, and fungal diseases. Locations of activities will vary, based on CDC priority, but will include multiple regional and country-level locations. **Due April 2.**

Open Solicitations and BAAs

[BAA's remain open for one or more years. During the open period, agency research priorities may change or other modifications are made to a published BAA. If you are submitting a proposal in response to an open solicitation, as below, check for modifications to the BAA at Grants.gov or by utilizing Modified Opportunities by Agency to receive a Grants.gov notification of recently modified opportunities by agency name.]

Broad Agency Announcement for the Army Rapid Capabilities Office

This Broad Agency Announcement (BAA), W56JSR-18-S-0001, is sponsored by the Army Rapid Capabilities Office (RCO). The RCO serves to expedite critical capabilities to the field to meet Combatant Commanders' needs. The Office enables the Army to experiment, evolve, and deliver technologies in real time to address both urgent and emerging threats while supporting acquisition reform efforts. The RCO executes rapid prototyping and initial equipping of capabilities, particularly in the areas of cyber, electronic warfare, survivability and positioning, navigation and timing (PNT), as well as other priority projects that will enable Soldiers to operate and win in contested environments decisively. This BAA is an expression of interest only and does not commit the Government to make an award or pay proposal preparation costs generated in response to this announcement. Questions

concerning the receipt of your submission should be directed:
http://rapidcapabilitiesoffice.army.mil/eto/

Technical questions will be sent to the appropriate Technical Points of Contact (TPOC), topic authors, and/or Subject Matter Experts (SMEs) to request clarification of their areas of interest. No discussions are to be held with offerors by the technical staff after proposal submission without permission of the Army Contracting Command-Aberdeen Proving Ground (ACC-APG) Contracting Officer. **Open to March 23, 2023.**

W911NF-18-S-0005 U.S. Army Research Institute for the Behavioral and Social Sciences Broad Agency Announcement for Basic, Applied, and Advanced Research (Fiscal Years 2018-2023)

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) announces the ARI FY18-23 Broad Agency Announcement for Basic, Applied, and Advanced Scientific Research. This Broad Agency Announcement, which sets forth research areas of interest to the United States Army Research Institute for the Behavioral and Social Sciences, is issued under the provisions of paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), which provides for the competitive selection of proposals. Proposals submitted in response to this BAA and selected for award are considered to be the result of full and open competition and in full compliance with the provisions of Public Law 98-369 (The Competition in Contracting Act of 1984) and subsequent amendments. The U.S. Army Research Institute for the Behavioral and Social Sciences is the Army's lead agency for the conduct of research, development, and analyses for the improvement of Army readiness and performance via research advances and applications of the behavioral and social sciences that address personnel, organization, training, and leader development issues. Programs funded under this BAA include basic research, applied research, and advanced technology development that can improve human performance and Army readiness.

Those contemplating submissions of a proposal are encouraged to contact the ARI Technical Point of Contact (TPOC) for the respective topic area cited in the BAA. If the R&D warrants further inquiry and funding is available, submission of a proposal will be entertained. The recommended three-step sequence is (1) telephone call to the ARI TPOC or responsible ARI Manager, (2) white paper submission, (3) full proposal submission. Awards may be made in the form of contracts, grants, or cooperative agreements. Proposals are sought from educational institutions, non-profit/not-for-profit organizations, and commercial organizations, domestic or foreign, for research and development (R&D) in those areas specified in the BAA. The U.S. Army Research Institute for the Behavioral and Social Sciences encourages Historically Black Colleges and Universities/Minority Serving Institutions (HBCU/MSI) and small businesses to submit proposals for consideration. Foreign owned, controlled, or influenced organizations are advised that security restrictions may apply that could preclude their participation in these efforts. Government laboratories, Federal Funded Research and Development Centers (FFRDCs), and US Service Academies are not eligible to participate as prime contractors or recipients. However, they may be able to participate as subcontractors or Subrecipients (eligibility will be determined on a case-by-case basis). **Open to April 29, 2023.**

FA8650-17-S-6001 Science and Technology for Autonomous Teammates (STAT)

The objective of Science and Technology for Autonomous Teammates (STAT) program is to develop and demonstrate autonomy technologies that will enable various AF mission sets. This research will be part of Experimentation Campaigns in: 1 -Multi-domain Command and Control; 2-Intelligence,

Surveillance, Recognizance (ISR) Processing Exploitation and Dissemination (PED); and 3- Manned-Unmanned combat Teaming to demonstrate autonomy capabilities to develop and demonstrate autonomy technologies that will improve Air Force operations through human-machine teaming and autonomous decision-making. The technology demonstrations that result from this BAA will substantially improve the Air Force's capability to conduct missions in a variety of environments while minimizing the risks to Airmen. The overall impact of integration of autonomous systems into the mission space will enable the Air Force to operate inside of the enemy's decision loop.

STAT will develop and apply autonomy technologies to enhance the full mission cycle, including mission planning, mission execution, and post-mission analysis. Particular areas of interest include multi-domain command and control, manned-unmanned teaming, and information analytics. The technology demonstrations that result from this BAA will substantially improve the Air Force's capability to conduct missions in a variety of environments while minimizing the risks to Airmen. The overall impact of integration of autonomous systems into the mission space will enable the Air Force to operate inside of the enemy's decision loop. This effort plans to demonstrate modular, transferable, open system architectures, and deliver autonomy technologies applicable to a spectrum of multi-domain applications. Development efforts will mature a set of technologies that enable airmen to plan, command, control, and execute missions with manageable workloads. The software algorithms and supporting architectures shall:

- Ingest and understand mission taskings and commander's intent
- Respond appropriately to human direction and orders
- Respond intelligently to dynamic threats and unplanned events

Chosen technologies will be open, reusable, adaptable, platform agnostic, secure, credible, affordable, enduring, and able to be integrated into autonomous systems. The program will be comprised of various technologies developed by AFRL and Industry, integrated into technology demonstrations and deliverables with all the necessary software, hardware, and documentation to support AFRL-owned modeling and simulation environments for future capability developments. Thus, all technology development efforts must adhere to interface designs and standards. **Open to July 23, 2023**.

ARMED FORCES PEST MANAGEMENT BOARD (AFPMB)

The Armed Forces Pest Management Board (AFPMB), an agency of the Department of Defense (DoD), is soliciting pre-proposals for original and innovative research designed to develop new interventions for protection of deployed military personnel from diseases caused by arthropod-borne pathogens and to improve control of bed bugs and filth flies. Diseases of significant concern include Lyme disease, malaria, dengue fever and other arboviruses. The program supports development of: (1) new toxicants or the adaptation of existing toxicants to medically relevant pests; (2) new insecticide application techniques; (3) new personal protection tools that prevent human-vector contact; (4) decision support tools and (5) novel vector surveillance tools that focus on improved control outcomes. Ideally the research would support **Advanced Technology Development** (see DoD Financial Management Regulation Volume 2B, Chapter 5, DoD RDT&E Budget Activity 3) of new insecticides or improved formulations of existing insecticides for vector control, new technology or enhanced modalities of personal protection from biting arthropods, or improved efficacy and sustainability of equipment for vector surveillance and application of pesticides for vector control in a military operational environment. Research should be product-oriented, consisting of advanced research related to a particular technology or new capability, evaluation of experimental products for

military uses, or research directed towards development of an existing prototype product for commercial manufacture. Research should include semi-field or field evaluation of prototype products. Research should not include testing and evaluation of commercial products. Any pesticide end use products described in the proposed research should be destined for registration by the U. S. Environmental Protection Agency (EPA). The research must be primarily applicable to the military, products should be transferable to civilian uses. The program consists of competitive grants open to principal investigators (PIs) from academia, industry, and local or state government agencies. Federal Agencies (including DoD) may apply subject to appropriate regulations. This BAA is intended to solicit pre-proposals for AFPMB for those parts of development not related to a specific system or hardware procurement in accordance with Title 2, Subtitle A, Chapter II, Part 200 CFR. The purpose of this BAA is to identify the best available science, and as such, there are no set-asides associated with any awards resulting from this BAA. Specific areas of interest are described in the "Areas of Interest" section of this BAA. This Announcement provides a general description of project areas, including specific areas of interest, general information, evaluation and selection criteria, and proposal preparation instructions. All documentation and or attachments that are required with the submission of a full proposal, if requested, are described in the Mandatory Proposal Forms section of this announcement. Awards are typically made under grants; however, other funding opportunities may be considered. **Open to Oct. 31, 2024**

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