Research Development & Grant Writing News

Table of Contents

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Topics of Interest URLs

(Back to Page 1)

URLS Continue Next Page

Research Development & Grant Writing News

Finding Funding in the Humanities & Social Sciences, Part 2

A Review by Katherine E. Kelly, PhD

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

Book Review: Raphael B. Folsom*, How to Get Grant Money in the Humanities and Social Sciences*. Yale U Press, 2019.

Last month, we reviewed Barbara Walker and Holly Unruh's *Funding Your Research in the Humanities and Social Sciences,* published by Routledge in 2019. This month, we'll take a look at Raphael Folsom's book on the same topic. It's to our benefit that two books written on the same topic can approach it in very different ways. The Walker/Unruh book could pass as an exemplary, required textbook for humanities/social science grantsmanship. Folsom's book, on the other hand, reads like an illuminating letter from a charming friend who has learned the ins and outs, ups and downs of grantwriting from personal experiences, both happy and sad. You don't want to miss either book.

Parts I ("Principles") and II ("Ingredients") of the Folsom book should be required reading for any Humanities or Humanities-oriented Social Science graduate student or beginning Assistant Professor. When, in Part I, Folsom cautions the reader to "Prepare for a Competitive Process," and to "Be Ambitious," he's going to the heart of academic funding culture and reminding the reader of the basic truths of this culture. By page 3, he's describing the three general principles for securing grant money: "Competition is a fact of academic life." "Ambition is a useful tool." And, "You need a team." Following this, he lists the six parts of every successful grant application: (1) A one-sentence research question (which he later modifies to 2-3 sentences); (2) a highly specific list of primary sources; (3) a mastery of the scholarly literature on the proposal topic; (4) a demonstration of how theory informs the proposal; (5) a list of funding sources; and (6) a detailed understanding of what each of those sources expects to find in a proposal. If readers were to stop reading here, they'd reap a huge benefit from this book.

Part II called "Ingredients," sounds innocuous, but contains some of the most valuable advice the book offers. This is where Folsom urges the reader to "craft a compelling question." This, too, sounds obvious, but obvious does not equal easy. In one of his typical moves, Folsom offers several examples of influential books in his field that have become influential. He then creates (retrospectively) a research question for each of them. The resulting advice is simple: a strong proposal will formulate a powerful research question and then offer a few answers to it. The work of the proposal will be to decide which of those possible answers is the most true. More examples of research questions posed by influential books in anthropology and political science follow. These offer readers models for arriving at questions worth asking and answering.

Of all the short, readable chapters in Part II, my favorite is "Know Your Theory." Here, Folsom clarifies the role that theory should play in a proposal, or, for that matter, in a dissertation, article, or book. Folsom articulates the foundational reason for relying on the explanatory power of a relevant theory, and it isn't simply to seem intellectually fashionable. The point is to use the explanatory power of large ideas as a tool for giving meaning to many, disparate examples of human activity. Folsom lists recent influential theorists and recommends that a proposal should discuss one or more of these theories economically, "showing how your work either confirms, adds interesting detail to, or undermines it." He even offers a percentage of space (less than 1/20th) that should be occupied by a discussion of theory in a grant proposal. This, of course, presupposes that the proposal is not itself dedicated to advancing or critiquing theory. He offers examples to show how this can be done.

A special feature of the Folsom book called "Interviews with Experts" occupies about one-third of its pages. In this closing section, Folsom asks a series of questions of well-published and influential humanists, which they answer with sometimes hilarious candor. One interviewee discusses the importance of avoiding jargon in proposals by translating specialized concepts into clear English. "One thing I will say," she confesses, "is that applications in philosophy drive me crazy. They are working in another world from the people in the other humanities." When asked about selecting recommenders, another interviewee, Pauline Yu, former president of the American Council of Learned Societies, advises, "Getting a big name to write for you isn't going to help . . . if they can't speak to your work with specificity and detail." This section is worth a close read.

Both the Walker/Unruh and the Folsom books address the issue of multi-disciplinary (transdisciplinary, cross-disciplinary, etc.) research—why it exists and how it can best be pursued successfully. This trend appears stronger in the sciences than in the Humanities and humanistic Social Sciences. Folsom suggests that, for humanists, theory offers a conceptual and rhetorical bridge between disciplines. For Walker/Unruh, a growing interest in mixing disciplines can be attributed to the "recognition that science and technology are embedded in social relationships and cultural practices." They cite funding agencies' interest in approaches that "take what is called a SHTEAM approach (Science, Humanities, Technology, Engineering, Arts, and Math)". This approach appears to be part of a backlash against the push for STEM disciplines that omit the humanities altogether. It's an interesting correction, but it doesn't seem to be fully developed or widely adopted as yet, although many science and technology funders are increasingly requiring a social science component to large grants.

Finally, both books offer cheerful advice for the rejected. When a proposal is refused, the applicant can be tempted to quit or lose focus. This has to be resisted. After all, most proposals will be rejected most of the time. Acceptance is rare, but increasingly likely if the applicant accepts the reviewers' descriptions of the proposal's flaws and learns from them. Inspiring, amusing, and useful, these two books offer humanist academics at all stages and of all stripes sensible advice for writing competitive proposals.

How to Analyze a DARPA BAA

By Mike Cronan, co-publisher
(Back to Page 1)

The recent DARPA Broad Agency Announcement (BAA) HR001119S0071, open from June 2019 to **June <u>2020</u>**, is a good example of a common practice of federal mission agencies sunsetting open BAAs after a year or more and opening new BAAs *near the time when the those agencies transition to a new fiscal year*. Moreover, while the example used for discussion purposes in this article is a relatively brief document (some BAAs can run over 100 pages), it nonetheless follows a common BAA format wherein the document gives a general overview of research topic areas of interest to the <u>funding agency</u>.

This can be distinguished from **an agency funding solicitation that will be very topic specific and prescriptive in the program's goals and objectives.** In a way, solicitations that address an agency's targeted domain of research interests are trolling for exciting new ideas heretofore not addressed by the agency but of potential great benefit.

Moreover, BAAs such as this DARPA document are helpful in providing new and junior faculty, among others, a detailed introduction to BAAs because they represent a suite of integrative program requirements that *serve as an excellent learning tool related to writing successful proposals*. This tool can help faculty fairly new to grant writing build a more comprehensive understanding of *what constitutes a competitive proposal and the factors that impact competitiveness*. For example, BAAs typically clarify <u>in a generic way</u>

- the importance of *talking about your proposed research to a program officer* or BAA POC (point of contact) prior to writing a proposal, preliminary proposal, or white paper;
- the importance of *linking the proposed research to the agency mission priorities* detailed or referenced in the BAA;
- the *nature of basic or fundamental research as opposed to applied research;*
- the importance of having a thorough *knowledge of an agency's mission priorities* to ensure that proposed research brings value-added benefits to the agency mission;
- the importance of following submission and format requirements;
- the importance of reading through a complex set of instructions carefully and being able to resolve ambiguities that may be inherent to a general BAA to make sure an applicant can fit the agency's research priorities;
- how to *write a white paper* as a first step towards writing a full proposal;
- how to track an agency's research priorities as they change over time; and
- how an agency will review and evaluate a proposal.

As a specific example, this <u>document</u> uses the BAA mechanism to address the DARPA mission and research objectives, noted as follows (emphasis added): "The mission of the Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) is to *identify and create the next generation of scientific discovery by pursuing high-risk, high-payoff research initiatives across a broad spectrum of science and engineering disciplines* and transforming these initiatives into disruptive technologies for U.S. national security. In support

of this mission, the DSO Office-wide BAA invites proposers to submit innovative ***basic or applied research concepts that address one or more of the following technical domains***: (1) Frontiers in Math, Computation and Design, (2) Limits of Sensing and Sensors, (3) Complex Social Systems, and (4) Anticipating Surprise and includes a list of example research topics that highlight several (but not all) potential areas of interest. Proposals must investigate innovative approaches that <u>enable revolutionary advances</u>. ***DSO is explicitly <u>not interested</u> in approaches or technologies that primarily result in evolutionary improvements to the existing state of practice***."

The takeaway from the above, and to BAAs in general, is the importance of drilling down to what the agency is asking for in the BAA, ***some of which will be explicit,*** and, more importantly and more challenging, ***some of it will be implicit,*** wherein the agency will leave it to the potential applicant to clearly discern agency intent ***by experience, talking to colleagues funded by the agency, and by a deep dive into the agency website, reports, and abstracts of funded projects, among other ways***. It is clear from the above that if you hope to be successful in responding to a DARPA BAA your proposed research must be sufficiently transformative for the agency to make a risky investment in your research in hopes of a high pay-off revolutionary advance in the field. No research **merely** proposing evolutionary proposals need apply for this funding in these four general research domains.

Moreover, you cannot just claim your research is transformative to the field of interest to DARPA; ***you need to prove it*** under the assumption that all DARPA program managers are from Missouri—the Show Me State—and all program managers and reviewers channel the 1899 observation by Missouri Rep. Willard D. Vandiver who famously said, "***Frothy eloquence neither convinces nor satisfies me. I'm from Missouri. You've got to show me***."

As noted above, DARPA operates on the principle that generating big rewards requires taking big risks. But how does the Agency determine the risks worth taking? Well, more detail was added to Vandiver's observation by George H. Heilmeier, a former DARPA director (1975-1977), who crafted a set of iconic questions now known as the "*Heilmeier Catechism*" to help DARPA officials think through and evaluate proposed research programs, specifically:

- What are you trying to do?
- Articulate your objectives using absolutely no jargon.
- How is it done today, and what are the limits of current practice?
- What is new in your approach and why do you think it will be successful?
- Who cares? If you are successful, what difference will it make?
- What are the risks?
- How much will it cost?
- How long will it take?
- What are the mid-term and final "exams" to check for success?

Moreover, keep in mind that, while the above is specific to a DARPA BAA, it is not all that dissimilar to the language used in most BAAs. So if you master the process of analysis of one BAA, you have largely mastered the process of analyzing all BAAs, regardless of agency. For example, a key part of responding to any BAA is to understand the application and submission process. In the case of this DARPA BAA, prior to submitting a full proposal, proposers are

strongly encouraged to first submit ***an executive summary and/or abstract*** as described below. (Don't delude yourself into thinking this step is optional.) This process allows DARPA to ascertain whether the proposed concept is: (1) ***applicable to the DSO Office-wide BAA*** and (2) ***currently of interest***. As noted by DARPA, "For the purposes of this BAA, applicability is defined as follows:

- The proposed concept is applicable to the technical areas described herein.
- The proposed concept is important to DSO's current investment portfolio.
- The proposed concept investigates an innovative approach that enables revolutionary advances, i.e., will not primarily result in evolutionary improvements to the existing state of practice.
- The proposed work has not already been completed (i.e., the research element is complete but manufacturing/fabrication funds are required).
- The proposer has not already received funding or a positive funding decision for the proposed concept (whether from DARPA or another Government agency)."

Moreover, the BAA notes, "All executive summaries, abstracts and full proposals must provide sufficient information to assess the validity/feasibility of their claims as well as comply with the requirements outlined herein for submission formatting, content and transmission to DARPA. Executive summaries, abstracts and full proposals that fail to do so may be deemed non-conforming and removed from consideration. Proposers will be notified of non-conforming determinations via letter."

Additionally, the format of submitted documents is addressed in the BAA and templates for the submission process are provided, as noted in the below screen from the BAA.

Click on the following file link(s) to download the related document(s):

File Description	File Name	Last Updated Date/Time	File Size
Folder: Full Announcement - HR001119S0071	HR001119S0071-Full Announcement - HR001119S0071.zip	Jun 13, 2019 02:04:43 PM EDT	1.3 MB
Attachment A Executive Summary Template	Attachment A Executive Summary Template.docx	Jun 13, 2019 02:04:37 PM EDT	28.1 KB
Attachment B Abstract Summary Slide Template	Attachment B Abstract Summary Slide Template.pptx	Jun 13, 2019 02:04:38 PM EDT	419.6 KB
Attachment C Abstract Template	Attachment C Abstract Template.docx	Jun 13, 2019 02:04:38 PM EDT	32.1 KB
Attachment D Proposal Summary Slide Template	Attachment D Proposal Summary Slide Template.pptx	Jun 13, 2019 02:04:39 PM EDT	419.7 KB
Attachment E Proposal Template Vol. 1-Tech &	Attachment E Proposal Template Vol. 1-Tech &	Jun 13, 2019 02:04:40 PM EDT	36.9 KB

Mgmt	Mgmt.docx		
Attachment H Proposal Template Vol. 3-Admin & Natl Policy Requmts	Attachment H Proposal Template Vol. 3-Admin & Natl Policy Requmts.docx	Jun 13, 2019 02:04:41 PM EDT	40.2 KB
HR001119S0071.pdf	HR001119S0071.pdf	Jun 13, 2019 02:04:36 PM EDT	241.0 KB
updated Attachment F	Attachment F Proposal Template Vol. 2-Cost.docx	Jun 13, 2019 02:04:42 PM EDT	40.9 KB
updated Attachment G	Attachment G - Proposal Template - Volume 2 - Cost Summary Spreadsheet.xlsx	Jun 13, 2019 02:04:43 PM EDT	179.8 KB

Executive Summary Template

Note that the templates from the above chart are mandatory. For example, as noted in the BAA, "*Use of this template is mandatory for all executive summary submissions to this BAA. This document must include all components described herein and must be submitted in .pdf, .odx, .doc, or .docx formats. All submissions must be written in English and all pages shall be formatted for printing on 8-1/2 by 11-inch paper with 1-inch margins and font size not smaller than 12 point. Font sizes of 8 or 10 point may be used for figures, tables, and charts. Executive summaries shall not exceed a maximum of 2 pages* (1 page cover sheet + 1 page technical description)."

Abstract Template (aka White Paper)

Also noted is the format for the abstract, specifically "Use of this template is mandatory *for all abstract submissions to this BAA. This document must include all components described herein and must be submitted in .pdf, .odx, .doc, or .docx formats. All submissions must be written in English and all pages shall be formatted for printing on 8-1/2 by 11-inch paper with 1-inch margins and font size not smaller than 12 point. Font sizes of 8 or 10 point may be used for figures, tables, and charts. Abstracts shall not exceed a maximum of 5 pages*."
The purpose of the white paper, according to DoD, is to preclude unwarranted effort on the part of an applicant whose proposed work is not of interest to the agency.

Based on an assessment of the abstract or whitepaper, **feedback will be provided to the proposers to encourage or discourage them to submit a full proposal**. White papers should present the effort in sufficient detail to allow evaluation of the concept's technical merit and its potential contributions of the effort to the agency-specific mission. Moreover, mission agencies may ask occasionally for the submission of a Quad Chart (see example Quad Chart in DARPA BAA) as part of the unsolicited proposal process. This is a very abbreviated process wherein a one-page document divided into quadrants serves as a template for responding to four key questions related to your research and its relevance to the agency mission.

This abbreviated application process comprised of discrete and briefer preliminary review gates (quad chart/abstracts/white paper) limits your initial commitment of time and effort. **However, your success depends on your capacity to distill your research vision, goals, and objectives into a succinct and clearly written response that allows agency program**

officers to quickly grasp the significance of your research and how it advances the research mission of the agency. In a white paper or abstract, a connection must be made quickly between the **significance of your research and the research mission of the agency**.

Here, too, the more knowledgeable you are about a funding agency's research mission, strategic plans, research culture, investment priorities, and the rationale behind them, the better able you will be to develop highly competitive responses in the form of quad charts, abstracts, white papers, preliminary proposals, preapplications, and full proposals as required by the agency-specific process.

If you are new to BAAs, this 24-page DARPA BAA is of modest size yet addresses all the typical components of the stepwise process to put you in the position of being encouraged to submit a full proposal, starting with a discussion with the Point of Contact (POC).

Finally, and perhaps most imporantly, **BAAs will address the general protocol for contacting a POC**, but in general, regardless of contacting a POC (see list below of DARPA DSO POCs) or a program officer, **there are some generic protocols to remember**. First, **do your due diligence before you call** or, preferably, email about setting a date and time to talk to a POC or PO. Make sure you have thoroughly explicated the BAA or the program solicitation before you make contact. Don't waste a program officer's time asking questions that you can easily answer for yourself by carefully reading the BAA or program solicitation. Expand beyond that-- if you are not knowledgeable about the mission and culture of a particular agency or program area within an agency issuing the BAA, find out all you can from looking at the agency website, strategic reports, or talking to colleagues familiar with the agency.

When you do call, have a list of questions you would like to ask and get to the point of those questions quickly. Remember it is a business call and not a social call. **Do not ask questions that require the POC or program officer to speculate on outcomes**, such as "*What do you think my chances are of being funded*?" Keep in mind also that, in many mission agency program areas, the program managers have significant, and in some cases total, influence over the funding outcomes of proposals. You want to convince them your research will make a significant contribution to the agency's research objectives.

Moreover, don't forget to do some background searching on the POC or program officer. Sometimes their CV or a biographical profile will be on the agency website, or you can do a Google search to find information on the technical background of the POC or program officer. **The more you know about the agency, the agency's research priorities, and the background of the POC or program officer, the more you will be able to guide the conversation in a way that is favorable to your proposed research**. Also, many agencies post abstracts of recently funded programs on their Web site. In those cases where descriptions of recent prior awards are posted online, a valuable source of nuanced information exists about what the agency seeks in a particular research domain.

Contact DARPA DSO Program Managers to discuss your ideas
Dr. William Carter (Materials Science) **More**
Dr. Tatjana Curcic (Quantum Information Science) **More**
Dr. Michael Fiddy (Electromagnetic Waves, Scattering and Structures) **More**
Dr. Anne Fischer (Chemical Systems) **More**
Major C. David Lewis, USAF (Physics) **More**

Dr. Rosa Alejandra Lukaszew (Physics & Materials) **More**
Dr. John S. Paschkewitz (Systems, Design & Materials) **More**
Dr. Adam Russell (Behavioral & Social Sciences) **More**
Dr. Bartlett Russell (Behavioral & Cognitive Science) **More**
Mr. Ted Senator (Artificial Intelligence) **More**
Dr. Jan Vandenbrande (Math, Design & Production Automation) **More**
Dr. Mark Wrobel (Radiation Science; Health Physics) **More**
Dr. Jiangying Zhou (Artificial Intelligence) **More**

Tips for Effective Proposal Graphics

By Lucy Deckard, co-publisher
(Back to Page 1)

Effective graphics, which may include images, drawings, schematics, flow charts, graphs, plots, tables, and organization charts, are often key to a strong proposal, but PIs often fail to take full advantage of the power of graphics. In this article, we'll discuss how to develop graphics that help you make your case for funding.

First, it's helpful to be clear about what you're trying to accomplish with graphics. Reading text is a linear experience—we read one sentence, then the next sentence, and so on—but many ideas and concepts aren't linear. Graphics can be a more effective way to communicate these non-linear concepts, such as how various elements fit together or how a process works. Graphics can also be an effective way to summarize and draw attention to particularly important information or arguments you're making. Graphics can provide complex information supported by data, usually in the form of graphs or charts, such as the interactions between various variables, trends, or comparisons. Obviously, graphics are the best way to present visual information, such as drawings of a structure, images of an instrument, or photos of participants engaging in an outreach activity. Finally, graphics can make a page more inviting and reader-friendly, providing an esthetically pleasing break in the proposal text.

Another, less appreciated, advantage of generating graphics is that they can be used as thinking documents, helping to clarify your or your team's thinking. For example, when a team prepares a chart that shows how each proposed activity supports specific project goals, they often see connections (or a lack of connections) that they hadn't identified before. Developing an organization chart for the project team often helps clarify what the specific role of each team member is and also makes it clear when there are "orphan" roles that need to be assigned to someone.

With these functions in mind, we discuss below what makes a proposal graphic effective and common mistakes to avoid.

❖ Make sure your graphics are legible.

This might seem obvious, but illegible graphics are one of the most common mistakes that PIs make. Typically, the problem is that text in the graphics (such as axis labels, legends, scales, etc.) is too small. This typically arises from the process of taking a graphic, such as a graph presented on a large screen at a conference, and shrinking it down to fit into a small section of a proposal page without altering the text in the graphic. A graph with illegible axis labels or legends is not just a waste of valuable proposal real estate, it also irritates your reviewer—something you don't want to do! Yes, if the reviewer is reading your proposal on a computer, they may be able to zoom in on your graphic to try to read the axis labels, but odds are they will just skip it and keep reading. After all, they have a stack of proposals to get through, and if you didn't bother to make the graphic legible, it's not their problem.

To avoid this mistake, look at your graphic as it is on the page at 100% scale (not zoomed to 150%). Is the graphic (and all associated text) easy to read? If this were printed out on a black and white printer (which some reviewers still do), is it still legible? If not, you should

either re-do the text only, or redraw the entire graphic if necessary. Typically, for relatively small text in graphs or tables, sans serif fonts such as Arial work best. They can be quite small while still being legible. Another trick, especially for flow charts and small labels on figures, is to bold the text. This makes the text easier to ready while increasing the size only slightly. If you're using colors, be sure that the colors of the text and background contrast strongly. If your text is gray, for example, try making it black. For most funding agencies, font style and size rules don't apply to figures and tables as long as they are legible, but **be sure to check the rules for your specific proposal**.

Another problem that can hinder legibility is "fuzzy" graphics. These are usually the result of exporting graphics from one program (for example, PowerPoint or Excel) to another (for example, MS Word) with insufficient resolution. Poor-quality, fuzzy graphics make a poor impression on reviewers and can be seen as a reflection of the PI's competence and attention to detail. Unless there is a compelling reason to include a low-quality graphic (e.g., you're showing an image of an astronomical object or an atomic particle taken at the highest resolution that science allows), it is imperative that you fix these! Often, the fix is as simple as going back to the original graphic and exporting it in a different way. If all else fails, assuming the original graphic looks good, blow it up as large as you can on your screen, take a screen grab, and save it to a graphics program such as Paint or Photoshop where you can, if necessary, adjust the resolution to around 300 dpi. (It's generally not a good idea to paste a screen grab directly into your proposal draft since the resolution can sometimes end up being much higher than needed. As we will discuss near the end of this article, you don't want to use ultra-high resolution images since they aren't necessary for a small graphic in a proposal, and they can blow up your file size.) If you don't have access to the original graphic, redraw it if possible.

❖ Make sure your graphics are easy to interpret.

As we discussed earlier, one function of graphics is to present an overview of an idea or concept in a way that's quick and easy to grasp. If you make your graphic very complex, you defeat that purpose. What's more, a strength of graphics—the fact that it's a non-linear way to communicate—can quickly become a liability when a reviewer is presented with a very complex graphic. It may not be clear where to start in interpreting the graphic and what the most important components are. In contrast, text leads the reader through the discussion step by step.

If you find yourself developing a complex graphic with a spaghetti bowl of boxes and arrows, consider how you can simplify it. Could you split it into multiple, simpler graphics? Could you present the main concepts at a higher, less-detailed level and reserve the details for the discussion in the accompanying text? Could you change the format of your graphic by, for example, converting from a flow chart showing the experimental protocol to a table showing the main experimental parameters.

One caveat to this principle is that sometimes a funder or program will require specific, detailed graphics or tables with instructions on what must be included. Examples include the NSF Engineering Research Center 3-plane diagram and detailed logic models required for many education and programmatic grants. In these cases, you should still strive to make the graphic as legible and easy to interpret as possible, but it may still be very complex. In this case,

however, the reviewers will be very familiar with the format and should have no problem interpreting your graphic as long as you follow the program's conventions and instructions.

❖ **Include strong captions that help reinforce your point.**

The main purpose of your figure caption should be to state the point you're trying to make with the graphic. For example, if your graphic shows the median income of the US population by quintile, it's not very helpful to caption your graphic, "Figure 1. Median income of the US population by quintile." That should be obvious from a quick glance at the x and y labels of your graph. Instead, state the conclusion or main point that you want the reviewer to take away from the graphic, for example, "Figure 1. The top quarter of US earners earned 90% of total US income in 2018." Similarly, if you show a photomicrograph of a gold nanoparticle coated with a layer of proteins, rather than saying in the caption, "Figure 1. Photomicrograph of gold nanoparticle coated with a monolayer of proteins," think about what point you're trying to make by showing that photomicrograph. For example, it might be "Figure 1. Our lab has demonstrated the ability to coat gold nanoparticles with a monolayer of proteins, paving the way for our proposed drug delivery approach."

It should be obvious that including very long, detailed captions defeats the purpose of stating clearly and concisely what your main point is. This is a case where more is less. For example, if you include in the caption a long description of the process by which you coated the gold nanoparticles with the monolayer of proteins, your main point that this is an important new capability that positions you to be successful with your proposed new drug delivery approach will be lost in all the verbiage. If you need to describe the coating process in detail, put that in description in your body text, and summarize it briefly in the caption.

That said, there are differences in style for different agencies and disciplines. For NIH proposals, for example, it's more common to include longer captions. However, NIH reviewers are still human, and their eyes still get tired, so it's still a good idea to avoid very long figure captions, particularly if they are in smaller fonts than the body text. If you need to include a long explanation of the figure, put it in the body of your proposal when referring to the figure.

❖ **Make sure your graphics use space efficiently.**

For proposals, it's generally not a good idea to include a graphic that takes up a large portion of a page, except in cases where that graphic is explicitly required by the funder (e.g., logic models, detailed project schedules, etc.). If you have a graphic that takes up half a page of a 12- or 15-page narrative, you're losing a lot of precious real estate. Scrutinize your graphic. Is it too complex? Can you simplify it and make it smaller? Does it include a lot of white space? Can you compress the graphic components or redesign it to make it smaller? If it's a table, is it too detailed? Can you reformat the table so that it uses less space? (Remember that most funders allow you to use a smaller font in tables than in your body text and, as we mentioned above, smaller sans serif fonts work well for tables. Also, you may want to look at the line spacing to see if you can compress the text in the table a bit. However, don't make allow your graphics to look crowded.)

Of course, there are situations where a large graphic is justified, such as longer Center-level proposals (where they narrative might be 40 pages or longer) or proposals where a large

graphic is absolutely required to provide key information. Just consider whether it makes sense to give up a half-page or more of text in order to include your graphic.

❖ **Make your graphics esthetically pleasing.**

Again, this is a place where it's important to put yourself in the place of a reviewer. If you're reading a proposal with attractive, polished graphics, what is your impression of the PI? Compare that to reading a proposal that has poorly drawn, amateurish looking graphics. Clearly, no reviewer will admit to recommending a proposal for funding simply because it had pretty pictures. However, how your proposal looks provides a general impression of your competence. Moreover, esthetically pleasing graphics naturally draw the reader's eye. If you're using graphics to reinforce your most important points, then drawing the reader's eye immediately to those points will make your proposal more effective.

How do you make your graphics esthetically pleasing? Follow the steps above: make sure they're legible; don't make them too complex; and make sure they're sharp. Also, consider using some color, keeping in mind that they should, if possible, still work if printed out in black and white. (For some topics, such as disciplines where you must show illustrations of complex biomolecules, this isn't really possible, but reviewers in those fields understand that.) However, don't go crazy with color; it can end up being distracting. If you're struggling, consider enlisting help. Some universities have graphic designers on staff, or they have a list of graphic designers you can engage for a reasonable price. You may even be able to enlist the help of an undergraduate or graduate student who has experience with graphics programs.

❖ **Beware very high-resolution of images.**

As a logistical consideration, be careful about including images with much higher resolutions than necessary. If, for example, you insert multiple photographs at full resolution, you can end up with a proposal draft file that is so large that it crashes, can't be emailed as an attachment, and sometimes can't be uploaded for submission. Remember that you typically don't need a resolution of more than 300 dpi, and sometimes less if fine. When you're considering inserting an image, take a minute to look at the size of the file. If it's close to a megabyte, you can probably reduce its resolution. Import it into MS Paint, Adobe Photoshop, or a similar program and do that before importing into your draft.

Here's a wonky tip: If you're working on a team, and someone sends you a proposal draft that is an inordinately large size that's causing trouble, it may be only one or two graphics that are blowing up the file size. If you're using MS Word, you can figure out which graphics are too big by saving the file as a webpage (click "Save As" then click "Webpage" under "Type"). Go to where you saved the file, and in addition to the HTML file, you'll find a folder that contains all the figures as separate files. By viewing the details of the files, which shows each file's size, you'll find that the large figures will have a dramatically larger file size than the rest of the figure files. You can then reduce the resolution of those images and reimport them into the document (making sure "track changes" is off). (You're supposed to be able to compress images within MS Word, but I've found that function to be of limited use.)

In this competitive funding landscape, graphics can be key to developing a compelling grant proposal. Be sure to take full advantage of the edge that strong graphics can give you.

NSF ECR Proposal Preparation Web Seminar

By Mike Cronan, co-publisher

The EHR Core Research (ECR) *STEM Learning and Learning Environments, Broadening Participation, and Workforce Development* invites proposals due October 3 for **fundamental** research (basic research or use-inspired basic research) that advances knowledge in one or more of the three Research Tracks: Research on STEM Learning and Learning Environments, Research on Broadening Participation in STEM fields, and Research on STEM Workforce Development. The 2-hour Proposal Preparation Webinar complementing this solicitation was held August 7. The webinar slides are posted online HERE and the web seminar will be posted shortly. ***Keep in mind that while this webinar is specific to the EHR program many of the insights offered by the NSF Program Officers apply to many other NSF funding opportunities as well***. (Also see NSF 19-033 ECR Dear Colleague Letter Outreach Webinar and NSF 19-044 DCL: Fundamental Discipline-Based Education Research (DBER) Outreach Webinar.)

These are major awards, as noted by the three funding levels and as noted by NSF in the web seminar: "The three levels of funding should align with the maturity of the proposed work, the size and scope of the empirical effort, and the capacity of the team to conduct the proposed research: (1) **Level I proposals**: have a maximum award size of $500,000 and a maximum duration of 3 years; (2) **Level II proposals** have a maximum award size of $1,500,000 and a maximum duration of 3 years; (3) **Level III proposals** have a maximum award size of $2,500,000 and a maximum duration of 5 years."

One important point made in the web seminar is that the new solicitation NSF 19-508 is significantly different from the prior solicitation NSF 15-509. So don't read the new solicitation on autopilot and conflate it with the prior funding opportunity. However, NSF noted that this solicitation will likely not change over the coming few years; therefore, if you are thinking of applying at a future due date, you can prepare early with confidence that this solicitation will govern that future application.

It is important to comment here on the nature of NSF webinars, including this one. Do not expect webinars, complementary slides, and comments by program officers to inform you of anything that you cannot glean from a close reading of the full solicitation, or an explication of text. You will not be offered a secret decoder ring by program officers with explicit insider information unavailable to those who do not attend the webinar. What you can get that others won't is *implicit information* contained in the webinar that has been distilled from the much longer solicitation. This will give you a sense of the relative importance of the information presented by program officers, e.g., why some information was included from the solicitation but not other information.

Furthermore, you can gain implicit insight into the key factors that result in a successful proposal by noting the amount of time program officers devote to the specifics of the solicitation, or when program officers reference what you may have assumed to be ancillary information but is actually priority one information. For example, the importance NSF places on the Common Guidelines for Education Research and Development and Companion Guidelines on Replication & Reproducibility in Education Research emerges clearly in this

webinar. Moreover, in terms of your data management plan, NSF is placing increasing importance on the reproducibility and replication of research. NSF notes that "Your DMP should describe how data and related materials are generated to allow for reproducibility, and should support the sharing of data, products and methods for understanding, validation, and replication of research findings."

Briefly addressed were comments such as the following:
- Need for a dissemination plan beyond academic fields,
- Never say "this topic has never been researched before," or there is no research literature in this field because my work is so groundbreaking,"
- Remember the a budget justification is a narrative justifying what you ask for and not merely a spreadsheet,"
- Make sure you justify the level of support your ask for,
- Remember at NSF reviewers are advisory only—they do not make funding decisions,
- It is disconcerting to reviewers and program officers when an applicant for a complex project like the ERC uses fewer than the 15 pages allocated for the project description.

What makes a successful ECR proposal ? According to NSF:
- Builds upon existing theory and evidence from relevant fields.
- Draws broadly on the current relevant literatures and also on
- the specific literature in any STEM domain of central focus.
- Explicitly describes the research design including:
    o underlying methodological assumptions
    o target population and sampling
    o measures and instruments
    o data gathering and analysis plan.
- Data collection procedures should be well-specified, including information on reliability, validity, and appropriateness of proposed measures and instruments or plans for establishing them.

As noted early in the solicitation, "The EHR Core Research program (ECR) invites proposals for **fundamental** **research**…" The NSF webinar clarifies the importance of this point: "*Fundamental Research: What do we mean*?
- Curiosity-driven research that expands knowledge in a specific theoretical or research area.
- In the case of ECR, fundamental research addresses important research questions related to education, learning, broadening participation, or workforce development in and across STEM fields.
- While the research may have implications for policy or practice, ECR research doesn't necessarily generate findings with immediate applications at the practical level.

Fundamental Research:
- Is grounded in theoretical or empirical frameworks that inform research questions;

- Identifies and explores important new constructs in education, learning, broadening participation, or workforce development in STEM fields;
- Extends understanding of current constructs;
- Increases understanding of relationships among the constructs under investigation;
- Extends research or evaluation methodologies for advancing the evidence base to support improved policy or practice"

Importantly in the webinar, NSF addresses what **makes a successful ECR Proposal**. It

- "Builds upon existing theory and evidence from relevant fields.
- Draws broadly on the current relevant literatures and also on the specific literature in any STEM domain of central focus.
- Explicitly describes the research design including:
  - o underlying methodological assumptions
  - o target population and sampling
  - o measures and instruments
  - o data gathering and analysis plan.
- Data collection procedures should be well-specified, including
  - o information on reliability, validity, and appropriateness of proposed measures and instruments or plans for establishing them."

Moreover--

- "Proposals involving quantitative research should include:
  - o descriptions of the statistical methods to be used;
  - o their assumptions and how they will be tested;
  - o details on how potential threats to validity will be addressed;
  - o results of power analyses for proposed sample sizes; and
  - o estimates of effect sizes.
- Proposals involving qualitative research should explain data collection, coding, and reduction procedures:
  - o Data analysis procedures and the specific conceptual frameworks that will guide analyses;
  - o Details about the sample and sample selection;
  - o How validity will be assessed and addressed.
  - o Reporting pilot results and providing examples of anticipated findings that might result from the proposed studies will strengthen the competitiveness of proposals."

In conclusion, this webinar and the presentation materials offer an effective competitive insight into how to obtain funding in this program area.

USDA Report on the Key Role of Technology Transfer in Funded Proposals

By Mike Cronan, co-publisher

A key factor in funding success at federal mission agencies is the capacity of the research team to ***explain in the first page of the proposal narrative*** how their proposed project brings value-added benefits to the mission priorities of the funding agency and advances the disciplinary field in the context of those mission priorities. To make this argument successfully requires the proposing research team to have a robust understanding of the mission and culture of the funding agency. After all, it would be ***impossible to make a convincing case that proposed research advances the mission priorities of the funding agency without a thorough understanding of that agency mission and the culture that drives it***.

This is why the USDA's recently published 407-page FY2018 Annual Report on Technology Transfer is a helpful reference document for gaining insight into 11 USDA units (e.g., NIFA, ARS) specific to program mission; nature and structure of the program; technology transfer goals, objectives, and measures of success of the program; strengthening current activities and new initiatives, etc. Moreover, the 407-page report need not be read in its entirety. The report is divided into 11 program areas, only a few of which will interest most researchers, whereas research offices will likely want to have a more comprehensive understanding of the entire report. Also see **Full NIFA 2018 Annual Report** for a detailed description of **NIFA's Science Emphasis Areas and Institutes**.

In effect, you might consider this report a reference document that, in its entirety, offers an integrative overview of USDA offices, program areas, and mission areas that better illuminate and complement information gathered from visiting the USDA website, e.g., funding cycles, review process, open solicitations, characteristics of successful proposals etc.. However, a key thread runs through this document, as indicated by the report's title: the ***role played by technology transfer at USDA across all programmatic areas***. Basically, ***technology transfer is a major backdrop for all USDA research activities***, both intramural (in-house) and extramural, through discretionary grants programs and other funding mechanisms. **Bottom line**: *If you seek funding success at USDA you need to get the technology transfer section of your project right and this report can help you do that*.

The point here is that, if you ***know the end goal of USDA-funded research, i.e., technology transfer, understand it in the context of the USDA mission, and describe it in that context in your project description, you will be able to write more successful proposals to that agency***. Using this report as a reference document when planning, developing, and writing a proposal to USDA will give you a competitive advantage in ***proposing to address the role of technology transfer in your research***.

After all, funding success is always dependent on how well you map your proposed research to the priority mission objectives of the funding agency. ***In the vast and spooky graveyard of declined proposals, a common cause of death (i.e., funding declined) listed by reviewers and program officers is the proposal's failure to fully respond to the agency's***

mission objectives as described specifically in the solicitation and more broadly in the agency website and in agency reports such as this one.

At its heart, grant writing is a *knowledge-based enterprise comprised of two key knowledge domains*. The most important of these by far is the *quality of the research ideas being proposed for funding*, but ancillary to that is the knowledge domain of what *constitutes a well-written proposal that will ensure the research ideas are convincingly described in a way that makes funding possible*. Or, as the iconic adage from an NIH deputy director once noted, "*Good writing cannot turn a bad idea into a good one worthy of funding, but there are many ways poor writing can disguise an excellent idea and make it unfundable.*" *This report is a reference document that will help you write a more convincing proposal by giving you a better understanding of the* role technology transfer plays in funding success across USDA.

Specifically, as noted in the report (emphasis added), "USDA broadly defines *technology transfer as the* adoption of research outcomes (i.e., solutions) for public benefit…Public benefit is achieved through many mechanisms, including public release of information, tools, and solutions (*e.g., germplasm, plants, and other materials; adoption and enhancement of research outcomes by partners through collaborative research; formal cooperative research and development agreements (CRADA) authorized by the Federal Technology Transfer Act (1986); direct Federal, State, or local technical assistance; or through licensing of biological materials or protected intellectual property directly to not-for-profit entities and for-profit private-sector firms*). Additionally, successful adoption of USDA knowledge and research outcomes typically requires complementary *assets and services provided by multiple agencies in USDA, including agencies that are not primarily engaged in direct research in the physical and life science arenas*."

Moreover, as noted above, using this report as a reference document to complement other facets of your understanding of securing USDA funding for your research will *make your proposals to that agency more competitive for funding*. For example, using this report as a complement to USDA's **General Grant Writing Tips for Funding Success at USDA** provides an excellent integration of key knowledge about the agency. *Specifically, the USDA tip sheet quoted below was developed by USDA to aid researchers in preparing competitive grant proposals*. (For applicants preparing an Integrated Proposal, USDA also refers applicants to the *Tips for Developing and Implementing Integrated Projects* document.)

"Developing the Proposal:
• Read the RFA
• Develop idea to fit within program priorities
    o consider eligibility
    o consider relevance, review criteria
• Write project description for particular program, reviewers, review process, *etc.*
• Describe all elements if project is integrated
• Complete all paperwork, get signatures
• Submit on time

Improving the Proposal:
• Obtain a successful proposal from a successful colleague

• **Review abstracts of recently funded projects in the programs of interest**
• Obtain critical reviews from colleagues before you submit
> o Ask a colleague in your research, education, or extension area to review the proposal for clarity and logic, including scientific and education methodology
> o Ask a colleague outside your research area to review the proposal for clarity, logic, and significance

• High risk proposals need high potential impact - need to sell it but admit risk

Successful Proposals:
• Excite the reviewers
• Are easy to read and understand
• Have an appropriate literature review
• Have clear rationale & objectives that fit program priorities
• Clearly stated hypotheses or research questions – for research proposals
• Clearly stated learning objectives and expected outcomes/impacts for education and extension portion of the project (What will be different as a result of the proposed work?)
• Have specific objectives, methods, work plan, etc. for research, education, and extension components – for integrated proposals
• Have well-communicated importance of topic and potential contributions of work
• Contain a detailed project description - methods, sample selection, analysis, educational program delivery, instructional materials development, etc.
• Have a discussion of expected outcomes
• Address potential pitfalls, including short-comings of data and amelioration plans
• Contain a good plan for dissemination of results and use of research results in education programs
• Appropriate expertise of the Project Director(s)
• Critically reviewed by colleagues before submission
• Follow the submission rules!!!

Reasons for Lower Ratings:
• Project of little or no relevance to CSREES mission and/or program priorities
• Insufficient preliminary data or evidence from literature
• Exceeds page limit, poorly written, unclear objectives or hypotheses
• Poor record of results (e.g., publications) from previous funding
• Experiments or objectives not cohesive, different functions aren't integrated
• Low scientific merit, basic flaws in logic, demonstrates lack of scientific understanding
• No hypotheses, research questions, or learning objectives
• Not innovative, little new information gained
• Inappropriate methods or methods too vague
• Not as exciting as other proposals (*i.e.*, worth funding, but ran out of funds)
• Project Director(s) not qualified "

As a postscript to the above, especially since the value of such reference documents as this report on technology transfer are to help you write more successful proposals by writing

more clearly to reviewers and program officers, it is helpful in this context to ***review how USDA/NIFA reviews your proposals***, as noted below and quoted in its entirety from the USDA website (emphasis added).

"The NIFA Peer Review Process for Competitive Grant Applications
NIFA reviews all proposals accepted into the individual competitive programs through the **peer review process**. ***The following description of that process portrays general concepts that are shared among NIFA competitive grants programs***. However, specific details on the panel meeting, review format, and evaluation criteria will vary among programs. Processes and procedures specific for the Agriculture and Food Research Initiative (AFRI) are noted.

"The Request for Applications
The review process begins with the publication of the Request for Applications (RFA) for the NIFA competitive program of interest. The RFA is published on the agency Web site and is accessible through funding opportunity Web pages. The RFA can also be accessed through Grants.gov, the Web site for Federal government grants. Occasionally, RFAs are also published in the Federal Register. **The RFA includes all of the pertinent information** for the current funding cycle, including program purpose, legislative mandates, award types, eligibility requirements, evaluation criteria, submission instructions, program goals and funding priorities, proposal submission deadlines, and application submission instructions. **NIFA program staff also conduct various grantsmanship webinars throughout the year**, covering various NIFA competitive programs, to educate applicants regarding NIFA funding opportunities.
"After reading the RFA, applicants often will contact the program staff to discuss the applicability of a topic to the program goals and suitability for prospective submission as a proposal. **Applicants are encouraged to submit only those proposals responsive to the funding priorities outlined in the RFA**. Proposals that do not respond to priorities in the RFA are not reviewed. Some individual AFRI program areas also require submission of letters of intent prior to proposal submission. For these program areas, proposals submitted without prior approval of the letter of intent by the program leader are returned without review. The letter of intent contains a descriptive title of the proposed project; names and roles of the project directors and other key personnel, along with their institutions; and a brief statement of approaches and objectives, including the program priority to which the project is responding. **NIFA program staff evaluates these letters for the suitability of the project to program goals and priorities and in relation to program scope and needs**. Invitations to submit a full application are then issued by the program leader for letters describing proposed projects best fitting these criteria.

Selection of a Panel Manager
"**Many NIFA competitive programs utilize a panel manager** who is selected by the program leader to assist with administration of the program. The panel manager is an active, established scientist possessing broad-based knowledge in the program area and a strong reputation for fairness and impartiality. The Panel Manager will have experience in research, education and extension as is appropriate for the program. **The professional stature of the panel managers within their respective scientific communities brings additional visibility and recognition to the program**. Panel managers become part-time, temporary (1 to 2 years) USDA

employees. Duties of the panel manager include assisting program leaders in selecting panel members and *ad hoc* reviewers, assigning proposals to reviewers, chairing the panel meeting, and assisting program leaders with funding decisions. Panel managers (or their family members) cannot submit an application to the panel that they head, as project director (PD), Co-PD or collaborator.

Selection of Panelists and Proposal Review

"The program leader and panel manager aim to assemble a diverse panel active in research, education, and/or extension (as appropriate for the program) related to the subject matter in question. **The goal is to create a balanced panel with the necessary expertise to cover the range of the proposals, while also maintaining diversity in geographical location, institution size and type, professional rank, gender, and ethnicity**. Programs also strive to have continuity on the panel from previous years by inviting at least 30 percent of the panelists to return for a subsequent year. Potential panelists must be dedicated to high quality, fair reviews, and be able to devote sufficient time to the review process. No more than one individual, including the panel manager, can serve from a single institution or, with very few exceptions, from a single state. As with the panel manager, panelists cannot submit an application to the panel on which they've agreed to serve. The integrity of competitive programs depends upon the stature and qualifications of the individual panelists and the fairness and scientific skill with which they administer their scientific review responsibilities. All these qualities are necessary for the careful review and evaluation of the submitted applications.

"**The program leader and panel manager study the proposals carefully and assign them for review to panel reviewers and, when additional expertise is needed, to *ad hoc* reviewers**. **Typically, three to four panelists review each proposal**. If needed for additional expertise, up to three *ad hoc* reviewers may also evaluate a proposal. **Each panelist is assigned 12 to 20 proposals, for which they provide written reviews**. During the review panel meeting, discussion of each proposal begins with each panelist providing an oral evaluation, based on their written review, of their assigned proposal.

"Reviewers prepare their written reviews and **assign a review 'score' based on the evaluation criteria, published in the RFA and available on the NIFA website**, to assess the strengths and weaknesses of each proposal. For AFRI and most other programs, review 'scores' include 'excellent', 'very good', 'good', 'fair' and 'poor'. Some programs may first assign points to evaluation criteria and align these to similar scores of 'excellent', 'very good', 'good', 'fair' or 'poor'. These scores may be useful in panelist discernment between the proposals they reviewed and valuable to the rest of the panel in preparation for the subsequent in-depth discussion that takes place during the peer review panel meeting. Review criteria are specific for the NIFA competitive program. For the AFRI program, proposals are evaluated for scientific merit; qualifications of project personnel and adequacy of facilities; and relevance to program priorities, including importance of the topic for agriculture.

Confidentiality and Conflicts of Interest

"Confidentiality is critical to ensuring the integrity of the peer review process. Names of submitting institutions and individuals, as well as application content and peer evaluations, are kept confidential, except to those involved in the review process, to the extent permitted by

law. Identities of peer reviewers remain confidential throughout the entire review process, and the names of the reviewers are not released. Reviewer comments and discussion during the review panel meeting also remain confidential. This issue is emphasized repeatedly from the time a panelist is invited to serve on the panel to completion of the panel meeting. The panel manager, program leader, panelists, and program staff are permitted access to the written reviews immediately before and during the panel meeting. Otherwise, written reviews and evaluations of each proposal are shared only with the respective applicant.

"During the review process, special care is taken to avoid conflicts of interest. Individuals involved in the review process may not participate in any aspect of the proposal evaluation if they have: (1) served as an adviser or advisee to the applicant(s); (2) collaborated or served as a coauthor with the applicant(s) during the past 3 years; (3) are currently affiliated with, were previously employed within the past 12 months by, or are being considered for employment at the institution(s) of the applicant(s); (4) participated in a consulting/financial arrangement with the applicant in the past 3 years; or (5) are the spouse, child, sibling, parent, partner, or close friend, or otherwise have a relationship that might affect judgment, or could be seen as doing so by a reasonable person familiar with the relationship. These conflict-of-interest rules apply to everyone involved in the review, including the program staff, panel manager, panelists, and *ad hoc* reviewers. When a proposal comes up for discussion during panel, any panelist with a conflict of interest leaves the panel room and does not participate in the review, discussion, or ranking of that proposal. Similarly, if the panel manager or program leader has a conflict of interest with a proposal, they do not participate in any aspect of the review for the proposal, including assigning reviewers or being present during panel discussion.

The Review Panel Meeting

"At the panel meeting, panelists are seated around a single table to allow the discussion among the various panelists assigned to a proposal. This arrangement also allows the entire panel to participate in the discussion of any proposal reviewed in the panel for which they do not have a conflict of interest.

"Prior to the panel meeting, the panel manager and program leader read the applications to identify special issues affecting panel discussion. Throughout the meeting, the panel manager and program leader enforce rules about conflict of interest. They ensure that panelists leave the room during review and discussion of applications submitted from their own institutions or from individuals with whom they have a conflict of interest. They also emphasize confidentiality regarding all matters concerning submission, review, recommendations, ranking, and panel composition, and that confidentiality must be maintained outside the panel meeting room and after the panel meeting as well.

"The panel manager and program leader serve as chairs of the panel meeting and are responsible for assuring that every application receives a thorough and objective review. They do not provide an opinion or review of the proposal; the rating and ranking of the proposal is entirely the consensus opinion of the panel. The panel manager and program leader also ensure that different types of applications, such as research, integrated, and strengthening proposals, are discussed and ranked separately.

"**During the meeting, the panelists discuss each proposal and arrive at a consensus rating and ranking that reflects the overall merit of each proposal in consideration of, for**

example, the program priorities (including evaluation criteria), likelihood of success, and projected impacts and outcomes. For the AFRI, ranking categories are 'outstanding,' 'high priority,' 'medium priority,' 'low priority,' and 'do not fund.' Only proposals ranked in the first three categories may be considered for funding; those ranked in the latter two are ineligible for an award. Similar categories are used across NIFA competitive programs. Applicants should refer to the Funding Opportunity web page for programs of interest to see the previous year's success rate and gauge the level of competition for that particular.

"Following the evaluation and initial ranking of each proposal, a 'panel summary' document is written by a panel member reflecting the panel consensus. It details the salient points of the panel's assessment of the strengths and weaknesses of the proposal. **The panel summary also contains a section with synthesis comments, describing areas, and potentially providing suggestions, for improvement**. The synthesis also provides comments generally indicating the proposal's overall merit and the review panel's level of enthusiasm, or lack thereof. On the final day of panel meeting, the panelists reassess the initial rankings of the proposals and re-rank proposals, as needed, to ensure that they accurately categorize and order the proposals.

"After the completion of the panel, the program leader and panel manager use the panel ranking to determine the proposals that will be recommended for funding. The program leader and panel manager also review both the budgets of these top proposals to make sure the request is appropriate and the funding the applicant has, or may receive, from other funding agencies to ensure that the project is not already funded. **Generally proposals are funded according to the panel ranking until program funds are used up**. In the AFRI program, lower ranked proposals that fall below this funding line may be supported with 'strengthening' funds, a percentage of the AFRI budget set aside to support proposals from eligible small to mid-sized institutions, minority-serving institutions, or those in EPSCoR states (see the RFA for definitions and eligibility requirements). Following the funding decisions, applicants in most NIFA competitive programs receive copies of the written reviews of their proposal (with reviewer name removed to maintain reviewer confidentiality), the panel summary, and information on the relative ranking of their proposal. This information is commonly sent to the applicant only through email correspondence."

The Schedule and Task Assignment Table for Proposal Production

Reprinted from December 15, 2010 Issue
By **Mike Cronan**, co-publisher

A poorly planned proposal has little likelihood of success. Walt Kelly's Pogo once famously observed, "We have met the enemy and he is us!" That observation perfectly fits a poorly planned proposal development effort. But preparation can save you from becoming your proposal's enemy. A well-planned proposal development effort cannot turn ideas of modest importance into ideas of compelling significance, but it can give your ideas a chance to be realized through a well-crafted proposal rather than disguised by a poorly crafted one.

Two earlier articles in this newsletter addressed the role of the solicitation (RFP, BAA, FOA, etc.) in developing a proposal narrative template (Sept. 15) and in conducting a red team review of a near-final narrative draft (Nov. 15). This article addresses the use of the entire solicitation as a starting point for developing a *Schedule and Task Assignment Table* (**STAT**) for producing an entire proposal, from the cover page to the last page. The larger the proposal the more critical this proposal development schedule and task assignment table becomes to realizing a competitive submittal. For major institutional proposals and proposals to develop research or research and education centers, the STAT is the organizational linchpin of the entire effort, and a principal factor in potential success.

Moreover, other factors may make the scheduling and tasking of development assignments more difficult and complex. On large proposals, the number of partner institutions involved in the project where subcontracts or subawards need to be negotiated and finalized specific to research and/or educational roles requires advance scheduling. Another layer of complexity may result when subcontracts need to be in place for outreach institutions unfamiliar with the subcontract or subaward process (e.g., K-12 school districts, museums or science centers, community colleges, and other institutions lacking research and grant contract offices).

Fortunately, most large research and education solicitations by federal agencies operate on annual or biennial schedules, or otherwise announce their deadlines far in advance, to allow a well-planned submission process. In any case, as soon as the solicitation becomes available, it needs to be transformed into a development template for the proposal narrative and a corresponding schedule and task assignment table. These will serve as the key organizational documents ensuring that a competitive proposal is developed, written, and submitted to the funding agency on time.

Of course, the first step in this process is having an established history of successful research that clearly meets the research interests and/or mission of the funding agency as defined in the solicitation. As addressed in the September 15 issue of this newsletter, *Writing the Competitive Research Center Proposal, Submitting for the Right Reasons and with the Right PI*, the competitive principal investigator who leads the effort must be both a successful

researcher and an experienced manager of research and researchers, as well as adroit at achieving consensus among occasionally competing interests and personalities.

However, once the PI and a team of likely coPIs feels confident that a competitive proposal can be developed and makes the decision to go forward, then this core team forms the nucleus of the proposal development effort and decides how the core group will expand to bring on board the range of expertise needed to respond fully to each item in the solicitation. When this point in the process has been reached, it is time to start the development of the proposal production infrastructures that will support and guide the effort over the coming months. Representative components of the proposal production infrastructure are described and discussed below.   A generic example of a *Schedule and Task Assignment Table* discussed in the rest of this article is located at the conclusion.

Create a Proposal Narrative Template

The most common reasons funding agencies assign a poor review to a proposal can be traced to the proposer's flawed understanding of the sponsor's goals and objectives as defined in the solicitation, together with the role these play in structuring a competitive narrative that maps your expertise to the funding agency requirements. To create the narrative template, simply copy and paste, in detail, the RFP's key sections, research objectives, and review criteria into a beginning draft narrative, typically under a proposal section entitled "*Project Description*."

This allows the RFP to serve as an **organizational template** for the full proposal and a reference point to ensure that subsequent draft iterations of the narrative are **continuously calibrated to the guidelines**. A detailed narrative template is easily constructed in a few hours by a member of the research team, or an experienced grant writer assisting the PI on the proposal. It is then distributed electronically to everyone contributing to the effort and serves as a navigational compass to keep the proposal continuously on a true course towards success during proposal development meetings and during the writing of the narrative.

Create a Schedule and Task Assignment Table

A version of the narrative template will serve as a component of the *Schedule and Task Assignment Table* (see example STAT at end of this article), particularly since the section of the proposal typically entitled *Project Description* functions as the conceptual heart of the proposal. As you will see below, the STAT embeds that critical research narrative in a larger table that lists all information and related documentation requested by the sponsor, assigns a member of the proposal team responsibility for producing and tracking that information, and assigns an internal due date for completion of that task. Internal completion dates will occur well before all of the component pieces of the proposal are assembled into the final document for submittal on, or even better, a day prior to the due date. In the case of the research narrative and other key narrative sections, a series of draft due dates that allow the proposal to *converge on excellence through multiple iterations and multiple reviews must be scheduled* . Moreover, this production schedule for the narrative should incorporate a red team review. *The first substantive outside review and competitive assessment of a large proposal should be made by a red team, not when the funding agency review panel makes the funding decision.* The red team process may seem like a brutal and critical ordeal to some, but using a red team

willing and able to play the role of a surrogate review panel will prove an invaluable asset to the competitiveness of a large proposal.

The research description section is typically authored by the research team of principal investigators, along with contributing authors who may write specialized narrative sections, e.g., evaluation and assessment, commercialization, plan for meeting diversity objectives, research training for future faculty. A grant writer with disciplinary expertise in science or engineering and experience as a team member on large proposals will prove invaluable to the principal investigators in this regard. Even better, look for a grant writer who has gained expertise by serving on major research center proposals to NSF, NIH, and the mission agencies, such as DOE, DoD, NASA, USDA, NOAA.

In many ways, the production of a major center proposal is akin to competing in the Iditarod dog sled race, an often grueling event that can be helped enormously by a grant writer "**who knows the trail**" and can help the PI and coPIs **anticipate potential pitfalls** and find a way around them. In the end, a host of pitfalls can degrade the competitiveness of a proposal if not anticipated and corrected. A grant writer with experience on many center level proposals will likely have encountered most of the possible pitfalls and can help alert the research team to them. While those pitfalls may come as a surprise to some on the research team new to center development, they should not surprise a person who has served on the team of many center proposals directed to many agencies over many years and hence possesses a knowledge base or "corporate memory" of how best to achieve the **significant competitive advantage that results from a well-planned proposal production effort.**

Identify the Proposal Production Team

The core production team of principal investigators together with an experienced grant writer that first develops the narrative template will have to **expand that team** to produce the comprehensive *Schedule and Task Assignment Table.*

The first team members to be brought on board will likely include **personnel from your office of research services or sponsored projects office**. They will play a key role in producing the budget, budget justification, subawards, etc., and will carry out various process tasks, such as routing for institutional signatures. **These tasks, and others, are key items in the STAT**. While the capacities and roles of these offices vary by institution, most institutions will likely provide a core of proposal support services. Selected staff will need to join this planning process and the production team. Proposal support services staff need to become fully engaged early on in the process, and kept in the informational loop on development plans that impact their offices. Don't surprise them with new requirements, if at all possible, and be mindful that uploading a major proposal is a major task that takes time. They should not pay the price for poorly planned and poorly scheduled proposals, **hence the importance of the STAT**. The STAT, for example, will incorporate the following: Will there be subawards or subcontracts? How many? To whom? Who are the institutional points of contact at those partner institutions responsible for the subaward budget, budget justification, institutional letters of commitment, current and pending support, CVs, etc., **and who is listed in the STAT as the person responsible for tracking all this**?

Research services offices or OSP staff often take on the task of converting the final proposal file to pdf, if required, and uploading it to the sponsor's designated portal (e.g.,

Grants.gov, Fastlane), or does a hard copy might go in overnight delivery to the sponsor. **The STAT must account for this "endgame" schedule** in a way that can **accommodate the unexpected**, or other difficulties, in bringing together all the component sections of the entire document.

Finally, if your campus has an office tasked with research development and grant writing, take advantage of their expertise and experience on prior center proposals, including insights they gained in the review process or in site visit reviews by a funding agency. *Sometimes knowing what went wrong on a prior proposal can be more valuable knowledge than knowing what went right*.

More on Constructing the STAT

For large center proposals, many members of the production team will need to be *assigned roles and responsibilities by name in the STAT*, and many questions will need to be asked and answered regarding the team's composition. For example, **the STAT will address:**

- Who is responsible for the first and subsequent drafts of the *integrative sections* of the project description section, e.g., executive summary, vision statement, rationale for the center, goals and objectives, research focus areas integration plan, benefits of the center, expected research synergies, etc.? [**This is not a trivial task** and lies at the heart of the competitive research proposal and STAT planning, and it is often nuanced given that *your research description is not necessarily the same as a description of the significance of your research.*]
- Are lead authors, perhaps coPIs, assigned for each of the research focus areas?
- Who will write the management plan?
- Who will write the five-year strategic plan?
- *Does the research team need other support expertise*?
- Who is best able to produce professional-quality milestone charts, graphics, illustrations, tables, and other visuals that complement the text and strengthen the overall positive impact the proposal must make on project managers and reviewers?
- Who will be responsible for reading or quickly reviewing *all the documents cited by the sponsor in the solicitation*, typically by URL, as having relevance to the program, e.g., agency strategic plans, national academy reports, agency reports and workshops, etc. [*This is a critical role,* since making competitive arguments for the significance of your research without being fully informed of the agency's research vision, mission, and research investment agenda is *often a fatal flaw in the proposal narrative*.]
- How will internal references be cited in the proposal?
- Research centers, particularly from NSF and the federal mission agencies, almost always require an *education and outreach component*. Who will be the lead author of that section, and who will serve as contributing authors, e.g., for undergraduate research, postdoctoral mentoring, research experiences for teachers, etc.? Who are contributing authors from partner institutions? Who will be responsible for **assessment and evaluation**? Does the capacity for this exist in-house or will an external evaluator have to be included in the budget to write that section of the narrative?

- If the proposal requires *institutional data*, e.g., STEM degrees granted in total and to women and minorities by academic department, who will take responsibility for gathering the data and putting it in the format specified in the solicitation? Who keeps the data? Are data kept by colleges and departments, or by an office of institutional research? Are the data accessible to queries that meet the sponsor requests? Who collects data from partner institutions and from whom?

Schedule Development Meetings

The entire proposal production team benefits when the proposal team holds a major development meeting once a week. Specifics of the agenda may vary, but the foundation of the meeting will consist of a review and discussion of progress made during the past week *as it is calibrated to the Schedule and Task Assignment Table*.

Keeper/Monitor of the Schedule and Task Assignment Table

A STAT is of little use if it is not used, monitored, and updated daily so that it canprovide a current snapshot of the proposal production status. The responsibility for internal performance expectations related to assigned tasks and assigned schedules ultimately falls to the principal investigator, but it is wise to offload as much as possible of process and production tracking from the PI to an experienced assistant. *It encourages efficiency and coordination to assign one person the task of tracking all STAT-specific activities*, due dates, and status reports, along with informing the PI and the research team of the group's progress, particularly if any difficulties arise that could potentially alter the proposal production schedule.

STAT: Identify Lead PI at Each Partner Institution

In addition to scheduling and tasking interaction among research services or sponsored projects offices to coordinate preaward process activities, particularly the budget, the STAT should identify a lead person at each partner institution to ensure that partner contributions are completed on time and reviewed for quality control, particularly for the narrative sections in the project description.

STAT: Identify the Keeper of the Proposal Master File

It is of enormous value to identify one person responsible for (a) continuously updating the *evolving proposal draft of the project description,* (b) keeping the most current version of the proposal file organized and identifiable by version number in the file name, and (3) inserting the date/time of each update as the first line on page one, so that an orderly process of continuous revisions can be achieved. This person assists the PI and supports the coPIs to ensure that narrative contributions, graphs, tables, illustrations, and other documentation in the proposal undergoing continuous revisions and improvements by contributing team members get inserted into the master file. This is not a simple task, but it is important to identify a person that can offload this task from the PI or coPIs so that they spend their time and energy on developing the research narrative critical to success.

This person needs to be highly skilled in manipulating large text files containing graphics (particularly graphic contributions in various formats), tables, and other visuals that may be embedded in the narrative. *It is absolutely essential that this person be a skilled user of track-*

edit and all its features, including document comparisons. Many disruptive formatting "gremlins" can sneak into a master file when multiple team members contribute to the proposal using different platforms (e.g., Windows, Macs, or even Linux or LaTeX) or various versions of Microsoft Office. On large proposals, these cross-platform format perturbations can amplify the stress level significantly of the person responsible for keeping one master document and reflecting that status in the STAT.

STAT: Establish Document Contribution Protocols

It encourages coordination and efficiency when the PI, coPIs and the person responsible for keeping the most current master document establish a few simple protocols that every contributor to the proposal narrative will be asked to follow. *One important protocol involves agreeing on a process whereby track-edit contributions to the master document use an agreed-upon mechanism for accepting or rejecting changes.* For example, it may be the PI who reviews, accepts, and/or rejects track-edit contributions before they are merged with the master document. In other cases, it may be the coPI leading a research focus area that serves as the gate to changes made to the master document. The specific process is not as important as a general agreement on establishing some process to bring order to what can quickly become a very chaotic procedure if left to happenstance. There is nothing as dispiriting as realizing at some point that two "master" documents may have evolved because of miscommunications or lack of a clearly understood *protocol for reviewing and integrating narrative contributions into the master file*.

An important part of the document contribution protocol is that everyone must understand and follow the sponsor's formatting guidelines. The sponsor may specify margins and font size, but not font type. Define internal formatting standards early on in the process to make it easier on the person keeping the master file. *Resist the urge to think a better proposal can be written were the font size were reduced and all white space expunged from the document.*

STAT: Identify Institutional Support Required

Deans and vice presidents for research often seem less than charmed by requests for letters of institutional commitment, cost-sharing, or matching funds that are made on the morning of the day a proposal is due. These requirements need to be included in STAT and tracked, particularly to ensure that someone is responsible for drafting *letters of commitment that represent actual commitments* and not just institutional "best wishes."

Example Schedule and Task Assignment Table, STAT
for a Generic Research Center Proposal

Activity	Person(s) Responsible	Completion Dates
Proposal Final and Complete for Uploading	Development Team Final Review coPI Final Review **PI Final Review & Approval for Upload**	*~36 hours prior to uploading as insurance against the unexpected*

Research Development & Grant Writing News

Cover Sheet		
Project or Executive Summary, 3 pages [*Note to Project Summary Author*: **Your research description is not necessarily the same as a description of the significance of your research.**]	Principal Investigator	Draft 1: Draft 2: Draft 3: Draft 4: **Red Team Review**: Final:
Table of Contents	Production Staff (or auto-generates)	
Project Description		

Description of Center Research
• Vision Statement
• Rationale for Center
• Goals and Objectives
    o Research Focus Area 1
    o Research Focus Area 2
    o Research Focus Area 3
    o Research Focus Area 4
• Evaluation Criteria for Research Plan
• Research Strategic Plan
• Research Integration Plan
• Expected Research Synergies
• Research Milestone Chart by Year/5 Years
• Research Dissemination Plan
• Benefits of Funded Research Center
	Principal Investigator
	Research Focus Area Leaders/coPIs
	Contributing Authors
		Draft 1:
		Draft 2:
		Draft 3:
		Draft 4:
		Red Team Review:
		Final:

Description of Management Plan • Organizational Diagram • Major Milestone Chart • Role of Key Members of Management Team • Describe External Advisory Committee • Strategic Planning Protocols • Ensuring Cross-Disciplinary Interactions • Research Assessment and Evaluation Plans • Sustainability Plan	Principal Investigator Research Focus Area Leaders/coPIs Contributing Authors	Draft 1: Draft 2: Draft 3: Draft 4: **Red Team Review**: Final:
Education and Outreach • Goals and Objectives • K-12 Engagement Plans • Community College Transition Partnerships • Undergraduate Research • Graduate Training • Course and Curriculum Development • Web-Based Education and Outreach • Workforce Development Plans • Recruitment of Underrepresented Groups • Tracking Student Progress	Principal Investigator Research Focus Area Leaders/coPIs Contributing Authors	Draft 1: Draft 2: Draft 3: Draft 4: **Red Team Review**: Final:

• Evaluation and Assessment • Five-Year Degree Data for all Partners by Gender and Ethnicity • Five-Year Strategic Plan and Milestones		
Plan for Mentoring Postdocs		Draft 1: Draft 2: **Red Team Review**: Final:
Diversity Objectives		Draft 1: Draft 2: **Red Team Review**: Final:
Knowledge Transfer Objectives • Publications • Technology Transfer • Commercialization • Plan for Intellectual Property • Industrial Collaborations		Draft 1: Draft 2: **Red Team Review**: Final:
Facilities and Equipment Description of Institutional Infrastructure		
Budget , Budget Justification, and Subawards		
Budget	Grants Office/OSP/RS	
Budget Justification	PI or coPI	
Budget and Budget Justification for Subaward 1		
Budget and Budget Justification for Subaward 2		
Other Documents and Appendices		
References Cited		
Biographical Sketches of Key Personnel		
Current and Pending Support		
Institutional Letters of Support and Commitment		
Table of Relevant Research Past Five Years		
Table of Relevant Education and Outreach		
Address Responsible Conduct of Research and Intellectual Property Rights		
Appendices, Required and Allowed		

Research Grant Writing Web Resources
(Back to Page 1)

Five Helpful NIH and NIAID Webpages to Bookmark
Check out these NIH and NIAID webpages for extramural investigators and save the links for easy future reference.

If we missed some of your favorites, let us know at deaweb@niaid.nih.gov (link sends e-mail) and we'll collect your top picks into a follow-up article.

1. *NIH Guide*. Updated daily, the *NIH Guide to Grants and Contracts* (link is external) is your go-to source for grant funding opportunities and policy announcements. You can also get NIAID-specific lists of Funding Opportunity Announcements and Special Announcements. All three lists offer filtering options. For extramural research and development contract solicitations, try NIH at FedBizOpps (link is external) or NIAID at FedBizOpps (link is external).

2. Electronic application and system news. NIH updates the NIH eSubmission Items of Interest (link is external) page several times a year to reflect key developments and news on electronic application and submission topics. Get same-day system alerts at eRA News (link is external), and while you're there, scroll down to check out the eRA Items of Interest. You can also subscribe to the eRA Information (link is external) email list.

3. Catch the latest breakthroughs. The journal search at PubMed (link is external) can help you stay on top of developments in your area of science. NIH Research Matters (link is external) highlights successful funded research each week. For our area of science, go to NIAID News Releases and NIAID-Funded Research News.

4. Find funding priorities and trends. Compare your research ideas with the NIH-Wide Strategic Plan (link is external), updated every four years. Be sure to Understand NIAID Research Priorities using resources such as our thrice-yearly Concepts: Potential Opportunities. Follow our guide on how to See Funded and More Projects Using NIH Databases and discover funding data, investigators, publications, program officials, and more.

5. Social media sites. NIH offers a huge index of Social Media & Outreach (link is external) accounts, many of which provide daily updates. Similarly, there are plenty of ways to Connect With NIAID on social media.

For even more NIAID extramural links, revisit our "Where Are They Now?" *Funding News* article series.

Other ECR Webinars on STEM education research areas highlighted in Dear Colleague Letters (these sessions will be different from the August 7th webinar and you may want to attend both the 7th and one or more of these webinars)

- NSF 19-044 DCL: Fundamental Discipline-Based Education Research (DBER) Focused on Undergraduate and Graduate STEM Education within the EHR Core Research (ECR) Program: August 15, 2019 at 2pm ET REGISTER for this webinar HERE
- NSF 19-033 DCL: Research to Improve STEM Teaching and Learning, and Workforce Development for Persons with Disabilities: August 19, 2019 2pm ET REGISTER for this webinar HERE

- [NSF 19-035](#) DCL: Fundamental Research on Equity, Inclusion, and Ethics in Postsecondary Academic Workplaces and the Academic Profession within the EHR Core Research Program: August 20, 2019 at 2pm ET [REGISTER for this webinar HERE](#)
- [NSF 19-025](#) DCL: STEM Workforce Development Using Flexible Personal Learning Environments: August 21, 2019 at 2pm ET [REGISTER for this webinar HERE](#)

Educational Grant Writing Web Resources

We Need Your Feedback on IES Research Topics: Who Gets Voted Off the Island?
IES needs feedback from the field on these issues relatively quickly if—as we intend—your advice affects how we frame next year's grants. **Short-term "off-cycle" competitions**
We are considering whether to release three topic specific RFAs in the middle of next winter.

1. *Using state longitudinal data systems to measure long-term outcomes.*
One of the principles in our Standards for Excellence in Education Research (SEER) is the need to measure long-term outcomes. Through IES, the federal government has made a large investment in state longitudinal data systems (SLDS). This NCES/NCER RFA would ask researchers to use SLDS to identify students who were in a "treatment" group and track their educational progress. The problems are as big as they are obvious. Our goal is to incentivize researchers to consider the possibilities of using these data systems to measure long-term outcomes of past interventions.

2. *Using NAEP process data.*
Since 2015, NAEP has captured (and timed) every key stroke that students make while taking assessments. Couple these process data with the wealth of data NAEP background questionnaires capture, and IES believes we are at the cusp of a breakthrough in understanding testing and student test scores. This RFA would be a joint project between NAEP and NCSER. In addition to knowing how students with disabilities score on NAEP, we want to know the processes these students use to arrive at their answers, especially in comparison to their peers without disabilities. As an aside: These NAEP data are massive and likely require analytic skills beyond what many educational researchers already have. Indeed, we are hoping that the richness of these data—and the challenges they present—will attract data scientists to our research program.

3. *Systematic evaluation of widely used math and reading programs.*
Good science requires replication. This RFA would build on the Systematic Replication RFAs, where we asked for proposals focused on any of 17 IES-funded math and reading interventions that have evidence of efficacy. While relatively few students have used most of these 17 treatments, other reading and math "interventions" used by millions of students often have limited evidence of their effectiveness. We are considering an RFA that asks researchers to systematically test one of the 10 or so most widely used reading or math programs to help identify which of these programs work for whom. IES has supported two efficacy tests of widely used curricula: the National Randomized Control Trial of Everyday Mathematics and the National Randomized Controlled Trial Study of SRA/McGraw-Hill Open-Court Reading Program. These studies provide some useful information about how similar work could be structured.

To reiterate, we are *considering* these RFAs and would like your feedback. I think the problems facing research in each of them (especially with SLDS) are clear, but are they surmountable? That's my first "ask." Now to the second.

Research Development & Grant Writing News

Revisiting topic areas

The research program at IES is structured around a matrix in which NCER has [13 topic areas ("verticals")](#) and NCSER has [12](#). These topics were traditionally crossed with 5 horizontal "goals." In this year's RFAs, we renamed and simplified the goal structure and simplified the topic descriptions, hopefully allowing researchers more freedom to propose innovative ideas. It's now time to more fully consider the verticals.

Some of these topics (reading, writing, math) are core to the education research enterprise and ESRA requires NCER to support research in those areas. Others have been added to the RFAs to address issues raised at a specific moment in time. Times change. Should any of the verticals be sent off to a well-deserved retirement?

Perhaps of greater importance is the flip side: what are we missing? We can imagine tinkering on the edges, adding new "special topics," or running off-cycle competitions (like the three I described above), but is it time for a more thorough rethink?

I met with the Friends of IES recently and asked the 15 or so participants to give me their feedback on these two questions. We are planning some meetings to get feedback from the field. We may also issue a formal Request for Information (RFI).

We are hoping that this blog will mobilize the research community to think about this challenge and reach out with their ideas. You can send your comments to me:

Mark Schneider
Director of IES
Mark.Schneider@ed.gov

IES Posts Additional FY 2020 Research Funding Webinars

The [Institute of Education Sciences](#) (IES) posted a series of on-demand webinars for those interested in Fiscal Year 2020 funding opportunities and learning more about IES. These pre-recorded webinars are hosted by the [National Center for Education Research](#) and the [National Center for Special Education Research](#). You can access them on the [IES Webinar Series website](#).

[Secretary's Proposed Priority for DoED Discretionary Grant Programs](#)

The Secretary of Education proposes to establish a priority for discretionary grant programs that would align the Department of Education's (the Department's) discretionary grant investments with the Administration's Opportunity Zones initiative, which aims to spur economic development and job creation in distressed communities. Submit your comments through the Federal eRulemaking Portal or via postal mail, commercial delivery, or hand delivery. We will not accept comments submitted by fax or by email or those submitted after the comment period. To ensure that we do not receive duplicate copies, please submit your comments only once. In addition, please include the Docket ID at the top of your comments. We must receive your comments on or before August 28, 2019.

[NSF 19-033](#) DCL: *Research to Improve STEM Teaching and Learning, and Workforce Development for Persons with Disabilities*: August 19, 2019 2pm ET [REGISTER for this webinar HERE](#)

NSF 19-035 DCL: *Fundamental Research on Equity, Inclusion, and Ethics in Postsecondary Academic Workplaces and the Academic Profession within the EHR Core Research Program*: August 20, 2019 at 2pm ET REGISTER for this webinar HERE

NSF 19-025 DCL: *STEM Workforce Development Using Flexible Personal Learning Environments*: August 21, 2019 at 2pm ET REGISTER for this webinar HERE

Common Guidelines for Education Research and Development

Agency Research News
(Back to Page 1)

Domain-based Message Authentication, Reporting & Conformance (DMARC)
Domain-based Message Authentication, Reporting & Conformance (DMARC) is an email authentication and reporting protocol that improves email security within Federal agencies. This protocol is mandated by the Department of Homeland Security (DHS) and was implemented at NSF in October 2018.

DMARC enables organizations like NSF to verify that email was sent from a trusted source rather than from bad actors such as spammers, hackers or phishers. Since NSF's implementation of DMARC, the Foundation has observed that some individuals and a few external organizations use email routing practices such as email auto-forwarding or third-party email distribution services that cause messages to be blocked from distribution because they are flagged as potentially fraudulent by DMARC protocols. This means some external recipients may not be receiving important NSF communications related to research funding actions, deadlines, and/or other important messages.

NSF, **as all other federal agencies**, is required to implement this standard which improves email security. In response, some universities have already communicated to their staff about DMARC and specifically about not auto-forwarding email. (Just a few of the examples include the University of Illinois, Northwestern University, Cornell University and the University of Minnesota. Click on the name of the organization to view their public communications.)

If you or your organization engage in regular email communications with NSF, please read further to learn more about potential impacts if your email is auto-forwarded. Click the link to learn more about DHS' Binding Operational Directive (BOD) 18-01.
The following Frequently Asked Questions describe DMARC in more detail. Click here for a downloadable version.
What exactly is DMARC?
DMARC is a set of requirements issued by DHS to all federal agencies and was required to be implemented by October 16, 2018. DMARC is comprised of protocols inserted into organization's IT systems to prohibit the illegitimate use of organization email. These protocols authenticate emails to ensure they are coming from a valid source. Certain email practices such as using services that authorized to send messages on behalf of an organization (e.g., Constant Contact, GovDelivery, Amazon SES) or auto-forwarding emails to secondary (non-organization) email accounts can impact message delivery since bad actors such as hackers may use similar practices.
Why is it important that I know about DMARC?
Since NSF's implementation of DMARC, the Foundation has observed that some external organizations or individuals use email routing practices (such as auto-forwarding to personal accounts) that cause messages to be blocked from distribution because they are flagged as potentially fraudulent by the required DMARC protocols. It is important for you to know that if your email is auto-forwarded to another account, such as a personal email account, you may not receive emails from NSF in that forwarded account.

How do I know if I am impacted by DMARC?

If you have been receiving NSF emails, nothing needs to be done.

If the email account at your organization or institution is configured to automatically forward emails to a third-party email service provider, such as Google or Yahoo among others, it is possible that NSF emails are not being delivered to your third-party email address. Messages that are manually forwarded are not impacted. Please verify that you are receiving NSF emails in your primary organization/institution mailbox.

If you have not received emails sent by NSF, please contact your Sponsored Research Office (SRO) so they are aware that you and others at your organization may be impacted. Please also contact the email administrator in your IT Department to tell them about your issue and ask them to confirm that current email configurations are compatible with DMARC.

Note that factors other than DMARC configurations can impact email delivery, including mistyping email addresses as well as spam and reputation filtering utilized by email providers.

Who can I contact at NSF if I have more questions?

If you have additional questions, please contact IT Help Central (ITHC) by phone at 703-292-HELP (x4357) or 800-711-8084. ITHC hours of operation are 6:00 a.m. to 7:00 p.m. You may also contact ITHC by email at ITHelpCentral@nsf.gov.

Request for Information: Planning and Operation Models and Data Analytics for Solar Grid Integration

The U.S. Department of Energy Solar Energy Technologies Office (SETO) is issuing this request for information (RFI) to solicit feedback from industry, academia, research laboratories, government agencies, and other stakeholders. This RFI will inform SETO's strategic planning on research related to the integration of distributed solar energy resources. Specifically, this RFI will inform strategies relating to the modeling, monitoring, predicting, and controlling of solar photovoltaic (PV) systems. As the penetration of solar PV on the grid grows, these activities will become more important as grid operators consider how solar adoption impacts grid planning and operations technologies.

This is solely a request for information and not a funding opportunity announcement (FOA). No funding applications are being accepted in response to this RFI.

This RFI is not a Funding Opportunity Announcement (FOA); therefore, EERE is not accepting applications at this time. EERE may issue a FOA in the future based on or related to the content and responses to this RFI; however, EERE may also elect not to issue a FOA. There is no guarantee that a FOA will be issued as a result of this RFI. Responding to this RFI does not provide any advantage or disadvantage to potential applicants if EERE chooses to issue a FOA regarding the subject matter. Final details, including the anticipated award size, quantity, and timing of EERE funded awards, will be subject to Congressional appropriations and direction.

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

received or provide feedback to respondents with respect to any information submitted under this RFI. Responses to this RFI do not bind EERE to any further actions related to this topic.

To respond, please email your response to SETO.RFI.SI@ee.doe.gov no later than 12:00pm (ET) on August 30, 2019. Responses to this RFI must be submitted electronically and provided as attachments to an email. It is recommended that attachments with file sizes exceeding 25MB be compressed (i.e., zipped) to ensure message delivery. Responses must be provided as a Microsoft Word (.docx) attachment to the email, and no more than ten (10) pages in length, 12 point font, 1 inch margins. Only electronic responses will be accepted.

Dear Colleague Letter: Supplemental Funding Opportunity to Support Student Design Projects Directly Related to NSF Research

SUPPLEMENTAL FUNDING OPPORTUNITY

NSF will consider supplemental funding requests to support student design projects connected to active NSF grants. The goals of these supplements are the following:

- To connect student design projects to innovative, NSF-supported research and the latest advances in engineering science.
- To expose students to the discovery process of research while preparing them for their roles in the engineering workforce.
- To provide a team of students with the funds necessary to pursue the design process, from need finding, industry and customer discovery, through prototyping and validation.

DESCRIPTION OF ACTIVITIES SUPPORTED

The PI of an active NSF award (see below for the participating Divisions) may request supplemental funding to support a mentored, student-led design project that is connected to their NSF award. To be eligible, the design-research connection should meet one of the following two criteria:

- A project that builds on scientific advances from the research by applying that knowledge to solve a current challenge.
- A project that challenges students to design a technology, device, or system to complement or augment the methods or aims of the research project.

In addition, eligible projects are expected to meet the following requirements:

- Projects must be conducted by students, preferably as a team.
- The solution to the challenge should not be pre-determined (i.e. the students are not simply implementing a design developed by the PI), so that the students go through the complete engineering design process - including development of a prototype or system simulation, as appropriate.
- The project should require students to consider relevant standards and realistic constraints.
- Project support from the supplement must be used to support the design process, including need finding, industry and customer discovery, prototyping, and validation/verification, not student time.

Dear Colleague Letter: Understanding the Overturning Circulation in the North Atlantic Ocean

The overturning circulation in the North Atlantic Ocean is critically important for a wide range of processes including general circulation of the global ocean, climate dynamics, regional weather patterns, and biogeochemistry. Significant international investments in measuring it directly in the last couple of decades have revealed that we still do not fully understand the extent, nature, and drivers of its variability so that the fidelity of its representation in climate models remains uncertain. This letter serves to express NSF's continued interest in research on this topic and to highlight opportunities for collaborations with researchers in the United Kingdom (UK).

The Rapid Climate Change-Meridional Overturning Circulation and Heatflux Array (RAPID/MOCHA) array, deployed in partnership between the UK and US through parallel projects funded by their respective science agencies, directly measured the overturning circulation across 26.5oN and found high variability on subannual timescales, implying that our previous hydrographic estimates were highly aliased and could not capture any trends. More recently, high variability was also found at subpolar latitudes by another similarly funded international project (Overturning in the Subpolar North Atlantic-OSNAP). Early results from OSNAP also showed that processes east of Greenland dominate the overturning circulation, which is counter to the contemporary paradigm that emphasizes processes in the Labrador Sea. These recent results highlight the need to better understand the dynamics of the overturning circulation and its interaction with other components of the earth system over seasonal to decadal scales. The RAPID time series has been sustained for over 14 years. OSNAP is currently funded through year 6 of the observations, but NSF has a strong interest in continuing the OSNAP measurements for 10 years as originally conceived. All of these data sets are publicly available within 2 years after collection and can be combined with modeling methods and theoretical insights to answer many science questions.

The UK's Natural Environment Research Council (NERC) and NSF's Division of Ocean Sciences (OCE) are interested in broadening the successful collaborations between the US and UK for these kinds of research. The [Lead Agency Opportunity](#) between NSF's Directorate for Geosciences and NERC allows science teams from the US and UK to collaborate under a single proposal. Such a proposal is reviewed by one of the agencies, and if it is successful, each national component is supported by its own funding agency. The OCE Physical Oceanography program welcomes proposals in all areas of physical oceanography and encourages proposals that aim to understand the overturning circulation in the North Atlantic, its connections to variability in the subpolar ocean, its consequences for air-sea interaction or exchanges with the Arctic, implications for climate dynamics, and the representation of such processes in climate or earth system models. Proposals with collaborators in the UK may be submitted to the program under the [Lead Agency Opportunity](#). We also encourage our colleagues to be alert to any solicitations NERC may announce on similar topics and take advantage of any collaboration opportunities for US researchers.

Agency Reports, Workshops & Research Roadmaps
(Back to Page 1)

Soil Health Institute releases progress report on adoption of soil health practices

The Soil Health Institute (SHI) has released *PROGRESS REPORT: Adoption of Soil Health Systems* Based on Data from the 2017 U.S. Census of Agriculture. The analysis includes a state-by-state breakdown of both cover crops and no-till production.

The 2017 Census of Agriculture was released by the U.S. Department of Agriculture on April 11, 2019. The Census represents the most thorough overall assessment of a number of agricultural metrics that is conducted in the United States. Due to the time and expense involved with the Census, it is conducted only once every five years. Periodically, new questions are added, such as a question on cover crop acres that appeared for the first time in 2012 and was repeated in 2017.

In relation to soil health-promoting practices, the main data that the Census provides is on use of cover crops and tillage. Census respondents were asked how many acres of cover crops they planted in 2017 (and 2012), and from that response, the number of farm operations with cover crops was also determined. For tillage, respondents were asked how many acres they had of no-till, conservation tillage, or conventional tillage. Overall, the 2017 Census of Agriculture showed considerable progress with soil health practices from 2012 to 2017, with 5 million additional acres of cover crops and 8 million additional acres of no-till in the U.S.

This report provides several tables and maps that were generated by extracting data from the online Census of Agriculture data sets and then analyzing or ranking the data to provide insights into progress with soil health practices, specifically cover crops and no-till.

The report was developed by Rob Myers, Ph.D., a University of Missouri agronomist and Co-chair of the Soil Health Institute Policy Action Team, and Joe LaRose, a University of Missouri extension associate. **For further information, click here.**

New Funding Opportunities

Content Order
New Funding Posted Since July 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 July 15 Newsletter

International Research Experiences for Students (IRES)
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. **Due September 10.**

REQUEST FOR PRE-APPLICATION Specialty Crop Research Initiative (SCRI)

This notice identifies the objectives for SCRI projects, deadlines, funding information, eligibility criteria for projects and applicants, and application forms and associated instructions. NIFA requests pre-applications for the Specialty Crop Research Initiative (SCRI) for fiscal year (FY) 2020 to solve critical United States specialty crop issues, priorities, or problems through the integration of research and extension activities that use systems-based, trans-disciplinary approaches.

The intent of the SCRI program is to address the needs of the various specialty crop industries through the promotion of collaboration, open communication, the exchange of information, and the development of resources that accelerate application of scientific discovery and technology. The SCRI program will give priority to projects that are multistate, or multi-institutional, or trans-disciplinary (as defined in Appendix III), and include clearly defined mechanisms to communicate results to producers and the public. The anticipated amount available for support of this program in FY 2020 is approximately $80 million.

Projects must address at least one of five focus areas:

•Research in plant breeding, genetics, genomics, and other methods to improve crop characteristics
•Efforts to identify and address threats from pests and diseases, including threats to specialty crop pollinators
•Efforts to improve production efficiency, handling and processing, productivity, and profitability over the long term (including specialty crop policy and marketing)
•New innovations and technology, including improved mechanization and technologies that delay or inhibit ripening
•Methods to prevent, detect, monitor, control, and respond to potential food safety hazards in the production efficiency, handling and processing of specialty crops. **Due October 15**.

Long-Term Ecological Research (LTER): New Urban Site

To address ecological questions that cannot be resolved with short-term observations or experiments, NSF established the Long-Term Ecological Research Program (LTER) in 1980. Two components differentiate LTER research from projects supported by other NSF programs: 1) the research is located at specific sites chosen to represent major ecosystem types or natural biomes, and 2) it emphasizes the study of ecological phenomena over long periods of time based on data collected in five core areas. Long-term studies are critical to achieve an integrated understanding of how components of ecosystems interact as well as to test ecological theory. Ongoing research at LTER sites contributes to the development and testing of fundamental ecological theories and significantly advances understanding of the long-term dynamics of populations, communities and ecosystems. It often integrates multiple disciplines and, through cross-site interactions may examine patterns or processes over broad spatial scales. Recognizing that the value of long-term data extends beyond use at any individual site, NSF requires that data collected by all LTER sites be made publicly accessible.

The LTER program has long recognized the importance of humans in ecological systems and is especially interested in how human activities in urban settings interact with natural processes to determine ecological outcomes. Factors that control urban ecosystems are not only environmental, but also social and economic. These factors and their interactions need to

be considered to understand urban ecosystems over long time frames and broad spatial scales. **Preliminary due Dec. 4**

National Science Foundation Research Traineeship (NRT) Program
A letter of intent is required and must be submitted by an Authorized Organizational Representative during the submission window for subsequent full proposal submission and review.

There is a requirement to address organizational partnerships in the letter of intent. The letter of intent requires prescribed language that all partner organizations have been informed by the lead organization that their involvement may impact their organizational eligibility limits or that no partner organizations, aside from an evaluator, will be involved in the project.

There are supplementary letter requirements. Full proposals must include required letters from the lead institution (support letter) and NRT-eligible partner organizations (letters of collaboration).

For FY2019 and FY2020, the NRT Program requests proposals in any interdisciplinary research theme of national priority, with special emphasis on the six research areas within NSF's 10 Big Ideas. The NSF research Big Ideas are Harnessing the Data Revolution (HDR), The Future of Work at the Human-Technology Frontier (FW-HTF), Navigating the New Arctic (NNA), Windows on the Universe: The Era of Multi-Messenger Astrophysics (WoU), The Quantum Leap: Leading the Next Quantum Revolution (QL), and Understanding the Rules of Life: Predicting Phenotype (URoL). Proposals that align with one of the NSF Research Big Ideas should contain a title to reflect that alignment, as described in the program solicitation (e.g. NRT-HDR: title or NRT-QL: title). **See solicitation for letter of intend and proposal due dates.**

Solicitations Remaining Open from Prior Issues of the Newsletter

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**.

[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.**

[DOE-Office of Science's Science Undergraduate Laboratory Internships, Spring 2020](#)
The Science Undergraduate Laboratory Internship (SULI) program encourages undergraduate students and recent graduates to pursue science, technology, engineering, and mathematics (STEM) careers by providing research experiences at the Department of Energy (DOE) laboratories. Selected students participate as interns appointed at one of 17 participating DOE laboratories/facilities. They perform research, under the guidance of laboratory staff scientists or engineers, on projects supporting the DOE mission. **Deadline, October** 7. [Read the full announcement.](#)

[Graduate Research Fellowship Program (GRFP)](#)
The purpose of the NSF Graduate Research Fellowship Program (GRFP) is to help ensure the vitality and diversity of the scientific and engineering workforce of the United States. The program recognizes and supports outstanding graduate students who are pursuing full-time research-based master's and doctoral degrees in science, technology, engineering, and mathematics (STEM) or in STEM education. The GRFP provides three years of support for the graduate education of individuals who have demonstrated their potential for significant research achievements in STEM or STEM education. NSF especially encourages women, members of underrepresented minority groups, persons with disabilities, veterans, and undergraduate seniors to apply. **Multiple due dates beginning October 21.**

[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**.

Materials Research Science and Engineering Centers (MRSEC)

Solicitation: NSF 19-517
Institutional Limit: 1
Only one MRSEC preliminary proposal may be submitted by any one organization as the lead institution in this competition. An institution proposing research in several groups should submit a single MRSEC proposal with multiple Interdisciplinary Research Groups (IRGs). A MRSEC proposal must contain a minimum of 2 IRGs and a maximum of 3 IRGs. The IRGs in a center may be thematically related, or they may address different aspects of materials science typically supported by DMR. A single center at an organization allows efficient usage of resources, including common infrastructure, and better coordination of education and other activities of the center. Institutions that were awarded a MRSEC in the FY 2017 competition as the lead institution are **not** eligible to submit a MRSEC proposal as a lead institution in this competition. MRSEC full proposals may be submitted by invitation only. **Due Date: November 26, 2019**

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.**

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**.

Open Solicitations and BAAs

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

HR001119S0071, DSO Office-wide Broad Agency Announcement, Department of Defense DARPA - Defense Sciences Office 2020 BAA

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

revolutionary advances. DSO is explicitly not interested in approaches or technologies that primarily result in evolutionary improvements to the existing state of practice. **Open to June 12, 2020.**

[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**.

Research Development & Grant Writing News

Academic Research Funding Strategies, LLC (Page 1)
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What We Do--

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

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

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

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

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

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

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

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

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

Workshops by Academic Research Funding Strategies
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