

# Research Development & Grant Writing News

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[Academic Research Funding Strategies, LLC](#)  
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[Mike Cronan, PE](#) (Texas 063512, inactive) has 23 years of experience developing and writing successful proposals at Texas A&M University. He was named a [Texas A&M University System Regents Fellow](#) (2001-2010) for developing and writing A&M System-wide grants funded at over \$100 million by NSF and other funding agencies. He developed and directed two research development and grant writing offices, one for Texas A&M's VPR and the other for the Texas Engineering Experiment Station (15 research divisions state-wide).

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

### About the editor

[Katherine E. Kelly](#), Ph.D., is a retired English professor from Texas A&M University. She is the author of several books and numerous articles and served as a contributing editor for an academic journal for five years. She provides **editorial services** to [RD&GW News](#) and to [ARFS](#) clients on proposals, journal articles, and manuscripts.

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## Broader Impacts and Evidence-Based Models

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By [Mike Cronan](#), co-publisher

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While there are many perspectives on broader impacts—what they are, what they mean, and how they are best characterized and classified—one certainty remains for those writing proposals to NSF or supporting those who do: success depends upon addressing the broader impacts (BI) criteria specific to the solicitation.

Somewhat like quarks, BI activities come in multiple flavors, but for those writing research proposals to NSF, BI activities often equate to STEM educational activities at one or more points along what NSF describes as the “*pre-K to Ph.D. continuum*.” Of course, BI activities are a function of the award size of any research proposal, typically representing some much smaller proportion of the overall research budget. However, on center proposals, such as an ERC or STC, that smaller portion can be significant due to the size of the grant itself.

That said, keep in mind when planning, developing, and proposing broader impacts activities in the research narrative that these activities benefit enormously from being described in the (1) logical context of the proposed research; (2) in the context of ***evidence-based models, best practices, literature, and theory***; and (3) in the context of the ***evaluation metrics*** that will convince reviewers and program officers of the value of the proposed BI activities.

Moreover, keep in mind that NSF often looks for scalable, inquiry-based BI models, particularly in the domain of K-12 STEM outreach and education. Of course, in the case of K-12 outreach and education, the PI of any research proposal, regardless of size, will need significant support from someone knowledgeable in this domain. The uninitiated PI will face many challenges related to evidence-based models for STEM collaboration with K-12 teachers and student engagement, scale and scope of K-12 outreach activities within budget and time constraints, the interface of proposed BI activities with governing science standards and curricula in the schools, etc. For most PIs on research proposals, K-12 outreach is uncharted territory and they will need a guide to go there. (See [Achieving Broader Impacts in the National Science Foundation, Division of Environmental Biology](#)).

Also, metrics at NSF are not merely a factor in the review of the proposal but in the annual review of many funded projects, particularly at the center level. Moreover, when it comes to BI, ***NSF is not a monolithic agency where one BI model fits all NSF directorates, divisions, and programs. NSF is an agency of multiple cultures, each of which may view, review, and reward BI components of the research narrative differently.*** Keep in mind as well that NSF favors BI educational models that are replicable at other institutions rather than institutionally specific models that resist dissemination. As an agency, NSF is all about funding new models with widespread relevance to other institutional domains and settings rather than funding institutionally-specific projects that they would essentially consider a “BI one off.”

This tight coupling of broader impacts activities with evidence-based models, best practices, and evaluation metrics imposes a very important initial condition on writing the BI components of a project narrative ***whose goal is to be funded by NSF. Bottom Line:*** NSF wants to invest in what works. NSF program officers and reviewers will not buy “***a pig in a poke***,” no

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matter how beautiful the seller may claim the pig to be. NSF is all about evidence-based STEM teaching and learning models and proven best practices, and for research that improves evidence-based practices in STEM education. Moreover, NSF clearly favors and rewards BI and education models that draw upon the existing literature and, in turn, contribute to it in some important way. Keep this in mind when considering how to write a BI component to a research grant, including NSF grants in which STEM learning itself is the research.

While there are many perspectives on BI from many disciplinary or even philosophical vantage points, if you are yourself or assisting others to write a proposal to NSF, you need to understand BI as NSF sees it **and not as you may want it to be**. For the grant writer, a decidedly applied and strategic skill, **continuously calibrate what you propose to do with what the agency asks you to do**. In the case of BI, do not forget what NSF defines as the five core elements to be considered in its review of your BI narrative ([Chapter III - NSF Proposal Processing and Review](#)), especially element 3: “Is the plan for carrying out the proposed [BI] activities well-reasoned, well-organized and **based on a sound rationale**? **Does the plan incorporate a mechanism to assess success**?” How you interpret “**sound rationale**” and “**mechanism to assess success**” will determine the effectiveness of your proposal’s BI narrative section. A prudent reading of element 3 would suggest you equate “**based on sound rationale**” with **evidence-based activities** and best practices, and that you equate “**mechanism to assess success**” with evaluation **metrics**. Of course, these two definitions in practice intertwine and depend upon one another. But in all cases, **metrics matter at NSF**.

The evidence-based BI activity model requires evaluation metrics. Fortunately, most of the core NSF goals underpinning BI activities allow quantitative descriptions of the impact of BI activities, e.g., improved teaching and learning, demographics, retention, curricula, engaging underrepresented groups and communities, etc. Moreover, BI models that meet the NSF expectations for innovation, effectiveness, and dissemination to other domains will require strong and compelling evidence. **There is no getting around the fact that, at NSF, evidence-based models and metrics matter.**

So when you propose a BI activity, you must also be able convincingly to evaluate its success. Therefore, keep the need for evidence-based models and metrics in mind when you start planning, developing, and writing a BI component(s) to the research narrative. By doing so, you will ensure that reviewers and program officers easily recognize how the proposed activities, outputs, and outcomes will be evaluated (See [Logic Models for Program Design, Implementation, and Evaluation: Workshop Toolkit](#) ).

Federal agencies are placing an increasing emphasis on evidence and the need to build the evidence base that supports research programs in the congressional appropriations process. String theorists may get a pass at NSF and be funded, regardless of the fact that no one has yet, presumably, figured out an evidence-based way to test the theory. **But if you are proposing broader impacts activities in an NSF research proposal in which your BI activities and rationale are informed neither by the evidence-based literature nor by metrics, do not expect such a consideration to be extended to you.**

## NSF's Perp Walk for Plagiarism

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By Lucy Deckard, co-publisher

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A few weeks ago, NSF's Office of Inspector General (OIG) published its 46-page [semiannual report](#) detailing its search for fraud and research misconduct in the agency's \$7 billion annual investment in some 35,000 research and education grants. The report identifies the poster child for fraud, abuse, and research misconduct punishable as criminal conduct by fine and jail or both as the Small Business Innovation Research program, a focus area of OIG investigations.

However, of most interest to research offices that assist faculty in the writing of NSF proposals is the agency's very determined and persistent effort to ferret out plagiarism in all its manifestations using commercial software to scan proposals. Plagiarism identified by this software may range from pirated research text stolen from another proposal and presented as the "author's" own to failure to properly use quotation marks in direct or paraphrased quotes and attributions.

Unlike the SBIR investigations, it doesn't appear that any PI has yet gone to jail for the failure to use quotation marks properly when citing the work of others, but the penalties for plagiarism are stiff nonetheless. These include multi-year debarment from submitting proposals to NSF followed by multi-year institutional certifications and assurances that a proposal submitted by a debarred PI is free of plagiarism and meets institutional standards on plagiarism, as well as a long-term prohibition from serving as an NSF reviewer. While this may not be as bad as having to sing the "*Folsom Prison Blues*," being investigated and found guilty of research misconduct related to plagiarism can be a career-ending outcome for any researcher, particularly tenure-track faculty who may not fully understand either the institutional standards or NSF standards related to responsible conduct of research in the plagiarism domain.

NSF clearly takes plagiarism very seriously, stating in the current [semi-annual report](#) (March 2015): "We analyzed over 8,000 proposals awarded by NSF in FY 2011 for evidence of plagiarism, and investigated those which appeared serious. We opened 34 plagiarism investigations, ten of which have resulted in NSF making findings of research misconduct. So far, we have recovered \$357,602 in federal funds from these investigations."

"As part of a proactive review," the report elaborates, "we analyzed these 8,000 proposals awarded by NSF in FY 2011 for evidence of plagiarism. We processed these proposals using commercial plagiarism software, and ranked them by the amount of apparently-copied text. We determined that many proposals contained some amount of copied text, but opened cases only on the more apparently serious violations that might constitute research misconduct. We opened 34 plagiarism investigations, ten of which have resulted in NSF making findings of research misconduct. From these cases we have recovered \$357,602 in federal funds to date. We issued questionable research practice letters in six cases in which the copying was considered plagiarism, but did not rise to the level of research misconduct. Ten cases are still pending. One of the pending plagiarism investigations uncovered significant financial issues, and is being pursued for possible civil/criminal prosecution. Overall, less than one half of one



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percent of the funded proposals contained enough plagiarism to constitute research misconduct. **This percentage is less than the results from our earlier proactive reviews which included declined proposals.**

The following examples are quotes taken from the OIG report that offer instructive advice for PI's on issues related to plagiarism as research misconduct in the research narrative. Note that if you assist PIs in the writing and editing of the research narrative or present workshops on grant writing for faculty at your institution, the below examples of plagiarism in NSF proposals and the consequences are important to include in your presentation. Furthermore, while the below examples are specific to NSF, the point is generic to any research funding agency—**don't plagiarize!**

### ***“PI Plagiarizes from Former Colleagues in NSF Proposal***

A PI at a Pennsylvania university plagiarized a significant amount of material from a colleague's declined proposal submitted to another agency into her own NSF proposal. The university declined to conduct an investigation because it did not have a research misconduct policy. The PI admitted to us that she knowingly plagiarized material from a former advisor and another colleague, ***blaming time constraints and inexperience in proposal writing***. We concluded that the PI committed plagiarism and recommended that NSF debar her for one year, require certifications and assurances for three years after the debarment, and bar her from participating as a peer reviewer, advisor, or consultant for NSF.”

### ***“Texas Professor Claims Wrong Version of Proposal Submitted to NSF***

Our investigation determined that a Texas PI plagiarized in two NSF proposals. The PI told us he mistakenly submitted a version of the proposal in which he used placeholders for copied text, and that proper citations and references were present in a “final” version. The “final” version that he provided showed changes only to the text which we had originally identified, suggesting that the final version was created after we contacted the PI. The PI's university determined that plagiarism also existed in a proposal submitted by the PI to another agency. **Because the proposals were used as support in his tenure package, the university dismissed the professor.** We recommended that NSF require certifications and assurances for three years, and a concurrent prohibition from service to NSF as a reviewer, consultant, or advisor.”

### ***“Professor Copies Portions of His Proposal's Proposed Research Plan***

A professor at a Virginia university submitted two NSF proposals containing plagiarism. One of the proposals contained copied text in the research plan taken from another researcher's proposal. The professor told us that his citation was adequate, and that he “had no intention of taking the author's technical idea or copying his writing without giving him full credit.” The university investigation concluded the professor plagiarized and that his actions represented a pattern of plagiarism. **It required him to submit all of his proposals, papers, and manuscripts for plagiarism review for five years.** We concurred with the university's conclusions and recommended that NSF require the professor to provide certifications and assurances for two years, and require he certify compliance with the university-imposed requirements.”

## *Team Grant Training for New Faculty*

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By Lucy Deckard, co-publisher

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Research office strategies for assisting faculty with planning, developing, and writing large-team grants have traditionally supported senior faculty submitting center proposals to federal agencies, including NSF, NIH, and DOE, among others. The focus on senior faculty has made sense when you consider that large-team and center grants require a demonstrable history of research funding, successful collaborations, and a research management track record sufficient to convince program officers and reviewers to make a large-scale agency investment in the proposing PI's project. After all, one lynchpin to success in obtaining center-level research funding for large, interdisciplinary team grants is a convincing management and research performance plan for the proposed project, something new and junior faculty are not in a position to offer.

That said, new and junior faculty currently planning a research career will be entering a research environment significantly different than the one their major advisor or mentor entered years ago. For example, over the last several years, new and junior faculty have begun to compete for funding in an environment increasingly dominated by interdisciplinarity and the research team configuration required to compete successfully in that domain.

To see where this is all going, one only has to look at some of the future funding directions outlined in the FY 2016 budget requests presented to Congress last February by federal research agencies (see [Federal R&D in the FY 2016 Budget: An Overview, AAAS](#)). In particular, note some of the common interdisciplinary research priorities put forward by multiple federal agencies in the areas of antimicrobials (see [FACT SHEET: President's 2016 Budget Proposes Historic Investment to Combat Antibiotic-Resistant Bacteria to Protect Public Health](#)) and NSF's [Innovations at the Nexus of Food, Energy and Water Systems](#)).

These initiatives, like the ongoing Brain Initiative ([NSF](#), [NIH](#), and others), have the common characteristic of being priority research investments at multiple federal research agencies. Each agency puts its own mission imprint on the research area, but there is an overarching interdisciplinarity to the topic. For example, the kinds of research funded at NIH and NSF under the Brain Initiative may differ significantly, but the research is aligned under the common overarching research theme. Likewise, over the coming years, research funded by NSF, USDA/NIFA, DOE, and others related to the food, energy, and water nexus will take on the "flavor" of the particular agency mission but also will align under the common overarching research theme.

These examples demonstrate to new and junior faculty assisted by research offices that an interdisciplinary landscape unlike that of their research advisors will define much of the future in which they must compete. Fortunately, however, the past strategies and expertise developed by research offices for assisting senior faculty in pursuing center-level proposals is easily scalable to assisting new and junior faculty to prepare for a research future where understanding the principles and best practices of planning, developing, and writing interdisciplinary team grants, regardless of size, will be critical to successful funding.

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Moreover, assisting junior faculty in this way has several advantages beyond preparing them to be more competitive on smaller, interdisciplinary team grants submitted in collaboration with their peers. For example, in many cases, junior faculty may be invited to participate in a large research or center-level grant led by a senior faculty member. In this scenario, junior faculty may play various roles on a large-team grant, including joining one of multiple subsets of research teams assigned a research thrust area on a large grant, offering some specialized area of expertise to a larger grant, or offering expertise in a required broader impacts component, perhaps related to the social and behavioral sciences. Moreover, it is not unheard of for a senior faculty member serving as the PI on a large center proposal to engage one or more junior faculty members in the task of drafting narrative sections of a proposal.

As stated, it is very unlikely a junior faculty member will serve as the PI on a large-team grant, but short of that role, there are numerous ways and a significant likelihood that junior faculty will play an important role in smaller team grants. These roles can include serving as the PI, or a support figure in larger-team grants. They will be prepared for these roles through team grant training by a research office or by one-on-one discussions with research office staff. This preparation will give them a competitive edge with the funder or, perhaps equally important, will identify them as a valuable team member by senior colleagues.

A good place to start in this process of preparing junior faculty for the world of interdisciplinarity and team grants is to prepare them for the core generic questions sponsor's typically ask on team grants, regardless of size or disciplinary scope. Of course, discussions of what characterizes a good team member will prove invaluable as well, since that gets to the heart of team dynamics, the essential ingredient of success.

First off, team proposals, regardless of size, require synergy not silos to be successful. The team must be able to answer such key questions in the research narrative as:

- Why are we a team?
- What synergies and benefits not otherwise possible result from our team configuration?
- What are the key team research interactions and interdependencies that will enable success?
- Does each team member understand how his or her research will be impacted and enabled by the research of other team members?

Research collaborators must convince reviewers of the significant value in the interdisciplinary team structure and of the important research interactions and synergies that will occur among the disciplinary partners that would otherwise be impossible.

When it comes to what makes for a good team member, junior faculty should emulate the following:

- Read and understand the solicitation
- Bring value-added expertise to the team
- Write well-crafted and prompt narrative contributions
- Act as an integrator— build synergy not silos
- Help the team communicate
- Help build consensus
- Help find a path forward past barriers



And finally, junior faculty should demonstrate the following characteristics:

- Earn trust of other team members
- Demonstrate the capacity to perform
- Respect team development principles
- Gain confidence of other team members
- Demonstrate reliability (e.g., meet deadlines!)
- Stay engaged
- Be well informed (e.g., reads the RFP!)
- Bring valuable expertise to the proposal
- Acts as a good communicator
- Play well with others...not looking for a free ride

## Confessions of a Grumpy Reviewer

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By [Mike Cronan](#), co-publisher

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PIs often approach writing grant proposals as they do writing journal articles. However, there is a key difference between the journal article reader and the proposal reviewer: your colleague who chooses to read your journal article is already interested in what you have to say and has made the choice to read your article; in contrast, the reviewer reading your grant proposal may have no special interest in the topic you're proposing and is obligated to read your proposal. In addition, reviewers are specifically tasked with the role of being critical and helping to winnow down numerous proposals to just the ones with the best ideas. As a result, proposal reviewers are a much more challenging audience. They may be tired; they often are reading your grant proposal as one in a large stack of proposals; and they may be grumpy. It's therefore very important to engage and excite your reviewer and make him or her your champion. Most critically, avoid irritating your reviewer.

There are many ways to irritate your reviewer. Below we list mistakes that PIs often make—some can significantly hamper the clarity of your proposal, while others are admittedly pedantic. However, like a small pebble in a shoe, even minor irritations can become significant for a reviewer who is reading your proposal at 2 am.

First, the big mistakes that can hamper clarity:

- **Illegible figures and graphs.** This can drive reviewers crazy and lead them to conclude that the PI really doesn't really care whether the reviewer understands the proposal or—even worse—that the PI has something to hide by making key graphs or charts impossible to read. Graphs may be illegible because the axis labels or units are missing or too small, or because there is no clear legend for multiple lines. Figures are often illegible because text in the figures is too small, or because the figure is too complex. Beware taking a PowerPoint slide and shrinking it down to figure size – this is almost always a bad idea. Simplify the figure and redraw it so that it is legible at the size it will be in the proposal. If it's too complex, consider breaking the figure into two figures or focusing only on the core concept and explaining the rest within the text. Also beware of blurry, low resolution figures. This adversely impacts the impression of competence that you want to convey to the reviewer.
- **Very lengthy figure captions.** The main point of including a figure is to provide a visual way for the reviewer to easily and quickly grasp key concepts. However, some PIs see it as a way to get around the font limitations by including a lengthy discussion of the figure in the caption in 9 point font. A grumpy reviewer will just skip the entire figure. If the figure merits a lengthy discussion, include that in your main text. In the caption, provide a concise description of the main points you're making with the figure.
- **Failure to clearly state your project goals and objectives early in the proposal.** Many reviewers tell me that if they have read two (some say just one) pages of a proposal and they still don't know what, *specifically*, the PI is actually proposing to do, they will put the proposal down and go on to the next one. Remember that you can always provide background later in the proposal; don't irritate your reviewer by making him read several

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pages of background information he probably already knows in order to find out what you're proposing to do.

- **Typos and grammatical mistakes.** These kinds of mistakes, which reviewers see as sloppiness, signal to the reviewer that the PI didn't care enough about the proposal to ask someone to proof read it (or at least use spell check). Reviewers see this as sign the PI will do sloppy research, and they also see it as lack of respect for them as the reader.
- **Walls of text with no subheadings.** When a reviewer opens a proposal, and she sees large blocks of text with minimal headings and no subheadings, a deep feeling of dread settles on her. This proposal is likely to be difficult to follow, and it will be a challenge to find where in the text the review criteria are addressed. This makes the reviewer's job much more difficult and, consequently, makes her extremely grumpy and disinclined to give the PI the benefit of the doubt on any aspect of the proposed project.
- **The garden path proposal.** Usually, when a topic is introduced early in a proposal, it's a signal to the reader that the topic is central to the proposed project. However, some PIs introduce a topic and discuss it at some length, and then never return to it in the rest of the proposal. Instead of discussing an important point, that part of the proposal was just an interesting aside (perhaps motivated by the PI's perceived need to acknowledge work that is tangential to the proposal or that might be of interest to the review panel). In this case, the PI has led the reviewer down the proverbial "garden path," signaling to him that the proposal was going one way, and then suddenly taking a 90 degree turn in an unexpected direction. Reviewers often find this deeply confusing and, at 2 am, deeply irritating. If a topic is not really central to your proposal, don't discuss it at length early in the proposal. If you feel you must address it, put it later in your proposal and clearly explain why you are discussing the topic and how it relates to your proposed project.
- **The ghost team project.** Often, proposals for team projects fail to describe the team, their qualifications, and what the roles of team members are until the management plan, if there is one, at the end of the proposal. The project plan is often written in passive voice, e.g., "The specimens will be fabricated and tested ..." As a result, the proposal reads as if key tasks will be done magically by no one in particular. Team projects are more expensive and complex than single-PI projects, so there needs to be a strong reason to fund a team. That reason usually stems from the skills and experience that each team member brings to the team. If you fail to describe your team and the qualifications of each member early in the proposal, you have left out one of the most important aspects of your project, and reviewers are unlikely to recommend funding.
- **The tentative or uncommitted proposal.** Some proposals read as if the PI is not really sure what he will do if he wins the grant. The research plan is peppered with words like "might," "could," "would," "it might be interesting to," "X can be done," etc. This kind of tentative wording weakens your proposal and makes it appear that you are not really committing to a clear course of action, which makes reviewers uncomfortable. Everyone knows that there are no guarantees in research, but as the PI, you need to have the courage of your convictions. If you appear to be unsure of what you will do or whether you're likely to be successful, why should your reviewer place her faith in you? Wording such as, "We will do x" is always more convincing than, "We plan to/might/could/would do x."

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- **Using jargon or lab shorthand.** Some PIs are so accustomed to talking to their graduate students and close colleagues that they end up using language in their proposals that is inaccessible or unclear to reviewers who are not in their particular subfield. You may say to your grad student, “Go scan these specimens,” or “Analyze the interface,” and your student will know that you want a differential scanning calorimetry analysis done of the specimen to determine its glass transition temperature or that you want the interface examined using transmission electron microscopy to determine its structure. However, if you write in your proposal that you will “scan the specimens” without being specific, it will be unclear to the reviewer what you’ll actually be doing. In addition, even if the reviewer can figure out what you mean, she is likely to see this kind of imprecise wording as sloppiness, which will irritate her.
- **Vague claims.** PIs will often say that their research will improve or reduce something without giving any numbers. If you make claims that your research will “improve the efficiency” or “reduce the cost” of a step, the reviewer will want to know if you anticipate a 200% improvement in efficiency or a 0.02% improvement. If you don’t give at least some estimate of the magnitude of the impact along with rationale for that estimation, reviewers will often disregard the claim altogether.
- **Inconsistent descriptions of tasks.** In many proposals, the project schedule at the end of the proposal lists the specific tasks to be accomplished in satisfying detail, but the research plan/methodology section doesn’t describe many of the tasks, or describes different tasks. Alternatively, tasks may be mentioned early in the proposal but not addressed in the research plan. Inconsistencies of this type makes it difficult for the reviewer to know what you actually plan to do and also make it appear you may not be sure what exactly you’ll do if you get the grant.
- **Overuse of acronyms.** Nothing is more annoying to a reviewer than having to search for the definition of an acronym that was defined on page 2 and then used again on page 9. Terms that are used just a few times in a proposal shouldn’t be converted into acronyms unless the acronyms are universally used in your discipline and the reviewers all share your discipline.

Below are some more pedantic complaints which, nonetheless, can be deeply irritating at 2 am:

- **Using “proposal” when you mean “project.”** The proposal is the grant application document you are submitting; the project is what you will do if you are awarded the grant. Therefore, you should not say, “the goal of this proposal is to [research goal here].” That’s the goal of your **proposed project**. The goal of your proposal is to convince the agency to fund you. However, you can say, “In this proposal we will first discuss x and then y...” because that refers to the document itself.
- **Use of overly colloquial wording.** This is most commonly an issue for non-native English speakers who may not realize that some words are too informal for use in a proposal. The most common of these is the use of “nowadays,” which in the US has a distinct “grandpa in a rocking chair on the front porch” feel and might be followed by a discussion of what the “whippersnappers are up to.” Better wording would be “currently” or “to date.”
- **Use of “notice” when you mean “note.”** This is also most common for non-native speakers. “Notice” connotes casually seeing something that may or may not be important, whereas

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“note” generally connotes paying attention to something, which is usually the correct meaning in a proposal.

- **Use of quotation marks for emphasis.** Some PIs write things like *“This approach is “novel” because...”* There is already copious griping on the internet and in writing guides about the this kind of misuse of quotation marks, but we include it here because it’s still a common mistake and is especially problematic in a proposal. Putting “novel” in quotation marks implies that you are quoting someone else, and it may not actually be novel—the opposite of what you want to communicate to the reviewer.

As you work on your proposal draft, remember that even though there is no review criterion called, “Did not annoy the reviewer,” these kinds of annoyances can often impact your reviews in less explicit ways. Do your best to avoid the mistakes discussed above, and ask your friends and colleagues to read your proposal draft and give you feedback on how reader-friendly they found your proposal to be.

## CAREER Heads-Up: Don't let this happen to you

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By [Mike Cronan](#), co-publisher

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In recent months, we have been hearing many heartbreaking stories of proposals to NSF being returned without review because of compliance issues. While there have always been some such incidences, based on anecdotal evidence, there recently seems to be a notable increase in the number of returned proposals. Part of this problem seems to be changes in recent revisions of the [Grant Proposal Guide](#), of which many PIs are still unaware. Another contributor may be an increased alacrity in enforcement (perhaps influenced by relatively inflexible computer programs being used to check for compliance) and NSF's decreased willingness to let non-compliant proposals go through.

With thousands of CAREER proposals being submitted in July, many of which are from first-time NSF PIs or PIs who have not submitted to NSF in the last year, there is a danger of even more sad stories of proposals being returned without review. Don't let this happen to you! Here are several commonly overlooked changes of which you should be aware:

- **New collaboration letter requirements for CAREER:** This year, CAREER letters of collaboration may only be ***one sentence long***. The wording, provided in this year's CAREER solicitation, is:  
***"If the proposal submitted by Dr. [insert the full name of the Principal Investigator] entitled [insert the proposal title] is selected for funding by the NSF, it is my intent to collaborate and/or commit resources as detailed in the Project Description."***  
Ask your collaborator to fill in these blanks, print this out on her/his letterhead and sign it. This letter (*with no additional wording*) should then be submitted in Supplementary Documents. You will need to describe the details of the collaboration in the text of your Project Description. Note that this applies only to the Letters of Collaboration ***not*** the Departmental Letter, which is still 2 pages long with requirements listed in the solicitation.
- **Results of Prior NSF Support:** If you have been supported by NSF funding in the last 5 years in any capacity (not just as PI or co-PI), you must include "Results of Prior NSF Support" as part of your 15-page Project Description. If you've been involved in more than one project, you may choose the one that is most relevant to your CAREER proposal. When describing those results, individually label "***Intellectual Merit***" and "***Broader Impacts***." We heard the story of a well-funded PI who recently had his proposal returned without review because he used the headings, "IM" and "BI" to save space. You also need to be sure to cite all publications and products that came out of that project. There are a number of other requirements, so check the [Prior NSF Support](#) guidance in the most recent Grant Proposal Guide and be sure to follow these instructions ***to the letter!*** If you haven't had prior NSF funding, it's safest to include a short statement to that effect in your Project Description.
- **Broader Impacts of Proposed Work:** You must include a separate, titled section called "Broader Impacts of Proposed Work." We recently heard of a PI who had problems because he titled his section "Broader Impacts of Proposed Activities" in compliance with the



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wording in a previous version of the GPG, so it's safest to ***use those exact words***. Some CAREER PIs put that heading over the entire Education section, but we think it's a better idea to include a separate labeled "Broader Impacts of Proposed Work" section that summarizes the broader impacts of both the research plan and the education plan. This will provide a helpful and easy-to-locate summary for your reviewers.

- **Include Unfunded Collaborations and Other Resources in "Facilities, Equipment and Other Resources"**: This includes collaborations for which you included a Letter of Collaboration as well as other resources that aren't included in the budget, for example, a student who will work on your project who is supported by a departmental fellowship.
- **References Cited Instructions**: In recent years, NSF has become stricter about what must be included in your cited references. Remember that this section is not included in your 15 pages, and there is not a page limit for references in the CAREER. You must include all authors in the sequence in which they appear in the publication, the article and journal title, book title volume number, page numbers (beginning and ending) and year of publication. If the publication is available electronically, include the website address.
- **Don't include urls in the Project Description**: You may cite a website just as you would a journal article and include the url in the References Cited section, but **don't** include the url within the 15-page Project Description.
- **Follow biosketch formatting requirements exactly**: We heard of a PI who had his proposal returned without review because he accidentally included eleven publications instead of the specified ten. Follow all of the [requirements](#) to the letter!

If you're unclear about any of the proposal requirements, remember that the CAREER solicitation is your first guide, and then anything not addressed in the solicitation is covered by the Dec. 2014 Grant Proposal Guide. If you're still not sure about an issue, contact your pre-award office. If you still need clarification, you can contact NSF directly.

## Topics in Brief: EAC at NSF; Antimicrobials

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By Lucy Deckard, co-publisher

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### NSF Evaluation and Assessment Capability (EAC) in FY 2016 Proposed Budget

NSF requested a 61% increase (\$8.86 million) in the [EAC](#) budget for FY 2016 over the current budget. ***This is important for research offices looking to the future evaluation and assessment environment at NSF and how that will eventually impact the writing of the research narrative and the use of evidence-based best practices and metrics, not just for broader impacts but likely across all facets of research to varying degrees.***

The mission of this new initiative, what NSF calls an [NSF-wide investment](#), is to “provide NSF with the capacity to operate from a basis of evidence in policy decisions. The Evaluation and Assessment Capability (EAC) will provide centralized support and resources for data collection, analytics, and the design of evaluation studies and surveys. These activities will enable NSF to more consistently evaluate the impacts of its investments, to make ***more data-driven decisions***, and to ***establish a culture of evidence-based planning and policy-making.***” This is a loud “heads up” to those writing proposals to NSF. You cannot be an “innocent bystander” with no skin in the game when it comes to proposal metrics. Instead, you will be a principal source of the metrics NSF needs to make this initiative a success.

As sociologist William Bruce Cameron noted in a quote often [mistakenly attributed](#) to Einstein, “Not everything that can be counted counts, and not everything that counts can be counted.” However charming this 1963 quote, it is not good advice today for those hoping to write a successful NSF or any other federal research and/or education narrative. Metrics has increasingly become the clarion call of the day.

This focus on metrics is noted in the NSF [FY 2016 Annual Performance Plan](#). The performance plan’s ***Goal 6: Evaluate NSF Investments*** states: “By September 30, 2016, the NSF Evaluation and Assessment Capability (EAC) will have updated its evaluation quality principles and disseminated them to all directorates. These quality principles will be followed by all new evaluation projects across the agency. ***NSF will have incorporated logic models/theory of change language in the rationale for all new programs (expected outputs and outcomes).***”

“While directorates and offices will continue to manage their respective program evaluations, EAC will provide foundation-wide leadership and coordination, providing a set of quality principles and evaluation policies applicable NSF-wide that will assure consistency and the best use of evaluation dollars. This includes EAC coordination of NSF cross-cutting programs and initiatives. EAC has made progress exploring the frontier in ***evaluation of research investments*** with national experts convened in a series of workshops to ***inform a framework that establishes levels of evidence and rigor for different types of programs, including basic research programs***. The EAC piloted a peer review mechanism for statements of work and evaluation designs against evaluation quality principles. EAC has also clarified roles and responsibilities for an ***integrated evidence-based system for decision-making***, formation of the internal evaluation working group, and establishing mechanisms to design and supervise cross-cutting evaluations.”

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This language forecasts the extent to which metrics will permeate future research narratives and gives researchers a strong incentive to begin thinking now about how to incorporate metrics in future proposals. **Bottom line:** NSF will need more data to implement the EAC mission. Much of that data will come from funded projects. Projects with successful metric protocols in place will have a greater chance at success.

As [NSF notes](#), “In FY 2017 and FY 2018 investments in the three specific areas will continue. The EAC will finalize the development of a portfolio analysis system and start using the tools consistently. ***Evaluation studies will be initiated for broadening participation, interdisciplinary research programs, large facilities, and broader impacts and their cumulative impact on people.*** The EAC staff, the EAC working group, and the EAC steering committee will attend a focused discussion/retreat to get expert advice on methodological issues encountered evaluating science investment programs that could be solved by extrapolating from other disciplines.”

In FY 2016, EAC will impact various program areas relevant to university research office support of faculty. NSF notes: “(1) ***A cross-cutting evaluation will be initiated for NSF investments in broadening participation on the following populations:*** underrepresented undergraduate and graduate students, underrepresented faculty in STEM departments, underrepresented principal investigators submitting proposals worthy of support, and underrepresented institutions.”

“The evaluation design will use a mixed methods approach (qualitative and quantitative) to do a formative assessment of what mechanisms work best and a summative evaluation of the impact of NSF’s historic investments in broadening participation. The impact achieved by different funding mechanisms used to identify and fund interdisciplinary and potentially transformative research (IDR and PTR) at NSF, including core programs, will be evaluated. The quality of the proposal responses to the ***revised elements of the broader impacts criterion*** and the actual consecution of those funded activities will be assessed.”

“The EAC will develop a study to explore the ***cumulative longitudinal impact of NSF funding on individuals***, (their career paths, creative ability, mentoring of students, networks, and other spillover effects such as single investigators, Research Experiences for Undergraduates (REUs), fellows, etc.). The EAC will initiate planning for the ***formative and summative evaluation of NSF strategic investments associated with NSF priority research areas*** (e.g. Innovations at the Nexus of Food, Energy, and Water Systems, Understanding the Brain).”

All of this will clearly impact the writing of research and education proposals to NSF. The foregoing give a glimpse of the future at NSF when it comes to the importance of metrics in all aspects of writing the successful research narrative. As the old adage goes, “Being forewarned is being forearmed.”

### Antimicrobials in the FY 2016 Proposed Budget

According to the White House Press Office, the “President’s [2016 Budget](#) Proposes Historic Investment to Combat Antibiotic-Resistant Bacteria to Protect Public Health.” The Budget nearly “doubles funding for combating and preventing antibiotic resistance to more than \$1.2 billion.” The funding is targeted to “improve antibiotic stewardship; strengthen antibiotic resistance risk assessment, surveillance, and reporting capabilities; and drive research

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innovation in the human health and agricultural sectors.” The major beneficiaries of this increase in funding will be NIH (\$650 million); CDC (\$280 million); FDA (\$47 million); USDA (\$77 million); DVA/DOD (\$160 million), along with lesser but still significant funding to NSF.

Regardless of the enacted budget, it is clear that funding for antimicrobial resistance and antibiotic resistance is a growth sector of the federal research budget at core funding agencies. Given this future funding landscape, researchers and the research offices that support them would be wise to develop a strategic funding plan that maps research capacities and expertise to the likely funding scenarios in the FY 2016 budget and beyond. For research offices that support faculty, some basics about the topic are in order, starting with the key questions: What is antimicrobial resistance? What is the difference between antibiotic and antimicrobial resistance?

According to the World Health Organization’s [fact sheet](#) (April 2015), “antimicrobial resistance is resistance of a microorganism to an antimicrobial drug that was originally effective for treatment of infections caused by it. Resistant microorganisms (including **bacteria, fungi, viruses and parasites**) are able to withstand attack by antimicrobial drugs, such as antibacterial drugs (e.g., antibiotics), antifungals, antivirals, and antimalarials, so that standard treatments become ineffective and infections persist, increasing the risk of spread to others. The evolution of resistant strains is a natural phenomenon that occurs **when microorganisms replicate themselves erroneously** or when resistant traits are exchanged between them. The use and misuse of antimicrobial drugs accelerates the emergence of drug-resistant strains. Poor infection control practices, inadequate sanitary conditions and inappropriate food-handling encourage the further spread of antimicrobial resistance.”

The difference between antibiotic and antimicrobial resistance, according to WHO, is that “antibiotic resistance refers specifically to the resistance to antibiotics that occurs in common bacteria that cause infections. **Antimicrobial resistance is a broader term**, encompassing resistance to drugs to treat infections caused by other microbes as well, such as parasites (e.g. malaria), viruses (e.g. HIV) and fungi (e.g. Candida).”

A funding strategy to compete across multiple federal research agencies starts with gaining a deeper understanding of the research investment priorities in these topic areas that will be somewhat unique to various agencies. A good starting place for this strategic planning process is gaining familiarity with the motivating reports and documents, including: [White House Forum on Antibiotic Stewardship](#); [National Action Plan for Combating Antibiotic-Resistant Bacteria](#); [Executive Order - Combating Antibiotic-Resistant Bacteria](#); [National Strategy to Combat Antibiotic-Resistant Bacteria](#); [PCAST Report on Combating Antimicrobial Resistance](#) [CDC report: Antibiotic Resistance Threats in the United States, 2013](#).

As is typical in developing a strategic funding plan that maps capacity to funding opportunities, the initial universe of funding is very large. But once you superimpose your research capacities on that very large universe looking for a competitive match, the number of realistic, i.e., competitive, funding opportunities diminishes dramatically, by both agency and program. Nonetheless, this process is an important one if you hope to be well positioned to take advantage of the major federal investments in this topic area.

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**[Webinar: NSF Update on the Proposal & Award Policies & Procedures Guide \(PAPPG\) -](#)**

**January 27, 2015, Presentation Slides:**

**[https://www.nsf.gov/bfa/dias/policy/outreach/nsfupdate\\_pappgdec14.pdf](https://www.nsf.gov/bfa/dias/policy/outreach/nsfupdate_pappgdec14.pdf)**

**NSF Grants Conference hosted by the State University System of Florida - June 1-2, 2015**

- [Introduction and NSF Overview](#)
- [Proposal Preparation](#)
- [NSF Merit Review Process](#)
- [Award Management](#)
- [NSF Policy Update](#)
- [Crosscutting and Special Interest Programs](#)
- [International Programs](#)
- [Office of the Inspector General](#)
- **Breakout Sessions:**
  - [Biological Sciences](#)
  - [Post-Award Monitoring and Compliance](#)
  - [Computer and Information Science and Engineering](#)
  - [Education and Human Resources](#)
  - [Engineering](#)
  - [Faculty Early Career Development \(CAREER\) Program](#)
  - [Geosciences](#)
  - [Mathematical and Physical Sciences](#)
  - [NSF Award Cash Management Service \(ACM\\$\)](#)
  - [Science, Engineering & Education for Sustainability \(SEES\)](#)
  - [Social, Behavioral and Economic Sciences](#)
  - [IT Modernization/Research.gov](#)
  - [Emerging Research Institution Roundtable](#)

### **Fundamentals of Grant Writing**

Gives an overview of the grant writing process, including fund seeking, budget, and narrative. Also includes information about federal rural health grant programs. -- University of North Dakota Center for Rural Health.

### **New Investigator Guide to NIH Funding**

Your reviewers are your application's audience. To make a high impact, your application will need to meet their expectations:

- Have a project that addresses a highly significant problem.
- Show how:
  - Your research will advance your field.

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- The work is new and unique.
- It will fill knowledge gaps (you will need to show you are aware of opportunities, gaps, roadblocks, and research underway).
- Your research meets NIH's mission to improve human health through science.
- Convince reviewers you have the expertise and resources to perform the research.

### **NSF Publication: A Guide for Proposal Writing**

The staff of the Division of Undergraduate Education (DUE) at the National Science Foundation (NSF) often provide informal guidance to proposers. Staff members give workshops on proposal writing, answer questions by phone and e-mail, and talk to potential awardees at professional meetings and at NSF. The following is the essence of the advice often given to inquirers. These suggestions for improving proposals were collected from a variety of sources, including NSF Program Directors, panel reviewers, and successful grantees. Ultimately, most proposals are peer reviewed in panels consisting of colleagues in science, technology, engineering, and mathematics disciplines or related fields, and the success in obtaining funding depends in great measure on reviewers' judgments and their written reviews.

### **Guide to FY2016 Research Funding at the Department of Defense (DOD)**

### **Researcher Guidebook: A Guide for Successful Institutional-Industrial Collaborations**

### **Guide to FY2016 Research Funding at the U.S. Department of Agriculture (USDA)**

### **Guide to FY2016 Research Funding at the Department of Justice (DOJ)**



## *Educational Grant Writing Web Resources*

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### [Keeping Pace with K-12 Digital Learning: An Annual Review of Policy and Practice \(2014\)](#)

"Keeping Pace with K-12 Digital Learning: An Annual Review of Policy and Practice (2014) is the 11th in a series of annual reports that began in 2004 that examine the status of K-12 online education across the country. The report provides an overview of the latest policies, practices, and trends affecting online learning programs across all 50 states."

### [The Role of Digital Technologies in Deeper Learning](#)

"To compete in today's global, knowledge-based, innovation-centered economy, young people must go beyond a high school diploma and acquire not just academic knowledge, but interpersonal and interpersonal capacities. That is, they must engage in deeper learning. As schools shift away from traditional education models in favor of providing deeper learning environments, they are required to replace their outdated technology practices and implement a new infrastructure to support student learning. This report explores how partnering deeper learning strategies with effective technology designs allows for greater educational success."

### [Tracking Science: Following the STEM Trend](#)

"With the most recent version of the Next Generation Science Standards (NGSS Lead States 2013), implementing science lessons that embed engineering, technology, and mathematics concepts becomes imperative. Designing and constructing a solar tracker gives students the opportunity to apply science and mathematics knowledge to improve existing technology through the engineering design process. In this article, we describe a teacher's implementation of a solar tracker design task and explain how this engaging and collaborative lesson integrates science, technology, engineering, and math objectives."

### [Beyond "You Can Do It!" - Developing Mathematical Perseverance in Elementary School](#)

"Perseverance," an important psychological construct, matters for mathematics learning because solving challenging mathematics problems and reasoning about mathematical ideas often requires a kind of uncomfortable persistence. However, school experience often signals speed to be a marker of mathematical skill, and learners are rarely guided explicitly to see that perseverance is needed or how to stick productively with a tough problem. In this paper, we argue that perseverance is a domain-specific bundle of capacities and that it is not a trait, but can be deliberately taught and learned. We argue further that perseverance can be developed as a collective as well as an individual practice, and that collective work can help develop individual perseverance. We use a case of the teaching and learning of a challenging mathematics problem in an upper elementary mathematics class to illustrate and unpack these elements of the paper's argument. Our analysis focuses on three aspects of the instruction: the nature of the mathematical task on which the class was working, the sequencing of students' work on the problem, and how perseverance for this problem and beyond was supported. The

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paper concludes with several questions that our analysis suggests as important for next steps in trying to understand mathematical perseverance and what it takes to support and develop it."

### **Black Learners' Perseverance With Mathematics: A Qualitative Metasynthesis**

"Perseverance is often viewed as behavior exhibited in relation to a specific task, but perseverance can also be viewed more broadly as a behavior or set of behaviors spanning a longer period of time. This is the approach that Berry and Thunder (2014) take in their paper, which synthesizes qualitative research to explore how Black learners identity formation over time may influence their perseverance in mathematics throughout the course of their K-12 educations. The authors describe the ways in which Black learners racialized forms of experience contribute to identity formation and their sense of agency in relation to mathematics, highlighting first-hand accounts from high-achieving Black students that illustrate how their identities led to a high sense of agency that enabled them to persevere with and succeed in mathematics over time. Berry and Thunders study enriches our understanding of perseverance by relating the unique experiences of a particular subgroup of learners, as well as by demonstrating how perseverance can be seen not only as a task-specific concept, but also as a habit that persists over a longer period of time."

### **Cultural Considerations in Support of Mathematical Perseverance: The Role of Context Activation**

"This paper describes the ways in which consideration of students' out-of-school practices might be related to understanding and supporting students' mathematical perseverance. It discusses a study in which children were presented mathematics tasks related and unrelated to their everyday experiences. With the tasks related to their everyday lives, in addition to showing greater success, students also demonstrated greater levels of mathematical perseverance. This paper provides a theoretical framework that explains these findings by suggesting that children draw on previous experiences outside of school when solving these types of tasks, which appear to activate norms and orientations toward math that children use in out-of-school settings. Since problem solving in these settings often has "real life" consequences, children develop higher expectations that math can be meaningful, and these higher expectations for meaning appear to result in greater perseverance. The paper concludes with implications for teacher preparation and suggestions for future research."

### **Robotics in the Core Science Classroom: Benefits and Challenges for Curriculum Development and Implementation**

"The Science Learning Integrating Design, Engineering and Robotics (SLIDER) project at the Georgia Institute of Technology is in the 5th year of developing and implementing an inquiry and project-based learning curriculum that is aligned with the Next Generation Science Standards (NGSS) and designed to teach middle school physical science disciplinary content and practices using LEGO Mindstorms NXT as the instructional manipulative. Using Design-Based Implementation Research (DBIR) methods, the team has documented the curriculum design decisions that resulted from iterative cycles of A) design and creation of materials, B) teacher professional learning sessions, C) enactment by teachers in 8th grade classrooms, D) observation and data collection, and E) problem redefinition and curriculum redesign. These

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activities have taken place in a diverse set of public schools, ranging from a low-income but fairly stable rural school, to a suburban school with a rapidly changing demographic population and high student turnover, to a stable and high performing affluent school.

This paper will focus on the benefits and challenges of using robotics, in this case LEGO Mindstorms NXT kits, as a manipulative to teach science content within the core science classroom, particularly within less-than-optimal, but very common, types of school settings. It will cover the issues of materials management and constraints, resource and time requirements in different settings, the effects of variability in student prior knowledge, and the necessary scaffolding of robotic-based activities to ensure that students focus adequately on science content. Data sources include design reflections and documentation, classroom observations, project communications, teacher surveys and interviews, and teacher reports of curriculum enactment.”

### **High School Engineering class: From Wood Shop to Advanced Manufacturing**

“The maker movements, a general term for the rise of inventing, designing, and tinkering, and the addition of engineering standards to the Next Generation Science Standards (NGSS) have spawned a major evolution in technology classes throughout the country. At Georgia Institute of Technology, a new curriculum attempts to bring the maker movement to high school audiences through both curricular and extra-curricular channels. The curriculum is structured around engineering standards and learning goals that reflect design and advanced manufacturing content, along with employability skills, while borrowing best practices from wood shop and technology education classes. The hope is that this course will bolster many of the Attributes of Engineers in 2020 described by the National Academy of Engineering and 21st Century Skills these skills and attributes can be beneficial to any college or career path, not just one in engineering. The course incorporates design-build activities into entrepreneurial and business contexts, providing relevance to foundational math skills and science practices while integrating problem solving and cutting-edge technology. The course requires that students draw and render design concepts, communicate design concepts to their peers and clients, fabricate design artifacts, and document their requirements and decisions while engaging in the engineering design process.

The purpose of this paper is to explore the results from the first and second year implementation of a maker-infused Advanced Manufacturing (AM) course for high school students in a low income, rural-fringe school system. Results from a portfolio assessment and 21st Century Skills surveys will be discussed in terms of course effectiveness and challenges to implementation. Similarities and differences between learning goals for this new AM course and the more traditional wood shop and technology education classes will be highlighted. Implications for engineering education, theory, and practice are discussed.”

### **Equity in Out-of-School STEM Learning: Professional Development Needs and Strategies**

"How can professional learning for out-of-school staff be organized to promote equity in STEM learning? This is the question a group of out-of-school educators and educational researchers gathered to discuss at the Exploratorium on January 30/31, 2015. The meeting was sponsored by the Research+Practice Collaboratory, an NSF-funded project that develops and tests new models for integrating research and practice perspectives for the improvement of science and

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mathematics education. Four big ideas for supporting equity-oriented facilitation emerged from the group's discussions: (1) Seeing, hearing, and honoring, (2) Reflecting on teaching, learning, and equity, (3) Adopting asset-based approaches to staff development, and (4) Foregrounding equity to shape program activities."

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## *Agency Research News*

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### **Comment Request by July 20: National Science Foundation Proposal/Award; Information—NSF Proposal and Award Policies and Procedures Guide**

The draft NSF PAPPG is now available for your review and consideration on the NSF Web site at <http://www.nsf.gov/bfa/dias/policy/>. To facilitate review, revised text has been highlighted in yellow throughout the document to identify significant changes. A brief comment explanation of the change also is provided.

### **NIH Director's Statement Regarding Dr. Sally Rockey's Departure**

It is with truly mixed emotions that I announce that Dr. Sally Rockey will be leaving her post as Deputy Director for Extramural Research to become the [Director of the Foundation for Food and Agriculture Research](#). On the one hand, I'm very happy for Sally and proud that she will be bringing her considerable skills to the leadership of this new and important endeavor. This foundation, authorized by the 2014 Farm Bill, is a non-profit corporation that will focus on important national and international issues of agriculture where expanded investments will generate innovative solutions. Sally has a long history in agriculture, having spent 19 years with the USDA before joining the NIH, so this looks like an ideal fit. On the other hand, I will greatly miss her wisdom, courage, and creativity as we tackle the knotty issues associated with extramural grant funding, especially in this particularly stark budget climate. Sally has done an outstanding job of steering the NIH through many challenging times and we will be forever in her debt. Among her many accomplishments, she managed the successful implementation of ARRA, led the focus on the biomedical research workforce, and greatly enhanced NIH's partnership and dialogue with the extramural community, especially through social media and her "Rock Talk" blog where she shares information about NIH grants policy, extramural research activities, and data about NIH-extramural research. I wish Sally all the best in her new position. We will truly miss her. The good news is that she's not leaving right away. She will be with us until mid-September while we mount a vigorous search for her successor. Francis S. Collins, NIH Director.

### **NIH Common Fund launches physical activity research program**

It is well-known that exercise is good for you, but how exactly does physical activity improve the function of different tissues and organs in the body? What molecules underlie how physical activity is translated into better health? The National Institutes of Health's Common Fund launched a program that aims to catalogue extensively the biological molecules that are affected by physical activity in people, identify some of the key molecules that underlie the systemic effects of physical activity, and characterize the functions of these key molecules.

This program, Molecular Transducers of Physical Activity in Humans, is the largest targeted NIH investment of funds into the mechanisms of how physical activity improves health and prevents disease. Through the program, investigators at research institutions across the United States will receive about \$170 million over five years, pending availability of funds. "This program will lay the foundation for our understanding of how physical activity affects the

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human body, and ultimately, advance our understanding of how activity improves and preserves health,” said NIH Director Francis S. Collins, M.D., Ph.D. “Armed with this knowledge, researchers and clinicians may one day be able to define optimal physical activity recommendations for people at various stages of life, as well as develop precisely targeted regimens for individuals with particular health needs.”

This program will include studies of different kinds of physical activity in humans, aimed at identifying biological molecules that change in response to exercise and that may play a role in mediating the effects of physical activity. Complementary studies of physical activity in animals will provide additional insights into the function of the molecular transducers of physical activity.

### NIH Grant Instructions Effective January 2016: Rigor and Reproducibility

Enhancing reproducibility through rigor and transparency: the information provided on this website is designed to assist the extramural community in addressing rigor and reproducibility in grant applications due on January 25, 2016, and beyond.

On June 9th, 2015, the NIH published guide notices [Enhancing Reproducibility through Rigor and Transparency \(NOT-OD-15-103\)](#), as well as [Considering Sex as a Biological Variable in NIH-funded Research \(NOT-OD-15-102\)](#). See related blog posts by Dr. Larry Tabak and Dr. Sally Rockey on [Rock Talk](#), and Dr. Janine Clayton on the [ORWH Director's Page](#)

NIH's mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability. Key to the successful application of that knowledge toward health outcomes is scientific rigor in conducting biomedical research. One of NIH's goals is to exemplify and promote the highest level of scientific integrity, public accountability, and social responsibility in the conduct of science. NIH plans to enhance reproducibility in multiple ways, by promoting greater scientific rigor and transparency in funding applications and publications, encouraging robust peer review, providing adequate training, removing perverse incentives, and emphasizing overlooked areas such as the consideration of both sexes in research and the use of authenticated cell lines.

Pending approval from the Office of Management and Budget (OMB), for grant applications due on January 25, 2016, and beyond, newly revised application instructions and review criteria will focus on four areas deemed important for enhancing rigor and transparency:

1. The scientific premise of the proposed research
  - The **scientific premise** for an application is the research that is used to form the basis for the proposed research question(s). NIH expects applicants to describe the general strengths and weaknesses of the prior research being cited by the applicant as crucial to support the application. It is expected that this consideration of general strengths and weaknesses could include attention to the rigor of the previous experimental designs, as well as the incorporation of relevant biological variables and authentication of key resources.
2. Rigorous experimental design for robust and unbiased results
  - **Scientific rigor** is the strict application of the scientific method to ensure robust and unbiased experimental design, methodology, analysis, interpretation and



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reporting of results. This includes full transparency in reporting experimental details so that others may reproduce and extend the findings.

3. Consideration of relevant biological variables
  - **Biological variables**, such as sex, age, weight, and underlying health conditions, are often critical factors affecting health or disease. In particular, sex is a biological variable that is frequently ignored in animal study designs and analyses, leading to an incomplete understanding of potential sex-based differences in basic biological function, disease processes and treatment response.
  - NIH expects that sex as a biological variable will be factored into research designs, analyses, and reporting in vertebrate animal and human studies. Strong justification from the scientific literature, preliminary data or other relevant considerations must be provided for applications proposing to study only one sex.
4. Authentication of key biological and/or chemical resources
  - **Key biological and/or chemical resources** include, but are not limited to, cell lines, specialty chemicals, antibodies and other biologics. Key biological and/or chemical resources:
    1. may differ from laboratory to laboratory or over time;
    2. may have qualities and/or qualifications that could influence the research data;
    3. are integral to the proposed research; and
    4. are not limited to resources generated with NIH funds.
  - The quality of resources used to conduct research is critical to the ability to reproduce the results. Each investigator will have to determine which resources used in their research fit these criteria and are therefore key to the proposed research.

### [Dear Colleague Letter: Conducting "Future Cloud" Research - Leveraging NSFFutureCloud Experimental Infrastructure in Research Proposals](#)

The Directorate for Computer and Information Science and Engineering (CISE) announced the CISE Research Infrastructure: Mid-Scale Infrastructure (NSFFutureCloud) program in September 2013 to support research infrastructure that enables the CISE academic research community to develop and experiment with novel cloud architectures addressing emerging challenges, and pursue new, architecturally-enabled applications of cloud computing. The goal of NSFFutureCloud is to enable community exploration of resource sharing in clustered computing; virtualization with software-defined networking technologies; quality of service guarantees; and the interplay among applications, cloud computing architectures, and the physical environment; etc. This research infrastructure will enable the CISE community to go beyond the use of existing commercial cloud offerings, allowing researchers to influence such offerings in the future.

In August 2014, CISE issued two \$10 million NSFFutureCloud awards. The first of these projects supports the design, deployment and initial operation of [Chameleon](#), a large-scale, reconfigurable experimental environment for cloud research, co-located at the University of

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Chicago and The University of Texas at Austin. The second project supports the development of [CloudLab](#), a large-scale, distributed infrastructure based at the University of Utah, Clemson University and the University of Wisconsin, on top of which researchers will be able to construct many different types of clouds. Both projects provide "bare-metal access," allowing for experimentation with existing cloud computing technologies, as well as research on new technologies that could improve reliability, security and performance. Detailed descriptions of the hardware and capabilities of each system are available on their respective websites, <http://www.chameleoncloud.org> and <http://www.cloudlab.us>. Both systems are currently open for use, with application instructions available on their websites, and are expected to reach full capacity around December 2015. With this Dear Colleague letter (DCL), the CISE directorate announces the availability of the NSFFutureCloud prototypes, and encourages researchers to consider utilizing these resources when submitting proposals to relevant NSF research programs.

### **Dear Colleague Letter: National Science Foundation, Directorate for Social, Behavioral & Economic Sciences (NSF/SBE) and US-Israel Binational Science Foundation (BSF) Opportunity for Collaborations in Economics and Psychology**

To facilitate the support of collaborative work between US groups and their Israeli counterparts, NSF's Directorate for Social, Behavioral & Economic Sciences (SBE) and the BSF have recently signed a Letter of Intent that outlines a review process for projects in Economics and Psychology. Israeli researchers are invited to read the BSF solicitation at: <http://www.bsf.org.il/ElectronicSubmission/GatewayFormsAndGuidelines.aspx?PageId=7&innerTextID=0>.

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## *Agency Reports, Workshops & Research Roadmaps*

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### MIT Report Calls for Renewed U.S. Investment in Basic Research

AIP reports that “A new report published by the MIT Committee to Evaluate the Innovation Deficit calls for the U.S. to shore up its declining investments in basic research, highlighting fifteen under-exploited areas of science and technology in which the authors believe a more robust basic research investment would help to improve society, shape and maintain U.S. economic power, and provide other significant payoffs in health, energy, high-tech industry, space exploration, and national defense. The 40-page report, titled [The Future Postponed: Why Declining Investment in Basic Research Threatens a U.S. Innovation Deficit](#), is part of a [broader campaign](#) of science associations and universities, led by MIT, to draw attention to what is being called the innovation deficit, or the gap between the actual federal investments in research and higher education and what experts contend the investments need to be if the U.S. is to remain the world’s innovation leader.

According to the report, the widespread concern over a growing U.S. innovation deficit is attributable in part to the declining public investment in research and development (R&D) since the mid-1960s. [Data provided by the American Association for the Advancement of Science](#) shows that, as a share of the total federal budget, R&D has fallen from 11.7 percent in 1965 to a low of 3.6 percent in 2015. Furthermore, of the most notable scientific highlights of 2014 - the first landing on a comet, the discovery of the Higgs Boson, the development of the world’s fastest supercomputer, and the surge in research on plant biology to meet global food requirements - none were U.S.-led achievements. At the same time, China is on track to surpass the U.S. and become the largest spender on R&D internationally by the 2020s, according to R&D Magazine.”

### NIH Approves Strategic Vision to Transform National Library of Medicine

The NIH Director charged the National Library of Medicine (NLM) Working Group, hereafter referred to as the Working Group, with articulating a strategic vision for NLM to ensure that NLM remains an international leader in biomedical and health information. Over the course of five months of deliberations, the Working Group reviewed numerous documents and reports pertaining to NLM’s mission and activities, consulted with NLM leadership and staff, and solicited public comments and suggestions. The Working Group recognizes that NLM has an important opportunity to play a key leadership role in one of the most exciting periods of biomedical history: data science is increasing rapidly, computational power is expanding at a breathtaking pace, the breadth and depth of digital health data are undergoing unprecedented and accelerating growth, a movement towards more interdisciplinary work and team science continues to gain momentum, a broad commitment to open science is becoming increasingly adopted, and the demand for services to support an ever more engaged and informed public is expanding. To leverage these historic changes, the Working Group, with respect for the outstanding history of NLM and its potential for the future, formulated a series of recommendations to guide the future of NLM:

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NLM must continually evolve to remain a leader in assimilating and disseminating accessible and authoritative biomedical research findings and trusted health information to the public, healthcare professionals, and researchers worldwide.

NLM should lead efforts to support and catalyze open science, data sharing, and research reproducibility, striving to promote the concept that biomedical information and its transparent analysis are public goods.

NLM should be the intellectual and programmatic epicenter for data science at NIH and stimulate its advancement throughout biomedical research and application.

NLM should strengthen its role in fostering the future generation of professionals in biomedical informatics, data science, library sciences, and related disciplines through sustained and focused training efforts.

NLM should maintain, preserve, and make accessible the nation's historical efforts in advancing biomedical research and medicine, thereby ensuring that this legacy is both safe and accessible for long-term use.

New NLM leadership should evaluate what talent, resources, and organizational structures are required to ensure NLM can fully achieve its mission and best allocate its resources.

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## *New Funding Opportunities*

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### **Content Order**

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

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

### **New Funding Solicitations Posted Since May 15 Newsletter**

[Fusion Energy Sciences - Research on Innovative Approaches - preapplication](#) LOI June 29.

#### [Defense Forensics and Biometrics Agency \(DFBA\) BAA for Basic, Applied](#)

This Broad Agency Announcement (BAA), which sets forth research areas of interest to the Defense Forensics and Biometrics Agency (DFBA), 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 Department of Army's Office of the Provost Marshall General (OPMG) recently established the Defense Forensics and Biometrics Agency (DFBA). This umbrella agency serves as the Executive Agent for Department of Defense (DoD) forensics and biometrics casework, research, and new capabilities development. The DFBA forensic and biometric capabilities assist DoD in combating networks that threaten warfighters by denying criminals and adversaries anonymity. The requested proposals should focus on DFBA activities and needs of the Program's other customers (AFMES, DC3, JPAC-CIL). Forensic research proposals should focus on the creation of new and improved field or laboratory functional capabilities that result in faster, more robust, more informative, less costly, or less labor-intensive recognition, identification, collection, preservation, and/or analysis of forensic evidence.

To learn more and apply, visit: <http://www.arl.army.mil/www/pages/8/DFBA%20BAA%20FY13-FY15%20approved%2010Jul2013.pdf>. **Due June 30.**

[DARPA Precise Robust Inertial Guidance for Munitions: Advanced Inertial Micro Sensors](#) LOI July 1

[Coastal Ecosystem Resiliency Grants Program](#)

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The National Oceanic and Atmospheric Administration (NOAA) is committed to helping coastal communities prepare for, and recover from, increasing risk from extreme weather events, climate hazards, and changing ocean conditions. To that end, NOAA's National Ocean Service is providing up to \$5 million in competitive grant awards through the Regional Coastal Resilience Grant Program. NOAA's National Marine Fisheries Service is administering up to \$4 million in competitive grant awards through the [Coastal Ecosystem Resiliency Grant Program](#). **Due July 2.**

### **USDA-NIFA-ARPA-005216 Agriculture Risk Management Education Partnerships (ARME) Competitive Grants Program**

The primary purpose of the RME program is to provide U.S. agricultural producers and their families, as appropriate, with the knowledge, skills, and tools needed to make informed risk management decisions that enhance profitability of their operations. **Due July 6.**

### **NRC-HQ-50-15-FOA-0001 U.S. Nuclear Regulatory Commission Funding Opportunity Announcement, Radioactive Material Disposition Grant**

The primary objectives of this grant: 1. Effectively provide information regarding the disposition of unwanted and orphan material; 2. Effectively provide assistance for the disposition of orphan material. The areas of interest to accomplish the objectives including but not limited to: - compliance with all Federal and State regulatory requirements regarding disposition of radioactive material, including those for possession, transfer, transport and disposal - ensuring that funds expended are done in an efficient and prudent manner, ensuring best value while maintaining safety, - ability to assemble, maintain, and provide accurate information regarding available disposition options, processes and requirements for disposition of material, and available service providers for activities related to disposition of radioactive material, including: characterization, packaging, transportation, and surveys, - ability to produce accurate, knowledgeable determination of available disposition options for individual unwanted or orphan material situations, and provide recommendations of options to possessors of material, - ability to effectively coordinated with State and local governmental entities regarding unwanted or orphan material, and - capability to address issues related to orphan material. **Due July 6.**

### **DHS-15-DOD-025-000-01 Fiscal Year (FY) 2015 National Urban Search & Rescue (US&R) Response System Readiness Cooperation Agreement Department of Homeland Security**

The National Urban Search and Rescue Response System (US&R) provides funding for 28 national task forces staffed and equipped to conduct round-the-clock search-and-rescue operations following earthquakes, tornadoes, floods, hurricanes, aircraft accidents, hazardous materials spills and catastrophic structure collapses. These task forces, when deployed support state and local emergency responders' efforts to locate victims and manage recovery operations. **Due July 15.**

### **Capacity Building Grants for Non-Land Grant Colleges of Agriculture Program**

NLGCA Institutions may use the funds: (a) to successfully compete for funds from Federal grants and other sources to carry out educational, research, and outreach activities that address priority concerns of national, regional, State, and local interest; (b) to disseminate information



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relating to priority concerns to interested members of the agriculture, renewable resources, and other relevant communities, the public, and any other interested entity; (c) to encourage members of the agriculture, renewable resources, and other relevant communities to participate in priority education, research, and outreach activities by providing matching funding to leverage grant funds; and (d) through: (1) the purchase or other acquisition of equipment and other infrastructure (not including alteration, repair, renovation, or construction of buildings); (2) the professional growth and development of the faculty of the NLGCA Institution; and (3) the development of graduate assistantships. **Due July 20.**

### **DE-FOA-0001357: Generating Realistic Information for Development of Distribution and Transmission Algorithms (GRID DATA)**

Program Overview: This program seeks to fund the development of large-scale, realistic, validated, and open-access electric power system network models (transmission and distribution) that have the detail required for the successful development and testing of transformational power system optimization and control algorithms. In conjunction, the program will also fund the creation of an open-access, self-sustaining repository for the storage, annotation, and curation of these power systems models, as well as others generated by the community. These advancements would promise to substantially reduce the barriers to the testing and adoption of new strategies for grid optimization and control, including new Optimal Power Flow (OPF) algorithms. The public availability provided by open-access to these models and the repository is required for more accurate and comprehensive evaluation of emerging grid operation optimization algorithms, including optimization competitions, as have been successfully employed in many other optimization-dependent fields and industries. These new optimization algorithms promise to enable increased grid flexibility, reliability and safety, while also significantly increasing economic and energy security, energy efficiency and substantially reducing the costs of integrating variable renewable generation technologies into the electric power system in the United States. **Concept Paper due July 20.**

### **Regional Coastal Resilience Grant Program**

The Regional Coastal Resilience Grant program will support regional approaches to undertake activities that build resilience of coastal regions, communities, and economic sectors to the negative impacts from extreme weather events, climate hazards, and changing ocean conditions. It will support planning or implementing actions that mitigate the impacts of environmental drivers on overall resilience, including economic and environmental resilience. Funded projects will result in improved information for decision makers and actions that reduce risk, accelerate recovery, and promote adaptation to changing social, economic, and environmental conditions. **Due July 24.**

### **NIST: Economic Analysis of the National Need for Technology Infrastructure to Support the Materials Genome Initiative**

NIST is soliciting applications from eligible applicants to assess the economic impacts of meeting the Nation's need for technology infrastructure to support the Materials Genome Initiative (MGI). Advanced materials are essential to economic security and human well-being, with applications in industries aimed at addressing challenges in clean energy, national security,

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and human welfare, yet it can take 20 or more years to move a material after initial discovery to the market. This prospective (strategic planning) study involves, at a minimum, expertise in the following disciplines: technology assessment, high-tech industry behavioral and structural analyses, microeconomic modeling of complex technology development and commercialization patterns, high-tech industry survey and data collection techniques, and quantitative and qualitative analyses of technology infrastructure gaps that are inhibiting the advancement of technologies. The goal of the analysis is to identify gaps in the Nation's technology infrastructure needed to support the MGI and estimate the economic value of eliminating these gaps. **Due July 28.**

### **Research on Innovative Approaches to Fusion Energy**

The Office of Fusion Energy Sciences (FES) of the Office of Science (SC), U.S. Department of Energy (DOE), hereby announces its interest in receiving proposals for research on innovative approaches to fusion energy on the spherical tokamak, advanced tokamak, and stellarator concepts. Such research on small to medium scale facilities can explore specific aspects of these concepts, thereby enhancing the understanding of magnetically confined plasmas. By broadening the scientific approach, this research can also help to grow and validate fusion science over a wider range of plasma conditions and enhance the opportunity for scientific discovery in toroidal confinement. Support of research that can help to deepen the scientific understanding and improve the tokamak or stellarator concept is an important focus area of this DOE National Laboratory Announcement (Announcement). Pre-proposal June 29; invited full proposal **August 3.**

### **2015-NIST-PREP-MML-01 Professional Research Experience Program (PREP-MML)**

NIST is soliciting applications from eligible applicants to provide undergraduate students, graduate students, and post-doctoral fellows with fellowship opportunities and financial assistance to obtain laboratory experiences within the NIST Material Measurement Laboratory (MML) in Gaithersburg, Maryland and Charleston, South Carolina. The recipients will work with NIST to foster collaborative research relationships among NIST staff, undergraduate/graduate students, post-doctoral fellows, and the students' academic institutions. **Due August 7.**

### **CMS-110-15-001 Grants to Support the Historically Black Colleges and Universities Health Services Research Grant Program**

The Centers for Medicare & Medicaid Services (CMS) is announcing the availability of funds under this grant program to assist Historically Black Colleges and Universities (HBCUs) in conducting health services and health disparities research for 2015. The purpose of the grant program is to support researchers in implementing health services research activities to meet the needs of diverse CMS beneficiary populations. The goals of the grant program are to: 1) encourage HBCU health services researchers to pursue research issues which impact the Medicare, Medicaid, and Children Health Insurance Programs (CHIP); 2) assist CMS in implementing its mission focusing on health care quality and improvement for its beneficiaries; 3) assist HBCU researchers by supporting extramural research in health care capacity development activities for the African American communities; 4) increase the pool of HBCU researchers capable of implementing the research, demonstration, and evaluation activities of

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CMS; 5) promote research that will be aimed at developing a better understanding of health care services pertaining to African Americans; and 6) assist in fostering inter-university communication and collaboration regarding African American health disparity issues. **Due August 10.**

### **CMS-1H0-15-001 Grants to Support the Hispanic Health Services Research Grant Program**

The Centers for Medicare & Medicaid Services (CMS) is announcing the availability of funds under this grant program to assist researchers in conducting health services research for 2015. The purpose of the Hispanic grant program is to implement Hispanic health services research activities to meet the needs of diverse CMS beneficiary populations. The grant program is designed to: 1) encourage health services and health disparities researchers to pursue research issues which impact Hispanic Medicare, Medicaid, and Children Health Insurance Program (CHIP) health services issues, 2) conduct outreach activities to apprise Hispanic researchers of funding availability to conduct research-related issues affecting Hispanic communities to expand the pool of applicants applying for such grants, 3) assist CMS in implementing its mission focusing on health care quality and improvement for its beneficiaries, 4) support extramural research in health care capacity development activities for the Hispanic communities, 5) promote research that will be aimed at developing a better understanding of health care services issues pertaining to Hispanics, and 6) foster a network for communication and collaboration regarding Hispanic health care issues. **Due August 11.**

### **DOE Nuclear Science, Engineering Nonproliferation Research Consortium** **Due August 12.**

### **Fellowship Programs at Independent Research Institutions**

Grants for Fellowship Programs at Independent Research Institutions (FPIRI) support fellowships at institutions devoted to advanced study and research in the humanities. Recognizing that at times scholars need to work away from their homes and institutions, the FPIRI program sponsors fellowships that provide scholars with research time, a stimulating intellectual environment, and access to resources that might otherwise not be available to them. Fellowship programs may be administered by independent centers for advanced study, libraries, and museums in the United States; American overseas research centers; and American organizations that have expertise in promoting research in foreign countries. Individual scholars apply directly to the institutions for fellowships. In evaluating applications consideration is given to the library holdings, archives, special collections, and other resources—either on site or nearby—that institutions make available to fellows. FPIRI grants provide funding for humanities fellowships of four to twelve months. The fellowships are held at the U.S. grantee institutions or—in the case of overseas research centers and organizations—abroad. **Due August 13.**

### **NEH Museums, Libraries, and Cultural Organizations**

This grant program supports projects for general audiences that encourage active engagement with humanities ideas in creative and appealing ways. Many different formats are supported, including permanent and traveling exhibitions, book or film discussion programs, historic site or district interpretations, living history presentations, and other face-to-face programs in public

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venues. All projects must be grounded in humanities scholarship in disciplines such as history, art history, film studies, literature, religious studies, philosophy, or anthropology. Projects must also demonstrate an approach that is thoughtful, balanced, and analytical (rather than celebratory). The approach to the subject matter must go beyond the mere presentation of factual information to explore its larger significance and stimulate critical thinking. NEH is a national funding agency, so the projects we support must demonstrate the potential to attract a broad, general audience. We welcome humanities projects tailored to particular groups, such as families, youth (including K-12 students), teachers, seniors, at-risk communities, and veterans, but they should also strive to cultivate a more inclusive public audience. Museums, Libraries, and Cultural Organizations grants provide support for museums, libraries, historic places, and other organizations that produce public programs in the humanities. NEH encourages projects that explore humanities ideas through multiple formats. Proposed projects might include complementary components that deepen an audience's understanding of a subject: for example, a museum exhibition might be accompanied by a website, mobile app, or discussion programs. Planning grants are used to refine the content, format, and interpretive approach of a humanities project; develop the project's preliminary design; test project components; and conduct audience evaluation. Implementation grants are for projects in the final stages of preparation to "go live" before the public. Grants support final scholarly research and consultation, design development, production, and installation of a project for presentation to the public. **Due August 12.**

### **20150824-AE Humanities Initiatives at Community Colleges**

NEH Humanities Initiatives at Community Colleges are intended to strengthen the teaching and study of the humanities in subjects such as history, philosophy, and literature. These grants may be used to enhance existing humanities programs, resources, or courses, or to develop new ones. NEH Humanities Initiatives may create opportunities for faculty members to study together, in order to improve their capacity to teach the humanities; support new humanities programs (which may include but are not limited to new humanities minors, first-year seminars, and capstone courses), and enhance existing ones; support humanities contributions to professional training (in such fields as business, law, economics, technology, and nursing and medicine); develop bridge programs for at-risk and nontraditional students; help institutions take advantage of humanities resources, especially in the digital humanities; and support collaborative projects in the humanities between the applicant institution and another institution, such as a college or university, a school or school system, a museum or library, or a historical or cultural society. Each project must be organized around a core topic or set of themes. **Due August 24.**

### **NSF Political Science Doctoral Dissertation Research Improvement Grants DDRIG** Due Aug. 28.

### **NEH Enduring Questions**

The NEH Enduring Questions grant program supports faculty members in the preparation of a new course on a fundamental concern of human life as addressed by the humanities. This question-driven course would encourage undergraduates and teachers to join together in a

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deep and sustained program of reading in order to encounter influential ideas, works, and thinkers over the centuries. **Due September 10.**

**American Psychological Assn Early Graduate Student Researcher Awards** **Due September 15.**

### **RFA-AI-15-024 Partnerships for the Development of Host-Targeted Therapeutics to Limit Antimicrobial Resistance (R01) Department of Health and Human Services**

The purpose of this Funding Opportunity Announcement (FOA) is to solicit research applications for milestone-driven projects focused on preclinical development of candidate therapeutics that target host-encoded functions required for infection, replication, virulence, proliferation and/or pathogenesis of select bacterial pathogens for which drug resistance poses a significant public health concern. The objective of this FOA is to support milestone-driven projects focused on advancement of candidate host-targeted therapeutics through the product development pathway. These milestones include standard IND-enabling activities required for therapeutic products, such as medicinal chemistry, structure/activity relationships, Current Good Manufacturing Practices (CGMP) production of active pharmaceutical ingredient (API), identification of an acceptable drug product formulation, successful execution of GMP toxicology studies, completion of proof-of-concept efficacy studies in appropriate models of disease, and preparation of IND and design of future clinical plans. This initiative focuses on the development of novel therapeutics that target host-encoded functions required for infection, replication, virulence, proliferation and/or pathogenesis of bacterial pathogens for which drug resistance poses a significant public health concern. Responsive applications must target at least one bacterial pathogen listed in the ***Centers for Disease Control and Prevention's Antibiotic Resistance Threats in the United States***, 2013 report (<http://www.cdc.gov/drugresistance/pdf/ar-threats-2013-508.pdf>). Projects focused on drug-resistant *Mycobacterium tuberculosis* are limited to development and/or evaluation of therapeutic entities that are not currently licensed for another indication (repurposed drugs). **LOI August 17; full September 17.**

### **NSF Environmental Sustainability (Core Program)**

The goal of the **Environmental Sustainability** program is to promote sustainable engineered systems that support human well-being and that are also compatible with sustaining natural (environmental) systems. These systems provide ecological services vital for human survival. Research efforts supported by the program typically consider long time horizons and may incorporate contributions from the social sciences and ethics. The program supports engineering research that seeks to balance society's need to provide ecological protection and maintain stable economic conditions.

There are four principal general research areas that are supported:

- **Industrial Ecology:** Topics of interest in Industrial Ecology include advancements in modeling such as life cycle assessment, materials flow analysis, input/output economic models, and novel metrics for measuring sustainable systems. Innovations in industrial ecology are encouraged.
- **Green Engineering:** Research is encouraged to advance the sustainability of manufacturing processes, green buildings, and infrastructure. Many programs in the

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Engineering Directorate support research in environmentally benign manufacturing or chemical processes. The Environmental Sustainability program supports research that would affect more than one chemical or manufacturing process or that takes a systems or holistic approach to green engineering for infrastructure or green buildings. Improvements in distribution and collection systems that will advance smart growth strategies and ameliorate effects of growth are research areas that are supported by Environmental Sustainability. Innovations in management of storm water, recycling and reuse of drinking water, and other green engineering techniques to support sustainability may also be fruitful areas for research. **NOTE:** Water treatment proposals are to be submitted to the CBET Environmental Engineering program (1440), NOT the Environmental Sustainability program (7643).

- **Ecological Engineering:** Topics should focus on the engineering aspects of restoring ecological function to natural systems. Engineering research in enhancement of natural capital to foster sustainable development is encouraged.
- **Earth Systems Engineering:** Earth Systems Engineering considers aspects of large scale engineering research that involve mitigation of greenhouse gas emissions, adaptation to climate change, and other global scale concerns. **Full Proposal Window: October 1, 2015 - October 20, 2015**

### *URL Links to New & Open Funding Solicitations*

*Links verified: Saturday, October 04, 2014*

- [HHS Grants Forecast](#)
- [American Cancer Society Index of Grants](#)
- [SAMHSA FY 2014 Grant Announcements and Awards](#)
- [DARPA Microsystems Technology Office Solicitations](#)
- [Open Solicitations from IARPA \(Intelligence Advanced Research Projects Activity\)](#)
- [Bureau of Educational and Cultural Affairs, Open Solicitations, DOS](#)
- [ARPA-E Funding Opportunity Exchange](#)
- [DOE Funding Opportunity Exchange](#)
- [NIAID Funding Opportunities List](#)
- [NPS Broad Agency Announcements \(BAAs\)](#)
- [NIJ Current Funding Opportunities](#)
- [NIJ Forthcoming Funding Opportunities](#)
- [Engineering Information Foundation Grant Program](#)
- [Comprehensive List of Collaborative Funding Mechanisms, NORDP](#)
- [ARL Funding Opportunities — Open Broad Agency Announcements \(BAA\)](#)
- [HHS Grants Forecast](#)
- [American Psychological Association, Scholarships, Grants and Awards](#)
- [EPA 2014 Science To Achieve Results \(STAR\) Research Grants](#)



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- [NASA Open Solicitations](#)
- [Defense Sciences Office Solicitations](#)
- [The Mathematics Education Trust](#)
- [EPA Open Funding Opportunities](#)
- [CDMRP FY 2014 Funding Announcements](#)
- [Office of Minority Health](#)
- [Department of Justice Open Solicitations](#)
- [DOE/EERE Funding Opportunity Exchange](#)
- [New Funding Opportunities at NIEHS \(NIH\)](#)
- [National Human Genome Research Institute Funding Opportunities](#)
- [Army Research Laboratory Open Broad Agency Announcements \(BAA\)](#)
- [SBIR Gateway to Funding](#)
- [Water Research Funding](#)
- [Fellowship and Grant Opportunities for Faculty Humanities and Social Sciences](#)
- [DARPA Current Solicitations](#)
- [Office of Naval Research Currently Active BAAs](#)
- [HRSA Health Professions Open Opportunities](#)
- [NIH Funding Opportunities Relevant to NIAID](#)
- [National Institute of Justice Current Funding Opportunities](#)
- [Funding Opportunities by the Department of Education Discretionary Grant Programs](#)
- [EPA's Office of Air and Radiation \(OAR\) Open Solicitations](#)
- [NETL Open Solicitations](#)
- [DoED List of Currently Open Grant Competitions](#)
- [Foundation Center RFP Weekly Funding Bulletin](#)

### **Solicitations Remaining Open from Prior Issues of the Newsletter**

#### **20150624-LD Humanities in the Public Square National Endowment for the Humanities**

Designed to demonstrate the vital role that humanities ideas can play in our civic life, the Humanities in the Public Square program invites projects that draw on humanities scholarship to engage the public in understanding some of today's most challenging issues and pressing concerns. As NEH launches a year-long celebration of its fiftieth anniversary in September 2015, the Common Good initiative seeks to demonstrate the vital role that the humanities can play in our public life. NEH's enabling legislation speaks eloquently of the need to attend to "the relevance of the humanities to the current conditions of national life." Today, as our country grapples with both remarkable opportunities and extraordinary challenges, the "conditions of our national life" suggest that this need is greater than ever. The Common Good initiative envisions humanities scholars and organizations turning their attention and expertise to topics that have widespread resonance with the American people and that lend themselves to humanistic methods and concerns. Organizations are encouraged to think creatively about what discussion topics would be meaningful to their community. **Due June 24.**

#### **Humanities Initiatives National Endowment for the Humanities**



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NEH Humanities Initiatives at Hispanic-Serving Institutions, Historically Black Colleges and Universities, and Tribal Colleges and Universities are intended to strengthen the teaching and study of the humanities in subjects such as history, philosophy, and literature. These grants may be used to enhance existing humanities programs, resources, or courses, or to develop new ones. NEH Humanities Initiatives may 1) create opportunities for faculty members to study together, in order to improve their capacity to teach the humanities; 2) support new humanities programs (which may include but are not limited to new humanities minors, first-year seminars, and capstone courses), and enhance existing ones; 3) support humanities contributions to professional training (in such fields as business, law, economics, technology, and nursing and medicine; 4) develop bridge programs for at-risk and nontraditional students; 5) help institutions take advantage of humanities resources, especially in the digital humanities; and; 6) support collaborative projects in the humanities between the applicant institution and another institution, such as a college or university, a school or school system, a museum or library, or a historical or cultural society. **Due June 25.**

### **DE-FOA-0001310: Next Generation Marine Energy Systems - Durability and Survivability**

Next Generation Marine Energy Systems - Durability and Survivability focuses on the robustness of innovative MHK design systems with high performance potential and attempts to address questions regarding the costs, reliability, and survivability of innovative and novel system designs. This FOA will address these questions early in the development cycle and avoid costly failures and design iterations with prototypes at a larger scale. Projects awarded from the Next Generation Marine Energy Systems - Durability and Survivability FOA will improve system cost characteristics (i.e., Initial capital costs (ICC), Operational Expenditures (OPEX), Availability, and System Life) by reducing the risk and uncertainty that drives conservatism in design and premature failures in operations. Projects awarded under Topic Area 1 will reduce ICC or extend system life by developing system designs and defining the conditions for survival. Projects will establish and validate survival conditions by testing model scale prototypes in a controlled laboratory environment. Under Topic Area 2, more mature systems that are ready for testing as a fully integrated system will reduce ICC, reduce OPEX, or increase availability by developing new approaches to installation, operations, and maintenance. Prototypes will be instrumented and monitored to identify sources as well as progression of failures that drive the cost of operations. The full Funding Opportunity Announcement (FOA) is posted on the EERE Exchange website at <https://eere-exchange.energy.gov> . Applications must be submitted through the EERE Exchange website to be considered for award. The applicant must first register and create an account on the EERE Exchange website. A User Guide for the EERE Exchange website can be found on the website <https://eere-exchange.energy.gov/Manuals.aspx> . **Due July 1.**

### **ED-GRANTS-041515-003 Institute of Education Sciences (IES): Education Research and Development Center Program CFDA Number 84.305C**

The Acting Director of the Institute of Education Sciences (Institute) announces the Institute's FY 2016 competitions for grants to support education research and special education research. The Acting Director takes this action under the Education Sciences Reform Act of 2002. The Institute's purpose in awarding these grants is to provide national leadership in expanding

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fundamental knowledge and understanding of (1) developmental and school readiness outcomes for infants and toddlers with or at risk for disability, and (2) education outcomes for all students from early childhood education through postsecondary and adult education. Purpose of Program: The central purpose of the Institute's research grant programs is to provide interested individuals and the general public with reliable and valid information about education practices that support learning and improve academic achievement and access to education opportunities for all students. These interested individuals include parents, educators, students, researchers, and policymakers. In carrying out its grant programs, the Institute provides support for programs of research in areas of demonstrated national need. Competitions in This Notice: **The Institute will conduct eight research competitions in FY 2016 through two of its centers:** The Institute's National Center for Education Research (NCER) will hold six competitions: one competition for education research, one competition for education research training, one competition for education research and development centers, one competition for statistical and research methodology in education, one competition for partnerships and collaborations focused on problems of practice or policy, and one competition for research networks. **Due August 20.**

### **NOAA-NOS-IOOS-2016-2004378 FY 2016 Implementation of the U.S. Integrated Ocean Observing System (IOOS®)**

The U.S. Integrated Ocean Observing System (IOOS®) is a national and regional partnership working to provide observations, data, and new tools and forecasts to improve safety, enhance the economy, and protect our environment. NOAA is requesting proposals for coordinated regional efforts that further the IOOS in two topic areas, 1) sustaining and enhancing comprehensive regional observing systems and 2) verification and validation of observing technologies for studying and monitoring coastal and ocean environments. NOAA invites applicants to submit proposals for one or both of these topic areas, described in detail below, and requests applicants submit separate applications for each topic area. For single topic proposals, clearly identify the topic area and present all required information such that merit reviewers can associate proposal elements (project description, partners, budgets) with the specific topic area. NOAA anticipates making multiple awards, subject to the availability of funds, in amounts ranging from \$1,000,000 to \$4,000,000 per year, for up to five years. **Due August 31.**

### **NSF Building Community and Capacity in Data Intensive Research in Education**

As part of NSF's Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21) activity, the Directorate for Education and Human Resources (EHR) seeks to enable research communities to develop visions, teams, and capabilities dedicated to creating new, large-scale, next-generation data resources and relevant analytic techniques to advance fundamental research for EHR areas of research. Successful proposals will outline activities that will have significant impacts across multiple fields by enabling new types of data-intensive research. Investigators should think broadly and create a vision that extends intellectually across multiple disciplines and that includes--but is not necessarily limited to--EHR areas of research. **Due September 1.**

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### [USDA-NIFA-AFRI-004915 Agriculture and Food Research Initiative - Foundational Program](#)

The AFRI Foundational Program is offered to support research grants in the six AFRI priority areas to continue building a foundation of knowledge critical for solving current and future societal challenges. The six priority areas are: Plant Health and Production and Plant Products; Animal Health and Production and Animal Products; Food Safety, Nutrition, and Health; Renewable Energy, Natural Resources, and Environment; Agriculture Systems and Technology; and Agriculture Economics and Rural Communities. Single-function Research Projects, multi-function Integrated Projects and Food and Agricultural Science Enhancement (FASE) Grants are expected to address one of the Program Area Priorities (see Foundational Program RFA for details). **See application for various LOI dates. Proposals due September 30**

### [GCC-GRANT-SEP-15-001 Spill Impact Component Planning Grants Gulf Coast Ecosystem Restoration Council](#)

This announcement provides guidance to the Gulf Coast States – defined as any of the States of Alabama, Florida, Louisiana, Mississippi, and Texas – or the Gulf Coast States’ administrative agents and the Gulf Consortium of Florida counties to apply for grants to fund planning activities to develop individual State Expenditure Plans (SEP) under the Spill Impact Component of the Resources and Ecosystem Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act). The eligible entities may apply to the Council for a grant to use the minimum allocation available under the Spill Impact Component of the RESTORE Act for planning purposes. The submission process for this announcement is organized into two phases: (1) the submission of a planning SEP by a Gulf Coast State; and (2) the administrative application process, which includes the submission of all administrative grant application materials by the eligible entities. All planning activities proposed under this announcement are limited to the development of a comprehensive SEP, including conceptual design and feasibility studies related to specific projects. This announcement does not include engineering and environmental studies related to specific projects. It also does not include any pre-award costs incurred prior to August 22, 2014. **December 31, 2015**

## **Open Solicitations and BAAs**

### [Research Interests of the Air Force Office of Scientific Research](#)

AFOSR plans, coordinates, and executes the Air Force Research Laboratory’s (AFRL) basic research program in response to technical guidance from AFRL and requirements of the Air Force; fosters, supports, and conducts research within Air Force, university, and industry laboratories; and ensures transition of research results to support USAF needs. The focus of AFOSR is on research areas that offer significant and comprehensive benefits to our national warfighting and peacekeeping capabilities. These areas are organized and managed in three scientific directorates: Aerospace, Chemical and Material Sciences, Physics and Electronics, and Mathematics, Information and Life Sciences. **Open until superseded.**

### [DARPA-BAA-14-54 Biological Technologies EZ](#)

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The Defense Advanced Research Projects Agency (DARPA) is soliciting innovative research proposals of interest to the Biological Technologies Office (BTO). Of particular interest are those proposals from entities (both small and large business) that have never received Government funding, or who do not normally propose to Government solicitations. Proposed research should investigate leading edge approaches that enable revolutionary advances in science, technologies, or systems at the intersection of biology with engineering and the physical and computer sciences. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of the art. BTO seeks unconventional approaches that are outside the mainstream, challenge assumptions, and have the potential to radically change established practice, lead to extraordinary outcomes, and create entirely new fields. **Open to July 23, 2015.**

### **Broad Agency Announcement for Research Initiatives at Naval Postgraduate School**

The Naval Postgraduate School (NPS) is interested in receiving proposals for research initiatives that offer potential for advancement and improvement in the NPS core mission of graduate education and research. Readers should note that this is an announcement to declare NPS's solicitation in competitive funding of meritorious research initiatives across a spectrum of science and engineering, business, politics and public/foreign policy, operational and information sciences, and interdisciplinary disciplines that are in line with the NPS' graduate education and research mission. Additional information on the Naval Postgraduate School's graduate education and research mission is available at: General Information:

<http://www.nps.edu/About/index.html> ; NPS Strategic Plan:

<http://www.nps.edu/About/NPSStratPlan.html> ; Academic Programs:

<http://www.nps.edu/Academics/index.html> ; Research Programs:

<http://www.nps.edu/Research/index.html> ; Prior to preparing proposals, potential Offerors are strongly encouraged to contact an NPS point of contact (POC) whose program and research efforts best match the Offeror's field of interest. The academic and research programs links above can be used to locate an appropriate POC by exploring the information provided about the faculty members in NPS' schools, research institutes, and interdisciplinary centers and research groups. **Open to July 31, 2015.**

### **Small University Grants Open 5-Year Broad Agency Announcement**

**Open to August 26, 2015**

### **DARPA-BAA-14-48 Strategic Technologies**

DARPA is seeking innovative ideas and disruptive technologies that offer the potential for significant capability improvement across the Strategic Technology Office focus areas. This includes technology development related to Battle Management, Command and Control (BMC2), Communications and Networks, Electronic Warfare, Intelligence, Surveillance, and Reconnaissance (ISR), Position, Navigation, and Timing (PNT), Maritime, and Foundational Strategic Technologies and Systems. **BAA Closing Date: September 17, 2015**

### **ONRBAA15-001 Long Range BAA for Navy and Marine Corps Science and Technology**

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The Office of Naval Research (ONR) is interested in receiving proposals for Long-Range Science and Technology (S&T) Projects which offer potential for advancement and improvement of Navy and Marine Corps operations. Readers should note that this is an announcement to declare ONR's broad role in competitive funding of meritorious research across a spectrum of science and engineering disciplines. A brief description of the ONR Program Codes and the science and technology thrusts that ONR is pursuing is provided below. Additional information can be found at the ONR website at <http://www.onr.navy.mil/Science-Technology/Departments.aspx> . Potential Offerors are urged to check the program areas that they are interested in throughout the year for updates to thrust areas and research priorities on the ONR website at <http://www.onr.navy.mil>. Prior to preparing proposals, potential offerors are strongly encouraged to contact the ONR point of contact (POC). To identify the POC, follow the link for the appropriate code or division listed below and then click on the link to the thrust or topic area. Each thrust or topic area will provide a POC or e-mail address. **BAA Closing Date: September 30, 2015**

### **DHS-2014-OHA-BIOWATCH BioWatch Program: 2014-2015**

The BioWatch Program is a cornerstone of the Department of Homeland Security's (DHS) comprehensive strategy for countering biological terrorism. The BioWatch Program is an early warning system that is designed to detect the intentional release of select aerosolized biological agents. The BioWatch Program's mission is to provide and maintain a continuous bio-terrorism air monitoring system in metropolitan areas and coordinate with state and local public health communities to prepare for and respond to a bioterrorist event. This mission is accomplished by serving as an early warning system which enhances the security of jurisdictions by providing the needed time to execute their comprehensive concept of operations plans to counter biological terrorism. The Biowatch Program is a critical part of an ongoing national effort to build and sustain preparedness which helps the United States to maintain momentum through targeted jurisdictional planning that highlights preventative actions necessary to allow for a proper and timely response and begin the process to recovery from a biological agent release. The BioWatch Evaluation Program (BWEP) will be conducted under the BioWatch Quality Assurance Program effective April 1, 2013. This program will consist of independent external audits (Quality Assurance) by Signature Science and internal audits (Quality Control) by BioWatch Systems Program Office field personnel. This approach will initially be conducted with a focus on adherence to the BioWatch Field Operations Standard Operating Procedure (SOP), Version 1.3 and will eventually evolve to encompass the Field Operations Quality Assurance Program Plan (QAPP). In order to ensure a robust QA / QC program the jurisdictions may be subject to a QA external audit and a QC internal audit during the same cooperative agreement cycle (year). **Closes September 30, 2015.**

### **DE-FOA-0001204 FY 2015 Continuation of Solicitation for the Office of Science**

The Office of Science of the Department of Energy hereby announces its continuing interest in receiving grant applications for support of work in the following program areas: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics. On September 3, 1992, DOE published in the Federal Register the Office of Energy Research Financial Assistance Program

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(now called the Office of Science Financial Assistance Program), 10 CFR 605, as a Final Rule, which contained a solicitation for this program. Information about submission of applications, eligibility, limitations, evaluation and selection processes and other policies and procedures are specified in 10 CFR 605. This Funding Opportunity Announcement (FOA), DE-FOA-0001204, is our annual, broad, open solicitation that covers all of the research areas in the Office of Science and is open throughout the Fiscal Year. This FOA will remain open until September 30, 2015, 11:59 PM Eastern Time, or until it is succeeded by another issuance, whichever occurs first. This annual FOA DE-FOA-0001204 succeeds FOA DE-FOA-0000995, which was published October 1, 2013. **Open to September 30, 2015.**

### **Nuclear Energy University Programs - Fellowship and Scholarship**

This program supports education and training for future nuclear scientists, engineers and policy-makers who are attending U.S. universities and colleges in nuclear-related graduate, undergraduate and two-year study programs. These are zero-dollar awards that will be funded as students apply through the Department of Energy, Office of Nuclear Energy. **Open until November 30, 2015.**

### **FY2011 – 2016 Basic Research for Combating Weapons of Mass Destruction (C-WMD) Broad Agency Announcement (BAA)**

**This BAA is focused on soliciting basic research projects** that support the DTRA mission to safeguard America and its allies from WMD (e.g., ***chemical, biological, radiological, nuclear, and high-yield explosives***) by providing capabilities to reduce, eliminate, and counter the threat and mitigate its effects.

### **DARPA-BAA-15-27 Innovative Systems for Military Missions**

The Tactical Technology Office of the Defense Advanced Research Projects Agency is soliciting executive summaries, white papers and proposals for advanced research and development of innovative systems for military missions. This solicitation seeks system and subsystem level technologies that enable revolutionary improvements to the efficiency and effectiveness of the military. Novel concepts are sought in the following focus areas: Ground Systems, Maritime Systems, Air Systems, and Space Systems. Refer to the URL stated below for complete details of the BAA. **Open to April 29, 2016.**

### **Open Solicitations from IARPA (Intelligence Advanced Research Projects Activity) Army Research Laboratory Broad Agency Announcement for Basic and Applied Scientific Research**

This Broad Agency Announcement (BAA), which sets forth research areas of interest to the **Army Research Laboratory** (ARL) Directorates and Army Research Office (ARO), is issued under the paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), which provides for the competitive selection of basic research 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 provision of Public Law 98-369, "The Competition in Contracting Act of 1984" and subsequent amendments. **Open June 1, 2012 to March 31, 2017.**



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## **W911NF-12-R-0012 Army Research Office Broad Agency Announcement for Basic and Applied Scientific Research**

The purpose of this Broad Agency Announcement (BAA) is to solicit research proposals in the engineering, physical, life, and information sciences for submission to the Army Research Office (ARO) for consideration for possible funding. For ease of reference, this BAA is an extraction of the ARO sections of the Army Research Laboratory BAA.

([www.arl.army.mil/www/default.cfm?page=8](http://www.arl.army.mil/www/default.cfm?page=8) ). **Open to May 31, 2017**

## **ARL Core Broad Agency Announcement for Basic and Applied Scientific Research for Fiscal Years 2012 through 2017**

### **Air Force Research Laboratory, Directed Energy Directorate** **University Small Grants Broad Agency Announcement**

This is a five-year, open-ended Broad Agency Announcement (BAA) to solicit research proposals for the United States Air Force Research Laboratory (AFRL) Directed Energy (RD) Directorate. This BAA is a university grant vehicle that can provide small grants of \$100k or less to students/professors in a timely manner for the purpose of engaging U.S./U.S. territories' colleges and universities in directed energy-related basic, applied, and advanced research projects that are of interest to the Department of Defense. **Open to April 1, 2017.**

## **HM0210-14-BAA-0001 National Geospatial-Intelligence Agency Academic Research Program**

NGA welcomes all innovative ideas for path-breaking research that may advance the GEOINT mission. The NGA mission is to provide timely, relevant, and accurate geospatial intelligence (GEOINT) in support of national security objectives. GEOINT is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. GEOINT consists of imagery, imagery intelligence, and geospatial information. NGA offers a variety of critical GEOINT products in support of U.S. national security objectives and Federal disaster relief, including aeronautical, geodesy, hydrographic, imagery, geospatial and topographical information. The NGA Academic Research Program (NARP) is focused on innovative, far-reaching basic and applied research in science, technology, engineering and mathematics having the potential to advance the GEOINT mission. The objective of the NARP is to support innovative, high-payoff research that provides the basis for revolutionary progress in areas of science and technology affecting the needs and mission of NGA. This research also supports the National System for Geospatial Intelligence (NSG), which is the combination of technology, systems and organizations that gather, produce, distribute and consume geospatial data and information. This research is aimed at advancing GEOINT capabilities by improving analytical methods, enhancing and expanding systems capabilities, and leveraging resources for common NSG goals. The NARP also seeks to improve education in scientific, mathematics, and engineering skills necessary to advance GEOINT capabilities. It is NGA's intent to solicit fundamental research under this BAA. Fundamental research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from Industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security



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reason. (National Security Decision Directive (NSDD) 189, National Policy on the Transfer of Scientific, Technical, and Engineering Information). NGA seeks proposals from eligible U.S. institutions for path-breaking GEOINT research in areas of potential interest to NGA, the DoD, and the Intelligence Community (IC). **Open to September 30, 2017.**

### **AFRL Research Collaboration Program**

The objective of the AFRL Research Collaboration program is to enable collaborative research partnerships between AFRL and Academia and Industry in areas including but not limited to Materials and Manufacturing and Aerospace Sensors that engage a diverse pool of domestic businesses that employ scientists and engineers in technical areas required to develop critical war-fighting technologies for the nation's air, space and cyberspace forces through specific AFRL Core Technical Competencies (CTCs). **Open until December 20, 2017.**

### **United States Army Research Institute for the Behavioral and Social Sciences Broad Agency Announcement for Basic, Applied, and Advanced Scientific Research (FY13-18)**

Announcement for Basic, Applied, and Advanced Scientific Research. This Broad Agency Announcement (BAA), 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 US 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. The funding opportunity is divided into two sections- (1) Basic Research and (2) Applied Research and Advanced Technology Development. The four major topic areas of research interest include the following: (1) Training; (2) Leader Development; (3) Team and Inter-Organizational Performance in Complex Environments; and (4) Soldier/Personnel Issues. Funding of research and development (R&D) within ARI areas of interest will be determined by funding constraints and priorities set during each budget cycle. **Open to February 5, 2018.**

### **BAA-HPW-RHX-2014-0001 Human-Centered Intelligence, Surveillance Air Force Research Lab**

This effort is an open-ended BAA soliciting innovative research concepts for the overall mission of the Human-Centered Intelligence, Surveillance, & Reconnaissance (ISR) Division (711 HPW/RHX). It is intended to generate research concepts not already defined and planned by RHX as part of its core S&T portfolio. The core RHX mission is to develop human-centered S&T that (1) enables the Air Force to better identify, locate and track humans within the ISR environment and (2) enhance the performance of ISR analysts. To accomplish this mission, the RHX core S&T portfolio is structured into three major research areas: (1) Human Signatures - develop technologies to sense and exploit human bio-signatures at the molecular and macro

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(anthropometric) level, (2) Human Trust and Interaction – develop technologies to improve human-to-human interactions as well as human-to-machine interactions, and (3) Human Analyst Augmentation – develop technologies to enhance ISR analyst performance and to test the efficacy of newly developed ISR technologies within a simulated operational environment. The RHX mission also includes research carried over from the Airman Biosciences and Performance Program. While not directly linked to the core S&T strategic plan, there exists a unique capability resident within RHX to address critical Air Force operational and sustainment needs resulting from chemical and biological hazards. Research areas include contamination detection, hazard assessment and management, individual and collective protection, and restoration and reconstitution of operational capability. **Open to Feb. 12, 2018.**

### **Research Interests of the Air Force Office of Scientific Research**

The Air Force Office of Scientific Research (AFOSR) manages the basic research investment for the U.S. Air Force (USAF). To accomplish this task, AFOSR solicits proposals for basic research through this general Broad Agency Announcement (BAA). This BAA outlines the Air Force Defense Research Sciences Program. AFOSR invites proposals for research in many broad areas. These areas are described in detail in Section I of the BAA, Funding Opportunity Description. AFOSR plans, coordinates, and executes the Air Force Research Laboratory's (AFRL) basic research program in response to technical guidance from AFRL and requirements of the Air Force; fosters, supports, and conducts research within Air Force, university, and industry laboratories; and ensures transition of research results to support USAF needs. The focus of AFOSR is on research areas that offer significant and comprehensive benefits to our national warfighting and peacekeeping capabilities. These areas are organized and managed in five scientific directorates: Dynamical Systems and Control (RTA), Quantum & Non-Equilibrium Processes (RTB), Information, Decision, and Complex Networks (RTC), Complex materials and Devices (RTD), and Energy, Power, and Propulsion (RTE). The research activities managed within each directorate are summarized in Section I of the BAA. **Open until superseded.**

### **Air Force BAA - Innovative Techniques and Tools for the Automated Processing and Exploitation (APEX) Center**

The AFRL/RIEA branch performs Research and Development (R&D) across a broad area of Air Force Command, Control, Communications, Computers/Cyber, and Intelligence (C4I). All applicable "INTs" are investigated with emphasis on Ground Moving Target Indication (GMTI), Electronic Intelligence (ELINT), Signals Intelligence (SIGINT), Image Intelligence (IMINT), Non Traditional Intelligence, Surveillance and Reconnaissance (NTISR), and Measurement and Signature Intelligence (MASINT). The APEX Center is used to perform analysis for seedling efforts, provide baseline tool development for major programs, and to provide realistic operational systems/networks/databases for integration efforts. The APEX Center resources will be used by the Government to perform the necessary research, development, experimentation, demonstration, and conduct objective evaluations in support of emerging capabilities within the Processing and Exploitation (PEX) area. Software tools, data sets, metrics (Measures of Performance/Measures of Effectiveness), and analysis are needed for the Government to perform the vetting, maturing, and analysis of efforts related to PEX, e.g. Automatic Tracking, Activity Based Intelligence, Entity, Event & Relationship (EER) Extraction,

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Association & Resolution (A&R), Analysis & Visualization (A&V), Social Network Analysis, Network Analytics, Pattern Discovery, Scalable Algorithms, and Novelty Detection. The AFRL APEX Center is the AFRL/RI gateway into the cross-directorate PCPAD-X (Planning & Direction, Collection, Processing & Exploitation, Analysis & Production, and Dissemination eXperimentation) initiative. **Open to FY 2018.**

### **BAA-RQKD-2014-0001 Open Innovation and Collaboration Department of Defense Air Force -- Research Lab**

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

### **HDTRA1-14-24-FRCWMD-BAA Fundamental Research to Counter Weapons of Mass Destruction**

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

### **BAA-RQKH-2015-0001 Methods and Technologies for Personalized Learning, Modeling and Assessment Air Force -- Research Lab**

The Air Force Research Laboratories and 711th Human Performance Wing are soliciting white papers (and later technical and cost proposals) on the following research effort. This is an open

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ended BAA. The closing date for submission of White Papers is 17 Nov 2019. This program deals with science and technology development, experimentation, and demonstration in the areas of improving and personalizing individual, team, and larger group instructional training methods for airmen. The approaches relate to competency definition and requirements analysis, training and rehearsal strategies, and models and environments that support learning and proficiency achievement and sustainment during non-practice of under novel contexts. This effort focuses on measuring, diagnosing, and modeling airman expertise and performance, rapid development of models of airman cognition and specifying and validating, both empirically and practically, new classes of synthetic, computer-generated agents and teammates. An Industry Day was held in November 2014. Presentation materials from the Industry Day and Q&A's are attached. If you would like a list of Industry Day attendees, send an email request to [helen.williams@us.af.mil](mailto:helen.williams@us.af.mil) **Open until November 17, 2019.**

## **Academic Research Funding Strategies, LLC** ([Page 1](#))

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[mjcronan@gmail.com](mailto:mjcronan@gmail.com)

### **What We Do--**

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

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- 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 and developing institutional and center-level proposals](#) (e.g., NSF ERC, STC, IGERT, STEP, 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
- Facilities and Instrumentation - Assistance in identifying and competing for [grants to fund facilities and instrumentation](#)
- Training for Staff - [Professional Development](#) for research office and sponsored projects staff

### **Workshops by Academic Research Funding Strategies**

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

[\(View Index of Articles\)](#)

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