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**Post-Election Cost-Cutting Could Impact U.S. R&D Funding, AAAS Expert Reports**

The co-publishers offer a series of re-configurable, in-depth research development and grant writing workshops based on all published articles. [See workshop URL](#). Call or email for details.

If you have an idea for an article related to academic research development and grant writing you would like to write for RD&GWN email co-publisher Lucy Deckard with a query proposal of up to ~75 words. $100 honorarium paid for published articles.
The NSF Faculty Early Career Development (CAREER) Program: Selecting a Research Topic and an NSF Program

This is the first in a series of articles discussing various aspects of planning and preparing an NSF CAREER proposal.

The largest single grant program dedicated to junior faculty is the National Science Foundation’s CAREER program. In this article, we’ll describe the program’s basics, such as eligibility requirements, discuss how to select a research topic for the CAREER, and offer guidance on identifying the particular NSF program to which you should submit.

The Basics

NSF awards over 500 CAREER grants each year. These grants provide five years of funding (a minimum of $500,000 total for proposals submitted to the Biology Directorate and a minimum of $400,000 for all other proposals) to tenure-track, untenured faculty holding an assistant professor or equivalent position. Faculty may submit up to three applications for the grant as long as they have not already won a CAREER grant. NSF accepts proposals annually with a typical due date of mid-July. Links to the solicitation, an FAQ page, and abstracts of previously awarded CAREER projects can be found at NSF’s CAREER webpage. The solicitation for 2011 CAREER submissions hasn’t yet been released, but no significant changes to the previous solicitation are expected.

In an official sense, NSF awards CAREER grants in all areas of research normally supported by NSF, but in practice, some directorates fund more CAREER grants than others. Each directorate sets its own priorities, and some directorates place a strong emphasis on awarding CAREER grants to promising junior faculty, while others prefer to use “core” (or “unsolicited”) awards for that purpose (see a detailed discussion of the core awards in the September issue). Also, some directorates have larger budgets than others and are therefore able to fund more CAREER grants. Graphs showing numbers of proposals submitted and funded by the various directorates in recent years can be found in NSF’s CAREER presentation for the most recent Regional Grants Conference.

Selecting a Research Topic

Your research plan should address an area of interest to NSF; it should be innovative and exciting; and it should hold the promise for significant impact in your field. Research that promises only incremental progress, for example, “dotting the i’s and crossing the t’s” on a well-established line of inquiry, will not be competitive. On the other hand, high-risk projects with little preliminary data, or topics in which you have no previous publications, are unlikely to be funded because reviewers want to fund projects with a good probability of success, and they may feel your project entails too much risk.

Your CAREER research plan will, of course, be based on your research interests and your previous work, but junior faculty often find that they have a significant amount of leeway in choosing exactly which of several topics to propose. For example, at this point in your career,
your research interests may follow two or three directions: a continuation of dissertation research, a relatively newer and more innovative offshoot of that research, or perhaps research on a different but related topic you’re conducting in collaboration with other faculty. You’ll typically have the strongest track record in terms of data and publications in the research related to your dissertation topic. On the other hand, the newer research directions may be more exciting and innovative. Which topic should you propose? Unfortunately, there are no easy answers to this question, but you can use some criteria to help balance innovation and impact against risk. Ask yourself:

• What are my long-term research goals (the big questions I want to answer in the next 20 years) and which project topic will best help me advance toward those goals?
• Can I explain clearly why this research topic is important and will have a significant impact in my field? If the research topic is a continuation of a long line of research (perhaps started by your dissertation advisor 20 years ago), it will be difficult to make that case.
• Does this topic fit well with the interests of an NSF program (more about selecting the program later)?
• Can I develop a convincing five-year research plan on this topic? (If there are potential show stoppers in years one or two, such as a negative result that would end the project, then this topic may not be mature enough for a CAREER.)
• Do I have enough preliminary results and/or publications to convince reviewers that I have the necessary expertise and am likely to be successful? If my publications do not directly address the topic, can I make the argument that skills gained from previous experience can transfer well to this new topic?

If you feel you are generally well qualified to conduct research on a topic, but an aspect of the research lies somewhat outside your expertise (an increasingly common occurrence as new areas of research blur disciplinary lines), it may be a good idea to recruit a collaborator who can contribute that expertise. CAREER grants do not allow a coPI, but established researchers will often be happy to provide advice in the role of an off-budget collaborator.

**Choosing the NSF Program to Which You Will Submit**

PIs must submit CAREER grants to a particular directorate and program within NSF based on the area of research addressed by the proposed project. It’s very important to make sure that your proposal is submitted to the NSF program that best fits your research because a good CAREER proposal submitted to the wrong program may be doomed. (The Program Officer may transfer your proposal to a different program that offers a better fit, but it’s not wise to assume this will occur.) For information on how to use NSF’s website to find the NSF directorate and program that best fits your research, see the videos posted at the bottom of [Academic Research Funding Strategies’ Workshop webpage](http://www.academicresearchfundingstrategies.com/workshop).

After you’ve done some web research and identified one or more possible programs, contact the Program Officer(s). It’s always a good idea to contact the Program Officer when working on any NSF proposal, but it’s especially important in the case of the CAREER. Program
Officers can give you feedback on the NSF program that best fits your research as well as advice on points to emphasize and pitfalls to avoid. They can also tell you about any recent changes in emphasis or interests in their program. [Note: Program Officers may be called “Program Directors” in some NSF programs; these terms are synonymous.] To contact a Program Officer (PO), e-mail the PO a short description (one or two paragraphs) of your research idea and ask to set up a time for a phone conversation. POs are very busy, so you may need to be persistent, but also remember that they travel frequently, so give them at least a week to respond. Even if it does take several attempts to set up a call with the PO, remember that the vast majority of NSF POs are very happy to talk to you, and especially encourage faculty who plan to submit CAREER proposals to contact them.

_In the next article, we’ll discuss background work you can do to develop your Education plan._
All of DARPA's (Defense Advanced Research Projects Agency) research is performed by outside researchers at universities, large and small businesses, non-profit institutions, government laboratories and other outside research organizations. DARPA funds these researchers based on a competitive review of proposals submitted in response to a solicitation calling for research ideas. Current DARPA solicitations are located at FedBizOpps. You can also register with FedBizOpps to receive notifications whenever a new DARPA-related content is posted. Once you have registered and logged in, you can set up a “Saved Search” that will periodically review all newly posted information and send an email notification. Each technical office also maintains a list of its current and past solicitations:

- Defense Sciences Office (DSO) Solicitations
- Information Processing Techniques Office (IPTO) Solicitations
- Microsystems Technology Office (MTO) Solicitations
- Strategic Technology Office (STO) Solicitations
- Transformational Convergence Technology Office (TCTO) Solicitations
- Tactical Technology Office (TTO) Solicitations

DARPA announces its research needs through solicitations that most often take the form of a Broad Agency Announcement (BAA). The DARPA BAA is a competitive solicitation procedure used to obtain proposals for basic and applied research as well as any part of development unrelated to the creation of a specific system or hardware procurement. The type of research solicited under a BAA attempts to increase knowledge in science and/or to advance the state of the art as compared to the practical application of knowledge.

Other DARPA opportunities may also be called Special Notices, Research Announcements, or Requests for Proposals (RFP). Solicitations may be office specific or may involve multiple offices. Solicitations are published, as appropriate, in many different places:

- Each technical office's individual website
- For small businesses through the Small Business Programs Office
- Through Federal Business Opportunities, also known as FedBizOpps and Grants.gov

Note that DARPA makes important distinctions between a BAA and a Competitive RFP, as outlined below, that you will want to heed, particularly the key statement describing how they are evaluated: A proposal in response to a BAA that is otherwise weak could be selected if it shows great technical promise, such as a risky but perhaps revolutionary approach.

Type of Research and Development

- **RFP** - Focuses on a specific system or hardware solution.
- **BAA** - Scientific study and experimentation directed toward advancing the state-of-the-art or increasing knowledge or understanding.

Statement of Work
• **RFP**- The Government drafts a common SOW to which all investigators submit a proposal.

• **BAA**- The Government drafts a statement of a problem or general research interest. Each investigator proposes its own statement of work and technical approach.

**Proposal Comparison**

• **RFP**- All proposals are attempting to solve the same problem. The winner is selected by comparing proposals.

• **BAA**- Proposals contain stand-alone unique solutions. They are not compared to one another.

**Nature of the Competition**

• **RFP**- Proposals address common SOW and compete against one another. Cost, price, or best value, will often decide the winner.

• **BAA**- Each proposal presents a distinct approach to solving the problem. The proposals technically compete in the “marketplace of ideas.” Cost or price rarely decides the winning proposal.

**Evaluation Process**

• **RFP**- An RFP follows very closely a predetermined source selection plan.

• **BAA**- Proposals undergo a scientific review process. *An otherwise weak proposal could be selected for showing great technical promise, such as a risky but perhaps revolutionary approach to solving a problem.*

In addition, DARPA actively supports a number of special assistance programs established to ensure equality in Federal procurements. These include the Small Business Innovation Research (SBIR) program and Small Business Technology Transfer (STTR) program. See DARPA’s [SBIR/STTR Support Center](http://www.darpa.mil/sbir/sttr). Additional information on opportunities for small businesses is available from the [DoD Office of Small Business Programs](http://www.oversight.dod.mil/oa/smallbusiness/) or by contacting DARPA’s Small Business Support Center at [sbir@darpa.mil](mailto:sbir@darpa.mil) or (703) 526-4170. You can contact a member of DARPA’s staff through the DARPA [staff directory (pdf)](http://www.darpa.mil/staff/) or search the [staff and program database](http://www.darpa.mil). If you are new to DARPA, you may want to subscribe to several of its RSS feeds offered to help researchers become more knowledgeable about the DARPA mission, strategic plan, and agency culture: News Releases: [http://www.darpa.mil/news.xml](http://www.darpa.mil/news.xml) and Podcast: [http://www.darpa.mil/podcast/feed.xml](http://www.darpa.mil/podcast/feed.xml)

DARPA research runs the gamut from conducting basic, fundamental scientific investigations in a laboratory setting to building full-scale prototypes of military systems. It funds research in a wide variety of scientific disciplines — **biology, medicine, computer science, chemistry, physics, engineering, mathematics, material sciences, social sciences, neuroscience, and more.**

DARPA programs focus on high-risk research with results that could provide dramatic advances in military capabilities. **Each DARPA office** manages a large portfolio of programs. Find out more about DARPA’s programs by visiting its five technical offices:

• [Adaptive Execution Office (AEO) Programs](http://www.darpa.mil/area_aeo)

• [Defense Sciences Office (DSO) Programs](http://www.darpa.mil/area_dso)
DARPA Defense Sciences Office (DSO)

The DARPA Defense Sciences Office identifies and advances radically new technologies that promise to revolutionize military capabilities. As the most fundamental and scientifically diverse DARPA office, DSO places no limit on the range of ideas it pursues. Although distinct in their respective technical objectives, all DSO programs focus on mining "far side" science. Current programs are categorized into the following strategic thrusts: Physical Sciences, Materials, Mathematics, Training and Human Effectiveness, Biological Warfare Defense, and Biology.

- DSO's research in the Physical Sciences focuses on three strategic areas: Fundamental Physics, Novel Physics-Based Devices and Applications, and Power. These strategic areas provide a sound fundamental foundation by investigating concepts in their formative stages, and steering their evolution to solve vital DoD problems (more).
- Future investments in the DSO Materials program will continue to explore the frontiers of material science, which include new science-based tools for the development of new materials, novel materials for energy and water harvesting, new mechanical designs that exploit or challenge new materials and material systems, and innovative electromagnetic materials that will revolutionize the field of electronics (more).
- The DSO Materials program is rooted in the tenet that DoD needs are best addressed by creating integrated teams of mathematicians and subject matter experts to address problems. This enables the rapid exploitation of new mathematical techniques to create new technologies as well as the translation of technological needs into challenge problems for the mathematics community to drive new research (more).
- Research efforts are under way to discover and apply advances in neuroscience to improve information processing under stress, as well as to increase the rate and quality of learning (more).
- DSO has pioneered advances across the full spectrum of bio-warfare defense needs, including the development of advanced diagnostics (such as those used routinely today for postal screening), decontamination (such as chlorine dioxide), and medical therapies that are active against an entire spectrum of infectious agents (more).

The DSO Biology basic research program is designed to understand fundamental processes in biology through promoting interactions among the most creative thinkers in biology with leaders in disparate fields such as physics, mathematics, and engineering (more).

Obtaining DARPA Funding: Step 1

As a first step in obtaining DARPA research funding, review DARPA’s research interests. Each DARPA technical office maintains a list of current programs and research thrust areas. In addition, DARPA’s Strategic Plan includes information on DARPA’s overarching strategic focus.
areas. Lastly, DARPA previously held a Systems and Technology Symposium approximately every eighteen to twenty-four months, to share priorities for future programs that will help bridge the gap between far-side possibilities of tomorrow and the near-side capabilities of today. Proceedings from past DARPATech can be found here (DARPATech).

Obtaining DARPA Funding: Step 2

DARPA solicitations most often take the form of a Broad Agency Announcement (BAA), but can also be called Special Notices, Research Announcements, Request for Proposals, or something similar. DARPA issues BAAs, each for a specific DARPA research program, throughout the year. DARPA BAAs are published in the U.S. government’s one-stop virtual marketplace, Federal Business Opportunities, also known as FedBizOpps (www.fbo.gov). DARPA also publishes BAAs on www.grants.gov, the central storehouse for information on federal grants. In addition to program-specific BAAs, each DARPA office issues what it calls an “Office-Wide” BAA. These BAAs solicit proposals across a broad range of technology areas.

What is a BAA?

Each DARPA BAA includes general information about the DARPA program, outlines the research being solicited, and provides detailed information on how to submit a proposal. DARPA’s BAAs are “open” (i.e., proposals can be submitted) for a full year, but many BAAs impose an earlier deadline (often forty-five days after issuance) for researchers interested in having their proposals reviewed during an initial review period. Many DARPA BAAs require or encourage the submission of a proposal, abstract, or white paper prior to the submission of a full proposal. All of these details will be outlined in the BAA.

Small Business Funding Opportunities

For information on opportunities available only to small businesses, please visit the Department of Defense Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR) website, or DARPA’s Small Business Support Center (SBSC). SBIR and STTR solicitations are available online.

How to Receive the Consideration of a DARPA Program Manager

Don’t constrain your ideas by attempting to second guess how you think DARPA may react to them. Even though DARPA may not appear active in a particular area this doesn’t mean that the Agency won’t be interested in an innovative technological idea in a new arena. In fact, your idea could lead to new areas of research. The key to working with DARPA is to work through a program manager.

To maintain an entrepreneurial atmosphere and a flow of new ideas, DARPA hires program managers for two to six years; the best way to foster innovation is to bring in new people with fresh outlooks. DARPA program managers:

- Provide feedback regarding whether an idea is suited to DARPA.
- Help shape ideas to synchronize with an ongoing or new DARPA program.
- In some cases, a program manager may substantially alter what he or she plans to do based on a new idea.
• A big part of a program manager’s job is to find strong ideas upon which to build new programs.
• Informational exchanges with DARPA program managers are the foundation for “Doing Business with DARPA.”

Some of the best opportunities to pitch ideas for DARPA programs occur when DARPA program managers start new programs. When considering an idea, DARPA program managers will ask:

• What are you trying to do?
• How is this done now? What are the limitations?
• How will this approach remove those limitations and improve performance? By how much?
• If an idea is successful, what difference will it make?

DARPA program managers often fund studies ("seedlings") as initial research to determine whether a more formal program is appropriate. This brochure provides guidance for transforming your ideas into agreements with DARPA.

DARPA Methods of Soliciting Business
Because DARPA understands that creating proposals involves a great deal of time and effort, many DARPA solicitations encourage the submission of a white paper or abstract to determine whether an idea is likely to be selected. DARPA does not tend to think in terms of individual contracts, but rather collections of contracts or projects. It is the program manager’s job to develop projects, so be sure to demonstrate how your idea will fit as part of a larger project.

Each DARPA technical office has an office-wide BAA that covers a broad range of topics and is usually open for one year. Program-specific BAAs are targeted specifically to a particular area of research. DARPA BAAs describe:

• the Agency’s research interest for either an individual program requirement or broadly defined areas of interest covering the full range of the Agency’s requirements;
• criteria for selecting proposals, their relative importance, and the method of the evaluation;
• specific time available for submission of proposals; and
• specific instructions for the preparation and submission of proposals.

Preproposal Information
DARPA industry days are held after publication of a program notice and prior to the submission of proposals. They provide the opportunity to hear program managers and meet potential industry partners for teaming. DARPA industry days are not limited to the promotion of BAAs; they are used for all methods of soliciting business.

White papers are the initial ideas submitted to a DARPA program manager and are not considered proposals. They permit the presenter to make a detailed, written explanation of an
idea/concept. A white paper invites a response from a DARPA program manager and, if appropriate, may result in a formal proposal submittal.

**Evaluation and Award**

BAA proposals are evaluated on technical merit and are not compared to other proposals. They do not include a common statement of work. DARPA identifies general areas of interest, but does not tell organizations how to propose work or how to solve problems. The basis for the selection of proposals is a judgment of the technical importance of the proposal with respect to Agency programs and funding availability. Cost realism and reasonableness are also considered, to an appropriate extent, in evaluating a proposal. The award may take the form of a contract, assistance agreement, or an other transaction. The proposal can list the type of preferred agreement; however, the appropriate type of award is subject to negotiation.
Red Teaming Proposals for Funding Success

Red teaming a proposal is particularly helpful on large efforts that represent a significant institutional investment of resources, time, and effort to develop and write. These large, multi-million dollar proposals are typically responding to complex solicitations with multifaceted research and/or educational objectives, making Red Team a must.

In the September 15 issue of this newsletter, the article “The Strategic Role of the Request for Proposals,” includes a section, “Role of the RFP in Proposal Organization,” that describes using the solicitation as a template for drafting the proposal narrative. This ensures that the proposal narrative:

- responds fully to all requested information
- offers information in the order requested
- provides the required detail
- integrates review criteria into the narrative, and
- remains on track and in sequence.

The solicitation plays an equally important role in the process known as red teaming. The term “red team” is derived from government and industrial evaluations that use a group—a red team—to review, assess, test, or vet plans, operations, concepts, capabilities, or proposals. Red teaming is essentially a very thorough review and evaluation of a proposal. In this context, it is important to keep in mind that successful proposals approach excellence through repeated revisions that eradicate ambiguities and bring focus and clarity to the description of the research or educational vision, goals, and objectives. Narratives relying on excessive generalities and unsupported claims rather than specific and validating detail that advances a research vision will quickly lose reviewers’ attention and confidence. The worst response a reviewer can have to a proposal is the one H. L. Mencken had while reviewing a book he described as “an army of words marching across the page in search of an idea.” The red teaming process can help assure this does not happen to a major proposal. Importantly, red teaming is a scalable process. While most often used for large research center-level proposals, or other major institutional initiatives, the step-by-step red team review process can be adapted to smaller proposals as well.

Why conduct a red team review?

Red teaming a proposal is particularly helpful on large efforts that represent a significant institutional investment of resources, time, and effort to develop and write, e.g., center-level initiatives. These large, multi-million dollar proposals are typically responding to complex solicitations with multifaceted research and/or educational objectives. These proposals are evaluated under agency review criteria that are extensive, detailed, and searching in assessing the applicant’s capacity to meet the performance goals and objectives of the funding agency. A project narrative for a large proposal is correspondingly complex to develop and write, and often has page limits far in excess of the typical research proposal. To compete against similar proposals, the applicant must present a clear, integrated vision of the rationale, goals,
objectives, and focus of the proposed project. This clarity will typically require that the proposal articulate the benefits of funding a large center structure intended to support multiple research strands rather than a series of discretely proposed research projects unconnected to one another. Writing an integrative research vision statement and supporting narrative presents a major challenge, particularly, as is often the case, when multiple contributors compose the research narrative. In early drafts of the proposal, these research contributions may be siloed or stove piped, or cut and pasted from other proposals, both successful and unsuccessful, in an attempt to force fit them into the current effort, all of which will make the task of producing a polished project narrative more difficult. Ultimately, the narrative of these large proposals must be flawless if they are to succeed, since only a few awards may be made in a competition that is national in scope.

Too often, the first – and final – substantive outside review of these large proposals occurs when the funding agency makes the funding decision. The red team review should intervene before the final submission of a large proposal. The team’s role is to give an “outsider’s perspective” on the quality of the proposal prior to its submission, while the opportunity exists to undergo another thorough revision of the proposal text to ensure that it makes a clear and convincing case for funding.

What are the goals of a red team?
• conduct a comprehensive, exhaustive, and extremely fine-grained review and evaluation of the proposal narrative prior to submission, including, for example, to:
  • find weaknesses, deficiencies, and ambiguities in the proposal text,
  • identify inconsistencies and omissions between the proposal narrative and the requirements of the solicitation and review criteria,
  • play the devil’s advocate when necessary,
  • challenge the vision, assumptions, and other statements in the text that are not well supported or clearly stated, or are poorly argued,
  • make observations on the persuasiveness of the arguments put forward by the author(s) describing the uniqueness of their research and how compelling they make the case for funding, and
• offer suggestions that both correct identified deficiencies and better amplify identified strengths.

Red team members enhance the competitiveness of a proposal, with the ultimate goal of helping the author(s) submit a more competitive narrative than would otherwise occur without a red team process. Members of the red team must not be reluctant to criticize a proposal out of a misdirected sense of kindness or sensitivity to the authors’ ideas and the presentation of those ideas. The red teaming process needs to be unflinchingly objective and conducted in the spirit of Tom Hank’s comment to right-fielder Bitty Schram in the movie A League of Their Own: “Are you crying? Are you crying?! There’s no crying in baseball!” The same admonition needs to apply to the red team review process when giving feedback to proposal authors.
The ability of the red team to offer an informed and intelligent “outsider’s perspective” by reviewing the document from a fresh and/or different vantage point is a key factor in the proposal’s potential success and should be encouraged. The authors of large proposals typically work for months developing ideas and drafting text. In the process, they become so familiar with their own writing and their own descriptions of research vision, rationale, goals, and objectives that they can lose the ability to judge how others might perceive what they have written. Multiple authors invariably have multiple writing styles; this can result in a proposal lacking cohesion and consistency. Authors may have difficulty understanding how a reviewer could possibly understand the proposal narrative without the clarity and understanding the authors bring to it. A red team helps the authors build in to the proposal an expression of its purpose and importance that will communicate these to someone unfamiliar with its development. The red team may also offer a needed boost of energy at the end of the proposal writing process, when the authors’ weariness makes them reluctant to face the additional challenge of significant final revisions.

How do you form a red team...Who should be on the red team?

A red team typically will consist of three to six members, but this number can vary and is best determined by the kinds of expertise that would most benefit the review process. Therefore, the proposal itself should dictate the number and composition of the red team. For example, some proposals, while large, may focus upon a narrow set of research objectives, e.g., those written to the NIH, while other large proposals, e.g., those directed to the NSF, may have multiple research strands and include a constellation of activities complementing the research core, such as K-12 educational outreach, undergraduate research, graduate training, post-doctoral mentoring, curriculum development, diversity initiatives, and societal impacts.

In general, a mix of expertise on a red team will benefit the proposal, but the fundamental requirement is that the reviewers be experienced, intelligent readers, thereby reflecting what typically characterizes an agency review panel. Universities have multiple pools from which to draw in forming a proposal red team: faculty who have served as reviewers or program officers, successful researchers, faculty serving as research administrators, experienced proposal writers and editors, among others. The team may include, when needed, faculty and staff with expertise in specific domains, e.g., educational components, evaluation and assessment, dissemination, project management, societal impacts, or other areas defined as key programmatic elements in the solicitation.

When should the red team conduct the review?

The timing of the red team review is important in order to optimize the benefits of the process. Consider four key factors when scheduling a red team review:

(1) the proposal narrative should be sufficiently complete and as close to final as possible to allow a through, substantive review;

(2) the red team must have time to conduct a very finely-grained and exhaustive reading of the solicitation, review criteria, supporting documents, and the narrative, and then generate a detailed review document reflecting its recommendations;
(3) the red team must have sufficient time to meet with the proposal author(s) and present their recommendations; and
(4) the authors must allow sufficient time to consider the recommendations of the red team and make those changes to the proposal with which they agree.

How long does it take to conduct a red team review?

The time required for a red team review will vary and will reflect the complexity of the solicitation and the length and complexity of the proposal. In general it may take several days to complete the red team review process described in items 2 and 3 above. The first day may be devoted to red team members independently reading the solicitation, proposal narrative, and supporting documents in depth. Another day may be required for a sequestered red team to meet as a group and review the proposal section by section, paragraph by paragraph, and line by line while concurrently recording comments that reflect the observations of each red team member, particularly as those comments relate to strengthening the proposal. Part of another day may be needed for the red team members to debrief the proposal author(s) by meeting with them and going through the proposal and the red team review report, here again line by line, paragraph by paragraph, and section by section, to allow for a full verbal discussion of the written critique and an exchange between the red team members and the proposal team members about ways to strengthen the proposal.

What is the role of red team members? What key factors should red team members address in their review?

The role of the red team members is to evaluate the competitiveness of the proposal by conducting a very probing review of the narrative taking the viewpoint of intelligent readers with relevant expertise. Red team members must, therefore, reach a consensus on those factors that characterize a successful, competitive proposal, and then apply those competitive factors as markers while undertaking a competitive benchmarking of the proposal. Competitive factors used in the red team’s assessment may include the following, among others:

- Clarity of the research vision
- Strength of the case made for the significance of the research
- Clear statement and substantive claims of research synergy in the proposal
- A narrative fully responsive to all items/requirements listed in the solicitation
- A clearly written proposal accessible to the intelligent reader
- Appropriate detail and examples that support the research goals and objectives
- An appropriate synthesis of ideas with performance and operational detail
- A compelling case for the capacity of the research team to perform
- An institutional capacity in place to support the project
- A strong case that the management team’s expertise will equal or exceed that needed for success
- Proposal arguments that are clearly stated, logical, convincing, and compelling
A convincing claim that the project clearly contributes to the interests and objectives of the funding agency

A narrative likely to convince a review panel

A convincing claim that the proposed project clearly advances the research objectives required by the solicitation.

**What key documents are needed for a red team review?**

The key documents needed are the solicitation and any documents referenced in the solicitation, a close-to-final draft of the proposal, and any supporting documents, prior proposals, and prior reviews that have informed the proposal process. Based on these documents, red team members may find it helpful to construct a scoring matrix (example below) or table based on the above key factors as well as other factors red team members feel are important based on the specific solicitation. The scoring matrix will help guide the red team members in the review process and give a structure to recording the comments/scoring for each of the key items. For example, each red team member would complete a scoring matrix as below. Next, each member of the team would share the score with the entire team as part of developing a team score for each scoring factor, in this case “Is the Research Vision Clearly Stated?” based on discussion with team members, along with a recording of all observations (culling duplicates) by the entire team of the strengths, weaknesses, and suggested improvements the proposal authors might consider in preparing the final document.

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<tr>
<th>Scoring Matrix for Completion by Each Red Team Member &amp; Discussed as Team</th>
<th>Example Scoring Factor: <em>Is the Research Vision Clearly Stated?</em></th>
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<td><strong>Impact</strong></td>
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**What document(s) does the red team produce?**

Red team members produce a very detailed report of all recommendations for improving the proposal by identifying weaknesses to correct and strengths to amplify.

**What is the role of the red team after the review is complete?**

It is helpful when red team members remain engaged in the process of taking the proposal through one or more additional iterations of the narrative.
An Introduction to SBIR/STTR Grants

The Small Business Innovation Research (SBIR) Program and the Small Business Technology Transfer (STTR) Program are often of interest to university researchers with industry partnerships or to those who may have or will begin start-up companies.

About SBIR/STTR

The Small Business Administration Office of Technology administers the Small Business Innovation Research (SBIR) Program and the Small Business Technology Transfer (STTR) Program. Through these two competitive programs, SBA ensures that the nation's small, high-tech, innovative businesses are a significant part of the federal government's research and development efforts. Eleven federal departments participate in the SBIR program; five departments participate in the STTR program awarding $2.5 billion to small high-tech businesses. The SBIR program uses a three-phase award system providing qualified small businesses with opportunities to propose innovative ideas that meet the specific research and development needs of one of the eleven participating agencies. The program is a set-aside aside from the external research budgets of eleven participating agencies with external research budgets greater than $100 million per year. See also: NSF SBIR/STTR Information Site.

In the current economic environment of scarce capital for start-up companies, the SBIR program is more important than ever. Last year, the SBIR program distributed approximately $2.5 billion in funding to small businesses, while the entire venture capital industry only put $1.7 billion into early-stage investments. The program is specifically designed to fund research and development projects that private sector investors may deem too early or too risky. The goals of the SBIR Program include fostering innovation, using small business to meet federal research and development needs, enhancing private-sector commercialization of innovation, and increasing women and minority participation in technology innovation.

SBIR/STTR Programs Extended through January 31, 2011

On September 30, President Obama signed S.3839 to extend the SBIR/STTR programs through January 31, 2011. These programs require agencies with a significant extramural R&D portfolio to award a percentage of those funds (currently 2.5% for SBIR and 0.3% for STTR) to small business projects. See CRS Report: Small Business Innovation Research (SBIR) Program.

SBIR/STTR Restrictions Important to Partners

The restrictions specific to each program detailed below are taken, as a generic example, from the Department of Energy’s Annual Phase I Small Business Innovation Research (SBIR) Small Business Technology Transfer (STTR) Funding Opportunity Announcement, September 28, 2010 at the above hotlink.

- SBIR Restrictions – To be awarded an SBIR grant, a minimum of two-thirds or 67% of the research or analytical effort must be carried out by the small business applicant during Phase I; correspondingly, a maximum of one-third or 33% of the effort may be performed by an outside party such as consultants or subcontractors. (In Phase II, a
minimum of 50% of the research or analytical effort must be carried out by the small business applicant).

- **STTR Restrictions** – To be awarded an STTR grant, *at least 40% of the research or analytical effort must be allocated to the small business applicant*, and at least 30% of the effort must be allocated to a single research institution. (The same requirement is applicable for both STTR Phase I and Phase II.)

**Department of Energy SBIR/STTR**

Annual Phase I Small Business Innovation Research (SBIR) Small Business Technology Transfer (STTR) Funding Opportunity Announcement. [Latest SBIR News & Events](#). This page lists [SBIR/STTR Funding Awards from 1998 to the present](#). To View General Statistics, [Select This Link](#). See [Instructions for Completing a DOE SBIR/STTR Phase I Grant Application](#). This application guide contains instructions and other useful information for preparing the required forms for a grant from the U. S. Department of Energy for Small Business Innovation Research (SBIR) Phase I Grant, and Small Business Technology Transfer (STTR) Phase I Grant. [Managing A SBIR/STTR Application](#).

**SBIR 2.0 - Innovative Improvements Supporting Innovative Entrepreneurs**

The [Small Business Innovation Research (SBIR) Program](#) will undergo a series of improvements in the coming months to increase the effectiveness and efficiency of the overall program. Together, these improvements will represent the so-called "SBIR 2.0". The goal of SBIR 2.0 is to make the program more user friendly. By leveraging best practices among the eleven agencies who participate in SBIR and strengthening performance measurements to ensure effective operation government-wide, SBIR 2.0 is intended to produce better results for the program. See [SBIR 2.0 – Frequently Asked Questions](#).

**Advice Presentations for SBIR and STTR**

The below tutorials from Dr. Gregory Milman at NIH help small businesses apply for SBIR and STTR funding. They offer general advice and information on applying, as well as a visual step-by-step overview for small business applicants. While developed at NIH, the tutorials offer a generic overview on these programs. Also see [Small Business Awards](#).

<table>
<thead>
<tr>
<th>Modules</th>
<th>Date</th>
<th>Adobe PDF</th>
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<tr>
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<td>Writing for Reviewers</td>
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<td>FY 2008 Data</td>
<td>July 2009</td>
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<td>Tips and Tricks</td>
<td>July 2009</td>
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<tr>
<td>NIH Offers More than SBIR and STTR Funds</td>
<td>July 2009</td>
<td>Adobe PDF</td>
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SBIR Alerting Service

Pacific Northwest National Laboratory's SBIR/STTR Alerting Service is a resource for those seeking funding from the Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) programs as their primary source of capital for technology development and early-stage commercialization. The Alerting Service searches for and consolidates funding solicitations and other information from multiple agency websites and issues an electronic alert bi-weekly at no cost to subscribers.

More SBIR/STTR Resource Links
- SBIR/STTR Programs Information Handbook
  - NC Small Business & Technology Development Center
- SBA SBIR Handbook
  - Office of Technology, U.S. Small Business Administration
- SBIR Information Site
  - This site represents another portal available for listings of open SBIR/STTR solicitations posted by federal agencies.
- SBIR/STTR Federal Agency Links (Comprehensive)
- Portal for Small Business Innovation Research (SBIR) Information
- Use the following links to find the SBIR resources:
  - SBIR & STTR Solicitations - Find opportunities from various government agencies
  - Conference and Events Center - Find government-sponsored SBIR/STTR events
  - Federal Agency Links - A list of Federal Agencies with SBIR/STTR programs
  - State Resources - Find assistance in your state
  - Links - Find more SBIR/STTR resources
  - Past Awards - Search the Small Business Administration's site for past awards

Master Schedule of Release Dates for FY 2011 SBIR/STTR

<table>
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<tr>
<th>Agency</th>
<th>Release Date</th>
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<tr>
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<td>August 17, 2010</td>
<td>September 15, 2010</td>
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<td>December 13, 2010</td>
<td>January 12, 2011</td>
<td>Solicitation details can be found at: <a href="http://www.dodsbir.net/solicitation">http://www.dodsbir.net/solicitation</a></td>
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<td>May 26, 2011</td>
<td>January 29, 2011</td>
<td>Solicitations are pre-released for Q&amp;A 4 weeks prior to open date. Proposals must be submitted electronically at: <a href="http://www.dodsbir.net/submission">www.dodsbir.net/submission</a></td>
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<td>Institute of Education Sciences (IES) Office of Special Education and Rehabilitative Service/ National Institute on Disability and Rehabilitative Research (OSERS/NIDRR)</td>
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<td>March 10, 2011</td>
<td>June 10, 2011</td>
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Why Read Abstracts of Funded Proposals?

Reviewing abstracts (aka project summary or executive summary) of recently funded projects gives researchers yet another source of information about the interests of a funding agency by presenting review panels’ and program officers’ selections of successful proposals. Reading the abstracts of funded projects will give you a more nuanced understanding of the funding agency culture and expectations specific to a solicitation, or cluster of solicitations, within a disciplinary domain. Abstracts from the two most current past funding cycles are typically the most informative because annual grant solicitations often evolve over time. This is particularly true when reading abstracts of research, educational, and institutional initiatives funded by programs with long-running annual solicitations, for example, NIH and NSF.

The abstracts serve as an excellent complement to the program solicitation by giving examples of successful applicant responses to the research goals and objectives defined in the RFP. In some cases, particularly on institutional and educational initiatives, reviewing the abstracts of projects funded during the past two years reveals a core of programmatic elements and activities common to all successful proposals. In other cases, again most often for educational and institutional grants, or hybrid research and educational grants (e.g., NIH Bridges or NSF IGERT), reading ten or twenty abstracts of recently funded projects may reveal common program models or programmatic components viewed by program officers and reviewers as effective models for achieving the goals and objectives of the particular solicitations. For instance, the NSF Research Experiences for Undergraduates (REU) program is a very long-standing annual solicitation. The mentoring plan will comprise a core component to a successful proposal. Effective mentoring plans include proven mentoring activities. Reviewing the REU abstracts, along with the REU literature, will help the new applicant understand those models the agency favors, and equally important, gain insight into the models the agency program officers might not favor.

In some cases, abstracts include contact information on the principal investigators, including email addresses. On educational and institutional grants, in particular, the PI may be willing to share observations related to developing a competitive proposal to the particular program, and may even agree to share a copy of the funded proposal, reviewers comments, and outcomes of annual performance reviews. PIs are more often willing to share information about educational and institutional grants than about a research grant. In many cases, e.g., NSF educational grants, the funding agency expects those funded to disseminate results related to “best practices” in such areas as K-12 education and undergraduate research (e.g., MSPnet Useful Websites).

URL Links for Finding Abstracts at Federal Agencies

- NIH RePORT Expenditures and Results (RePORTER)
- NSF Award Data
See How to Use the NSF Award Database to Prepare a Better Proposal in the October 15 issue of RD&GWN.

- NASA NSPIRES Past Solicitations and Selections
  - Selection information is not available for every solicitation. However, you may also contact the Program Manager for the desired solicitation.

- Agency for Healthcare Research and Quality (AHRQ) Grants On-Line Database (GOLD)
  - AHRQ Project Map for 2010: Projects displayed by location and type. View projects in table format.

- USDA Current Research Information System
  - CRIS is the U.S. Department of Agriculture's documentation and reporting system for ongoing and recently completed research and education projects in agriculture, food and nutrition, and forestry.

- Department of Defense (DoD): Congressionally Directed Medical Research

- Department of Defense (DoD) SBIR/STTR Awards
  - Looking for awards from a recent solicitation? Selections are posted by solicitation six months after the solicitation closes.

- Department of Education (ED) Grant Awards

- Department of Energy (DoE) Project Summaries
  - The database provides access to summaries of ongoing or recently completed projects performed by the DOE laboratories and research facilities. These projects pertain to a variety of R&D disciplines, such as Science, Fossil Energy, Environmental Management, Energy Efficiency, and Renewable Energy.

- Department of Health and Human Services
  - Tracking accountability in Government Grants System. TAGGS Advanced Search lets you create a very refined search through more than 500,000 grant awards.

- Environmental Protection Agency (EPA) Grants Information and Control System
  - EPA's management information system for grants programs is the Grants Information and Control System (GICS) that awards, administers, and monitors grants. Grants are regularly awarded to federal, state, or local government agencies, universities, and other institutions that support the EPA's environmental programs.

- Institute of Museum and Library Services (IMLS) Grants Awarded

- National Endowment for the Humanities (NEH) Recent Grant Awards

- Federal R&D Project Summaries and Awards (NIH, NSF, EPA, DoE, USDA, & SBA)
  - Search across scientific databases of federal research and development project summaries. With a single query, discover what is happening in the Federal R&D community.

- Health Services Research Projects in Progress

- Substance Abuse and Mental Health Services Administration

Learn About Proposals Funded by Foundations
The 990-PF is the information return that U.S. private foundations file with the Internal Revenue Service. This public document provides fiscal data for the foundation, names of
trustees and officers, application information, and a complete grants list. The 990-PF may be the only source for a complete grants lists for smaller and mid-sized foundations. Larger foundations often issue annual reports, which provide descriptions of the grants awarded during the year for which the return is filed, and many have websites. The typical IRS filing deadline for most foundations is four and a half months after the end of the foundation's fiscal year. It then takes another few months for the IRS to process and scan the 990-PFs into a digitized format. So, if a foundation's fiscal year ended on December 31, 2009, its Form 990-PF would, in all likelihood, become available sometime in the fall of 2010. Of course, foundations can also request a filing extension from the IRS, which can lead to further delays in the 990-PF becoming publicly available.

- Foundation Center (Find Funders)
- Foundation Finder
- 990 Finder
- 990-PF IRS Return of Private Foundation
- Demystifying the 990-PF
Program evaluation and assessment requirements defined in federal agency research and educational grant solicitations commonly responded to by universities are becoming increasingly rigorous. This is clearly evident from the July 29, 2010 OMB Memorandum For The Heads Of Executive Departments And Agencies on Evaluating Programs for Efficacy and Cost-Efficiency. This followed the earlier 2009 Memorandum Increased Emphasis on Program Evaluations on the same topic. The core message in each memo was the requirement that federal agencies show how their Fiscal Year 2012 funding priorities are evidence-based or otherwise subject to rigorous evaluation.

The take away message here is that funding agencies will increasingly expect appropriate evaluation metrics be applied to both research and educational grant programs to justify those investments. Evaluation and assessment protocols for a broad range of university grants, particularly educational grants and hybrid research and educational grants, have evolved dramatically over time from simple input/output counting models to very robust evaluation and assessment models that may examine, for instance, cognition related to how students learn STEM disciplines. For example, NSF’s Promoting Research and Innovation in Methodologies for Evaluation (PRIME) seeks to support research on evaluation with special emphasis on exploring innovative new approaches for determining the impacts and usefulness of evaluations of STEM education projects and programs. A look at this solicitation will illustrate the evolution of expectations related to STEM evaluations.

Writing a strong evaluation and assessment section specific to program, e.g., K-12 or public outreach, diversity, undergraduate research, etc., included as a required educational component of large center or institutional proposals to federal agencies, or as the entirety of smaller proposals specific to an educational objective, is a demanding and increasingly rigorous task that has a significant impact on the competitiveness of the overall proposal. Many large research grants, as well smaller grants like the NSF CAREER, require an educational component. Other grants, including many from the U.S. Department of Education, focus entirely on educational programs requiring robust evaluation and assessment protocols.

On larger proposals, with more complex K-12 STEM outreach components, researchers may want to work with university-based evaluation centers, either on their own campus or at centers such as the West Texas Office of Evaluation and Research, whose director is a former principal investigator and project director on several NSF-funded K-16 systemic initiatives. Most campuses have offices of institutional research and assessment, but few of those offices have the evaluation and assessment skill sets required for evaluating the educational components of grants to federal agencies. Depending on the size of the grant and complexity of the education and outreach sections, various paths may be available to faculty and research development professionals required to include an evaluation section in a proposal. In some cases the program management staff of previous grants awarded to a university may have developed evaluation and assessment skills relevant to new initiatives. In some cases these program staff may have completed training at Western Michigan University’s Evaluation Center, the Evaluators’ Institute, and/or American Evaluation Association sponsored workshops, and thereby provide an invaluable “in-house” expertise for development of the
evaluation section of a proposal. In other cases, there may be doctoral students in education or
the social and behavioral sciences on campus that have evaluation and assessment expertise.

At NSF, for example, the Broader Impacts review criterion can often be addressed
through an educational component. Also, many of the federal mission agencies (NOAA, DOD,
DOE, USDA, NASA, etc.) may require educational components in research grants to address
their long-term interests in the preparation of a future STEM workforce at all degree levels with
training in mission critical disciplines specific to agency. On smaller grants where the budget
does not permit the hiring of internal or external evaluators to draft the evaluation section
required for an educational component it is often the case that the fundamental evaluation and
assessment protocols, formative and summative, and evaluation and assessment logic models
may have to be a skill learned by those developing and writing the specific grant. In those
cases, there are many rich and very robust web resources available where the fundamentals of
evaluation and assessment models specific to various educational program types can be
learned by researchers and grant professionals.

The following URL links are representative examples of those resources, including
handbooks developed specific to evaluation by NSF for applicants to programs at that agency to
a very comprehensive evaluation site maintained by University of Wisconsin-Extension
Cooperative Extension to a compendium of resources at MSPnet Useful Web Sites,
specifically Assessment.

The 2002 User Friendly Handbook for Project Evaluation
National Science Foundation
This Handbook provides principal investigators with basic guidelines for the evaluation of NSF
educational programs. It targets people who need to learn more about what evaluation can do
and how to do an evaluation, rather than investigators with evaluation experience who already
have expertise in the field. The Handbook discusses quantitative and qualitative evaluation
methods, suggesting ways in which both methods can be used as complements in an evaluation
strategy.

User-Friendly Handbook for Mixed Method Evaluations
National Science Foundation
Experienced evaluators find that the best results are often achieved through the use of mixed
method evaluations, combining quantitative and qualitative techniques. Whereas the
handbook described above provides an overview of the collection and analysis of qualitative
data, this handbook provides more information on qualitative techniques and discusses how
qualitative data can be effectively combined with quantitative measures.

Online Evaluation Resource Library
The Online Evaluation Resource Library, funded by NSF, was developed to collect and make
available evaluation plans, instruments, and reports for NSF projects that can be used as
examples by Principal Investigators, project evaluators, and others outside the NSF community
as they design proposals and projects.
Evaluation Resources, University of Wisconsin – Extension
Evaluation is a core function of University of Wisconsin-Extension Cooperative Extension with support provided by the Program Development and Evaluation Unit (PDE). This site provides key resources for evaluation, most notably:

- The "Planning a Program Evaluation" booklet and worksheet (PDF files)
  The worksheet is also available as a Word document that can be saved and used to enter text.
- The "Enhancing Program Performance with Logic Models" on-line course
- Now available (Oct. 2010) a PDF version of the course for offline use
  This file (216 pages, 3.35MB) may be downloaded to view offline or print all or selected pages for reference. Note that this file contains the content of the Feb. 2003 online course, no revisions have been made.
- Templates for creating a logic model
- Examples of logic models
- Logic model on-line, self-study module: "Enhancing Program Performance with Logic Models"
- A resource for teaching and training about logic models, posted in February 2008.
  - Developing a logic model: Teaching and training guide - includes handouts and printed slide notes pages (118 pages, 3.1MB)
  - PowerPoint slide file (86 slides, 5.0MB)

W.K. Kellogg Foundation Evaluation Handbook
For those with evaluation experience, or for those inexperienced in evaluation but with the time and resources to learn more, this handbook provides enough basic information to allow project staff to conduct an evaluation without the assistance of an external evaluator. More.

W.K. Kellogg Foundation Logic Model Development Guide
Nonprofits today are being pressed to demonstrate the effectiveness of their program activities by initiating and completing outcome-oriented evaluation of projects. This guide was developed to provide practical assistance to nonprofits engaged in this process. In the pages of this guide, we hope to give staff of nonprofits and community members alike sufficient orientation to the underlying principles of "logic modeling" to use this tool to enhance their program planning, implementation, and dissemination activities. More. Logic Model from Wikipedia.

The Program Manager’s Guide to Evaluation
Department of Health & Human Services, Administration on Children, Youth, & Families
This informative guide explains program evaluation – what it is, how to understand it, and how to do it. It answers questions about evaluation and explains how to use evaluation to improve programs and benefit staff and families.

CDC Evaluation Working Group
Centers for Disease Control and Prevention
This site is an excellent resource organized around the following topics for further information about evaluation or assistance in conducting an evaluation project. Explore the following links for further information about evaluation or assistance in conducting an evaluation project. Resources are divided into the following groups:

- **Ethics, Principles, and Standards**
- **Organizations, Societies, Foundations, Associations**
- **Journals and On-Line Publications**
- **Step-by-Step Manuals**
- **Logic Model Resources**
- **Planning and Performance Improvement Tools**
- **Reports and Publications: General**
- **Reports and Publications: GPRA**
- **Suggestions**

**Planning an Effective Program Evaluation**
*American Physiological Society*
This website offers an interactive online short course that includes six lessons about evaluation basics, questions raised by program directors, and resources available both on and off line. Each lesson includes an interactive component designed for the user to develop an evaluation planning document.

**The Evaluation Center, Western Michigan University**
The Center’s role is to provide national and international leadership for advancing the theory and practice of evaluation, as applied to education and human services.

**Tips on Assessment, Evaluation and Dissemination**
This site provides a summary of program evaluation and lists hotlinks to other web resources, divided into the categories “From NSF,” “Organizations,” “Disciplinary Examples,” and “Suggested Readings.” It also includes information on project dissemination.

**American Evaluation Association’s Online Handbooks and Texts**
The above URL links to handbooks and texts that are available in their entirety online. Most are multi-chapter documents focusing on the “how-to’s” of evaluation-related subjects.

**Alternative Approaches to Evaluating STEM Education Partnerships: A Review of Evaluation Methods and Application of an Interorganizational Model**
The goals of this evaluative research project are: 1) to review how partnership performance is evaluated in the STEM educational community and also in a variety of other settings drawn from other policy contexts, industry, and not-for-profit; and 2) to develop and test a model exploring how degrees of embeddness among partners influence the process by which STEM educational outcomes are pursued and achieved. A panel of STEM evaluation and education experts will participate in an online Delphi panel whose goal is to develop an evaluative model for linking embedded partnership relations to educational outcomes. This model will be tested
with up to four systemic initiatives for retrospective insights into partnership activities and with at least two ongoing Math and Science Partnership projects.

**Strategies for Evaluating Collaboration**
- Defining collaboration
- Goals and indicators
- Involving multiple stakeholders
- Using pre- post- and ongoing measures
- Multiple data sources

**American Evaluation Association Guiding Principles For Evaluators**
Here you will find the *Guiding Principles for Evaluators* in their entirety. Brochures of the *abbreviated* version of the *Guiding Principles* are available, free of charge, in both hardcopy and PDF. To download the *abbreviated* version of the *Guiding Principles* in PDF format, [click here](#). To obtain hardcopies of the *abbreviated* version of the *Guiding Principles*, please contact the AEA office at [office@eval.org](mailto:office@eval.org). For a print-friendly version of the complete *Guiding Principles* [click here](#).

**Evidence on Promising Practices in Undergraduate Science, Technology, Engineering, and Mathematics (STEM) Education**
Numerous and varied teaching, learning, assessment, and institutional promising practices in undergraduate STEM education have been developed in recent years -- many funded by NSF--but little is known about their impact. The goal of this proposal is to begin to focus on the evidence of impact for a selected number of such promising practices. To do this the National Research Council will facilitate two, one-day workshops which will be overseen by an independent steering committee appointed by the Chairman of the NRC. Each workshop will shed light on the state of knowledge on the selected STEM promising practices as well as suggest areas for additional research or where a major synthesis of existing research is needed. All of the conceptual work described in this proposal will be coordinated with and provide information and guidance to the work of another proposal being sent to NSF by the [Wisconsin Center for Education Research (WCER)](#). [National Academies Center for Education Commissioned Papers](#).
When writing a proposal, it’s always important to keep the reviewer in mind; this is especially important in the case of NSF review panels.

The Panel Review Process

In recent years, NSF has been moving toward using review panels in place of the *ad hoc* review process, by which reviewers selected for their expertise are sent a few proposals in their area to review by mail or online. (Some programs use a combination *ad hoc* and panel review process.) In the panel review process, a group of reviewers is selected to read and evaluate a large number of proposals. At the start of this process, a few (typically three) reviewers will be assigned to serve as primary reviewers on a number of proposals. They will read these before the panel convenes. Then the entire panel convenes at NSF (or virtually) to evaluate the proposals. The primary reviewers present each of their assigned proposals, and all of the panel members discuss the proposal before assigning it a rating of, typically, *excellent, very good, good, fair, or poor*. At the end of the process, the submitting PI receives a review from the primary reviewer and a panel review. If you don’t know whether a panel or *ad hoc* review process will be used for your proposal, ask the Program Office. *If a panel will be reviewing your proposal, keep several points in mind.*

Writing Strategies

Since panel reviewers are less likely than *ad hoc* reviewers to be experts in your particular subtopic, be sure to write your proposal so that it is understandable by any expert in your discipline. Points that might be obvious to you may require explanation for these reviewers; ask colleagues from outside your sub-discipline to read your proposal and help identify any concepts that need explanation. If you receive reviews raising technical issues that obviously don’t apply to your proposed project, or if it appears that the reviewers didn’t understand what you were proposing, it’s likely that you failed to write a broadly accessible proposal. Panelists who are not assigned as your primary reviewers will probably read your Summary and then skim quickly through your Project Description. This means that it’s especially important to write a strong, engaging Project Summary and construct your proposal so that important points are easy to find. Therefore, it’s advisable to

- Offset important elements, such as project goals, tasks, and objectives, with bullets.

  Include informative figures with captions that explain the main point you want the reviewer to understand from the figure. Try to develop your proposal so that a reviewer reading only the tables, figures, and figure captions can understand the gist of your proposal from just those elements. If you have a complex project, it’s especially important to make it easy to understand through the use of a flow chart or concept diagram placed early in the proposal before reviewers have a chance to get lost in the detail.

  *Use bold, italic and underlining to identify important information,* and address each review criterion concisely in one or two sentences that a skimming reader could easily find. For example, NSF requires reviewers to evaluate all proposed projects with respect to their novelty
and potentially transformative implications. Of course, you’ll be using most of your Project Description to explain directly and indirectly why your project is novel, but you also need to include a concise statement overtly stating how and why the research is novel that a reviewer can easily find, such as, “The proposed project is novel because no researchers have yet attempted to do ...”. You’ll often find that reviewers will copy and paste your statement addressing review criteria directly into their review sheets. If you don’t concisely and explicitly address these review criteria, you risk leaving to the reviewers the task of trying to decide whether or not you have successfully done so.

Explain the significance of your work in a way that will excite reviewers outside your area. Of course you feel your proposed project is significant, but have you explained why someone in a different subfield (or even in a different discipline) should be excited about your research?

Use Headings and Graphics to Help Reviewers Find Your Main Points

Reviewers skimming your proposal will skip over large blocks of text. By identifying your main points (and the answers to review criteria) using headings, reviewers’ eyes will automatically jump to those sections. Include a project schedule or milestone chart that clearly links to your project tasks and objectives. Panel reviewers can then flip to that chart to find a concise listing of the tasks you will actually perform if funded.

Interpreting Panel Reviews

It’s also helpful to understand the panel review process when interpreting reviews. The PI receives review sheets on which the panel review appears first, followed by individual reviews. It’s often the case that the panel review conflicts somewhat with one of the individual reviews. This may be because the individual reviews were written before the panel convened, and the panel discussion then helped to change that reviewer’s mind, or the panel simply didn’t agree with that reviewer. For this reason, you should pay the most attention to the panel review, but also keep in mind that the individual reviewers read your proposal most closely, so their feedback is often very useful.

However, in cases where a particular reviewer’s comments appear to be completely disconnected from the panel’s, it may be that the reviewer missed or misunderstood something, and the panel discussion then helped correct that misconception. In some cases, reviewers will even go back and amend their review in light of the panel discussion. Also keep in mind that the panel review is conducted in the presence of the Program Officer, who may provide additional information regarding the goals of the program, in which case the panel review may be informed by those additional insights. Remember also that if you revise and resubmit your proposal, it’s very likely that you will have totally different reviewers in the next round. For that reason, you should address the reviewers’ concerns but be careful not to spend too much time and space addressing a single reviewer’s comments if they seem off the mark and are not repeated by other reviewers or the panel.

If your proposal isn’t funded, it’s always a good idea to contact the Program Officer to ask respectfully for advice, and this is especially the case for panel reviews, since the Program
Officer was in the room during the panel discussion and can often give you helpful information about the panel’s deliberations.

A great way to learn firsthand about how review panels work is to become a reviewer yourself. NSF doesn’t require that you’ve been funded by NSF (although it’s helpful to have submitted proposals to NSF), and they are always looking for reviewers. Consider contacting the Program Officer in your research area and volunteering to serve as a reviewer. You will learn a lot about the review process and even more about how to write a proposal that reviewers will like.
There are excellent articles, websites, and books designed to help students write effective proposals. Here are our recommendations:

**For the humanities and social sciences:**
- The Making of a Successful Proposal.
- The Art of Writing Proposals.
- Writing Proposals for ACLS Fellowship Competitions.

**For science, technology, engineering, and math:**
- How to Win a Graduate Fellowship.
- National Science Foundation’s A Guide for Proposal Writing.
- NSF Graduate Research Fellowship Program – PowerPoint presentation by Dr. William Hahn, former Director of NSF-GRF.
- Workshop - How to Win an NIH/NRSA/Kirschstein Fellowship
- NIH/NRSA/Kirschstein Fellowship Application Checklist
- Funding Your Research: How to Apply for an NIH/NRSA/Kirschstein/F30-31 Fellowship.

Sample Proposals Online:
- Rachel C. Smith (NSFs).
- Dissertation Proposal Workshop (Fulbrights, NSFs).

Preparing a Successful Fellowship or Grant Application
Ernesto Chávez, Miroslava Chávez-García and Luis Alvarez
Organization of American Historians.

Writing the Personal Statement

Writing Proposals for ACLS Fellowship Competitions
Proposal writing is a genre of its own. If rhetoric is the craft of persuasion, proposal writing is especially so. The goal is to persuade reviewers that the proposed project has the special merit to deserve funding—that the project will stand out as novel and significant, and that the methodology will be recognized as careful and thorough.
Tips on Writing Grant/Fellowship Proposals (and other Research Proposals)

Ruth L. Kirschstein National Research Service Award (NRSA)
Dr. Ruth L. Kirschstein, for whom the awards below were named, passed away on October 6, 2009. Aside from Dr. Kirschstein’s scientific accomplishments in polio vaccine development, and becoming the first woman director of an NIH Institute, she was a champion of research training and a strong advocate for the inclusion of underrepresented individuals in the scientific workforce. More on Dr. Kirschstein’s life can be found [here].

- **Guide to Kirschstein - NRSA Programs** (graphical guide for funding opportunities at specific training stages)
- **For individuals with or working on a research doctorate**
- **For individuals with or working on a health-professional doctorate**
- **Applying for an NRSA**
  - [How to Apply for an NRSA from NIH](#) by Laura Stark, Ph.D.
- [Resources for NRSA applications](#) by Laura Stark, Ph.D.

Writing A Proposal For An Empirical Social Science Dissertation

Upcoming (2010-2011) Fellowship Funding Opportunities

**2011 SBE Doctoral Dissertation Research Improvement Grants**

**National Physical Science Consortium**
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. **Due Nov. 30.**

**University Student Scholars Program**
The NCST is once again pleased to announce an opportunity for currently enrolled university graduate students to conduct a project that relates to older adult transportation. Through this program, the National Center on Senior Transportation anticipates awarding a number of post-baccalaureate students with awards up to $2,000 per award to expand upon current transportation/mobility-related projects to benefit older adults and transportation service delivery networks. Funding need not be used for new initiatives and can expand upon a project that is already underway. **Due Nov. 30.**

**Earth Institute Fellows Program**
Seeks outstanding scholars with recent doctorates in the natural, social, engineering and health sciences who possess a strong interest in sustainable development. The Program provides innovative scholars with the opportunity to build a deeper foundation in one of these core disciplines while at the same time acquiring the cross-disciplinary expertise and breadth needed to addresses critical issues related to sustainable development, including reducing poverty, hunger, disease, and environmental degradation. **Due Dec. 1.**
Energy Fellowships
Preference will be given to candidates who have a well-defined thesis direction but who still have enough time remaining working toward their Ph.D. that receipt of a Link Foundation Fellowship could make a difference. The award consists of $50,000 paid in two installments of $25,000. Information on applying for fellowships may be obtained from the administrators for the individual programs of energy, ocean engineering and instrumentation, and simulation. Due Dec. 1.

NEW Burroughs Wellcome Fund Program: Collaborative Research Travel Awards: Engineering, Math, Statistics, Chemistry, Physics, Engineering Projects with Biology
To capitalize on what appears to be an opportunity to provide relatively unrestricted travel funds to academic scientists and trainees and to provide a stimulus for those working or contemplating working at the interface of science, the BWF Board approved a new program to provide travel grants that can be used both internationally and domestically to acquire new research techniques, to promote collaborations, and to attend courses. Candidates must hold a Ph.D. or are studying for a Ph.D. in mathematics, physics, chemistry, computer science, statistics, or engineering and are interested in investigating research opportunities in the biological sciences. Due Dec. 1.

Science, Mathematics & Research for Transformation Scholarship for Service Program
SMART is an opportunity for students pursuing an undergraduate or graduate degree in Science, Technology, Engineering, and Mathematics disciplines to receive a full scholarship and be gainfully employed upon degree completion. Due Dec. 1.

American Society for Photogrammetry and Remote Sensing - Awards and Scholarships
The American Society for Photogrammetry and Remote Sensing sponsors Awards and Scholarships to facilitate graduate-level studies and career goals adjudged to address new and innovative uses of remote sensing data/techniques that relate to the natural, cultural, and agricultural resources of the Earth. Due Dec. 1.

Five College Fellowship Program
Provides year-long residencies at one of the member campuses for doctoral students completing dissertations. The chief goal of the program is to promote diversity in the Academy while familiarizing Fellows with the five institutions. The program's intention is to support scholars from under-represented groups, and/or scholars with unique interests and histories, whose engagement in the Academy will enrich scholarship and teaching. Amherst, Hampshire, Mount Holyoke and Smith colleges and the University of Massachusetts Amherst are members of the Five College consortium. Due Dec. 1.

NY Public Library - Schomburg Center for Research in Black Culture - Scholars in Residence
The Program assists scholars and professionals whose research in the black experience can benefit from extended access to the Center's resources. Fellowships funded by the Center will
allow recipients to spend six months or a year in residence with access to resources at the Schomburg Center and other centers of The New York Public Library. The program encourages research and writing on black history and culture, facilitates interaction among participating scholars, and provides wide-spread dissemination of findings through lectures, publications, and colloquia and seminars. It encompasses projects in African, Afro-American, and Afro-Caribbean history and culture. **Due Dec. 1.**

**HHMI International Student Research Fellowships**
The Howard Hughes Medical Institute expects to grant 40 fellowships for international students pursuing doctoral degrees in the sciences in the United States, 2010-2011. This new fellowship program includes a $30,000 stipend, fees, and a $3,000 research allowance annually for up to three years, but not beyond the fifth year of study. **Institutional Nomination Due Dec. 1.**

**Getty Graduate Interns**
Getty Graduate Internships are offered in the four programs of the J. Paul Getty Trust—the J. Paul Getty Museum, the Getty Research Institute, the Getty Conservation Institute, and the Getty Foundation—to students who intend to pursue careers in fields related to the visual arts. Training and work experience are available in areas such as curatorial, education, conservation, research, information management, public programs, and grant-making. **Due Dec. 1,**

**AERA-ETS Fellowship Program in Measurement and Education Research**
At the time of appointment, fellows must have an earned doctorate in education or a related social or behavioral science field (i.e., anthropology, psychology, statistics, or sociology). **Due Dec. 1.**

**AAAS Science & Technology Policy Fellowships**
The [online application system](#) for the 2011-2012 fellowship year is now open. Applications are due December 5. [Click here](#) to review the Guidelines & Instructions for Candidates. **Due Dec. 5.**

**Fellowships at The Huntington 2011-2012**
The Huntington will award to scholars over one hundred fellowships for the academic year 2011-2012. These fellowships derive from a variety of funding sources and have different terms. Recipients of all fellowships are expected to be in **continuous residence** at the Huntington and to participate in and make a contribution to its intellectual life. **Due Dec. 15.**

**The National Defense Science and Engineering Graduate (NDSEG)**
The DoD will offer these fellowships to individuals who have demonstrated ability and special aptitude for advanced training in science and engineering. **Due Dec. 17.**

**DOE Computational Science Graduate Fellowship for 2011-2012**
The Department of Energy Computational Science Graduate Fellowship program provides outstanding benefits and opportunities to students pursuing a PhD in scientific or engineering disciplines with an emphasis in high-performance computing. **Online application for the**
fellowship for the 2011-2012 academic year will be available late October. Click here to be notified by email when this happens.

**NOAA EPP Graduate Sciences Program**
The GSP offers between two years (master's candidates) to four years (doctoral students) of NOAA-related research and training opportunities. Applications available in October. The Graduate Sciences Program (GSP) is aimed primarily at increasing opportunities for students in NOAA-related fields to pursue research and educational training in atmospheric, environmental, remote sensing and oceanic sciences at minority serving institutions (MSI) when possible. The GSP offers between two years (master's candidates) to four years (doctoral students) of NOAA-related research and training opportunities.

**Postdoctoral Programs at Woods Hole Oceanographic Institution**
The Woods Hole Oceanographic Institution offers several types of postdoctoral awards. A term appointment to the position of Postdoctoral Scholar, Fellow, or Investigator may be offered to an individual who has completed the requirements for a Ph.D. degree. The degree may or may not have been officially awarded; a letter from the individual's university asserting that he or she has completed all of the requirements for the degree is satisfactory for establishing eligibility for the position. Each type of postdoctoral appointment has a slightly different selection and appointment procedure. Due Jan. 14.

**NSF SBE Doctoral Dissertation Research Improvement Grants in Cultural Anthropology**
Solicits research proposals of theoretical importance in all substantive and theoretical subfields within the discipline of Cultural Anthropology. Graduate Students may apply for SBE Doctoral Dissertation Research Improvement Grants in Cultural Anthropology. Due Jan. 15.

**NOAA Climate and Global Change Postdoctoral Fellowship Program**
The UCAR Visiting Scientist Programs announces the 2011 recruitment for the NOAA Climate and Global Change Postdoctoral Fellowship Program. The program pairs recently graduated PhDs with host scientists at U.S. institutions to work in an area of mutual interest. The program aims to create the next generation of climate researchers. It endeavors to attract recent PhDs with research interests in areas relevant to the NOAA climate science and services program (http://www.climate.noaa.gov or http://www.globalchange.gov/). Due Jan. 17.

**Fellowships at The Wilson Center 2011-2012**
The Center awards approximately 20-25 residential fellowships annually to individuals with outstanding project proposals in a broad range of the social sciences and humanities on national and/or international issues. Topics and scholarship should relate to key public policy challenges or provide the historical and/or cultural framework to illuminate policy issues of contemporary importance. Due Oct. 1.
A Guide for Preparing and Submitting White Papers to the Technology Innovation Program

The Technology Innovation Program (National Institute of Standards and Technology) uses white papers to shape future competitions. Pertinent ideas, concepts and knowledge offered by stakeholders in these white papers combined with information from a variety of other sources, enables TIP to identify and address areas of critical national need and associated societal challenges suitable for TIP investment (NIST Oct. 27, 2010). The following white papers are available for comment: TIP 2008 Annual Report.

- Civil Infrastructure
- Energy (Updated)
- Healthcare (Updated)
- Manufacturing (Updated)
- Robotics (New)
- Water (New)

NSF Merit Review Facts

This section contains some important to know facts about the merit review process.

1. FACT: All proposals submitted to NSF are reviewed according to the two merit review criteria: Intellectual Merit and Broader Impacts. DISCUSSION: All proposals submitted to NSF are reviewed utilizing the two merit review criteria: Intellectual Merit and Broader Impacts. Proposals are returned without review if the Project Summary does not clearly address in separate statements 1) the intellectual merit and 2) the broader impacts of the proposed activity (see Merit Review Broader Impacts Criterion: Representative Activities). In addition to these two merit review criteria, programs may employ additional review criteria, which would be stated in the program solicitation.

2. FACT: NSF Program Officers make recommendations to fund or decline a proposal. DISCUSSION: Reviewers do not make funding decisions. The analysis and evaluation of proposals by external reviewers provide information to NSF Program Officers in making their recommendations to award or decline a proposal. See Phase II: Proposal Review and Processing.

3. FACT: Most proposals that are awarded do not receive all "Excellents." DISCUSSION: It is not true that a proposal must receive all "Excellents" to be funded; in fact, most proposals that are awarded do not receive all "Excellents." Furthermore, even if you get all "Excellents," you may not be funded. See the annual reports to the National Science Board on the National Science Foundation's Merit Review Process for data about proposals and success rates, as well as further information and data concerning the merit review process.

4. FACT: NSF Program Officers are encouraged to recommend "risky" science and engineering for funding. DISCUSSION: NSF Program Officers are encouraged to recommend for funding proposals that have high potential or payoff, even though they may be considered as being "risky" by external reviewers. NSF also has several mechanisms in place to promote the funding of 'risky science'. For example, the Grants for Rapid Response Research (RAPID) funding mechanism is used for...
proposals having a severe urgency with regard to availability of, or access to data, facilities or specialized equipment, including quick-response research on natural or anthropogenic disasters and similar unanticipated events (see GPG, Chapter II.D.1.) In addition, the EArly-concept Grants for Exploratory Research (EAGER) funding mechanism may be used to support exploratory work in its early stages on untested, but potentially transformative, research ideas or approaches (see GPG, Chapter II.D.2.) NSF is also in the process of implementing a new emphasis on transformative research which includes a modification to the intellectual merit review criteria and the development of a new funding mechanism for "early-concept" research projects. (See Important Notice No. 130: Transformative Research).

5. FACT: Principal Investigators submit on average about 2.1 proposals for every award they receive. DISCUSSION: A common misconception is that once declined, you will always be declined. However, NSF statistics show that on average, Principal Investigators submit about 2.1 proposals for every award they receive. That is, many Principal Investigators who receive awards also have been declined. See Resubmission process. Another common misconception is that one cannot get funded on a first submission. However, NSF statistics show that, in 2006, 45% of new PIs received their first award on their first attempt.

6. FACT: NSF promotes broadening participation in science and engineering. DISCUSSION: NSF promotes broadening participation in science and engineering fields. This includes increasing the participation of underrepresented minorities and women, and persons with disabilities. This also includes increasing diversity in the NSF portfolio with respect to types of institutions supported and the geographic regions represented. Broadening participation activities can be developed to address the NSF Broader Impact Merit Review Criterion; however, it is important to note that other activities are also appropriate to address the Broader Impact criterion (see Merit Review Broader Impacts Criterion: Representative Activities).

7. NSF annually has active awards at over 2000 awardee organizations. DISCUSSION: NSF funds a large number of investigators at over 2000 awardee organizations. If you are most interested in which investigators and institutions receive the awards in your area of expertise, you can easily check using the NSF award database. Use key words to conduct a search of funded projects, or you can search by NSF program. Then check the investigators and institutions named on the award abstract. You can also search the award database by investigator or institution name.

Grant Writing Resource Links

Components of a Successful Proposal
There is no single formula for preparing a sound proposal. However, many successful applications for USIP Jennings Randolph Senior Fellowships have certain elements in common.

NSF Publication: A Guide for Proposal Writing

NSF ERC Best Practices Manual
The National Science Foundation-sponsored Engineering Research Centers (ERCs) are a group of engineering systems-focused, interdisciplinary centers located at universities all across the United States, each in close partnership with industry. Since the ERC Program was founded in 1985, the ERCs collectively have brought significant changes in the culture of academic engineering research and education. This Best Practices Manual was authored independently by staff of the ERCs. It is not an NSF publication and does not necessarily reflect official NSF policy. The document is intended as a "how-to" manual for those involved in, or contemplating involvement in, the operation of an ERC or similar university-industry center.

**EPA Grant Writing Tips**

**EPA Grant-Writing Tutorial** via Purdue University

**NIH Grant Writing Tip Sheets**

Many [NIH Institutes](#) put out guides and tip sheets on their Web sites. These guides can be useful resources. Here are just a few.

- **All About Grants** - Including Grant Application Basics, How to Plan a Grant Application and How to Write a Grant Application.
- **Applying for an NHGRI Grant**
- **Choosing an Appropriate NIH Funding Instrument and Funding Mechanism** (MS Word - 209 KB)
- **NIH Grants Information CD** (PDF - 51 KB)
- **Peer Review Guidelines and Information**
- **Peer Review Meetings** - Meeting dates, descriptions, rosters, guidelines, etc.
- **Preparing Grant Applications**
- **Quick Guide for the Preparation of Grant Applications** (Complementary and Alternative Medicine)
- **SBIR/STTR Policy and Grantsmanship Information**
- **Tips for New NIH Grant Applicants**
- **Writing a Grant**

**Electronic Media:**

- **All About Grants** (Podcasts)
- **NIH Grant Review Process Videos** (YouTube)

**NIAID All About Grants Tutorials**

**National Cancer Institute (NCI) Quick Guide for Grant Applications**

**National Institute of Neurological Disorders and Stroke (NINDS), Common Mistakes in NIH Applications**

**Social Science Research Council “The Art of Writing Proposals”**

**The Art of Writing Proposals: Some Candid Suggestions for Applicants to Social Science Research Council Competitions**
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.

Funding Opportunities at the Institute of Education Sciences
Elizabeth R. Albro, Ph.D. Associate Commissioner, Teaching and Learning Division National Center for Education Research. Video.

ORNL K-12 Students and Teachers Research Programs

What the MSPs have learned about Institutional Change and Sustainability: a dynamically generated bibliography of MSP authored papers
Here you will find a dynamically generated bibliography of papers relating to institutional change and sustainability, drawn from papers authored by the MSPs, which you can view with or without abstracts. This will automatically update as new papers are added to the MSpnet library.

Finding Value and Meaning in the Concept of Partnership
"What is a partnership? This seemingly simple question evokes an astonishing variety of responses that can have profound implications for the formation, operation and outcomes of a partnership. In this study we develop a model of partnership with the goal of linking embedded partnership relations to educational outcomes. The academic literature around ideas of partnering leads to an organizational or community building view of partnerships.

Education Partnerships: Defining, Observing, Measuring and Evaluating
The need to understand how partnering works, and whether it influences the outcomes of programmatic work, has led to a growing body of evaluation studies and research. This paper reviews this literature in an effort to synthesize the concepts and measures used in the study of partnership. While our focus is primarily on partnerships between K-12 schools and institutions of higher education (IHE) like those in MSP, we have reviewed studies of partnership in other policy domains in order to develop a broader understanding of the topic and to learn from other professional communities.

DARPA Supports a “Renaissance of Wonder” for Nation’s Students
Today the White House hosted its Science Fair. Today DARPA helped ignite a ‘renaissance of wonder’ for students. And in releasing the BAA for its MENTOR program today, DARPA’s investment reached $15M in STEM-related programs over the next year.

Achievement Effects of Four Early Elementary Math Curricula: Findings for First and Second Graders
According to a national evaluation of four math curricula, among first graders, the results favored Math Expressions over both Investigations and SFAW, but not over Saxon. Among second graders, the results favored Math Expressions and Saxon over SFAW, but not over Investigations. The four curricula studied include: (1) Investigations in Number, Data, and Space, (2) Math Expressions, (3) Saxon Math, and (4) Scott Foresman-Addison Wesley Mathematics (SFAW).

What the MSPs have learned about Partnerships: A dynamically generated bibliography of MSP authored papers
Since the MSP program’s inception, partnerships between Higher Education and K-12 have been a critical area of interest. Many MSPs have written papers on this topic. Here you will find a dynamically generated bibliography drawn from papers authored by the MSPs, which you can view with or without abstracts. This will automatically update as new papers are added to the MSPnet library. We invite you use this list as you contribute to the literature on partnerships.

Expanding Underrepresented Minority Participation: America’s Science and Technology Talent at the Crossroads
Expanding Underrepresented Minority Participation suggests that the federal government, industry, and post-secondary institutions work collaboratively with K-12 schools and school systems to increase minority access to and demand for post-secondary STEM education and technical training.

Partnerships for STEM Education
Consistent with barriers to community-engaged scholarship in general, STEM faculty engagement in elementary and secondary schools (K-12) can be undermined, for example, by (i) low status accorded to STEM education research and publications, (ii) a zero-sum view of faculty time allocation (e.g., K-12 engagement means time away from work more highly rewarded during promotion, tenure, and merit review), and (iii) bureaucracies that hinder collaboration between STEM faculty and K-12 teachers and administrators.

Preparing the Next Generation of STEM Innovators: Identifying and Developing Our Nation’s Human Capital
The development of the nation's human capital through our education system is an essential building block for future innovation. Currently, the abilities of far too many of America’s young men and women go unrecognized and underdeveloped, and, thus, these individuals may fail to reach their full potential. This represents a loss for both the individual and society. There are talented students with enormous potential from every demographic and from every part of our country who, with hard work and the proper educational opportunities, will form the next generation of science, technology, engineering, and mathematics (STEM) innovators.

Prepare and Inspire: K-12 Education in Science, Technology, Engineering, and Math (STEM) for America’s Future
In preparing this report and its recommendations, PCAST assembled a Working Group of experts in curriculum development and implementation, school administration, teacher preparation and professional development, effective teaching, out-of-school activities, and educational technology.
Post-Election Cost-Cutting Could Impact U.S. R&D Funding, AAAS Expert Reports
A push for reduced federal spending in the wake of the U.S. midterm elections “could have a significant impact on federal R&D investment,” said Patrick Clemins, director of the AAAS R&D Budget and Policy Program. Leaders of the Democratic and Republican parties agree that reigning in the deficit must now be a priority, and efforts to trim government spending are likely to encompass federal R&D financing, Clemins noted in a new post-election analysis. See the full post-election analysis by Patrick Clemins, director of the AAAS R&D Budget and Policy Program. See the budget chart accompanying Clemins’ analysis.

Webinar: Federal Research Priorities and Budget for FY10
Tuesday, November 10, 2009, 8 am to 5 pm CST

Advanced Biofuels Research Pathways Webinar, November 18, 2010

Overview of the American Heart Association’s Program Portfolio for January/February 2011

Information and Instructions for Preparing Proposals for the Transportation Research Board’s Cooperative Research Programs, Updated November 2010.

Director’s Final Proposed Priorities for the Institute Of Education Sciences, November 1, 2010
The National Board for Education Sciences has approved research priorities for the Institute of Education Sciences (IES). Proposed by IES Director John Easton under terms of the Education Science Reform Act of 2002, the priorities were submitted for public comment this summer and approved at the National Board’s meeting November 1, 2010 in Washington, D.C.

REQUEST FOR IDEAS: Marine Microbiology and Marine Microbial Ecology Research
The Gordon and Betty Moore Foundation’s Marine Microbiology Initiative has supported research in marine microbiology and marine microbial ecology since 2004. Building on advances in the field, the initiative is preparing to enter its next phase. It is seeking input from the international scientific community to identify the most promising opportunities where a strategic, focused effort over the next five years will help to break open black boxes in the field and take understanding of marine microbial communities to a new level.

SBIR/STTR Programs Extended Through January 31, 2011
The President signed S.3839 on September 30 to extend the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs through January 31, 2011. These programs require agencies with a significant extramural R&D portfolio to award a percentage of those funds (currently 2.5% for SBIR and 0.3% for STTR) to small business projects. SBIR/STTR Extension (S.3839); CRS Report: Small Business Innovation Research (SBIR) Program.
NIH Notice of Intent to Publish a Funding Opportunity for the Reissue of the Institutional Research and Academic Career Development Awards. The Institutional Research and Academic Career Development Awards program announcement (PAR-06-470) has expired and there will not be an application receipt date in the fall of 2010. NIGMS plans to reissue this announcement and the next application receipt date is likely to be in the fall of 2011.

NIH Notice of Intent to Publish a Funding Opportunity for the Reissue of the Postbaccalaureate Research Education Program. The Postbaccalaureate Research Education Program (PREP) announcement (PAR-07-432) has expired, and there will not be any application submission date in January 2011. NIGMS plans to reissue this announcement and the next application submission date is likely to be in the fall of 2011.

NIH Notice of Intent to Publish a Funding Opportunity for the Reissue of Bridges to the Doctorate. The Bridges to the Doctorate program announcement (PAR-07-410) has expired and there will not be an application submission date in the fall of 2010. NIGMS plans to reissue this announcement and the next application submission date is likely to be in the fall of 2011.

NIH Notice of Intent to Publish a Funding Opportunity for the Re-issue of Bridges to the Baccalaureate. The Bridges to the Baccalaureate (PAR-07-411) has expired and there will not be an application submission date in the fall of 2010. NIGMS plans to reissue this announcement and the next submission date is likely to be in the fall of 2011.

NIH, DHS, DARPA, NSF and USDA are participating in a joint SBIR Phase I solicitation for robotics topics closing on December 20, 2010.

Master Schedule of Release Dates for FY 2011 SBIR/STTR

NIST TIPS Program Seeking White Papers
The National Institute of Standards and Technology’s (NIST) Technology Innovation Program (TIP) announces that it is seeking white papers from any interested party, including academia; Federal, State, and local governments; industry; national laboratories; professional organizations/ societies, and others. White papers will be used to identify and select areas of critical national need and the associated technical challenges to be addressed in future TIP competitions. The due dates for submission of white papers are November 29, 2010, February 15, 2011, May 10, 2011, and July 12, 2011. White papers should address the following topic areas: civil infrastructure; complex networks and complex systems; energy; nanomaterials/ nanotechnology; ensuring future water supply; and manufacturing.

NSF Dear Colleague Letter Inviting RAPID Proposals for Analysis of Climate Model Simulations for the IPCC Fifth Assessment Report
The Climate and Large-scale Dynamics program is accepting proposals for one-year projects to analyze climate model simulations of present-day climate prepared in anticipation of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5). Our
The objective in writing this letter is to increase community-wide diagnostic research into the behavior of the current generation of coupled climate and earth system models used for future climate simulations and initialized climate predictions. Research conducted in these projects is expected to lead to more detailed model intercomparisons, better understanding of robust model behaviors, and better understanding and quantification of uncertainty in future climate simulations.

**NSF Dear Colleague Letter: Wiki for Advancing Digitization of Biological Collections (ADBC) collaboration**

The Directorate for Biological Sciences recognizes the need to facilitate communication among diverse principal investigators, especially for new, highly collaborative programs such as Advancing Digitization of Biological Collections (ADBC). The solicitation and FAQs may be found at: [http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503559&org=BIO&from=home](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503559&org=BIO&from=home).

Accordingly, NSF intends to use a Wiki, a social networking vehicle, to facilitate and increase the number of collaborations among potential principal investigators in developing their proposals for this competition. On the Wiki, researchers, collection managers and others will be able to briefly describe their expertise and interest in developing collaborative proposals. The Wiki is accessible at: [https://extwiki.nsf.gov/x/FQB1](https://extwiki.nsf.gov/x/FQB1). First-time users must register for an account.

**Proposal and Award Policies and Procedures Guide, January 2011**

Available Formats: [HTML](#) | [PDF](#)

*Effective for proposals submitted or due on or after January 18, 2011.*

**Award and Administration Guide, January 2011**

Available Formats: [HTML](#) | [PDF](#)

*Effective for proposals submitted on or after January 18, 2011.*

**Grant Proposal Guide, January 2011**

Available Formats: [HTML](#) | [PDF](#)

*Effective for proposals submitted on or after January 18, 2011.*

The Department of Energy is now accepting nominations for the [Ernest Orlando Lawrence Awards](#). The Lawrence Awards honor U.S. scientists and engineers at mid-career for exceptional contributions in research and development supporting the Department of Energy and its mission to advance the national, economic, and energy security of the United States. Nominations for the 2011 Lawrence Awards must be submitted by January 15, 2011. The Lawrence Award’s [webpage](#) describes the nomination guidelines and process, and all nominations must be made via an [electronic submission process](#). The Lawrence Award is given in each of the following eight categories: Atomic, Molecular, and Chemical Sciences; Biological and Environmental Sciences; Computer, Information, and Knowledge Sciences; Condensed Matter and Materials Sciences; Energy Science and Innovation; Fusion and Plasma Sciences; High Energy and Nuclear Physics; and National Security and Nonproliferation.
DOE Biomass Energy Data Book: Edition 2 in PDF format
The Department of Energy, through the Biomass Program in the Office of Energy Efficiency and Renewable Energy, has contracted with Oak Ridge National Laboratory to prepare this Biomass Energy Data Book. The purpose of this data book is to draw together, under one cover, biomass data from diverse sources to produce a comprehensive document that supports anyone with an interest or stake in the biomass industry. Given the increasing demand for energy, policymakers and analysts need to be well-informed about current biomass energy production activity and the potential contribution biomass resources and technologies can make toward meeting the nation’s energy demands.

USDA Readies Expanded Biofuels Initiatives, Including FAA Jet Fuel Project
The U.S. Department of Agriculture (USDA) announced a series of measures on October 21 to promote production of biofuels from renewable sources. USDA will publish a final rule to implement the Biomass Crop Assistance Program (BCAP), which has operated as a pilot since 2009. Under the BCAP final rule, USDA will resume making payments to eligible producers. Authorized in the Food, Conservation, and Energy Act of 2008, BCAP is designed to ensure that a sufficiently large base of new, non-food, non-feed biomass crops is planted to meet future demand for renewable energy consumption. The overall goal of the measure is to create jobs and mitigate the effects of climate change.

What are the major sources and users of energy in the United States?
The major energy sources in the United States are petroleum (oil), natural gas, coal, nuclear, and renewable energy. The major users are residential and commercial buildings, industry, transportation, and electric power generation. The pattern of fuel use varies widely by sector. For example, oil provides 94% of the energy used for transportation, but only 1% of the energy used to generate electric power. Understanding the relationships between the different energy sources and their uses provides insights into many important energy issues.

AAAS Report XXXV Research and Development FY 2011

PART II: Agency R&D Budgets

- **Chapter 5**
  - Department of Defense
  - Joanne Padrón Carney, AAAS
- **Chapter 6**
  - National Science Foundation
  - Amy Scott and Tobin Smith, AAU
- **Chapter 7**
  - National Institutes of Health
  - Erin Heath, AAAS
- **Chapter 8**
  - Department of Energy
  - Michael S. Lubell, APS
- **Chapter 9**
  - National Aeronautics and Space Administration
  - Ross B. G. Bell, AIAA
- **Chapter 10**
  - U.S. Department of Agriculture
  - Elizabeth Allred, Ian L. Maw, and Eddie G. Gouge, APLU
Comments sought on draft National Nanotechnology Initiative
The White House Office of Science and Technology Policy and the Nanoscale Science, Engineering, and Technology Subcommittee of the National Science and Technology Council are seeking public comments on the draft 2010 National Nanotechnology Initiative (NNI) Strategic Plan. The NNI is the framework that underpins the nanotechnology work of the NNI member agencies. It aims to ensure that advances in nanotechnology research and development (R&D) and their applications to agency missions and the broader national interest continue unabated in this still-young field. Its purpose is to facilitate achievement of the NNI vision by laying out targeted guidance for agency leaders, program managers, and the research community regarding planning and implementation of nanotechnology R&D investments and activities. Deadline for comments Nov. 30. Details:
The competitiveness of proposals can be enhanced by grounding the arguments you make in the proposal narrative, as appropriate, on national reports and agency research roadmaps that demonstrate your understanding of the national research agenda and how your research advances and maps to that agenda.

DOE Releases Comprehensive Report on Offshore Wind Power in the United States
Report addresses opportunities, benefits and challenges to the large-scale deployment of offshore wind power.

DARPA Supports a “Renaissance of Wonder” for Nation’s Students
Today the White House hosted its Science Fair. Today DARPA helped ignite a ‘renaissance of wonder’ for students. And in releasing the BAA for its MENTOR program today, DARPA’s investment reached $15M in STEM-related programs over the next year.

NOAA’s Next Generation Strategic Plan
Paul Doremus, NOAA Director of Strategic Planning Office of Program, Planning, and Integration. See Office of Program Planning and Integration. Within this goal, NOAA will pursue specific objectives that over the next five years:

- **Objective:** Resilient coastal communities that can adapt to the impacts of hazards and climate change
- **Objective:** Comprehensive ocean and coastal planning and management
- **Objective:** Safe, efficient and environmentally sound marine transportation
- **Objective:** Improved coastal water quality supporting human health and coastal ecosystem services
- **Objective:** Safe, environmentally sound Arctic access and resource management

New Priorities for the 21st Century –NOAA’s Strategic Plan

Information and Instructions for Preparing Proposals for the Transportation Research Board’s Cooperative Research Programs, Updated November 2010.

Changes to NEA Guidelines
NEA’s Grants for Arts Projects application guidelines that will be posted in January 2011. Here are the highlights of the changes:

* The Access to Artistic Excellence and Learning in the Arts for Children and Youth categories have been replaced with a new funding category called Art Works, which will embody the agency's guiding principle: "Art works."
* Art Works will support the **four outcomes** mandated by the Agency's [2010 Strategic Plan](#): - Creation: The creation of art that meets the highest standards of excellence, - Engagement: Public engagement with diverse and excellent art, - Learning: Lifelong learning in the arts, and - Livability: The strengthening of communities through the arts.
You will be asked to select the outcome that is most relevant to your project and that reflects the results expected to be achieved by your project. If you receive a grant, you also will be asked to provide evidence that the outcome was achieved.

* **Within these outcomes, innovative projects are encouraged.** To ensure that innovative ideas and formats for artistic expression are supported, the NEA is requiring that Consortium applications be for innovative projects (see below for a definition).

What does this mean to you?

**If you've been applying to Access to Artistic Excellence**, you now will apply to Art Works.

* The **two application deadlines** are at the same times as last year (March 10 and August 11, 2011).
* You'll continue to go to the discipline that is most relevant to your project as your starting place.
* All types of projects supported in the past continue to be eligible in Art Works.

**If you've been applying to Learning in the Arts for Children and Youth**, you now will apply to Art Works through the Arts Education discipline.

* If you have a pre-K through 12 curriculum-based project that aligns with national or state arts education standards, your new starting place for funding will be with the Arts Education discipline.
* You will need to make a **schedule adjustment** within the Arts Education discipline. You may apply to either the March 10 or August 11, 2011, application deadlines; **there no longer is a June deadline**. The March deadline will be for community-based projects with project start dates of January 1, 2012, or later. The August deadline will be for school-based projects with project start dates of June 1, 2012, or later.

**If you will be applying for an official Consortium project** in Art Works, you must apply for an innovative project. An official Consortium project is an exception to the one-application rule and represents a partnership of organizations that undertakes a shared project. In general, innovative projects are characterized as those that may prove transformative with the potential for meaningful change; are distinctive by offering fresh insights and new value for the field and/or the public through unconventional solutions; and may be shared and/or emulated, or lead to other innovations.

**A note about Challenge America Fast-Track**: This funding category will still be available with an application deadline of **May 26, 2011**. This year we’re implementing a policy to limit consecutive-year funding. If you've received a Challenge America Fast-Track grant for the last three years, you are not eligible to apply to the Fast-Track category this year. You may apply to other NEA funding opportunities including Art Works.

**Grants.gov update**: Grants.gov has implemented new security requirements for the use of the Grants.gov system. Among the changes, you are required to change your password every 90 days. See [www.grants.gov](http://www.grants.gov) for more details.

**Once the Grants for Arts Projects guidelines are posted in January**, take a look, and if anything is unclear, contact the discipline staff that is appropriate to your project (see "Agency Contacts").
New Funding Opportunities

Overview of the American Heart Association's Program Portfolio for January/February 2011

Fellowship and Other Humanities Funding Opportunities

Humanities and Social Sciences H-Net Online Funding Opportunities

Funding Opportunities at the Institute of Education Sciences
Elizabeth R. Albro, Ph.D. Associate Commissioner, Teaching and Learning Division National Center for Education Research. Video.

Fossil Fuel Research of HBCU/MSI
This program is designed to raise the overall level of competitiveness of HBCU/OMIs with other institutions in the field of fossil energy research; and to tap an under-utilized resource by increasing the number of opportunities in the areas of science, engineering, and technical management. Funding Opportunity Announcement DE-FOA-0000409 entitled "Support of Advanced Fossil Resource Utilization Research By Historically Black Colleges and Universities and Other Minority Institutions (HBCUs/OMIs)." Contract Specialist: Harolynne Blackwell. Questions regarding the content of the announcement must be submitted through FedConnect. Application due date is December 1, 2010.

Support of Advanced Coal Research at U.S. Colleges and Universities
Through its annual Funding Opportunity Announcement (FOA), DE-FOA-0000408, entitled "Support of Advanced Coal Research at U.S. Colleges and Universities", the University Coal Research (UCR) Program supports the Department of Energy's (DOE) Office of Fossil Energy and the National Energy Technology Laboratory's mission by supporting long-term, high-risk meritorious fundamental research that advances the science of coal technologies at U.S. colleges and universities. Since its inception in FY1979, the UCR Program has maintained three objectives, to be achieved simultaneously, which are: (1) to improve our understanding of the chemical and physical processes involved in the conversion and utilization of coal in an environmentally acceptable manner; (2) to maintain and upgrade the coal research capabilities and facilities of U.S. colleges and universities; and (3) to support the education & training of our next generation of scientists and engineers. Due Dec. 9.

DARPA Young Faculty Award
This RA solicits ground-breaking single-investigator proposals from junior faculty for research and development in the areas of Physical Sciences, Engineering, Mathematics, Medicine, Biology, Information and Social Sciences of interest to DARPA’s Microsystems Technology Office (MTO), Defense Science Office (DSO), and Information Innovation Office (I2O) (formerly the...
Transformational convergence Technology Office (TCTO) and the Information Processing Techniques Office (IPTO). Due Dec. 10.

Call for Research in Analog & Mixed-Signal Devices
Semiconductor Research Corp. (SRC) Global Research Collaboration (GRC) in Device Sciences is soliciting White Papers in the area of Analog and Mixed-Signal (AMS) Devices. The principal goals of this research are to explore new frontiers in devices and technologies for analog and mixed-signal applications. This Call, issued to universities worldwide, may be addressed by an individual investigator or a research team. Our selection process is divided into two stages. The interested parties are requested to submit brief, 2-page White Papers. A successfully selected White Paper will result in an invitation to submit a full proposal which will be considered in a competitive procurement process leading to a 3-year research contract. Due Dec. 15.

Fellowships at The Huntington 2011-2012
The Huntington will award to scholars over one hundred fellowships for the academic year 2011-2012. These fellowships derive from a variety of funding sources and have different terms. Recipients of all fellowships are expected to be in continuous residence at the Huntington and to participate in and make a contribution to its intellectual life. Due Dec. 15.

2011 National Geological & Geophysical Data Preservation Program
Objectives of the Program are to: 1. Archive geologic, geophysical, and engineering data, maps, well logs, and samples; 2. Provide a national catalog of such archival material; and 3. Provide technical and financial assistance related to the archival material. For details of the Implementation Plan for the National Geological and Geophysical Data Preservation Program visit here. Due Dec. 17.

Talent Search Program
Purpose of Program: The purpose of the TS Program is to identify qualified individuals with potential for education at the postsecondary level and encourage them to complete secondary school and undertake a program of postsecondary education. TS projects publicize the availability of, and facilitate the application for, student financial assistance for persons who seek to pursue postsecondary education and encourage persons who have not completed programs at the secondary or postsecondary level to enter or reenter and complete these programs. Due Dec. 28.

Junior Faculty Development Program
The Office of Academic Exchange Programs/ European Programs Branch of the Bureau of Educational and Cultural Affairs announces an open competition for the Junior Faculty Development Program. Due Jan. 6.

2011 National Spatial Data Infrastructure
Funds projects in the geospatial data community to build the infrastructure necessary to effectively discover, access, share, manage, and use digital geospatial data. NSDI consists of the
technologies, policies, organizations, and people necessary to promote cost-effective production, ready availability, and greater utilization of geospatial data among a variety of sectors, disciplines, and communities. NSDI CAP areas of emphasis include: documenting, implementing, and providing outreach for FGDC geospatial standards including metadata; expanding geographic information coordination and collaboration across and between organizational levels; promoting geospatial best practices; and advancing the implementation and exchange of common geospatial data, services, and applications. Due Jan. 6.

SERDP Solicits Proposals for FY 2012 Funding
Core Proposal Submissions Due January 6, 2011 (Non-Federal) and March 10, 2011 (Federal). All SEED Proposals Due March 10, 2011. SERDP released its FY 2012 Core and SERDP Exploratory Development (SEED) solicitations on October 28, 2010. [SERDP is DoD’s environmental science and technology program, planned and executed in partnership with DOE and EPA, with participation by numerous other federal and non-federal organizations. SERDP invests across a broad spectrum of basic and applied research, as well as advanced development. ] Funds are available through a competitive process to both federal and private organizations to perform basic and applied research and advanced technology development. Core Solicitation projects vary in cost and duration, consistent with the scope of the work proposed. The Statements of Need (SON) referenced by this solicitation request proposals related to the SERDP program areas of Environmental Restoration (ER), Munitions Response (MR), Resource Conservation and Climate Change (RC), and Weapons Systems and Platforms (WP). For the Core solicitation, pre-proposals from the non-federal sector are due January 6, 2011. Federal proposals are due March 10, 2011. The SEED Solicitation is designed for work that will investigate innovative environmental approaches that entail high technical risk or require supporting data to provide proof of concept. SEED proposals are limited to not more than $150,000 and approximately one year in duration. Successful SEED projects may lead to more extensive follow-on efforts. A SEED SON was released for the Munitions Response (MR) program area. All SEED proposals are due March 10, 2011.

NEH America’s Historical and Cultural Organizations Grants
America’s Historical and Cultural Organizations grants support projects in the humanities that explore stories, ideas, and beliefs in order to deepen our understanding of our lives and our world. The Division of Public Programs supports the development of humanities content and interactivity that excite, inform, and stir thoughtful reflection upon culture, identity, and history in creative and new ways. Due Jan. 11.

National Clean Diesel Funding Assistance Program FY 2011
EPA’s National Clean Diesel Funding Assistance Program (PDF file) is soliciting proposals nationwide for projects that achieve significant reductions in diesel emissions in terms of tons of pollution produced and diesel emissions exposure, particularly from fleets operating in areas designated by the Administrator as poor air quality areas. Eligible diesel emission reduction solutions include verified emission control technologies such as retrofit devices, cleaner fuels, and engine upgrades, verified idle reduction technologies, verified aerodynamic technologies
and low rolling resistance tires, certified engine repowers, and/or vehicle or equipment replacement. **Due Jan. 13.**

**Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom Challenge Grants**
The program seeks to: (a) promote and strengthen secondary education and two-year postsecondary education in agriscience and agribusiness in order to help ensure the existence in the United States of a qualified workforce to serve the food and agricultural sciences system; and (b) promote complementary and synergistic linkages among secondary, two-year postsecondary, and higher education programs in the food and agricultural sciences in order to advance excellence in education and encourage more young Americans to pursue and complete a baccalaureate or higher degree in the food and agricultural sciences. **Due Jan. 18.**

**NSF Major Research Instrumentation Program: Instrument Acquisition or Development**
New solicitation effective Nov. 1 with application revisions.
MRI serves to increase access to shared scientific and engineering instruments for research and research training in our Nation's institutions of higher education, museums, science centers, and not-for-profit organizations. This program especially seeks to improve the quality and expand the scope of research and research training in science and engineering, by providing shared instrumentation that fosters the integration of research and education in research-intensive learning environments. Development and acquisition of research instrumentation for shared inter- and/or intra-organizational use are encouraged, as are development efforts that leverage the strengths of private sector partners to build instrument development capacity at academic institutions. **Due Jan. 27.**

**Institute for Advanced Topics in the Digital Humanities**
These NEH grants support national or regional (multistate) training programs for scholars and advanced graduate students to broaden and extend their knowledge of digital humanities. Through these programs, NEH seeks to increase the number of humanities scholars using digital technology in their research and to broadly disseminate knowledge about advanced technology tools and methodologies relevant to the humanities. **Due Feb. 16.**

**Innovative Bioavailability Assays to Assess the Effectiveness of Contaminated Sediment Remediation (R01)**
The National Institute of Environmental Health Sciences (NIEHS) invites qualified investigators from domestic institutions of higher education to submit an application for a Superfund Research Program (SRP) Individual Research Project Grant (R01). This funding opportunity announcement (FOA) encourages the research community to develop innovative bioavailability assays to determine the effectiveness of contaminated sediment remediation. **Due Feb. 17.**

**FY 2012 Fulbright Scholar Program**
The Office of Academic Programs, Bureau of Educational and Cultural Affairs (ECA), U.S. Department of State announces an open competition for a cooperative agreement to assist in the FY 2012 administration of the worldwide Fulbright Scholar Program. Due Feb. 18.

**Plant Feedstock Genomics for Bioenergy:**
A Joint Research Funding Opportunity Announcement USDA, DOE
The U.S. Department of Energy's Office of Science, Office of Biological and Environmental Research (OBER), and the U.S. Department of Agriculture (USDA), National Institute of Food and Agriculture (NIFA), hereby announce their interest in receiving applications for genomics based research that will lead to the improved use of biomass and plant feedstocks for the production of fuels such as ethanol or renewable chemical feedstocks. Specifically, applications are sought for fundamental research on plants that will improve biomass characteristics, biomass yield, or sustainability. Systems biology approaches to identify genetic indicators enabling plants to be efficiently bred or manipulated, or research to predict phenotype from underlying genotype that could lead to improved feedstock characterization and sustainability are also encouraged. Posted at FedConnect Nov. 1. Due Feb. 25. Preapplications are Required: December 17, 2010.

Solicitations Remaining Open from Sept. 15 & Oct. 15 Issues of RD&GWN

**DARPA-BAA-10-83 Strategic Technologies**
Posted 8 September 2010—Open to Sept. 8, 2011
The Defense Advanced Research Projects Agency’s (DARPA) Strategic Technology Office (STO) is soliciting innovative proposals under this BAA for the performance of research, development, design, and testing that directly supports Strategic Technology Office (STO). This includes Communications, Networks and Electronic Warfare; Cyber; Energy and Self-Sufficient Operations; Finding Difficult Targets; Recapturing Surprise; and Core Strategic Technologies.

**$800 million for all DOE Office of Science new, renewal, and supplemental grants FY2011**
This FOA will remain open until September 30, 2011 or until replaced by a successor FOA. Applications may be submitted any time during this period. Grants 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 FOA, DE-FOA-0000411, is for new applications; a companion FOA, DE-FOA-0000412, exists for renewal and supplemental applications.

**Dear Colleague Letter: Metabolomics for a Low Carbon Society**
This NSF DCL announces an upcoming opportunity that is anticipated to be offered in FY 2011, pending appropriation of funds. The Metabolomics for a Low Carbon Society Program will support basic research in the area of plant, algal and microbial metabolomics.
NEW Burroughs Wellcome Fund Program: Collaborative Research Travel Awards: Engineering, Math, Statistics, Chemistry, Physics, Engineering Projects with Biology
To capitalize on what appears to be an opportunity to provide relatively unrestricted travel funds to academic scientists and trainees and to provide a stimulus for those working or contemplating working at the interface of science, the BWF Board approved a new program to provide travel grants that can be used both internationally and domestically to acquire new research techniques, to promote collaborations, and to attend courses. Candidates must hold a Ph.D. or are studying for a Ph.D. in mathematics, physics, chemistry, computer science, statistics, or engineering and are interested in investigating research opportunities in the biological sciences. Due December 1.

Guggenheim Memorial Foundation, John Simon - Fellowships to Assist Research and Artistic Creation -- Latin American and Caribbean Competition
The John Simon Guggenheim Memorial Foundation provides fellowships for advanced professionals in all fields (natural sciences, social sciences, humanities, creative arts) except the performing arts. Fellowships are not available for students. The Foundation only supports individuals. It does not make grants to institutions or organizations. Due Dec. 1.

Rockefeller Foundation - Bellagio Study and Conference Center
The Bellagio in northern Italy offers Individual, Collaborative, and Parallel Residencies for scholars and artists. The center offers one-month stays for 15 residents at a time. Individuals in any discipline or field and coming from any country who expect their work to result in publication, exhibition, performance, or other concrete product are welcome to apply for a period of work uninterrupted by the usual professional and personal demands. Due Dec. 1.

American Philosophical Society - Franklin Research Grants (for Travel for Research Purposes)
The Franklin Research Grants program is particularly designed to help meet the costs of travel to libraries and archives for research purposes; the purchase of microfilm, photocopies, or equivalent research materials; the costs associated with fieldwork; or laboratory research expenses. Due Dec. 1.

Bibliographical Society of America - Short-Term Fellowship Program
The Bibliographical Society of America invites applications for its annual Short-term Fellowship Program, which supports bibliographical inquiry as well as research in the history of the book trades and in publishing history. Research may concentrate on books and documents in any field, but should focus on the book or manuscript (the physical object) as historical evidence. Fellowships may be held for one or two months and include a stipend of up to $2,000 per month in support of travel, living, and research expenses. Due Dec. 1.

Virginia Foundation for the Humanities and Public Policy - Resident Fellows Program
The Foundation is committed to humanities research in the public interest. The VFH Fellowship program offers time, space, and resources to scholars applying the tools of history, philosophy, ethics, cultural studies, and literary criticism to matters of public concern. Due Dec. 1.
Five College Fellowship Program
Provides year-long residencies at one of the member campuses for doctoral students completing dissertations. The chief goal of the program is to promote diversity in the Academy while familiarizing Fellows with the five institutions. The program's intention is to support scholars from under-represented groups, and/or scholars with unique interests and histories, whose engagement in the Academy will enrich scholarship and teaching. Amherst, Hampshire, Mount Holyoke and Smith colleges and the University of Massachusetts Amherst are members of the Five College consortium. Due Dec. 1.

American Society for Photogrammetry and Remote Sensing - Awards and Scholarships
The American Society for Photogrammetry and Remote Sensing sponsors Awards and Scholarships to facilitate graduate-level studies and career goals adjudged to address new and innovative uses of remote sensing data/techniques that relate to the natural, cultural, and agricultural resources of the Earth. Due Dec. 1.

Study of the United States Institutes for Student Leaders on U.S. History and Government
The Branch for the Study of the United States, Office of Academic Exchange Programs, Bureau of Educational and Cultural Affairs, invites proposal submissions for the design and implementation of six Study of the U.S. Institutes for Student Leaders on U.S. History and Government. Participants will be drawn from countries throughout Central and South America and the Caribbean. Three institutes will be conducted entirely in Spanish, and the remaining three in English. Each academic institute will be five weeks in duration, including a one-week integrated study tour. $1.4 million for one award. Due Dec. 3

AAAS Science & Technology Policy Fellowships
The online application system for the 2011-2012 fellowship year is now open. Click here to review the Guidelines & Instructions for Candidates. The Fellowships help to establish and nurture critical links between federal decision-makers and scientific professionals to support public policy that benefits the wellbeing of the nation and the planet. Due Dec. 5

Fall 2011 EPA Fellowships For Undergraduate Environmental Study
EPA invites applications for the Greater Research Opportunities Fellowships for undergraduate environmentally related study for bachelor’s level students. Subject to availability of funding, the agency plans to award approximately 40 new fellowships by July 29, 2011. The fellowship provides up to $19,700 per year of academic support and $9,500 for internship support for a combined total of up to $48,900 over the life of the fellowship. Due by Dec. 9.

NOAA Regional Ocean Partnership Funding Program - FY2011 Funding Competition
NOAA is soliciting proposals for competitive funding for Regional Ocean Partnerships that include or emphasize regional Coastal and Marine Spatial Planning (CMSP) efforts. This competition is focused on advancing effective coastal and ocean management through regional ocean governance and the goals for national ocean policy set out in the July 2010 Final
Recommendations of the Interagency Ocean Policy Task Force, which includes a national CMSP Framework. Due Dec. 10

**Advancing Digitization of Biological Collections**
Program seeks to create a national resource of digital data documenting existing biological collections and to advance scientific knowledge by improving access to digitized information (including images) residing in voucheder scientific collections across the U.S. Due Dec. 10.

**Fiscal Year 2011 Office of Naval Research Young Investigator Program (YIP)**
Proposals addressing research areas as described in the ONR Science and Technology (S&T) Department section of ONR’s website which are of interest to ONR Program Officers and Division Directors will be considered. Due Dec. 22.

**8th Annual P3 Awards**
The P3 competition highlights the use of scientific principles in creating innovative projects focused on sustainability. The P3 Awards 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. See the P3 Website for more details about this program. Review the EPA Strategic Plan and EPA Sustainability Research Strategy to gain a better understanding of the mission context and role of the P3 Awards. Due Dec. 22.

**Comparative Analysis of Marine Ecosystem Organization (CAMEO)**
The purpose of the program is to strengthen the scientific basis for an ecosystem approach to the stewardship of our ocean and coastal living marine resources and ecosystems. The goal is to provide an understanding of and predictive capability for marine ecosystem organization and production, particularly as the dual drivers of climate variability and fishing pressure affect them. Comparative analyses provide an ideal way to achieve this goal. Due Jan. 7.

**Promoting Research and Innovation in Methodologies for Evaluation (PRIME)**
Supports research on evaluation with special emphasis on exploring innovative new approaches for determining the impacts and usefulness of evaluations of STEM education projects and programs; building on and expanding the theoretical foundations for evaluating STEM education and workforce development initiatives, including translating and adapting approaches from other fields. Due Jan. 5.

**Strategic Technologies for CyberInfrastructure (STCI)**
The goal of the NSF Cyberinfrastructure Framework for the 21st Century (CF21) initiative is to foster the development of a scalable, comprehensive, secure and sustainable cyberinfrastructure that supports potentially transformative research in science and engineering. Full Proposal Window: January 3, 2011 - January 18, 2011

**US-Mexico Border Environmental Education, Outreach and Support Program**
This notice announces the availability of funds and solicits applications from eligible entities for creation and management of an environmental education outreach program in the US section of the US Mexico Border region designed to reach K-12, undergraduate, and graduate students and provide training to assist them in pursuing careers in air quality management, and increase their awareness and understanding of environmental risks stemming from air pollution and related environmental justice concerns. Optional LOI Nov. 15; full proposal due Jan. 10.

**Scalable Nanomanufacturing (SNM)**
A program on collaborative research and education in the area of scalable nanomanufacturing, including the long-term societal implications of the large-scale implementation of nanomanufacturing innovations. Posted: September 24, 2010. Due Jan. 10.

**Prophecy (DARPA-BAA-10-93)**
DARPA seeks to achieve the ability to successfully predict the natural evolution of any virus, via platforms and algorithms which are capable of monitoring rare advantageous viral events and incorporating numerous environmental factors. Proposed research should investigate approaches that enable advances in science, devices, or systems. Due Jan. 14.

**Nanoelectronics for 2020 and Beyond, A Joint Activity between NSF and NRI**
NSF and the semiconductor industry’s Nanoelectronics Research Initiative plan will support innovative research and education activities on the topic of Nanoelectronics for 2020 and Beyond. Activities will be supported as interdisciplinary research team awards. Due Jan. 19.

**Broadening Participation Research Initiation Grants in Engineering (BRIGE)**
The goal of the BRIGE solicitation is to increase the number of proposals to the Directorate for Engineering from individuals who can serve as role models and mentors for an increasingly diverse engineering student population who will become the workforce of the future. BRIGE supports innovative research and diversity plans that contribute to recruiting and retaining a broad representation of engineering researchers, especially subgroups underrepresented in the engineering population in programs supported by these grants. Due Jan. 24.

**CHE-DMR-DMS Solar Energy Initiative**
The NSF Solar Energy Initiative program announced this new solicitation. It supports interdisciplinary efforts by groups of researchers to address the scientific challenges of highly efficient harvesting, conversion, and storage of solar energy. Groups must include three or more co-Principal Investigators, of whom one must be a researcher in chemistry, a second in materials, and a third in mathematical sciences, in areas supported by the Divisions of Chemistry, Materials Research, and Mathematical Sciences, respectively. Due by Jan. 25.

**Animal and Biological Material Resource Centers (P40)**
This FOA issued by the National Center for Research Resources (NIH) encourages grant applications for national Animal Model, and Animal and Biological Material Resource Centers. These Centers provide support for special colonies of laboratory animals, as well as other
resources such as reagents, cultures (cells, tissues, and organs) and genetic stocks that serve the biomedical research community at large. **Due Jan. 25.**

**Plant Genome Research Program**
Up to $20 million is available for FY 2011 new awards, pending availability of funds. Four areas of opportunity will be offered as components of the PGRP in **Fiscal Year 2011**: (1) Genome-Enabled Plant Research (GEPR) awards to tackle major unanswered questions in plant biology on a genome-wide scale; (2) Transferring Research from Model Systems (TRMS) awards to transfer findings made using model systems to plants of economic importance; (3) Tools and Resources for Plant Genome Research (TRPGR) awards to support development of novel tools to enable discovery in plant biology and (4) Improving Plant Genome Annotation (IPGA) awards to improve existing tools or develop new tools for improved annotation of the genomes of plants of economic importance. **Due Jan. 28.**

**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. **Due Feb. 2.**

**The NSF-Census Research Network (NCRN)**
The NSF-Census Research Network will **provide support for a set of research nodes**, each of which will be staffed by a team of scientists conducting interdisciplinary research and educational activities on methodological questions of interest and significance to the broader research community and to the Federal Statistical System, particularly the U.S. Census Bureau. The activities will be expected to advance both fundamental and applied knowledge as well as further the training of current and future generations of researchers in research skills of relevance to the measurement of economic units, households, and persons. **Due Feb. 16.**

**Digital Humanities Start-Up Grants**
NEH invites applications to the Digital Humanities Start-Up Grants program. This program is designed to encourage innovations in the digital humanities. **By awarding relatively small grants to support the planning stages, NEH aims to encourage the development of innovative projects that promise to benefit the humanities. Due Feb. 23**

**Undergraduate Research and Mentoring in the Biological Sciences** (**URM)**
The goal of the program is to increase the number and diversity of individuals pursuing graduate studies in all areas of biological research supported by the NSF Directorate for Biological Sciences. Support will be provided to academic institutions to establish innovative programs to engage undergraduates in a year-round research and mentoring activity. Particular emphasis will be placed on broadening participation of members of groups historically underrepresented in science and engineering. **Due March 1.**
What We Do--

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

- 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

- 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

Note to Potential Contributors

If you have an idea for an article related to academic research development and grant writing you would like to write for Research Development & Grant Writing News email co-publisher Lucy Deckard with a query proposal of up to ~75 words. Our goal is to publish two articles each issue from faculty, researchers, STEM educators, and research development professionals, among others, to gain a diversity of perspectives related to all areas of academic grant writing.

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