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Katherine E. Kelly, PhD: Editing in the Humanities & Humanities Related Social Sciences; Presentations on Grant Writing and Funding in the Humanities and Humanistic Social Sciences

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About the Editor
KATHERINE E. KELLY, Ph.D., is a retired English professor from Texas A&M University. She 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 editorial services to RD&GW News and to ARFS clients on proposals, journal articles, and manuscripts. She also presents seminars on grant writing in the humanities.

MIKE CRONAN, PE (Texas 063512, inactive) 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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Topics of Interest URLs

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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 or titles, as below, will typically take you to a working link.

Trump’s 2021 budget drowns science agencies in red ink, again
Trump Seeks Familiar Science Cuts, Favors ‘Future’ Industries
How Congress could reverse cuts in Trump’s budget request for NSF
The budget request’s R&D chapter
National Science Foundation presents FY 2021 budget request
National Institutes of Health would see 7% cut in 2021 under White House plan
Dr. Katherine Hoyt Price Blount, Texas A&M University, Commerce
NSF Issues Revised Proposal and Award Policies and Procedures Guide (NSF 20-1)
80HQTR20NOA01-20ECF-B1 Early Career Faculty National Aeronautics and Space Administration
DE-FOA-0002243 Solar Energy Technologies Office Fiscal Year 2020 Funding Program
Dear Colleague Letter: Exploring the NSF 2026 Idea Machine
What is beta.SAM.gov
U.S. Nuclear Regulatory Commission Funding Opportunity Announcement (FOA), Scholarship and Fellowship Education Grant, Faculty Development Grant, and Trade School and Community College Scholarship Grant, Fiscal Year (FY) 2020
U.S. Nuclear Regulatory Commission Funding Opportunity Announcement (FOA), Research and Development Grant, Fiscal Year (FY) 2020
Spring Brings Computing Clouds and eRA Downtime
R&D Spending at Federally Funded R&D Centers Surpassed $21 Billion in FY 2018
The State of U.S. Science and Engineering 2020
What’s Happening With NIH “At-Risk Investigators?”
Request for Information (RFI): Inviting Comments and Suggestions on a Framework for the NIH-Wide Strategic Plan for FYs 2021-2025
Higher Education in Science and Engineering
Mathematicians divided over faculty hiring practices that require proof of efforts to promote diversity
Dear Colleague Letter: Stimulating Participation from Institutions New to the Improving Undergraduate STEM Education: Education and Human Resources Program
Broadening the Pool of NIH Reviewers
Science Policy in 2020: 10 Stories to Watch
A Message from the Presidents of the NAS, NAE, and NAM
Final FY20 Appropriations: National Institutes of Health
Final FY20 Appropriations: STEM Education
Final FY20 Appropriations: U.S. Geological Survey
Final FY20 Appropriations: NASA
Final FY20 Appropriations: DOE Applied Energy R&D
Final FY20 Appropriations: National Institute of Standards and Technology
Final FY20 Appropriations: National Oceanic and Atmospheric Administration
Final FY20 Appropriations: DOD Science and Technology
Invention, Knowledge Transfer, and Innovation
Reminder of NIH Requirement to Adhere to the Revised Common Rule and Use a Single IRB for Multi-Site Studies
International Research in Infectious Diseases (R01 Clinical Trial Not Allowed)
2020 NIAID Omnibus Broad Agency Announcement

URLs continue next page
Centers of Research Excellence in Science and Technology (CREST) and HBCU Research Infrastructure for Science and Engineering (RISE)
Historically Black Colleges and Universities - Excellence in Research (HBCU-EiR)
Foundational Research in Robotics
Senate bill would boost spending on Trump administration’s research priorities
DE-FOA-0002197 Fiscal Year 2020 Advanced Vehicle Technologies Research FOA
DE-FOA-0002203 FY20 Bioenergy Technologies Multi-Topic FOA
USDA-NIFA-BRAP-007072 Biotechnology Risk Assessment Grants Program
The Unified Website for Biotechnology Regulation
U.S. Bioeconomy Is Strong, But Faces Challenges; Expanded Efforts in Coordination, Talent, Security, and
Fundamental Research Are Needed
FY 2020 Fiscal Policies for NIH Grant Awards: Funding Levels, Salary Limits, and Stipend Levels
Legislative Mandates for NIH FY 2020
Partnerships for Enhanced Engagement in Research (PEER) 2019/2020 Solicitation
Addressing Antibiotic Stewardship In Animal Agriculture
Agriculture and Food Research Initiative - Foundational and Applied Science Program
Division of Integrative Organismal Systems Core Programs
FAQs: Knowledge Transfer for Universities and Research Institutions Key issues and core concepts
Applications for New Awards; Training Program for Federal TRIO Programs
Applications for New Awards; Developing Hispanic-Serving Institutions Program
OneNOAA Science Seminar Series
Department of Energy moves carefully on assessing foreign research collaborations
DE-FOA-0002243 Solar Energy Technologies Office Fiscal Year 2020 Funding Program
Task Force Urges ‘Systemic Changes’ to Support African American Students in Physics
Integrity in Scientific Research: Creating an Environment That Promotes Responsible Conduct
Federal R&D Obligations Increase 8.8% in FY2018; Preliminary FY2019 R&D Obligations Increase 9.3% Over FY
2018
International Research and education Network Connections (IRNC)
FY 2020 Exchange Network Grant Solicitation Notice
Dear Colleague Letter: Secure Analog-RF Electronics and Electromagnetics (SARE)
Dear Colleague Letter: Exploring the NSF 2026 Idea Machine
FY2021 FOA for the Office of Naval Research (ONR) Manufacturing Science Program
USDA-FAS-10961-0700-10-20-0001 Scientific and Cooperative Research Program
Moffitt Cancer Center details links of fired scientists to Chinese talent programs
Ruth L. Kirschstein National Research Service Award (NRSA) Stipends, Tuition/Fees and Other Budgetary Levels
Effective for Fiscal Year 2020
Frequently Asked Questions (FAQs) for Improving Undergraduate STEM Education: Education and Human
Resources [IUSE: EHR]
Katherine E. Kelly is a retired English professor from Texas A&M University. She 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 editorial services to ARFS clients on proposals, journal articles, and manuscripts and presents seminars on grant writing and funding in the humanities and humanistic social sciences.

The NEA offers grants for organizations and individuals, as well as Partnership Agreements between organizations. Here, we’ll describe some of the elements of the 2020 NEA grant available to individual poets—the type of grant, its requirements, the award it offers, and the application process. This isn’t intended to take the place of the NEA website explaining all of the application details, but to highlight some details to which the applicant can pay special attention.

First, some dates and contact information:

- Deadline: March 11, 2020  Results announced: December 2020  Period of performance beginning no earlier than: January 1, 2021.  Late applications will not be accepted.

- You may apply only once each year.

- Direct questions about the application to the Literature staff at 202-682-5034 or email LitFellowships@arts.gov.

The National Endowment for the Arts provides direct support to individual (published) creative writers and literary translators through Literature Fellowships of two kinds: Creative Writing and Translation. Here, we’ll discuss Creative Writing only, as the Translation deadline passed on Jan. 15, 2020.

**Creative Writing Fellowships:** The Literature Fellowships offer $25,000 grants in prose (fiction and creative nonfiction) or poetry to published creative writers that enable the recipients to set aside time for writing, research, travel, and general career advancement. The Literature fellowship programs operate on a two-year cycle with fellowships in prose and poetry available in alternating years. Fiscal year 2020 awards are for fellowships in poetry.

**Who qualifies to apply for this award?** Only published poets can apply for this award. NEA defines “published” precisely. Among other criteria listed on the website, the applicant must have published, between January 1, 2013, and March 11, 2020, a volume of 48 or more pages of poetry; or 20 or more individual poems or pages of poetry that appear in at least 5 literary journals, anthologies, or publications that regularly include poetry as a portion of their format. Up to 16 pages of poetry may be from a single volume of poetry that is fewer than 48 pages.
(e.g. a chapbook). This volume may count as only one of the required five places of publication. For online publications, a page of poetry is considered to be 20 lines or less. To qualify, work must have been published for the first time with an eligible publisher between the dates described above. Reprints or reissues in another format during this period do not meet the eligibility requirement.

Once eligibility has been established, the application process begins by signing up with Grants.gov (You’ll find a link to instructions at https://www.arts.gov/grants-individuals/creative-writing-fellowships/grant-program-description on the right-hand side of the page.) The application is detailed and the instructions must be followed to the letter. For a detailed explanation, go to https://www.arts.gov/grants-individuals/creative-writing-fellowships/how-to-prepare-and-submit-an-application#step2). This process may seem daunting, but NEA offers detailed support and help online and via telephone and email (see below) to complete the application correctly. It’s worth the time and effort to follow the instructions precisely; to do otherwise is to risk outright rejection of the application.

Some parts of the application bear special notice: the application calls for submitting a minimum of 7 and a maximum of 10 manuscript pages using a specified type size and margins. The manuscript can be one poem or several; it can be work in progress, published, or unpublished, but note that the publication status of the manuscript should not be indicated. This and other instructions, such as ensuring the application’s anonymity, are meant to ensure the fairness of the award process. This extends to the sample’s title, which should not include the author’s name. Further, the poem(s) submitted must have been written in the time period that establishes the applicant’s eligibility (see above), and for which the applicant is sole author.

The Project Description asks for two or three sentences describing how the writer’s work will be encouraged or advanced by the fellowship. The answers might describe research undertaken during the grant period that will be used in writing, time for writing itself, travel required to prepare for writing, etc. These two to three sentences carry weight, so be sure to craft them carefully, offering specific and clear descriptions of how the award will be used to advance the writer’s work. NEA notes that review panelists won’t see the project description, but the NEA staff will. So the applicant has two audiences: the NEA staff and the reviewers. The NEA staff will want to be reassured that the award will help the writer in direct and significant ways. The best way to impress the NEA staff is to follow their directions to the letter. The reviewers will be assessing the quality of the anonymous writing. The writing will speak for itself.
Humanities, Social Sciences, and Arts Funding Opportunities and News*
*Potential applicants should visit agency websites to confirm deadlines, requirements, etc. Listings of funding opportunities by due date are also included in the 15 December 2019 and 15 January 2020 issues of Research and Development & Grant Writing News. Opportunities are listed by application due date.

<table>
<thead>
<tr>
<th>Due Date</th>
<th>Award Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various</td>
<td>NSF Doctoral Research Grants</td>
</tr>
</tbody>
</table>

The following programs provide either direct (i.e., from NSF) or indirect (i.e., from an awardee institution) funding for students at this level or identify programs that focus on educational developments for this group, such as curricula development, training or retention. Awarded to: graduate students

Visit the following URL to locate each of the deadlines for these awards: [https://www.nsf.gov/funding/education.jsp?fund_type=2](https://www.nsf.gov/funding/education.jsp?fund_type=2)

Archaeology Program - Doctoral Dissertation Research Improvement Awards
Biological Anthropology Program - Doctoral Dissertation Research Improvement Grants
Centers of Research Excellence in Science and Technology (CREST) and HBCU Research Infrastructure for Science and Engineering (RISE)
Cultural Anthropology Program - Doctoral Dissertation Research Improvement Grants
CyberCorps(R) Scholarship for Service
Decision, Risk and Management Sciences
Economics
Geography and Spatial Sciences Program - Doctoral Dissertation Research Improvement Awards
Graduate Research Fellowship Program
Innovations in Graduate Education (IGE) Program
Linguistics Program - Doctoral Dissertation Research Improvement Grants
Mathematical Sciences Postdoctoral Research Fellowships
National Science Foundation Research Traineeship (NRT) Program
National STEM Education Distributed Learning
NSF Astronomy and Astrophysics Postdoctoral Fellowships
Political Science Doctoral Dissertation Research Improvement Grants
Robert Noyce Teacher Scholarship Program
SOCIIOLOGY PROGRAM - Doctoral Dissertation Research Improvement Awards
Non-Academic Research Internships for Graduate Students (INTERN) Supplemental Funding Opportunity

3/1/20 NEH Summer Seminar, Institute, or Landmarks Workshop for K-12 Educators
Summer Seminars and Institutes are 1- to 4-week residential programs that support collegial study of significant topics in the humanities and make use of important scholarship and primary resources such as archival documents, artifacts, or historic sites. Participant stipends help cover travel and living expenses. For more information, visit https://www.neh.gov/divisions/education/summer-programs

3/2/20* New England Foundation for the Arts (NEFA) National Dance Project Production Grant
NDP Production Grants provide funding to non-profit artists/companies to create new dance works and touring subsidies to U.S. organizations who bring those works to their communities.
Awarded to: artists and companies, preferably U.S. based.
*Preliminary round deadline 3/2/20; late April/early May winners announced. Full proposal round: late April/early May application available. 6/1/20 application deadline.
https://www.nefa.org/grants/find-grant/national-dance-project-production-grant

3/9/20* New England Foundation for the Arts (NEFA) National Theater Project Creation and Touring Grant
Modeled on NEFA’s National Dance Project, NTP not only provides funding but also animates an informed, interactive network of producing theaters, presenters, and ensembles that promote the funded projects and the development of the field as a whole. Projects are supported through Creation & Touring Grants, which fund creation and preparation for touring of devised projects and Presentation Grants, which are awarded to presenters by the artist and support up to 50% of the artistic fee for NTP projects.
Awarded to: artist
*Preliminary round: 1/6/20; 3/9/20; May. Full proposal round: mid-May, June 15, 2020
https://www.nefa.org/grants/find-grant/national-theater-project-creation-touring-grant

3/24/20 Department of Education Undergraduate International Studies and Foreign Language Program (Office of Postsecondary Education, Department of Education).
The UISFL program provides grants for planning, developing, and carrying out projects to strengthen and improve undergraduate instruction in international studies and foreign languages in the US. The Department will hold a pre-application meeting via webinar for prospective applicants. For more information, contact Tanyelle H. Richardson tanyelle.richardson@ed.gov
https://www2.ed.gov/programs/iegpsugisf/index.html

3/30/20 National Endowment for the Arts: Research Grants in the Arts
These awards fund research investigating the value and/or impact of the arts, either as individual components of the U.S. arts ecology or as they interact with each other and/or with other domains of American life. Matching/cost share grants of $10,000 to $100,000 will be awarded.
Awarded to: research teams that demonstrate interdisciplinary partnerships between arts practitioners and researchers/evaluators.
https://www.arts.gov/grants-organizations/research-grants-in-the-arts#awardinformation

3/30/20 National Endowment for the Arts: NEA Research Labs
The National Endowment for the Arts’ five-year research agenda, 2017-2021 (https://www.arts.gov/artistic-fields/research-analysis/new-research-agenda-national-endowment-arts-fy-2017%E2%80%932021) aims to build public knowledge about the arts’ contributions to individuals and society. Through NEA Research Labs, we extend this agenda and its impact by cultivating a series of transdisciplinary research partnerships, grounded in the social and behavioral sciences, to produce and
report empirical insights about the arts for the benefit of arts and non-arts sectors such as healthcare, education, and business or management.
Awarded to: transdisciplinary research teams grounded in the social and behavioral sciences.

4/8/20 **NEH Awards for Faculty at Tribal Colleges and Universities**
Output: Book; Article; Digital Material and Publication; Archaeological Report; Translation; Edition; Other Scholarly Resource; Basic research leading to improvement of existing course; Basic research related to goals and interests of the institution or community

8/20/20 **NEH Fellowship Programs at Independent Institutions**
Awarded to: Organizations
Output: Fellowships
[https://www.neh.gov/grants/research/fellowship-programs-independent-research-institutions](https://www.neh.gov/grants/research/fellowship-programs-independent-research-institutions)

12/2/20 **NEH Scholarly Editions and Scholarly Translations**
Awarded to: Organizations
Output: Book; Translation; Edition; Music edition

12/2/20 **NEH Collaborative Research**
Awarded to: Organizations
Output: Book; Digital Material and Publication; Other Scholarly Resource; Themed issue of peer-reviewed journal; Conference; Workshop
[https://www.neh.gov/grants/research/collaborative-research-grants](https://www.neh.gov/grants/research/collaborative-research-grants)

5/3/2021 **NEH Summer Stipends**
Awarded to: Individuals
Supports projects at any stage of development, but most especially early-stage research and late-stage writing in which small awards are most effective
Stipends support continuous full-time work on a humanities project for a period of two consecutive months. NEH funds may support recipients’ compensation, travel, and other costs related to the proposed scholarly research.
[https://www.neh.gov/grants/research/summer-stipends](https://www.neh.gov/grants/research/summer-stipends)

**News**
- (January 14, 2020)
WASHINGTON, D.C. — “The National Endowment for the Humanities (NEH) today announced $30.9 million in grants to support 188 humanities projects in 45 states and the District of Columbia. NEH Chairman Jon Parrish Peede announced the latest grants today at the Georgia O’Keeffe Museum in Santa Fe, New Mexico, which will receive a matching grant of up to $750,000 to create a new museum campus, including the construction of a new exhibition building to showcase the largest collection of O’Keeffe’s work in the world. It is one of 32 NEH Challenge grants. . . . An additional $48 million was awarded to fund 55 state, territorial, and jurisdictional humanities councils, which serve local communities through a range of state-focused humanities discussion and educational outreach programs.”

- (January 22, 2020)
WASHINGTON, D.C. --

“Key findings from the 2017 Survey of Public Participation in the Arts

--The new report tallies U.S. adults (aged 18 and over) who over a 12-month period:
--Used electronic media to access artistic or arts-related content (74 percent, or 175 million adults)
--Read books not required for work or school, and/or read novels and short stories, poems, or plays in particular (57 percent, or 138 million adults).
--Attended artistic, creative, or cultural activities (54.3 percent, or 128 million adults) with live music performance the most frequent activity
--Created or performed art (53.7 percent, or 128 million adults) with singing as the most popular form of artistic expression.
--Learned an art form informally (17 percent, or 41 million adults) or took arts classes or lessons (9.5 percent, or 23 million adults).

--Other participation findings are:

---Among adults who participated in the performing arts—either as creators or performers—62 percent did so to spend time with family and friends. By contrast, most adults who created visual artworks reported doing so because they felt “creative or creatively inspired” (61 percent).
---More than half of adults who attended artistic, creative, or cultural activities did so more than twice a year.
---Among adults who sang, made music, danced, or acted, 63 percent did so in the home, while 40 percent did so in a place of worship.”

The Communications Component of the Research Management Plan

An increasing emphasis on transdisciplinary and convergence research at NSF and other funding agencies makes new demands of proposal authors that often seem to go unrecognized. The unfortunate result is a proposal unlikely to be well reviewed. As NSF notes in Characteristics of Convergence Projects (emphasis added): “To support convergence research, NSF will need to address the key technical, organizational and logistical challenges that currently hinder truly transdisciplinary research.” Proposal authors often view this statement narrowly rather than holistically, a likely fatal flaw dashing hopes of funding.

In transdisciplinary and convergence research, the technical is enabled by the organizational and logistical in what might be understood as a secular trinity. Of course, when writing the research narrative, this means that the management plan assumes increasing importance in the review process. It is the place where the applicant must make a compelling case that their management expertise can truly enable convergent research. For example, those who submitted an NSF Science and Technology Center: Integrative Partnerships proposal last month will see their fortunes rise or fall on how well their management plan characterized the integrative partnership’s enabling technical, organizational and logistical framework.

Moreover, in Characteristics of Convergence Projects, NSF describes four key characteristics of convergence research, one of which directly guides how a management plan should be written (emphasis added): “Readiness to engage in convergence research: In order to make significant progress, the research team would need to provide evidence of readiness to engage in the proposed convergence research while simultaneously also representing different disciplines. Evidence for readiness might include previous interdisciplinary projects, joint publications of the PI’s and co-PIs, specialized knowledge residing in the research team that is pertinent to the problem, and/or co-development of research infrastructure.”

In this context, one key component of a management plan is often ignored or underemphasized in the research narrative—the communications plan that describes how distributed researchers from many disciplines will converge in an organized and logical way, or, as NSF describes it in the above URL (emphasis added): “A convergence project should make a compelling case for the depth of integration of knowledge bases in the contributing disciplines; it should demonstrate strong coupling, high leveraging, and/or co-development of integrated and/or beneficially complementary tools and techniques from the contributing disciplines; and it should demonstrate novelty of the integrated research approach resulting from combinations of modes of thinking that are characteristic to the contributing disciplines.”

These are the expected outcomes of a strong management plan, but to achieve full convergence requires developing a Project Communications Plan section within the overall Management Plan. This section can be understood as describing communication protocols, activities, and real and virtual connectivity that will integrate the core of the project. In this
regard, the most common flaw in poorly reviewed management plans can be traced to the applicants’ assumption that merely listing the management team’s academic titles will persuade reviewers to fund the project. Such a list is not, however, sufficient. Lists of management team members are merely silos in disguise and tell absolutely nothing about key interactions among the research team and how those will actually be managed. Moreover, the larger the financial award size, the more closely reviewers will scrutinize the management plan. Therefore, by the time you get to the $25 million award for an STC, the management plan needs to describe in accurate detail how it will enable the successful integration of a major project.

Moreover, many funding opportunities for much smaller awards depend, for success, upon a management plan grounded in the need for transdisciplinary and convergent research. In many ways, convergent research is a function of the capacity of the research team for disciplinary integration, again as noted by NSF at the above URL (emphasis added): “A convergence project should make a compelling argument for why it is essential to bring together substantially different science and engineering disciplines to address a specific scientific challenge or social problem. The extent of disciplinary diversity may be assessed by the history of intellectual traditions; the development of different tools, techniques, and approaches; and the various venues for publication.”

While a strong management plan for convergent research must contain several elements, chief among them is the communications plan, which conveys the critical interconnectedness among members of the entire research team. Moreover, describing the communications plan must do more than simply list a series of periodic meetings, methods of electronic communications, etc. The plan must reflect the context of the proposed research and describe a method of interacting among research team members that clearly advances the overarching goals of the project. This is not a trivial task. Federal agencies’ increasing emphasis on convergent research requires a rethinking of how to write the overall management plan and the role of the communications plan within the management of the project.
Overview of the New NSF CAREER Solicitation

The NSF CAREER competition takes place annually, with proposals due in late July. NSF has recently issued a new solicitation that will apply to all CAREER proposals submitted in July 2020. In addition, NSF has issued a new Proposal & Award Policies & Procedures Guide, which will go into effect on June 1, 2020, and will therefore apply to CAREER proposals. Below are the changes of which CAREER PIs should be aware:

**New Due Date**

In contrast to previous competitions, all proposals are now due on the same date regardless of the NSF Directorate to which you will be applying. The due date for the 2020 competition is July 27, 2020. However, the fact that all proposals are now due on the same date makes it even more likely that Fastlane or Research.gov will experience slow-downs on the due date. It also means that your Sponsored Projects or preaward office may be inundated with CAREER proposals from across your university on or near the due date. For this reason, you should plan to submit early! Check with your Sponsored Projects or preaward office now to find out when they need all final documents. Many offices require documents a week in advance. Even if yours doesn’t, you will reduce the chances of a last-minute hiccup by finishing your proposal at least a week in advance.

**Timeline Guidance**

NSF has also added additional guidance regarding the timeline for submission. This guidance is aimed at universities or institutions that are not set up for NSF proposal submission and focuses on institutional tasks such as getting a DUNs number. It also provides guidance for PIs who are new to NSF and are not yet registered on grants.gov. If you’re new to NSF, contact your preaward office well in advance of the due date to get registered, or you will not be able to submit your proposal. Also, be aware that if you have more than one NSF account for the same email address, NSF will suspend your account, so work with your preaward office to get that fixed now.

**Modified Eligibility Rules**

While eligibility rules are relatively straightforward for tenure-track faculty at conventional universities, they can be less clear for PIs who are in “tenure-track-equivalent” positions at institutions that don’t award tenure, and for those who are in permanent positions that are not tenure track.

One change for tenure-track Assistant Professors is that NSF now simply says that you must be untenured as of the date of the submission. (In the past, you had to be untenured as of Oct. 1st after the submission date. This requirement has been removed.) The definition of “Tenure-Track Equivalency” is more complicated. The guidance hasn’t changed from the
previous solicitation, but be sure to read it if you’re not in a traditional tenure-track position and are considering submitting a CAREER proposal.

**New PAPPG Rules**

As we mentioned above, the new PAPPG, which will go into effect on June 1st, will apply to CAREER proposals. These changes include: 1) a requirement that you use an NSF-supported format for the biosketch (either SciENcv or a fillable pdf); 2) similarly, the Current & Pending Support must follow an NSF-approved format; 3) if you ask that a reviewer not review your proposal, you now longer have to include a reason; and 4) clarification of instructions for the Collaborators & Other Affiliations form. For a full list of changes, see the new PAPPG.
If you are seeking research funding from NSF and other federal research agencies, one word that frequently jumps out like no other is “innovation,” or some variant thereof. A search of *Building the Future: Investing in Discovery and Innovation - NSF Strategic Plan for Fiscal Years (FY) 2018 – 2022* shows 58 instances of “innovative” and at least half that number occur in the current NSF STC program. NSF’s previous Engineering Research Centers (ERC) solicitation stated that a key feature of an ERC should be creation of an innovation ecosystem. ERC applicants must provide a strategic plan for innovation ecosystem development.

Moreover, in a report entitled *The Role of the National Science Foundation in the Innovation Ecosystem*, released in August 2010 by the NSF Directorate of Engineering, NSF defines the process of innovation as “the introduction of new or significantly improved products (goods or services), processes, organizational methods and marketing methods in internal business practices or the market place.” This process, couched in fundamentally economic terms, requires (1) creating new inventions, (2) translating those inventions into products or processes that can be commercialized, and (3) commercializing and marketing those new or improved products or processes. The innovation ecosystem is the combination of policies, infrastructure, connections, and actors that allows that process to happen.

Which brings us to the NSF report (January 2020) *Invention, Knowledge Transfer, and Innovation*, and why it is relevant to both those writing research and educational proposals to federal agencies, and to research offices assisting in proposal development. The above examples of the increasing emphasis on innovation in large center proposals is only the tip of the innovation iceberg. Over the past several years, there has been a dramatic acceleration of the requirement that research and education proposals of all sizes address innovation, either in a specific section or within the project description.

Unfortunately, a common observation of those who review and edit proposals required to address innovation is that the innovation discussion in the research narrative is too often perfunctory, or worse, a generalized off-the-shelf boiler plate response lacking context in relation to the proposed research, lacking specifics and details that map to the proposed research, and lacking a compelling explanation of why what is proposed is truly innovative. Keep in mind that innovation requirements impact both research and education proposals, frequently requiring explanations of how what is proposed represents an innovative approach to integrating research and education into what is sometimes described as an “innovation ecosystem” by those who ignore Mark Twain’s admonition of “Don’t use a five-dollar word when a fifty-cent word will do” in favor of aspirational phrasing.

That said, too often innovation sections are anemic at best and suffer from being long on claims and short on substantiation, a common failing for many proposal sections that cumulatively contribute to a proposal’s failure. Which gets us to the current NSF report, *Invention, Knowledge Transfer, and Innovation*, which offers details that will prove valuable.
for anyone writing, reviewing, or editing an innovation section or discussion in the research narrative.

After all, one of the cardinal sins in grant writing is making claims without offering proof, as if merely claiming something to be innovative makes it so. Unfortunately, channeling Captain Picard to Commander Riker (“Make it so Number One”) is insufficient in grant writing where all reviewers are from Missouri and no one is going to buy the Brooklyn Bridge just because you claim to own it. Reviewers are very good at sniffing out “trust me” claims of all sorts, and a claim without proof is merely a “trust me” request, and that is nothing if not an annoyance to reviewers.

So what to make of all this. Well first off, the innovation section of a proposal needs to be taken seriously and it needs to be well thought out with respect to how it fits the context of the proposed research; in other words, as the above report notes (emphasis added), “Invention, knowledge transfer, and innovation are distinct but interrelated components of a complex system for transforming creativity and knowledge from science and engineering (S&E) into benefits to society and the economy.”

One key take away from this report is related to the above quote and the report’s discussion of the interconnectedness of invention, knowledge transfer, and innovation. This discussion, quickly grasped from the Executive Summary, Introduction, and Conclusion sections of the report, sets the important framework and describes the landscape that puts innovation in context. That is, it helps those writing an innovation section, or reviewing and editing one, to better understand the context, connectedness, meanings, definitions, etc. of innovation as they are understood by federal research agencies, particularly NSF, and the National Academies.

A complete, contextual understanding of what agencies mean by innovation bears directly on success in writing proposal sections whose underpinnings relate to and are defined within a national agenda in research and education. The discussion of innovation in the research narrative cannot be perfunctory and off the top of your head. To be persuasive, the discussion must show an understanding of the concept in the broad national context. Bottom line: reports such as this inform you of the common language, definitions, and directions funding agencies use when discussing topics such as innovation. Therefore, such reports enable you to frame your arguments in the context of those discussions so that reviewers recognize that you share their understanding of the topic. Mapping has many facets in proposal success, and this is one of them, i.e., knowledgeably mapping your discussion of research and/or educational innovation to the national discussion as defined in these reports is one more way to ensure funding success.

In conclusion, as noted in the report (emphasis added): “Innovation brings new products and technologies into society through an interrelated system of activities by the business sector, universities, government entities, and individuals. Relationships among institutions underpin the environment in which ideas become innovations and diffuse through society. This innovation system environment is complex, encompassing financing, public infrastructure, tax and regulatory policies, intellectual property protection, and social attitudes toward risk. Three distinct but interrelated components of this environment are invention, knowledge transfer, and innovation. This report covers the composition and trends of these components.” Finally, this report will help you better write, edit, or review a discussion of innovation in your research project description.
DOE’s $97 Million FOA for Bioenergy Technologies

DOE’s $97 million Multi-Topic FOA for Bioenergy Technologies application process includes two key phases: a Concept Paper phase and a Full Application phase. Only applicants who have submitted an eligible concept paper by March 5 will be eligible to submit a full application April 30. Research offices supporting faculty responding to this 111-page FOA will want to pay special attention to two key sections critical to funding success: Section IV, Application and Submission Information, and Section V, Application Review Information. These address the process mechanics of submitting a proposal and, central to funding success, guidelines on the organization, content, formatting, and review of the research narrative (application). (Also see DE-FOA-0002243 Solar Energy Technologies Office Fiscal Year 2020 Funding Program)

As the FOA notes, the required Concept Paper is brief—two pages for the technical description and impact statement and one page for a description of the applicant’s experience, qualifications, and capabilities. Moreover, as Mark Twain famously wrote to a friend: “If I had had more time, I would have written you a shorter letter.” This points to an often lacking grant-writing skill that results in a declined proposal—mastery of writing a succinct concept paper, project summary, abstract, or narrative introduction, a time-consuming task to perfect.

In this case, as noted below by FOA topic areas, a wide range of disciplinary faculty may respond to this FOA, and it will be critical for them to write a perfect three pages if they hope to get invited to submit a full proposal. To write an impactful three pages for this FOA will require multiple iterations, reviews, and edits to get it right. This is an area where research offices’ editorial reviews can provide valuable assistance to faculty submitting a Concept Paper. Specifically, under this funding opportunity, DOE is interested in the following topic areas:

- Topic 1: Scale Up of Bench Applications (SCUBA)
- Topic 2: Waste to Energy Strategies for the Bioeconomy
- Topic 3: Algae Bioproducts and CO2 Direct-Air-Capture Efficiency (ABCDE)
- Topic 4: Bio-Restore: Biomass to Restore Natural Resources
- Topic 5: Efficient Wood Heaters
- Topic 6: Biopower and Products from Urban and Suburban Wastes: North American Multi-University Partnership for Research and Education
- Topic 7: Scalable CO2 Electrocatalysis

However simple the Concept Paper may appear, it is definitely not simple to achieve. Embedded in the brief list below are very challenging descriptive requirements that PIs often struggle with on all proposals, large and small. For example, describing (1) how your proposed project is unique and innovative, (2) where your proposed research fits in the state of the field today, (3) how your proposed research will overcome challenges in the field today, and (4) the impact of the proposed project on the field (above topics) and DOE mission.
A key point here is that the descriptive requirements for this concept paper represent the core generic descriptive requirement for any research proposal, and the principal ones on which funding decisions are made. They appear deceptively simple, but they are inherently difficult to address in a narrative text, and are made more challenging to address under the very tight page constraints of a concept paper. In effect, what a brief concept paper does is to force the author to distill complex ideas into an abbreviated form that concisely maintains and captures their significance. If it is a struggle to explain succinctly the importance of your proposed research idea in the context of the current state of the art in the field, (which it typically is), it will be doubly difficult to do so in an abbreviated format like a concept paper or project summary.

Regardless, DOE uses the concept paper process to effectively separate the wheat from the chaff as they decide who will or won’t be invited to submit a full proposal. While writing a concept paper presents a challenge, getting it right has great advantages: a successful concept paper meets the conceptual challenge of explaining briefly and clearly the benefits to funding your proposed research and it will serve as the core conceptual framework for writing a 25- or 40-page proposal. This full proposal will add detail and specifics that fully demonstrate what you will do, how you will do it, why you will do it, your capacity to do it, your rationale for doing it, how you will manage the research plan, and the impact your research will have on the field and the DOE mission, etc.

Basically, a successful concept paper represents the critical kernel of a compelling research idea and a strategic research plan for achieving the goals and objectives of the funding solicitation and, thereby, the funding agency’s mission priorities. The bottom line here is that a significant amount of team technical discussion, writing, rewriting, editing and reviewing must precede the iterative drafting of a successful concept paper. The time and effort spent on a concept paper is disproportionately much greater per page than that likely to be spent on the much longer research narrative.

Always remember--the concept paper is a gate. It will either open up opportunities for you or shut you out. It looks deceptively simple, but don’t be fooled into thinking a perfunctory response to a brief concept paper is sufficient. It is not. So take the time to get it right.
While the principal focus of university research offices is to support faculty in the planning, development, and writing of research grants to federal agencies, in many instances, nonfaculty professional staff in various nonresearch offices are also called upon to write proposals. These proposals often serve university offices that depend to various degrees on “soft money” for both staff and programmatic support, e.g., for extension services, educational outreach partnerships, on-campus summer enrichment programs, and a host of others.

Furthermore, students, particularly graduate students and new postdocs, can often benefit from basic grant writing training since it prepares them to write the narrative section of applications for graduate fellowships and to take a support role on faculty research grants, not to mention to assume positions in academia and industry where grant writing will be an important element in career advancement.

Moreover, it is not unusual for various community organizations and centers, municipal agencies, school districts, science museums, city and county food banks, nongovernmental support services, etc. to write proposals to secure funding for their community mission activities. In this case, it is not uncommon for someone in a university research office to volunteer to provide “pro bono” grant writing advice and assistance to these organizations, or do so as part of a university commitment to community service partnerships and relations.

In these cases, you have a somewhat different audience for introductory grant writing training than the training typically provided to new faculty each fall. For this nonfaculty audience, either within or outside the university, writing grants will be an occasional part of their job duties on an intermittent basis as the need and opportunities arise. The “CAREER-like” strategic planning approach to grant writing presentations for new and tenure-track faculty is not appropriate for this audience. They need a “nuts and bolts” presentation on grant writing basics that emphasizes generic best practices and identifies pitfalls.

Moreover, while faculty grant training may take the form of a one- to three-day research retreat, or form part of a half-day or all-day grant training presentation on a specific agency, almost always including NSF and NIH, or a specific program, almost always including an NSF CAREER workshop, this audience needs something like a one-hour PowerPoint presentation, perhaps followed by a half hour, moderated FAQ discussion, on basic grant writing for nonresearch, nonfaculty professionals. The goal here is to offer a primarily nonresearch audience an abbreviated, jump start into the grant writing process.

Many staff members in a research office could give such a presentation on a moment’s notice, somewhat like the old circuit riders who traveled around on horseback serving rural areas in the mid to late 1800s. In today’s vernacular, it might be called the “Basic Grant Writing Elevator Speech,” targeting professional practitioners of all sorts.

The question for this nonfaculty, nonresearch audience becomes “what key informational topics on grant writing need to be addressed and done so within a one-hour
While these topics will differ somewhat by institution and audience, in most cases they will include some key “nuts and bolts” perspectives on writing a successful grant. An example set of topics might include:

- Finding funding
- Understanding the funding solicitation
- Funding agency mission
- Proposal review process
- Writing well

With these five “nuts and bolts” topics in mind, the issue then becomes how to best address each topic in an average of 12 minutes. The below observations by topic offer a starting point to that process, but they are in no way exhaustive. Keep in mind that your presentation can serve as a training tool, so make sure to embed sufficient hotlinks in the presentation to make it useful afterwards as a guided tour to deeper exploration.

**Finding Funding**

This is fairly straightforward information to convey to anyone submitting a proposal to a federal agency. **One word:** [Grants.gov](http://Grants.gov). All new federal agency funding opportunities are posted on a daily basis to this site. In most cases, the funding notice will also be posted to the agency website, and in some cases, duplicate postings will be found at [FedConnect](http://FedConnect), [FedBizOps](http://FedBizOps), and the [Federal Register](http://Federal Register). Most agencies are set up to send out funding alerts by email or RSS subscriptions.

However, many in this type of audience will be looking for funding from foundations at a national, regional, or local level. This may take some digging to find the right funding source(s). The [Foundation Center](http://Foundation Center) and places like [GrantsWatch](http://GrantsWatch) are starting points for this process. However, a simple Google search often turns up good starting places for finding foundation funding, e.g., do a Google search on “foundations that fund [enter your topic].” Once possible foundations are identified, search the foundation website to see whether you are a fit for their funding mission and review instructions on how to submit a proposal to that foundation.

**Bottom line:** when it comes to finding funding outside of the domain of federal agencies and foundations, **Google becomes your best friend.** Crafting Google funding queries is a good skill to develop to find lesser-known funders. After all, the most valuable time frame in grant writing begins on the date a solicitation is published and ends at the proposal due date. Tracking funding in real time is key to success.

**Understanding the funding solicitation (aka RFP, FOA, etc.)**

The important point to make here is that a careless or uninformed reading of the funding solicitation is **the most common mistake made that leads to a declined proposal.** Great care must be taken to ensure the proposal narrative responds fully to the funder’s goals, objectives, and review criteria. A solicitation tells you all you need to know about submitting a proposal in response to a specific funding opportunity at an agency. Solicitations describe or reference such key information as the goals and objectives of the funding opportunity, proposal organization, topics and questions the applicant must address in the proposal, review criteria, and procedural questions related to eligibility, budgets, due dates, contact information for...
program offices, and related information. Several key points need to be emphasized when it comes to the funding solicitation, specifically what it is and what it is not:

- It is a **non-negotiable** listing of performance expectations reflecting the mission, goals, and research objectives of the funding agency.
- It is not a research smorgasbord offering a choice to address some topics but not others, depending on the applicant’s interest; nor can only some review criteria be addressed and others ignored.
- **Agencies do not fund good ideas.**
- **Agencies fund good ideas that advance their mission and investment priorities.**

Think of the funding solicitation as a treasure map. It is a step by step set of instructions that lead to funding success. Read it and read it again. Know it well and you will be successful.

**The funding agency mission**

All funding agencies have a mission, or a reason for funding specific activities of interest to the agency. Understanding the mission of the funding agency is key to success because all successful proposals have one common characteristic: **the proposal makes a strong and compelling case that the proposed activities will bring value-added benefits to the agency’s mission.** That case cannot be made in a convincing way unless the person(s) who writes the proposal understands the agency’s mission and investment priorities.

**The proposal review process**

Always write to your audience. Your audience for a proposal will be the program officers and reviewers. In some cases, they may be experts in your field; in other cases, they may be technically literate reviewers but not experts. Funding solicitations give information on the review process as well as describe the review criteria that will be used to judge the merits of the proposal. If this information is not given in the funding solicitation, it will be referenced in the solicitation with a URL to the agency website where it will appear in a more detailed way. It is important to locate and understand this information before you start writing the proposal. Understanding the review criteria and review process will influence how you write the proposal narrative, since the enumerated criteria will have to be clearly addressed in the proposal. Most federal funding agencies and many foundations provide very detailed information on their website about the review process.

Moreover, an important part of understanding the review process is understanding how the funding decision will be made, particularly the role of the program officer in the process. In some cases, reviewed proposals receive a numerical score that ranks them against all other proposals submitted to the competition and the program officer(s) fund by rank order. In others cases, the reviews are advisory only and the program officer(s) make the final determination on which proposals are funded in any given competition. In this latter case, other factors that influence a funding decision may be the geographic distribution of the awards, how well the proposed activities map to the funding agency mission priorities, or whether the proposed activities have been sufficiently funded in the past to preclude a continued agency investment in the particular topic area.
If in doubt about how your proposal will be reviewed, call the program officer and ask. In successful grant writing, timidity is never rewarded and ambiguity is always punished. If there is any ambiguity in how you understand the review process, or for that matter, how you understand the objectives of the funding opportunity, call and ask a program officer.

Writing Well

Reviewers often comment on how well a proposal is written, and more commonly comment on how poorly a proposal is written with such comments as “it is not clear what the proposer intends to do,” or “the goals and objectives are vague and general and lack specifics,” or “this proposal is confusing,” etc. A poorly written and poorly organized proposal makes it difficult for program officers and reviewers to determine the merit of the proposal. It leaves them guessing at what you intend to do. Funding agencies are not in the business of buying the equivalent of a lotto ticket and funding a proposal on the off chance that it might accomplish something of significance and importance to the agency. One thing is certain, if a proposal is challenging to read, it will not be read in anything more than a quick and perfunctory way. More to the point—it will not be funded. Reviewers will assume that sloppy errors in language, grammar, and spelling will translate into sloppy research, something they will not fund.

Moreover, it is important to understand that proposal organization is an important part of writing well. Whenever possible, organize your proposal narrative to reflect the funding solicitation in terms of order and in terms of the questions you address as given in the funding solicitation. A good strategy is to use the funding solicitation as a narrative template to make sure you fully respond to all questions asked by the funder and that you do so in the order asked, which will be the order the reviewers will be looking for when reading your proposal. Format your proposal to make it easy to read, e.g., through the use of white space, bullets, readable font sizes, manageable paragraphs, etc. Finally, reviewers respond best to details and specifics, and not so well to vague generalities. Get to the point quickly. Tell reviewers in an introductory paragraph what you propose to do, why you propose to do it, how you will do it, your rationale for doing it, why you have the expertise to do it, your anticipated outcomes, and the value-added benefits of your proposed activities to the agency’s mission priorities.

If nonfaculty grant seekers at your university or in your university community need a starting point for learning how to write a successful grant to a federal or state agency, foundation, corporate sponsor, or any other funder, the above information can be the starting point of a one-hour presentation that will help them jump start that process.
What is beta.SAM.gov

Fiscal Year 2020 SAMHSA Grant Announcements and Awards
SAMHSA announces grant funding opportunities through Funding Opportunity Announcements (FOAs). Each FOA contains all the information you need to apply for a grant.
IMPORTANT APPLICATION INFORMATION: All applicants must register with NIH’s eRA Commons in order to submit an application. This process takes up to six weeks. If you believe you are interested in applying for this opportunity, you MUST start the registration process immediately. Do not wait to start this process. If your organization is not registered and you do not have an active eRA Commons PI account by the deadline, the application will not be accepted. No exceptions will be made.
Applicants also must register with the System for Award Management (SAM) and Grants.gov (see Appendix A for all registration requirements).
Sign Up for Email Updates about Grant Funding Announcements.
Forecast of Fiscal Year 2020 Funding Opportunity Announcements (PDF | 154 KB)
SAMHSA periodically presents training webinars for prospective applicants interested in applying to FY 2020 grant programs. The webinar provides information on how to submit applications to SAMHSA using NIH’s eRA System, including application and registration processes, requirements and validations, and the post-submission process. Please find the presentation below, and check back to this page periodically for new training dates. Additional information is available on the Training Events, Videos, and Reference Materials for Applicants and Grantees page on the SAMHSA Grants website.
You should become familiar with all the components of the FOA before you apply. When you find an opportunity for which you would like to apply, be sure you meet all the eligibility requirements.
When you are searching for a funding opportunity on Grants.gov, use SAMHSA’s FOA number as the Funding Opportunity Number.
Please note that Grants.gov is periodically inaccessible due to service maintenance and system enhancements. Please check Grants.gov for the outage calendar.
Educational Grant Writing Web Resources

Applications for New Awards; Training Program for Federal TRIO Programs

What is beta.SAM.gov

U.S. Nuclear Regulatory Commission Funding Opportunity Announcement (FOA), Scholarship and Fellowship Education Grant, Faculty Development Grant, and Trade School and Community College Scholarship Grant, Fiscal Year (FY) 2020

Applications for New Awards; Developing Hispanic-Serving Institutions Program

Trends in High School Dropout and Completion Rates

A New Year’s Update from the Director of IES
Over the next few months, IES will begin rolling out a new logo and visual identity, an undertaking that has been in the works for about a year. Full implementation will take some time, but don't be surprised when you see a new look on our publications and social media.

Improving Undergraduate Instruction in Science, Technology, Engineering, and Mathematics: Report of a Workshop
Participants in this workshop were asked to explore three related questions: (1) how to create measures of undergraduate learning in STEM courses; (2) how such measures might be organized into a framework of criteria and benchmarks to assess instruction; and (3) how such a framework might be used at the institutional level to assess STEM courses and curricula to promote ongoing improvements. The following issues were highlighted:

- Effective science instruction identifies explicit, measurable learning objectives.
- Effective teaching assists students in reconciling their incomplete or erroneous preconceptions with new knowledge.
- Instruction that is limited to passive delivery of information requiring memorization of lecture and text contents is likely to be unsuccessful in eliciting desired learning outcomes.
- Models of effective instruction that promote conceptual understanding in students and the ability of the learner to apply knowledge in new situations are available.
- Institutions need better assessment tools for evaluating course design and effective instruction.
- Deans and department chairs often fail to recognize measures they have at their disposal to enhance incentives for improving education.
- Much is still to be learned from research into how to improve instruction in ways that enhance student learning.
Request for Information (RFI): Inviting Comments and Suggestions on a Framework for the NIH-Wide Strategic Plan for FYs 2021-2025

DE-FOA-0002282: Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0002283 Workforce Development in Emerging Fields
The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue a Funding Opportunity Announcement (FOA) entitled “Workforce Development in Emerging Fields.” EERE intends to announce a funding opportunity to support leading-edge interdisciplinary research that promotes workforce development in emerging fields by supporting a coordinated expansion of existing joint graduate education programs with national laboratories to prepare the next generation of scientists and engineers. Consistent with Congressional guidance, applicants will be restricted to land grant universities. Qualified land grant universities are identified here: https://nifa.usda.gov/land-grant-colleges-and-universities-partner-website-directory. This notice of intent (NOI) is issued so that interested parties are aware of the EERE’s intention to issue this FOA in the near term. All of the information contained in this NOI is subject to change. EERE will not respond to questions concerning this NOI. Once the FOA has been released, EERE will provide an avenue for potential applicants to submit questions.

Dear Colleague Letter: Exploring the NSF 2026 Idea Machine
NSF seeks to further explore the pool of ideas submitted to the NSF 2026 Idea Machine, for the purpose of framing new potential areas for NSF investment. This Dear Colleague Letter (DCL) invites submission of proposals for Conferences, and EArly-concept Grants for Exploratory Research (EAGERs), following the themes that emerged in the top group of Idea Machine entries. In 2016, the National Science Foundation (NSF) unveiled a set of "Big Ideas," 10 bold, long-term ideas that identify areas for future investment at the frontiers of science and engineering (see NSF's 10 Big Ideas). The Big Ideas represent unique opportunities to position our Nation at the cutting edge of global science and engineering leadership by bringing together diverse disciplinary perspectives to support convergence research. Investing in bold, foundational research questions that are large in scope, innovative in character, originate outside of any particular NSF directorate, and require a long-term commitment is the goal of NSF 2026, one of NSF's 10 Big Ideas. Framed around the year 2026, the Nation's 250th anniversary, NSF 2026 in turn launched the NSF 2026 Idea Machine, a prize competition seeking compelling ideas for fundamental research in science and engineering to be pursued in the coming years. The contest invited entrants to describe an emerging science, engineering, or learning research challenge that they thought should be addressed. It was open to the general public, inviting input from both experienced stakeholders and new and unconventional partners. The NSF 2026 Idea Machine received 800 entries from nearly every state in the country -- including submissions from established researchers, undergraduate and graduate students, teachers on behalf of their classes, and high school and middle school students. The entries were reviewed first by Program Officers and other staff from across NSF, then by the
NSF 2026 Working Group and finally by a Blue Ribbon Panel of external experts. The resulting group of narrowed entries (listed individually as an appendix to this DCL) were each invited to submit a video pitch. The 33 ideas were selected for their timeliness, potential scientific and societal impacts, and potential for inter-agency, international, or public-private partnerships. This DCL encourages the submission of proposals that engage interested stakeholders to enrich the research themes identified through the NSF 2026 Idea Machine and develop associated research agendas.

Dear Colleague Letter: Developing New Research Collaborations Between Evolutionary Biologists and LTER Scientists

There is a growing recognition in the ecological community of the importance and dynamic nature of interactions between ecology and evolution (eco-evo) and the need to better integrate the two fields to understand processes underlying ecological and evolutionary phenomena. Accordingly, the Division of Environmental Biology (DEB) aims to catalyze new collaborations that foster eco-evo research involving Long-Term Ecological Research (LTER) sites.

The LTER Program supports 28 active sites, distributed across a wide array of biomes (https://lternet.edu/). Although LTER activities focus on ecological research, the sites provide unparalleled opportunities for exploring the role of evolutionary phenomena in long-term ecological dynamics. As detailed below, DEB will support new collaborations between members of the LTER community and evolutionary biologists, with the intention of developing evolutionary research approaches, expanding the LTER eco-evo community, and evaluating the efficacy of building evolutionary studies on the experimental work and long-term data collected at LTER sites.

CALL FOR CONFERENCE PROPOSALS

The LTER program, in collaboration with the evolutionary clusters within DEB, Evolutionary Processes (EP) and Systematics and Biodiversity Science (SBS), will support conferences and workshops that lead to new research and collaborations between evolutionary biologists and current LTER scientists. The goal is to leverage existing long-term data, experiments and samples to catalyze new evolutionary studies. Proposed activities should involve one or more working groups that will meet multiple times to plan and accomplish goals. Meetings may be in-person or virtual. This initiative is intended to leverage opportunities at the intersection of evolution and ecology, not to expand the existing scope of the LTER program. Collaborations initiated through this mechanism may lead to proposals for submission to the Core programs in DEB (including EP, SBS, and the Bridging Ecology and Evolution [BEE] track in DEB’s core solicitation) and elsewhere.

PROPOSAL PREPARATION

Proposals for conferences must be prepared and submitted in accordance with the guidance for Conference Proposals contained in Chapter II.E.7 of the NSF Proposal and Award Policies and Procedures Guide (PAPPG). Budgets may include the costs of meeting activities as well as the costs of synthesis and analysis of existing data and samples that develop eco-evo approaches at LTER sites. Support for new analyses of existing samples or the collection of new data or samples that have clear potential to enhance the outcome of the conference may be
available through supplements to existing LTER sites. The LTER Network Office offers the opportunity to host working group activities, if desired (https://lternet.edu/contact-us/). Proposals should be directed to the Division of Environmental Biology and the Long-Term Ecological Research Program with titles that begin "EVO-LTER:" The Project Description should highlight opportunities to address evolutionary questions. Projects may focus on a single LTER site or may involve cross-site comparisons. Project personnel should include LTER scientists and evolutionary biologists from outside the LTER network. The proposal should make clear what data, samples or existing LTER experiments are being leveraged by the new interdisciplinary collaboration. Conference proposals can be submitted any time before April 1, 2021.

**Dear Colleague Letter: Competition of Operations and Management of an NSF - supported Geophysical Facility to Succeed the GAGE and SAGE Facilities**

The Division of Earth Sciences (EAR) in the Directorate for Geosciences (GEO) at the National Science Foundation (NSF) is gathering information in preparation for a competition for a future cooperative agreement to support a single, unified geophysical facility as the successor to SAGE (Seismological Facility for the Advancement of Geoscience) and GAGE (Geodetic Facility for the Advancement of Geoscience). These facilities provide seismic, geodetic, and related geophysical instrumentation; data archiving, quality control, and distribution; and education and outreach activities that serve a wide range of audiences. NSF envisions that a successor facility will provide access to a suite of geophysical instrumentation, data services, and education and outreach capabilities that sustain scientific progress and address future opportunities to advance understanding of Earth processes.

In April 2018, EAR commissioned the National Academies of Sciences, Engineering, and Medicine (NASEM) to undertake a consensus study for the Earth Sciences entitled "Catalyzing Opportunities for Research in Earth Sciences: A Decadal Survey for NSF's Division of Earth Sciences" (CORES) to provide input on priorities and strategies for NSF investments in research, infrastructure, and training for the coming decade. Within the context of this decadal survey, NASEM led a workshop in 2019 entitled "Management Models for Future Seismological and Geodetic Facilities and Capabilities" that reviewed different management models for future seismological and geodetic facility capabilities. A fundamental aspect of the workshop proceedings is the consensus that continued support of geophysical facility capabilities is critical to meet emerging and frontier science goals.

The planned competition will be held via an open, merit-based, external peer-review process. This process will be consistent with the NSF Proposal & Award Policies & Procedures Guide (PAPPG) and NSF NSF Major Facilities Guide (MFG). EAR is currently preparing the program solicitation for this competition, which is expected to lead to a single cooperative agreement for a geophysical facility at the end of the current SAGE and GAGE cooperative agreements on 30 September 2023.

This Dear Colleague Letter (DCL) provides general information regarding the upcoming competition and invites interested members of the community to submit comments on desired capabilities for a future facility resulting from the planned competition.

**Dear Colleague Letter: Competition for Future Research Center(s) to Coordinate Research in Fundamental Earthquake Processes**
The Division of Earth Sciences (EAR) in the Directorate for Geosciences (GEO) at the National Science Foundation (NSF) is preparing for a competition for future support of one or more research centers focused on coordinating research in fundamental earthquake processes. NSF currently supports a research center for earthquake processes through the *Southern California Earthquake Center: Research Program in Earthquake System Science, 2017-2022* (SCEC) at the University of Southern California. With this planned competition, NSF will seek to support research center(s) to enable transformative research in earthquake science. The center(s) will meaningfully improve the national welfare through bold and creative activities to expand the impact of earthquake research to a wide range of stakeholders and broaden participation of underrepresented groups in science, technology, engineering and mathematics (STEM). The planned competition will be held via a merit-based, external peer-review process in accord with best practices for open competition and will be consistent with the *NSF Proposal and Award Policies and Procedures Guide* (PAPPG). EAR is currently preparing the solicitation for this competition, which is expected to lead to one or more cooperative agreement(s) for one or more research centers following the end of the current SCEC cooperative agreement on 30 April 2022.

This letter provides general information regarding the upcoming competition and invites any interested members of the academic community to contact designated NSF representatives to provide non-proprietary input that they believe is important for the planned competition. This notice does not constitute a solicitation. Proposals are not yet sought, and no award of any kind will result from this notice.

NSF invites any members of the academic community to provide non-proproprietary input on this planned competition. NSF is interested in responses focused on the aspects of earthquake science that a center would coordinate, potential center capabilities and infrastructure, and possible center organizational structures. In addition, input that describes a vision for a future earthquake center or centers regarding how the center(s) would advance the frontiers of earthquake science is encouraged. Contributions are welcome on how to enable new modes for community engagement and/or the establishment of partnerships with critical stakeholders in federal, state, and local governments, as well as with the public. NSF is particularly interested in community feedback on opportunities and needs for broadening participation in earthquake science and educating the next generation of scientists, and the role a center can play in this effort. The Deadline for submission of written comments to NSF is April 1, 2020.
Patients with newly diagnosed musculoskeletal pain are prescribed opioids more often than recommended

Safeguarding the Bioeconomy
Research and innovation in the life sciences is driving rapid growth in agriculture, biomedical science, information science and computing, energy, and other sectors of the U.S. economy. This economic activity, conceptually referred to as the bioeconomy, presents many opportunities to create jobs, improve the quality of life, and continue to drive economic growth. While the United States has been a leader in advancements in the biological sciences, other countries are also actively investing in and expanding their capabilities in this area. Maintaining competitiveness in the bioeconomy is key to maintaining the economic health and security of the United States and other nations. Safeguarding the Bioeconomy evaluates preexisting and potential approaches for assessing the value of the bioeconomy and identifies intangible assets not sufficiently captured or that are missing from U.S. assessments. This study considers strategies for safeguarding and sustaining the economic activity driven by research and innovation in the life sciences. It also presents ideas for horizon scanning mechanisms to identify new technologies, markets, and data sources that have the potential to drive future development of the bioeconomy.

Integrity in Scientific Research: Creating an Environment That Promotes Responsible Conduct
Integrity in Scientific Research attempts to define and describe those elements that encourage individuals involved with scientific research to act with integrity. Recognizing the inconsistency of human behavior, it stresses the important role that research institutions play in providing an integrity--rich environment, citing the need for institutions to provide staff with training and education, policies and procedures, and tools and support systems. It identifies practices that characterize integrity in such areas as peer review and research on human subjects and weighs the strengths and limitations of self--evaluation efforts by these institutions. In addition, it details an approach to promoting integrity during the education of researchers, including how to develop an effective curriculum. Providing a framework for research and educational institutions, this important book will be essential for anyone concerned about ethics in the scientific community.

Evolving the Geodetic Infrastructure to Meet New Scientific Needs
Satellite remote sensing is the primary tool for measuring global changes in the land, ocean, biosphere, and atmosphere. Over the past three decades, active remote sensing technologies have enabled increasingly precise measurements of Earth processes, allowing new science questions to be asked and answered. As this measurement precision increases, so does the need for a precise geodetic infrastructure. Evolving the Geodetic Infrastructure to Meet New Scientific Needs summarizes progress in maintaining and improving the geodetic infrastructure and identifies improvements to meet new science needs that were laid out in the 2018 report
Thriving on Our Changing Planet: A Decadal Strategy for Earth Observation from Space. Focusing on sea-level change, the terrestrial water cycle, geological hazards, weather and climate, and ecosystems, this study examines the specific aspects of the geodetic infrastructure that need to be maintained or improved to help answer the science questions being considered.
New Funding Opportunities
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New Funding Posted Since January 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 January 15 Newsletter

Division of Integrative Organismal Systems Core Programs
The Division of Integrative Organismal Systems (IOS) Core Programs Track supports research aimed at understanding why organisms are structured the way they are and function as they do. Proposals are welcomed in all of the core scientific program areas supported by the Division of Integrative Organismal Systems (IOS). Areas of inquiry include, but are not limited to, developmental biology and the evolution of developmental processes, nervous system development, structure, modification, function, and evolution; biomechanics and functional morphology, physiological processes, symbioses and microbial interactions, interactions of organisms with biotic and abiotic environments, plant and animal genomics, and animal behavior. Proposals should focus on organisms as a fundamental unit of biological organization. Principal Investigators (PIs) are encouraged to apply systems approaches that will lead to conceptual and theoretical insights and predictions about emergent organismal properties.

The Rules of Life Track supports integrative proposals that span the subcellular and cellular scales normally funded by MCB to the organ, tissue, organismal, and group scale typically funded by IOS, to population, species, community and ecosystem scales typically funded by DEB. Rules of Life proposals may also include enabling infrastructure through joint submission with DBI. Discovery of fundamental principles and enabling infrastructure will advance understanding and further predict how key properties of living systems emerge from the interaction of genomes, phenotypes, and developmental, social and environmental context across space and time. This track provides opportunities to advance understanding of the Rules of Life by new mechanisms for review and funding of proposals that span two or more divisions in the Biological Sciences Directorate. Proposals accepted at any time.

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

The process of differentiation involves a multiplex combination of signaling molecules, receptors, promoters, markers, and regulators that dynamically interact to direct cell development and behavior. While individual inducers of native differentiation have been identified and employed to create specialized cell types, we still cannot engineer stem cells to allow for synthetic induction of differentiation along a predetermined path that can be actively monitored and manipulated on-the-fly. Such control of differentiation will enable the realization of individualized medicine in areas such as regenerative medicine, cancer treatment with engineered killer cells, the development of functional cells and tissues to treat disease, environmental control and monitoring, adaptive sensing, as well as the scalable and reproducible application of 3D organoids in drug testing.

The convergence of many disciplines is necessary to answer the fundamental questions and devise the tools needed to realize truly deterministic cell induction and differentiation strategies. As such, investigators are encouraged to form interdisciplinary teams with expertise in developmental biology, stem cell biology, cell biology, engineering, synthetic and systems biology, computation, sensing, and physics. Proposals will not be responsive to this solicitation if they address only one aspect of the differentiation process or aim to create a functional living product without improving our understanding of the mechanisms that underlie developmental processes. Collaborative proposals, of a duration up to 4 years, with budgets between $1,000,000 to $1,500,000 will be considered. Proposed budgets must be justified by project scope and need for complementary expertise. The solicitation will support teams of three or more PI/co-PIs and senior personnel. Proposals with only one PI or one PI with one other senior personnel are not permitted. Reflecting the need for thoughtful collaboration and planning required for these projects, Letters of Intent are required to be submitted prior to submission of a full proposal. LOI due March 2; full April 30.

USDA-NIFA-BRAP-007072 Biotechnology Risk Assessment Grants Program
The purpose of the Biotechnology Risk Assessment Grants (BRAG) program is to support the generation of new information that will assist Federal regulatory agencies make science-based decisions about the effects of introducing genetically engineered organisms (GE) into the environment. These organisms include: plants, microorganisms (including fungi, bacteria, and
viruses), insects, fish, birds, mammals, and other animals excluding humans. Investigations on the effects of both managed and natural environments are relevant. The BRAG program accomplishes its purpose by providing Federal regulatory agencies with scientific information relevant to regulatory issues. **Due March 18.**

**NSF-Simons Research Collaborations on the Mathematical and Scientific Foundations of Deep Learning (MoDL)**
The National Science Foundation Directorates for Mathematical and Physical Sciences (MPS), Computer and Information Science and Engineering (CISE), Engineering (ENG), and the Simons Foundation Division of Mathematics and Physical Sciences will jointly sponsor up to two new research collaborations consisting of mathematicians, statisticians, electrical engineers, and theoretical computer scientists. Research activities will be focused on explicit topics involving some of the most challenging questions in the general area of Mathematical and Scientific Foundations of Deep Learning. Each collaboration will conduct training through research involvement of recent doctoral degree recipients, graduate students, and/or undergraduate students from across this multi-disciplinary spectrum. Annual meetings of the Principal Investigators ("PIs") and other principal researchers involved in the collaborations will be held at the Simons Foundation in New York City. This program complements NSF's National Artificial Intelligence Research Institutes program by supporting collaborative research focused on the mathematical and scientific foundations of Deep Learning through a different modality and at a different scale. **LOI March 20; full April 30.**

**Computer Science for All (CSforAll: Research and RPPs)**
This program aims to provide all U.S. students with the opportunity to participate in computer science (CS) and computational thinking (CT) education in their schools at the preK-12 levels. With this solicitation, the National Science Foundation (NSF) focuses on both research and researcher-practitioner partnerships (RPPs) that foster the research and development needed to bring CS and CT to all schools. Specifically, this solicitation aims to provide (1) high school teachers with the preparation, professional development (PD) and ongoing support they need to teach rigorous computer science courses; (2) preK-8 teachers with the instructional materials and preparation they need to integrate CS and CT into their teaching; and (3) schools and districts with the resources needed to define and evaluate multi-grade pathways in CS and CT. **Due April 13.**

**DOJ Graduate Research Fellowship, Fiscal Year 2020**
The Graduate Research Fellowship (GRF) program provides grants to accredited academic institutions to support outstanding doctoral students whose dissertation research is relevant to criminal justice. Applicant academic institutions are eligible to apply only if:

1. The student is currently enrolled in a PhD program in the sciences or engineering; and
2. The student’s proposed dissertation research has demonstrable relevance to preventing and controlling crime and/or ensuring the fair and impartial administration of criminal justice in the United States.

In recent years, NIJ posted separate solicitations for applicants in the social and behavioral sciences (GRF-SBS) and for those in science, technology, engineering, and mathematics fields
All eligible applicants are now invited to apply under this single funding opportunity, without distinction between SBS and STEM. Learn more about the Graduate Research Fellowship Program and see FAQs. Due April 15.

Combating Antibiotic-Resistant Bacteria (CARB) Interdisciplinary Research Units (U19 Clinical Trial Not Allowed)

The purpose of this FOA is to solicit applications to establish multidisciplinary research programs focused on improving our understanding of bacterial and host factors important for drug resistance and infection by bacterial pathogens for which antibiotic resistance is a known public health concern to inform new ways to prevent, diagnose, and treat antibiotic-resistant infections. Each Combating Antibiotic-Resistant Bacteria (CARB) Interdisciplinary Research Unit (CARBIRU) is expected to bring together investigators from different disciplines in a cohesive and synergistic team to design and execute research addressing fundamental knowledge gaps that hinder development of effective treatment and prevention strategies. LOI April 8; application May 8.

DE-FOA-0002203 FY20 Bioenergy Technologies Multi-Topic FOA

The U.S. Department of Energy’s (DOE’s) Bioenergy Technologies Office (BETO) develops technologies that convert domestic biomass and other waste resources into fuels, products, and power to enable affordable energy, economic growth, and innovation in renewable energy and chemicals production – the bioeconomy. The activities supported by BETO are authorized by public law 109–58, TITLE IX, § 932, which authorizes the Secretary of Energy to establish a program of research and development for bioenergy with the goal of price-competitive biofuels, bioproducts, and biopower made from biomass-based feedstocks – see section I.E for details. This Funding Opportunity Announcement (FOA) will support high-impact technology research and development (R&D) to enable growth and innovation to accelerate the bioeconomy by requesting applications across the entire scope of BETO’s mission space. This FOA will provide funding to address BETO’s highest priority R&D areas. It includes Topic Areas from five BETO programs: Feedstock Supply and Logistics; Advanced Algal Systems; Conversion Technologies; Advanced Development and Optimization; and Strategic Analysis and Crosscutting Sustainability. Each Topic Area supports BETO’s objectives to reduce the minimum selling price of drop-in biofuels, lower the cost of biopower, and enable high-value products from biomass or waste resources. Under this funding opportunity, BETO is interested in the following topic areas: Topic 1: Scale Up of Bench Applications (SCUBA) Topic 2: Waste to Energy Strategies for the Bioeconomy Topic 3: Algae Bioproducts and CO2 Direct-Air-Capture Efficiency (ABCDE) Topic 4: Bio-Restore: Biomass to Restore Natural Resources Topic 5: Efficient Wood Heaters Topic 6: Biopower and Products from Urban and Suburban Wastes: North American Multi-University Partnership for Research and Education Topic 7: Scalable CO2 Electrocatalysis Interested parties are directed to visit https://eere-exchange.energy.gov for the full Funding Opportunity Announcement and technical datasheets for specific topics. Due April 30.

DE-FOA-0002243 Solar Energy Technologies Office Fiscal Year 2020 Funding Program

This funding opportunity announcement (FOA) is being issued by the U.S. Department of Energy’s (DOE) Office of Energy Efficiency and Renewable Energy (EERE) Solar Energy
Technologies Office (SETO). SETO supports solar energy research and development (R&D) in three technology areas—photovoltaics (PV), concentrating solar-thermal power (CSP), and systems integration—with the goal of improving the affordability, reliability, and performance of solar technologies on the grid. This section describes the overall goals of the Solar Energy Technologies Office Fiscal Year 2020 (SETO 2020) funding program and the types of projects being solicited for funding support through this FOA. The SETO 2020 funding program seeks to advance R&D of solar technologies that reduce the cost of solar, increase the competitiveness of American manufacturing and businesses, and improve the reliability of the grid. These projects will advance R&D in PV, CSP, and energy management technologies, while also working to improve cybersecurity, expand solar to new applications like agricultural solar, integrate solar and storage, and utilize artificial intelligence to address research challenges. Due May 21.

Genomic Community Resources (U24 Clinical Trial Not Allowed)
To facilitate genomic research and the dissemination of its products, NHGRI supports genomic resources that are crucial for basic research, disease studies, model organism studies, and other biomedical research. Awards under this FOA will support the development and distribution of genomic resources that use cost-effective approaches and will be valuable for the broad research community. Such resources include (but are not limited to) databases and informatics resources (such as human and model organism databases, ontologies, and analysis toolsets), comprehensive identification and collections of genomic features (such as functional genomic elements), and standard data types produced using central sets of samples (such as structural variants in 1000 Genomes or GTEx samples). Due May 25.

Special Research Grants Program Aquaculture Research
The purpose of the Aquaculture Research program is to support the development of an environmentally and economically sustainable aquaculture industry in the U.S. and generate new science-based information and innovation to address industry constraints. Over the long term, results of projects supported by this program may help improve the profitability of the U.S. aquaculture industry, reduce the U.S. trade deficit, increase domestic food security, provide markets for U.S.-produced grain products, increase domestic aquaculture business investment opportunities, and provide more jobs for rural and coastal America. The Aquaculture Research program will fund projects that directly address major constraints to the U.S. aquaculture industry and focus on one or more of the following program priorities: (1) genetics of commercial aquaculture species; (2) critical disease issues impacting aquaculture species; (3) design of environmentally and economically sustainable aquaculture production systems; and (4) economic research for increasing aquaculture profitability. Due May 28.

Solicitations Remaining Open from Prior Issues of the Newsletter

Algorithms for Threat Detection (ATD)
The Algorithms for Threat Detection (ATD) program will support research projects to develop the next generation of mathematical and statistical algorithms for analysis of large
spatiotemporal datasets with application to quantitative models of human dynamics. The program is a partnership between the Division of Mathematical Sciences (DMS) at the National Science Foundation (NSF) and the National Geospatial Intelligence Agency (NGA). **Due March 18.**

**NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)**

**IMPORTANT INFORMATION AND REVISION NOTES**

1. The S-STEM program team will host webinars after the release of this solicitation. In the webinars, key features and expectations of the S-STEM program will be discussed. Information regarding the webinars will be posted to the S-STEM program webpage: [https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5257](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5257).

2. The solicitation explicitly notes that not all STEM degrees are eligible for the S-STEM program. Eligible degrees for the S-STEM program have been more clearly defined and can be found in section "SUMMARY OF PROGRAM REQUIREMENTS/General Information/Synopsis of Program."

3. Principal Investigators (PIs) interested in submitting a request for supplemental funding should (a) contact their cognizant program officer before submission to discuss the proposal idea, and (b) follow the guidelines for supplemental funding requests for existing awards in the PAPPG.

4. The requirement that students be enrolled full-time has been eliminated. Students must now be enrolled at least half-time as defined by the institution.

5. All proposals must include specific tabular information described in section V.A.11.

6. The requirement of a third-year review only applies to Track 3 projects.

7. All projects are expected to contribute to the STEM education knowledge base.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) ([NSF 19-1](https://www.nsf.gov)), which is effective for proposals submitted, or due, on or after February 25, 2019. **Due March 25.**

**Dimensions of Biodiversity FY2020**

The 2020 Dimensions of Biodiversity program is restricted to projects supported by international partnerships with the National Natural Science Foundation of China (NSFC), the São Paulo Research Foundation (FAPESP) of Brazil, and the National Research Foundation (NRF) of South Africa. Proposals are to be submitted jointly, with the US PIs submitting to NSF and the collaborating Chinese, Brazilian, or South African PIs submitting to their appropriate national funding agencies. **Due March 27.**

**Principles and Practice of Scalable Systems (PPoSS)**

A key focus of the design of modern computing systems is performance and scalability, particularly in light of the limits of Moore’s Law and Dennard scaling. To this end, systems are increasingly being implemented by composing heterogeneous computing components and continually changing memory systems as novel, performant hardware surfaces. Applications fueled by rapid strides in machine learning, data analysis, and extreme-scale simulation are becoming more domain-specific and highly distributed. In this scenario, traditional boundaries between hardware-oriented and software-oriented disciplines increasingly are blurred.
Achieving scalability of systems and applications will therefore require coordinated progress in multiple disciplines such as computer architecture, high-performance computing (HPC), programming languages and compilers, security and privacy, systems, theory, and algorithms. Cross-cutting concerns such as performance (including, but not limited to, time, space, and communication resource usage and energy efficiency), correctness and accuracy (including, but not limited to, emerging techniques for program analysis, testing, debugging, probabilistic reasoning and inference, and verification), security and privacy, robustness and reliability, domain-specific design, and heterogeneity must be taken into account from the outset in all aspects of systems and application design and implementation.

The aim of the Principles and Practice of Scalable Systems (PPoSS) program is to support a community of researchers who will work symbiotically across the multiple disciplines above to perform basic research on scalability of modern applications, systems, and toolchains. The intent is that these efforts will foster the development of principles that lead to rigorous and reproducible artifacts for the design and implementation of large-scale systems and applications across the full hardware/software stack. These principles and methodologies should simultaneously provide guarantees on correctness and accuracy, robustness, and security and privacy of systems, applications, and toolchains. Importantly, as described below, PPoSS specifically seeks to fund projects that span the entire hardware/software stack and will lay the groundwork for sustainable approaches for engineering highly performant, scalable, and robust computing applications. Planning grant due March 30.

International Research and Education Network Connections
The International Research and education Network Connections (IRNC) Base program supports high-performance network connectivity required by international science and engineering research and education collaborations involving the NSF research community. High-performance network connections and infrastructure funded by this program are intended to support science and engineering research and education applications, and preference will be given to solutions that provide the best economy of scale and demonstrate the ability to support the largest communities of interest with the broadest services. Funded projects will assist the U.S. research and education community by enabling state-of-the-art international network services and access to increased collaboration and data services. NSF expects to make 3 to 10 awards in production R&E network infrastructure; 1 to 3 awards in international testbeds; and 1 award in Engagement. Due April 1.

DE-FOA-0002204 Energy Frontier Research Centers
The Department of Energy’s (DOE) Office of Basic Energy Sciences (BES) announces the call for Energy Frontier Research Centers (EFRC) proposals and encourages both new and renewal applications. Applications will be required to address priority research directions and opportunities identified in recent BES workshop and roundtable reports, the scientific grand challenges identified in the report Directing Matter and Energy: Five Challenges for Science and the Imagination, and the opportunities described in the report Challenges at the Frontiers of Matter and Energy: Transformative Opportunities for Discovery Science. All of these reports are described below. BES is soliciting proposals in four (4) topical areas: 1) Environmental Management (new and renewal proposals); 2) Quantum Information Science (new proposals...
only); 3) Microelectronics (new proposals only); and 4) Polymer Upcycling (new proposals only). Funding will be competitively awarded to the successful Energy Frontier Research Center applications selected by Federal officials, based on a rigorous merit review process as detailed in Section V of this Funding Opportunity Announcement (FOA). Due April 7.

Seeding Critical Advances For Leading Energy Technologies With Untapped Potential 2019
Seeding Critical Advances for Leading Energy technologies with Untapped Potential (SCALEUP) solicitation provides a vital mechanism for the support of innovative energy R&D that complements ARPA-E’s primary R&D focus on early-stage transformational energy technologies that still require proof-of-concept.

ARPA-E’s mission is to develop transformational energy technologies in support of U.S. national security and economic competitiveness. ARPA-E funds the R&D of technologies to build and maintain U.S. technological leadership in highly competitive global energy markets, thus supporting American jobs and economic growth. ARPA-E’s authorizing statute directs the Agency to develop linkages between its sponsored applied research and the marketplace. These linkages are central to realizing the public’s return on technology investments.

An enduring challenge to ARPA-E’s mission is that even technologies that achieve substantial technical advancement under ARPA-E support are at risk of being stranded in their development path once ARPA-E funding ends (averaging $2.5M over three years). ARPA-E-funded technologies typically face significant remaining technical risks upon completion of an award’s funding period. Experience across ARPA-E’s diverse energy portfolios, and with a wide range of investors, indicates that pre-commercial “scaling” projects are critical to establishing that performance and cost parameters can be met in practice for these very early stage technologies. These pre-commercial scaling projects aim to translate the performance achieved at bench scale to commercially scalable versions of the technology, integrate the technology with broader systems, provide extended performance data, and validate the manufacturability and reliability of new energy technologies. (These projects are often termed “pre-pilot” development in different industries.) Success in these scaling projects would enable industry, investors, and partners to justify substantial commitments of financial resources, personnel, production facilities, and materials to develop promising ARPA-E technologies into early commercial products.

The SCALEUP FOA builds upon ARPA-E-funded technologies by scaling the most promising. Stranding promising ARPA-E-funded technologies in their development pathways leaves substantial intellectual property developed with American taxpayer dollars vulnerable to adoption by foreign competitors, who can and do capture it for continued development – and economic benefit – overseas. This harms national competitiveness, as U.S. industries often lose the lead on the development, scaling, and manufacturing of technologies necessary to compete in rapidly evolving global energy markets. These scaling energy technology projects will meet ARPA-E’s statutory direction to achieve the above goals by “accelerating transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty” Due July 20.

N00173-19-S-BA01 NRL Long Range Broad Agency Announcement (BAA) for Basic and Applied Research
The NRL’s Broad Agency Announcement (BAA) issued under the provisions of paragraphs 35.016 and 6.102(d)(2) of the Federal Acquisition Regulations (FAR). Proposals may range from theoretical studies to proof-of-concept to include fabrication and delivery of a prototype. However, this is limited to research procurements for which it would be impossible to draft an adequate RFP in sufficient detail without restraining the technical response and thus hindering competition rather than expanding it. BAA topics include all NRL sites located in the Washington, DC area, the Stennis Space Center, MS, and Monterey, CA. Proposals submitted in response to a BAA announcement that are selected for award are considered to be the result of full and open competition and are in full compliance with the provisions of Public Law 98-369, "The Competition in Contracting Act of 1984."

NRL is interested in receiving proposals for the research efforts described under this BAA. This announcement is an expression of interest only and does not commit the Government to make any award or to pay for any proposal preparation costs. The cost of proposal preparation for response to a BAA is not considered an allowable direct charge to any resultant contract or any other contract; however, it may be an allowable expense to the normal bid and proposal indirect cost specified in FAR 31.205-18. Open to Sept. 10, 2020.

**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.]

**HR001119S0071, DSO Office-wide Broad Agency Announcement, Department of Defense**

**DARPA - Defense Sciences Office 2020 BAA**

The mission of the Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) is to identify and create the next generation of scientific discovery by pursuing high-risk, high-payoff research initiatives across a broad spectrum of science and engineering disciplines and transforming these initiatives into disruptive technologies for U.S. national security. In support of this mission, the DSO Office-wide BAA invites proposers to submit innovative basic or applied research concepts that address one or more of the following technical domains: (1) Frontiers in Math, Computation and Design, (2) Limits of Sensing and Sensors, (3) Complex Social Systems, and (4) Anticipating Surprise. Each of these domains is described below and includes a list of example research topics that highlight several (but not all) potential areas of interest. Proposals must investigate innovative approaches that enable revolutionary advances. DSO is explicitly not interested in approaches or technologies that primarily result in evolutionary improvements to the existing state of practice. Open to June 12, 2020.

**Access to Historical Records: Major Initiatives FY 2021**

The National Historical Publications and Records Commission seeks projects that will significantly improve public discovery and use of major historical records collections. The Commission is especially interested in collections of America’s early legal records, such as the
records of colonial, territorial, county, and early statehood and tribal proceedings that document the evolution of the nation’s legal history. For more information about how to become an invited applicant, please see the Preliminary Proposal announcement. All types of historical records are eligible, including documents, photographs, born-digital records, and analog audio and moving images. Projects may:

- Digitize historical records collections, or related collections, held by a single institution and make them freely available online
- Provide access to born-digital records
- Create new freely-available virtual collections drawn from historical records held by multiple institutions
- Create new tools and methods for users to access records

The NHPRC welcomes collaborative projects, particularly for bringing together related records from multiple institutions. Projects that address significant needs in the field and result in replicable and scalable approaches will be more competitive. We also encourage organizations to actively engage the public in the work of the project. Applicants should also consult Access to Historical Records: Archival Projects program, which has different requirements and award amounts. For a comprehensive list of Commission limitations on funding, please see: "What we do and do not fund". Applications that consist entirely of ineligible activities will not be considered. Due July 9, 2020.

BAA-AFRL-RQKMA-2016-0007 Air Force Research Laboratory, Materials & Manufacturing Directorate, Functional Materials and Applications (AFRL/RXA) Two-Step Open BAA

Air Force Research Laboratory, Materials & Manufacturing Directorate is soliciting White Papers and potentially technical and cost proposals under this two-step Broad Agency Announcement (BAA) that is open for a period of five (5) years. Functional Materials technologies that are of interest to the Air Force range from materials and scientific discovery through technology development and transition, and support the needs of the Functional Materials and Applications mission. Descriptors of Materials and Manufacturing Directorate technology interests are presented in the context of functional materials core technical competencies and applications. Applicable NAICS codes are 541711 and 541712. Open to April 20, 2021.

Army Research Office Broad Agency Announcement for Basic and Applied Scientific Research

This BAA sets forth research areas of interest to the ARO. This BAA is issued under FAR 6.102(d)(2), which provides for the competitive selection of basic and applied research proposals, and 10 U.S.C. 2358, 10 U.S.C. 2371, and 10 U.S.C. 2371b, which provide the authorities for issuing awards under this announcement for basic and applied research. The definitions of basic and applied research may be found at 32 CFR 22.105. 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 provision of Public Law 98-369, "The Competition in Contracting Act of 1984" and subsequent amendments. Open to April 30, 2022.

FA9453-17-S-0005 Research Options for Space Enterprise Technologies (ROSET)
The Air Force Research Laboratory (AFRL) Space Vehicle Directorate (RV) is interested in receiving proposals from all offerors to advance state of the art technology and scientific knowledge supporting all aspects of space systems including payload adapters, on-orbit systems, communications links, ground systems, and user equipment. Efforts will include basic and advanced research, advanced component and technology development, prototyping, and system development and demonstration and will span the range from concept and laboratory experimentation to testing/demonstration in a relevant environment. Specific tasks include design, development, analysis, fabrication, integration, characterization, testing/experimentation, and demonstration of hardware and software products. **Open to September 22, 2022.**

**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/](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 submission 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 autonomous 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.**
What We Do--

We provide consulting for colleges and universities on a wide range of topics related to research development and grant writing, including:

- Strategic Planning - Assistance in formulating research development strategies and building institutional infrastructure for research development (including special strategies for Emerging Research Institutions, Predominantly Undergraduate Institutions and Minority Serving Institutions)

- Training for Faculty - Workshops, seminars and webinars on how to find and compete for research funding from NSF, NIH, DoE and other government agencies as well as foundations. Proposal development retreats for new faculty.

- Large proposals - Assistance in planning, developing and writing institutional and center-level proposals (e.g., NSF ERC, STC, NRT, ADVANCE, IUSE, Dept of Ed GAANN, DoD MURI, etc.)

- Assistance for new and junior faculty - help in identifying funding opportunities and developing competitive research proposals, particularly to NSF CAREER, DoD Young Investigator and other junior investigator programs

- Assistance on your project narrative: in-depth reviews, rewrites, and edits

- Editing and proof reading of journal articles, book manuscripts, proposals, etc.

- Facilities and Instrumentation - Assistance in identifying and competing for grants to fund facilities and instrumentation

- Training for Staff - Professional Development for research office and sponsored projects staff

Workshops by Academic Research Funding Strategies

We offer workshops on research development and grant writing for faculty and research professionals based on all published articles.

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