Check Out Our eBook! New Faculty Guide to Competing for Research Funding provides an invaluable tool to faculty writing research grants, or for use by research offices developing grantwriting workshops to help faculty write more competitive proposals. View Table of Contents and Order

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When researchers consider whether or not to resubmit a declined proposal, they often mistakenly assume that “tweaking” the original narrative in response to reviewers’ comments will make it competitive. However, in most cases, declined proposals are not likely next in line for funding if only sufficient money could be found to fund one more worthy project. While Band Aid solutions to declined proposals may take significantly less time for all involved in the resubmission, they amount to the least competitive resubmission strategy possible. Tweaking in response to rejection underestimates not only the amount of work required to salvage a declined proposal but also the degree of improvement over the original that will be required to achieve competitiveness.

For example, if the funding rate for any particular program, say at NSF, is 10%, then a declined proposal has been ranked among the 90% that were not funded. So, for every 100 proposals submitted to a program that funds 10% of applicants, your declined proposal puts you among the 90% of unfunded applicants. In this example, you have absolutely no way of knowing precisely where your proposal is ranked among those not funded. Was your declined proposal 11th or 100th in line for funding? Where exactly did your declined proposal fall along the number line from 11 to 100?

You might glean some information from the reviews that will give you confidence in making some very general assumptions about your proposal’s competitiveness, particularly at agencies that provide an overall numerical score as compared to agencies using a ranking system involving terms such as excellent, very good, good, fair, and poor, or some variant of these. Regardless, when a proposal is declined, the ambiguity and “noise” in the review system make it all but impossible to determine how close you actually came to being funded. It’s therefore prudent to assume that the further your declined proposal sits from “next in line for funding,” the less appropriate it is to apply such minor fixes as tweaking, nudging, and Band Aids in hopes of achieving a competitive metamorphosis. Magically turning a frog into a prince works in Brothers Grimm fairy tales and Disney movies, but not so well in research narratives.

Moreover, it is helpful to keep in mind that your likely competitors for the next program due date will include a significant number of the 90 percent of those whose proposals were also declined in the last competition. In this context, keep in mind the old adage about success being 10% inspiration and 90% perspiration, or, as Thomas Edison said, “many of life’s failures are people who did not realize how close they were to success when they gave up.”

In proposal writing, not giving up most often means refusing the easy road of tweaks, nudges, and Band Aids in an attempt to save time and effort. Keep in mind that those who transform a declined proposal to a successful proposal in the next competition will likely be those who put in the hard work, or perspiration, of transforming the declined proposal into an essentially new proposal. After all, the goal is a metamorphosis of the declined proposal into a funded proposal, or transitioning a somewhat non-descript chrysalis sac (declined proposal) into a beautiful butterfly (funded proposal). The most likely outcome of using tweaks, nudges,
and Band Aids on a declined proposal is nothing more than turning a previously declined proposal into a newly declined proposal.

If a compelling idea is disguised in a declined proposal, set it free by unshackling it from the original project narrative so that it might better flourish in a new project narrative that both addresses the reviewers’ comments and reflects the growth of your research idea since the last submission. If a research idea has remained static over the year between annual due dates, then the new submission will lose its competitive edge. Successful proposals advance new ideas in the context of a disciplinary field that is also rapidly advancing. Tweaks, nudges, and Band Aids characterize static research rather than compelling research.

Moreover, the structure, logic, rationale, and arguments advanced in a declined proposal should be assumed insufficient for a new effort. After all, they were rejected by the reviewers in their original version. Unfortunately, proposals have the shelf life of refrigerated fish, degrading rapidly after the date of submission and soon becoming obsolete. A declined proposal requires a deep rethinking of the research ideas and how to best present them. That means starting anew.
BAA Overview

The Broad Agency Announcement (BAA) is a competitive solicitation used by many federal mission agencies to obtain proposals for (1) basic and applied research, and (2) development unrelated to building a specific system or procuring hardware. Agencies may use BAAs to fulfill their requirements 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. Many BAAs are issued annually and remain open for a period of one year. In other cases, BAAs remain open until superseded. Typically, the BAA:

- Describes the agency’s research interest, either for an individual program requirement or for broadly defined areas of interest covering the full range of the agency’s requirements;
- Describes the application and submission process, particularly any requirements for approval waypoints, such as quad-charts, white papers, preliminary proposals, and preapplications required to be invited to submit a full proposal;
- Describes the criteria for selecting the proposals, their relative importance, and the method of evaluation;
- Specifies the period of time during which proposals submitted in response to the BAA will be accepted;
- Designates a Point of Contact (POC) specific to agency research topic areas. **BAAs typically encourage potential applicants to contact the agency POC to discuss the relevance of their research to the agency mission priorities before preparing proposals**

BAAs tend to be lengthy and very detailed documents, sometimes over 100 pages, soliciting research proposals reflecting the strategic research plans of the particular agency over a period of years. (See the end of this article for more links to currently open BAAs.) For example, the Naval Science and Technology Strategic Plan describes how the Office of Naval Research (ONR) sponsors scientific research efforts through the currently open Long Range BAA for Navy and Marine Corps Science and Technology 13-001. In other cases, such as the Office of Science in the Department of Energy, an annual Funding Opportunity Announcement (FOA) is issued, e.g., the currently open FY 2013 Continuation of Solicitation for the Office of Science Financial Assistance Program. The FOA is essentially another version of the BAA and follows the same general content format as described above.

Under this FOA, for example, the DOE’s Office of Science announces its continuing interest in receiving grant applications supporting work in the following program areas: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, Nuclear Physics, and Workforce Development for Teachers and Scientists.
Proposals received as a result of a BAA are evaluated in accordance with criteria specified in the BAA through a peer or scientific review process. Written evaluation reports on individual proposals are typically given, but proposals are not evaluated against one another, since they are not submitted in accordance with a common work statement. The primary basis for selecting proposals is most often technical merit, importance to agency programs and mission, and fund availability. Cost realism and reasonableness are also considered.

The Role of BAAs in Your Funding Strategies

Several competitive advantages can be gained by those who take the time to read carefully through BAAs soliciting ideas in topic areas of interest to federal mission agencies and the defense agencies realized through basic research (6.1), applied research (6.2) and advanced technology development (6.3).

First, the extensive discussions in BAAs that address the spectrum of general research topics of interest to the agency in furthering its critical mission areas provide an excellent insight into the overarching research themes representing potentially fundable ideas at the specific agency. Unlike a research solicitation identifying one specific research topic and narrowly defining it in terms of an agency’s interests, BAAs are more global and general in listing research topic areas of interest. As such, they give researchers more opportunity to consider how their research might first map to some of the general topic areas listed in the BAA, and then, through discussions with a program officer or other designated Point of Contact, to narrow the research scope to best fit a specific research area of interest to the agency. This process can then be further defined if the agency shows interest in a proposed idea by inviting the researcher to submit a preliminary description of her research, often through a brief white paper answering core questions such as those described in Heilmeier's Catechism:

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

Secondly, BAAs typically reference key agency documents through embedded URLs providing you with more information on those research areas that best address the agency’s mission-critical research objectives. This often occurs when the agency demonstrates the BAA’s grounding in the agency strategic research plan, as in the ONR example above. Understanding the research mission and culture of a funding agency, particularly multiple mission agencies, such as those devoted to defense, will be a critical factor in the competitiveness of your discussions with a program officer, or in the writing of a white paper.
and any subsequent invited full proposals. If the mantra of success in real estate is “location, location, location,” then the mantra for success at the mission research agencies is “context, context, context.” To the extent that you are able to embed your research ideas in the mission-critical context of the agency, demonstrating how those ideas will bring value-added benefits to the agency’s mission, you will strengthen your competitiveness.

Third, understanding and responding to BAAs represents another arrow in your quiver of identifying potential funding opportunities. It represents another process to master that will better position you for research funding in the future, particularly if you encounter periods without published solicitations well fitted to your research ideas. In many ways, BAAs represent one version of unsolicited proposals, although they are positioned within the boundaries defined by an agency’s mission priorities.

Nonetheless, BAAs offer an opportunity to review a list of general research topics of interest to an agency, to explore how your research within one of the research topic areas might map to the mission critical domain of the particular agency, to identify the value-added benefits your research could bring to the agency mission priorities, and to propose a research project using one of the various mechanisms by which the agency considers responses to the BAA. These mechanisms would likely begin by discussing ideas with a program officer, and would use an intermediary approval gate, such as a brief abstract or a brief white paper, reviewed by a program officer to determine whether you would be invited to submit a full proposal to the agency.

Example Links to Open BAAs

**Army Research Laboratory (ARL) BAAs**

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

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

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

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

Air Force Research Laboratory, Directed Energy Directorate

University Small Grants Broad Agency Announcement

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

NPS Broad Agency Announcements (BAAs)
A fundable idea will be compelling in its significance to the field and/or will bring important value-added benefits to the funding agency’s mission. Funding agencies don’t fund small ideas offering small advances to the field, or modest value-added benefits to the agency’s mission-critical objectives. Agencies want to fund [pick your superlative: exciting, game changing, big, novel, transformative, innovative…] ideas.

You will therefore want to write the project narrative keeping in mind reviewers’ interest in how your ideas could impact the field, and/or how they will bring value-added benefits to the agency’s objectives. The reviewers will base their assessment of your proposal on your ability to demonstrate its significance or value-added benefits relative to those comprising the current state of the field, or the agency’s mission context.

In this regard, keep in mind that significance and value-added benefits must be demonstrated within the context of an agency’s mission and of the current state of knowledge in your discipline. They will not be demonstrated by bestowing glowing adjectives upon your own ideas, or by making unsupported claims about the novelty of those ideas in the current state of the field. If glowing adjectives appear at all, they should be found in the reviews, not in the proposal. Reviewers may bestow superlatives upon your proposal, but they must never be self-bestowed. The detail and specificity of the disciplinary and agency contexts within which you position your ideas will illuminate the importance of your proposed research far better than any undemonstrated claims you may make about its merits.

Moreover, it is common for authors of research narratives to over-write the general background narrative and under-write the research context narrative. While understandable, this tendency can seriously weaken a proposal. It is often easier to write a general introductory background to the research field than it is to describe the importance of the proposed research in the context of the current state of the field. The context that needs to be described in your research narrative and the place of your research in that context should reveal how your ideas lie at the cutting edge of the field. After all, research agencies fund projects that advance the field in some significant way.

Consequently, to increase the chances that reviewers will attach glowing adjectives to your research ideas, they must understand the place of your ideas in the context of the field’s current state. This places several requirements on the author of a research narrative: first and foremost, the researcher must demonstrate a clear knowledge of the field’s current state, or the current state of the agency’s mission-critical objectives, and must be able to describe that current context clearly, succinctly, and convincingly to reviewers. It also requires that the author of a research narrative present a vision that advances the field in some important way, and to make that case to reviewers in a clear, succinct, and convincing narrative.

In turn, this requires the author of the research narrative to make several judgments: most importantly, the researcher must calibrate the description of the research context to the expertise resident on the review panel, both to individual reviewers and to the group as a
whole. This calibration holds the key to success. If the description underestimates reviewers’ backgrounds, it squanders valuable space in a page-limited project. However, if the description of the research context appears technically inaccessible to some or all of the reviewers, it will also diminish the proposal’s competitiveness. The proposal’s author must first make a reasonable assessment of the general level of research expertise on the review panel and then must describe for that review panel both the current state of the research field and the place of the proposed research in that context in clear and simply stated language.

Three items should appear in a clear statement of how the proposed research will advance the field: (1) a description of the principal investigator’s fully integrated research vision; (2) a judicious number of citations woven precisely into that description; and (3) a clearly written statement illuminating the disciplinary context within which the research will be performed, revealing to reviewers how your research ideas will contribute to the field and therefore merit funding.
Stereotypical scientists and engineers are famously unconcerned with superficial appearances. We may feel that content, not appearances, are what count, and that attitude often manifests itself in how our proposals look. While it may seem reasonable to expect reviewers to focus on your ideas and research plan and not on how the proposal looks, it’s important to remember that every reader will have an initial emotional—and perhaps unconscious—reaction to your proposal when he first looks at it, and that initial attitude can affect the entire reading experience. In addition, formatting can make a dramatic difference in how easy it is for the reader to follow and understand your proposal. Below are some tips on how to use formatting to make your proposal more compelling, appealing, and easy to follow.

**Formatting: the Emotional Factor**

Current psychological research is providing fascinating insights into how people make complex decisions and the strong role that emotions and the unconscious have in the decision making process. It’s hard to think of a more complex decision than whether to fund a grant proposal. So put yourself in the place of the reviewer. You have already read three proposals, and you’re getting tired. You turn to the next proposal, and it looks like this:

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**Project Description**

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\[ M(p(t), q(t), t) = 0, \quad M(p(t), q(t), t) = 0 \]
What would your emotional reaction be to facing this block of dense text? Perhaps dismay – “Oh no, I’ve got to wade through this text before I get to go to bed.” Or it might be hostility – “This author doesn’t care about me, the reader.” Add some misspellings and typos to that, and you’ll get downright anger – “This PI didn’t care enough to use spell check, and I’m giving up sleep to read this stuff.” It’s probably safe to say that your reaction won’t be, “Oh good, this PI has a lot to tell me and decided to use every available inch to pack as much information as possible into her proposal, and I get to read it!”

Now, what if the proposal looks more like this:

Not only are you likely to think, “This proposal looks interesting!” but you are also likely to make unconscious judgments about the competence of the author (“This proposal looks polished and the PI seems to really know what she’s doing”). Before you’ve even read a word of the proposal, you’re starting with a positive attitude.

However, this is not to say that having more figures, headings, and white space is always better. The proposal format must fit within the culture of the particular agency and discipline.
For example, consider your reaction if you’re a reviewer for NSF and you open the following proposal:

**Project Description**

**INTRODUCTION AND OVERVIEW**

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**Figure 1:** This figure doesn’t say much but it gives visual appeal

**Figure 2:** This figure explains our approach

Although this formatting is visually appealing, the fact that it’s double spaced (which is allowed according to NSF’s formatting guidelines but is not normally done) immediately marks it as “not belonging” to NSF culture. As a reviewer, your first reaction is likely to be, “This is from someone who isn’t one of us and doesn’t understand how things are done at NSF.” It will then be extremely difficult for the PI to convince you that this proposal should be recommended funding. Further, including figures that don’t communicate useful information may give the impression that you don’t have enough content to fill the allotted pages and really don’t have a rigorous project plan.

A corollary of the above is the importance of following the agency’s formatting rules. NSF specifies allowed fonts, margin sizes, etc. in its **Grant Proposal Guide** (note that MS Word’s default font, Calibri, is not allowed). Similarly, NIH specifies formatting rules for their proposals in the **SF424 R&R** instructions (page I-20). If you don’t follow formatting rules, even if you’re lucky and your proposal isn’t rejected outright, you will irritate your reviewers and mark your proposal as “not belonging” as we discussed above. Some agencies don’t specify font even though they may specify page limits. In that case, try to find a funded proposal to the agency or
talk to someone who had been funded in order to find out what fonts are customarily used. If all else fails, it’s usually safe to stick with Times New Roman or Arial.

Interestingly, an informal experiment conducted by Errol Morris at the New York Times demonstrated that the font used has a strong effect on the reader’s assessment of the reliability of the information delivered. Not surprisingly, fonts typically used in informal situations such as Comic Sans rated lowest on credibility. Very old fashioned fonts, such as Baskerville, ranked best, perhaps because they unconsciously reminded readers of text book or encyclopedia fonts from their youth.

Another formatting issue that can stir a lot of debate is whether to right justify or have a “ragged right” margin. Accepted wisdom is that text with a ragged right margin is easier to read; however, in some disciplines right justification is strongly preferred because of its neat appearance. This is another case where you’ll want to conform to the culture of your agency and discipline. In some disciplines, both options are used about equally, in which case you should simply choose the option that you like best.

Formatting for Clarity

Good formatting is also an extremely helpful tool in guiding the reader through your proposal. Your project may be very complex, with multiple objectives, parallel tasks, and so forth, so it can be easy to lose the reader (particularly a tired one). To avoid that, your proposal should have a very clear structure, and formatting should help reinforce that structure. Formatting can also be used to help the reviewer find your main points and navigate easily to the places where you explicitly and succinctly address the review criteria.

Before you start writing your proposal, make an outline and decide what style you’ll use for each level of heading. For example, your highest level headings might be Arial 14 point bold; the next level down might be Arial 12 point; the next level could be Arial 10 underlined, and so forth. (There is no requirement that the headings have the same font as the text as long as all fonts used are allowed according to the formatting instructions.) These differences in style can provide easy, intuitive clues to the reader about where they are in the proposal. However, it’s important that you keep these styles consistent, or you risk confusing the reader. Using MS Word’s style feature can help you keep track of the styles for each heading level.

It can also be helpful to the reader to use numbered headings, with subsections indicated through decimal points, as in:

2. Research Plan
Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

2.1 Phase 1 – Characterization of Nanoparticles
Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat

2.1.1 Chemical Testing
Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat
Or use letters and numbers combined:

A. Research Plan  
A.1 Phase 1 – Characterization of Nanoparticles  
A.1.1 Chemical Testing

However, it’s generally not a good idea to take this scheme more than three levels down. For example, a heading like this is more likely to distract than inform the reader:

2.1.3.4 Differential Scanning Calorimetry Testing

Some people use indents to signal to the reader the level of the section, such as:

2. Research Plan  
  2.1 Phase 1 – Characterization of Nanoparticles  
    2.1.1 Chemical Testing

However, this can make headers harder to find as a reviewer scans through the document. Remember that not every header needs to have a number or letter label. For example, you can use only formatting as you get down to the lowest level sections:

A. Research Plan  
A.1 Phase 1 – Characterization of Nanoparticles  
A.1.1 Chemical Testing  
Differential Scanning Calorimetry

To save space, you can also use in-line heading such as:

Differential Scanning Calorimetry: Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo

Remember also to use space to help the reader’s eye find new sections and subsections. The section label should have some white space above it, but it should also have less white space between it and the text it heads so that it’s clear at first glance that the header and text belong together. In fact, too much white space can be as confusing as too little since it can make it harder for the reader to track the text. For example, note how the following spacing actually makes things harder for the reader:

2. Research Plan

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

2.1 Phase 1 – Characterization of Nanoparticles

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud
Typically, most PIs struggle to fit their proposals into the designated page limit, so white space can seem like a costly luxury. Luckily, a small amount of white space can be as effective as a larger amount. If you’re struggling to get those last three lines to fit, consider reducing 10 pt spaces above headers to 6 pts, and changing 6 pt spaces below headers to 3 pts (you can do this in Word by editing the paragraph settings in your style or directly). If you’ve included spaces between your paragraphs, to save space you might also consider using first line indents for paragraphs within sections rather than spaces between paragraphs. This usually works well as long as you have done a good job labeling subsections so that you still avoid large uninterrupted blocks of text.

Next month, we’ll talk about the use of figures, lists and bullets.
SERDP Solicits Proposals for FY 2014 Funding

The Strategic Environmental Research and Development Program (SERDP) released solicitations on October 25, 2012 seeking proposals for FY 2014 funding. Announced through a Federal Call for Proposals and a Broad Agency Announcement, this program offers funds through a competitive process open to both federal and private sector organizations seeking support for basic and applied research and advanced technology development.

SERDP is DoD’s environmental science and technology program, planned and executed in partnership with DOE and EPA, with participation by numerous additional federal and nonfederal organizations. SERDP invests across a broad spectrum of basic and applied research, as well as advanced development.

Core SERDP projects vary in cost and duration consistent with the scope of the work proposed. The Statements of Need (SON) referenced by the solicitation requests 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). For the Core solicitation, all preproposals are due to SERDP January 8, 2013.

The SERDP Exploratory Development (SEED) Solicitation provides funding opportunities for work that will investigate innovative environmental approaches entailing high technical risk or requiring supporting data to establish proof of concept. Funding is limited to not more than $150,000 and projects run approximately one year in duration. This year, SERDP is requesting SEED proposals for the Munitions Response (MR) and Weapons Systems and Platforms (WP) program areas. All SEED proposals are due March 12, 2013.

SERDP Federal Call for Proposals:

Core Solicitation
Preproposals due January 8, 2013
• Executive Working Group Call for Proposals Memorandum
• Statements of Need (SON)
• How to Submit a Federal Core Proposal

SEED Solicitation
Proposals due March 12, 2013
• Executive Working Group Call for Proposals Memorandum
• Statements of Need (SON)
• How to Submit a Federal SEED Proposal

SERDP Nonfederal Broad Agency Announcement
Core Solicitation
Preproposals due January 8, 2013
- Broad Agency Announcement
- Statements of Need (SON)
- How to Submit a BAA Core Proposal

SEED Solicitation
Proposals due March 12, 2013
- Broad Agency Announcement
- Statements of Need (SON)
- How to Submit a BAA SEED Proposal

Observations on DOD and STEM Education
The recently available prepublication report, *Assuring the U.S. Department of Defense a Strong Science, Technology, Engineering, and Mathematics (STEM) Workforce*, by the National Academies Press, offers an excellent resource for anyone interested in submitting STEM education proposals to federal agencies. This 194-page report exhaustively addresses such key topics as emerging science and technology fields, historical trends in the STEM workforce, institutional capacities related to STEM education, and preparing the STEM workforce, among many other key topics relevant to a context much broader than the DOD STEM workforce needs that motivated this report.

While the report focuses on DOD STEM needs, it is just as valuable as a resource base for those engaged in STEM educational grant writing, or research offices supporting those who write STEM educational grants, or provide STEM components embedded in larger research grants. The “broader impacts” of this report include a very comprehensive discussion of STEM educational needs from an historical perspective in the U.S.; exhaustive data, graphs, charts, and other visuals to support the arguments made in the report; an identification of critical STEM areas of the next decade and longer; and a discussion of key training requirements needed for the future STEM workforce, particularly related to experiences in cross-disciplinary teams and laboratory research experiences.

For example, this report identifies rapidly expanding areas with the potential to provide far-reaching and pervasive new technologies that will significantly impact the STEM skills needed by DOD and its industrial base over the coming decade (download free pdf here). According to the report, five cutting-edge science and engineering technological systems likely to impact DOD capabilities include: (1) information technology, (2) autonomous systems, (3) systems biology, (4) innovative materials, and (5) efficient manufacturing. These interdisciplinary technologies require basic research expertise interwoven with engineering innovation to realize the potential for new DOD capabilities. For example, the section of the report on innovative materials discusses applications of nanotechnology; the section on systems biology addresses the human-machine interface; and the sections on autonomous systems and systems biology discuss energy.

Advances in the technology areas relevant for future DOD capabilities, such as those described above, require knowledge from multiple disciplines, according to the report. Most overlap with the commercial sphere, making DOD simply another competitor to attract high-
tech talent. Teams of dedicated individuals with distinct knowledge bases should work together to apply cutting-edge science and engineering to solve DOD problems. For example, the report notes that the **STEM workforce needs training for cross-disciplinary teamwork**. The report recommends that DOD encourage interdisciplinary collaborations at all career stages in both academic and government laboratories through support of interdisciplinary projects, academic and on-the-job learning opportunities, and interdisciplinary career rewards.

This report will serve as a useful reference for anyone working on proposals specific to STEM education or inclusive of a STEM education component. The discussion, arguments, and exhaustive supporting data are current, and will likely remain so for several years. Moreover, while the discussion is specific to the DOD STEM workforce of the future requirements, the overarching themes apply universally within STEM.

**How Program Solicitation Changes Impact Proposal Development**

There is an old adage that generals often prepare to fight the last war. Unfortunately, a similar situation may occur when even experienced applicants mistakenly assume that a program solicitation funded annually for many years has remained static over the life of the solicitation. This can result in ideas put forward during the proposal development process that are backward rather than forward looking. Research and educational proposals are fundamentally about ideas. Ideas should (and do) advance over time, as should, by extension, solicitations. Within this context, many solicitations of interest to universities request educational proposals or proposals that are hybrids of research and educational objectives.

For example, the NSF Alliances for Graduate Education and the Professoriate (AGEP) program due last month and the NSF Advancing Informal STEM Learning program due this January have both been funded for over a decade. Both program solicitations have evolved considerably by going through several incarnations, most notably the social research component now required for the current AGEP and the informal science program name change.

Therefore, it is always best to assume that solicitations change over time, and even in cases where the language of a solicitation remains unchanged for several years, it is a safe bet that the ideas the agency views as competitive will be selected under increasingly rigorous standards related to programmatic expectations. After all, funding agencies learn from the projects they fund, and they use the knowledge gained from program reviews and assessments of currently funded projects to better hone and revise current solicitations to accurately reflect the agency’s research and/or educational mission.

In some cases, changes to an existing solicitation can be minor, while in other cases, the changes are significant. Consider the new NSF AGEP solicitation and the central role social science and educational research will now play in projects proposed by successful applicants to that program. In still other cases, changes to a solicitation can be more subtle, perhaps involving an expanded listing of reports, studies, and workshops referenced in the solicitation as underpinning the conceptual framework for the program, or as representing models of particular interest to the agency. To note the changes and modifications made to open BAAs by the defense and other mission agencies, subscribe to the [Grants.gov RSS feed](https://grants.gov) **Modified Opportunities by Agency**. This subscription will provide you with a listing of recently modified opportunities by agency name.
Two NIH landmark studies show power of epidemiology research; underscore need to address health disparities

Big Data: A Workshop Report
In 2012, the Defense Intelligence Agency (DIA) approached the National Research Council's TIGER standing committee and asked it to develop a list of workshop topics to explore the impact of emerging science and technology. From the list of topics given to DIA, three were chosen to be developed by the Committee for Science and Technology Challenges to U.S. National Security Interests. The first in a series of three workshops was held on April 23-24, 2012. This report summarizes that first workshop which explored the phenomenon known as big data.

The objective for the first workshop is given in the statement of task, which explains that that workshop will review emerging capabilities in large computational data to include speed, data fusion, use, and commodification of data used in decision making. The workshop will also review the subsequent increase in vulnerabilities over the capabilities gained and the significance to national security. The committee devised an agenda that helped the committee, sponsors, and workshop attendees probe issues of national security related to so-called big data, as well as gain understanding of potential related vulnerabilities. The workshop was used to gather data that is described in this report, which presents views expressed by individual workshop participants.

Big Data: A Workshop Report is the first in a series of three workshops, held in early 2012 to further the ongoing engagement among the National Research Council's (NRC's) Technology Insight-Gauge, Evaluate, and Review (TIGER) Standing Committee, the scientific and technical intelligence (S&TI) community, and the consumers of S&TI products.

NSF FY-2013 SBIR Program Solicitations Opens
The National Science Foundation (NSF) began accepting proposals in response to their FY-2013 SBIR solicitation on November 3, 2012. The deadline for receipt of proposals is December 3, 2012. As indicated in the solicitation, which is available at, NSF has formulated broad solicitation topics for SBIR that conform to the high-technology investment sector's interests. The four broad topics are:

- Biological and Chemical Technologies (BC)
- Education Applications (EA)
- Electronics, Information and Communication Technologies (EI)
- Nanotechnology, Advanced Materials, and Manufacturing (NM)

A series of webinars have been held recently to answer questions about the current Phase I solicitation and the submission process. The presentation from the latest webinar can be found in MS WORD format at here. The NSF FY-2013 STTR will also open soon. NSF will accept
proposals from November 20 to December 20, 2012, however, a letter of intent (LOI) must be submitted on or before November 20 in order to submit a full proposal. The STTR research topic for this solicitation is *Enhancing the Bioeconomy using emerging Biological Technologies (EBBT)*. Proposals must use a biologically-based approach, such as synthetic biology, systems biology, metabolic engineering, proteomics, bioinformatics, and computational biology, to address business opportunities in key industry sectors including biomedical, biomanufacturing, and sustainable agriculture. For more information, visit the [NSF SBIR/STTR website](#).

**SBIR Proposal Writing Basics: Articles**

- Jan. 6, 2012: [*What Does the SBIR/STTR Reauthorization Mean for Your Company?*](#)
- Feb. 17, 2012: [*Navigating the Appearance of Waste, Fraud or Abuse*](#)
- Mar. 9, 2012: [*SBIR/STTR Reauthorization vs. Reality*](#)
- April 18, 2012: [*Caution if you are using Human Subjects in your SBIR/STTR project*](#)
- May 18, 2012: [*Always Charge an Indirect Rate & a Profit on your SBIR/STTR Proposal*](#)
- June 14, 2012: [*Resubmitting a Proposal to NIH*](#)
- July 27, 2012: [*NIH Grant Submission Caution, DOE Deadline Looms*](#)
- Aug. 30, 2012: [*Don’t Be an Easy Target for a Fraud, Waste & Abuse Witch Hunt*](#)
- Sept. 28, 2012: [*Reducing Your Indirect Costs by Serving Jail*](#)
- Oct. 27, 2012: [*Allocating Pages for NIH Grant Proposals*](#)
Writing educational grants to federal agencies and foundations is helped by developing a knowledge base of proven and successful educational models and STEM standards at the K-12, community college, and university level.

**Developing a Vision of Pre-College Engineering Education**

The results of a study focused on identifying and articulating an “epistemic foundation” underlying a pre-collegiate focus on engineering. We do so in the context of UTeachEngineering (UTE), a program supported in part by funding by the National Science Foundation and designed to develop a model approach to address the systematic challenges facing this work—from identifying learning goals, to certifying pre- and in-service teachers for engineering courses to developing a research-based high school engineering course. Given the systemic nature of the UTE approach, this model is positioned to serve as a starting point to further the conversation around two of the National Academy of Engineering Committee on Standards in K-12 Engineering Education (2010) central recommendations for future work in this area: (1) Identification of core ideas in engineering, and (2) creation of guidelines for instructional materials. Toward that end, project faculty and staff were interviewed and/or surveyed about their views on the goals and outcomes of engineering and engineering teacher education, as well as strategies design to reach these goals and the warrants for them. Data were analyzed following a grounded protocol. The results align well with previous efforts to identify “core engineering concepts, skills, and dispositions for K-12 education” (National Academy of Engineering Committee on Standards in K-12 Engineering Education, 2010, Annex to Chapter 3).

**Considerations for Teaching Integrated STEM Education**

Quality Science, Technology, Engineering, and Mathematics (STEM) education is vital for the future success of students. Integrated STEM education is one way to make learning more connected and relevant for students. There is a need for further research and discussion on the knowledge, experiences, and background that teachers need to effectively teach integrated STEM education. A support, teaching, efficacy, and materials (s.t.e.m.) model of considerations for teaching integrated STEM education was developed through a year-long partnership with a middle school. The middle school was implementing Project Lead the Way's Gateway to Technology curriculum. The s.t.e.m. model is a good starting point for teachers as they implement and improve integrated STEM education.

**A Model for Professional Development to Promote Engineering Design as an Integrative Pedagogy within STEM Education**

Engineering design activities can help educators to apply concepts and processes from within and across STEM domains. To facilitate these connections, there is a need for sustained, job-embedded, and collegial professional development that brings together teachers from across STEM domains to engage in design-based activities. These activities can help teachers better understand engineering design processes and can foster collaborations. This can lead to
a culture shift within the school by which integration of STEM concepts and process becomes more seamless for both educators and their students. This paper describes a research-based model for professional development to promote engineering pedagogy to support learning of STEM concepts within and across domains.

**2014 Abridged Technology And Engineering Literacy Framework For The 2014 National Assessment Of Educational Progress**

Because of the growing importance of technology and engineering in the educational landscape, and to support America's ability to contribute to and compete in a global economy, the National Assessment Governing Board initiated development of the first national assessment in Technology and Engineering Literacy. Relating to national efforts in science, technology, engineering, and mathematics (STEM) fields, the NAEP Technology and Engineering Literacy assessment measures the "T" and "E" in STEM, augmenting longstanding NAEP assessments in science and mathematics.

**Engineer Your World: An Innovative Approach to Developing a High School Engineering Design Course**

As standards for K-12 engineering learning emerge with the development of the Next Generation Science Standards, the nation's school systems will likely struggle with the question of whether engineering should be employed as a tool for teaching science and mathematics content (i.e., embedded in science and mathematics courses) or treated as a unique discipline in which science and mathematics are employed as tools for solving design challenges (i.e., offered as a standalone course). Acting on the belief that the latter paradigm is a more appropriate depiction of engineering, the UTeachEngineering project at The University of Texas undertook to demonstrate how rigorous engineering content can be deployed in secondary classrooms by developing a year-long high school engineering course built on a foundation of solid research in the learning sciences, couched in the context of a rigorous engineering design process and scaffolded to build engineering skills and habits of mind.
RFI - Conversion Technologies for Advanced Biofuels (CTAB)
The purpose of this request for information (RFI) to obtain input from stakeholders and the research community regarding technologies for the deconstruction of lignocellulosic biomass to intermediates and for the upgrading of biomass derived intermediates to hydrocarbon transportation fuels and blendstocks, as summarized in the accompanying draft Conversion Technologies for Advanced Biofuels (CTAB) Roadmap. In addition to this, this RFI is requesting all stakeholders with an opportunity to contribute their views and opinions regarding the draft roadmap from the U. S. Department of Energy as a result of its CTAB road mapping workshop held December 6-8, 2011. Although the DOE may determine as the result of this RFI to issue a formal Funding Opportunity Announcement, there is no guarantee that future funding opportunities or other activities will be undertaken as a result of this RFI. **Respond by November 19.**

FAA Centers of Excellence
Notice of Public Meeting: Establishment of the FAA Center of Excellence (COE) for Environment and Energy (E&E). The FAA is forming a Center of Excellence for Environment and Energy during FY-13. The COE will be a consortium of the FAA, university partners, and private industry affiliates selected by the FAA Administrator to work collectively on business and operational issues of mutual interest and concern. The FAA will discuss COE and technical requirements at a Public Meeting conducted on November 15 and 16 in the Washington, DC area. Contact Patricia.Watts@faa.gov for further information regarding the COE Program, or to register for the COE Public Meeting or to receive additional information, contact jessica.shaw@faa.gov. Potential applicants are encouraged but not required to attend this meeting. **Read more.**

Request for Information: Establishing Centers of Excellence on Environment and Health Disparities
The National Institute on Minority Health and Health Disparities (NIMHD) is considering establishing new Centers of Excellence on Environment and Health Disparities with potential Federal partners. These interdisciplinary Centers will lead to new evidence-based strategies for alleviating system drivers of racial and socioeconomic disparities in environmentally mediated health outcomes (environmental health) and access to health and sustainable environments. The goal of this Request for Information (RFI) is to seek public comment on research topics and approaches these Centers could adopt in conducting the research for consideration in the development and implementation of these Centers. Information obtained via this RFI will help to improve the design of the Centers and ensure utility and productivity, and overall value to the scientific community and the public health.

Dear Colleague Letter: National Science Foundation and National Institute of Justice Collaboration in the Social, Behavioral and Forensic Sciences
NSF is pleased to announce that on September 10th, NSF's Directorate for the Social, Behavioral & Economic Sciences and the Department of Justice's National Institute of Justice, (NIJ) signed a Memorandum of Understanding that outlines a framework for cooperation and collaboration in the social, behavioral, and forensic sciences. NSF and NIJ have distinct but complementary missions. NSF focuses on promoting the progress of science to advance the national health, prosperity and welfare and to secure the national defense, while NIJ seeks to provide objective and independent knowledge and tools to reduce crime and promote justice, particularly at the state and local levels. By working together, the two agencies can build on one another's strengths and leverage resources to identify and support innovative, cutting-edge social and forensic science research on crime, violence and victimization.

The MOU provides an opportunity for joint review and co-funding, and for seamless communication with PIs whose work may better fit the mission of the other agency. As initial steps to facilitate this partnership, NSF's Law & Social Sciences Program will coordinate with NIJ to share information about workshops and symposia of common interest; identify reviewers and workshop participants from the other agency's network of scholars; co-sponsor sessions at professional conferences; and share information about the other agency's programs with our communities. Future directions include jointly funding topical workshops and research proposals, and development of new initiatives designed to catalyze high-quality, original scholarship in the area of criminology and criminal justice.

**Frequently Asked Questions** for **NSF 13-506**: IOS Core Programs Solicitation

1. What types of proposals in IOS require preliminary proposals?
2. Why did IOS change the submission guidelines from the previous twice yearly full proposal submission process?
3. Are all BIO divisions switching to the new preliminary proposal solicitation?
4. My funding request is a competitive renewal application for a previously NSF-funded research project. Do I need to submit a preliminary proposal?
5. Can I submit a preliminary proposal to NSF for a project that was submitted to or is under review at another agency?
6. How many preliminary proposals may I submit?
7. What is the definition of a PI/co-PI?
8. How many full proposals may I submit?
9. What feedback will I receive on my preliminary proposal?
10. What criteria will panelists use to evaluate preliminary proposals?

**Attention SAMHSA Grant Applicants**

Electronic Grant Application Submission Requirements

Beginning in Fiscal Year 2013, SAMHSA discretionary grant applications must be submitted electronically through Grants.gov. SAMHSA will not accept paper applications, except when a waiver of this requirement is approved by SAMHSA.
Applicants may request a waiver of the requirement for electronic submission if they are unable to submit electronically through the Grants.gov portal because their physical location does not have adequate access to the Internet. Inadequate Internet access is defined as persistent and unavoidable access problems/issues that would make compliance with the electronic submission requirement a hardship. The process for applying for a waiver is described below and will be included in each Request for Applications (RFA). Questions on applying for a waiver may be directed to the Division of Grant Review, 240-276-1199.

A 'DARPA' Approach to U.S. Foreign Aid
In a further move to bolster the role of science and technology in foreign aid, the U.S. Agency for International Development (USAID) today announced major awards at seven universities in the United States and abroad to support "development labs" that will design innovative, low-cost approaches to improving health and reducing poverty and conflicts. "This is USAID trying to build a DARPA [Defense Advanced Research Projects Agency] for development," says Alex Dehgan, the agency's science adviser. The USAID program is for $130 million over 5 years, with a 60% required match from the universities. Each of the seven institutions will receive grants of up to $5 million a year for projects aimed at developing useful technologies.
The competitiveness of proposals can be enhanced by grounding the arguments you make in the proposal narrative, as appropriate, on national reports, agency research roadmaps, and research workshops that demonstrate your understanding of the national research agenda and how your research advances and maps to that agenda.

**Effects of Climate Change on U.S. National Security**
Climate change can reasonably be expected to increase the frequency and intensity of a variety of potentially disruptive environmental events—slowly at first, but then more quickly. It is prudent to expect to be surprised by the way in which these events may cascade, or have far-reaching effects. Over the coming decade, some climate-related events will produce consequences that exceed the capacity of affected societies or global systems to manage; these may have global security implications. Although focused on events outside the United States, *Climate and Social Stress: Implications for Security Analysis* recommends a range of research and policy actions to create a whole-of-government approach to increasing understanding of complex and contingent connections between climate and security, and to inform choices about adapting to and reducing vulnerability to climate change.

**Exploring Health and Environmental Costs of Food: Workshop Summary**
The U.S. food system provides many benefits, not the least of which is a safe, nutritious and consistent food supply. However, the same system also creates significant environmental, public health, and other costs that generally are not recognized and not accounted for in the retail price of food. These include greenhouse gas (GHG) emissions, soil erosion, air pollution, and their environmental consequences, the transfer of antibiotic resistance from food animals to human, and other human health outcomes, including foodborne illnesses and chronic disease. Some external costs which are also known as externalities are accounted for in ways that do not involve increasing the price of food. But many are not. They are borne involuntarily by society at large. A better understanding of external costs would help decision makers at all stages of the life cycle to expand the benefits of the U.S. food system even further. The Institute of Medicine (IOM) and the National Research Council (NRC) with support from the U.S. Centers for Disease Control and Prevention (CDC) convened a public workshop on April 23-23, 2012, to explore the external costs of food, methodologies for quantifying those costs, and the limitations of the methodologies.

**Assuring the U.S. Department of Defense a Strong Science, Technology, Engineering, and Mathematics (STEM) Workforce**
The ability of the nation's military to prevail during future conflicts, and to fulfill its humanitarian and other missions, depends on continued advances in the nation's technology base. A workforce with robust Science, Technology, Engineering and Mathematics (STEM) capabilities is critical to sustaining U.S. preeminence. Today, however, the STEM activities of the Department of Defense (DOD) are a small and diminishing part of the nation's overall science and engineering enterprise. *Assuring the U.S. Department of Defense a Strong Science,
Technology, Engineering, and Mathematics (STEM) Workforce presents five principal recommendations for attracting, retaining, and managing highly qualified STEM talent within the department based on an examination of the current STEM workforce of DOD and the defense industrial base. As outlined in the report, DOD should focus its investments to ensure that STEM competencies in all potentially critical, emerging topical areas are maintained at least at a basic level within the department and its industrial and university bases.

Large-Scale Production of Biofuels Made From Algae Poses Sustainability Concerns; Further Innovations Needed to Reach Full Potential
Scaling up the production of biofuels made from algae to meet at least 5 percent -- approximately 39 billion liters -- of U.S. transportation fuel needs would place unsustainable demands on energy, water, and nutrients, says a new report from the National Research Council. However, these concerns are not a definitive barrier for future production, and innovations that would require research and development could help realize algal biofuels' full potential. Biofuels derived from algae and cyanobacteria are possible alternatives to petroleum-based fuels and could help the U.S. meet its energy security needs and reduce greenhouse gas emissions, such as carbon dioxide (CO₂). Algal biofuels offer potential advantages over biofuels made from land plants, including algae's ability to grow on non-croplands in cultivation ponds of freshwater, salt water, or wastewater. The number of companies developing algal biofuels has been increasing, and several oil companies are investing in them. Given these and other interests, the National Research Council was asked to identify sustainability issues associated with large-scale development of algal biofuels.

Advancing Strategic Science: Spatial Data Infrastructure Roadmap for U.S. Geological Survey
Science is increasingly driven by data, and spatial data underpin the science directions laid out in the 2007 U.S. Geological Survey (USGS) Science Strategy. A robust framework of spatial data, metadata, tools, and a user community that is interactively connected to use spatial data in an efficient and flexible way--known as a spatial data infrastructure (SDI)--must be available for scientists and managers to find, use, and share spatial data both within and beyond the USGS. Over the last decade, the USGS has conducted breakthrough research that has overcome some of the challenges associated with implementing a large SDI. Advancing Strategic Science: A Spatial Data Infrastructure Roadmap for the U.S. Geological Survey is intended to ground those efforts by providing a practical roadmap to full implementation of an SDI to enable the USGS to conduct strategic science.
New Funding Solicitations Posted Since October 15 Newsletter

Long Range Broad Agency Announcement for Navy and Marine Corps Science and Technology
This BAA is intended for proposals related to basic research, applied research, or advanced technology development. Open to September 2013.

FY 2013 Coastal Resilience Networks
The purpose of this notice is to solicit grant proposals from eligible organizations to implement activities that enhance resilience of coastal communities to natural hazard and climate risks through a regional or national network. Proposals must leverage, enhance, or create a system in which one or more coastal hazard issues can be addressed through partnerships to improve coordination and collaboration throughout the region. Partnerships must include multiple institutions, disciplines, and sectors at the local, state, and federal level. Proposals submitted in response to this announcement should provide beneficial public outcomes for coastal communities to address existing and potential future climate and hazard risks to coastal infrastructure, local economies, vulnerable populations, and the natural environment. Eligible funding applicants are: regional authorities, nonprofit and for-profit organizations, institutions of higher education, and state, territorial, and county/local governments. The funding applicants must conduct projects in one or more of the following three U.S. regions: the U.S. Flag Pacific Islands (Hawaii, American Samoa, Guam, Commonwealth of the Northern Mariana Islands), Gulf of Mexico Coast (Alabama, Gulf Coast of Florida, Louisiana, Mississippi, and Texas) and West Coast (California, Oregon, and Washington). LOI Nov. 19; full January 11.

National Physical Science Consortium Graduate Fellowships
The National Physical Science Consortium is a partnership between government agencies and laboratories, industry, and higher education. NPSC's goal is to increase the number of American citizens with graduate degrees in the physical sciences and related engineering fields, emphasizing recruitment of a diverse applicant pool including women and minorities. Closes by November 30.

Climate Change Education Partnership Alliance Office (CCEPA Office)
In FY 2012, NSF funded six Phase II Climate Change Education Partnership (CCEP-II) projects. The PI's, Co-PI's and significant partners of the six CCEP-II projects constitute the CCEP network. The lead PI's for the six projects comprise the CCEP Alliance (CCEPA), which will convene on a regular basis in order to identify common needs and opportunities for collaboration across the
CCEP network. Key to the success of this networked approach is the creation of a CCEP Alliance Office (CCEPA Office), which will: facilitate communication among the projects participating within the CCEP-II network; enable and nurture cross-project coordination and collaboration, such as assisting with data collection for a program-wide evaluation undertaken by NSF; and, support dissemination of resources developed by the CCEP-II network to the larger scientific community and the public. The CCEPA Office is also expected to foster coordination of CCEP-II activities with the larger climate change education community. **Preliminary due December 6; full February 5.**

**Center of Excellence (CoE) in Guided-Wave Infrared Sources**

This replaces the referenced number: BAA-RQKSE-2013-02, published in FBO on 9/11/2012). The Air Force Research Laboratory, Sensors Directorate (AFRL/RY) and the Air Force Office of Scientific Research (AFOSR) seek applicants to provide a Center of Excellence in the development of guided-wave infrared sources. It is anticipated that successful bidders will propose tasks in both the basic and applied research domains associated with the broad categories of infrared waveguides and/or fibers for low-loss optical transmission, lasers, nonlinear conversion devices and beam control devices. Wavelength regimes of interest are those consistent with atmospheric transmission windows as well as organic and inorganic absorption in the 2-12 micron region. It is also anticipated that successful bidders will have significant experience in education of students in technical areas of interest. Successful bidders will also demonstrate a willingness to make results of research available to the technical community at large through activities such as frequent seminars, publications and presentations at conferences. Program Engineer: William Mitchell, AFRL/RYMWA, (937) 528-8660 or email: william.mitchell@wpafb.af.mil. "General OPSEC procedures, policies and awareness is required in an effort to reduce program vulnerability from successful adversary collection and exploitation of critical information. OPSEC will be applied throughout the lifecycle of the contract. **Due December 7.**

**Historically Black Colleges and Universities - Undergraduate Program**

The Historically Black Colleges and Universities Undergraduate Program (HBCU-UP) is committed to enhancing the quality of undergraduate STEM education and research at HBCUs as a means to broaden participation in the nation's STEM workforce. To this end, HBCU-UP provides awards to develop, implement, and study evidence-based innovative models and approaches for improving the preparation and success of HBCU undergraduate students so that they may pursue STEM graduate programs and/or careers. Support is available for Targeted Infusion Projects, Broadening Participation Research Projects, Research Initiation Awards, Implementation Projects or Achieving Competitive Excellence Implementation Projects, and other funding opportunities. **Preliminary due December 10; full February 11.**

**Fulbright-Hays Seminars Abroad--Bilateral Projects**

The program provides short-term study and travel seminars abroad for U.S. educators in the social sciences and humanities for the purpose of improving their understanding and knowledge of the peoples and cultures of other countries. Support is generally made available
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through interagency agreements. The Department of Education transfers funds through the State Department to Fulbright commissions in various countries to pay the costs associated with administering seminars. This partnership allows the program to use the services and expertise of binational organizations to plan and conduct seminars for U.S. educators. Due December 10.

FY13 Nancy Foster Scholarship Program
The Dr. Nancy Foster Scholarship Program provides support for independent graduate-level studies in oceanography, marine biology, or maritime archaeology (including all science, engineering, social science and resource management of ocean and coastal areas), particularly to women and minorities. Individuals who are U.S. citizens and are applying to or have been accepted to a graduate program at a U.S. accredited institution may apply. Prospective scholars do not need to be enrolled in a graduate program at the time of application, but must be admitted to a graduate level program in order to be awarded this scholarship. Scholarship selections are based on academic excellence, letters of recommendations, research and career goals, and financial need. Applicants must have and maintain a minimum cumulative and term grade point average of 3.5 and maintain full-time student status for every term, and for the duration of their award. Dr. Nancy Foster Scholarships may provide, subject to appropriations, yearly support of up to $42,000 per student (a 12-month stipend of $30,000 in addition to an education allowance of up to $12,000), and up to $10,000 of support for a four to six week program collaboration at a NOAA facility. Due December 11.

DOE SBIR/STTR FY 2013 Phase II Release 1
The Department of Energy invites only DOE SBIR/STTR Phase I Release I Awardees from FY 2012 to submit Phase II grant applications. The purpose of Phase II is to perform the research and development required to meet the DOE objectives stated in the technical topic of the Phase I Funding Opportunity Announcement (FOA). In addition, it is intended that the small business grantee would be in a position to pursue commercial applications of the R&D at the end of Phase II. In many cases, Phase II results in a prototype product or a working process that can be demonstrated to a potential investor or customer (either in the private sector or in the Federal government, including the Department of Energy). This FOA is supplemental to the FY 2012 SBIR/STTR Phase I Release I FOA (DE-FOA-0000577); therefore, general information already provided in the FY 2012 FOA also applies to this Phase II process. If a conflict arises, this Phase II FOA will govern. Due December 11.

Analytical Chemistry Graduate Fellowship Program
The American Chemical Society Division of Analytical Chemistry Graduate Fellowship Program is designed to encourage basic research in the field of analytical chemistry, to promote the growth of analytical chemistry in academic institutions and industry, and to provide recognition of future leaders in the field of analytical chemistry. The program has endeavored to be a model of the benefits of cooperation between the academic and industrial communities, with chemical companies employing Ph.D. analytical chemists sponsoring the fellowships for outstanding analytical graduate students. The Graduate Fellowship Committee of the ACS
Division of Analytical Chemistry, which is comprised of representatives from the sponsoring companies, analytical faculty from undergraduate institutions, and scientists from national laboratories, evaluate the applications and make the fellowship awards. Both nine-month ($21,000) and summer ($7,000) fellowships are available. Due by December 14.

**Desalination and Water Purification Research and Development Pre-proposal Solicitation**
The U.S. Department of the Interior, Bureau of Reclamation (Reclamation), is currently requesting pre-proposals sponsored by the Desalination and Water Purification Research and Development Program (DWPR). Through this program, Reclamation is forming partnerships with private industry, universities, water utilities, and others to address a broad range of desalting and water purification needs. The intent of the program is to augment the supply of usable water in the United States. This will be accomplished by reducing the costs, improving operation and reliability, and developing innovations in desalination and water purification technologies. The Water Desalination Act of 1996 defines the following important terms: (1) Desalination or desalting means “the use of any process or technique for the removal and, when feasible, adaptation to beneficial use, of organic and inorganic ... compounds from saline or biologically impaired waters, by itself or in conjunction with other processes” and (2) Saline water means “sea water, brackish water, and other mineralized or chemically impaired water.” Due January 3.

**Fiscal Year 2013 Office of Naval Research Young Investigator Program (YIP)**
The Office of Naval Research (ONR) is interested in receiving proposals for its Young Investigator Program (YIP). ONR’s Young Investigator Program (YIP) seeks to identify and support academic scientists and engineers who are in their first or second full-time tenure-track or tenure-track-equivalent academic appointment and for FY2013, have begun their first appointment on or after 01 November 2007, and who show exceptional promise for doing creative research. The objectives of this program are to attract outstanding faculty members of Institutions of Higher Education to the Department of the Navy’s research program, to support their research, and to encourage their teaching and research careers. Proposals may request up to $170,000 per year for three (3) years. These funds may be budgeted against any reasonable costs related to the conduct of the proposed research, for example, salary for the Young Investigator, graduate student support, supplies, and operating expenses. Additional funds (beyond the basic $170,000 yearly amount) for capital equipment which enhances the Young Investigator’s proposed research may be requested for the first budget period, based on the needs of the research. Due January 4.

**Environmental Justice Small Grants Program**
The Environmental Justice Small Grants Program, supports and empowers communities working on solutions to local environmental and public health issues. The program assists recipients in building collaborative partnerships to help them understand and address environmental and public health issues in their communities. Successful collaborative partnerships involve not only well-designed strategic plans to build, maintain and sustain the
partnerships, but also working towards addressing the local environmental and public health issues. **Due January 7.**

**Ocean Sciences Research Initiation Grants (OCE-RIG), Broadening Participation**
The Division of Ocean Sciences (OCE) offers Research Initiation Grants in an effort to increase the participation of under-represented groups in the ocean sciences. Research Initiation Grants provide start up funding for researchers who have been recently appointed to tenure track (or equivalent) positions, with the twin goals of enhancing the development of their research careers and broadening the participation of under-represented groups in ocean sciences. In this solicitation, the term under-represented groups will refer to and include the following: women, persons with disabilities, African Americans, Hispanics, Native Americans, Alaska Natives, and Pacific Islanders. **Replaces Document: NSF 11-578 Due January 14.**

**Ocean Sciences Postdoctoral Research Fellowships (OCE-PRF) Broadening Participation**
The Division of Ocean Sciences (OCE) offers Postdoctoral Research Fellowships to increase the participation of under-represented groups in the ocean sciences. Awards are intended to support the individual fellows' research and increase the diversity of the U.S. ocean sciences research community. In this solicitation, the term under-represented groups will refer to and include the following: women, persons with disabilities, African Americans, Hispanics, Native Americans, Alaska Natives, and Pacific Islanders. Fellowships are awards to individuals, not organizations, and are administered by the fellows. **Due January 14.**

**Museum Grants for African American History and Culture**
Museum Grants for African American History and Culture are intended to enhance institutional capacity and sustainability through professional training, technical assistance, internships, outside expertise, and other tools. Successful proposals will focus on one or more of the following three goals: (1) developing or strengthening knowledge, skills, and other expertise of current staff at African American museums; (2) attracting and retaining professionals with the skills needed to strengthen African American museums; and (3) attracting new staff to African American museum practice and providing them with the expertise needed to sustain them in the museum field. **Due January 15.**

**Autonomous Diagnostics to Enable Prevention and Therapeutics: Prophylactic Options to Environmental and Contagious Threats (ADEPT-PROTECT)**
DARPA is soliciting proposals for the development of nucleic acid platforms capable of in vivo host production of a transient immune prophylaxis for adults as a component of the Autonomous Diagnostics to Enable Prevention and Therapeutics (ADEPT) program. **Due January 15.**

**EPSCoR Research Infrastructure Improvement Program: Track-2**
The Experimental Program to Stimulate Competitive Research (EPSCoR) is a program designed to fulfill the National Science Foundation’s (NSF) mandate to promote scientific progress nationwide. The EPSCoR program is directed at jurisdictions that have historically received
lesser amounts of NSF Research and Development (R&D) funding. Thirty-one jurisdictions including twenty-eight states, the Commonwealth of Puerto Rico, the U. S. Virgin Islands, and Guam currently are eligible to participate. Through this program, NSF establishes partnerships with government, higher education, and industry that are designed to effect lasting improvements in a state's or region's research infrastructure, R&D capacity and hence, its national R&D competitiveness. Due January 30.

**AHRQ Conference Grant Program (R13)**
The Agency for Healthcare Research and Quality (AHRQ), announces its interest in supporting conferences through the AHRQ Conference Grant Program. AHRQ seeks to support conferences that help to further its mission to improve the quality, safety, efficiency, and effectiveness of health care for all Americans. The types of conferences eligible for support include here. Due February 1.

**Robert Wood Johnson Foundation Nurse Faculty Scholars**
The goal of the Robert Wood Johnson Foundation Nurse Faculty Scholars (NFS) program is to develop the next generation of national leaders in academic nursing through career development awards for outstanding junior nursing faculty. The program aims to strengthen the academic productivity and overall excellence of nursing schools by providing mentorship, leadership training, and salary and research support to young faculty. Up to 12 awards of up to $350,000 each over three years will be available in this round of funding. Due February 12.

**Challenge Grants for Two-year Colleges**
The National Endowment for the Humanities invites two-year colleges to apply in a special Challenge Grant competition to strengthen their long-term humanities programs and resources. Two-year colleges are major educational assets that have too often been overlooked, even though over half of students in post-secondary education attend two-year institutions. The humanities can and should play a vital role in community colleges. The perspectives of history, philosophy, and literature can enrich the educational experience of students attending two-year colleges, deepening their understanding of questions related to differences among cultures, as manifested in diverse understandings of citizenship, politics, and ethics. NEH seeks to encourage two-year colleges to develop models of excellence that enhance the role of the humanities on their campuses. Due February 22.

**Fiscal year 2013 NMFS-Sea Grant Fellowships in Marine Resource Economics**
The Graduate Fellowship Program generally awards two new PhD fellowships each year to students who are interested in careers related to the development and implementation of quantitative methods for assessing the economics of the conservation and management of living marine resources. Fellows will work on thesis problems of public interest and relevance to NMFS under the guidance of NMFS mentors at participating NMFS Science Centers or Laboratories. The NMFS-Sea Grant Fellowships in Marine Resource Economics meets NOAA's Mission goal of "Protect, Restore and Manage the Use of Coastal and Ocean Resources Through Ecosystem-Based Management". Due February 22.
**Agriculture and Food Research Initiative: Foundational Program**
The U.S. Department of Agriculture (USDA) established the Agriculture and Food Research Initiative (AFRI) under which the Secretary of Agriculture may make competitive grants for fundamental and applied research, education, and extension to address food and agricultural sciences (as defined under section 1404 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA) (7 U.S.C. 3103)), as amended, in six priority areas. The six priority areas include: 1) plant health and production and plant products; 2) animal health and production and animal products; 3) food safety, nutrition, and health; 4) renewable energy, natural resources, and environment; 5) agriculture systems and technology; and 6) agriculture economics and rural communities. **Due May 22, 2013.**

**Links to New & Open Funding Solicitations**

- **SAMHSA FY 2012 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**
- **NIAID Funding Blog**
- **EPA 2012 Science To Achieve Results (STAR) Research Grants**
- **NASA Open Solicitations**
- **Defense Sciences Office Solicitations**
- **The Mathematics Education Trust**
- **Opportunities for Humanities Funding Announced**
- **EPA Open Funding Opportunities**
- **DOE Funding Opportunity Exchange**
- **CDMRP FY 2012 Funding Announcements**
- **Office of Minority Health**
- **Department of Justice Open Solicitations**
DOE/OS Early Career Research Program

The Office of Science of the Department of Energy hereby invites grant applications for support under the Early Career Research Program in the following program areas: Advanced Scientific Computing Research (ASCR); Biological and Environmental Research (BER); Basic Energy Sciences (BES), Fusion Energy Sciences (FES); High Energy Physics (HEP), and Nuclear Physics (NP). The purpose of this program is to support the development of individual research programs of outstanding scientists early in their careers and to stimulate research careers in the areas supported by the DOE Office of Science. Due November 26.

NSF Science, Engineering and Education for Sustainability Fellows

Through the SEES Fellows Program, NSF seeks to advance science, engineering, and education to inform the societal actions needed for environmental and economic sustainability and human well-being while creating the necessary workforce to address these challenges. The Program's emphasis is to facilitate investigations that cross traditional disciplinary boundaries and address issues of sustainability through a systems approach, building bridges between
academic inquiry, economic growth, and societal needs. The Fellow's proposed investigation must be interdisciplinary and allow him/her to obtain research experiences beyond his/her current core disciplinary expertise. Fellows are required to develop a research partnership(s) that will advance and broaden the impact/scope of the proposed research, and present a plan for their own professional development in the area of sustainability science and engineering. **Due November 26.**

**FY12 Air Force Defense Research and Development Rapid Innovation Fund (RIF) Program**
The National Defense Appropriation Act (NDAA) for FY2011, Section 1073, provided the Department of Defense (DoD) with the authorities to facilitate the rapid insertion of innovative technologies into military systems or programs meeting critical national security needs. The FY2012 NDAA, Section 4201, includes funding to support these efforts. Efforts awarded under this Broad Agency Announcement (BAA) should resolve operational challenges characterized by the national security areas of particular interest to the Air Force and Department of Defense. This BAA describes Air Force implementation of RIF and complies with guidelines established by OSD. **Due November 27.**

**Fall 2013 EPA Science to Achieve Results Fellowships for Graduate Environmental Study**
The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is offering Graduate Fellowships for master’s and doctoral level students in environmental fields of study. The deadline for submission of applications is November 27, 2012 at 11:59:59 PM. Subject to availability of funding and other applicable considerations, the Agency plans to award approximately 80 new fellowships in the late summer of 2013. Master’s level students may receive support for a maximum of two years. Doctoral students may be supported for a maximum of three years, usable over a period of five years. The fellowship program provides up to $42,000 per year of support per fellowship. **Due November 27.**

**Brownfields Area-Wide Planning Grant**
This notice announces the availability of EPA grant funds for projects from eligible entities to facilitate community involvement and conduct research, training and technical assistance necessary to develop area-wide plans and implementation strategies to facilitate brownfields assessment, cleanup, and subsequent reuse. Brownfields area-wide planning grant funding must be directed to specific areas affected by a single large or multiple brownfield sites, such as a neighborhood, downtown district, city block or local commercial corridor. The grant funding will result in an area-wide plan, including implementation strategies, for the brownfields-affected area. The brownfields area-wide plan will inform the assessment, cleanup and reuse of brownfields properties and promote area-wide revitalization. **Due November 30.**

**Fellowships at The Huntington 2013-2014**
The Huntington is an independent research center with holdings in British and American history, literature, art history, and the history of science and medicine. The Library collections range chronologically from the eleventh century to the present and include seven million manuscripts, 413,000 rare books, 275,000 reference works, and 1.3 million photographs, prints, and ephemera. The Burndy Library consists of some 67,000 rare books and reference volumes
in the history of science and technology, as well as an important collection of scientific instruments. Within the general fields listed above there are many areas of special strength, including: Middle Ages, Renaissance, 19th- and 20th-century literature, British drama, Colonial America, American Civil War, Western America, and California. The Art Collections contain notable British and American paintings, fine prints, photographs, and an art reference library. In the library of the Botanical Gardens is a broad collection of reference works in botany, horticulture, and gardening. **Due November 30.**

**World Bank Internships**
The Bank Internship offers highly motivated and successful individuals an opportunity to improve their skills while working in a diverse environment. Interns generally find the experience to be rewarding and interesting. To be eligible for the Internship, candidates must possess an undergraduate degree and already be enrolled in a full-time graduate study program (pursuing a Master's degree or PhD with plans to return to school in a full-time capacity. Generally, successful candidates have completed their first year of graduate studies or are already into their PhD programs. This **Internship typically seeks candidates in the following fields**: economics, finance, human development (public health, education, nutrition, population), social science (anthropology, sociology), agriculture, environment, private sector development, as well as other related fields. Fluency in English is required. Prior relevant work experience, computing skills, as well as knowledge of languages such as French, Spanish, Russian, Arabic, Portuguese, and Chinese are advantageous. **Due December 1 to January 31.**

**Cyber-Enabled Sustainability Science and Engineering**
The Cyber-Enabled Sustainability Science and Engineering (CyberSEES) program aims to advance interdisciplinary research in which the science and engineering of sustainability are enabled by new advances in computing, and where computational innovation is grounded in the context of sustainability problems. The CyberSEES program is one component of the National Science Foundation's Science, Engineering, and Education for Sustainability (SEES) activities, a foundation-wide effort aimed at addressing the challenge of sustainability through support for interdisciplinary research and education. In the SEES context, a sustainable world is one where human needs are met equitably without harm to the environment or sacrificing the ability of future generations to meet their own needs. **Required LOI due Dec. 4; full due Feb. 5.**

**Fall 2013 EPA Greater Research Opportunities (GRO) Fellowships For Undergraduate Environmental Study**
The U.S. Environmental Protection Agency (EPA), as part of its Greater Research Opportunities (GRO) Fellowships program, is offering undergraduate fellowships for bachelor level students in environmental fields of study. The deadline for receipt of applications is December 5, 2012, at 11:59:59 PM ET. Subject to availability of funding and other applicable considerations, the Agency plans to award approximately 40 new fellowships in the summer of 2013. Eligible students will receive support for their junior and senior years of undergraduate study and for an internship at an EPA facility during the summer of their junior year. The fellowship provides
up to $20,700 per academic year of support and $8,600 of support for a three-month summer internship. Due December 5.

**Scholarly Editions and Translations**
Scholarly Editions and Translations grants support the preparation of editions and translations of pre-existing texts and documents of value to the humanities that are currently inaccessible or available in inadequate editions. These grants support full-time or part-time activities for periods of a minimum of one year up to a maximum of three years. Projects must be undertaken by a team of at least one editor or translator and one other staff member. Grants typically support editions and translations of significant literary, philosophical, and historical materials, but other types of work, such as musical notation, are also eligible. Due December 6.

**NEH Collaborative Research**
Collaborative Research Grants support interpretive humanities research undertaken by a team of two or more scholars, for full-time or part-time activities for periods of a minimum of one year up to a maximum of three years. Support is available for various combinations of scholars, consultants, and research assistants; project-related travel; field work; applications of information technology; and technical support and services. All grantees are expected to communicate the results of their work to the appropriate scholarly and public audiences. Due December 6.

**10th Annual P3 Awards: A National Student Design Competition for Sustainability Focusing on People, Prosperity and the Planet**
The U.S. Environmental Protection Agency (EPA), as part of the P3—People, Prosperity and the Planet Award Program, is seeking applications proposing to research, develop, and design solutions to real world challenges involving the overall sustainability of human society. The P3 competition highlights the use of scientific principles in creating innovative projects focused on sustainability. The P3 Award program was developed to foster progress toward sustainability by achieving the mutual goals of economic prosperity, protection of the planet, and improved quality of life for its people-- people, prosperity, and the planet -- the three pillars of sustainability. The EPA offers the P3 competition in order to respond to the technical needs of the world while moving towards the goal of sustainability. Please see the P3 website for more details about this program. Due December 11.

**National Robotics Initiative (NRI)**
The goal of the National Robotics Initiative is to accelerate the development and use of robots in the United States that work beside, or cooperatively with, people. Innovative robotics research and applications emphasizing the realization of such co-robots acting in direct support of and in a symbiotic relationship with human partners is supported by multiple agencies of the federal government including the National Science Foundation (NSF), the National Aeronautics and Space Administration (NASA), the National Institutes of Health (NIH), and the U.S. Department of Agriculture (USDA). The purpose of this program is the development of this next generation of robotics, to advance the capability and usability of such systems and artifacts, and to encourage existing and new communities to focus on innovative application areas. It will
address the entire life cycle from fundamental research and development to manufacturing and deployment. Methods for the establishment and infusion of robotics in educational curricula and research to gain a better understanding of the long term social, behavioral and economic implications of co-robots across all areas of human activity are important parts of this initiative. Collaboration between academic, industry, non-profit and other organizations is strongly encouraged to establish better linkages between fundamental science and technology development, deployment and use. **December 11 and January 23.**

**National Defense Science and Engineering Graduate (NDSEG) Fellowship**
The National Defense Science and Engineering Graduate (NDSEG) Fellowship is a highly competitive, portable fellowship that is awarded to U.S. citizens and nationals who intend to pursue a doctoral degree in one of fifteen supported disciplines. NDSEG confers high honors upon its recipients, and allows them to attend whichever U.S. institution they choose. NDSEG Fellowships last for three years and pay for full tuition and all mandatory fees, a monthly stipend, and up to $1,000 a year in medical insurance. The Department of Defense (DoD) is committed to increasing the number and quality of our nation's scientists and engineers, and towards this end, has awarded approximately 3,200 NDSEG fellowships since the program's inception 22 years ago. The NDSEG Fellowship is sponsored by the Air Force Office of Scientific Research (AFOSR), the Army Research Office (ARO), the High Performance Computing Modernization Program (HPCM), and the Office of Naval Research (ONR), under the direction of the Director of Defense Research and Engineering (DDR&E). **Due December 14.**

**National Defense Science and Engineering Graduate (NDSEG) Fellowship**
The NDSEG Fellowship is a highly competitive, portable fellowship that is awarded to U.S. citizens and nationals who intend to pursue a doctoral degree in one of fifteen supported disciplines. NDSEG confers high honors upon its recipients, and allows them to attend whichever U.S. institution they choose. NDSEG Fellowships last for three years and pay for full tuition and all mandatory fees, a monthly stipend, and up to $1,000 a year in medical insurance. The Department of Defense (DoD) is committed to increasing the number and quality of our nation's scientists and engineers, and towards this end, has awarded approximately 3,200 NDSEG fellowships since the program's inception 22 years ago. The NDSEG Fellowship is sponsored by the Air Force Office of Scientific Research (AFOSR), the Army Research Office (ARO), the High Performance Computing Modernization Program (HPCM), and the Office of Naval Research (ONR), under the direction of the Director of Defense Research and Engineering (DDR&E). **Due December 14.**

**Expeditions in Training, Research, and Education for Mathematics and Statistics through Quantitative Explorations of Data (EXTREEMS-QED)**
The long-range goal of EXTREEMS-QED is to support efforts to educate the next generation of mathematics and statistics undergraduate students to confront new challenges in computational and data-enabled science and engineering (CDS&E). EXTREEMS-QED projects must enhance the knowledge and skills of most, if not all, the institution's mathematics and statistics majors through training that incorporates computational tools for analysis of large
data sets and for modeling and simulation of complex systems. Funded activities are expected to provide opportunities for undergraduate research and hands-on experiences centered on CDS&E; result in significant changes to the undergraduate mathematics and statistics curriculum; have broad institutional support and department-wide commitment that encourage collaborations within and across disciplines; and include professional development activities for faculty or for K-12 teachers. Due December 14.

Global Hunger and Food Security Research Strategy: Climate Resilience, Nutrition, and Policy
This RFA focuses on climate resilience, nutrition, and policy objectives under the Research Strategy, and welcomes applications in the following specific Program Areas: Program Area No. Program Area 1 High-Yielding, Climate-Resilient Legumes (two distinct opportunities: soy and other legumes) 2 High-Yielding, Climate-Resilient Cereals 3 Increased Livestock Productivity through Climate Resilience and Disease Resistance (two distinct opportunities: vaccine development and breeding/genomics approaches) 4 Small-Scale Irrigation Technologies and Agricultural Water Management Practices 5 Reduced Post-Harvest Losses and Food Waste 6 Food Security Policy. Due December 21.

FY 12 Funding Opportunity For The National Consortium For Measurement And Signature Intelligence (MASINT) Research Program
FY12 Program: Offerors are invited to present related work, on-going research activities and proposed future activities associated with the following areas: (A) Remote assessment of missile performance characteristics such as location, thrust, throw weight, warhead accuracy, defensive capabilities, etc. (B) Remote assessment and detection of weapons of mass destruction such as nuclear, biological, chemical and radiological weapons. This thrust area does not include improvised explosive devices utilizing standard explosives such as dynamite, TNT, C4, ANFO, etc. (C) Remote assessment and detection of directed energy weapons. This would include all lasers that are primarily designed as weapons as well as high-powered microwave (HPM) and electromagnetic pulse (EMP) weapons. Open to Dec. 31, 2012.

Innovation Corps Sites Program (I-Corps Sites)
The National Science Foundation seeks to develop and nurture a national innovation ecosystem that builds upon research to guide the output of scientific discoveries closer to the development of technologies, products and processes that benefit society. In order to contribute to a national innovation ecosystem, NSF is establishing the NSF Innovation Corps Sites Program (NSF I-Corps Sites). Due January 7.

Small Business Technology Transfer Program Phase I Solicitation FY-2013 (STTR) Release: 2
The Small Business Technology Transfer program stimulates technological innovation in the private sector by strengthening the role of small business concerns in meeting Federal research and development needs, increasing the commercial application of federally supported research results, and fostering and encouraging participation by socially and economically disadvantaged and women-owned small businesses. The Small Business Technology Transfer Program (STTR) requires researchers at universities and other non-profit research institutions to play a
significant intellectual role in the conduct of each STTR project. These researchers, by joining forces with a small company, can spin-off their commercially promising ideas while they remain primarily employed at the research institution. The program is governed by Public Law 112-81 (SBIR/STTR Reauthorization Act of 2011). Required LOI January 8; full February 6.

**DARPA Strategic Technologies**
The Defense Advanced Research Projects Agency's (DARPA) Strategic Technology Office (STO) is soliciting innovative proposals under this Broad Agency Announcement (BAA) for the performance of research, development, design, and testing that directly supports Strategic Technology Office (STO). This includes Finding Difficult Targets; Communications, Networks and Electronic Warfare; Shaping the Environment; and Foundational Technologies that support multiple STO focus areas. DARPA-BAA-12-09, entitled Strategic Technologies, is provided as an attachment to this presolicitation notice and includes information on the specific areas of interest, the submission process, proposal formats, as well as all other pertinent administrative information. Open to January 12, 2013.

**SPIE Education Outreach Grants Program Supporting Optics And Photonics Related Education And Outreach Projects**
As part of its education outreach mission, SPIE provides support for optics and photonics related education outreach projects. The award process is competitive; applications are judged on their potential to impact students and increase optics awareness. The key criterion in evaluation and ranking applications is the potential to impact students and to increase optics and photonics awareness. Qualifying not-for-profit organizations such as universities, optics centers, science centers, primary and secondary schools, youth clubs, industry associations and international optical societies are eligible for project support. Due January 13, 2013.

**Coastal SEES (Coastal SEES) Science, Engineering and Education for Sustainability**
Coastal SEES is focused on the sustainability of coastal systems. For this solicitation we define coastal systems as the swath of land closely connected to the sea, including barrier islands, wetlands, mudflats, beaches, estuaries, cities, towns, recreational areas, and maritime facilities; the continental seas and shelves; and the overlying atmosphere. These systems are subject to complex and dynamic interactions among natural and human-driven processes. Coastal systems are crucial to regional and national economies, hosting valued human-built infrastructure and providing ecosystem services that sustain human well-being. More than half of the world’s human population lived in coastal areas in 2000, and this proportion is predicted to increase to 75 percent by 2025. Due January 13.

**Cyber-Physical Systems (CPS)**
Cyber-physical systems are engineered systems that are built from and depend upon the synergy of computational and physical components. Emerging CPS will be coordinated, distributed, and connected, and must be robust and responsive. The CPS of tomorrow will need to far exceed the systems of today in capability, adaptability, resiliency, safety, security, and usability. Examples of the many CPS application areas include the smart electric grid, smart
transportation, smart buildings, smart medical technologies, next-generation air traffic management, and advanced manufacturing. CPS will transform the way people interact with engineered systems, just as the Internet transformed the way people interact with information. However, these goals cannot be achieved without rigorous systems engineering. Due January 14.

**NEA FY 2013 Our Town**
Organizations may apply for creative placemaking projects that contribute to the livability of communities and place the arts at their core. An organization may request a grant amount from $25,000 to $200,000. Due January 14.

**DARPA Strategic Technologies**
The Defense Advanced Research Projects Agency's (DARPA) Strategic Technology Office (STO) is soliciting innovative proposals under this Broad Agency Announcement (BAA) for the performance of research, development, design, and testing that directly supports Strategic Technology Office (STO). This includes Finding Difficult Targets; Communications, Networks and Electronic Warfare; Shaping the Environment; and Foundational Technologies that support multiple STO focus areas. DARPA-BAA-12-09, entitled Strategic Technologies, is provided as an attachment to this presolicitation notice and includes information on the specific areas of interest, the submission process, proposal formats, as well as all other pertinent administrative information. [DARPA-BAA-12-09 at FedBizOpps](https://www.fedbiz.gov). Open through January 16, 2013.

**Centers for Water Research on National Priorities Related to a Systems View of Nutrient Management**
This Request for Applications (RFA) is soliciting proposals that take a systems view of nutrient management. A systems view of nutrient management considers every potential link in the breadth of possibilities that may influence water quality. These involve societal and technological considerations and may include, but are not limited to: local resources, prevailing land uses, watershed health, manure management, energy costs, municipal wastewater treatment, in-building water reuse, or nutrient resource recovery. A systems view would also consider valuation of monetized and non-monitized possible co-benefits and consequences (e.g., decreased sediment runoff, improved recreational value) which may be part of a nutrient management program. Proposed research areas should include:
- Science to achieve sustainable and cost effective health and environmental outcomes as part of water management.
- Demonstration projects to support efficacy of water management systems with and beyond current technology and information at appropriate scales.
- Community involvement in the design, acceptance and implementation of nutrient management systems.

Due January 15.

**Special Program Announcement for the Office of Naval Research**
The selected topics in this special notice are designed to address research and technology gaps in the area of nanoscience and nanotechnology in ONR’s current program portfolio. The program will pursue fundamental research in several specific topics that complement and enhance existing programs in related areas. The Office of Naval Research (ONR) is interested in receiving proposals on the following research topics: Topic #1 - Graphene Photonics in the Infrared and Terahertz Regime Topic #2 - Novel Nanomaterial Approaches to Processing of Ultra-High Temperature Materials Topic #3 - Nanoscale Non-Line-of-Sight Conformal Coatings with Controlled Electronic Properties. Due January 17.

**National Digital Newspaper Program**
NEH is soliciting proposals from institutions to participate in the National Digital Newspaper Program (NDNP). NDNP is creating a national digital resource of historically significant newspapers published between 1836 and 1922, from all the states and U.S. territories. Due January 17.

**Interdisciplinary Behavioral and Social Science Research (IBSS)**
The Interdisciplinary Behavioral and Social Science Research competition promotes the conduct of interdisciplinary research by teams of investigators in the social and behavioral sciences. Emphasis is placed on support for research that involves researchers from multiple disciplinary fields, that integrates scientific theoretical approaches and methodologies from multiple disciplinary fields, and that is likely to yield generalizable insights and information that will advance basic knowledge and capabilities across multiple disciplinary fields. Due January 23.

**Digital Humanities Implementation Grants**
This program is designed to fund the implementation of innovative digital-humanities projects that have successfully completed a start-up phase and demonstrated their value to the field. Such projects might enhance our understanding of central problems in the humanities, raise new questions in the humanities, or develop new digital applications and approaches for use in the humanities. The program can support innovative digital-humanities projects that address multiple audiences, including scholars, teachers, librarians, and the public. Applications from recipients of NEH’s Digital Humanities Start-Up Grants are welcome. Due January 23.

**The Bill and Rita Clements Research Fellowships for the Study of Southwestern America**
Fellowships are normally for a full academic year but we also welcome applications from scholars interested in a half-year fellowship. Competition is open to individuals in any field in the humanities or social sciences doing research on Southwestern America or the U.S.-Mexico borderlands. The fellowships are designed to provide time for senior or junior scholars to bring book-length manuscripts to completion. One of the fellowships, funded by the generosity of the Summerlee Foundation, supports work on Texas history. Due January 25.

**Mexican Partnership Program**
The United States Agency for International Development (USAID) Mission in Mexico is seeking concept papers and, later, applications from Mexican for-profit and non-for-profit organizations
to implement activities to support the Mexican Partnership Program related to global climate change, economic competitiveness, youth, human rights and rule of law. Eligible organizations include, but are not limited to, non-government organizations (NGOs), associations, cooperatives, universities, civil society organizations, foundations, and private companies. **Open to January 29, 2013.**

**GDA APS 2012 - Addendum Mexico**

Through this Addendum to the FY 2012 Global Development Alliance (GDA) Annual Program Statement (APS) No. APS-OAA-12-000003 (the GDA APS), USAID/Mexico is making a special call for the submission of concept papers related to the USG development pillars of private sector competitiveness, environment and education for work in Mexico. The objectives supported under this addendum are to: 1) help mitigate the effects of global climate change, with a focus on the energy and forestry sectors; 2) improve the availability, relevance and quality of youth leadership and workforce development programs in communities most affected by crime and violence; and 3) support Mexico’s implementation of a new criminal justice system. **Open to January 31, 2013.**

**The Lewis and Clark Fund for Exploration and Field Research**

The Lewis and Clark Fund (initially supported by the Stanford Ascherman/Baruch Blumberg Fund for Basic Science, established by a benefaction from the late Stanford Ascherman, MD, of San Francisco) encourages exploratory field studies for the collection of specimens and data and to provide the imaginative stimulus that accompanies direct observation. Applications are invited from disciplines with a large dependence on field studies, such as archeology, anthropology, biology, ecology, geography, geology, linguistics, paleontology, and population genetics, but grants will not be restricted to these fields. Graduate students and postdoctoral and junior scientists wishing to pursue projects in astrobiological field studies should consult the program description and application forms for the **Lewis and Clark Fund in Exploration and Field Research in Astrobiology. Due by February 1.**

**Interdisciplinary Research in Hazards and Disasters (Hazards SEES)**

The overarching goal of Hazards SEES is to catalyze well-integrated interdisciplinary research efforts in hazards-related science and engineering in order to improve the understanding of natural hazards and technological hazards linked to natural phenomena, mitigate their effects, and to better prepare for, respond to, and recover from disasters. The goal is to effectively prevent hazards from becoming disasters. Hazards SEES aims to make investments in strongly interdisciplinary research that will reduce the impact of such hazards, enhance the safety of society, and contribute to sustainability. The Hazards SEES program is a multi-directorate program that seeks to: (1) advance understanding of the fundamental processes associated with specific natural hazards and technological hazards linked to natural phenomena, and their interactions; (2) better understand the causes, interdependences, impacts and cumulative effects of these hazards on individuals, the natural and built environment, and society as a whole; and (3) improve capabilities for forecasting or predicting hazards, mitigating their
effects, and enhancing the capacity to respond to and recover from resultant disasters. Due February 4.

**Higher Education Challenge Grants Program**
Projects supported by the Higher Education Challenge Grants Program will: (1) address a State, regional, national, or international educational need; (2) involve a creative or non-traditional approach toward addressing that need that can serve as a model to others; (3) encourage and facilitate better working relationships in the university science and education community, as well as between universities and the private sector, to enhance program quality and supplement available resources; and (4) result in benefits that will likely transcend the project duration and USDA support. Due February 8.

**Camille Dreyfus Teacher-Scholar Awards Program**
The Camille Dreyfus Teacher-Scholar Awards Program supports the research and teaching careers of talented young faculty in the chemical sciences. Based on institutional nominations, the program provides discretionary funding to faculty at an early stage in their careers. Criteria for selection include an independent body of scholarship attained within the first five years of their appointment as independent researchers, and a demonstrated commitment to education, signaling the promise of continuing outstanding contributions to both research and teaching. The Camille Dreyfus Teacher-Scholar Awards Program provides an unrestricted research grant of $75,000. Due February 10.

**Hispanic-Serving Institutions (HSI) Education Grants Program**
This competitive grants program is intended to promote and strengthen the ability of Hispanic-Serving Institutions to carry out higher education programs in the food and agricultural sciences. Programs aim to attract outstanding students and produce graduates capable of enhancing the Nation's food and agricultural scientific and professional work force. Due February 18.

**Endangered Language Fund**
The Endangered Language Fund provides grants for language maintenance and linguistic field work. The work most likely to be funded is that which serves both the native community and the field of linguistics. Work which has immediate applicability to one group and more distant application to the other will also be considered. Publishing subventions are a low priority, although they will be considered. Proposals can originate in any country. The language involved must be in danger of disappearing within a generation or two. Endangerment is a continuum, and the location on the continuum is one factor in our funding decisions. Due April 22.

**Initiative for Conservation in the Andean Amazon Phase II**
The United States Agency for International Development (USAID) is seeking concept papers and later, applications, from Non-Governmental Organizations (NGOs), education institutions, partnerships and consortia to implement activities to support the Initiative for Conservation in the Andean Amazon (ICAA) with Landscape-based programs. Please note, at this time we are
not accepting full applications or proposals. Only concept papers will be reviewed. Instructions on how to prepare a concept paper are provided within this APS. Open to May 2, 2013.

**APS for Food Security, Nutrition, Biodiversity and Conservation**
The U.S. Agency for International Development (USAID) continues its commitment to foster more strategic alliances with the private sector’s “solution holders” who are often well positioned to address specific development challenges. The purpose of this APS is to announce USAID/Uganda’s plans to fund a limited number of Public Private Alliances to enhance food security and address issues of biodiversity and conservation. Competition under this APS will consist of a two-step process where applicants first submit a Concept Paper for an initial competitive review. All Concept Papers received will be evaluated for responsiveness to the application criteria specified in this APS. Open to September 15, 2013.

**National Oceanic and Atmospheric Administration (NOAA)**
The purpose of this notice is to request applications for special projects and programs associated with NOAA’s strategic plan and mission goals, as well as to provide the general public with information and guidelines on how NOAA will select proposals and administer discretionary Federal assistance under this Broad Agency Announcement (BAA). This BAA is a mechanism to encourage research, education and outreach, innovative projects, or sponsorships that are not addressed through our competitive discretionary programs. It is not a mechanism for awarding congressionally directed funds or existing funded awards. Open until September 30, 2013.

**National Geospatial-Intelligence Agency Academic Research Program**
The National Geospatial-Intelligence Agency (NGA) is releasing this solicitation for its sponsored academic research program. This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Department of Defense (DoD) Grant and Agreement Regulations (DoDGARs) 22.315(a). Awards will take the form of grants. However, other instruments may be considered as appropriate based on the proposals. Open to September 30, 2013.

**FY 2013 Continuation of Solicitation for the Office of Science Financial Assistance Program**
The Office of Science of the Department of Energy hereby announces its continuing interest in receiving grant applications for support of work in the following program areas: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, Nuclear Physics, and Workforce Development for Teachers and Scientists. This annual FOA DE-FOA-0000768 succeeds FOA DE-FOA-0000600, which was published September 30, 2011. Open to September 30, 2013.

**U.S. Army Medical Research and Materiel Command 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 Warfighter at home and abroad. 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 program plays 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 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 6.102(d)(2) and 35.016. This announcement provides a general description of USAMRMC's research programs, including research areas of interest; general information; proposal/application preparation instructions; and the evaluation and selection criteria. This fiscal year's BAA contains several changes from previous USAMRMC BAAs. Read each section carefully. Open to September 30, 2013.

**Long Range BAA for Navy and Marine Corps Science and Technology**
ONR is constantly looking for innovative scientific and technological solutions to address current and future Navy and Marine Corps requirements. We want to do business with educational institutions, nonprofit and for-profit organizations with ground-breaking ideas, pioneering scientific research and novel technology developments. The following list includes currently active broad agency announcements (BAAs) -- each announcement provides technical and contracting points of reference. Required: All BAAs incorporate a standardized template for the submission of technical and cost proposals for all contract awards. Guidance and assistance in completing the form and spreadsheet can be obtained from points of contact provided in the BAA. Download the forms (updated for 2012) | Email your feedback Open to September 30, 2013.

**FAA Center of Excellence for Environment and Energy**
The FAA is forming a Center of Excellence for Environment and Energy during FY-13. The COE will be a consortium of the FAA, university partners, and private industry affiliates selected by the FAA Administrator to work collectively on business and operational issues of mutual interest and concern. Due October 4, 2013.

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

**Research Interests of the Air Force Office of Scientific Research**
AFOSR solicits proposals for basic research through this general Broad Agency Announcement (BAA). This BAA outlines the Air Force Defense Research Sciences Program. AFOSR invites proposals for research in many broad areas. These areas are described in detail in Section I, Funding Opportunity Description. AFOSR is seeking unclassified, white papers and proposals that do not contain proprietary information. We expect our research to be fundamental. **Open until superseded.**

**DARPA Microsystems Technology Office-Wide**
The Microsystems Technology Office (MTO) supports DARPA’s mission of maintaining technological superiority and preventing technological surprise by investing in areas such as microelectromechanical systems (MEMS), electronics, system architecture, photonics, and biotechnology. In recent years, the proliferation of commercial components and manufacturing processes has allowed our adversaries to achieve capabilities that were previously not possible. **Open to September 1, 2014.**

**NINDS SBIR Technology Transfer (SBIR-TT [R43/R44])**
This Funding Opportunity Announcement (FOA) encourages Small Business Innovation Research (SBIR) grant applications from small business concerns (SBCs) for projects to transfer technology out of the NIH intramural research labs into the private sector. If selected for SBIR funding, the SBC will be granted a royalty-free, non-exclusive internal research-use license for the term of and within the field of use of the SBIR award to technologies held by NIH with the intent that the SBC will develop the invention into a commercial product to benefit the public. **Open November 5, 2011, to September 8, 2014.**

**Small University Grants Open 5-Year Broad Agency Announcement**
Open to August 26, 2015

**FY2011 – 2016 Basic Research for Combating Weapons of Mass Destruction (C-WMD) Broad Agency Announcement (BAA)**
This BAA is focused on soliciting basic research projects that support the DTRA mission to safeguard America and its allies from WMD (e.g., chemical, biological, radiological, nuclear, and high-yield explosives) by providing capabilities to reduce, eliminate, and counter the threat and mitigate its effects. **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.**
**ARL Core Broad Agency Announcement for Basic and Applied Scientific Research for Fiscal Years 2012 through 2017**

**Air Force Research Laboratory, Directed Energy Directorate**

**University Small Grants Broad Agency Announcement**

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

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

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

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

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