Research Development & Grant Writing News

Table of Contents

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Katherine E. Kelly, PhD: Editing in the Humanities

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Topics of Interest URLs

(Back to Page 1)

Federal Register announcing the availability of a "For comment" draft of the NSF Proposal & Award Policies & Procedures Guide (PAPPG)

2018 Status Report on Engineering Education

Explore xTRACT Before Its Required Use in FY 2020

Report to the National Science Board on the National Science Foundation's Merit Review Process FY 2017

ACLS 2019-20 Competitions and Deadlines

Check Out FFAR's 2018 Annual Report: Transforming Agriculture's Future

A wave of graduate programs drop the GRE application requirement

Dear Colleague Letter: Effective Practices for Data

NSF Convergence Accelerator

Where to Post Informed Consent Forms for NIH-Funded Clinical Trials

Second Place America? Increasing Challenges to U.S. Scientific Leadership

Agriculture faces a scientific innovation drought

CYFAR 4-H Military Partnership Professional Development and Technical Assistance (CMPC-PDTA)

The Beckman Young Investigator (BYI) Program

National Academy of Sciences to allow expulsion of harassers

NIH should ask both institutions and investigators to report sexual harassment findings, advisory group says

Request for Non-Land-Grant College of Agriculture Designation

After outcry, USDA will no longer require scientists to label research 'preliminary'

Going Back to College: Undergraduates Who Already Held a Postsecondary Credential

Senator's queries prompt NIH and NSF to clarify how they monitor foreign research ties

Business Research and Development and Innovation: 2016

NEH Humanities Collections and Reference Resources

Finding the 'Goldilocks' level of enthusiasm for business pitches

Guidance on Posting Informed Consent Forms for NIH-Funded Clinical Trials

Public Engagement with Historical Records FY 2020 Grant Announcement (Initial)

Humanities Collections and Reference Resources

White House sends mixed messages on 2020 research spending bills

Office of Postsecondary Education (OPE): Developing Hispanic-Serving Institutions Program CFDA Number 84.031S; Notice Inviting Applications for New Awards for Fiscal Year (FY) 2019

Notice of Special Interest for Small Business Research in Genomics

Graduate Students and Postdoctorates in Science and Engineering: Fall 2017

Differences in Master's and Doctoral Enrollment in Science, Engineering, and Health in 2017

Outcomes for NIH Loan Repayment Program Awardees: A Preliminary Look

NOAA Warns 5G Spectrum Interference Presents Major Threat to Weather Forecasts

Report Puts Scientific Replicability and Reproducibility Under the Microscope

NIST Economic Analysis of the National Need for Technology Infrastructure to Support the Internet of Things (IoT)

Scientists want to help restore Notre Dame, hoping to make new discoveries in the process

Bipartisan bill would create forum for discussing how to counter U.S. academic espionage

NNH18ZEA001N-ULI2 D.4 University Leadership Initiative 2 (ULI2)

Science and Engineering Publication Output Trends: 2017 Shows U.S. Output Level Slightly Below That of China but the United States Maintains Lead with Highly Cited Publications

Bipartisan bill would create forum for discussing how to counter U.S. academic espionage

A wave of graduate programs drops the GRE application requirement

Science and Engineering Publication Output Trends: 2017 Shows U.S. Output Level Slightly Below That of China but the United States Maintains Lead with Highly Cited Publications

Emerging Markets Program for Agriculture Products

URLs continue next page

Don't Let the Organizational Ghosts of Proposals Past Haunt Your New Proposal

By Mike Cronan, co-publisher

William Faulkner's observation in *Requiem for a Nun* that "The past is never dead. It's not even past," is, unfortunately, too often the case when it comes to the organizational structure of **prior proposals unduly influencing new proposals.** This is especially true when one area of research has **multiple potential funding sources at various federal agencies**. For example, Big Data research may be funded by NSF, NIH, DOD, DOE, DHS, etc. Bioenergy research may be funded by NSF, DOE, USDA, DOD, etc. But the organizational structure of the research narratives directed at each of those agencies will vary widely, depending upon the solicitation and agency.

Problems can arise when a new funding solicitation offers an opportunity for a PI to submit a new proposal that advances currently funded research, or to revise research declined for funding in the past and submit it to a different agency where it may have a better chance of success. Proposed research on a topic common across several agencies will most likely require a different organizational format for each research narrative as a consequence of how each agency describes the project's goals and objectives. **This, in turn, significantly impacts the order in which the topics are addressed**.

For instance, one agency may require a narrative organizational structure that begins with 1 or 2 pages of background and a description of prior research results leading up to what is proposed, while another agency may require that the narrative begin with what is proposed, why it is proposed, how it will be accomplished and its impact on the field, as well as on the agency's mission. The key point to keep in mind is that revising and resubmitting prior research in response to a new funding opportunity requires paying close attention to how that revised research must be re-organized to meet the organizational format requirements of a new solicitation. It is most unlikely, for example, that a proposal submitted to USDA/NIFA in the past would be revised and advanced for submission to NSF with an identical ordering of both documents, regardless of how closely the research is aligned.

Of course, revising or advancing prior research ideas that either were funded or declined for funding in the past, or a combination of both, is common, particularly because a new solicitation may be a better match for a research idea declined for funding in the past, or a new proposal may offer a better fit to the mission priorities of a different funding agency. **Keep in mind that a declined proposal under one solicitation or from one agency does not mean that the research idea itself is unfundable under another solicitation, or the same solicitation with revisions, from another agency**.

Being declined for funding may or may not mean that the proposed research is un-fundable. In the specific case of a declined proposal, it just means the research idea was not fundable in a specific competition, **often for reasons unrelated to the quality of the idea**, and more commonly due to a mismatch between the proposed research and the mission objectives of the specific solicitation. So revising research ideas to submit again to the same or different

solicitations or agencies is a normal part of the grant writing process. In this regard, successful PIs share two characteristics: research ideas that advance the discipline or agency mission **and persistence**.

Problems arise, however, when sections of the research narrative or project description of prior research projects are ***insufficiently mapped to the requirements of the current solicitation. These proposals are "haunted" by an earlier project.*** The most common example of this occurs when the research of a prior proposal is revised or advanced in some important ways but the organizational structure of the new proposal continues to mirror a prior solicitation. "***Ghosting" by a prior proposal's organizational structure can be a serious flaw in a new proposal, so serious that it can put the newer project at risk of failing.*** In this case, calling Bill Murray and the Ghostbusters team will not save your proposal.

This ghosting problem is fairly easy to fix when caught early in the writing of the research narrative.. But catching the ghost requires knowing how an agency wants a proposal to be structured. When PIs ask others to review a proposal prior to submission, they don't always provide the reviewer with a copy of the solicitation. In other cases, reviewer(s) may be ***inattentive or unfamiliar with the required narrative organizational structure addressed in the solicitation***, or are unaware of the fact that different funding agencies have different preferred organizational structures.

Finally, in this regard, who has not reviewed an NSF proposal, perhaps in the biological or chemical sciences, and quickly muttered "*Oh-oh, this is just an NIH proposal retreaded for NSF.*" Retreading proposals is just as dangerous as retreading tires. (See the related article, *Do Not Build Your Proposal Out of Spare Parts* in this issue reprinted from October 2011.) So the takeaway here is that reviews of project narratives done by colleagues or research offices ***need to address not only how well the narrative text is written but also how well the organizational structure of the text mirrors the requirements spelled out in the solicitation***.

White Papers and Concept Papers Are Often the First Step to Funding Success

By Mike Cronan, co-publisher

You may not be as agile as Mikaela Pauline Shiffrin, four-time reigning world champion in slalom, at successfully passing through a series of elimination gates on the way to a win, but your ability to transverse a series of funding agency gates is nonetheless a critical grant-writing skill. This process often begins with white papers, concept papers, project abstracts, and similar abbreviated documents of a few pages that *serve as the first elimination gate for both solicited and unsolicitated proposals*. At this first gate, a funding agency decides whether or not to invite you to submit a full proposal, or a preliminary proposal, or to expand the concept paper to address questions the agency may have about your proposed research.

Keep in mind that the term *concept paper* may be the best one to use in this regard because it constantly reminds the author(s) that the challenge is about describing a **research concept** in a way that is sufficiently persuasive, even in an abbreviated form, to warrant funding.

However, when it comes to concept papers and white papers, there is *good news and bad news*. The **GOOD NEWS**: if you are skilled at writing a concept paper that encapsulates the significance of your proposed research and its fit to the agency's mission priorities, you *significantly compress the timeline to getting that agency's expression of interest or non-interest.* **This** acceleration of decision making saves an enormous amount of time, effort and resources that might otherwise be spent writing a full proposal of 15 to 40 pages that the agency could decline for lack of a good fit to its interests.

One purpose of a white paper is to preclude unwarranted effort on the part of an applicant whose proposed work is not of interest to the agency, and to preclude an unwarranted effort by the agency in setting up a review process for a proposal that does not fit its mission priorities. On this point, keep in mind that a concept paper that receives an expression of non-interest from an agency does not necessarily mean the research idea itself does not merit funding, but that the research idea does not fit the agency's research or program area current priorities. As a consequence, it's warranted to submit the concept paper to another agency or program that may be a better fit.

The **BAD NEWS**: writing a compelling white paper of a few or several pages *requires significant writing, organizational, and editing skills to get it right*. Mark Twain understood this when he began his correspondence to a friend by stating, "*If I had had more time I would have written you a shorter letter*." This pretty much sums it up when it comes to concept papers. An abbreviated document that distills the essence of a research idea down to a few pages *leaves no room for ideas poorly expressed or organized, or for writing that is inflated, or for syntactic ambiguity, or for a narrative crying out for a tight edit*, all of which the iconic journalist and English language scholar H. L. Mencken nailed in his description of an article submitted for publication as "*an army of 10,000 words marching across the page in search of an idea*."

Just as a proposal is fundamentally written and organized differently than an academic research article, so a concept paper must be written differently than a proposal, although some of the narrative attributes of a well written concept paper would be welcome in many proposals.

Concept papers and white papers have value because they force the author to make a compelling case for research funding within a few pages. This, in turn, forces the author to clearly and precisely address the **key points to be made in the first paragraph of a concept paper by describing**: *what you propose to do, why you propose to do it, how you propose to do it, your capacity and expertise for success, why the proposed research is significant to the mission of the funding agency, how the proposed research will advance and impact specific research goals and objectives of the agency, why your research is at the forefront of current research being done in the mission areas of the funding agency, and the value-added mission benefits your proposed research will bring to the agency*. Moreover, to get an agency invitation to submit a large proposal, your concept paper may need to explain your long-range research vision and your integrative management plan to ensure project success.

These same points will have to be addressed in a successful full proposal as well, but in the concept paper, the PI must address them early and convincingly. This major challenge is compounded by the fact that PIs often struggle with describing their research under these key points and are more comfortable describing what they propose to do without explaining how their plan **maps tightly to the funding agency mission**. PIs should anticipate devoting a lot of thought and discussion to addressing these key points succinctly in the concept paper.

Of course, the plus side to this challenge is that those who successfully transit a concept paper gate have been forced to address the most difficult aspects of describing their research early on in the process. Meeting this challenge gives the researcher an advantage well beyond the concept paper in submitting some version of the research to other solicitations and agencies. Remember, the most common reason full proposals are declined for funding is that the author(s) failed to address fully the above points in the project description. The more experience PIs have in addressing these key points under the tight constraints imposed by concept papers, the better able they will be to write better and more successful full proposals.

As I. I. Rabi, 1944 Nobel Laureate in Physics, explained to his research lab scientists after the Manhattan Project was phased out post WW2, "*Well, there is no more money left now in our budget for experimental equipment, so now we are going to have to learn to think*."   The concept paper forces a similar condition on its author(s).

Know the Type of Project You're Proposing

By Lucy Deckard, co-publisher

When you're pursuing funding for a project, it's important to understand what type of project it is for two reasons: 1) it's important that the type of project fit the expectations of the funder; and 2) the way you describe the project should fit the type of project. There are generally three categories of projects that university faculty and staff typically propose: fundamental research, applied research, and programmatic/intervention projects. Below, we'll describe each type of project and discuss how to describe them in a proposal.

Types of projects

Fundamental research projects focus on fundamental questions—in other words, not just **what** happens in a particular situation, but **why** it happens. These types of projects focus on discovering underlying processes, theories, or mechanisms. Fundamental research projects focus on **gaps in knowledge** and typically aim to advance the frontiers of the relevant discipline. The ultimate output of these projects is new knowledge that may be relevant to a many applications. Typically, the product of the project is **scholarly publications**.

Applied research projects focus on addressing a desired outcome—**how** can we make something happen? These projects focus on **gaps in capability**. Often, these projects employ existing tools and methods in a new way to achieve the desired outcome. This approach may be supported by evidence from fundamental research. Usually, these projects have **deliverables** with clear **performance targets**.

Programmatic and Intervention projects focus on an **unmet need**. These projects propose to use a proven strategy or approach (often a product of fundamental or applied research) to address that need. Usually **logistics** are the major challenge in these projects. The outcome is **impact** on the targeted need.

Examples

For example, a **fundamental** research project might focus on **understanding** the role of prolactin in the reproductive cycle of deer. An **applied research** project might use that knowledge to **develop** a long-acting contraceptive for deer based on manipulating prolactin levels. An **intervention** project might aim to reduce deer population growth in the Sequoia National Forest by **using** a long-acting contraceptive.

To take another example, a **fundamental** research project might aim to **understand** the role of a specific gene in the onset of borderline personality disorder. An **applied** research project might aim to **develop** a cognitive behavioral therapy approach for treating teenagers with borderline personality disorder. An **intervention** project might **provide** treatment for borderline personality disorder in teenage patients in the Houston area.

A **programmatic** project might establish improved processes, following proven best practices, to address sexual assault on the applicant's university campus. Another programmatic project might engage 12 students each summer in research experiences, or provide scholarships for 50 economically disadvantaged students each year.

Finding a Match

A common reason for declined proposals is a mismatch between the type of project proposed and the type of project the funder wishes to fund. For example, most NSF and NIH programs fund fundamental research with clear hypotheses or research questions. For NSF, a key review criterion, *intellectual merit,* is judged based on the new knowledge generated and the potential of the proposed project to advance the frontiers of the relevant discipline. However, many PIs frame their research in terms of specific applications without making clear what new fundamental knowledge will be generated. As a result, reviewers rate the project as "too applied" or "lacking in intellectual merit."

In contrast, some funders (for example, many programs at the Department of Defense or the Department of Energy) may be looking for more applied research, with clear deliverables and target performance metrics. Faculty often make the mistake of proposing fundamental projects whose main outputs will be journal articles rather than, for example, hardware that meets specific performance targets. Again, these proposals are not well received.

Similarly, a proposal for an intervention or programmatic proposal that proposes to implement an innovative, unproven approach is not likely to fare well with funders who are looking for a low-risk project that is highly likely to succeed.

While some projects fall clearly into one of these categories, many projects straddle the boundary between two categories. For example, many projects can be described as a fundamental project by emphasizing the new knowledge that will be generated, or they can be described in terms of a specific application. In another example, an intervention project could also generate applied research results, and a proposal might either emphasize the applied research, or it might emphasize the need to be fulfilled. By understanding what type of project the funder is looking for, in these cases, the PI can frame the project accordingly.

Describing Your Project Based on Type

Fundamental research projects generally should have goals that focus on generating new knowledge or understanding, and they almost always should have clear research questions or hypotheses. The significance of the research questions to be answered or the hypotheses to be tested are often central to reviewers' evaluation of the value of the project.

In contrast, **applied research projects** usually should have goals that focus on a specific application, with a clear description of what will be new or improved. In projects that involve improvement (e.g., something will be made more efficient, less expensive, lighter, faster, etc.), it's desirable to include at least a rough estimate of the magnitude of improvement you aim to achieve. It's important to explicitly discuss the **barriers or challenges** that will be overcome in order to achieve these goals. In general, for applied projects, deliverables with clear performance metrics are expected.

For **intervention or programmatic projects**, it's important to describe your **strategy or rationale**; i.e., why do you think this intervention will work? Usually, this is where you will provide evidence that your strategy is likely to succeed, either from literature or from your prior work. For intervention projects, a l**ogic model** or a **theory of change** is often expected. For both interventions and programmatic projects, logistics—how well you have thought through how you will implement the intervention—are the major challenge, so you will need to provide a detailed implementation plan. Also, an **assessment plan** to evaluate the impact of your

intervention is often expected.

In summary, you will markedly increase your likelihood of securing funding by having a clear idea of the type of project you're proposing, the type of project the funder is looking for, and the main points you need to make for that type of project.

Does Your Office Assist New Faculty in Grant Writing? Here Are Some Tips

By Mike Cronan, co-publisher

Research office support for faculty grant writing varies widely by institution. Some offices focus on assisting new faculty jump start their research careers, while others support senior faculty on larger and center-level grants. This focus depends in part on the resources available for assisting faculty research development and grant writing and on the skill sets of the various research offices that help faculty develop, plan, write, edit, and submit grants to federal agencies. In actual practice, however, most research offices cover the spectrum of possible faculty support, from new professors to senior professors, and from small grants to broad, large awards.

By this time of year, most research offices will have a list of new, tenure-track faculty coming in for the fall semester and will be discussing internally what support can be offered to help them meet the research expectations for starting their research career, third-year review, and, eventually, tenure and promotion. A general description of what new faculty need to know about grant writing typically includes some variation on the following "how to" topics presented in workshops, seminars, or consultations with research offices: finding funding, analyzing the funding solicitation, understanding the funding agency mission priority research and culture (e.g., does the agency fund basic or applied research or both), understanding the agency review process, the characteristics of a well-written proposal, and common mistakes made in proposals declined for funding.

However, over the last several years, particularly for those faculty seeking NSF and NIH funding, it has become important to expand on the above topics to include information for new faculty related to (1) **research misconduct in grant writing** and (2) **reproducibility and replicability in science** (see companion article on this topic in this issue). A discussion of research misconduct as it specifically applies to plagiarism in grant writing, failure to follow standard practices in attribution, and related practices that constitute research misconduct has been an ongoing topic addressed twice annually by the NSF Office of Inspector General in the Semi-Annual Report to Congress (see *How to Avoid the Research Misconduct Perp Walk* in the February, 2019 issue). Similarly, reproducibility and replicability in science has been an ongoing concern for NSF and other federal funding agencies, as well as the National Academies of Sciences, Engineering and Medicine (see companion article in this issue and the National Academies report Reproducibility and Replicability in Science).

Each of these issues can derail a faculty research career and, in some cases, end it, if instances of research misconduct are sufficiently grievous. Alerting faculty to the boundaries of both of these topics has become an important issue to address in new faculty workshops, seminars and consultations, especially describing how research misconduct in the proposal narrative can result in disbarment from submitting proposals to NSF, either for a period of years or permanently. It is in this domain of research misconduct related to writing grants that research offices have the experience and expertise to assist faculty in ways that can prevent

them from violating--intentionally or unintentionally--the standards of practice **demanded by NSF, standards that must be adhered to** avoid plagiarism and related misconduct.

As we noted in the February article on this topic, "NSF's Research Misconduct regulation is found at [45 CFR 689](). ***Research misconduct means fabrication, falsification, or plagiarism in proposing or performing research funded by NSF***, reviewing research proposals submitted to NSF, or in reporting research results funded by NSF. . . . NSF has been making clear for some time now and in various forums from workshops to Dear Colleague Letters (see OIG DCL [August 30, 2018]()), that proposal narratives and narrative attachments are ***electronically checked for plagiarism in various manifestations against all prior proposals, funded or unfunded, submitted to the agency as well as other research publications, journals, theses, etc.*** Moreover, plagiarism runs the gamut from bold thievery to more nuanced instances related to proper references and attributions that can trip up all faculty, but particularly new and junior faculty or their graduate students."

For example, it is instructive to look at one case where a new faculty **PI plagiarized by adding a section of copied but unacknowledged text to an NSF Proposal,** as described in the NSF OIG [Semiannual Report to Congress as of September 2018 (OIG-SAR-59)](): "A university investigation committee concluded the PI committed research misconduct when he plagiarized text into an NSF proposal. The university also concluded the PI and his graduate students engaged in a pattern of self-plagiarism in their published papers. Self-plagiarism is not research misconduct by NSF's definition; however, it can be a *questionable research practice*. *The university delayed the PI's tenure application for 1 year, assigned a faculty mentor to the PI, required him to take a RCR course and, for 3 years, required the PI to submit all proposals and manuscripts to the Office of the Associate Provost for review before submission to an agency or journal*."

This is not a trivial outcome for plagiarism, including self-plagiarism, and speaks to why it is important to incorporate that discussion into any workshop, seminar, or consultation with new faculty on the subject of grant writing. The NSF OIG reports represent a treasure trove of experiential descriptions that serve as harsh examples of how faculty careers can be derailed when the best practices of writing research grants are not adhered to and aligned with the funding agency's standards and expectations, particularly NSF. Therefore, research offices should attempt to include this information in grant-writing support directed to new faculty.

In conclusion, grant-writing training for new faculty can include numerous subtopics under the umbrella of the larger topics mentioned above. These typically include "testing" the proposal with the following questions to make sure it responds fully to the agency guidelines: Does it respond clearly and explicitly to the funding solicitation, program guidelines, and review criteria? Does it reveal an understanding of the many implicit, often undefined but important, agency requirements embedded in the particular agency's culture, mission, and funding priorities? Does it imply an awareness of reviewer expectations for what constitutes a persuasive and well-written research narrative accessible to them as readers?

Moreover, there are some specific and very urgent essentials about which new faculty must be aware, including how to find research funding opportunities; how to identify the right funding agency and solicitation for research; how to understand the timeline for proposal production, including both the narrative and the institutional submission and fiscal processes; how to understand the agency's mission, culture, and language; ***how to use the solicitation and***

review criteria as a narrative organizational template; how to recognize a well-written project narrative, etc.

Agency language, for example, is very important for new faculty to understand, yet it is a topic about which most new faculty are largely uninformed. It is not something an agency points to and says "*here is the language we use in our solicitations and the definitions you must know.*" Rather, the "corporate experience" of research offices can come into play on this topic in a significant way. Agency language and the significance of its common terms is an expanding lexicon of evolving meanings, most notably at the "poster child" of agency language, NSF.

At NSF in particular, a continuous cascade of evolving terms such as "convergence", "broader impacts", "societal benefits", "research and education integration", "evidence-based best practices", "innovation", "transformational", "transdisciplinary", etc. come and go, and can impact the competitiveness of a proposal if the author(s) does not understand what the agency means by these terms.

In summary, **a PI's lack of understanding can find its way into a research narrative in various ways, to the <u>proposal's detriment</u>**. Research offices can detect and redirect misunderstandings of agency key terms to ensure that PIs not only express their ideas fully but use the language that will speak persuasively to their potential funders.

Talking to New Faculty about Reproducibility and Replicability in Science

By Mike Cronan, co-publisher

Issues related to ***reproducibility and replicability in science*** (see Reproducibility and Replicability in Science free download from National Academies) may not at first glance seem to be in the wheel house of research offices that assist faculty with proposals. It may not, in particular, seem as relevant as issues related to ***research misconduct stemming from plagiarism***, data integrity, citations, attributions, etc. as addressed in a companion article in this issue. However, on reflection, issues related to reproducibility and replicability in science and research misconduct in science in the context of grant writing ***certainly may rhyme*** in many cases where data fabrication, data falsification, data cherry picking, intentional or unintentional violations of accepted research standards and best practices, etc. find their way into the research narrative in one way or another.

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

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

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

Research offices can give new faculty a heads up that these issues will be factors, implicitly or explicitly, in funding agencies' decisions during the review process. Fortunately, in this instance, an ounce of prevention is worth several orders of magnitude more than a pound of cure, under the reasonable assumption that most of the violations of the research standards implicit in this issue derive from being uninformed rather than duplicitous.

As noted by the American Physics Institute's *Report Puts Scientific Replicability and Reproducibility Under the Microscope* (May 23) "Congress required the National Science Foundation to initiate the study two years ago through the American Innovation and Competitiveness Act, responding to widespread concerns about the reliability of scientific

findings in fields such as biomedicine and psychology. The effort received additional financial support from the Sloan Foundation and the study committee was chaired by Gordon and Betty Moore Foundation President Harvey Fienberg… Noting that the concepts of 'reproducibility' and 'replicability' are variable and **often conflated**, the *report defines reproduction as independently deriving a study's quantitative results from its original data set, and replication as obtaining consistent results across different studies that have separate data sets*. It makes recommendations on how to bolster replicability and reproducibility, but also stresses that scientific reliability does not hinge on the validity of particular scientific results. "

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

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

- New Grant Guidelines for Rigor and Reproducibility for NIH Applications
- Rigor and Reproducibility in NIH Applications – Resource Chart
- Reviewer Guidance on Rigor and Transparency
- Principles and Guidelines for Reporting Preclinical Research
- Enhancing Reproducibility through Rigor and Transparency
- NIH Data Sharing Policy

The following NSF reports also address these issues:

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

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

NSF Data Sharing Policy

In conclusion, research offices do not have to become experts in these issues, but should **be sufficiently aware of them to point new faculty to the appropriate resources**, as those noted above. These resources will enable them to consider these issues in the context of *writing the research narrative in a way that that will align the narrative with best practices in the areas of reproducibility and replicability in science and the related issues of research misconduct*. This is particularly important because the two federal research funding agencies that can have the most significant impact on new faculty careers and tenure and promotion — NSF and NIH—are the two agencies that have taken these issues seriously **by incorporating them into their research funding and review process**.

Do Not Build Your Proposal Out of Spare Parts

By **Mike Cronan**, co-publisher

Learning how to develop and write successful proposals begins with gaining an understanding of some of the key generic strategies that enhance the competitiveness of proposals regardless of discipline or agency. These core generic strategies form the necessary foundation for presenting your research idea in the best possible way to program officers and review panelists. The counterpart to understanding successful strategies amounts to understanding unsuccessful "strategies," or unsuccessful practices that diminish the competitiveness of your proposal by obscuring your research idea in a patchwork e research narrative .

In fact, a list of common mistakes, or common misconceptions, made in the development and writing of proposals can be of enormous value to new and junior faculty beginning a research career, as well as to more experienced investigators seeking to continuously improve the success rate of their proposals in a difficult funding climate. This critical information often comes from a senior faculty mentor with a history of successful funding, or it can come from research development and grant writing professionals who have benefitted from working with highly successful researchers on successful proposals of all sizes, especially center-level proposals in which many component parts comprise the center narrative.

The most successful faculty researchers tend to be those whose success in funding begins with smaller grants of a few PIs and grows over time to research centers or other large grants. These researchers can develop a capacity to frame the development and writing of the proposal by thinking strategically about every part of the proposal narrative, from the overarching vision statement to the smallest details that illuminate the research team's capacity to perform.

New and junior faculty can learn from successful researchers that successful proposals represent new and exciting ideas originating from the PI and the PI's research team, or as NSF and NIH might characterize the research, it must be "***transformative***" research. ***This requires that the research narrative be as close to perfect as possible***—perfect in its vision, perfect in the operational details that advance the vision, perfect in its synthesis and integration of all component parts with the overall goals and objectives, and perfect in every section and subsection required to respond fully to the solicitation.

Therefore, it is important not to be tempted to use spare parts from older proposals (successful or unsuccessful), or information archived in database files, or narrative text created as so-called boilerplate by known or unknown authors. While writing a successful proposal narrative that advances new ideas in a compelling way is hard work, it cannot be made easier by the use of off-the-shelf text or boilerplate text written by others. On the contrary, ***it can be significantly harmed by that practice.***

In specific terms, ***the use of boilerplate imposes a distorting structure on the proposal narrative*** that should evolve logically, consistently, proportionally, and integratively from a core

research idea. This consistency should apply to the ideas advanced by the principal author as well as the language patterns and structure used by the author to describe those ideas. Unfortunately, no anti-rejection drugs exist to ameliorate the harm done by attempting to transplant boilerplate text into a proposal in hopes of making it more successful. In the successfully crafted proposal narrative, ideas and language interweave to create a coherent and seamless synthesis. Boilerplate or recycled text will destroy the needed symmetry at all scales.

What else is not a successful proposal? Edited collections of many short articles, or sections, written by an army of authors, some known and, in the case of boilerplate, some unknown, lacking a coordinated evolution of the research ideas, will not meet with success. Unfortunately, however, once a proposal narrative has been built in a way that reveals gaps between sections, parts, or topics, renovating that inchoate narrative will require significant time and energy. If a researcher also introduces boilerplate into the proposal narrative, either verbatim or modified, she will push the narrative structure further in the direction of a crazy quilt of ideas rather than a seamless integration of text and ideas.   In many ways, the use of boilerplate text is akin to distributing a few counterfeit bills among the legal currency you use for cash purchases. At its worst, boilerplate text may come near to flirting with unintentional plagiarism, depending on the source of the text, and it is certainly not something federal research agencies would expect in a proposal that represents itself as a persuasive argument for the significance and merit of the proposed new research.

Having understood the disadvantages of boilerplate text, it's worth taking a moment to ensure that we all understand what this term means. Most successful PI's don't use this term (or the text itself), but inexperienced and eager researchers may use it. While various professions may use the term to refer to various types of text, *in most cases it refers to inferior, off-the-shelf writing, often of unknown and dubious origin, that operates as a static, plug-in set of phrases, sentences, paragraphs, or conceptual outlines. By definition, boilerplate fails to change or to reflect the evolving set of ideas associated with the successful proposal.*

Boilerplate is frozen in time, whereas the successful research proposal originates with a good idea that evolves during the development and writing of the proposal narrative to make an original and compelling case for funding. Moreover, *even the most excellent writing has a very short shelf life*, perhaps a matter of months. In fact, most often by the startup period of a grant, perhaps six to twelve months after the submission of the proposal, the successful narrative is typically dated and showing signs of age. If you are maturing research and educational ideas, then the ideas you have six months from now should be more robust and better explicated than the ones you have now. *Do not encumber your good ideas with spare parts developed by someone else with absolutely no knowledge of why your ideas are significant and how best to configure those ideas within an integrated proposal narrative.*

When the term "boilerplate" in used by those who develop and write proposals typically within private sector consulting firms (engineering, architectural, scientific, etc.), then it typically refers to a description of past performances on similar projects in a capabilities section of the proposal. This recycled language is used to bolster the case that a contract awarded to the applicant would once again result in successful deliverables of one kind or another. However, when the term begins to migrate from contract work into proposals describing

exploratory and transformational research to federal agencies, ***it has crossed a boundary from an appropriate use of the term to an inappropriate one***.

While faculty should avoid boilerplate, they can become knowledgeable about successful models for some of the common sections required in a proposal, particularly in larger proposals, such as those related to institutional infrastructures, access to equipment, instrumentation and facilities, plans for undergraduate research or post-doc mentoring, management plans, diversity plans, data management plans, and the like. Descriptions of these resources may be adapted judiciously to inform possible topic points but not as transplanted text that disturbs the context of the proposal narrative. Moreover, research development professionals can make this information much more robust by working with successful PIs during the start-up period of grants where the concepts defined in the proposal may be significantly modified to work more effectively in actual operation. See the article in the June 15, 2011, issue of this newsletter "***Writing Competitive Proposals: Topics in Brief—NSF Broader Impacts (BI) Revisited***" for a more in-depth discussion of these issues specific to the NSF broader impacts. This represents one place where the use of boilerplate specific to BI can do a real disservice to the PI. Boilerplate is like the mini spare tires that come with new cars: it is not intended for use on your extended research journey.

Bottom line: if you are proposing new research ideas, express the significance of those new ideas, and all topic components of them, in newly-crafted writing for every word of the proposal narrative. Success in proposal writing will not be achieved using after-market parts—***successful proposals are not renovations of the past but a creation for the future and the compelling arguments you make for the place and significance of your research ideas in that future***.

Research Development & Grant Writing News

Research Grant Writing Web Resources

NSF Spring Grant Writing Conference May 20-21, 2019: Introduction and Overview

NSF Spring Grant Writing Conference May 20-21, 2019: Funding Types

NSF Spring Grant Writing Conference May 20-21, 2019: Proposal Preparation

NSF Spring Grant Writing Conference May 20-21, 2019: Merit Review Process

NSF Spring Grant Writing Conference May 20-21, 2019: More Presentations

2019 AFRI Food Safety, Nutrition & Health Program Areas Webinar Recordings
These videos allow for additional support and information for the fiscal year 2019 programs. All videos are external, opens a new window, and links directly to the unique video on the NIFA YouTube Channel.
Overview 2019 AFRI Foundational and Applied Science (link is external)
A1332 - Food Safety and Defense (link is external)
A1364 - Novel Foods and Innovative Manufacturing Technologies (link is external)
A1344 - Diet, Nutrition and the Prevention of Chronic Diseases (link is external)
A1343 - Food and Human Health (link is external)
A1366 - Mitigating Antimicrobial Resistance across the Food Chain (link is external)
Request the Foundational FSNH Webinar 2019 slide deck (link sends e-mail).
For more information or further assistance, please contact Dr. Isabel Walls, Dr. Melvin Carter, Dr. Helen Chipman, Dr. Paul Cotton, or Dr. Mervalin Morant.

NSF Convergence Accelerator
With the NSF Convergence Accelerator, NSF's goals are: (i) to pilot a new NSF capability to accelerate use-inspired convergence research in areas of national importance, and (ii) to initiate convergence team-building capacity around exploratory, potentially high-risk proposals in specific convergence topics (tracks). The NSF Convergence Accelerator supports use-inspired, goal-oriented, basic research, encouraging rapid advances through partnerships that include multiple stakeholders (e.g., industry, academic, not-for-profits, government entities, and others). The NSF Convergence Accelerator brings teams together in a cohort that are all focused on a common research goal of national importance, but which may be pursuing many different approaches.

As a funder of research and education across all fields of science and engineering and with relationships with universities and funding agencies around the world, NSF is uniquely positioned to pilot this approach to accelerate discovery and innovation. Teams supported by the NSF Convergence Accelerator will focus on grand challenges that require a convergence approach. The teams are multidisciplinary and leverage partnerships; tracks within the NSF

Convergence Accelerator relate to a grand challenge problem and have a high probability of resulting in deliverables that will benefit society within a fixed term. The NSF Convergence Accelerator is modeled on acceleration and innovation activities from the most forward-looking companies and universities.

Specific funding opportunities will be announced through Dear Colleague Letters, program announcements, and/or solicitations. For more information see the NSF Convergence Accelerator website: https://www.nsf.gov/od/oia/convergence-accelerator/index.jsp

FR-6300-N-USP Authority To Accept Unsolicited Proposals for Research Partnerships Notice Department of Housing and Urban Development
This notice announces that HUD's Office of Policy Development and Research (PD&R) has the authority to *accept unsolicited research proposals that address current research priorities*. In accordance with statutory requirements, the research proposals must be submitted by eligible applicants and provide cost sharing for at least 50 percent of total project cost from philanthropic entities or Federal, state or local government agencies. This notice announces that HUD is accepting research proposals and provides a general description of information that should be included in any research proposal. The Department is interested in increasing participation of Minority Serving Institutions of higher education and Historically Black Colleges and Universities in all program areas. *Therefore, HUD encourages eligible entities that are not themselves MSIs or HBCUs to develop partnerships with MSIs and HBCUs*. **Open to December 31, 2020.**

HUD Funding Opportunities
HUD awards discretionary funding through over 20 Grant programs that support HUD initiatives, including Affordable Housing Development and Preservation, Community and Economic Development, Environment and Energy, Fair Housing, Homelessness, Homeownership, Rental Assistance, and Supportive Housing and Services.
Notice of Funding Availability (NOFA) - The Notice of Funding Availability (NOFA) is a notice published each year in Grants.gov for HUD's Discretionary Funding Programs. This notice describes the type of funding available on a competitive basis and provides a contact where an application may be submitted, typically up to 60 to 90 days from the date of NOFA publication. Selection will then be made based upon specific factors and criteria identified within the NOFA.

Educational Grant Writing Web Resources
(Back to Page 1)

Video: The Importance of Early Math Education
In this video, NSF-funded researchers Arthur Barody, Jere Confrey, Paul Goldenberg, and Julie Sarama discuss the importance of mathematics education in the early grades.

Strategies for Attracting and Retaining Educators: What Does the Evidence Say?
A highly competent teacher workforce is a necessary foundation for improving children's educational outcomes, especially for those who rely most on schools for their success. Yet in the United States, shortages in the teaching force have been growing across the country, reaching crisis proportions in some teaching fields- such as mathematics, science, and special education-and in locations where wages and working conditions are least attractive. We analyzed recent research and representative survey data to identify the drivers of teacher recruitment and retention. We also reviewed the policy literature to identify district, state, and federal policy strategies that have been effective at addressing the factors influencing teachers' professional decisions. These policies include increasing their compensation and improving their preparation, professional support, and working conditions, as well as improving district and school management practices that otherwise create obstacles to recruitment and retention.

Recruitment, Employment, Retention and the Minority Teacher Shortage
This study examines and compares the recruitment, employment, and retention of minority and nonminority school teachers over the quarter century from the late 1980s to 2013. Our objective is to empirically ground the ongoing debate regarding minority teacher shortages and changes in the minority teaching force. The data we analyze are from the National Center for Education Statistics' nationally representative Schools and Staffing Survey (SASS) and its longitudinal supplement, the Teacher Follow-up Survey (TFS). Our data analyses document the persistence of a gap between the percentage of minority students and the percentage of minority teachers in the US. But the data also show that this gap is not due to a failure to recruit new minority teachers. In the two decades since the late 1980s, the number of minority teachers almost doubled, outpacing growth in both the number of White teachers and the number of minority students. Minority teachers are also overwhelmingly employed in public schools serving high-poverty, high-minority and urban communities. Hence, the data suggest that widespread efforts over the past several decades to recruit more minority teachers and employ them in disadvantaged schools have been very successful. But, these efforts have also been undermined because minority teachers have significantly higher turnover than White teachers and this is strongly tied to poor working conditions in their schools.

Understanding Teacher Shortages: An Analysis of Teacher Supply and Demand in the United States
This paper reviews the sources of and potential solutions to teacher shortages in the United States. It describes the sources of current and projected increases in teacher demand relative

to enrollments, shifts in pupil-teacher ratios, and attrition. It places these in relation to recent declines in teacher supply and evaluates evidence of shortages in fields like mathematics, science, special education, and educators for English learners, as well as in particular parts of the country. Our analysis using national databases through 2016 predicted an estimated annual teacher shortage of approximately 112,000 teachers in 2017-18. Our recent review of state teacher workforce reports estimated 109,000 individuals were uncertified for their teaching positions in the US in 2017, roughly approximating our projections. We discuss the factors driving shortages and, based on previous research, identify responses that might ameliorate these trends.

Algebra I Coursetaking and Postsecondary Enrollment

The High School Longitudinal Study of 2009 (HSLS:09) is a nationally representative, longitudinal study of over 23,000 9th-graders in 2009. This study follows students throughout their secondary and postsecondary years assessing student trajectories, major fields of study, and career paths. The Base Year collection occurred in 2009, with a First Follow-up in 2012 and a Second Follow-up in 2016. The 2016 survey included questions about when students last took Algebra I and whether they had ever enrolled in postsecondary education by the end of February 2016.

Agency Research News

Dear Colleagues:

NSF published a notice today in the Federal Register announcing the availability of a "For comment" draft of the Proposal & Award Policies & Procedures Guide (PAPPG). The Foundation is accepting comments from the external community until cob July 29, 2019. The draft PAPPG is available on the Policy Office website.

To facilitate review, revised text has been highlighted in yellow throughout the document and explanatory comments have been included in the margins, where appropriate.

Any questions should be directed to the Policy Office at policy@nsf.gov .

We appreciate the research and education community's interest and look forward to your input.

SUMMARY: The National Science Foundation (NSF) is announcing plans to renew this collection. In accordance with the requirements of the Paperwork Reduction Act of 1995, we are providing
opportunity for public comment on this action. After obtaining and considering public comment, NSF will prepare the submission requesting Office of Management and Budget (OMB) clearance of this collection for no longer than 3 years.

DATES: Written comments on this notice must be received by July 29, 2019 to be assured consideration. Comments received after that date will be considered to the extent practicable.

Best, Jean Feldman, Head, Policy Office, Division of Institution & Award Support
National Science Foundation email: jfeldman@nsf.gov

Dear Colleagues:

As you know, last year the National Science Foundation (NSF) made important changes to the way the research community registers for NSF accounts and maintains account and user profile information in FastLane and Research.gov. **Please be advised that effective May 20, 2019**, the Demographic Information site has moved from FastLane to the Research.gov Account Management site, so you can manage your profile data in one location.

Here's what you need to know: Demographic information previously entered on the FastLane site was migrated to "My Profile" in Research.gov.

To view or edit your demographic information: Sign in to Research.gov and click on "My Profile" located at the top of the screen. Demographic information is located on your "View/Edit Profile" page. Scroll down to the Demographic Information section at the bottom of your profile to view the demographic information you previously provided in FastLane or to update your demographic information.

Submission of the requested demographic information is voluntary. NSF asks for demographic data relating to gender, ethnicity/race, and disability status to gauge whether our programs and other opportunities in science and technology are fairly reaching and benefiting everyone regardless of demographic category; and to ensure that those in underrepresented

groups have the same knowledge of and access to programs, meetings, vacancies, and other research and educational opportunities as everyone else.

Screenshots of the new Research.gov Demographic Information section are available in the Account Management Guide, and new questions have been added to the Frequently Asked Questions (FAQs). Additional Account Management resources are accessible from the Research.gov About Account Management page. For IT system-related questions, please contact the NSF Help Desk at 1-800-381-1532 or rgov@nsf.gov. Policy-related questions should be directed to policy@nsf.gov.   Regards, Research.gov Team at the National Science Foundation.

Dear Colleague Letter: Effective Practices for Data

Open science principles are increasingly being adopted by industry, government, and academia. Open science gives rise to public benefits by offering broader access to publication, data, and other research materials; broader access enables broader circulation of scientific knowledge, greater return on investments in research data, and more opportunities for replicating and building upon scientific findings.

NSF's open science policy is articulated in the Foundation's Public Access Plan (NSF 15-052) and formally implemented in the NSF Proposal and Award Policies and Procedures Guide and in the Award Terms and Conditions that accompany each award that NSF makes. Implications of this policy are further clarified in an actively-maintained set of Frequently Asked Questions (NSF 18-041).

The purpose of this Dear Colleague Letter (DCL) is to describe — and encourage — effective practices for managing *research data*[1], including the use of persistent identifiers (IDs) for data and machine-readable data management plans (DMPs).

NSF's DMP requirement, as stated in NSF 15-052, expands on NSF's long-standing data-sharing policy. The DMP requirement specifies that every proposal submitted to NSF must include a supplementary document of no more than two pages, titled "Data Management Plan." This document should describe how activities described in the grant proposal will conform to NSF policy on the dissemination and sharing of research results.

Agency Reports, Workshops & Research Roadmaps

Second Place America? Increasing Challenges to U.S. Scientific Leadership

The Task Force on American Innovation (TFAI) is a non-partisan alliance of leading American companies and business associations, research university associations, and scientific societies. Established in 2004, TFAI supports federally-funded scientific research and promotes its benefits to America's economy and national security. TFAI is particularly concerned with research and educational funding in the physical sciences and engineering at the Department of Defense, the National Science Foundation, the Department of Energy's Office of Science, the National Institute of Standards and Technology, and NASA.

Foundation for Food and Agriculture Research

The Foundation for Food and Agriculture Research's (FFAR) 2018 Annual Report (download pdf file) outlines the organization's success in building strategic public-private partnerships, funding transformative research and supporting the next-generation of researchers. FFAR funded a wide-range of groundbreaking projects in 2018 that address agriculture challenges ranging from methane emissions in cattle to computational modeling of food access. FFAR also developed several scientific programs that focus on a variety of food and agriculture challenges, including exploring the complexity of food system interventions, improving animal welfare and stimulating innovative aquaculture research. In 2018, FFAR awarded more than 50 grants, totaling over $32 million in FFAR award funding and related support costs. The Foundation collaborated with more than 200 industry, philanthropic and nonprofit partners. These partnerships provided a combined investment of over $60 million to groundbreaking research that is transforming food and agriculture systems. FFAR is excited about our progress and welcomes your partnership as we continue to explore new frontiers in food and agriculture research.

Monitoring Educational Equity

Disparities in educational attainment among population groups have characterized the United States throughout its history. Education is sometimes characterized as the "great equalizer," but to date, the country has not found ways to successfully address the adverse effects of socioeconomic circumstances, prejudice, and discrimination that suppress performance for some groups. To ensure that the pursuit of equity encompasses both the goals to which the nation aspires for its children and the mechanisms to attain those goals, a revised set of equity indicators is needed. Measures of educational equity often fail to account for the impact of the circumstances in which students live on their academic engagement, academic progress, and educational attainment. Some of the contextual factors that bear on learning include food and housing insecurity, exposure to violence, unsafe neighborhoods, adverse childhood experiences, and exposure to environmental toxins. Consequently, it is difficult to identify when intervention is necessary and how it should function. A revised set of equity indicators should highlight disparities, provide a way to explore potential causes, and point toward possible improvements. Monitoring Educational Equity proposes a system of indicators of educational

equity and presents recommendations for implementation. This report also serves as a framework to help policy makers better understand and combat inequity in the United States' education system. Disparities in educational opportunities reinforce, and often amplify, disparities in outcomes throughout people's lives. Thus, it is critical to ensure that all students receive comprehensive supports that level the playing field in order to improve the well-being of underrepresented individuals and the nation.

New Funding Opportunities

Content Order
New Funding Posted Since May 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 May 15 Newsletter

Established Program to Stimulate Competitive Research: Workshop Opportunities (EPS-WO)
The Established Program to Stimulate Competitive Research is designed to fulfill the mandate of the National Science Foundation (NSF) to promote scientific progress nationwide. Through this program, NSF establishes partnerships with government, higher education, and industry that are designed to effect sustainable improvements in a jurisdiction's research infrastructure, Research and Development (R&D) capacity, and hence, its R&D competitiveness. Eligibility to participate in the EPSCoR Workshop Opportunities program is described according to the Outreach Eligibility Map (see eligibility map). EPSCoR welcomes proposals for workshops from institutions within EPSCoR-eligible jurisdictions. These workshops will focus on innovative ways to address multi-jurisdictional efforts on themes of regional to national importance with relevance to EPSCoR's goals and NSF's mission. **Proposals Accepted Anytime.**

USDA-NRCS-NHQ-CIG-19-GEN0010208 Notice of Funding Opportunity for NRCS' Conservation Innovation Grants (CIG) National competition for Federal fiscal year (FY) 2019
The purpose of CIG is to stimulate the development and adoption of innovative conservation approaches and technologies in conjunction with agricultural production. CIG projects are expected to lead to the transfer of conservation technologies, management systems, and innovative approaches (such as market-based systems) to agricultural producers, into NRCS technical manuals and guides, or to the private sector. CIG generally funds pilot projects, field demonstrations, and on-farm conservation research. On-farm conservation research is defined as an investigation conducted to answer a specific applied conservation question using a statistically valid design while employing farm-scale equipment on farms, ranches or private forest lands. NRCS is announcing the availability of up to $12.5 million in CIG funding to stimulate the development and adoption of innovative conservation approaches and technologies. Applications will be accepted from eligible entities in any of the 50 States, the District of Columbia, the Caribbean Area (Puerto Rico and the U.S. Virgin Islands), and the Pacific Islands Area (Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands). All U.S.-based non-federal entities (NFE) and individuals are invited to apply, with the

sole exception of federal agencies. Projects may be between one and three years in duration. The maximum award amount for a single award in FY 2019 is $2 million. **APPLICATIONS DUE DATE:** Applications must be received by 5 p.m. Eastern Time on **July 30, 2019**.

19-581 GeoPRISMS Program National Science Foundation

GeoPRISMS (Geodynamic Processes at Rifting and Subducting Margins) Program investigates the coupled geodynamics, earth surface processes, and climate interactions that build and modify continental margins over a wide range of timescales. These interactions cross the shoreline and have applications to margin evolution and dynamics, construction of stratigraphic architecture, accumulation of economic resources, and associated geologic hazards and environmental management. The GeoPRISMS Program includes two broadly integrated science initiatives (Subduction Cycles and Deformation (SCD) and Rift Initiation and Evolution (RIE)), linked by five overarching scientific topics and themes, where transformative advances are likely to occur in the decade 2011-2020, and where a focused scientific program could be most effective. These overarching science topics include 1) Origin and evolution of continental crust; 2) Fluids, magmas and their interactions; 3) Climate-surface-tectonics feedbacks; 4) Geochemical cycles; and 5) Plate boundary deformation and geodynamics. Each of the initiatives has identified primary sites for focused investigations, as well as thematic studies that will complement primary site studies. The GeoPRISMS Office, supported separately by an award to Pennsylvania State University, is tasked with community outreach and engagement through conferences, meetings, and maintenance of a website. More information about the function of the national office can be found here: http://geoprisms.org/about/organization/ Please note: This phase of GeoPRISMS is focused on facilitating the integration of previously acquired data, the synthesis of results within and across disciplines, and dissemination through collaboration, education, and legacy products. **This is the last solicitation for the program**. NSF Publication 19-581. **Due August 16.**

Innovative Technology Experiences for Students and Teachers (ITEST)

ITEST is an applied research and development (R&D) program providing direct student learning opportunities in pre-kindergarten through high school (PreK-12). The learning opportunities are based on innovative use of technology to strengthen knowledge and interest in science, technology, engineering, and mathematics (STEM) and information and communication technology (ICT) careers. To achieve this purpose, ITEST supports projects that engage students in technology-rich experiences that: (1) increase awareness and interest of STEM and ICT occupations; (2) motivate students to pursue appropriate education pathways to those occupations; and (3) develop STEM-specific disciplinary content knowledge and practices that promote critical thinking, reasoning, and communication skills needed for entering the STEM and ICT workforce of the future. **Due August 19**.

Research Experiences for Undergraduates

The Research Experiences for Undergraduates (REU) program supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation. REU projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for the REU program. This solicitation

features two mechanisms for support of student research: (1) REU Sites are based on independent proposals to initiate and conduct projects that engage a number of students in research. REU Sites may be based in a single discipline or academic department or may offer interdisciplinary or multi-department research opportunities with a coherent intellectual theme. Proposals with an international dimension are welcome. (2) REU Supplements may be included as a component of proposals for new or renewal NSF grants or cooperative agreements or may be requested for ongoing NSF-funded research projects. Undergraduate student participants in either REU Sites or REU Supplements must be U.S. citizens, U.S. nationals, or permanent residents of the United States. Students do not apply to NSF to participate in REU activities. Students apply directly to REU Sites or to NSF-funded investigators who receive REU Supplements. To identify appropriate REU Sites, students should consult the directory of active REU Sites on the Web at https://www.nsf.gov/crssprgm/reu/reu_search.cfm. NSF Publication 19-582. **Due August 28.**

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. (**https://www.archives.gov/nhprc/announcement/preliminary-proposal/prelim.html**) 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" (http://www.archives.gov/nhprc/apply/eligibility.html). Applications that consist entirely of ineligible activities will not be considered. **Due July 9, 2020**.

Opportunities for Promoting Understanding through Synthesis

The OPUS program seeks to provide opportunities for mid- to later-career investigators to develop new understanding of science in the fields supported by the Division of Environmental Biology (DEB) through two tracks of synthesis activities. OPUS: Mid-Career Synthesis. This track aims to provide a mid-career researcher, defined as a candidate at the associate professor rank

(or equivalent), with new capabilities to enhance their productivity, improve their retention as a scientist, and ensure a diverse scientific workforce that remains engaged in active research(including more women and minorities at high academic ranks). This track provides an opportunity for the mid-career scientist to enable a new synthesis of their ongoing research. Synthesis is achieved by developing new research capabilities through collaboration with a mentor to enable new understanding of the research system and questions of interest. OPUS: Core Research Synthesis. This track provides an opportunity for an individual or a group of investigators to revisit and synthesize a significant body of their prior research in a way that will enable new understanding of their research system and questions of interest. This track would also be appropriate early enough in a career to produce unique, integrated insight useful both to the scientific community and to the development of the investigator's future career. All four clusters within the Division of Environmental Biology (Ecosystem Science, Evolutionary Processes, Population and Community Ecology, and Systematics and Biodiversity Science) encourage the submission of these proposals enabling researchers to expand understanding and develop new insights in their research. **Due August 28**.

[International Research Experiences for Students](#)
The International Research Experiences for Students (IRES) program supports international research and research-related activities for U.S. science and engineering students. The IRES program contributes to development of a diverse, globally-engaged workforce with world-class skills. IRES focuses on active research participation by undergraduate or graduate students in high quality international research, education and professional development experiences in NSF-funded research areas. The overarching, long-term goal of the IRES program is to enhance U.S. leadership in research and education and to strengthen economic competitiveness through training the next generation of research leaders. This solicitation features three mechanisms; proposers are required to select one of the following tracks to submit their proposal. Track I focuses on the development of world-class research skills in international cohort experiences. Track II is dedicated to targeted, intensive learning and training opportunities that leverage international knowledge at the frontiers of research. Track III supports U.S. institutional collaborations to develop, implement and evaluate innovative models for high-impact, large-scale international research and professional development experiences for U.S. graduate students. Student participants supported by IRES funds must be citizens, nationals, or permanent residents of the United States. Students do not apply directly to NSF to participate in IRES activities. Students apply to NSF-funded investigators who receive IRES awards. To identify appropriate IRES projects, students should consult the directory of active [IRES awards](#). All PIs, co-PIs and Senior Personnel on IRES proposals must be from U.S. based institutions., **Due September 24**.

[Advanced Computing Systems & Services: Adapting to the Rapid Evolution of Science and Engineering Research](#)
The intent of this solicitation is to request proposals from organizations willing to serve as service providers (SPs) within the NSF Innovative High-Performance Computing (HPC) program to provide advanced cyberinfrastructure (CI) capabilities and/or services in production operations to support the full range of computational- and data-intensive research across all of science and engineering (S&E). The

current solicitation is intended to complement previous NSF investments in advanced computational infrastructure by provisioning resources, broadly defined in this solicitation to include systems and/or services, in two categories:

- Category I, Capacity Systems: production computational resources maximizing the capacity provided to support the broad range of computation and data analytics needs in S&E research; and
- Category II, Innovative Prototypes/Testbeds: innovative forward-looking capabilities deploying novel technologies, architectures, usage modes, etc., and exploring new target applications, methods, and paradigms for S&E discoveries. **Due November 5**.

Critical-Zone Collaborative Network

NSF seeks proposals to establish an adaptive and responsive research network that supports investigations of the Earth's Critical Zone. This network will consist of two components that will work together to advance knowledge, education, and outreach in this convergent science:1) Thematic Clusters of fixed or temporary locations will conduct basic research on significant, overarching scientific questions concerning the structure, function, and processes of the Critical Zone. These U.S.-based Clusters could include existing observatories engaged in collecting environmental data, other monitoring locations that have been in operation for extended periods of time, and new sites that will support the scientific goals of the Cluster;2) A Coordinating Hub that will oversee the compatibility and archiving of the data resulting from the Thematic Clusters, coordinate outreach and community-building activities, support the use of network facilities by outside researchers, and plan for infrastructure needs of the network. This solicitation invites proposals for either of the two components: 1) Thematic Clusteror 2) Coordinating Hub. The Thematic Clusters will carry out interdisciplinary research on scientific questions and manage part of the network infrastructure; the Coordinating Hub will serve as the national center for the network. The infrastructure of the network will be accessible to other research teams pursuing research in the Critical Zone. **Due Dec. 2.**

URL Links to New & Open Funding Solicitations
Links verified June 8, 2018

- **SAMHSA FY 2017 Grant Announcements and Awards**
- **Open Solicitations from IARPA (Intelligence Advanced Research Projects Activity)**
- **Bureau of Educational and Cultural Affairs, Open Solicitations, DOS**
- **ARPA-E Funding Opportunity Exchange**
- **DOE Funding Opportunity Exchange**
- **NPS Broad Agency Announcements (BAAs)**
- **NIJ Current Funding Opportunities**
- **NIJ Forthcoming Funding Opportunities**
- **Engineering Information Foundation Grant Program**
- **Comprehensive List of Collaborative Funding Mechanisms, NORDP**
- **ARL Funding Opportunities — Open Broad Agency Announcements (BAA)**

- **NASA Open Solicitations**
- **CDMRP FY 2018 Funding Announcements**
- **DOE/EERE Funding Opportunity Exchange**
- **New Funding Opportunities at NIEHS (NIH)**
- **National Human Genome Research Institute Funding Opportunities**
- **Office of Naval Research Currently Active BAAs**
- **HRSA Health Professions Open Opportunities**
- **Foundation Center RFP Weekly Funding Bulletin**

Solicitations Remaining Open from Prior Issues of the Newsletter

FY19 Bioenergy Technologies Office Multi-Topic Funding Opportunity Announcement
This Funding Opportunity Announcement (FOA) will provide funding to address the highest priority R&D areas within biofuel technologies, bioproducts, and biopower. It includes Areas of Interest (AOIs) from all five BETO programs: Feedstock Supply and Logistics; Advanced Algal Systems; Conversion; Advanced Development and Optimization; and Sustainability and Strategic Analysis. Each AOI supports BETO's objectives to reduce the minimum selling price of drop-in biofuels, lower the cost of biopower, enable high-value products from biomass or waste resources, and improve the quality of feedstock characterization and reliability of biorefinery operations. The full FOA is posted on the EERE Exchange website at https://eere-exchange.energy.gov. To apply to this FOA, Applicants must register with and submit application materials through EERE Exchange, EERE's online application portal. Information on where to submit questions regarding the content of the announcement and where to submit questions regarding submission of applications is found in the full FOA posted on the EERE Exchange website. **Due July 22**.

Physics Frontiers Centers (PFC)
The Physics Frontiers Centers (PFC) program supports university-based centers and institutes where the collective efforts of a larger group of individuals can enable transformational advances in the most promising research areas. The program is designed to foster major breakthroughs at the intellectual frontiers of physics by providing needed resources such as combinations of talents, skills, disciplines, and/or specialized infrastructure, not usually available to individual investigators or small groups, in an environment in which the collective efforts of the larger group can be shown to be seminal to promoting significant progress in the science and the education of students. Activities supported through the program are in all sub-fields of physics within the purview of the Division of Physics: atomic, molecular, optical, plasma, elementary particle, nuclear, particle astro-, gravitational, and biological physics. Interdisciplinary projects at the interface between these physics areas and other disciplines and physics sub-fields may also be considered, although the bulk of the effort must fall within one of those areas within the purview of the Division of Physics. The successful PFC activity will demonstrate: (1) the potential for a profound advance in physics; (2) creative, substantive activities aimed at enhancing education, diversity, and public outreach; (3) potential for broader impacts, e.g., impacts on other field(s) and benefits to society; (4) a synergy or value-

added rationale that justifies a center- or institute-like approach. **Preliminary due August 1; full January 30.**

[2019 NASA Teams Engaging Affiliated Museums and Informal Institutions (TEAM II)](#)
[National Aeronautics and Space Administration](#)

NASA's Office of STEM Engagement, collaborating closely with the Mission Directorates, and also in cooperation with NASA Headquarters' Office of Communications and Mission Support Directorate, solicits proposals led by Informal Education Institutions (IEIs) to provide inquiry- or experiential-based educational opportunities with direct alignment with major NASA missions for students and the public. These opportunities shall utilize partnerships with major networks of other IEIs, youth-serving organizations, libraries, and/or K-12 schools along with commercial entities, higher education institutions, and/or other agencies that support Federal STEM education goals. NASA's work in STEM Engagement is focused on ultimately serving students. It is recognized that providing support and resources to educators and educational institutions are vital vehicles through which to effectively engage students. Through this solicitation, NASA seeks to enhance the ability of IEIs and partners to deliver and participate in NASA-based activities, and to increase the capacity of institutions to utilize NASA resources and to provide students with the opportunity to contribute to NASA's mission using innovative tools and platforms. In particular, this solicitation seeks projects that feature the most current NASA space exploration, missions, engineering, and technologies to support NASA STEM Engagement objectives, strategies, and outcomes.

NASA TEAM II seeks to provide authentic STEM engagement opportunities for students and for their learning support systems of informal and formal educators that also support NASA STEM Engagement Core Principles, Objectives, and Strategies:

- Provide STEM engagement activities aligned with NASA mission-driven needs and priorities;
- Leverage NASA missions, content, people, and facilities to provide experiential authentic STEM opportunities that encourage innovation, critical thinking, and problem-solving skills;
- Use or develop evidenced-based educational strategies in designing and implementing the project and address state and local needs;
- Provide a measurable impact on learner interest in and positive attitudes towards STEM topics and improve self-perception of the learner's ability to participate in STEM;
- Enhance diversity and inclusion by better serving groups historically underrepresented and under served in STEM fields; and
- Utilize partnerships and regional and national networks of STEM- and STEM education-related IEIs to magnify and maximize reach and impact;

For this solicitation, informal education projects shall target STEM engagement for youth (particularly those of upper elementary and middle school age, in grades 4-8), and their support systems of families and informal and formal educators and institutions. **Due August 13**.

[Computer and Information Science and Engineering (CISE) Research Initiation Initiative (CRII)](#)

The NSF Directorate for Computer and Information Science and Engineering (CISE) seeks to award grants intended to support research independence among early-career academicians

who specifically lack access to adequate organizational or other resources. It is expected that funds obtained through this program will be used to support untenured faculty or research scientists (or equivalent) in their first three years in a primary academic position after the PhD, but not more than five years after completion of their PhD. Applicants for this program may not yet have received any other grants or contracts in the PI role from any department, agency, or institution of the federal government, including from the CAREER program or any other program, post-PhD, regardless of the size of the grant or contract, with certain exceptions as noted below. Serving as co-PI, Senior Personnel, Postdoctoral Fellow, or other Fellow does not count against this eligibility rule. Importantly, the CRII program seeks to provide essential resources to enable early-career PIs to launch their research careers. For the purposes of this program, CISE defines "essential resources" as those that (a) the PI does not otherwise have, including through organizational or other funding and (b) are critical for the PI to conduct early-career research that will enable research independence. In particular, this program is not appropriate for PIs who already have access to resources to conduct any early-career research. **Due August 14.**

[Agriculture and Food Research Initiative - Education and Workforce Development](#)
The Agriculture and Food Research Initiative - Education and Workforce Development (EWD) focuses on developing the next generation of research, education, and extension professionals in the food and agricultural sciences. In FY 2019, EWD invites applications in five areas: professional development for agricultural literacy; training of undergraduate students in research and extension; fellowships for predoctoral candidates; fellowships for postdoctoral scholars, and a brand new program for agricultural workforce training. **Due August 22.**

W81XWH-19-TBDRP-CDA DOD [Tick-Borne Disease, Career Development Award](#) **Department of Defense Dept. of the Army -- USAMRAA**
The FY19 TBDRP Career Development Award supports independent, early-career investigators in their efforts to conduct impactful research with the mentorship of an experienced tick-borne diseases researcher (i.e., the Mentor), thus providing an opportunity to obtain the funding, guidance, and experience necessary for productive, independent careers at the forefront of tick-borne diseases research. This award supports impactful research projects with an emphasis on discovery that may be translational in nature, but are not clinical trials. Under this award mechanism, the early-career investigator is considered the Principal Investigator (PI), and the application should focus on the PI's research and career development. It should be clear that the proposed research is intellectually designed by the PI and not a product of the Mentor. Preliminary data are not required. However, logical reasoning and a sound scientific rationale for the proposed research must be demonstrated. **Due August 22**.

[DOD Tick-Borne Disease, Investigator-Initiated Research Award](#)
The FY19 TBDRP Investigator-Initiated Research Award (IIRA) intends to support highly rigorous, high-impact studies that have the potential to make important contributions to Lyme disease and other tick-borne diseases research, patient care, and/or quality of life. This award mechanism promotes a wide range of research from basic through translational, including preclinical studies in animal models or human subjects, as well as correlative studies associated

with an existing clinical trial to establish proof-of-principle for further development in future studies. Applications should include a well-formulated, testable hypothesis based on strong scientific rationale that is established through logical reasoning, preliminary data, and critical review and analysis of the literature. Applications should articulate both the short- and long-term impact of the proposed research. High-impact research will, if successful, significantly advance Lyme disease and/or other tick-borne diseases research, patient care, and/or quality of life. **Due August 22.**

DOD Tick-Borne Disease, Idea Award

The FY19 TBDRP Idea Award intends to support conceptually innovative, high-risk/potentially high-reward research in the early stages of development that could lead to critical discoveries or major advancements that will accelerate progress in improving outcomes for individuals affected by Lyme disease and/or other tick-borne illnesses. This award mechanism promotes new ideas that represent innovative approaches to Lyme disease and other tick-borne diseases research and have the potential to make an important contribution toward the TBDRP mission. Applications should include a well-formulated, testable hypothesis based on strong scientific rationale that is established through inferential reasoning and/or critical review and analysis of the literature. Innovative research may introduce a new paradigm, challenge existing paradigms, look at existing problems from new perspectives, or exhibit other uniquely creative qualities that may include high-risk/potentially high-gain approaches to Lyme disease and other tick-borne diseases research. Research that is merely an incremental advance (the next logical step) is not considered innovative. **Due August 22**.

FY 2020 Department of Defense Multidisciplinary Research Program of the University Research Initiative

This MURI competition is open only to, and proposals are to be submitted only by, U.S. institutions of higher education (universities) with degree-granting programs in science and/or engineering, including DoD institutions of higher education. To the extent that it is a part of a U.S. institution of higher education and is not designated as a Federally Funded Research and Development Center (FFRDC), a University Affiliated Research Center (UARC) or other University Affiliated Laboratory (UAL) is eligible to submit a proposal to this MURI competition and/or receive MURI funds. Ineligible organizations (e.g., industry, DoD laboratories, FFRDCs, and foreign entities) may collaborate on the research but may not receive MURI funds directly or via subaward. When additional funding for an ineligible organization is necessary to make the proposed collaboration possible, such funds may be identified via a separate proposal from that organization. This supplemental proposal shall be attached to the primary MURI proposal and will be evaluated in accordance with the MURI review criteria by the responsible Research Topic Chief. If approved, the supplemental proposal may be funded using non-MURI or non-Government funds. **Due September 13**.

Minerva Research Initiative

The Minerva Research Initiative (Minerva) emphasizes questions of strategic importance to U.S. national security policy. It seeks to increase the Department's intellectual capital in the social sciences and improve its ability to address future challenges and build bridges between the

Department and the social science community. Minerva brings together universities and other research institutions around the world and supports multidisciplinary and cross-institutional projects addressing specific interest areas determined by the Department of Defense. The Minerva program aims to promote research in specific areas of social science and to promote a candid and constructive relationship between DoD and the social science academic community. **Due September 26**.

[**Agriculture and Food Research Initiative Competitive Grants Program**](#)
Applications to the FY 2019 Agriculture and Food Research Initiative - Sustainable Agricultural Systems (SAS) [Request for Applications](#) (RFA) must focus on approaches that promote transformational changes in the U.S. food and agriculture system within the next 25 years. NIFA seeks creative and visionary applications that take a systems approach, and that will significantly improve the supply of abundant, affordable, safe, nutritious, and accessible food, while providing sustainable opportunities for expansion of the bioeconomy through novel animal, crop, and forest products and supporting technologies. These approaches must demonstrate current and future social, behavioral, economic, health, and environmental impacts. Additionally, the outcomes of the work being proposed must result in societal benefits, including promotion of rural prosperity and enhancement of quality of life for those involved in food and agricultural value chains from production to utilization and consumption. **Due September 26.**

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.]

[**FA9550-18-S-0003 Research Interests of the Air Force Office of Scientific Research**](#)
AFOSR plans, coordinates, and executes the Air Force Research Laboratory's (AFRL) basic research program in response to technical guidance from AFRL and requirements of the Air Force. Additionally, the office fosters, supports, and conducts research within Air Force, university, and industry laboratories; and ensures transition of research results to support U.S. Air Force needs. The focus of AFOSR is on research areas that offer significant and comprehensive benefits to our national war fighting and peacekeeping capabilities. These areas are organized and managed in two scientific Departments: Engineering and Information Science (RTA) and Physical and Biological Sciences (RTB). The research activities managed within each Department are summarized in this section. **Open Until Superseded**.

[**BAA-RQKD-2014-0001 Open Innovation and Collaboration Department of Defense Air Force -- Research Lab**](#)
Open innovation is a methodology to capitalize on diverse, often non-traditional talents and insights, wherever they reside, to solve problems. Commercial industry has proven open

innovation to be an effective and efficient mechanism to overcome seemingly impossible technology and/or new product barriers. AFRL has actively and successfully participated in collaborative open innovation efforts. While these experiences have demonstrated the power of open innovation in the research world, existing mechanisms do not allow AFRL to rapidly enter into contractual relationships to further refine or develop solutions that were identified. This BAA will capitalize on commercial industry experience in open innovation and the benefits already achieved by AFRL using this approach. This BAA will provide AFRL an acquisition tool with the flexibility to rapidly solicit proposals through Calls for Proposals and make awards to deliver innovative technical solutions to meet present and future compelling Air Force needs as ever-changing operational issues become known. The requirements, terms and specific deliverables of each Call for Proposals will vary depending on the nature of the challenge being addressed. It is anticipated that Call(s) for Proposals will address challenges in (or the intersection between) such as the following technology areas: Materials: - Exploiting material properties to meet unique needs - Material analysis, concept / prototype development, and scale up Manufacturing Processes that enable affordable design, production and sustainment operations Aerospace systems: - Vehicle design, control, and coordinated autonomous and/or manned operations - Power and propulsion to enable next generation systems Human Effectiveness: - Methods and techniques to enhance human performance and resiliency in challenging environments - Man – Machine teaming and coordinated activities Sensors and Sensing Systems: - Sensor and sensing system concept development, design, integration and prototyping - Data integration and exploitation. **Open to July 12, 2019.**

HDTRA1-14-24-FRCWMD-BAA Fundamental Research to Counter Weapons of Mass Destruction
** Fundamental Research BAA posted on 20 March 2015.** Potential applicants are strongly encouraged to review the BAA in its entirety. **Please note that ALL general correspondence for this BAA must be sent to HDTRA1-FRCWMD-A@dtra.mil. Thrust Area-specific correspondence must be sent to the applicable Thrust Area e-mail address listed in Section 7: Agency Contacts.** **Open to Sept. 30, 2019.**

FY 2019 Continuation of Solicitation for the Office of Science Financial Assistance Program
Open to September 30.

BAA-RQKH-2015-0001 Methods and Technologies for Personalized Learning, Modeling and Assessment Air Force -- Research Lab
The Air Force Research Laboratories and 711th Human Performance Wing are soliciting white papers (and later technical and cost proposals) on the following research effort. This is an open ended BAA. The closing date for submission of White Papers is 17 Nov 2019. This program deals with science and technology development, experimentation, and demonstration in the areas of improving and personalizing individual, team, and larger group instructional training methods for airmen. The approaches relate to competency definition and requirements analysis, training and rehearsal strategies, and models and environments that support learning and proficiency achievement and sustainment during non-practice of under novel contexts. This effort focuses on measuring, diagnosing, and modeling airman expertise and performance, rapid development

of models of airman cognition and specifying and validating, both empirically and practically, new classes of synthetic, computer-generated agents and teammates. An Industry Day was held in November 2014. Presentation materials from the Industry Day and Q&A's are attached. If you would like a list of Industry Day attendees, send an email request to helen.williams@us.af.mil **Open until November 17, 2019.**

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/

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 autonomy technologies that will improve Air Force operations through human-machine teaming and autonomous decision-making. The technology demonstrations that result from this BAA will substantially improve the Air Force's capability to conduct missions in a variety of environments while minimizing the risks to Airmen. The overall impact of integration of autonomous systems into the mission space will enable the Air Force to operate inside of the enemy's decision loop.

STAT will develop and apply autonomy technologies to enhance the full mission cycle, including mission planning, mission execution, and post-mission analysis. Particular areas of interest include multi-domain command and control, manned-unmanned teaming, and information analytics. The technology demonstrations that result from this BAA will substantially improve the Air Force's capability to conduct missions in a variety of environments while minimizing the risks to Airmen. The overall impact of integration of autonomous systems into the mission space will enable the Air Force to operate inside of the enemy's decision loop. This effort plans to demonstrate modular, transferable, open system architectures, and deliver autonomy technologies applicable to a spectrum of multi-domain applications. Development efforts will mature a set of technologies that enable airmen to plan, command, control, and execute missions with manageable workloads. The software algorithms and supporting architectures shall:• Ingest and understand mission taskings and commander's intent• Respond appropriately to human direction and orders• Respond intelligently to dynamic threats and unplanned events Chosen technologies will be open, reusable, adaptable, platform agnostic, secure, credible, affordable, enduring, and able to be integrated into autonomous systems. The program will be comprised of various technologies developed by AFRL and Industry, integrated into technology demonstrations and deliverables with all the necessary software, hardware, and documentation to support AFRL-owned modeling and simulation environments for future capability developments. Thus, all technology development efforts must adhere to interface designs and standards. **Open to July 23, 2023**.

Academic Research Funding Strategies, LLC (Page 1)
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