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Avoiding the Mule’s Kick at NSF

By Mike Cronan, co-publisher

Sam Rayburn, the longest serving Speaker of the U.S. House of Representatives, often noted, “There’s no education in the second kick of the mule.” Unfortunately, this sage advice is too often ignored, particularly by experiential learners. Anyone who has raised a teenage son can likely attest to this, as well as those with a history of supporting the planning, development, and writing of research proposals. In the latter case, however, failure to follow this advice results in unpleasant yet fairly benign outcomes, e.g., a poor review and hence unfunded proposal.

However, don’t count on benign outcomes if you ignore the semi-annual warnings contained in the NSF’s Office of Inspector General’s (OIG) Semiannual Report to Congress. This recently released 68-page report to Congress has as one principal focus encouraging the ethical conduct of research. When it comes to NSF/OIG investigations related to research misconduct, ranging from plagiarism in the proposal narrative to mismanagement of project funds, it is best to avoid the first kick of the mule altogether. An OIG investigation is no place to be an experiential learner because there are no trivial outcomes—at best a legal smack down and period of debarment from submitting proposals to NSF and at worst hard jail time. **Bottom line:** if you get referenced in an NSF/OIG report, you can likely expect a dramatic career transition in the near future.

Reading through this report is like witnessing an avoidable car wreck, one invariably caused by greed and stupidity in equal doses. Take the case, for example, of two Florida **scientists** linked to three prominent universities sentenced to fifteen and thirteen years in prison following convictions for defrauding the SBIR program. According to the NSF OIG report, “the scientists used two companies to fraudulently obtain SBIR and STTR awards from NSF and six other federal agencies totaling $10.6 million. In their proposals, they misrepresented their facilities, employees, costs, and the eligibility of principal investigators. They also fraudulently used the identities of over 50 prominent researchers and industry leaders to create false letters of support, endorsements, and commitments. In response to our initial request for information, the scientists provided falsified and backdated documents in an attempt to influence our investigation. In September 2015, one was sentenced to fifteen years in federal prison and the other to thirteen years, each followed by 3 years of supervised release. They were also ordered to pay $10,654,969 in restitution, in addition to an order of forfeiture of the same amount.”

In this current OIG report, as in prior reports, it is clear that the **SBIR and STTR programs have proven to be very fertile ground for NSF/OIG investigations into research misconduct and fiscal shenanigans.** In most cases, the skullduggery is not as intentionally egregious in both scope and scale as the above example, but damaging and likely career ending nonetheless for such malfeasance as—

- spending the majority of the NSF award funds on personal expenses unrelated to the award,
- failing to exercise oversight and control over NSF award funds in the institution,
• falsifying time and effort reports, and directing others to do so, during an audit in an
effort to support the salary costs incurred on the university’s NSF grants,
• certifying falsely that a small business was 51% owned or controlled by U.S. citizens or
by a U.S. entity, and
• misrepresenting a company’s facilities, personnel, and the percentage of work
completed by the company, and using award funds to pay for personal expenses such as
trips, car maintenance, a speeding ticket, and groceries.

In addition to the SBIR/STTR domain where premeditated fiscal malfeasance is the
common denominator, NSF/OIG conducted numerous other research misconduct
investigations, including, for example, “a graduate student who falsified data in a dissertation,
plagiarism in a proposal requesting support to write a textbook, and a co-PI who plagiarized
from three sources in an awarded proposal.” Plagiarized material of one sort or another in
proposals falls directly into the domain where research development offices work most often
and is something that needs to be of concern to make sure all those engaged in the writing and
editing of the research narrative are aware of how NSF and the larger institutional community
define plagiarism.

As NSF/OIG notes in the report, “research misconduct damages the scientific enterprise,
is a potential misuse of public funds, and undermines the trust of citizens in government-funded
research.... Pursuing allegations of research misconduct (plagiarism, data fabrication, and
data falsification) by NSF-funded researchers continues to be a focus of our investigative work.
In recent years, we have seen a significant rise in the number of substantive allegations of
research misconduct associated with NSF proposals and awards.... NSF takes research
misconduct seriously, as do NSF’s awardee institutions. During this reporting period, institutions
took actions against individuals found to have committed research misconduct, ranging from
letters of reprimand to revocation of doctoral degrees. NSF’s actions in research misconduct
cases ranged from letters of reprimand to a proposed five-year debarment. In every case, we
recommended that NSF make a finding of research misconduct, issue a letter of reprimand, and
require the subject to complete a Responsible Conduct of Research (RCR) training program.”

A good insight for research offices on how NSF investigates intent in verbatim
plagiarism can be gleaned from the below, here taken verbatim from the OIG report. This is
good information to bring to any engagement with an NSF proposal, particularly team
proposals where several authors may contribute to the research narrative. Moreover, it is
excellent information to include in seminars and workshops on grant writing sponsored by
research offices. New faculty, in particular, will benefit from understanding the NSF
expectations related to agency protocols for plagiarism and NSF’s method for investigating
plagiarism.

Assessing Intent in Verbatim Plagiarism Investigations

“One approach for assessing intent in verbatim plagiarism cases examines the acts
of copying, pasting, and integrating (CPI) text into a document. CPI draws on the
copy-and-paste description of plagiarism, and relates the physical actions of copying
and pasting to the levels of intent to start the analysis. The intent level derived from
CPI may then rise or fall according to other evidence.
Copy: Selecting and copying text and figures from electronic sources has become the digital equivalent of manual note-taking—but maintaining bibliographic information for citation purposes is still necessary. Copying without preserving information for proper attribution can be a reckless act, because a reasonable person would recognize the increased risk of later using the copied material without attribution.

Paste: The act of pasting copied material into a document is inherently a knowing, conscious act, because it generally requires manual highlighting followed by executing a copy command, changing documents, and executing a paste command. Thus, a knowing level of intent is inherent in the act of pasting the material into the new document, and the act becomes knowing plagiarism in the conscious absence of subsequent steps to provide quotation marks, citation, and reference. The recurrence of matching typographical errors, spelling conventions, and embedded citations or objects into the new document are common evidence of the copy-and-paste method of plagiarism demonstrating knowing intent.

Integrate: Additional specific steps to integrate the copied material into the body of a new document can help mislead the reader into concluding that the new document is the subject’s original work. Those steps can elevate the intent level to intentional. Examples include: updating “in press” references cited in the source to reflect subsequent publication in journals; renumbering embedded citations to be consistent with the bibliography; or changing verb tenses to suggest work completed by another is to be performed in the future by the subject. Each of these specific steps on its face shows intent to achieve the specific purpose of making the copied material appear to be original. Evidence of integration of the copied material often supports findings of intentional plagiarism.

Research offices can provide a valuable service to authors of research proposals by alerting them to the agency standards for research misconduct—thereby helping them avoid being “kicked by the mule” entirely.
Writing Grants to the Department of Education

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By Mike Cronan, co-publisher

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The recently published 5th Edition of *Grantmaking at ED, Answers to Your Questions About the Discretionary Grants Process*, is a welcome update to the prior edition published in 2010. This 62-page publication provides an overview of ED’s discretionary grants and cooperative agreement process. Discretionary grants at ED are made through a competitive review process, as detailed in this guide. Cooperative agreements also include discretionary grants, but tend to be larger grants requiring ED’s substantive operational involvement in the project. These discretionary grants differ significantly from ED formula funding or student financial assistance, neither of which are addressed in the guide and are not to be confused with it.

However, for faculty and others in higher education, the guide will serve as a principal source of information about discretionary grant applications, review, award, administration, closeout, or audit at ED. It serves as an invaluable complement for research offices and PIs akin to other key ED information sources, such as the most current Forecast of Funding Opportunities under the Department of Education Discretionary Grant Programs for Fiscal Year (FY) 2016, Catalog of Federal Domestic Assistance, Federal Register, Grants.gov, and ED’s Grants Website.

The Guide gives an overview of the seven principal ED offices responsible for the administration of discretionary grant programs: Office of Innovation and Improvement; Office of Postsecondary Education; Office of Elementary and Secondary Education (OESE); Institute of Education Sciences (IES); Office of Special Education and Rehabilitative Services (OSERS); Office of English Language Acquisition, Language Enhancement, and Academic Achievement for Limited English Proficient Students (OELA); and Office of Career, Technical, and Adult Education (OCTAE). This is particularly important information to new faculty trying to map their research to potential funding from federal agencies and foundations.

Moreover, the Guide is an important document because the proposal (application) process at ED is a very prescriptive one, especially when compared to an agency such as NSF. This document provides detail and elaboration on the grant process beyond that gained from reading just the program notification in the Federal Register, or the ED website. For example, a common practice in an ED solicitation is to give a very structured and finely-grained organizational outline of proposal (application) sections with numerous subsections, typically assigning scoring points to each section that, in aggregate, will represent the numerical score of an application.

If you are submitting a proposal to ED, use the solicitation’s outline of the narrative sections of the application as a template. Adhere strictly to the order of the numerous sections and subsections and note the numerical value ED has assigned to each. This is a very formulaic process, but an important one to follow exactly. The questions asked or topics addressed in the ED proposal narrative organizational structure often include some intentional redundancy. The best strategy in this situation is to answer all questions in accordance to the narrative guidelines.
Much of this Guide addresses the ED application process itself; however, beyond this process information, key sections of this Guide are important to the writing of the research narrative itself, the former likely of more interest to sponsored projects offices and the latter to research and proposal development offices assisting faculty with planning, developing, writing, and editing the research narrative. Moreover, the Guide is important to any university research office, or similar office at the college or department level, where staff might be asked to review and edit a proposal responding to an ED solicitation.

The grant writer will want to note the most important information in the Guide: how ED will review the proposal. As noted in the Guide, “for the majority of grant competitions, program offices recruit application reviewers from outside the federal government who have expertise in the subject area of the grant program for which the applications were submitted. For some competitions, program offices might use employees or contractors at ED, or employees of other federal agencies to serve as reviewers. ED program staff screen applications to ensure that they meet all the requirements of the program and assign applications to reviewers. Reviewers read and independently score each application assigned to them.” ED recruits reviewers with expertise in areas pertinent to a grant program. The program staff maintain a reviewer registry and contact individuals when they are needed for an upcoming competition (e.g., see Notice Soliciting Peer Reviewers; Investing in Innovation (i3) Call for Peer Reviewers).

Knowing how your proposal will be reviewed at ED should guide how you plan, structure and write your application narrative. ED uses the following process in grant reviews.

“After the applications, reviews, and related documents are checked for completeness, program staff conduct a series of steps to determine which applicants will be funded. The steps comprise the following:

- Develop a rank order list from the panel scores for each application.
- Determine how many applications can be funded with the available appropriations.
- Perform a cost analysis on those applications that can be considered for funding. A cost analysis will be conducted on your application to determine whether the proposed costs in your budget are allowable, allocable, and reasonable. Through this analysis, program staff ensures that costs relate to the activities and objectives of the project. All unallowable costs are deleted from the budget. During this stage, program staff might contact you for clarifying information. If the program staff requests a written response, your response should address only the specific items needing clarification. This clarification contact should not be misconstrued as an offer of funding.
- Create a formal list, called a “funding slate,” of the applications recommended for funding and the recommended funding level for each.
- Evaluate the risk posed by the applicant. To complete this analysis, the ED must consult various repositories of information to review eligibility or financial integrity information. In addition, ED may review your history through past performance monitoring, audits, and other available records.
- Forward the funding slate to the principal officer of the program office (or his or her designee) for final review and approval.”
- Issue grant award notices (GANs) to the successful applicants.
One of the more common preliminary gates to submitting an unsolicited proposal is the preparation of a brief, three- to five-page white paper. These papers demonstrate the significance of the proposed research to the agency’s research mission objectives as defined in the agency guidelines for unsolicited proposals, or as defined in Broad Agency Announcements (BAA) open for a year or more at many mission agencies, particularly DOD.

Most often, the purpose of the white paper is to preclude applicants’ unwarranted effort in cases where their proposed work may not be of interest to the agency. White papers should present the proposed effort in sufficient detail to allow evaluation of the concept's technical merit and its potential contributions to the agency-specific mission. Based on an assessment of the white papers, agency feedback will be provided to the proposers to encourage, discourage, or simply disinvite them to submit a full proposal.

A successful white paper depends on the researcher’s capacity to distill the research vision, goals, and objectives into a succinct and clearly written response that allows agency program officers to quickly grasp the significance of the research and how it advances the research mission of the agency, or the field. A successful white paper must quickly connect the significance of the research and the research mission of the agency; in other cases, the white paper must address how the proposed research impacts the field in some important way.

The brevity required by the white paper format demands clarity and precision, together with an easily understood and compelling statement of significance and its context. Crafting a white paper of several pages, for example, requires a laser-like focus and distillation of a research idea into its core essentials, followed by a convincing explanation of its significance. There is no room in a successful white paper for verboseness or for listing multiple ideas hoping one or more might be of interest to an agency. Here, the old adage, “If you can't explain it, you can't sell it” applies, as in contract bridge, in spades. And make no mistake about it, a white paper offers you the opportunity to pitch your idea, but it must be done in a very concise way if you are to gain the agency’s interest.

Given this description of a required white paper, it comes as no surprise that the white paper process itself can also play a very valuable role in cases where it is not required. This process can help build a team and it can help strengthen interdisciplinary proposals. In these cases, applicants use the white paper as an internal mechanism, particularly at the institutional level across colleges and departments, for example, to develop a team that will focus on funding in emerging interdisciplinary areas, such as precision medicine, big data, anti-microbial research, national robotics initiative, etc.

The key point here is that a white paper forces a transition from a loose verbal understanding of potential research directions to a more concrete written understanding that benefits from a structured logic and descriptive clarity. This pathway from initial research generalities expressed verbally in meetings to the clarity of specifics and details of the written research narrative determines success in grant writing. The often treacherous transition from verbal to written narrative is to grant writing what the valley of death is to technology transfer.
Using an internal white paper to bridge that divide forces attention to addressing the generic topics common to all successful research narratives, i.e., you must explain clearly your:

- Research goals and objectives
- Research plan
- Research significance
- Research context
- Value-added benefits and impact on an agency mission or a research field
- Prior results/preliminary data that validate your capacity to perform and the value of a team approach
- Barriers and challenges to achieving results and your plan for overcoming them
- Payoffs from success

While participants of team proposals commonly take notes chronicling the discussions from meeting to meeting, notes alone often lack the relational framework that ties the facts together in a synergistic way. After all, it is not a mere listing of facts that gives rise to fundable ideas, but the relationship and interaction among them and the capacity to find something new hidden there. Moreover, verbal memories from meeting to meeting among research team members are often notoriously unreliable, with a half-life measured in hours rather than days or weeks.

So, in the case of team and interdisciplinary proposals, applicants should adopt the strategy, especially during the initial stages of proposal development, of assuming that a white paper is required, even when it is not. Use that process to help guide proposal development by answering early on those key questions that will need to be answered in the actual research narrative. You might think of this as a “heuristic white paper” in that the writing process itself will force participants to be more rigorous in presenting and justifying ideas and their importance.
The recently posted NSF FY 2015 Agency Financial Report, a 138-page document detailing the NSF mission and research funding priorities, requires a very committed reader to slog through in its entirety. But some parts of the report provide useful insight to those in research offices who work with faculty on NSF proposals. For example, for those writing grants to NSF, it is good to know that 89% of research funding is allocated through the competitive review process, with awards going to 1,851 institutions involving 350,000 engineers, scientists, and educators. In FY 2015, NSF awarded 12,016 new awards, mostly to academic institutions. Furthermore, according to the report, of the total NSF FY 2015 budget of $7.6 billion, research activities funded by NSF account for 81% or $5.9 billion of the budget (FY2016 Detailed Budget Request); Education and Human Resources account for 12% or $866 million (FY2016 Detailed Budget Request); and 3% or $201 million are allocated to major research equipment and facilities (FY2016 Detailed Budget Request).

If you plan, develop, and write grants to NSF or assist those who do, the great news here is that 96% of the $7.3 billion NSF budget is awarded through a competitive review process whose outcomes are largely determined by your peers acting as reviewers. Among all federal funding agencies, NSF stands out for its merit-based review process that comes as close to the ideal as possible for any agency dependent on Congress for its budget. Moreover, NSF awards are made with sufficient transparency to allay fears that other unknown factors besides merit are used to determine whether or not any proposal will be competitive for a grant.

For example, at mission agencies, factors other than merit can determine the outcome of some grants in any given competition, perhaps a function of congressional district, geographic distribution, or a favored weighting of awards to long-time recipients of a particular agency funding. In other cases, agency priorities may change during the open period of the grant and hence competitive factors may implicitly change. In yet other cases, success may be helped by a long-time relationship with a program officer making it more difficult for new faculty or new applicants to compete at the agency.

A self assessment of how competitive and hence successful a researcher might be for any given funding solicitation is always part of step one in deciding whether to submit or not submit a proposal. The time it takes to plan, develop, and write a proposal is significant and it is a resource that must be used judiciously. So becoming able to determine your competitiveness in considering a potential funding opportunity is very important. You want to make sure that decision is made by eliminating any unknowns in the “submit or not to submit” determination, and it must be as reasoned as Hamlet’s “to be or not to be” soliloquy.

This is what is really neat about writing proposals to NSF. Knowing that your funding fate will be decided by a process as close as possible to a true merit-based review removes significant uncertainty from the process. At NSF, grant writers get the sense, justifiably, that they “control their own destiny,” as college and professional coaches love to explain, particularly heading into season end bowl games and tournaments. With that known, the applicant can focus single mindedly on writing the most perfect proposal possible rather than
getting drawn into pondering what unknown factors might or might not influence the funding outcome.
Proposals often require specialized language, providing a special challenge for non-native English speakers even though they may be very proficient in English. Because grammatical errors and awkward phrasing can distract reviewers from the content of the proposal, PIs should make every effort to avoid these mistakes. Below are a few mistakes that are commonly made by PIs whose native language is not English.

Use of the articles “the” and “a”

Because many Slavic and Asian languages don’t use articles, native speakers of those languages often struggle to understand when to use articles in their proposals. The rules for when to use articles in English are admittedly convoluted, and most native English speakers couldn’t explain them if asked – they just know what “sounds” right – so it’s understandable that non-native speakers would find this confusing. However, incorrect use of articles can not only distract the reader, it can actually change the meaning of your sentence. So if you’re writing a proposal it’s worth the effort to get this right. Here are a few tips that may help:

- Use “the” when you’re referring to a specific noun. For example, if you have been describing how you will prepare a specimen, you might then describe the next step as “We will then test the specimen to determine...” because you are referring to that specific specimen (the one whose preparation you just described). Similarly, if you have been describing a 700 MHz nuclear magnetic resonance (NMR) spectrometer that is available to you on your campus, you would then say, “we will use the NMR spectrometer to analyze...”

- Use “a” when you’re referring to one of a general category. So, considering the example above, if you had been describing how you will prepare a number of specimens, and the next step is to test one of those specimens (and it doesn’t matter which one), you would say, “we will then test a specimen to determine...” Similarly, if you have not been discussing a specific spectrometer but want to convey that you will be analyzing a specimen using spectroscopy, you would “we will use a spectrometer to analyze.”

- Note that for all of the examples above, we did use an article (either “the” or “a”) since we were referring to a singular noun (either one specimen or one spectrometer). A common mistake is to omit the article altogether, as in “we will test specimen,” which is grammatically incorrect and distracting to the reader. It also omits the information carried by the article (whether you’re referring to a specific specimen or a general specimen that is one of a category), which may in some cases be important to understanding your procedure.

- You can instead use the plural form of the noun without an article, if appropriate to your meaning. So, you might say “after preparation, we will then test specimens to determine...” if you will test multiple specimens. You may also say, “after preparation, we will test the specimens to determine...” if you want to emphasize that you will test
those specific specimens. Because some languages don’t modify nouns to indicate the plural form, some PIs neglect to do this in English. This can add another layer of confusion for the reader, who may struggle when encountering “we will test specimen,” trying to understand if the writer meant to make the term plural, or meant for it to be singular but neglected to include an article.

- Mercifully, there is one case where article use is clear. When you’re referring to the PI of the project, you should almost always use “the”. A common mistake is to say something like, “PI will oversee …” To avoid making this mistake, do a global search of your draft, and everywhere you see “PI” put a “the” in front of it. If you do this, you’ll be correct 99% of the time.

Avoid other common mistakes

Some of the usages listed below are grammatically incorrect, while others are just awkward or wordy. In either case, in the interest of clarity you’ll want to avoid these common mistakes:

- **British English usage.** PIs who learned British English rather than American English often use “Britishisms” such as “researches” rather than “research,” “learnt” rather than “learned,” and “whence.” While this type of usage is not incorrect, it can be distracting to an American audience and is best avoided.

- **Overuse of the “ing” verb form.** Non-native English speakers tend to overuse the “ing” form in their writing, as in “we will use the xyz test method for revealing…” Whenever you find yourself using the “for verb-ing” construction, consider instead using the infinitive (“to verb”) form, as in “we will use the xyz test method to reveal…” Similarly, instead of saying “Our objective is mapping…” it is better to say, “Our objective is to map…” and instead of writing “This method will allow overcoming…” you should write “This method will allow us to overcome…”

- **Using the wrong homonym.** Some words commonly used in proposals that sound the same but have different spellings are “complement” (meaning “add to”) rather than “compliment” (meaning “say something nice”) and the always-confusing “affect” (verb) and “effect” (either a noun or a verb meaning “implement”).

- **Misplaced plural.** If you have a compound noun such as “cell array library” or “nanoparticle property” remember that to make it plural, put the “s” on the noun not the modifiers. So the plural of the terms above would be “cell array libraries,” not “cell arrays library” and “nanoparticle properties” not “nanoparticles property.” If you place the plural on the modifier, that changes your meaning.

- **Overuse of “both.”** While not incorrect, this can contribute to wordiness. So, for example, a PI may say, “We will conduct both mechanical testing and chemical analysis.” Unless it’s important to emphasize that you will do both things rather than just one or the other, it’s more concise to eliminate the “both” and just say “We will conduct mechanical testing and chemical analysis.”

- **Avoiding the possessive form.** Non-native English speakers tend to use “of” rather than the possessive form, which can result in less direct and more wordy sentences. Instead of writing “The potential of the sensor to...,” consider saying “The sensor’s potential to ...”
• **Overuse of “as well as.”** When writing lists, many writers tend to tack “as well as” onto the last item. This usage is appropriate when the last item doesn’t necessarily fit with the rest of the list, but if that’s not the case, it just contributes to wordiness. So, instead of saying, “We will conduct mechanical and chemical, as well as physical testing of the specimens,” consider saying “We will conduct mechanical, chemical and physical testing of the specimens.”

• **Informal usage.** It’s best to avoid informal constructions such as omitting “of” in sentences, such as “All the specimens will be tested.” Since proposals are generally conceptually complex, it’s best to be as clear as possible and instead write, “All of the specimens will be tested” even though that construction requires an extra word. Similarly, wording such as “nowadays” is too informal for most research proposals; you should instead use more formal terms such as “currently,” or “to date.”

• **Use of “notice” when you mean “note.”** “Notice” implies someone observes something that may or may not be important, whereas “note” means you are directing the reader’s attention to an important point. However, before changing that “notice” to “note,” consider whether you need it at all. It’s more concise to omit the “Note that...” altogether and just make your point. In addition, the shorter sentence is often stronger.

• **Use of “such as” when you mean “including.”** Remember that “such as” is a weak term. So, for example, if you say “We will test the unmanned vehicle in conditions such as high winds, rain, and hilly terrain” that means you will test the vehicles in various conditions, which may or may not include high winds, rain and hilly terrain. This implies you’re somewhat unsure about exactly what kinds of testing conditions you will use, and being vague is never a good idea in proposals. If instead you write, “We will test the unmanned vehicle in conditions including high winds, rain, and hill terrain,” that communicates to the reviewer that you will definitely test under those conditions and may also test under additional conditions. This is a much stronger statement.

• **Indirect statements.** PIs often use indirect statements that are more appropriate for journal articles, such as “It would be interesting to...” or “It is important to understand...” These statements communicate tentativeness. Remember that a proposal should communicate what you will do, and the more definite you are about your plans, the more confidence your reviewers will have that they understand what you plan to do. So consider replacing those phrases with “We will...” (If you’re not sure if you will do those tasks, describe the factors that will affect your decision.)

As you review your proposal draft, try to eliminate these usage problems. As a result, your proposal will be more clear and concise, and easier to follow, which will likely make it more competitive.
INFORMATION WEBCAST: The NSF will hold an informational webcast on Friday, January 22, 2015 at 1:30pm to discuss the CRISP program and answer questions about this solicitation. More details about the webcast will be posted on the CMMI website, http://www.nsf.gov/eng/cmmi, as they become available.

Could 2015 Be a Turning Point in NIH Funding?
It’s a “different atmosphere than we’ve seen in over a decade” said Mary Woolley, the president of the advocacy group Research! America. In the wake of September 11, she said, national defense and fighting terrorism crowded out research funding. “We took our eyes off the ball collectively on focusing on making sure that research for health—and I would say science broadly for that matter—was adequately supported,” Woolley said. She attributes the change this year to “the steady drumbeat of loss of life.” MORE at above URL.

Department of Health and Human Services' Grants Forecast
The Department of Health and Human Services' Grants Forecast is a database of planned grant opportunities proposed by its agencies. Each Forecast record contains actual or estimated dates and funding levels for grants that the agency intends to award during the fiscal year. Forecast opportunities are subject to change based on enactment of congressional appropriations. When funding is available and an agency is ready to accept applications, the agency will issue an official notice, known as a Funding Opportunity Announcement (FOA), which will be available on Grants.gov. The FOA provides guidance on how to receive an application kit and instructions on how to apply.

The National Science Foundation
NSF invites you to view the plenary session webcast presentations from the Fall 2015 NSF Grants Conference held on November 2-3 in Arlington, Virginia. Free on-demand webcast viewing is available at: http://www.tvworldwide.com/events/nsf/151102/. Registration is required. If you previously registered for the live webcasts, you can log in with your registered email to view the recorded webcasts. If you are not registered on the TV Worldwide site, please register online by providing your name, title, organization, and email. The conference presentation slides are posted on the Policy Office website.
The below webinar sessions are available for on-demand viewing:

- Welcoming Remarks
- Introduction & NSF Overview
- Proposal Preparation
- Merit Review Process
- Post Award Monitoring & Compliance
- Award Management
- NSF Policy Update
- Office of the Inspector General
Funding Mechanism Overview
Faculty Early Career Development (CAREER) Program

For webcast on-demand viewing technical support, please email info@tvworldwide.com. Grants conference and NSF policy questions may be directed to grants_conference@nsf.gov.

The next NSF Grants Conference will be held February 29 - March 1, 2016, in Portland, Oregon, and will be hosted by Portland State University. Please visit the NSF Grants Conference Notification website to be placed on the mailing list for the Portland event, as well as for future NSF Grants Conferences. In addition, to receive conference and other NSF updates by email, please register for NSF's free email subscription service by selecting "Get Events Updates by Email" on the NSF events webpage.
A Values-Engaged, Educative Approach for Evaluating Education Programs: A Guidebook for Practice

This guidebook presents practical guidelines for evaluators of education programs. It presents these guidelines within a values-engaged, educative framework for evaluation. Values engagement has two main dimensions. First, it signals purposeful attention to the values that are intrinsic in education programs, including value differences that may be present among key program stakeholders. Take, for example, the program challenges of prioritizing among different learning outcomes. Performance on standardized tests may be highly valued by some stakeholders, while problem solving competence may be prized by others, and laboratory skills by yet others. Evaluators using this evaluation approach aspire to be inclusive in their engagement with these varied value stances as part of assessing program quality and further to promote stakeholder dialogue about them. Such dialogue, we believe, can advance the evaluations educative goals of better program understanding, program improvement, and enhanced student learning.

In the second dimension of values engagement, evaluators pay special attention to the values of diversity and equity. Diversity refers to the traditional socio-demographic markers such as class, gender, race, alongside the multiple other ways people are different from one another such as talents, humor, learning styles. Equity in this approach is concerned with the treatment of diverse program participants and other relevant stakeholders. Treatment refers to access and the opportunity to participate and benefit from a program. These three strands of equity in an education program access, participation, and accomplishment are all important areas of focus for the values-engaged education program evaluator. This special focus on equity draws attention to the particular educational histories, contexts, and needs of the children, youth, and adult learners who remain underserved by our public schools and our community education programs. In this evaluation approach, an equitable education program is one in which all potential participants particularly those least well served in that context have opportunities for participation, meaningful learning, and accomplishment.

The educative part of this evaluation approach means that it is intended to facilitate learning and better understanding about the program being evaluated its underlying logic, contextual appropriateness, potential power to effect change, connections to relevant standards and research evidence, and overall quality all from diverse stakeholder perspectives. This approach, therefore, is best suited for evaluations that include assessments of program design and implementation, as well as program outcomes. Programs at the efficacy stage of development are perhaps the best match for this evaluation approach, although it can be well used in multiple contexts.

STEM + Computing Partnerships (STEM+C)

The STEM+C Partnerships program seeks to significantly enhance the learning and teaching of science, technology, engineering, mathematics (STEM), and computing by K-12 students and teachers, through research on, and development of, courses, curriculum, course materials,
pedagogies, instructional strategies, or models that innovatively integrate computing into one or more STEM disciplines, or integrate STEM content into the teaching and learning of computing. In addition, STEM+C seeks to build capacity in K-12 computing education with foundational research and focused teacher preparation. Projects in the STEM+C Partnerships program should build on research in STEM education and prior research and development efforts that provide theoretical and empirical justification for proposed projects. Pre-service and in-service teachers who participate in STEM+C projects are expected to enhance their understanding and teaching of STEM and computing content, practices, and skills. STEM+C invites creative and innovative proposals that address emerging challenges in the learning and teaching of STEM and computing. The program offers proposers two tracks: (1) Integration of Computing in STEM Education and (2) Computing Education Knowledge and Capacity Building. The second track is discipline-specific and may be expanded to include additional disciplines in future releases of the solicitation.

**Lessons From a School District–University Research Partnership: The Houston Education Research Consortium**

Research partnerships between school districts and universities can be extremely beneficial to both institutions, but these partnerships require many skills that academics and district leaders generally do not have, making these collaborations challenging to set up and difficult to maintain. Co-authored by a university professor and a school district leader, this article examines from both perspectives why more of these research partnerships are needed, why they are not more common, and how these barriers can be overcome, using an example of a recently formed partnership with one of the nation’s largest school districts.

**Types of Engineering Degrees**

[http://typesofengineeringdegrees.org](http://typesofengineeringdegrees.org) is a resource for students looking to enter college for an engineering degree. This is a portal about engineering and engineering careers, designed to help young people understand better what engineering means, and how an engineering career can be made part of their future. All types of engineering degrees are provided in summary with a link to a full article with more detail on each where available. You can also find links to universities offering that specific degree, or use the their search engine to find available engineering degrees.

**Dividing by Zero: Exploring Null Results in a Mathematics Professional Development Program**

Since 2002, U.S. federal funding for educational research has favored the development and rigorous testing of interventions designed to improve student outcomes. However, a large proportion of the programs developed and rigorously tested in the past decade have shown null results on both student outcomes and, often, intermediate variables. Scholars reporting on null results often explain such results by reporting on factors identified informally as they either delivered or observed the program. In this paper, we argue for a more systematic approach to examining null results and illustrate this approach via an examination of one program’s failure to impact teaching and learning.
Research! America
Research! America is the nation’s largest not-for-profit public education and advocacy alliance working to make research to improve health a higher national priority. We urge Congress and the administration to increase funding for the National Institutes of Health (NIH), Centers for Disease Control and Prevention (CDC), Agency for Healthcare Research and Quality (AHRQ), Food and Drug Administration (FDA) and National Science Foundation (NSF) at levels that keep pace with scientific opportunity. We also advocate for federal funding for global health research and a legislative and regulatory climate that stimulates growth in industry research and development.

The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Fuel Cell Technologies Office (FCTO), a Funding Opportunity Announcement (FOA) entitled “Hydrogen and Fuel Cell Technologies Research, Development, and Demonstrations”. The Fuel Cell Technologies Office (FCTO) is a key component of the Department of Energy’s (DOE) Office of Energy Efficiency and Renewable Energy (EERE) portfolio. The central mission of FCTO is to enable the widespread commercialization of a portfolio of hydrogen and fuel cell technologies through applied RD&D, and diverse efforts to overcome institutional and market challenges. Fuel cells can address our critical energy challenges in all sectors: transportation, commercial, residential, and industrial. They can use diverse fuels, including biomass-based fuels, natural gas, and hydrogen produced from renewable resources. FCTO’s focus is primarily transportation and light-duty passenger vehicles utilizing hydrogen as an energy carrier. This FOA will provide funding to meet FCTO’s goals for Hydrogen Production and Delivery, Hydrogen Storage, Fuel Cell Technologies, Technology Validation, Manufacturing, and Analysis Programs. More detailed descriptions of the FCTO Programs, including technical and cost targets, can be found in the Multi-Year Research, Development and Demonstration Plan (MYRD&D) at http://energy.gov/eere/fuelcells/downloads/fuel-cell-technologies-office-multi-year-research-development-and-22. It is anticipated that up to $35M in DOE funds will be awarded under this FOA, subject to the availability of appropriations. This Notice is issued so that interested parties are aware of the EERE’s intention to issue this FOA in the near term. All of the information contained in this Notice is subject to change. EERE will not respond to questions concerning this Notice. Once the FOA has been released, EERE will provide an avenue for potential Applicants to submit questions. EERE plans to issue the FOA on or about December 10, 2015 via the EERE Exchange website https://eere-exchange.energy.gov/. If Applicants wish to receive official notifications and information from EERE regarding this FOA, they should register in EERE Exchange. When the FOA is released, applications will be accepted only through EERE Exchange.

Dear Colleague Letter: Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE)
The Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE) pilot continues to support bold interdisciplinary projects in all NSF-supported areas of science, engineering, and education research in FY16. INSPIRE has no targeted themes and serves as a funding mechanism for proposals that are required both to be interdisciplinary and to exhibit potentially transformative research (IDR and PTR, respectively). Complementing existing NSF efforts, INSPIRE was created to handle proposals whose: Scientific advances lie outside the scope of a single program or discipline, such that substantial funding support from more than one program or discipline is necessary; Lines of research promise transformational advances; and Prospective discoveries reside at the interfaces of disciplinary boundaries that may not be recognized through traditional review or co-review. To receive funding as an INSPIRE-appropriate project, all three criteria must be met. INSPIRE is not intended to be used for interdisciplinary projects that can be accommodated within other NSF funding mechanisms or that continue well-established practices. The implementation of the INSPIRE pilot is based on two overarching goals:

Goal 1: To emphasize to the science, mathematics, engineering and education research community that NSF is welcoming to bold, unconventional ideas incorporating creative interdisciplinary approaches. INSPIRE seeks to attract unusually creative high-risk/high-reward "out of the box" interdisciplinary proposals.

Goal 2: To provide NSF Program Officers (POs) with additional tools and support to engage in cross-cutting collaboration and risk-taking in managing their award portfolios.

INSPIRE supports projects that lie at the intersection of traditional disciplines, and is intended to 1) attract unusually creative high-risk/high-reward interdisciplinary proposals; 2) provide substantial funding, not limited to the exploratory stage of the pursuit of novel ideas (unlike NSF's EArly-concept Grants for Exploratory Research, or EAGER); and 3) be open to all NSF-supported areas of science, mathematics, engineering, and education research.

**NSF New Survey for Proposers and Reviewers**

**Background**

From time to time, NSF has administered surveys of the members of the research community that seek to learn about their experiences with the merit review process (see, for example, McCullough, 1989). The information gathered in such a survey helps NSF to serve better both those who submit grant proposals to NSF and those who undertake the task of reviewing such proposals. In the terminology used by the Office of Management and Budget (OMB), this is a “customer satisfaction survey.”

In 2007, NSF fielded a large-scale survey, the “NSF 2007 Proposer Survey”. This was developed by the Impact of Proposal and Award Management Mechanisms (IPAMM) Working Group. Results of the 2007 survey are described in the “Final Report of the IPAMM Working Group”, published as NSF 07-45 (National Science Foundation, 2007). The FY 2015 NSF budget request to Congress included a plan to update the 2007 survey and stated that, “NSF will engage an external party to conduct surveys of NSF reviewers, investigators, and panel moderators to assess workload, the impacts of the technologies used, and the quality of feedback provided to proposers.”

Since 2007, the frontiers of science have continued to evolve, there has been a growth in the numbers of both single-investigator and collaborative research projects proposed to NSF,
and there have been changes both to NSF’s proposal submission system and to the technologies used to support the review process. The 2015 survey, entitled “Satisfaction of Investigators and Reviewers with the Merit Review Process,” seeks to understand how these factors have affected NSF investigators and reviewers. This feedback will be available for use by NSF as it works to make the review process more effective, maintaining the quality of the review process while minimizing the burden on proposers and reviewers and exploring the value of potential technological enhancements.

The 2015 Survey

The directorate for Office of Integrative Activities (OIA) has partnered with Insight Policy Research (Insight) to develop and deploy the 2015 survey. The contractor has expertise in survey design, survey administration, and analysis. Using the IPAMM survey and the description of the merit review process in the report on NSF’s Merit Review Process in FY 2014 (National Science Board, 2014) as an initial starting point, the contractor received input and feedback from staff across NSF associated with the Merit Review Working Group. The survey has also been reviewed by two of NSF’s survey statisticians who provided valuable feedback used by Insight to improve further the clarity of the questions.

Insight conducted a test of the clarity of a draft of the survey questions with a set of NSF staff, primarily rotators who had recently joined as program officers or Senior Executive Service staff, and made changes based on the feedback received. Insight subsequently created an online version of a draft of the survey which was then taken by a new set of recently arrived rotators to provide information on the average time required to complete the survey, which turned out to be under 30 minutes.

The survey contains about 100 questions but respondents will not see all of the questions. Which later questions are seen depends on the responses to earlier questions. For example, some questions determine whether a respondent was a participant in a specific merit review pilot. Only individuals that participated in the pilot will see questions related to that pilot. Responses are provided by clicking radio buttons (or, in a few cases, by entering a number); the survey does not ask respondents to provide text answers.

The survey asks reviewers and investigators about their experiences with and perceptions of NSF’s merit review process. The survey participants will be individuals who have submitted proposals to and/or reviewed for NSF in the past few years. The participant group will cover all of the academic disciplines that receive awards from NSF, embrace a broad spectrum of research and educational organizations, and represent many different demographic groups. Participants will first receive an email from NSF that invites them to take part in the survey. A few days later, participants will receive an email from Insight that contains a link to the online survey. Insight will collect the survey data on behalf of NSF. Insight and NSF will analyze the data jointly.

Survey Results

The results of the survey will be provided to NSF by Insight, together with some preliminary analysis. NSF will prepare a preliminary internal report on the outcomes of the survey and anticipates including some of the results of the survey in the FY 2016 Report on the National Science Foundation’s Merit Review Process. During FY 2016, Insight and NSF will work together to develop a more complete analysis of the survey data.
NSF Dear Colleague Letter: Germination of Research Ideas for Large Opportunities and Critical Societal Needs (GERMINATION)

Today, with growing and aging population, we are facing many societal challenges including pressing demands for food, land, energy and water, urgent need for educating students from diverse backgrounds, requirement of security in an increasingly connected world, more effective and affordable healthcare, and sustainable economic growth for employment. These and other such challenges are likely to become even more important in the coming years. At the same time, they represent potentially large and fertile opportunities for science and engineering research for advancement of society. It is ever more critical to conceive and conduct fundamental research that holds the promise of unlocking these big opportunities and addressing important societal needs, thus enhancing our quality of life, security, and economic competitiveness.

This Dear Colleague Letter (DCL) seeks EAGER (EArly-concept Grants for Exploratory Research) proposals with exploratory ideas to design learning frameworks, platforms and/or environments to enable participants to conceive research ideas and questions with potentially transformative outcomes.

Motivating Question: How can effective learning frameworks, platforms and/or nurturing experiential environments be designed in which early- and mid-career faculty, as well as graduate students and post-doctoral fellows can be stimulated to germinate transformative research ideas and questions to open large opportunities that address important societal needs?

This DCL aims to stimulate new approaches in cultivating a risk-taking and impact-driven research culture. NSF welcomes novel approaches to educate and nurture early- and/or mid-career faculty, as well as graduate students and post-doctoral fellows to develop research concepts and questions that are not only transformative, but also with the potential to address important societal needs. Proposals should focus on the development of key skills and mindsets that will increase the capacity of participants to identify big opportunities, think creatively, explore novel research formulations, and take intellectual risk.

Proposals should clearly identify the targeted participants. The proposed learning frameworks, platforms and/or environments should be designed to match the needs of targeted participants. The targeted participants may include any of the following: early- and/or mid-career faculty, graduate students, and/or post-doctoral fellows.

Proposers are strongly encouraged to design their exploratory approaches as creatively as possible, building on relevant knowledge from social/behavioral sciences and science of research organizations. A plan to pilot the approach and test the effectiveness of the approach must be included.

Proposals may choose to focus on one or a few research domains or be broad and allow all research domains. Multidisciplinary convergence types of approaches are highly encouraged. There is no constraint on the academic backgrounds of participants who can come from one or multiple institutions with a variety of academic backgrounds as appropriate.
Integrating Discovery-Based Research into the Undergraduate Curriculum: Report of a Convocation

Students who participate in scientific research as undergraduates report gaining many benefits from the experience. However, undergraduate research done independently under a faculty member's guidance or as part of an internship, regardless of its individual benefits, is inherently limited in its overall impact. Faculty members and sponsoring companies have limited time and funding to support undergraduate researchers, and most institutions have available (or have allocated) only enough human and financial resources to involve a small fraction of their undergraduates in such experiences. Many more students can be involved as undergraduate researchers if they do scientific research either collectively or individually as part of a regularly scheduled course. Course-based research experiences have been shown to provide students with many of the same benefits acquired from a mentored summer research experience, assuming that sufficient class time is invested, and several different potential advantages. In order to further explore this issue, the Division on Earth and Life Studies and the Division of Behavioral and Social Sciences and Education organized a convocation meant to examine the efficacy of engaging large numbers of undergraduate students who are enrolled in traditional academic year courses in the life and related sciences in original research, civic engagement around scientific issues, and/or intensive study of research methods and scientific publications at both two- and four-year colleges and universities. Participants explored the benefits and costs of offering students such experiences and the ways that such efforts may both influence and be influenced by issues such as institutional governance, available resources, and professional expectations of faculty. Integrating Discovery-Based Research into the Undergraduate Curriculum summarizes the presentations and discussions from this event.

Landscape Conservation Cooperatives Yield Many Early Accomplishments; Measurement of Long-Term Benefits Needs Improvement

Because fish, wildlife, habitats, and cultural resources extend beyond political boundaries, there is a national need to develop resource management strategies across jurisdictions and sectors, says a new congressionally mandated report from the National Academies of Sciences, Engineering, and Medicine. The Landscape Conservation Cooperatives (LCCs), initiated by the U.S. Department of the Interior in 2009 and coordinated by the department’s Fish and Wildlife Service (FWS), were created to address this national need and can point to many early accomplishments. Ultimately, the long-term success of this effort will depend on developing ways to measure and demonstrate benefits to its conservation partners and the nation.

At the request of Congress, FWS asked the Academies to convene a committee to evaluate the LCCs, a network of 22 regional conservation partnerships in the United States, including the Pacific and Caribbean islands, as well as parts of Canada and Mexico. Each LCC is tasked with creating a collaborative framework to develop shared conservation priorities and
identify applied research needs across federal agencies, state agencies, tribes, private landholders, and other stakeholders working on conservation efforts within its region.

Individual LCCs have generated some early accomplishments, such as identifying partners, establishing governance structures and steering committees, and developing shared conservation and research priorities for use by all partners, says the report. It is too soon to expect the network as a whole to have made measurable improvements to managing fish, bird, and other wildlife populations and their habitats. In addition, the LCC network needs to improve its evaluation process to better capture the contributions made by all partners toward common objectives and to better measure and demonstrate benefits to its partners.

The report finds that LCCs are unique in that they are designed to address landscape needs at a national level for all natural and cultural resources as well as to bridge conservation research and management. Similar federal programs are more narrowly focused and the LCCs generally seek to coordinate with other programs where their interests overlap. Moving forward, the LCC network needs to strengthen coordination with other programs that have a strong interest in landscape approaches to conservation to avoid duplicative efforts and limit demands on state agency and other partners that participate in multiple programs.

**Broader Impacts Guiding Principles and Questions for National Science Foundation Proposals**

The National Association for Broader Impacts (NABI) Broader Impacts Working Group has developed a guiding document for the National Science Foundation’s (NSF) broader impacts (BI) criterion. The purpose of this document is to assist NSF program managers, proposal reviewers, and review panels in evaluating the BI component of NSF proposals and to assist proposers with developing their broader impact plans. This document is intended to provide a means for consistency in the way review panels evaluate and rate proposed BI plans.

**Broader Impacts in the Earth Sciences Division (Ear) of the National Science Foundation (NSF)**

The National Science Foundation (NSF) supports transformational science to benefit society. This overarching goal is addressed through NSF’s two merit review criteria: intellectual merit and broader impacts. Given that society continually changes, individuals and institutions must continually reconsider, justify, and explain their role in society to remain relevant and competitive. Society does not accept the authority of science de facto. To gain influence on social issues and events, charismatic practitioners of science, and institutional support, are a must. This is the raison d’être of the NSF broader impacts.

The challenge of articulating compelling broader impacts in NSF proposals is not new. However, persuasive broader impacts are increasingly important both for science at large and for obtaining NSF funding in the current environment of intense competition. Given the nature of federally funded basic science, some projects will, perhaps unexpectedly, benefit society through the research itself. Some will need to integrate planned activities designed to achieve specific, desired societal outcomes. In the aggregate, these societally relevant advances and desired outcomes bolster the public’s trust of science.

This article presents a high-level, portfolio analysis to help Earth Scientists conceptualize some of the multifaceted aspects of NSF broader impacts. The analysis is exploratory and does not provide focused conclusions. Rather, the intention is to stimulate thought within the research
community on what the priorities should be for advancing the authority and influence of Earth Science in society.

A broad group of people in the Division of Earth Sciences (EAR) contributed to an effort to examine the many types of broader impacts carried out by the Earth Sciences community. They examined broader impacts in proposals using key words and phrases (Table 1). They used word clouds to visualize this information at the Division (Figure 1) and Program (Figure 2) levels. It is clear from this analysis which types of activities dominate the EAR broader impacts portfolio (Figure 1A). One question to consider is whether more diversification of broader impacts activities could reduce the risk of the Earth Sciences being perceived as weaker than other sciences or even irrelevant as society changes. A potential future scenario for EAR with more diversification is depicted in Figure 1B. In this scenario, EAR resources would support a more balanced portfolio of broader impacts activities across the Division.

All of the broader impacts activities reflected in the word clouds are arguably important. However, it is not EAR’s intention that they should all be contained within a single project. Indeed, proposals mentioning larger numbers of these terms had lower success rates, potentially reflecting their less focused plan. From 2007-2012 in EAR, for example, 92% of declines vs. 76% of awards mentioned at least one of the key words or phrases describing the “advance discovery and understanding while promoting teaching, training, and learning” category; 55% of declines vs. 41% of awards mentioned the “broaden participation of underrepresented groups” category; 93% of declines vs. 77% of awards mentioned the “enhance infrastructure for research and education” category; 71% of declines vs. 56% of awards mentioned the “broad dissemination to enhance scientific and technological understanding” category; and 51% of declines vs. 39% of awards mentioned the “benefits to society” category.

Relative to other categories, the “broaden participation of underrepresented groups” category received less than half as much emphasis in final reports as in awards, based on term abundances (Figure 3). Such a large difference may imply that the proposed activity was implemented, but was not included in the final report (either mentioned in an earlier report or not reported at all), or that the broader impacts activity was not implemented. At the Directorate level, the percentage of awards from 2007-2012 that mentioned the “broaden participation of underrepresented groups” category was lower in the Geosciences Directorate (37%) than in the other 7 research directorates at the NSF (range 50% - 71%). This is not a statistic that would help the Geosciences stand out favorably with society.

Broadening participation of underrepresented groups is fundamental to the NSF mission. To maintain public trust, broadening participation needs to be implemented and reported on in a spirit consistent with the proposed activities. If in the majority of cases it is not, that is a problem that warrants careful attention. A final question to consider is whether the low representation of minorities among Earth Science faculty diminishes the authority of Earth Science and its influence. Does it limit the potential to attract top talent into the Earth Sciences from large sectors of the United States population?

Broader Impacts Category
Advance discovery and understanding while promoting teaching, training, and learning

Example key Words and Phrases
• Graduate Student (61%)
• Postdoc (40%)
| Broaden participation of underrepresented groups | • K-16 (0.7%)  
|                                                  | • Student Assessment (0.3%)  
|                                                 | • Minority (20%)  
|                                                 | • Female (18%)  
|                                                 | • Native Hawaiian (0.3%)  
|                                                 | • TCU (0.6%)  
| Enhance infrastructure for research and education | • Collaboration (57%)  
|                                                 | • International (42%)  
|                                                 | • Multi-user Facility (3.3%)  
|                                                 | • Education Platform (0.1%)  
| Broad dissemination to enhance scientific and technological understanding | • Database (29%)  
|                                                 | • Museum (15%)  
|                                                 | • Diverse Media (0.1%)  
|                                                 | • Radio Show (0.1%)  
| Benefits to society | • Hazards (25%)  
|                                                | • Economy (20%)  
|                                                  | • Policy Tool (0.1%)  
|                                                  | • Public Participation (0.1%)  

Table 1. Broader impacts categories with example key words and phrases. In the actual analysis, 100 key words and phrases were used to depict the range of broader impacts in the Earth Sciences (EAR) portfolio.
New Funding Opportunities

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Content Order
New Funding Posted Since November 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 SolicitationsPosted Since November 15 Newsletter

Fogarty Funding Opportunities - Dates and Deadlines

Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP)
The goals of the Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP) solicitation are to: (1) foster an interdisciplinary research community of engineers, computer and computational scientists and social and behavioral scientists, that creates new approaches and engineering solutions for the design and operation of infrastructures as processes and services; (2) enhance the understanding and design of interdependent critical infrastructure systems (ICIs) and processes that provide essential goods and services despite disruptions and failures from any cause, natural, technological, or malicious; (3) create the knowledge for innovation in ICIs so that they safely, securely, and effectively expand the range of goods and services they enable; and (4) improve the effectiveness and efficiency with which they deliver existing goods and services. Due March 9.

USDA-NIFA-ICGP-005517 Organic Agriculture Research and Extension Initiative
The OREI RFA (http://nifa.usda.gov/sites/default/files/rfa/FY16%20OREI%20RFA.pdf) seeks to solve critical organic agriculture issues, priorities, or problems through the integration of research, education, and extension activities. The purpose of this program is to fund projects that will enhance the ability of producers and processors who have already adopted organic standards to grow and market high quality organic agricultural products. Priority concerns include biological, physical, and social sciences, including economics. The OREI is particularly interested in projects that emphasize research, education and outreach that assist farmers and ranchers with whole farm planning by delivering practical research-based information. Projects should plan to deliver applied production information to producers. Fieldwork must be done on certified organic land or on land in transition to organic certification, as appropriate to project goals and objectives. Refer to the USDA National Organic Program
Research Development & Grant Writing News

(https://www.ams.usda.gov/nop) for organic production standards. Visit the NIFA website to access a factsheet on the Center of Excellence (COE) designation process, including COE criteria, and a list of programs offering COE opportunities in fiscal year 2016. You can also review a recording of COE outreach webinars held in February and March of 2015 from the site. The COE WebPages will be updated throughout FY 2016 with additional information, such as a summary of comments received from stakeholders. Due March 10.

ONR N00014-16-R-SN02 Undersea Technologies for Autonomous Detection and Communications

The Office of Naval Research (ONR) is soliciting white papers and full proposals for technologies to enable advanced maritime surveillance and response capabilities. Work under this BAA will consist of applied research and advanced technology development, and it will be funded under Budget Activity 2 and 3 respectively (as defined in DoD Financial Management Regulation Vol. 2B, Ch. 5). The overall S&T effort is envisioned to be conducted at the TRL 2-6 stage.

Background and Objectives The overall objective of this program is to conduct applied research and advanced technology development for an undersea system to autonomously detect targets and to communicate through both seawater and the air-sea interface. Its foci are 1) detection and classification of objects of interest with high confidence, and 2) transmission of these objects of interest in areas with tactical constraint. 1) Autonomous Detection, Tracking, Localization, and Identification. Under this thrust, both hardware and software products to detect, discriminate, and classify sources of interest will be investigated to optimize quality, speed of production, and level of production in autonomous employment. 2) Command, Control, and Communications (C3). This thrust will provide undersea data collection, storage, intra-nodal transfer, and/or exfiltration in real-time or in a “store-and-forward” capacity to remote sites. The following subsections describe the technology thrusts in more detail. Some specific topics of interest are given below, but submissions within the general interest area are encouraged and will be considered. The expected deliverables include hardware, firmware as needed to support hardware, software prototypes, algorithmic descriptions, and study findings as appropriate. Data rights for technologies developed or leveraged for this effort should be clearly stated in the White Paper and proposal; however, proposals should assume either government purpose rights (GPR) or unlimited rights. Justification provided for data rights more restrictive than GPR will be considered on a case-by-case basis. White Paper due January 8; Full March 22.

Spencer Foundation Accepting Proposals for Education Conference Grants

The Spencer Foundation is accepting proposals for its Conference Grants program. The program supports efforts to bring together scholars whose knowledge, theoretical insight, and methodological expertise can be assembled in ways that build on and reach beyond familiar modes of thinking concerning problems in education research, specifically those related to the area of teaching and learning. Through the program, the foundation aims to encourage the research community to advance new and rigorous research in this subfield and to ultimately increase collaboration within the educational research community.

Conferences should include a broad set of perspectives on topics or problems in education as they relate to the profession and practice of teaching or how students learn in
formal and informal spaces. The foundation is particularly interested in proposals that seek to bridge disciplines, subtopics, or contexts that address how and what people learn, including fields related to teaching and learning. For example, scholars of English education might seek to engage in conversations with science, social studies, mathematics, arts, or additional discipline specific education researchers in an effort to foster greater cross-fertilization within the field. Likewise, scholars who explore themes of culturally relevant or culturally sustaining pedagogy might seek to collaborate with scholars in content-specific fields in ways that support the development of research in both areas.

The program will support conference proposals with budgets of up to $50,000. Applicants must have earned a doctorate in an academic discipline or professional field, or be able to demonstrate appropriate experience in an education research-related profession. In addition, applicants must be affiliated with a college, university, school district, nonprofit research facility, or nonprofit cultural institution willing to serve as fiscal agent. For complete program guidelines, an FAQ, and proposal submission instructions, visit the Spencer Foundation website. **Due January 11.**

**ED/IES SBIR Fiscal Year 2016 Program Solicitation is Now Open**

Through its annual competition, the Small Business Innovation Research program at the Department of Education’s Institute of Education Sciences provides funding to firms and partners for the research and development, and evaluation of commercially viable education technology products. Fiscal Year 2015 "Phase I" Solicitation: Solicitation #ED-IES-16-R-0003, is a request for Phase I proposals for awards up to $150,000 for 6-months. These proposals are for the development of prototypes of education technology products to improve relevant student, teacher, or administrator outcomes in education and special education settings. The 2016 priority areas for ED/IES SBIR listed [HERE](#). **Due January 21.**

**Funding opportunity for US-Russia university partnerships: all academic fields**

Eurasia Foundation invites accredited higher education institutions from Russia and the United States to submit joint proposals for creating new bilateral partnerships as part of the US-Russia University Partnership Program (UPP). The funding competition offers “Linkage” funding of up to $41,000 for the implementation of new partnership projects in any academic field. Proposals must include at least one Russian and one US institution. All application materials for Linkage funding are due on January 22, 2016. In order to access the application materials, higher education institutions must first register with the UPP database ([http://usrussiaupp.org/en/disclaimer](http://usrussiaupp.org/en/disclaimer)). For more information about funding opportunities and eligibility requirements, please visit the UPP website at [http://usrussiaupp.org/en/partnership-funding](http://usrussiaupp.org/en/partnership-funding) or contact UPP staff at upp@eurasia.org. In order to receive the latest news and updates regarding the UPP initiative, please follow us on FaceBook ([https://www.facebook.com/usrussiaupp](https://www.facebook.com/usrussiaupp)) and Twitter ([https://twitter.com/USRussiaUPP](https://twitter.com/USRussiaUPP)). **Due by January 22.**

**RFA-CK-16-002 Spatially Scalable Integrated Tick Vector/Rodent Reservoir Management to Reduce Human Risk of Exposure to Ixodes scapularis Ticks Infected with Lyme Disease Spirochetes**
Lyme disease, caused primarily by the spirochete Borrelia burgdorferi sensu stricto in the United States, is the most commonly reported vector-borne disease with >30,000 confirmed or probable cases reported annually and a recent estimate suggesting that ten-fold more cases may occur. There is currently no human vaccine against B. burgdorferi. However, tick/pathogen control efforts that combine killing of host-seeking ticks with targeting of natural rodent reservoirs for B. burgdorferi can reduce the abundance of host-seeking infected ticks on residential properties. The purpose of the project is to advance knowledge of the impact of protection of single versus multiple adjacent properties - in relation to human landscape use patterns and tick exposure locations - to reduce human exposure to ticks infected with Lyme disease spirochetes. **Due February 2.**

**Global Chemical Security Activities**
The Department of State’s Office of Cooperative Threat Reduction (ISN/CTR) is pleased to announce an open competition for assistance awards through this Request for Proposals (RFP). ISN/CTR invites non-profit/non-governmental organizations, public international organizations, and for-profit companies, and **educational institutions** to submit proposals for projects that will advance the mission of the Department’s Chemical Security Program (CSP). ISN/CTR has approximately $18,000,000 available in the current fiscal year to award multiple grants and cooperative agreements in this field. ISN/CTR prefers projects that cost less than $250,000 including overhead, though awards may involve multiple projects that cumulatively exceed $250,000. In order to apply for new funding opportunities which are open to the public for competition, you may access the Grants.gov website portal. All funding opportunities and application kits are made available on Grants.gov. If your organization has/had a grantee business relationship with a grant program serviced by the Office of Grants Management, and you are applying as part of ongoing grantee related activities, please access GrantSolutions.gov. In order to apply electronically you must first have a GrantSolutions user account. If you are already an existing grantee, please login to GrantSolutions using your existing grantee username and password. If you do not remember your account information or have not been assigned a grantee account, please contact the GrantSolutions Help Desk at (866)577-0771 or by email at help@grantsolutions.gov. GrantSolutions provides you the ability for existing grantee organizations to submit their entire application online. However, please note that all required signatures must still be "original hardcopy signatures" and must be received by the Grants Servicing Office by the due date requirements as specified in the grant announcement. **Due February 12.**

**Gulf Research Program Fellowships**
The Gulf Research Program is accepting applications for its **2016 Early-Career Research Fellowships and Science Policy Fellowships** now through Feb. 17, 2016. These fellowships offer early-career researchers and professionals a unique opportunity to focus on leadership development while conducting research or work that is relevant to the **mission and goals of the Gulf Research Program**. **Due by February 17.**

**USDA-NIFA-AFRI-005515 National Institute of Food and Agriculture International Wheat Yield Partnership Program**
NIFA aims to support the G20 nations’ Wheat Initiative which is committed to coordinate wheat research in the areas of genetics, genomics, physiology, breeding and agronomy internationally. NIFA in coordination with the International Wheat Yield Partnership (IWYP), requests applications to seek breakthroughs for cereal breeding using new technologies and also discoveries that lead to significantly greater grain size, grain set and grain filling duration following embryo formation, in diverse environments, without compromising grain protein concentration in Triticeae species. RFA: [http://nifa.usda.gov/sites/default/files/rfa/16_NIFA-IWYP.pdf](http://nifa.usda.gov/sites/default/files/rfa/16_NIFA-IWYP.pdf) LOI due March 1; full May 3.

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

- [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](#)
- [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

**HRSA-16-017 Rural Health Network Development Planning Program**
This announcement solicits applications for the Rural Health Network Development Planning Grant Program (“Network Planning”). The purpose of the Network Planning program is to assist in the development of an integrated healthcare network, if the network participants do not have a history of formal collaborative efforts. Health care networks can be an effective strategy to help smaller rural health care providers and health care service organizations align resources and strategies, achieve economies of scale and efficiency, and address challenges more effectively as a group than as single providers. The Network Planning program promotes the planning and development of healthcare networks in order to: (i) achieve efficiencies; (ii) expand access to, coordinate, and improve the quality of essential health care services; and (iii) strengthen the rural health care system as a whole. The health care system is undergoing a significant amount of change and this can be particularly challenging for small rural providers. The goals of the Network Planning program are to help rural providers better serve their communities given changes taking place in health care, as providers move from focusing on the volume of services to focusing on the value of services. This program will bring together key parts of a rural health care delivery system, particularly those entities that may not have collaborated in the past under a formal relationship, to establish and improve local capacity and coordination of care. The program will support one year of planning with the primary goal of helping networks create a foundation for their infrastructure and focusing member efforts to address important regional or local community health needs. To appropriately address emerging community health needs and challenges, systemic efforts are key. This program will assist communities in establishing a rural health network of health care providers committed to forming relationships with each other and stakeholders. It is expected that the rural health networks will maintain the highest level of access to care, increase the use of health information technology, explore alternative health care delivery models and continue to achieve a high level of quality health care across the continuum of care from prevention and wellness to acute and long term care. **Due January 8.**
**RFA-CK-16-001 Emerging Infections Sentinel Networks (EISN) Research Department of Health and Human Services Centers for Disease Control and Prevention**

The Emerging Infections Sentinel Network (EISN) program assists awardees in operating provider-based sentinel networks. These networks will contribute to surveillance for emerging infectious diseases, including drug-resistant, foodborne and waterborne, and vaccine-preventable or potentially vaccine-preventable diseases, and will enhance information exchange. Research objectives for the provider-based sentinel networks include investigations of various emerging infections and implementation of studies to examine risk factors, determine practice guidelines, and evaluate outcomes. This FOA specifically aims to support the collection of infectious disease (ID) data from academically affiliated emergency departments. **Due January 8.**

**2016 Ecological Effects of Sea Level Rise Program - Advancing Predictive Capabilities to Evaluate Natural and Nature-based Features**

The purpose of this document is to advise the public that NOAA/NOS/National Centers for Coastal Ocean Science (NCCOS)/Center for Sponsored Coastal Ocean Research (CSCOR) is soliciting proposals under the Ecological Effects of Sea Level Rise (EESLR) Program to evaluate and quantify the ability of coastal natural and nature-based features to mitigate the effects of sea level rise (SLR) and inundation (storm surge, nuisance flooding, and/or wave run-up) effects on coastal ecosystems and communities through integrated field research and advancement of dynamic modeling tools. The overall goal of EESLR is to facilitate informed adaptation planning and coastal management decisions through a multidisciplinary research program that results in integrated models and tools of dynamic physical and biological processes capable of evaluating vulnerability and resilience under multiple SLR, inundation, and coastal management scenarios. The geographic scope of this particular EESLR funding announcement is limited to coastal regions of (1) southern California, defined as San Louis Obispo County south to the US/Mexico border, and (2) the Gulf of Mexico. Funding is contingent upon the availability of Fiscal Year 2016 Federal appropriations. It is anticipated that up to $800,000 may be available in Fiscal Year 2016 for the first year of research. Approximately 2 to 4 proposals, for approximately 3-4 years in duration, are expected to be funded at a level not to exceed $300,000 per year per proposal. In addition to this annual funding limit, any proposals submitted with total budgets (across all years) that are greater than $1,200,000 will not be considered for funding. Electronic Access: Background information about NOAA’s Ecological Effects of Sea Level Rise Program can be found at [http://coastalscience.noaa.gov/research/climate/sea_level_rise](http://coastalscience.noaa.gov/research/climate/sea_level_rise). **Due January 8.**

**Ocean Exploration 2016 Funding Opportunity**

NOAA’s Office of Ocean Exploration & Research (OER) is soliciting pre-proposals followed by full proposals for bold, innovative, multi-partner, interdisciplinary ocean exploration projects in the following areas of interest: 1) physical, chemical and biological characterizations of unknown or poorly known regions of the deep ocean, especially areas deeper than 500 m. 2) baseline characterization of marine archaeological resources at any depth; and 3) technology that advances ocean exploration and has application to NOAA related missions. Through this announcement, NOAA OER anticipates the availability of approximately $3 million. The actual funding amount is contingent upon FY 2016 Congressional appropriations. OER estimates
making 3-10 awards that will range from about $50,000 to $1.5 million. Funding for ship or submersible assets, if required, must be included in the proposal. Leveraging with ship time supported outside of this funding opportunity is strongly encouraged. **Due January 8.**

**F15AS00466 Wildlife Without Borders - Africa Program Department of the Interior**
Central Africa is a globally important region for forest and biodiversity conservation. The U.S. Fish and Wildlife Service (USFWS) works closely with national governments, U.S. agencies, and a range of other partners to ensure a strategic, results-based approach to wildlife conservation in the region. In collaboration with U.S. Agency for International Development's (USAID) Central Africa Regional Program for the Environment (CARPE), USFWS is providing this funding opportunity to reduce threats to key wildlife populations, and to develop the requisite individual and institutional conservation capacity to undertake long-term conservation programs. Please see A Results-Based Vision for Conservation in Central Africa on the USFWS website for greater detail on our approach to wildlife conservation in Central Africa. Funding will only be considered for projects that impact wildlife populations in the following countries: Burundi, Cameroon, Chad, Central African Republic, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Republic of Congo, Rwanda, and Sao Tome and Principe. Please review each USFWS funding priority below for specific details, including what USFWS wants to achieve through its funding support (i.e., Desired Results). Each funding priority also identifies factors that, in USFWS experience, are basic requirements (also known as prerequisites or enabling conditions) for projects to effectively implement proposed activities. Applicants should address these factors in the Statement of Need. USFWS supports wildlife conservation projects in Central Africa through multiple mechanisms: the Wildlife Without Borders Africa (WWB-Africa) Program, and the funds created by Congressional acts for the conservation of African elephants, great apes and marine turtles. In general, applicants are encouraged to submit a proposal to WWB-Africa if their project falls under one of the six funding priorities listed below. In order to maximize funding opportunities, USFWS staff may move proposals between the WWB-Africa Program and the Species Funds. **Due January 16.**

**USDA-NIFA-BFR-005436, Beginning Farmer and Rancher Development Program**
Department of Agriculture, National Institute of Food and Agriculture
Beginning farmer education for adult and young audiences in the United States can be generally traced back to the advent of the 1862 and the 1890 Morrill Land Grant Acts. But for the first time, the Food, Conservation, and Energy Act of 2008 (Pub. L. No. 110-234, Section 7410), appropriated $75 million for FY 2009 to FY 2012 to develop and offer education, training, outreach and mentoring programs to enhance the sustainability of the next generation of farmers. The [Agriculture Act of 2014](https://www.congress.gov) provided an additional $20 million per year for 2014 through 2018. The reasons for the renewed interest in beginning farmer and rancher programs are: the rising average age of U.S. farmers, the 8% projected decrease in the number of farmers and ranchers between 2008 and 2018, and the growing recognition that new programs are needed to address the needs of the next generation of beginning farmers and ranchers. **Due January 21.**

**DE-FOA-0001437 Environmental System Science Department of Energy - Office of Science**
The Office of Biological and Environmental Research (BER) of the Office of Science (SC), U.S. Department of Energy (DOE) hereby announces its interest in receiving applications for research in Environmental Systems Science (ESS), including Terrestrial Ecosystem Science (TES) and Subsurface Biogeochemical Research (SBR). The mission of the Climate and Environmental Sciences Division (CESD) within BER is to advance a robust predictive understanding of Earth’s climate and environmental systems and to inform the development of sustainable solutions to the Nation’s energy and environmental challenges. The goal of the Environmental System Science (ESS) activity in the Office of Biological and Environmental Research (BER) is to advance a robust predictive understanding of terrestrial environments, extending from bedrock to the top of the vegetated canopy and from molecular to global scales in support of DOE’s energy and environmental missions. Using an iterative approach to model-driven experimentation and observation, interdisciplinary teams of scientists work to unravel the coupled physical, chemical and biological processes that control the structure and functioning of terrestrial ecosystems across vast spatial and temporal scales. State-of-science understanding is captured in conceptual theories and models which can be translated into a hierarchy of computational components and used to predict the system response to perturbations caused, for example, by changes in climate, land use/cover or contaminant loading. Basic understanding of the system structure and function is advanced through this iterative cycle of experimentation and observation by targeting key system components and processes that are suspected to most limit the predictive skill of the models. **Due January 22.**

**NOAA-NOS-NCCOS-2016-2004640 National Competitive Hypoxia Programs: the Northern Gulf of Mexico Ecosystems and Hypoxia Assessment Program (NGOMEX) and Coastal Hypoxia Research Program (CHRP)**

The purpose of this document is to advise the public that NOAA/NOS/National Centers for Coastal Ocean Science (NCCOS)/Center for Sponsored Coastal Ocean Research (CSCOR) is soliciting proposals for the Northern Gulf of Mexico Ecosystems and Hypoxia Assessment Program (NGOMEX) and Coastal Hypoxia Research Program (CHRP). Funding is contingent upon the availability of Fiscal Year 2016 Federal appropriations. It is anticipated that projects funded under this announcement will have a September 1, 2016 start date. Total funding for this research: For NGOMEX, approximately 2 to 6 projects, for approximately 2-4 years in duration, are expected to be funded at a level not to exceed $300,000 per year per proposal. For CHRP, approximately 3 to 7 projects, for approximately 2-5 years in duration, are expected to be funded at a level not to exceed $400,000 per year per proposal. It is anticipated that up to $1,850,000 may be available in Fiscal Year 2016 for the first year of all hypoxia projects combined. In addition to these annual funding limits, NOAA does not anticipate funding any proposals submitted with total budgets (across all years) that are greater than $1,200,000 for NGOMEX and $2,000,000 for CHRP. Electronic Access: Background information about NOAA’s NGOMEX and CHRP Programs can be found at [http://coastalscience.noaa.gov/research/pollution/hypoxia/ngomex](http://coastalscience.noaa.gov/research/pollution/hypoxia/ngomex) and [http://coastalscience.noaa.gov/research/pollution/hypoxia/chrp](http://coastalscience.noaa.gov/research/pollution/hypoxia/chrp), respectively. Any Frequently Asked Questions that arise will be posted at these sites. Proposals should be submitted through Grants.gov, [http://www.grants.gov](http://www.grants.gov). Sign up to receive any potential amendments to this Announcement via [www.grants.gov](http://www.grants.gov). The key objective of NCCOS/CSCOR research is the...
production of user-driven predictive tools that will enable managers to assess alternative management strategies to restore degraded ecosystems and protect healthy ones. Research supported is outcome-oriented towards predictions, as well as increased scientific understanding that will provide managers and the public with sound scientific information for making decisions in support of societal objectives. Meritorious proposals articulate outcome-based management goals (see Section IV.B.) and recipients will be expected to report progress toward achieving outcome-based goals annually. Due January 22.

Division of Environmental Biology (core programs) (DEB)
The Division of Environmental Biology (DEB) supports fundamental research on populations, species, communities, and ecosystems. Scientific emphases range across many evolutionary and ecological patterns and processes at all spatial and temporal scales. Areas of research include biodiversity, phylogenetic systematics, molecular evolution, life history evolution, natural selection, ecology, biogeography, ecosystem structure, function and services, conservation biology, global change, and biogeochemical cycles. Research on organismal origins, functions, relationships, interactions, and evolutionary history may incorporate field, laboratory, or collection-based approaches; observational or manipulative experiments; synthesis activities; as well as theoretical approaches involving analytical, statistical, or computational modeling. Preliminary due January 25; full due August 2.

NIJ FY 16 Research and Development in Forensic Science for Criminal Justice Purposes
NIJ is seeking proposals for basic or applied research and development projects that will: (1) increase the body of knowledge to guide and inform forensic science policy and practice, or (2) result in the production of useful materials, devices, systems, or methods that have the potential for forensic application. The intent of this program is to direct the findings of basic scientific research, research and development in broader scientific fields applicable to forensic science, and ongoing forensic science research toward the development of highly discriminating, accurate, reliable, cost-effective, and rapid methods for the identification, analysis, and interpretation of physical evidence for criminal justice purposes. Due January 31.

Long-Term Ecological Research (LTER), New Site Competition
NSF currently supports 25 LTER research sites and, through this solicitation, invites proposals to establish three (3) new LTER sites. Research proposals should address questions in one of two broad ecosystems: Arid/semi-arid ecosystems: The Division of Environmental Biology (DEB) anticipates support and management of one (1) new site with a focus on arid or semi-arid ecosystems. The location of the research site for proposals submitted to develop a new arid/semi-arid ecosystem LTER must be within the United States, including its territories and protectorates. Ocean/coastal ocean ecosystems: The Division of Ocean Sciences (OCE) anticipates support and management of two (2) new sites that focus on ocean or coastal ocean ecosystems; defined as ecological systems from the shoreline outward on continental shelves and including the Laurentian Great Lakes, Congressionally defined as interior oceans. Preference will be given to proposals developing a new ocean/coastal ocean ecosystem LTER site located within the United States, including its territories and protectorates, but other locations are not precluded. To address ecological questions that cannot be resolved with
Research Development & Grant Writing News

short-term observations or experiments, NSF established the Long Term Ecological Research Program (LTER) in 1980. Two components differentiate LTER research from projects supported by other NSF programs: 1) the research is located at specific sites chosen to represent major ecosystem types or natural biomes; and 2) it emphasizes the study of ecological phenomena over long periods of time based on data collected in five core areas. The five core areas of long-term data collection are: 1) patterns and controls of primary production, 2) spatial and temporal population dynamics and food web interactions, 3) patterns and controls of organic matter accumulation and decomposition, 4) patterns of inorganic inputs and movements of nutrients, and 5) patterns and frequency of disturbances. The LTER program provides a unique opportunity for researchers to obtain an integrated, holistic understanding of ecosystems that is not possible through individual, short-term awards. Research at LTER sites must test important, current ecological theories and significantly advance understanding of the long-term dynamics of populations, communities and ecosystems. It often integrates multiple disciplines and, through cross-site interactions, examines patterns or processes over broad spatial scales. Recognizing that the value of long-term data extends beyond use at any individual site, NSF requires that data collected by all LTER sites be made broadly accessible. Prelim Feb. 1; full August 2

EJ Collaborative Problem-Solving Cooperative Agreements Program
The Environmental Justice Collaborative Problem-Solving (CPS) Cooperative Agreement Program provides funding for eligible applicants for projects that address local environmental and public health issues within an affected community. The CPS Program is designed to help communities understand and address exposure to multiple environmental harms and risks. Due February 12.

USDA-NIFA-BRAP-005435, Biotechnology Risk Assessment Grants Program
The purpose of the BRAG program is to support the generation of new information that will assist Federal regulatory agencies in making science-based decisions about the effects of introducing into the environment genetically engineered organisms (GE), including plants, microorganisms (including fungi, bacteria, and viruses), arthropods, fish, birds, mammals and other animals excluding humans. Investigations of effects on both managed and natural environments are relevant. The BRAG program accomplishes its purpose by providing Federal regulatory agencies with scientific information relevant to regulatory issues. See RFA for details. LOI Feb. 12; full April 15

Next Generation Humanities PhD Grants National Endowment for the Humanities
In recent years, research published by Humanities Indicators, among others, has revealed that humanities PhDs pursue careers in many different professions—both inside and outside academia. Yet most humanities PhD programs in the United States still prepare students primarily for tenure-track professor positions at colleges and universities. The increasing shortage of such positions has changed students’ expected career outcomes. NEH therefore hopes to assist universities in devising a new model of doctoral education, which can both transform the understanding of what it means to be a humanities scholar and promote the integration of the humanities in the public sphere. Next Generation Humanities PhD Planning
Grants support universities in preparing to institute wide-ranging changes in humanities doctoral programs. Humanities knowledge and methods can make an even more substantial impact on society if students are able to translate what they learn in doctoral programs into a multitude of careers. Next Generation PhD Planning Grants are designed to bring together various important constituencies to discuss and strategize, and then to produce plans that will transform scholarly preparation in the humanities at the doctoral level. Students will be prepared to undertake various kinds of careers, and humanities PhD programs will increase their relevance for the twenty-first century. Next Generation Humanities PhD Implementation Grants support universities in instituting wide-ranging changes in humanities doctoral programs. Humanities knowledge and methods can make an even more substantial impact on society if students are able to translate what they learn in doctoral programs into a multitude of careers. Next Generation PhD Implementation Grants are designed to produce plans that will transform scholarly preparation in the humanities at the doctoral level. Students will be prepared to undertake various kinds of careers, and humanities PhD programs will increase their relevance for the twenty-first century. NEH will support activities specific to each institution’s needs: these may include (but are not limited to) multi-departmental collaboration, transformations in curricula, modifications in stipend structures, altered formats for dissertations, commitment to collection of alumni career information and outcomes, partnerships with non-university entities, as well as a pledge to encourage doctoral students to explore and prepare for multiple career trajectories. NEH intends the Implementation Grants program to promote best practices on the part of its awardee institutions, and thereby to establish a new model for graduate education in the humanities. Grantee institutions must provide funds (either their own funds or funds raised from nonfederal third parties) equal to the grant funds released by NEH. Due February 17.

FY 2017 SERDP Solicitations
The Department of Defense’s Strategic Environmental Research and Development Program (SERDP) is seeking environmental research and development proposals for funding beginning in Fiscal Year (FY) 2017. Projects will be selected through a competitive process. Details are available on the website under Funding Opportunities. The Core Solicitation provides funding opportunities for basic and applied research and advanced technology development. Core projects vary in cost and duration consistent with the scope of the work proposed. The Statements of Need (SON) referenced by this solicitation request proposals related to the SERDP program areas of Environmental Restoration (ER), Munitions Response (MR), Resource Conservation and Climate Change (RC), and Weapons Systems and Platforms (WP). All Core pre-proposals are due January 7, 2016, by 2:00 p.m. ET. The SERDP Exploratory Development (SEED) Solicitation provides funding opportunities for work that will investigate innovative environmental approaches that entail high technical risk or require supporting data to provide proof of concept. Funding is limited to not more than $200,000 and projects are approximately one year in duration. This year, SERDP is requesting SEED proposals for the RC and WP program areas. SEED proposals are due March 8, 2016, by 2:00 p.m. ET.
Open Solicitations and BAAs

**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.**

The United States Agency for International Development (USAID) is seeking concept papers from qualified U.S. and non-U.S. higher education institutions (HEIs) to work with USAID to advance strategic priorities and objectives and achieve sustainable development outcomes, results, and impact. This Annual Program Statement (APS) has the flexibility to award Cooperative Agreements, Grants, Fixed Amount Awards, and leader with Associate Awards. This APS is not supported by specific funding, and any funding for any USAID-HEI partnership proposed under this APS would have to be requested from the specific USAID Mission, Bureau, or Independent Office with which the prospective applicant seeks to collaborate and to which the Concept Paper will be submitted. USAID seeks to optimize its relationship with HEIs by identifying and promoting successful partnerships and collaboration models, and increasing USAID’s access to higher education technical resources. The purpose of this APS is to promote opportunities for leveraging HEI capabilities across USAID’s portfolio and its program cycle, and strengthen developing country HEI capabilities to respond to and solve critical development challenges. **Original Closing Date for Applications: Jun 29, 2016**

**DARPA-BAA-15-39 DSO Office-wide BAA Department of Defense**
The mission of the Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) is to identify and pursue high-risk, high-payoff research initiatives across a broad spectrum of science and engineering disciplines and to transform these initiatives into important, radically new, game-changing technologies for U.S. national security. In support of this mission, this DSO Office-wide BAA invites proposers to submit innovative basic or applied research concepts in one or more of the following technical areas: Physical Systems; Mathematics, Modeling and Design; and Human-Machine Systems. Each of these areas is described below and includes a list of example research topics. For each technical area addressed, proposed research should investigate innovative approaches that enable revolutionary advances. DSO is explicitly not interested in approaches or technologies that primarily result in evolutionary improvements to the existing state of practice. **Open to July 2, 2016.**

**FY 2016 Continuation of Solicitation for the Office of Science Financial Assistance Program**
The Office of Science (SC) 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 (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-0001414, 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, 2016, 11:59 PM Eastern Time, or until it is succeeded by another issuance, whichever occurs first.

DoD USAMRMC FY16 Broad Agency Announcement for Extramural Medical Research
The U.S. Army Medical Research and Materiel Command’s (USAMRMC) mission is to provide solutions to medical problems of importance to the American Service member at home and abroad, as well as to the general public at large. The scope of this effort and the priorities attached to specific projects are influenced by changes in military and civilian medical science and technology, operational requirements, military threat assessments, and national defense strategies. The extramural research and development programs play a vital role in the fulfillment of the objectives established by the USAMRMC. General information on USAMRMC can be obtained at https://mrmc.detrick.army.mil/. This Fiscal Year 2016 (FY16) Broad Agency Announcement (BAA) is intended to solicit extramural research and development ideas and is issued under the provisions of the Competition in Contracting Act of 1984 (Public Law 98-369), as implemented in Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016. In accordance with FAR 35.016, projects funded under this BAA must be for basic and applied research and that part of development not related to the development of a specific system or hardware procurement. Projects must be for scientific study and experimentation directed toward advancing the state-of-the-art or increasing knowledge or understanding rather than focusing on a specific system or hardware solution. Research and development funded through this BAA is intended and expected to benefit and inform both military and civilian medical practice and knowledge. This BAA provides a general description of USAMRMC’s research and development programs, including research areas of interest, evaluation and selection criteria, pre-proposal/pre-application and full proposal/application preparation instructions, and general administrative information. Specific submission information and additional administrative requirements can be found in the document titled “General Submission Instructions” available in Grants.gov along with this BAA. This FY16 BAA is continuously open for a 12-month period, from October 1, 2015 through September 30, 2016, at 11:59 p.m. Eastern Time. Submission of a pre-proposal/pre-application is required and must be submitted through the electronic Biomedical Research Application Portal (eBRAP) (https://eBRAP.org/). Pre-proposals/pre-applications may be submitted at any time throughout the 12-month period. If the USAMRMC is interested in receiving a full proposal/application, the PI will be sent an invitation to submit via eBRAP. A full proposal/application must be submitted through Grants.gov
Invited full proposals/applications can be submitted under the FY16 BAA through September 30, 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**

**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). **Open to May 31, 2017**

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

**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 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.

**BAA-16-100-SOL-00002 Broad Agency Announcement (BAA) for the Advanced Development of Medical Countermeasures for Pandemic Influenza- BARDA**

BARDA ([full announcement](http://www.phe.gov/Preparedness/mcm/phemce/Documents/2014-phemce-sip.pdf)) encourages the advanced research, development and acquisition of medical countermeasures such as vaccines, therapeutics, and diagnostics, as well as innovative approaches to meet the threat of Pandemic Influenza in support of the preparedness mission and priorities of the HHS Public Health Emergency Medical Countermeasures Enterprise (PHEMCE) articulated in the 2014 PHEMCE Implementation Plan. The Implementation Plan is located on the ASPR website: [http://www.phe.gov/Preparedness/mcm/phemce/Documents/2014-phemce-sip.pdf](http://www.phe.gov/Preparedness/mcm/phemce/Documents/2014-phemce-sip.pdf)

The Pandemic and All Hazard Preparedness Act Pub. L. No. 109-417, 42 U.S.C. § 241 et seq. (PAHPA; [http://www.gpo.gov/fdsys/pkg/PLAW-109publ417/pdf/PLAW-109publ417.pdf](http://www.gpo.gov/fdsys/pkg/PLAW-109publ417/pdf/PLAW-109publ417.pdf)) and The Pandemic and All Hazard Preparedness Reauthorization Act Pub. L. No. 113-5, (PAHPRA; [http://www.gpo.gov/fdsys/pkg/PLAW-113publ5/pdf/PLAW-113publ5.pdf](http://www.gpo.gov/fdsys/pkg/PLAW-113publ5/pdf/PLAW-113publ5.pdf)) authorizes BARDA to (i) conduct ongoing searches for, and support calls for, potential qualified countermeasures and qualified pandemic or epidemic products; (ii) direct and coordinate the countermeasure and product advanced research and development activities of the Department of Health and Human Services; (iii) establish strategic initiatives to accelerate countermeasure and product advanced research and development (which may include advanced research and development for purposes of fulfilling requirements under the Federal Food, Drug, and Cosmetic Act or section 351 of this Act) and innovation in such areas as the Secretary may identify as priority unmet need areas; and (iv) award contracts, grants, cooperative agreements, and enter into other transactions, for countermeasure and product advanced research and development.

Development Area of Interest: The purpose of this BAA is to solicit proposals that focus on one or more of the following area of interest as listed below: Development Area of Interest; Personal Protective Equipment (Mask and Respirators) for Influenza Infection for All-Hazards; Full-Featured Continuous Ventilators for Influenza and All-Hazards; Influenza Test Systems and
Diagnostic Tools; Influenza Therapeutics; Influenza Vaccines BARDA anticipates that research and development activities awarded from this Broad Agency Announcement (BAA) will serve to advance the knowledge and scientific understanding of candidates' to protect the civilian population of the United States against pandemic influenza and serve to advance candidate medical countermeasures towards licensure or approval by the Food and Drug Administration (FDA). **Open to Oct. 24, 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 (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.

**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, 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**

**Farmland 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 Airm - Research Lab**

The Air Force Research Laboratories and 711th Human Performance Wing are soliciting white papers (and later technical and cost proposals) on the following research effort. This is an open ended BAA. The closing date for submission of White Papers is 17 Nov 2019. This program deals with science and technology development, experimentation, and demonstration in the areas of improving and personalized individual, team, and larger group instructional training methods for airmen. The approaches relate to competency definition and requirements analysis, training and rehearsal strategies, and models and environments that support learning and proficiency achievement and sustainment during non-practice of under novel contexts. This effort focuses on measuring, diagnosing, and modeling airman expertise and performance, rapid development of models of airman cognition and specifying and validating, both empirically and practically, new classes of synthetic, computer-generated agents and teammates. An Industry Day was held in November 2014. Presentation materials from the Industry Day and Q&A's are attached. If you would like a list of Industry Day attendees, send an email request to helen.williams@us.af.mil **Open until November 17, 2019.**
What We Do--

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

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

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

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

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

- **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

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