

Research Development & Grant Writing News

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provides consulting services for colleges and universities on a wide range of topics related to research development and grant writing, including research development [strategies](#), grant writing [workshops](#) and seminars, support developing [center proposals](#), support for [junior faculty](#), support on [facilities](#) and instrumentation grants, and complementary [support services](#) for research development and sponsored projects offices, as well as grant professionals in colleges, departments, and institutes.

Research Funding Strategies for New Investigators: How to Get Started

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Competing for funding as an early-career researcher can be daunting, but you can learn from colleagues who have been successful. This article addresses competitive strategies new investigators can use to jump-start their research careers by enhancing funding success.

Competing for grants as a new assistant professor just starting your research career can be daunting. Success rates for proposals to most federal agencies have been declining in recent years as a result of the dramatic increase in proposals submitted. Add to that the fact that you will be competing with established researchers with proven funding track records and a strong list of publications, and it may be tempting to throw up your hands and start looking into other career options. However, many early career researchers have been successful in winning funding, and by learning what worked for them, you can greatly improve your chances of winning research funding early in your own career. Here are some things you can do to improve your chances of winning research funding.

Determine your department's expectations regarding external research funding.

Expectations vary widely by discipline and department, so talk to your Department Head or Chair, colleagues, and mentors. Ask them: Should you start writing proposals immediately, or would your time be better spent generating preliminary data and publications? How important is external funding in the tenure decision? Are certain kinds of funding, and funding from certain agencies, more highly regarded than others when considering a candidate for tenure? For example, is more value given to being a PI on a smaller proposal than a co-PI or senior investigator on a larger effort led by an established researcher? Is value given to participation in educational proposals (e.g., NSF STEM programs)? The answers to these questions will help you decide when to start working on research proposals, what type of funding to pursue, and what specific agencies to target.

Learn from others. Seek out faculty in your field who have been successful at winning research funding. **Ask them:** What agencies and programs fund our kind of research? What are their expectations? How does the funding agency operate (i.e., what is its culture, mission, investment priorities and research strategic plan)? Have you been a reviewer for these agencies or served as a program officer? If so, are there common mistakes that you see in proposals that you've reviewed? How did you get your first few grants? What advice would you give a new faculty member who is pursuing his or her first grant? How should I interact with program officers? Ask whether or not the faculty member might be willing to let you see a successful proposal. In addition, enroll in workshops and seminars about grant writing--many universities offer these, and many make them available on the Web (for example, Michigan State University and University of North Carolina-CH have excellent sites on grant writing). Check with your Office of Sponsored Projects or Research to find out whether training is available at your university, **or check the ARFS Web for upcoming webinars and on-site seminars, including the CAREER Webinar.**

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Establish a research agenda that you plan to follow in the first few years of your research career, and publish and attend conferences in that area. Having a clear, focused idea of the research directions you want to pursue will enable you to select the grants that will help you develop a clear line of scholarship, and publications will help you to establish the credentials that proposal reviewers will be looking for. The details of how you should go about developing a research agenda vary considerably by discipline, but there are several considerations that you should take into account from a funding perspective:

- Is your research agenda sufficiently distinct from that of your graduate advisor to enable to establish an independent career?
- Is your research agenda in an area that you are passionate about and would enthusiastically spend the next few years working on?
- Do you have a strong publication record that will support your chosen research area or in a closely-related area, or do you have a plan to establish a strong record soon? If the area is very new, will your previous publications demonstrate your qualifications to pursue this research area?
- Is your research agenda in an exciting, vigorous, high-impact area of scholarship (rather than an area that has already been well-researched, where most progress is now incremental)?
- Is your research agenda in an area that is currently funded by agencies or foundations, or is it likely to be funded soon?
- Have you reviewed the strategic investment plans, research roadmaps, reports, and workshop results of the agencies you are targeting for funding?

This is not to say that you should plan your future research based solely on any of these considerations, or that the importance of these questions is the same in each discipline. However, it is wise for any early career researcher to know the answers to the above questions before deciding on a particular research agenda.

Network with other researchers in your field. Just as you are expected to participate in the scholarly community in your discipline, you should also work to become integrated into the funding community, including researchers in your field who have been funded by an agency, served as reviewers, or who have worked at the agency. Developing these connections will help you stay informed about changes at the agency, understand research priorities of the agency, and develop collaborations with other researchers in the community. While at conferences, seek out program directors from agencies that fund research in your area. Attend their presentations and talk to them afterwards about their programs, interests and priorities (be sure you have done your homework first by reading the agency's website and other documentation, particularly becoming knowledgeable about the program areas for which the program officer is responsible). Similarly, introduce yourself to researchers in your field who are well funded. It is likely that they may eventually be reviewers of one of your proposals.

The degree to which personal connections affect funding decisions varies widely by funding agency. However, it is always better to have met program directors and potential reviewers because it is often the case that these meetings give you a more nuanced understanding of how to make your proposals more competitive. Discussions about research ideas with colleagues and program officers helps integrate you and your ideas into the broader

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research community, and enhances your competitive position for future funding. In addition, once you have started a relationship, however briefly, it will be easier to contact them later for information and assistance, and you can build on that relationship as you meet at subsequent conferences and meetings.

Learn how to look for funding opportunities in your research area, and carefully select the grants you will pursue. In addition to talking to your colleagues, you can find funding opportunities using a range of tools on the internet. Grants.gov lists most federally funded grants available. In some cases, the solicitation may be posted to [FedConnect](#) or the Federal [Register](#). Most agencies and foundations publish funding opportunities on their websites and offer email and RSS alerts, and many universities maintain lists of upcoming opportunities on their Office of Research or Sponsored Projects websites. See the list of helpful resources for finding funding in this issue. (We'll devote an entire article to finding funding opportunities in a later issue.)

Be strategic and realistic when selecting the grants you will pursue. That \$2 million grant may look intriguing, but funders are generally hesitant to award a large grant to a new researcher who has little or no track record as a Principal Investigator. Start with smaller grants first; perform well on them (it's particularly important that publications result from the grant), and then progress to larger grants. If research funding is available for your research area from a variety of sources, it is often wise to pursue less competitive grants, such as state funding or small grants from foundations, in parallel with grants from the large federal agencies. Internal grants may also be available from your university. These may be quite small, but can also be used to establish a track record.

Consider collaborating. Another way to establish a track record is to collaborate with a more established researcher as a co-PI on a grant. This approach can allow an early career researcher to demonstrate her or his ability to conduct research, generate publications and get to know program directors at the funding agency. However, when considering such a collaboration, it is important to structure the project to ensure that your interests are protected, particularly in terms of research credit for promotion and tenure. Most senior researchers take their role as mentor seriously and work with new faculty to ensure their research role is properly acknowledged. You should be responsible for a clear, identifiable part of the project. This will allow you to develop a track record that is clearly your own and is generally best accomplished by collaborating with another researcher (or team of researchers) with different, highly distinguishable areas of expertise. In this way, the expertise that you bring to the project will be clear.

Consider applying to programs for early career researchers. There are several reasons you should consider pursuing these kinds of grants. These programs are designed to help build the careers of promising early career researchers and are often highly prestigious, so even disregarding the funds awarded, the prestige of winning such an award can enhance your career and provide you with additional credibility when pursuing other grants. When applying for these kinds of grants, you will not be competing with established researchers with lengthy funding track records. By definition, all applicants will be near the beginning of their research careers, thus leveling the field somewhat. However, this does not mean that applicants will have no track record; publications in the proposed area of research and preliminary data are

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generally required to make a proposal competitive. Therefore, just as with any other program, it is important to analyze the funding agency's expectations and eligibility criteria and make strategic decisions regarding when it makes sense to apply. You will find a list of some of these types of grants at the end of this article.

Allow yourself time to produce a well-written proposal. As a new faculty member, you will be very busy. Ask yourself: "Do I have enough time to produce a well-written proposal before the deadline?" If you don't realistically have time to produce a good proposal this semester, then it is better either to plan to apply later or to rearrange your commitments to make time. Producing a hastily-written proposal in all-night sessions the week the proposal is due will cost you precious sleep, waste time and resources you could have better spent on your other commitments, irritate proposal administrators at your institution who need time to prepare budgets and get appropriate signatures, and leave reviewers and program officers who have to read a poorly-written proposal unimpressed. Producing a competitive proposal takes time—time for your ideas to develop, time for the arguments you make to mature into a compelling case for funding, and time for the research narrative to go through a series of refining iterations with each new draft.

And, finally, persevere intelligently. If you talk to well-funded researchers, they will tell you that they have a drawer full of proposals that were declined for funding. In fact, even extremely successful researchers typically have had more proposals declined than funded. As a faculty member just starting your career, you should expect to have your first several proposals declined.

When a funding agency decides not to fund your proposal, there are three ways to respond: (1) become discouraged and stop applying for funding; (2) disregard the reviews and resubmit essentially the same proposal, figuring maybe you'll get more intelligent reviewers next time; or (3) look on it as a learning process, take reviewer comments to heart, thoughtfully revise your proposal in response to the reviewers' comments, and resubmit in the next funding cycle. Thoughtful reviews that explain shortcomings in your research or in the way you presented your research can be invaluable. **Asking colleagues to read your reviews and offer their observations can also be extremely helpful.** Early career faculty who have been successful in winning funding take the third approach. They expect to have to revise and resubmit proposals, just as they often have to revise submitted publications. They understand that reviewers' comments are meant to provide guidance, and they study them carefully. In cases where it is clear from the reviews that their idea is not a good fit for that program or agency, they either look for a new funding source that is a better fit, or they try a different idea.

The key is not to give up or take rejections personally. Each proposal you submit is a step toward getting funded!

Resources Mentioned in This Article

Finding Funding

Agency Websites (these links will take you to the agency's funding page, not their home page)

- [National Science Foundation](#)
- [National Institutes of Health: Requests for Applications \(RFAs\)](#)
- [National Institutes of Health: Program Announcements \(PAs\)](#)

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- [National Institutes of Health: Parent Announcements](#) (unsolicited proposals)
- [National Institutes of Health: National Institutes of Health - social and behavioral research](#)
- [Department of Energy: Office of Science](#)
- [Department of Energy: EERE](#)
- [Department of Energy: ARPA-E](#)
- [Department of Energy: NETL](#)
- [DoD: Office of Naval Research](#)
- [DoD: Air Force Office of Sponsored Research](#)
- [DoD: Army Research Office](#)
- [DoD: CDMRP](#)
- [NASA](#)
- [USDA](#)

Compilations of Funding Announcements

- [Grants.gov](#) (all federal funding opportunities are announced here - use the "Advanced Search" feature to narrow down your search)
- [Foundation Center](#) (funding from non-profit foundations)
- [Science Magazine's GrantsNet](#)
- [University of Iowa](#)
- [Duke University](#)

Programs for New and Junior Investigators

Some of the larger programs for new and junior investigators include:

NSF

- [Faculty Early Career Development Program](#) – funds non-tenured, tenure-track Assistant Professors to conduct research and education projects in any of the areas that NSF normally funds.
- [Broadening Participation Research Initiation Grants in Engineering \(BRIGE\)](#) – intended to increase diversity of engineering researchers and the number of engineering researchers at minority-serving institutions.
- [Research Initiation Grants to Broaden Participation in Biology \(RIG BP\)](#) – intended to increase the diversity of biology researchers.
- **Dept. of Energy (DOE)** Office of Science [Early Career Awards](#)
- **Office of Naval Research** [Young Investigator Awards](#)
- **NIH** [K99/R00](#) Program.
- Many other agencies and foundations also fund targeted grants for new and junior investigators. **For a comprehensive list** of grants for new and junior investigators, see [UC Berkeley](#) .

Unsolicited Proposals:

What Are They and Who Accepts Them

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Unsolicited proposals are often the main source of funding for academic researchers, but researchers may not even be aware of that they can submit them.

Most researchers are aware that funding agencies regularly issue solicitations for proposals. The names for these published solicitations vary by agency; they might be called solicitations, requests for proposals (RFPs), calls for proposals, requests for applications (RFAs), and funding opportunity announcements (FOAs), as well as other names. Because these solicitations tend to be highly visible – they are posted on grants.gov, announced on various websites, and many university grants offices distribute them – researchers who are new to the grants process may think that the only way to compete for funding is to respond to these solicitations. However, for many funding agencies, responding to solicitations is not the only (and often not the best) way to win grant funding. Many agencies, including NSF, NIH, DoD, DOE, DoED and DARPA, fund research through “unsolicited” or “investigator-initiated” proposals.

To understand how unsolicited proposals work, it’s helpful to understand how funding mechanisms evolved at the basic research agencies, taking NSF as an example. NSF was originally given the broad mandate to fund the best research ideas in science, math and technology. It was set up along disciplinary lines mirroring the structure of universities, with Directorates corresponding to the colleges within a university, Divisions within each Directorate corresponding to university departments, and Programs within each Division. These NSF Programs (often called “Core Programs”) were set up to fund a broad range of research fitting within the “Program Description.” (For information on how to use the NSF website to identify the core program that best fits your research, see the videos posted [here](#).) Below is an example [Program Description](#) for NSF’s **Atomic, Molecular and Optical Physics program** (which resides in the **Physics Division**, which is part of the **Math and Physical Sciences Directorate**).

“The Atomic Molecular and Optical Physics program encompasses four sub-areas of this broad discipline: Precision Measurements, Atomic and Molecular Dynamics, Atomic and Molecular Structure, and Optical Physics. Research supported in the first three sub-areas includes activities in quantum control, cooling and trapping of atoms and ions, low-temperature collision dynamics, the collective behavior of atoms in weakly interacting gases (Bose-Einstein Condensates and dilute Fermi degenerate systems), precision measurements of fundamental constants, and the effects of electron correlation on structure and dynamics. In Optical Physics, support is provided in areas such as nonlinear response of isolated atoms to intense, ultra-short electromagnetic fields, the atom-cavity interaction at high fields, and quantum properties of the electromagnetic field.”

As you can see, this program accepts proposals based on investigators’ ideas, as long as they fit under the broad program description. It does not offer a detailed solicitation or explicit

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guidance on acceptable proposal topics beyond the program description, hence, the term “unsolicited” or “investigator-initiated” proposals.

Initially, almost all proposals to NSF and NIH were unsolicited proposals. However, over the years the agency found that they wanted to encourage proposals on specific topics of interest to the agency – often because they saw great potential in a new area (for example, nanotechnology) or because the agency had specific objectives it wanted to meet (for example, encouraging more undergraduates to pursue majors in science). In order to encourage more proposals in these high-priority areas and to provide more guidance to researchers, NSF began issuing solicitations. You can find an example of a solicitation from the Physics Division [here](#). The solicitation is obviously much more prescriptive, and it also tends to come to the attention of more people because it is officially “released.” Probably for this reason, unsolicited proposals to NSF generally have higher success rates than proposals written in response to solicitations. In fact, about 50% of grants funded by NSF are unsolicited, and about 80% of NIH grants awarded are unsolicited.

Not all agencies accept unsolicited proposals, and those that do have a variety of mechanisms for providing guidance to researchers on the types of unsolicited proposal they want to see. Below is a list of various agencies that accept unsolicited proposals and useful links for finding out more about how to submit them. (Some private foundations also accept unsolicited proposals, but their processes can be quite different from those used by government agencies, so we’ll address that subject in a future article on foundations.)

In the next article in this series, we’ll talk about how to evaluate whether your idea is a good fit for an unsolicited proposal to a particular agency.

Agencies that Accept Unsolicited (or Investigator-Initiated) Proposals

(Note: if you would like to find out whether an agency not listed below accepts unsolicited proposals and the mechanisms involved, in addition to exploring the agency’s website, a Google search on “how to submit an unsolicited proposal to <NAME OF AGENCY OR PROGRAM>” is often a useful tactic.)

Agency: National Science Foundation

Mechanism: Proposals submitted to disciplinary core programs

Due Dates: Most core programs have due dates, target dates, or proposal windows that come around once or twice each year (although some core programs accept proposals at any time). This information is posted on the core program webpage. (We’ll discuss the differences between target dates, due dates, and proposal windows in the next article in this series.)

Proposal Guidance: Program Descriptions on the core program webpage describe the general areas of interest. The proposal format (page limits, margins, etc.) is dictated by NSF’s [Grant Proposal Guide](#).

Useful Resources:

[NSF’s website](#) is full of extremely helpful information.

We have [posted videos](#) on how to find and analyze core programs using the NSF website (scroll to the bottom of the page to find the streaming videos).

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Agency: National Institutes of Health

Mechanism: Investigator-initiated proposals are submitted in response to “[Parent Announcements](#),” but must address interests outlined in an institute [program description](#). (Because program announcements are regularly issued and reissued, NIH’s process for unsolicited proposals looks very much like an RFP process).

Proposal Guidance: All proposals must conform to the parent announcement guidelines and the [SF 424](#).

Useful Resources:

You can search active Program Announcements [here](#).

You can subscribe to an NIH funding opportunities RSS feed, which includes both solicitations (RFAs) and Program Announcements (PAs) [here](#).

Agency: Department of Defense

Mechanism: Each service that funds research releases what they call a “long range” or “blanket” Broad Agency Announcement (BAAs). These Long Range BAAs, which may be released only once every few years and are often close to 100 pages long, describe the various research interests of the service. If a researcher is interested in submitting a proposal related to one of these topics, she should contact the Program Officer to explore her interest in the proposed project before going further (more on this in the next article).

Proposal Guidance: See the BAA .

Useful Resources:

[Army Research Office Long Range BAA](#)

[Air Force Office of Scientific Research Long Range BAA](#)

[Office of Naval Research Long Range BAA for Science and Technology](#)

[Office of Naval Research Long Range BAA for STEM K-12 and Institutions for Higher Education](#)

Other Agencies

Department of Education Institute of Education Sciences (IES)

The Institute of Education Sciences accepts unsolicited applications for research, evaluation, statistics, and knowledge utilization projects that would make significant contributions to the mission of the Institute. More information [here](#).

Department of Energy

The National Energy Technology Laboratory (NETL), Pittsburgh Office, has operational responsibility for the DOE Unsolicited Proposal (USP) Program. All unsolicited proposals should be forwarded by email to John N. Augustine at DOEUSP@NETL.DOE.GOV . He serves as the single point of contact for all Department of Energy (DOE) unsolicited proposals. More information [here](#).

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Department of the Interior US Geological Survey

Through its contracting process, the USGS considers unsolicited research proposals in support of any field of study that helps fulfill its mission objectives. These fields include, but are not limited to geology, hydrology, geography, cartography, biology, and remote sensing. Awards are made to those organizations and individuals whose proposals demonstrate the potential to advance earth science research to an exceptional degree. Proposals will stand a better chance for funding if they (1) demonstrate a close relationship to the USGS's research programs, and (2) are technically meritorious. More information can be found in their [Guide for Submission of Unsolicited Proposals](#).

Defense Advanced Research Agency (DARPA)

Each of the technical offices within DARPA has a link on its website to a blanket BAA (which they call an “office-wide BAA”) that describes the kinds of research for which they will accept proposals. (As with any DoD funding opportunity, be sure to check with the Program Officer to assess their interest in your project before submitting a proposal):

- [Defense Sciences Office](#)
- [Information Processing Techniques Office](#)
- [Microsystems Technology Office](#)
- [Strategic Technology Office](#)
- [Transformational Convergence Technology Office](#)
- [Tactical Technology Office](#)

Writing the Competitive Research Center Proposal

Submitting for the Right Reasons and with the Right PI

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Writing research center proposals is an arduous process that often becomes more difficult as your due date nears. This is the point at which a seamless integration of multiple center objectives must take place. As on all proposals, your funding success on center proposals hinges on how well you gain an accumulation of marginal competitive advantage in crafting a compelling proposal narrative. Center proposals are complex, thereby offering many opportunities to get the narrative right, or get it wrong, which will dramatically impact your chances of success. In a series of articles on this topic in this and subsequent issues, we will explore in detail **what to do right** and, equally important, **what not to do!**

You must get two things right in order to develop a successful center proposal:

- **Submit the proposal for the right reasons**
- **Agree on the right principal investigator to lead the effort.**

The Right Reasons

You submit a proposal for the right reasons when an established history of successful research collaborations exists that clearly meets the research interests of the funding agency's center solicitation. There are many wrong reasons for submitting, any one of which will likely result in failure, principally because they make it difficult to develop a compelling vision for the center.

- "Top down" administrative directives to submit a center proposal in a search for money and institutional prestige but without a successful history of research capacities in the topic areas required, or perhaps with only a "thin veneer" of institutional capacities;
- Attempts to "force fit" heretofore disconnected researchers lacking a history of, or interest in, research collaborations into a center structure. The result is the so-called "shotgun center";
- Attempts to cobble together preexisting research partnerships that only partially meet the intent of the solicitation, followed by the forming of hasty "marriages of convenience" with other possible research partners designed to overcome deficits. This approach is the research version of speed dating.

Developing a center level proposal represents a major commitment of resources and a significant commitment of team member's time and effort. It is important to make an informed decision about whether or not to go forward before making this commitment. An informed decision must be grounded in candid self assessment of the capacity to perform and of the capacity to develop a competitive proposal in the time allotted. While there are many wrong reasons for submitting a center proposal, a few of which were listed above, there are good reasons for submitting a center proposal with an emerging rather than mature research partnership in which competitiveness holds future but perhaps not immediate potential. Good reasons for submitting include:

- The development and writing of the center proposal will serve the long term interests of an emerging research partnership by moving it towards a more competitive configuration;

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- The process will help prepare the research center partnership for the possible submission of smaller, more focused research grants that provide an important research component of any future center structure;
- The acknowledgement that many, if not most, funded center level efforts are awarded on the second and third submittal, and hence the development of a center proposal will prove an important exercise for committed team members for the long term;
- The recognition that developing and writing a center proposal and getting reviewer comments if it is declined holds the potential to advance the research team towards its goal of a funded center on a second or third attempt.

The Right PI

The principal investigator of a center proposal is, in ideal circumstances, an obvious choice. It is someone who has an established research track record in the center topic areas and a person who is already seen as the de facto leader of existing research collaborations in these areas. In some cases, there may be more than one obvious choice as principal investigator, particularly in multidisciplinary research collaborations comprised of several research strands. However, successful leaders of center proposals possess several key attributes. The PI:

- Has the capacity to define an overarching vision for the center;
- Is able to lead and inspire by describing a vision that engages other researchers and partner institutions;
- Is respected by center participants for her research and management abilities, and is **skilled in managing team dynamics**;
- Can clearly state why the integration of the research strands proposed under a center structure achieves a more compelling research vision and **clearly stated synergy** not possible were the research strands funded as separate projects;
- Possesses the integrative research skills required to meld the center's multiple research components into an aligned and coordinated effort within a multifaceted center structure;
- Appreciates the importance of all agency-required center components in addition to the core research, something particularly important at NSF where broader impacts, integration of research and education, diversity, etc., are key factors in success;
- Possesses strong organizational skills and the capacity to communicate across participating disciplines and research teams;
- Has the capacity to inspire based on a research track record in the center research topic area that is respected and acknowledged by the center development team members; and
- Is fully engaged and passionate, and through strong leadership skills is able to inspire in the center development team a feeling of confidence in the likely success of the effort.

In the next issue of the newsletter our article on writing center proposals will offer suggestions to help you converge on **developing a compelling center vision**. The inability to define a compelling center vision (its *raison d'être*) is often the Achilles' heel of center efforts. ***It is a mischievous difficulty that often reveals itself to the inattentive too near the due date to allow an appropriate response.***

The Strategic Role of the Request for Proposals (aka RFP, BAA, FOA,)

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A flawed understanding of the requirements of the RFP and the role they play in structuring a competitive research narrative is one of the common reasons proposals are poorly reviewed and declined by funding agencies--

The RFP is an invitation by a funding agency to submit proposals on research topics of **interest** to the agency. It contains the key information you will need to develop and write a competitive proposal. To be competitive, your proposal must be **fully responsive** to an agency's submission process, program objectives, review criteria, budget guidelines, and other requirements specific to the program. It is important to read the RFP carefully and in its entirety, including review criteria and all referenced documents. Writing a competitive proposal requires that you understand the RFP for what it is--*an expression of agency interest in a specific domain*--and not what you might wish it to be. It is almost never a perfect mirror of your desires. From the funding agency's perspective, the RFP is a **non-negotiable listing of performance expectations** reflecting the agency's goals, objectives, and investment priorities that **you must meet** to be funded. The RFP is ***not meant as a menu or smorgasbord offering you a choice*** of addressing some topics and review criteria but not others.

The competitiveness of your proposal will depend on how well you understand the RFP as an expression of an agency's interest in a topic. Once you clearly understand the agency's objectives, map your expertise to the RFP. If your interests and expertise do not map tightly to an RFP, it is wise not to submit and wait for a more appropriate solicitation. Invest your time, resources, and energy wisely—they are your most valuable assets and they must not be squandered. Having a good idea is a necessary **but not a sufficient condition** for successful funding. Funding agencies are seeking exciting ideas clearly stated that ***make a compelling case that your expertise will advance the priorities of the sponsor.***

The RFP needs to be closely analyzed and understood as an integrated whole. This includes understanding the agency's research objectives, desired outcomes or deliverables, the way in which those research objectives will be reviewed, and any referenced strategic plans or research roadmaps that define the research context in more detail. RFPs are written documents and, like all written documents, they are not always perfectly clear. Any uncertainties you have regarding the meaning or intent of any portion of the RFP need to be resolved early in the proposal process to ensure your proposal research narrative fully responds to the guidelines. You can often resolve uncertainties through repeated, closer readings of the RFP, discussions with colleagues who have been funded by the agency in similar research areas, or by contacting the program officer directly. The latter is often the best option.

Never hesitant to contact a program officer—**timidity is never rewarded in the competitive proposal process, and ambiguities in the research narrative are always punished.** You cannot write a competitive proposal narrative based on an ambiguous understanding of any portion of the RFP. If you don't clarify ambiguities in the RFP, they will metastasize to the research narrative and almost certainly result in a declined proposal. Program officers usually are happy to respond to queries by potential applicants, especially questions that are thoughtful, clearly

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stated, and focused on the research topic. Do not ask the program officer to make speculative comments on your likelihood of being funded, or to engage in similarly inappropriate discussions. But **do call them to resolve any ambiguities you feel exist in the RFP**, or to develop a more nuanced understanding of the agency's intent.

Many larger proposals are collaborative research efforts involving one or more disciplines and multiple PIs. It is important that **all potential team members** understand the RFP. To be successful, these proposals have to be an integrated effort representing a research team and not a vehicle to advance individual research interests **that do not add value to the effort**, or do not map to the research objectives of the agency. For this to happen, all participants must take the time to read and understand the RFP in detail to keep the research development discussions focused on the agency's interests as defined in the RFP. ***There is usually enough disorder in the initial research development discussions without amplifying it with opinions uninformed by the research objectives of the sponsor as detailed in the RFP.***

Role of the RFP in Proposal Organization

The RFP plays a key role in proposal organization by establishing the order, required level of detail, and focus of the research narrative. It is a good idea to simply copy and paste the RFP's key sections, research objectives, and review criteria into a beginning draft narrative. This allows the RFP to serve as an **organizational template** for the full proposal and a reference point to ensure that subsequent draft iterations of the narrative are **continuously calibrated to the guidelines**. For example, an RFP will often contain a detailed description defining the agency's objectives for the program (e.g., goals, objectives, performance timeline, outcomes, research management, evaluation, etc.) that must be addressed in the proposal narrative. This detail, including review criteria, can be selectively copied and pasted into the first draft of the proposal itself. This statement can provide initial section and subsection headings under which the applicant can draft out preliminary written responses to every requested item in the guidelines, thereby ensuring that the first draft of the proposal fully mirrors the program solicitation requirements in every way.

This copy and paste process of transforming the RFP into a narrative template helps ensure that several elements key to a successful proposal are addressed at the beginning, and adhered to throughout the writing process, even though ideas and approaches may change as they mature during the proposal development process. Using this approach, you will ensure that the proposal narrative:

- fully responds 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.

If the RFP refers to any publications, reports, or workshops, it is important to read those materials, analyze how that work has influenced the agency's vision of the program, and cite those publications in the proposal in a way that illustrates that you have read and absorbed the ideas behind those publications.

How To Find Funding Opportunities at NSF

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NSF funds a wide range of research and education activities. Some are easy to find, while others are often overlooked.

NSF funds a wide range of activities, including research (submitted either as unsolicited proposals to core programs or as responses to solicitations), the procurement and development of instrumentation, education and outreach projects, conferences and workshops, dissertation research in selected areas, research and international experiences for students, international travel, faculty and industry exchanges, and graduate fellowships. While some of these funding opportunities are easy to find, some are relatively obscure. Below is an overview of types of funding opportunities offered by NSF and how to find them.

Solicitations

NSF publishes its solicitations at several locations on its website. One of the easiest places to search for a particular solicitation is at "[Active Funding Opportunities by Due Date](#)." Go to that page, then use CNTRL F (the "find on page" function) to search the page for a word in the solicitation title (such as "research experience", or you can just scroll down the page until you find what you're looking for. There is also a pull-down menu that allows you to look for archived solicitations in case you're investigating the funding history of a particular program. On that same page, you can subscribe to RSS feeds or e-mail alert services that will automatically notify you of new funding opportunities or upcoming due dates. Even if you don't want to subscribe to the RSS feed, clicking on the RSS icon will bring up a list of funding opportunities with the most recently announced at the top; this is often more useful than the list organized by due date, since it's easy to find newly-announced opportunities.

Unsolicited Proposals to Core Programs

Program Descriptions and **Program Announcements** describe research programs that will accept "unsolicited" proposals. These programs fund the traditional, disciplinary core research projects usually involving one to three investigators. Descriptions of research areas that each program will fund are given on the program web pages, which can be found by going to the Directorate web site, selecting the Division of interest and finally selecting the Program web page. (One of the easiest ways to do this is to start at <http://www.nsf.gov/staff/orglist.jsp> and select the Division from the organization list.) Because Program Descriptions tend to be brief and relatively broad in describing fundable research areas, it is important to talk to the Program Officer and read abstracts of proposals recently funded by the program in order to get a better sense of current areas of interest for that program. (You can find out more about unsolicited proposals in the accompanying article on unsolicited proposals in this issue.) Many programs have started publishing their core programs on the NSF Solicitations page, probably to address the fact that these funding opportunities are often overlooked by researchers who are new to NSF. For more on how to find core programs using the NSF website, see the videos posted [here](#).

Early-concept Grants for Exploratory Research (EAGER)

EAGER grants support exploratory, potentially transformative projects at their early stages. The idea behind the EAGER grant is that the money will be used to allow proof of concept work or generation of enough preliminary data to produce a full-fledged research proposal to NSF. These grants are funded at up to \$300K for two years, although typical funding amounts are generally lower. Researchers interested in submitting an EAGER grant should always discuss their idea with the Program Officer before proceeding. The Program Officer will give important feedback to help you decide whether the idea is appropriate for an EAGER and whether funding is available. Proposals for EAGER grants are shorter than conventional NSF proposals (5 – 8 pages), and the funding recommendation is made by the Program Officer rather than by a review panel. For more information, go [here](#).

Grants for Rapid Response Research (RAPID)

This mechanism is for projects that require quick response because of the nature of the research, such as research related to natural disasters. Like EAGER, these proposals undergo an internal review rather than review by an external panel. Amounts are up to \$200K for one year. Go [here](#) for more information.

Grants for Conferences, Symposia, and Workshops

NSF supports conferences, symposia, and workshops that bring experts together to discuss their findings in special areas of science and engineering. Proposals should generally be made at least one year in advance of the scheduled date. (Note that these grants are intended to support the hosting of such events, not attendance by applicants to an existing conference or workshop.) For more information, go [here](#).

Grants to Support International Travel

A university, professional society, or other non-profit organization may apply for funds to enable it to coordinate and support US participation in one or more international scientific meeting(s) abroad. More [here](#). NSF also supports international travel for a variety of reasons related to planning or conducting research. More information on grants to support international activities (for example, international research fellowships and grants to support planning visits) is available at NSF's [Office of International Science and Engineering webpage](#).

Supplements to Funded Projects

PIs of NSF-funded projects can apply for a range of supplemental funding. These opportunities include:

- [Research Experiences for Undergraduates](#) (REU Supplement) – Provides funding to support one or two undergraduates from the PI's institution or elsewhere to conduct research on the NSF-funded project
- Research Experiences for Teachers (RET Supplement) – Provides funding for K-12 teachers to work with researchers on the project. (These are described in the [REU solicitation](#) near the end – pull up the solicitation and search for “Teacher.” Some

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Divisions have issued “Dear Colleague” letters or solicitations related to this opportunity.)

- [Research Opportunity Award Supplement](#) (ROA) – Enables faculty from predominantly undergraduate institutions to pursue research as visiting scientists with NSF-funded investigators.
- [Facilitation Awards for Scientists and Engineers with Disabilities](#) (FASSED) – Awards and supplements to remove barriers to participation in research and training by disabled individuals
- Other more narrowly focused supplements are also made available periodically, such as the [Research Experiences for Graduates](#) program for graduate students conducting research in cultural anthropology and the [Supplement for Translational Research in the Academic Community](#) in Engineering.

PIs interested in pursuing supplemental funding should talk to their program officer for guidance.

Dear Colleague Letters

While these are not specific grants, “Dear Colleague” letters often provide guidance to researchers on proposal topics or project types that NSF would particularly like to see. For example, a recent “Dear Colleague” letter announced that NSF will work in collaboration with the National Cancer Institute to accept and review unsolicited proposals involving interdisciplinary approaches to cancer research that include physical science and engineering. To find a list of recent “Dear Colleague” letters (with links to the full letters), click on the “NSF Program Announcements and Information” RSS feed icon (the orange box) on the [“Active Funding Opportunities” by date](#) page, and then type in “Dear Colleague” in the search box at the top right side of the page. (To ensure that you are notified the next time a “Dear Colleague” letter is issued, subscribe to either the [Program Announcements & Info Updates by E-mail](#) or the RSS feed at the link just mentioned.)

Funding for Graduate Students

In addition to research and education grants that include funding for graduate students, NSF funds the largest graduate fellowship program in the US, the [Graduate Research Fellowship Program](#). Students apply for these grants directly as individuals (as opposed to applying through their university). In addition, Doctoral Dissertation Research Improvement grants (which don’t support the students directly but provide additional funds for their research, such as travel funds) are funded by the [Directorate for Social, Behavioral and Economic Sciences](#) (SBE), the [International Office](#) and some Divisions within the [Directorate of Biological Sciences](#).

Funding for Postdocs

Information on the various postdoctoral fellowship programs funded by NSF can be found [here](#). Funding to support postdocs can also be included in standard research grants.

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Funding for Instrumentation

NSF has one NSF-wide program to fund instrumentation, the [Major Research Instrumentation](#) (MRI) program, of which most researchers are aware. However, researchers are often not aware that some Directorates fund additional instrumentation programs. You can usually find information on these programs by going either to the “[Active Funding Opportunities](#)” page and searching the page for “instrumentation” (using CNTRL F), or by going to the Division webpage and looking for instrumentation programs. In addition, some programs will accept proposals for instrumentation as unsolicited proposals or supplements. Always contact your Program Officer first to discuss the advisability of submitting such a proposal .

The various Directorates and Divisions differ with respect to the amounts at which they fund each of the categories discussed above, so it’s important to learn about the priorities of the Division that funds your research. In future articles, we’ll discuss strategies for exploring the culture and funding priorities of a particular NSF Program or Division.

Writing Proposals to the Department of Energy

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Writing proposals to DOE requires attention to several key questions:

- What kinds of research does the agency fund?
- How well do your research interests/expertise map to the agency's research priorities?
- How does the agency announce funding opportunities?
- Are unsolicited proposals accepted by the agency?
- How are research domains at the agency structured?
- What are the agency guidelines for submitting proposals?
- How will your proposal be reviewed?

As an agency, DOE has multiple and very diverse research and educational strands, ranging from genomics to 4th generation nuclear power, that at first may make it seem difficult match with your energy research interests. But like other large and broad spectrum agencies, e.g., NIH and DoD, breaking the agency down into more manageable components is helpful and easily done. And while DOE is a mission agency, its research domain covers the spectrum from very applied research to very basic, high-risk research, e.g., ARPA-E. Below are several entry points to writing proposals to the department of energy, including links to solicitations specific to the many programmatic offices within the agency. [Major Areas of Research](#)

All research solicitations posted at the DOE program offices will also be posted to [Grants.gov](#) and/or [FedConnect](#). If you use the “browse by agency” option of Grants.gov and select DOE, you will see a chronological listing of all DOE solicitations posted. More fine grained searches are easily done, see: [Instructions for Searching Grant Opportunities](#). [FedConnect](#) is not as user friendly as Grants.gov. However, many Grants.gov solicitation summaries link to FedConnect for the full FOA (Funding Opportunity Announcement). Follow the link “**Search Public Opportunities**,” and then sort by “**Issue Date**” for the most current postings. The “**Title**” column of a spreadsheet will hotlink to the DOE FOA which is downloadable as a Word or pdf file by clicking on the Documentation “**Body**” option.

In addition to finding DOE research solicitations of interest, you will make your proposal more competitive in the long term by finding your “**programmatic home**” at DOE among the entry points below. Then take the time to read and analyze the research supported by that particular office. Review posted reports, publications, and workshops posted by the specific program or office at DOE. Review and analyze solicitations posted over the past year to get a fuller sense of DOE's programmatic interests. The old adage that *the past is prologue to the future* is true in the domain of research solicitations as well.

DOE “Points of Entry”

The following URLs are the major points of entry to the Department of Energy. As an individual PI doing research in an energy topic area you will likely find your place in a subset of major programmatic areas. Once there, you will focus your attention and become informed about the DOE investment priorities, particularly since DOE offers research opportunities across

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a broad spectrum that includes most of the engineering, science (both physical and biological), and computational disciplines, as follows:

[Department of Energy e-Center](#)

The e-center is the DOE's web site for information on doing business with the Department of Energy, including viewing current business opportunities, registering to submit proposals, and obtaining information and guidance on the acquisition and financial assistance award process.

[Office of Energy Efficiency and Renewable Energy](#)

The Office of Energy Efficiency and Renewable Energy (EERE) works with business, industry, **universities**, and others to increase the use of renewable energy and energy efficiency technologies. One way EERE encourages the growth of these technologies is by offering financial assistance opportunities for their development and demonstration.

[Golden Field Office](#)

The Golden Field Office (Golden) is an organization within the Department of Energy's [Office of Energy Efficiency and Renewable Energy \(EERE\)](#). Golden works directly with industry, academia, states, and local governments in partnerships to further the development and commercialization of energy efficiency and renewable energy technologies.

[Office of Fossil Energy](#)

Most R&D procurements for the Office of Fossil Energy are coordinated by the National Energy Technology Laboratory (NETL). The Office of Fossil Energy participates in DOE's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

[Office of Nuclear Energy, Science and Technology](#)

ONE promotes nuclear power as a resource capable of meeting the nation's energy, environmental and national security needs by resolving technical and regulatory barriers through research, development and demonstration. [University Program Solicitations.](#)

[Office of Science](#)

Much of the work of the DOE's Office of Science (SC) is supported through grants and contractual vehicles. This work is processed through the SC [Office of Grants and Contracts Support](#) (GCS), which serves as the principal acquisition, financial assistance (grants and cooperative agreements), and contract/grant management advisor to the Director of Science. [Office of Science Solicitations.](#) SC publishes a new annual solicitation for FY2011 at the start of each fiscal year, October 1, 2010. The [FY2010](#) solicitation runs through Sept. 30.

[ARPA-E](#)

ARPA-E is modeled after the successful Defense Advanced Research Projects Agency (DARPA).

[ARPA-E Solicitations.](#)

Other Points of Entry to DOE for University Researchers

[Energy reports published by the National Academies](#) and NA's [Searchable Collection America's Energy Future](#) are important documents to help frame your energy related research in the context of the national effort.

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[Energy Frontier Research Centers](#) (EFRCs) and the [DOE Energy Innovation Hubs](#) are two major programs, but FY2011 appropriations may have a significant impact on these programs.

[Working with National Renewable Energy Laboratory](#)

NREL offers many opportunities to industry, organizations, governments, researchers, small businesses, students, teachers, subcontractors, and vendors.

DOE Office of Workforce Development for Teachers and Scientists [STEM Workforce Needs](#)

[Used Energy-Related Laboratory Equipment \(ERLE\) Grant Program](#)

The ERLE Grant Program was established by the DOE to grant excess used energy-related laboratory equipment to middle schools, high schools, universities and colleges and other nonprofit educational institutions of higher learning in the United States for use in energy-oriented educational programs.

[SBIR/STTR Funding from DOE](#); [SBIR/STTR Home](#)

[Understanding How DOE will Review Your Proposal](#)

Review of DOE proposals will use the review criteria established in the announcement. Proposals may be reviewed either by mail review or panel review or some combination of both. Each program will decide individually on its review method. Large numbers of proposals are generally handled by panels. The best way to prepare for the review is to learn about the review criteria and proposal format by reading the full announcement. If you ***write your proposal to be responsive to the review criteria***, to fit in with the Office of Science mission areas, and to follow the required format, you will be ready for any review process. The following are review processes used by various programs.

Department of Energy [Merit Review Guide For Financial Assistance](#)

Merit reviews are required for **all** discretionary financial assistance awards, including **competitive and noncompetitive grants and cooperative agreements**. Merit reviews are also required for renewals of these awards. Unsolicited proposals are reviewed using the [Guide for Submission of Unsolicited Proposals](#).

[Merit Review System in the Office of Science](#)

The SC project manager will review applications/proposals for technical/scientific merit and program policy factors. Typically, he or she will submit applications/proposals to at least three qualified reviewers for evaluation in addition to anyone having direct line authority over the project manager, including the selection official, for formal merit review. Instructions to reviewers will include a reasonable length of time for responding to SC's request for a merit review.

[Peer Review in the DOE Office of Science](#)

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Each program office must establish a merit review system covering the financial assistance programs it administers. Merit review of financial assistance applications is intended to be advisory and is not intended to replace the authority of the project/program official with responsibility for deciding whether an award will be made.

[Merit Review Procedures for Basic Energy Sciences Projects at the DOE Laboratories](#)

Research projects funded by the Office of Basic Energy Sciences (BES) within the DOE laboratories are subject to merit review. This document sets forth the procedures for merit review of research projects funded at these institutions. These procedures are patterned after those given in 10 CFR 605, which govern the Office of Science (SC) grant program.

Proposal Application Process

[Application Receipt and Processing \(Summary\)](#)

Includes administrative review of grant applications, evaluation criteria, and the merit review process. (As contained in the ***Grant Application Guide.***)

[Grant Application Guide](#)

This Guide includes instructions for preparing and submitting a grant application. Updates to this Guide are posted immediately at this web site. If you have a copy of the printed Application Guide booklet dated October 1985, or the undated Guide No. 3 or 3.1, it is out of date. This web site should be your source for the latest guide.

[DOE Grants and Contracts](#)

Much of the work of the Department of Energy's Office of Science (SC) is supported through grants and contractual vehicles. This work is processed through the Office of Science, Office of Grants and Contracts Support (GCS), which serves as the principal acquisition, financial assistance (grants and cooperative agreements) and contract/grant management advisor to the Director of Science. [Grants & Contracts](#)

[Guide For the Submission of Unsolicited Proposals](#)

The National Energy Technology Laboratory (NETL), Pittsburgh Office, has operational responsibility for the DOE Unsolicited Proposal (USP) Program. **All unsolicited proposals** should be forwarded by Email to John N. Augustine at DOEUSP@NETL.DOE.GOV who will serve as the single point of contact for all Department of Energy (DOE) unsolicited proposals. **Direct all unsolicited proposals, abstracts and correspondence to:**

John N. Augustine, Mail Stop 921-107 Unsolicited Proposal Manager
U.S. Department of Energy National Energy Technology Laboratory 626 Cochran's Mill Road P.O.
Box 10940 Pittsburgh, PA 15236-0940; email: DOEUSP@NETL.DOE.GOV

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Finding Funding for Energy Research at Federal Agencies (Back to [Page 1](#))

Funding for energy and energy-related research is available from many of the federal research agencies, both basic and mission, most of which use two main funding mechanisms: (1) published solicitations; and (2) unsolicited proposals. Energy research funding will reflect the differing strategic research roadmaps and investment priorities of the various agencies. The following are examples of various federal agencies funding energy research.

- The DoD has an interest in biofuels and, in 2007, published the [DoD Energy Strategy](#). [AFOSR Bioenergy](#): This program ([AFOSR-BAA-2010-1](#)) aims to understand and improve the facility of photosynthetic microbes to produce biofuels (specifically, molecular hydrogen and algal lipids) for use in fuel cells and air breathing engines, and also to enhance the power density of enzymatic and microbial biofuel cells and the range of complex, impure, or mixed natural substrates that the biofuel cells can oxidize and convert to electricity.
- Significant biofuels research funding is available at USDA. Learn about USDA's Energy programs by visiting the "[The Matrix](#)", a navigational tool that guides individuals through the various technology types, agencies, and research program areas. Keep your information current by using [USDA RSS Feeds](#).
- NIH funds basic research relevant to bioenergy research, [for example](#).
- EPA funds a range of programs related to [sustainable energy systems](#). For example: [Energy, Biofuels & Climate Change](#)--Research, Tools & Technologies.
- NSF supports targeted energy research as well as basic research that is relevant to energy. Examples **with upcoming due dates follow**: [Biomaterials](#), including biomaterials for energy harvesting, conversion and storage; [Solid State and Materials Chemistry](#), encourages fundamental studies of novel material and material systems for efficient energy harvesting, conversion and storage; [Emerging Frontiers In Research And Innovation](#) ; [Building Engineered Complex Systems](#); [Biomolecular Systems Cluster](#); [Energy for Sustainability](#); [Thermal Transport Processes](#); [Biotechnology, Biochemical, and Biomass Engineering](#).
- Unsolicited proposals related to energy can be submitted through the NSF [Early-concept Grants for Exploratory Research](#) (EAGER).
- [NIST research areas related to energy](#) use and conservation include standards for the Smart Grid, energy efficient lighting, photovoltaics, net-zero-energy buildings, and software for "smart" building, among others.
- [NASA Advanced Energy](#) Research Areas
- The Bureau of Land Management has [renewable](#) energy programs in [solar](#), [wind](#), [geothermal](#), and [biomass](#).
- [MMS Oil Spill Response Research](#)
- [DOE's E-Center](#)
- [DOE Golden Field Office](#)
- [EERE Solicitations](#) for Business, Industry, and Universities
- Agriculture and Food Research Initiative [Competitive Grants Program](#)

Tracking New Energy Funding Opportunities

The initial step in identifying energy funding is to first **define and then map your domain of research expertise to a subset of energy research topic areas**, for example: [wind](#), [solar](#), [bioenergy](#), [nuclear](#), [oil](#), [coal](#), [natural gas](#), [geothermal](#), [electric power](#), [building efficiency](#), [smart grid](#), [energy storage](#), [carbon sequestration](#), and [genomics](#), among others. You may then more narrowly define your research domain, e.g., for biofuels: novel marine, plant, algal and microbial bioenergy sources, etc. Moreover, key research areas critical to energy production, such as [water resources research](#), are factors in your search for energy research funding.

Knowing your research fit in the energy spectrum is key to finding funding. It will narrow down the list of possible agencies, and programmatic areas within agencies, that you will monitor for funding. Even if you are in a discipline relevant across the energy research spectrum, for example, one of the materials areas (chemical, mechanical, or aerospace engineering, physics, chemistry, mathematics, etc.), your energy fit will most likely be to a more narrowly defined area of energy research that maps specifically to your expertise.

Most, but not all, energy research will be posted to [Grants.gov](#). [Email and RSS feeds](#) are available so the content is pushed to your email inbox and/or browser ([RSS Feeds for Grants.gov](#)). (One **very important feature of the Grants.gov** electronic notifications is that **modifications to published solicitations** are immediately posted. This is particularly important for energy solicitations from the Department of Defense which may be open for some time, as well as from the mission agencies that fund energy research, DOE, USDA, EPA, etc. It is not unusual for several modifications to be issued to an open research solicitation. Modifications are unusual at the basic research agencies—NSF and NIH.

Some energy solicitations posted by the Department of Energy are posted to [FedConnect](#) and not to Grants.gov. **FedConnect** is not as user friendly as Grants.gov. Follow the link **“Search Public Opportunities”** and then sort by **“Issue Date”** for the most current postings. The **“Title”** column of a spreadsheet will hotlink to the DOE FOA (Funding Opportunity Announcement) that is downloadable as a Word or pdf file by clicking on the Documentation **“Body”** option.

DOE’s **National Energy Technology Laboratory** has a funding site supported by an [RSS Feed](#) capacity for listing new research [Solicitations & Business Opportunities](#). NETL uses **FedConnect** and/or **Grants.gov** and [FedBizOpps](#) to post solicitations and funding opportunity announcements and amendments, receive proposals and applications, and disseminate award information. **Energy Efficiency and Renewable Energy** also offers an [RSS Feed](#) capacity.

Role of Energy Strategic Plans & Reports in Responding to Funding Solicitations

As a competitive complement to finding energy research funding, it is helpful to review the strategic plans and research roadmaps of the agency/solicitation of interest, e.g., DOE’s [Science for Energy Technology: Strengthening the Link between Basic Research and Industry](#).

Reviewing these documents will help bring focus to the arguments you make in the research narrative, and better link them to the agency’s research objectives. More links are provided at the end of this article. MIT’s online journal [Technology Review](#) is a good source for energy R&D developments. The National Science Board Report, [Building a Sustainable Energy Future: U.S.](#)

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Actions for an Effective Energy Economy Transformation, also addresses key issues related to energy research.

Other Bookmarks for Energy Reports & Agency Roadmaps

- The [Annual Energy Review](#) (AER) is the [U.S. Energy Information Administration's](#) primary report of historical annual energy statistics. For many series, data begin with the year 1949. Included are data on total energy production, consumption, and trade; overviews of petroleum, natural gas, coal, electricity, nuclear energy, renewable energy, international energy, as well as financial and environmental indicators; and data unit conversion tables.
- [New Science for a Secure and Sustainable Energy Future](#), A Report from the Basic Energy Sciences Advisory Committee, December 2008
- [National Biofuels Action Plan](#), 2008, USDA/DOE
- [Genomics: GTL Roadmap](#) The *Genomics: GTL Roadmap* is an aggressive systems microbiology plan to accelerate the scientific discovery needed to support the development of practical applications for DOE energy and environmental missions.
- [National Plant Genome Initiative: 2009-2013](#)
- The National Academies Summit on [America's Energy Future](#): Summary of a Meeting
- [Building a Sustainable Energy Future](#): U.S. Actions for an Effective Energy Economy Transformation, National Science Board
- [Perspectives on Energy Policy](#): Security, Economics, and the Environment, Sandia National Laboratory
- [National Academies Reports](#) Related to *America's Energy Future Project*
- Strengthening America's Energy Future, [Education and Workforce Development](#)
- [NREL Wind Research Publications](#)
- NREL Strategic Energy Analysis Center: [Upcoming Seminars & Analysis Reports](#)
- [Federal Energy Regulatory Commission](#), [Strategic Plan 2009-2014](#)

Tracking Energy Research Appropriations

[Senate Committee on Energy and Natural Resources](#)

Addresses energy resources and development, including regulation, conservation, strategic petroleum reserves and appliance standards; nuclear energy; Indian affairs; public lands and their renewable resources; surface mining, federal coal, oil, and gas, other mineral leasing; territories and insular possessions; and water resources. Others include:

[House Committee on Energy and Commerce](#)

[House Committee on Agriculture](#)

[House Committee on Natural Resources](#)

[House Committee on Science and Technology](#)

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Research Grant Writing Web Resources

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University “How to Write Grants” Web Resources

- [Proposal Writing Resources, GrantSource Library, UNC-Chapel Hill](#);
- GrantSource [Funding Alerts](#)
- [UCLA Resources on Grant Writing](#)
- [Grantsmanship Tutorial](#), Albert Einstein College of Medicine
- [University of Pittsburgh](#)
- [Columbia University, Writing a Grant Proposal](#)
- [University of Iowa, Writing Guides](#)
- [University of Michigan Proposal Writer's Guide](#)
- [University of Minnesota, How to Write a Research Grant](#)
- [University of Pennsylvania Medical School, Grant Writing Manual 2007 - 2008](#)
- [University of Vermont, Grant Writing Resources](#)
- [Yale University, Grant Writing](#)

[Microsoft Research: Writing a good grant proposal](#)

Writing a good research grant proposal is not easy. This document is an attempt to collect together a number of suggestions about what makes a good proposal.

[Twelve Steps to a Winning Research Proposal by George Hazelrigg](#)

I have been an NSF program director for 18 years [Hazelrigg]. During this time, I have personally administered the review of some 3,000 proposals and been involved in the review of perhaps another 10,000. Through this experience, I have come to see that often there are real differences between winning proposals and losing proposals. The differences are clear. Largely, they are not subjective differences or differences of quality; ***to a large extent, losing proposals are just plain missing elements that are found in winning proposals.***

[Advice on Writing Proposals to the National Science Foundation](#)

This document focuses on writing proposals to NSF, but the general advice can be applied to writing any proposal.

Getting Funding for Research in Developmental Biology at [Primarily Undergraduate Institutions](#)

New faculty at PUIs cannot always get the research mentoring they need at their home institution. Therefore, the Professional Development and Education Committee of the [SDB](#) has convened this panel to provide resources for faculty who are interested in obtaining research funding for their undergraduate research programs.

[Tips for Applying for Fulbright](#)

Here are some instructions and suggestions that will assist you in locating the right award and preparing a competitive, successful application. If you have questions, please contact the [CIES program officer](#) for the country in which you are interested.

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NIH Grant Writing Tips 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.

[NIH How to Write a Research Project Grant Application](#)

Although the advice provided in this document is relevant to all research grants, it is geared toward the traditional [research project grant](#) (R01). Research Project Grants support a focused research program conducted by a principal investigator with or without collaborators, postdoctoral trainees, graduate students and/or technicians.

Many of DARPA's solicitations encourage the submission of a white paper or abstract. What to include in a white paper? Review solicitation instructions or try these websites ([STO](#), [IPTO](#), [MTO](#), [DSO](#), and [TTO](#))

[Writing the Research Grant Proposal](#)

It has been said that what succeeds in science is not the best idea, but the best defended idea. The best grant proposals adhere to guidelines, anticipate criticism, and actively solicit interest and approval. In addition, "clarity" and "focus" are words often heard when reviewers are asked what they like to see in a proposal.

More Grant Writing Links

- [American Scientist, *The Science of Scientific Writing*](#)
- [Foundation Center, *Short Course on Grant Writing*](#)
- [Getting Your Postdoc Grant--It Takes More Than Just Writing!](#)
- [Science Careers Journal, *The GrantDoctor: Advice for Grant Seekers*](#) (a series)
- [Social Science Research Council, *The Art of Writing Proposals: Some Candid Suggestions for Applicants to Social Science Research Council Competitions*](#)

Federal Register: The [Office of the Federal Register](#) and the [U.S. Government Printing Office](#) are jointly developing an unofficial prototype of an XML-based edition of the Federal Register on a new site, [federalregister.gov](#). The new site provides a more easy-to-read format for Federal Register documents and has web tools and user aids designed to help people find material relevant to their interests: [Federal Register: Browse](#); [Federal Register: About](#)

THOMAS : Library of Congress [RSS and Email Feeds](#)

SCIENCE.GOV: Science.gov searches over 42 databases and over 2000 selected websites from 14 federal agencies, offering 200 million pages of authoritative U.S. government science information **including research and development results.**

Environmental Protection Agency [Research and Resources RSS Feeds](#); American Physical Society [Journals RSS Feeds](#); [EDInfo: Archives](#); U.S. Department of Education of archive of current and past Notices Inviting Applications.

Research Development & Grant Writing News

Educational Grant Writing Web Resources

(Back to [Page 1](#))

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.

[Obama Advisers Call for Greater Emphasis on STEM Education](#)

The report, **expected out by the end of September**, backs most of the Administration's current strategies to raise student achievement in elementary and secondary schools. But said a more concerted effort and greater resources are needed. ***"The federal government hasn't been organized with a coherent strategy and leadership capacity for K-12 STEM education,"*** said Lander, director of the Broad Institute of the Massachusetts Institute of Technology and Harvard University. ***"There have been many STEM programs started, some of them very good. But they are growing somewhat disconnected from each other. Given the importance of STEM education, and its bipartisan support, it's essential to bring coherence to that vision."***

[Push for New Science, Mathematics Standards Described at NSF/AAAS Education Conference](#)

Attendees at the annual meeting of the [Robert Noyce Teacher Scholarship Program](#), organized by AAAS, got an early look at the standards in mathematics and the process for developing a conceptual framework and aligned next-generation science standards.

[Engineering in K-12 Education: Understanding the Status and Improving the Prospects](#)

Engineering education in K-12 classrooms is a small but growing phenomenon that may have implications for engineering and also for the other "STEM" subjects--science, technology, and mathematics. Specifically, engineering education may improve student learning and achievement in science and mathematics, increase awareness of engineering and the work of engineers, boost youth interest in pursuing engineering as a career, and increase the technological literacy of all students. The teaching of STEM subjects in U.S. schools must be improved in order to retain U.S. competitiveness in the global economy and to develop a workforce with the knowledge and skills to address technical and technological issues.

Engineering in K-12 Education reviews the scope and impact of engineering education today and makes several recommendations to address curriculum, policy, and funding issues. The book also analyzes a number of K-12 engineering curricula in depth and discusses what is known from the cognitive sciences about how children learn engineering-related concepts and skills.

[Linking Research and Practice: The NCTM Research Agenda Conference Report](#)

The National Council of Teachers of Mathematics (NCTM), has published ***"Linking Research and Practice: The NCTM Research Agenda Conference Report"*** to shape research and bring it to classroom and school-level decisions. Education research findings can improve mathematics teaching, learning, and curriculum. However, the research needed by classroom teachers and the research being conducted in mathematics education often differ. The new report presents **priorities for mathematics education research based on the needs of mathematics teachers,**

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administrators, and other school- and district-level educators. The publication is intended for researchers, funding agencies, and others who make decisions about mathematics education research.

[Conceptual Framework for New Science Education Standards](#)

The National Research Council today released a **[draft framework](#)** that proposes the science content and concepts students should learn for grades K-12. The Research Council is seeking comment on the draft from the science and education communities and the public. The final framework will serve as the basis for new science education standards to replace those based on documents developed over 10 years ago.

[The Future of STEM Curriculum and Instructional Design: A Research and Development Agenda for Learning Designers](#)

In 2009-10 a series of Workshops was organized to focus on STEM learning design for young students and adolescents. The objective was to provide visionary leadership to the education community by: (a) identifying and analyzing the needs and opportunities for future STEM curriculum development and instructional design given current and emerging technologies; and, (b) recommend policy positions and actions by funding agencies and the STEM research and development community regarding STEM instructional resources.

[Explaining Gaps in Readiness for College-Level Math: The Role of High School Courses](#)

This article estimates how much of these gaps are determined by the courses that students take while in high school. This analysis is valuable to policy makers and educators seeking to reduce disparities in college readiness. Despite increased requirements for high school graduation, almost one-third of the nation's college freshmen are unprepared for college-level math.

[NOAA Office of Education](#)

Educational Partnership Program Informational Session August 25, 2010. **[More](#)**.

[Science Prize for Online Resources in Education \(SPORE\) Winners](#)

The Science Prize for Online Resources in Education (SPORE) has been established to encourage innovation and excellence in education, as well as to encourage the use of high-quality on-line resources by students, teachers, and the public. Essays from the SPORE winners are published each month in Science, and are collected here.

[Institute of Education Sciences \(IES\) News Flash Subscription Service](#)

News Flash is available to anyone wishing to receive up-to-date alerts about breaking news from IES, its Centers, and various programs.

[IES Education Research Grant Programs](#)

IES has established 14 long-term programs of research under its Education Research Grant Programs. Each research program accepts applications twice a year:

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[IES Procedures for Peer Review of Grant Applications](#)

The Standards and Review Office is responsible for two primary activities: the peer review of Institute reports, and the peer review process for the funding of Institute grant applications.

[Download, view, and print as a PDF file](#) ; [Download, view, and print as an MS Word file](#)

[IES Unsolicited Grant Opportunities](#)

To view the FY2010 Unsolicited Grant Opportunities announcement, [click here](#).

[Subscribe to IES RSS](#) (Really Simple Syndication)

[ERIC](#)

The [Education Resources Information Center \(ERIC\)](#) is an internet-based digital library of education research and information sponsored by the [Institute of Education Sciences \(IES\)](#) of the [U.S. Department of Education](#).

[The Integrated Postsecondary Education Data System \(IPEDS\)](#)

Statistical data and Information on Postsecondary Institutions; Classification of Instructional Programs (CIP) The Classification of Instructional Programs (CIP) provides a taxonomic scheme that supports the accurate tracking and reporting of fields of study and program completions activity. CIP was originally developed by the U.S. Department of Education's National Center for Education Statistics (NCES) in 1980, with revisions occurring in 1985, 1990, and 2000. For information about these early revisions to the CIP, click [here](#) or access specific links to historical versions from the [resources](#) page. For information about versions after CIP 2000, click the 'change year' link on this site to see the available versions.

[FY 2011 Department of Education Appropriations Bill—STEM Highlights](#)

The Effective Teaching and Learning: STEM program was intended to replace the Mathematics and Science Partnerships program. This program was proposed in the Department of Education's Elementary and Secondary Education Act reauthorization blueprint.

[Language Diversity, School Learning, and Closing Achievement Gaps:](#)

[A Workshop Summary](#) (Free pdf download)

The workshop provided a forum for researchers and practitioners to review and discuss relevant research findings from varied perspectives. The disciplines and professions represented included: language development, child development, cognitive psychology, linguistics, reading, educationally disadvantaged student populations, literacy in content areas (math, science, social studies), and teacher education.

[Transforming STEM Learning \(TSL\)](#)

TSL combines interests and resources of separate programs in the Division of Research on Learning in Formal and Informal Settings (DRL) to explore the opportunities and challenges implied by innovative visions of the future for STEM learning. The TSL program invites interdisciplinary teams of STEM content specialists, experts in relevant technologies, STEM

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formal and informal education specialists, researchers with expertise in the learning sciences, and specialists in education research and evaluation methods to **submit proposals for research projects that** (1) Study efficacy of existing prototypes for innovations like virtual schools, special STEM schools, and educational programs that combine opportunities of formal and informal learning resources in their communities; or (2) Design and conduct exploratory development of new potentially transformative models for STEM learning environments. **Due March 11, 2011.**

Research and Evaluation on Education in Science and Engineering (REESE)

The REESE program has removed the labels "Contextual Research" and "Emerging Topics" used in the previous solicitation to distinguish the strands of research supported. **As a result, text (and sometimes content) in all the strands has been revised.** REESE has added a new strand on Implementation Research. The REESE program has changed the name of Knowledge Diffusion awards to Synthesis awards. Large Empirical proposals do not require collaborations of multiple institutions and are no longer permitted to include a supplemental coordination plan. **Due November 15.**

Jacob K. Javits Fellowship Program

This program provides fellowships to students of superior academic ability—selected on the basis of demonstrated achievement, financial need, and exceptional promise—to undertake study at the **doctoral and Master of Fine Arts level in selected fields of arts, humanities, and social sciences.** Eligibility is limited to individuals who at the time of application (1) will be entering a doctoral program in academic year 2010-2011 and/or who, at the time of application, have not yet completed their first full year of study in the doctoral program for which they are seeking support; (2) will be entering a Master of Fine Arts program in academic year 2010-2011 where the master's is the terminal highest degree awarded in the selected field of study. **Due September 30, 2010.**

Psychosocial Theories to Inform a New Generation of Student Support Structures for Learning Mathematics

The objective of this paper is to explore theories from psychology that could inform a new generation of student support structures committed to increasing student motivation and academic success. So, in turn, students can deepen their commitment to learning and increase productive persistence in the face of academic struggle through increased motivation and self-efficacy. **The particular focus of this support is community college students in developmental mathematics classes,** though the ideas may have broader application across the educational continuum.

Gender Differences at Critical Transitions in the Careers of Science, Engineering, and Mathematics Faculty

Gender Differences at Critical Transitions in the Careers of Science, Engineering, and Mathematics Faculty presents new and surprising findings about career differences between female and male full-time, tenure-track, and tenured faculty in science, engineering, and mathematics at the nation's top research universities. Much of this congressionally mandated

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book is based on two unique surveys of faculty and departments at major U.S. research universities in six fields: biology, chemistry, civil engineering, electrical engineering, mathematics, and physics. A departmental survey collected information on departmental policies, recent tenure and promotion cases, and recent hires in almost 500 departments.

[ADVANCE](#): Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers; [Advance Portal Website](#).

[Innovations in Teaching Undergraduate Biology and Why We Need Them](#)

A growing revolution is under way in the teaching of introductory science to undergraduates. It is driven by concerns about American competitiveness as well as results from recent educational research, which explains why traditional teaching approaches in large classes fail to reach many students and provides a basis for designing improved methods of instruction. Discipline-based educational research in the life sciences and other areas has identified several innovative promising practices and demonstrated their effectiveness for increasing student learning. Their widespread adoption could have a major impact on the introductory training of biology students. [Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences \(UBM\)](#). [Mathematical Biology Education: Beyond Calculus](#).

[Understanding NSF Grantees' Engagement](#)

Drawing upon survey data of 19 MSP grantees and 130 non-MSP NSF grantees in STEM-related disciplines from three Mid-Atlantic States, this study employs a mixed-method approach to explore to what extent demographics, institutional norms and practice, and self-perceptions about importance of research, teaching and service differ between the MSP program grantees and other NSF grantees during the 2007-08 academic year.

[Synergistic Interactions of K-16 Partnership Work, Research, and Teaching in Higher Education Science Faculty Members](#)

Work between higher education faculty and K-12 schools and teachers is fairly common, sometimes initiated by schools, sometimes designed by science professors under the aegis of broader impact as mandated by research grant solicitations and most recently mandated by the National Science Foundation's Math Science Partnership (MSP) solicitations. While most such work is focused on K-12 impact, this series of case studies examines the "push-back" effects of such work on the professors' teaching, scientific research, and in some cases, their institutions.

[A Longitudinal Analysis of Institution of Higher Education Faculty Engagement in a Math and Science Partnership Project](#)

Drawing on four years of survey data, the present study explores sources of variance that predict breadth, intensity, and persistence of engagement among college faculty in a National Science Foundation Math & Science Partnership project during 2003-2007. Building upon descriptive studies of faculty engagement and developmental theories on breadth and intensity as two separable dimensions of engagement, a three-level hierarchical linear model is applied to explain the proportion of variance attributable to temporal, individual, and institutional level variables, respectively.

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[NSF K-12 Resources for Science, Technology, Engineering and Mathematics Education](#)

Resources and findings generated through educational research and development projects funded in part by the National Science Foundation can help inform states and school systems that are developing strategies for improving K-12 STEM (science, technology, engineering and mathematics) education.

[Catalyzing Research in Science Education Policy Conference](#)

Included a very diverse set of participants and was intended to begin a conversation around establishing a research base that can inform **two important areas of great relevance to science education: new standards in science/engineering and science teacher education**

[Picturing America School Collaboration Projects](#)

Building on the national distribution of Picturing America, the **National Endowment for the Humanities** invites proposals for local and regional projects that **foster collaboration between K-12 teachers and humanities scholars** to encourage engagement with the rich resources of American art to tell America's story. Picturing America School Collaboration Projects grants are designed to help teachers incorporate Picturing America images into the teaching of core subjects. Information about [Picturing America](#), including the [Picturing America Teachers Resource Book](#), can be found by visiting the Picturing America website.

[The MSPnet Toolbox](#)

The toolbox contains materials that projects have found particularly useful in their work and that may be adapted for use by other MSP projects. Tools may include assessment instruments, evaluation protocols, form letters, etc.

[Who Is NCES?](#)

The purpose of the National Center for Education Statistics' website is to provide clear, complete information about NCES' mission and activities, and to serve the research, education and other interested communities. NCES values your comments and suggestions for improving the usability of this site. To provide comments or suggestions, or to seek further assistance, contact the NCES webmaster at NCESwebmaster@ed.gov. The National Center for Education Statistics (NCES) (see [Organizational Chart](#)) is the primary federal entity for collecting and analyzing data related to education in the U.S. and other nations. NCES is located within the U.S. Department of Education and the Institute of Education Sciences.

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Agency Research News

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Proposed Federal R&D Funding for FY 2011 Dips to \$143 Billion, with Cuts in Defense R&D

Federal agencies have a proposed total budget authority of \$143.4 billion for federally funded research and development in FY 2011. This represents a slight drop (0.3%) in current dollars from FY 2010 preliminary appropriations of \$143.9 billion and an expected drop of 2.3% in inflation-adjusted dollars ([table 1](#)). The FY 2011 proposed totals are agency estimates of federal funding for R&D based on agency documents and Office of Management and Budget data through May 2010.

Science and Technology Priorities for the FY 2012 Budget (OMB)

In the **2012 Budget**, agencies should **focus resources on addressing six challenges**: Promoting sustainable economic growth and job creation; Defeating the most dangerous diseases and achieving better health outcomes for all while reducing health care costs; Moving toward a clean energy future to reduce dependence on energy imports while curbing greenhouse gas emissions; Understanding, adapting to, and mitigating the impacts of global climate change; Managing the competing demands on land, fresh water, and the oceans for the production of food, fiber, biofuels, and ecosystem services based on sustainability and biodiversity; Developing the technologies to protect our troops, citizens, and national interests.

Addressing these challenges will require strengthening our efforts in six cross-cutting areas:

- Science, technology, engineering and mathematics (STEM) education and advanced learning technologies at every level, from early childhood to lifelong learning, and for all segments of society;
- The vitality and productivity of our research universities and national and private laboratories, and sustained support for fundamental research;
- The capacity and robustness of infrastructures for information and communication, transportation, and energy;
- High-impact collaborations with researchers, the private sector, universities and other institutions of higher learning, civil society, and international partners to achieve U.S. foreign policy, global health, energy, climate change, and global development objectives;
- Capabilities in space, which are germane not only to looking and exploring outward but also to Earth observation, geopositioning, communication, and more; and
- An economic and policy environment that promotes and rewards research, entrepreneurship, and innovation.

Federal Budget Links FY2011

- [AAAS R&D Budget and Policy Program](#)
- [AIP List of Federal Budget Requests](#)

Scientists Seeking NSF Funding Will Soon Be Required to Submit Data Management Plans

During the May 5th meeting of the [National Science Board](#), National Science Foundation (NSF) officials announced a change in the implementation of the existing policy on sharing research

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data. In particular, **on or around October, 2010**, NSF is planning to require that all proposals **include a data management plan in the form of a two-page supplementary document**. The research community will be informed of the specifics of the anticipated changes and the agency's expectations for the data management plans. The changes are designed to address trends and needs in the modern era of data-driven science. "Science is becoming data-intensive and collaborative," noted Ed Seidel, acting assistant director for NSF's Mathematical and Physical Sciences directorate. "Researchers from numerous disciplines need to work together to attack complex problems; openly sharing data will pave the way for researchers to communicate and collaborate more effectively."

NSF Postdoctoral Researcher Mentoring Plan

New NIH Policy on Post-Submission Application Materials

The National Institutes of Health is changing agency policy to only allow grant application materials to be accepted after submission of the application but before the initial peer review if they result from unforeseen administrative issues. **The change will be effective for applications submitted for the September 25, 2010 receipt date and thereafter.** The **May 21 NIH Guide Notice** includes lists of acceptable post-submission materials under the new policy, unacceptable post-submission materials, exceptions, and page limits for post-submission materials.

Importance of Communicating Research Value in Your NIH Application

Knowing that your title, abstract and public health relevance statements will be public if your grant application is funded means that you should consider more than just reviewers when writing them. **Clear, succinct language is appreciated by everyone, reviewers included.** That being said, writing clearly and succinctly without compromising the science is a challenge. For more information on this initiative and to see before and after examples of using plain language in a NIH application title, abstract and statement of public health relevance, please see **Communicating Research Intent and Value in NIH Applications**.

The NIH also offers tips for the use of Plain Language on its Web page, **Clear Communication: An NIH Health Literacy Initiative**. If you're looking for other elements of the grants process and/or additional grant writing tips, check out the **About Grants** Web page for helpful links, including those on **Writing Your Application**.

Enhancing Peer Review: New NIH Policy on Post-Submission Application Materials

This Notice serves to announce that the new NIH policy on post-submission grant application materials (NOT-OD-10-070; NOT-OD-10-104) will be effective for applications submitted for the September 25, 2010 receipt date and thereafter. The NIH Best Practice Guidelines for Accepting Additional Grant Application Materials (Revised 03/19/2010) will be rescinded at that time. This policy does not modify the existing Just-In-Time requirements or any other requests for additional information after the initial peer review.

Research Development & Grant Writing News

Communicating Research Intent and Value in NIH Applications

Tips on communicating the value of your research clearly: (1) Remember that the audience reading the title, abstract and public health relevance statements may not be scientists. (2) Avoid scientific jargon or technical writing. (3) Communicate the bigger picture. State what you are proposing, why it is important, and explain the potential impact on public health.

AAAS R&D Budget and Policy Updates

Welcome to the AAAS R&D Budget and Policy Program. Since 1976, the Program has sponsored studies and public meetings on funding and policy issues affecting research and development (R&D). The Program aims to provide timely, objective, and accurate information on federal R&D support.

DOE/ DoD MOU to Accelerate Clean Energy Innovation

Issued July 22, 2010

Subscribe to National Humanities Alliance Monthly Policy Digest

The National Humanities Alliance keeps the humanities community informed through NHA-Announce, a monthly digest of current events and information of significance to national humanities policy. To subscribe to this list, **click [here](#)**.

Changes to NSF Grant Application Submission Process

Effective August 23 NSF will implement several important changes to the application submission process through Grants.gov. [More](#).

Grants.gov Quarterly "Succeed" E-Newsletter

"Succeed" provides updates, tips, and articles on using Grants.gov.

Grants.gov Blog Daily System Status & News

National Academies Launches Study of Research Universities

The National Academies has [created an ad hoc committee \(members\)](#) to conduct a study and issue a report with findings and recommendations on the question: "What are the top ten actions that Congress, the federal government, state governments, research universities, and others could take to assure the ability of the American research university to maintain the excellence in research and doctoral education needed to help the United States compete, prosper, and achieve national goals for health, energy, the environment, and security in the global community of the 21st century?" The Consensus Report is **scheduled** to be released in approximately May 2011. **The first meeting of the study committee will be held in the Fall of 2010.**

The study committee will, in carrying out its work, focus on:

- Research and doctoral programs carried out by research universities and associated medical centers;

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- Basic and applied research in research universities, along with collaborative research programs with other components of the research enterprise (e.g., national and federal laboratories, federally-funded research and development centers, and corporate research laboratories);
- Doctoral education and, to the extent necessary, the pathways to graduate education and research careers; and
- Fields of study and research that are critical to helping the United States compete, prosper, and achieve national goals for health, energy, the environment, and security, with a focus on science, engineering, and medicine.

[White House Issues FY 2012 Science and Technology Priorities Memo](#)

On July 21, OMB Director Peter Orszag and OSTP Director John Holdren sent a four-page memorandum to the Heads of Executive Departments and Agencies outlining the Administration's Science and Technology Priorities for the FY 2012 budget. The Clinton and Bush Administrations issued similar memos, as did the Obama Administration last year, as part of the preparation of annual budget requests. **FY 2012 budget requests are to be submitted by September 13, 2010.**

Research Development & Grant Writing News

Agency Reports & Research Roadmaps

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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.

[National Science Foundation Investing in America's Future Strategic Plan FY 2006-2011](#)

[NSF Human Capital Strategic Plan](#)

[NIH Strategic Plans and Visions](#)

[EPA Strategic Plan, Draft FY 2011-2015 EPA Strategic Plan](#)

The public comment period for the U.S. Environmental Protection Agency's [Draft FY 2011-2015 Strategic Plan \(PDF\)](#) (57pp, 282K) closed on July 30, 2010. The Agency appreciates the comments and feedback received during this period and will consider them carefully in finalizing the Plan **for release to the Congress and the public on September 30, 2010.** [Full version of the 2006-2011 EPA Strategic Plan \(PDF\)](#)

[DoD Strategic Plan for Research and Engineering](#)

[NEA Strategic Plan: FY 2006 - 2011](#)

[NEH Fiscal Year 2007 - Fiscal Year 2012](#)

[Gulf of Mexico Research Plans](#)

The mission of the Gulf of Mexico Research Plan (GMRP) is to identify priority research needs for the Gulf of Mexico through broad constituent input and to implement strategies to address those needs. The goal is to assist the Gulf of Mexico research community, including those who conduct or administer research or use research findings. [More](#).

[NIST Finalizes Initial Set of Smart Grid Cyber Security Guidelines](#)

The National Institute of Standards and Technology (NIST) issued Sept. 2 its first **Guidelines for Smart Grid Cyber Security**, which includes high-level security requirements, a framework for assessing risks, an evaluation of privacy issues at personal residences, and additional information for businesses and organizations to use as they craft strategies to protect the modernizing power grid from attacks, malicious code, cascading errors, and other threats. All three volumes of Guidelines for *Smart Grid Cyber Security* (NISTIR 7628) can be downloaded at: <http://csrc.nist.gov/publications/PubsNISTIRs.html#NIST-IR-7628>.

Research Development & Grant Writing News

[Educational Partnership Program NOAA](#)

The goal of EPP is to increase the number of students from underrepresented communities who are educated, trained and graduated in fields that directly support NOAA's mission. NOAA's EPP/MSI program consists of four programmatic components: [Cooperative Science Centers](#), [Environmental Entrepreneurship Program](#), [Graduate Sciences Program](#), and [Undergraduate Scholarship Program](#).

[The National Academies Summit on America's Energy Future](#)

Downloadable Webcasts & PP Presentations

The National Academies Summit on America's Energy Future was a two-day, critical overview of the recent influential energy studies and initiatives. This timely event was intended to stimulate discussion among participants with diverse points of view on energy issues.

[Department of Energy STEM Workforce Strategic Plan](#)

DOE STEM programs are aimed at boosting teachers' content knowledge and improving student achievement in science and mathematics. Four primary strategic areas have emerged: **educators, students, workers, and the building of program capacity**. This document outlines an ambitious approach to workforce development, one that we hope will create a larger, more diverse, and highly skilled pool of scientists, engineers, and technically skilled workers.

[DOE Announces Secretary of Energy Advisory Board](#)

The Board will provide advice and recommendations to the Secretary on the Department's basic and applied research, economic and national security policy, educational issues, operational issues and other activities as directed by the Secretary.

[Overview and Summary of America's Energy Future: Technology and Transformation](#)

National Academies, August 17, 2010; **Free pdf download**

This *Overview and Summary* highlights key findings and major topics discussed in *America's Energy Future: Technology and Transformation*. It also reflects results presented in the additional three books that comprise the America's Energy Future project.

[Anticipates and Responds to System Disturbances \(Self-Heals\)](#)

The white paper titled, *A Systems View of the Modern Grid*, defines the seven principal characteristics of the smart grid. One of those characteristics is **Self Heals**. This main objective of this paper is to clearly define the Self Heals principal characteristic and present the distinction of the current state from a possible future state.

[Assessing the Effects of the Gulf of Mexico Oil Spill on Human Health: A Summary of the June 2010 Workshop](#)

Assessing the Effects of the Gulf of Mexico Oil Spill on Human Health is a useful resource that can help policy makers, public health officials, academics, community advocates, scientists, and members of the public collaborate to create a monitoring and surveillance system that results in "actionable" information and that identifies emerging health risks in specific populations.

Research Development & Grant Writing News

[Examination of the U.S. Air Force's Science, Technology, Engineering, and Mathematics \(STEM\) Workforce Needs in the Future and Its Strategy to Meet Those Needs](#)

In response to a request from the Deputy Assistant Secretary of the Air Force for Science, Technology, and Engineering, the National Research Council conducted five fact-finding meetings at which senior Air Force commanders in the science and engineering, acquisition, test, operations, and logistics domains provided assessments of the adequacy of the current workforce in terms of quality and quantity. **Free pdf download.**

[New Research Directions for the National Geospatial-Intelligence Agency](#)

The National Geospatial-Intelligence Agency (NGA) within the Department of Defense has the primary mission of providing timely, relevant, and accurate imagery, imagery intelligence, and geospatial information--collectively known as geospatial intelligence (GEOINT)--in support of national security. In support of its mission, NGA sponsors research that builds the scientific foundation for geospatial intelligence and that reinforces the academic base, thus training the next generation of NGA analysts while developing new approaches to analytical problems. Historically, NGA has supported research in five core areas: (1) photogrammetry and geomatics, (2) remote sensing and imagery science, (3) geodesy and geophysics, (4) cartographic science, and (5) geographic information systems (GIS) and geospatial analysis.

[Office of Naval Research](#)

Using the [Naval Science and Technology Strategic Plan](#) as its guide, ONR fosters, plans, facilitates and transitions scientific research in recognition of its paramount importance to enable future naval power and the preservation of national security. [Submitting Proposals](#) to ONR. [ONR Funding Opportunities](#). The [Discovery and Invention](#) portfolio sponsors research in multiple areas. Key research initiatives include core basic and applied research programs executed by ONR program officers and research performed at naval laboratories. There are three additional initiatives managed by the director of research -- the [University Research Initiative](#), [Basic Research Challenge](#) and the [Young Investigator Program](#). Research awards are made in response to the [broad agency announcements](#). The grant awards are made and managed by ONR program officers and performed by researchers at organizations, universities, naval laboratories and industry.

[Overview of Office of Justice Programs Grants and Funding](#)

Over the past 10 years, OJP has provided 52,000 funding awards to the criminal justice community totaling more than \$26 billion. In Fiscal Year (FY) 2009, OJP awarded 4,900 grants totaling more than \$2.5 billion. In FY 2009, OJP also awarded an additional 3,883 Recovery Act grants totaling more than \$2.74 billion to state and local and tribal law enforcement and community organizations. [OJP Grant Basics](#). [OJP Funding Opportunities](#). [A complete list of NIJ publications](#) (from this page select the linked tab "*Sponsored by NIJ*" to **view grant reports**). What NIJ Funds: Research, Development and Evaluation. On this page, learn all about applying for and managing funding from NIJ. Sections include:

- [What NIJ Funds](#)
- [Find a Funding Opportunity](#)

Research Development & Grant Writing News

- [What to Do Before You Apply](#)
- [Building Your Proposal](#)
- [Submitting Your Application](#)
- [How Your Application is Reviewed](#)
- [If Your Proposal Is Funded](#)

[NIST Internal Reports](#)

NIST Interagency or Internal Reports (NISTIRs) describe research of a technical nature of interest to a specialized audience. The series includes interim or final reports on work performed by NIST for outside sponsors (both government and nongovernment). NISTIRs may also report results of NIST projects of transitory or limited interest, including those that will be published subsequently in more comprehensive form.

[Top Priorities Picked for Astronomy and Astrophysics](#)

A new report by the National Research Council identifies the highest-priority research activities for astronomy and astrophysics in the next decade that will "set the nation firmly on the path to answering profound questions about the cosmos." The decadal survey -- the Research Council's sixth -- prioritizes activities based on their ability to advance science in key areas, and for the first time also takes into account factors such as risks in technical readiness, schedule, and cost.

[Select Agents Should Be Defined by DNA Sequence](#)

A DNA sequence-based system could be developed to better define when a dangerous pathogen or toxin should be subject to Select Agent regulations, says a new report from the National Research Council, which adds that this system could be coupled with a "yellow flag" system that recognizes requests to synthesize suspicious DNA sequences and serves as a reference to anyone with relevant questions, allowing for appropriate follow-up.

Faculty at Predominately Undergraduate Institutions: Assessing Your Strengths

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Faculty at PUIs may not realize that when it comes to competing for grant funding, they have some advantages over the R1 institutions.

Faculty at Predominantly Undergraduate Institutions (PUIs) are increasingly expected to conduct research and to bring in research funding. Fortunately, funding agencies (particularly NSF) have shown a growing interest in funding PUIs. However, many PUI faculty initially find the prospect of competing for research funding against faculty from Research-Intensive Institutions (often called R1 institutions) daunting. PUI faculty often ask how they can possibly compete with faculty from R1 institutions, who typically have lower teaching loads, graduate students who can serve as research assistants, and more research facilities. The key to understanding your funding competitiveness is to recognize that faculty researchers at PUIs, are not necessarily competing head-to-head with R1 faculty, and even in cases where you are, you have some advantages that the R1 institutions don't. (For NSF's definition of a PUI, see [Synopsis of Program.](#))

Your Students

The key advantage of almost all PUIs is their access to students that R1s are not reaching. PUIs often enroll students from underrepresented groups, are the first-generation in their family to attend college, lack economic advantages, come from rural areas, or who fit the category of non-traditional students with respect to age or educational history. These are precisely the types of students that many federal agencies want to reach as they work to increase the nation's educated workforce. The federal government is particularly concerned that as jobs become increasingly technical, the US will run short of workers skilled in science, technology, engineering and math (STEM) to fill those jobs. As a result, federal agencies are funding new programs to help train these students (e.g., [ONR STEM for K-12 & Institutions of Higher Education](#)), and are expanding programs that already exist (e.g., [NSF Transforming Undergraduate Education in STEM](#)). There is also increased interest in funding research at PUIs that will benefit students and enhance the research infrastructure at those institutions. *Note: If your institution has a high enough minority enrollment to be designated a Historically Black College or University (HBCU), a Hispanic Serving Institution (HSI), or a Minority Serving Institution (MSI), there are additional grants for which you are eligible; we'll discuss those grants in a future issue.*

As a faculty researcher at a PUI, you can take advantage of this increase in funding by pursuing grants that explicitly include both research and education components (e.g., [NSF CAREER](#) and [NSF Research Experiences for Undergraduates](#)) and by including in your research proposals a detailed discussion of how the project will benefit students and the research infrastructure at your institution. It's very likely that reviewers will not know much about your institution, so in your proposal, describe your institution and the types of students it serves. Be sure to engage undergraduates as researchers on your projects (there are many [good resources](#) available on mentoring undergraduates in research). Describe the skills and knowledge you

expect these students to learn as a result of their research experience, and discuss previous successes you've had with undergraduate researchers (Did any go on to graduate school? Did any become co-authors on a paper or participate in a conference post session? How many were from underrepresented groups?). Also, describe how the results of the research might be used to improve the curricula at your institution. For example, you might plan to include a discussion of the research in a class you'll be teaching. All of these tactics will help reviewers and the agency understand how funding your project will help them to fulfill their mission of producing a more skilled and educated workforce.

Your Collaborations and Connections

Many PUIs have close connections with neighboring community colleges, local high schools, local industry, local museums, research labs, or R1 institutions that may be located near your institution or may be part of the same university system. Find out about your institution's connections and collaborations and consider how these relationships could be used to develop or enhance your proposed project. For example, if your institution supplies a large number of graduates to the local chemical industry, you might recruit industry representatives as advisors on curriculum and laboratory improvement projects or as speakers about careers in science as an outreach component for a research proposal. In a proposal requesting funds for a laboratory instrument, you might include an activity to perform demonstrations using the instrument for students at local high schools. Outreach to community college students could be part of a diversity component for an NSF CAREER proposal. All of these proposed activities are more convincing to reviewers if they are part of an on-going relationship and build on a history of prior activities between the institutions or organizations.

In addition to your institution's connections, you can build on your personal connections while taking advantage of your position at a PUI to develop new collaborations. Faculty at PUIs often find that their former graduate advisor, postdoc advisor, or colleagues of their advisors are quite interested in collaborating with them on NSF proposals. Collaborations with PUIs can help faculty at R1 universities address NSF's broader impacts and diversity review criteria, and PUI faculty can benefit from access to equipment and resources at the larger universities. Furthermore, involvement in a research project as part of a team can allow you to take on tasks that you can realistically accomplish with the time you have available while still contributing to productive research. These collaborations can also help you establish a track record that will help you compete successfully for individual grants. (In a future issue, we'll discuss how to structure collaborations – particularly collaborations between junior and senior faculty and between faculty at R1 institutions and PUIs – so that all partners benefit.)

Programs Particularly for PUIs

Some agencies have special mechanisms and programs to fund PUIs. NSF has the [Research at Undergraduate Institutions](#) (RUI) program. The Research in Undergraduate Institutions (RUI) activity supports research by faculty members of predominantly undergraduate institutions through the funding of: (1) Individual and collaborative research projects, (2) The purchase of shared-use research instrumentation, and (3) Research Opportunity Awards for work with NSF-supported investigators at other institutions (usually funded as a supplement).

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All NSF directorates participate in the RUI activity. RUI proposals are evaluated and funded by the NSF programs in the disciplinary areas of the proposed research. To apply for these grants, the PI applies to the RUI solicitation above, but selects a particular disciplinary core program at NSF (programs that fund unsolicited proposals; see the accompanying article on unsolicited proposals for more information on finding core programs) on the table of contents page under “program”. The PI should follow the proposal window or target date specified by the disciplinary program. (Note that you must include an RUI impact statement and certification of RUI eligibility as part of your proposal.)

In addition, many solicited programs such as NSF’s CAREER do not allow an RUI designation, but nevertheless strive to award grants to RUIs as part of their general goal to fund a diverse range of institutions. CAREER program officers expect review panels to judge proposals from an RUI faculty member in the context of his or her institution’s mission. Therefore, it might be expected that a CAREER proposal from an RUI would have a more comprehensive education component and a smaller research scope, although the research must still be of high quality. It might also be expected that an RUI faculty member with a heavy teaching load would include funds for release time in her CAREER proposal budget, while requests for release time by a faculty member at an R1 institution who already has a relatively light teaching load might be viewed as a troubling lack of commitment to teaching. In this way, proposals to NSF from RUIs are not necessarily judged by the same criteria as proposals from R1 faculty, even though the quality of such proposals must still be excellent and the reviewers must be convinced that the PI has the resources and infrastructure required to accomplish the proposed research.

NIH does not have a program specifically for PUIs, but they do fund [Academic Research Enhancement Award](#) (AREA) grants. Academic institutions that have received less than \$6 million in funding in 4 out of the last 7 fiscal years are eligible to apply for these grants. The list of ineligible institutions is posted on this page under “Eligibility.” You can find success rates for AREA grants by year and institute by going to the same page and scrolling down to “AREA Data” and clicking on “Success rates.” The full Program Announcement is [here](#).

The Research Strengths of your Colleagues and Institution

Many PUI faculty have found that they can be very successful in competing for funding at the mission agencies (USDA, EPA, DoED, NASA) by taking advantage of specific research strengths of the faculty and institution. For example, a PUI with a strong record in agricultural research can compete very successfully at USDA. A faculty researcher with extensive experience in education research and has close ties to school districts can do well with the Department of Education. In fact, many senior faculty at PUIs have come to the position after a highly successful career in industry, business, or government and still have very useful connections. New PUI faculty can benefit from these areas of expertise within their institutions by becoming aware of resources available on their own campuses and by recruiting successful faculty to be mentors or collaborators.

Your Research and Education Strengths

Finally, no matter the type of institution at which you teach, your ability to win research and education grants will depend on the steps you take to develop a strong track record in research

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and teaching. Reviewers and program officers recognize that the number of publications will generally be lower for PUI faculty because of their teaching commitments, but they will still look for an active record of publication. It is also important to engage in education and outreach activities that reach beyond teaching courses, such as mentoring students in research experiences, arranging internships for students at national labs, engaging in recruiting activities aimed at underrepresented students, and participating in science and math programs for K-12 students. The results of these activities can then be discussed in the education and broader impacts sections of your proposals in the same way you would discuss prior research work. This will lend credibility to your education and outreach plans.

The particular type of education and outreach activities you select should depend on your interests, your institution's goals and mission, and the needs of students at your institution. If possible, publish the results of innovative education activities in science education journals, and work with the students you mentor in research experiences to publish their work and present it at conferences. NSF particularly likes to see papers co-authored with undergraduates when considering proposals that include undergraduate research. Taking these steps to develop your research and education track record will help to convince reviewers that you are likely to be successful in your proposed research and education project and that your proposal should be funded.

Programs of Particular Interest to PUI Faculty

Many PUIs have been successful in winning grants from the programs listed below:

- [Research at Undergraduate Institutions](#) (RUI)
- [NSF Major Research Instrumentation](#) (MRI)
- [NSF STEM Talent Expansion Program](#) (STEP)
- [NSF Transforming Undergraduate Education in STEM](#) (TUES – formerly CCLI)
- [NSF Scholarships in STEM](#) (S-STEM)
- [NSF Research Experiences for Undergraduates](#) (REU)
- [NIH Academic Research Enhancement Award](#) (AREA)
- [NSF Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences](#) (UBM)

Grad Students and Postdocs:

Preparing for Success as an Independent Researcher ([Back to Page 1](#))

Your time as a graduate student or postdoc is not only the time to learn how to do research but also an excellent time to learn how to pursue funding to support your research. Unfortunately, while most graduate programs make explicit efforts to teach students how to perform research, few of them teach students how to identify funding sources and write competitive proposals. This is starting to change as universities begin to offer elective courses and workshops in proposal writing for graduate students and postdocs. As a graduate student or postdoctoral fellow who plans to pursue a career in academic research, it will probably be up to you to seek out and take advantage of the expertise available at your university related to winning funding for research in your field.

First, be sure to take any courses or workshops in proposal writing that might be offered at your institution. Second, and even more importantly, seek out faculty in your discipline who have been successful at winning research funding. Schedule a time to meet with each faculty member you've identified, and ask them about their experiences in competing for funding. Most faculty are enthusiastic mentors and enjoy talking about their own experiences, so listen well and take good notes (you will need to refer to them again in several years' time). Examples of the kinds of questions you should ask are: What agencies and institutions fund research in our field? Where have you been most successful in winning funding? Within those agencies, which programs have funded your research? Where do you see the interests of these funders going in the future? Have you been a reviewer for these agencies? If so, are there common mistakes that you see in proposals that you've reviewed? How did you get your first few grants? What advice would you give a new faculty member pursuing his or her first grant? What can I do now to best position myself to be competitive for funding when I start a faculty position? Would it be possible for me to read one of your successful proposals?

If you are fortunate, your graduate or postdoc advisor will be one of those well-funded faculty. This will give you an excellent opportunity to learn from an expert how to write competitive research proposals. Let your advisor know that you would like to learn as much as possible about the process of competing for research funding. Talk to your advisor at length about her or his experiences, ask to see copies of successful and unsuccessful proposals, and volunteer to help write the next proposal that is related to your dissertation research. Most research grants do not allow graduate students or postdocs to serve as PIs or co-PIs, although graduate students and postdocs are often funded by these grants. Some students find this discouraging because they will not receive "credit" for a funded proposal that they helped to write. Don't let this deter you from helping to write a research proposal. The experience will repay with knowledge, skills, and connections developed during the process. What better way to develop those skills than under the guidance of an experienced grant winner (your advisor) and before a tenure clock begins?

Another way to gain experience writing proposals is by applying to special programs that fund graduate students or postdocs directly. Such programs include graduate fellowships, dissertation grants, and post-doctoral fellowships. Most of these programs do not require full-blown research proposals, but they do require a sort of mini-proposal, typically a document

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running from one to ten pages describing your proposed plan of research. (We'll discuss how to apply to these programs in more detail in a future article.)

Networking within your discipline is important at this stage in your career to position yourself not only to find a faculty position but also to compete for research funding. Attend conferences in your field, and present a paper or poster if possible since that will provide more opportunities to interact with other scholars and will add to your curriculum vitae. Many conferences provide funding to support graduate student attendance on a competitive basis. This presents another opportunity to write a "mini-proposal."

And, finally, one of the most important things that graduate students and postdoctoral fellows can do to position themselves to compete for funding is to publish their research. Of course, publishing is important for many reasons other than pursuing funding. However, should you need any further motivation to publish your research, keep in mind that reviewers will evaluate your qualifications and ability to conduct research based in large part on your list of publications. Starting your first faculty position with a strong list of publications will make winning those first research grants much easier.

Below are examples of funding opportunities for which graduate students or postdocs can apply (be sure to check the eligibility requirements for before applying).

Upcoming (2010-2011) Fellowship Funding Opportunities

[PostDoc Resources Posted at MIT](#)

[On Being a Scientist: A Guide to Responsible Conduct in Research: Third Edition](#)

Authors: Committee on Science, Engineering, and Public Policy, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine.

[NSF Graduate Research Fellowship Program](#)

Document History: Posted: August 20, 2010. **Replaces:** [NSF09603](#).

The purpose of the NSF Graduate Research Fellowship Program (GRFP) is to help ensure the vitality and diversity of the scientific and engineering workforce in the United States. The program recognizes and supports outstanding graduate students who are pursuing research-based master's and doctoral degrees in fields within NSF's mission. The GRFP provides three years of support for the graduate education of individuals who have demonstrated their potential for significant achievements in science and engineering research.

[The National Defense Science and Engineering Graduate \(NDSEG\)](#)

The 2011 application will become available in September 2010.

As a means of increasing the number of U.S. citizens and nationals trained in science and engineering disciplines of military importance, the Department of Defense (DoD) plans to ***award approximately 200 new three-year graduate fellowships in April 2011***, subject to the availability of funds. The DoD will offer these fellowships to individuals who have demonstrated ability and special aptitude for advanced training in science and engineering.

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DOE Computational Science Graduate Fellowship for 2011-2012

Applications accepted starting late October, 2010.

<http://www.krellinst.org/csgf/>

The Department of Energy Computational Science Graduate Fellowship (DOE CSGF) program provides outstanding benefits and opportunities to students pursuing a PhD in scientific or engineering disciplines with an emphasis in high-performance computing.

NOAA EPP 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. **Applications available in October.**

NIJ's Graduate Research Fellowship Program

An annual program that provides assistance to universities for **dissertation research support** to outstanding doctoral students undertaking independent research on issues related to crime and justice. Topics of interest to NIJ under this program vary from year to year. See the current [NIJ Graduate Research Fellowship Program solicitation](#) .

Hertz Foundation Fellows

Since 1963, the Fannie and John Hertz Foundation has awarded over 1000 doctoral fellowships with the goal of supporting the early stage research endeavors of **applied physical, biological, and engineering science students** who possess the potential to change our world for the better by solving difficult, real-world problems.

Ford Foundation Fellowship Programs

Through its Fellowship Programs, the Ford Foundation seeks to increase the diversity of the nation's college and university faculties by increasing their ethnic and racial diversity, to maximize the educational benefits of diversity, and to increase the number of professors who can and will use diversity as a resource for enriching the education of all students. The 2011 fellowship application competition is scheduled to open on or about September 1, 2010 and the online fellowship application will be available for registration at that time. Please continue to monitor this site for future announcements.

National Academy of Education/Spencer Postdoctoral Fellowship

The National Academy of Education/Spencer Postdoctoral Fellowship Program supports early career scholars working in critical areas of education research. This nonresidential postdoctoral fellowship funds proposals that make significant scholarly contributions to the field of education. The program also develops the careers of its recipients through professional development activities involving National Academy of Education members. **Due Nov. 5.**

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Spencer Dissertation Fellowship and the NAE/Spencer Postdoctoral Fellowship

The Spencer Foundation is unable to make previous applications publicly available. However, we do highly recommend reading "*The Art of Writing Proposals*" an article published by the Social Science Research Council about crafting a competitive research proposal. Please visit www.ssrc.org for more information. **Due Oct. 27.**

Graduate Women's Scholarship Program

The Microsoft Research Graduate Women's Scholarship is a one-year scholarship program for outstanding women graduate students and is designed to help increase the number of women pursuing a PhD. This program supports women in the second year of their graduate studies. Women who are interested in this scholarship must apply during first year of graduate studies. Scholarships are granted by Microsoft Research at the discretion of Microsoft. **Due by Oct. 8.**

Fall 2011 EPA Science To Achieve Results Fellowships For Graduate Environmental Study

Due by November 5.

Agriculture and Food Research Initiative Competitive Grants Program

In FY 2010, approximately \$6 million is available to support the **NIFA Fellowships Grant Program** within AFRI to provide fellowships to outstanding pre- and postdoctoral students in the agricultural sciences. The AFRI NIFA Fellowships Grant Program is focused on developing technical and functional competence for predoctoral students and the research independence and teaching credentials of postdoctoral scientists in the agriculture, forestry, and food sciences that are within NIFA's challenge areas through well-developed and highly interactive mentoring and training activities. **Due by Oct. 5**

NSF - Minority Postdoctoral Research Fellowships and Supporting Activities

Through the Directorate for Biological Sciences and the Directorate for Social, Behavioral and Economic Sciences, the **NSF** offers **Minority Postdoctoral Research Fellowships** and related supporting activities in an effort to increase the participation of underrepresented groups in selected areas of science in the U.S. These fellowships support training and research in science, technology, engineering and mathematics (STEM) fields in a host institution only in the areas of biology and social, behavioral, and economic sciences within the purview of NSF. Supporting activities are travel grants to graduate students to visit prospective sponsors and starter research grants for Fellows. **Due by Oct. 18.**

GEM Graduate Fellowships for Minority Students

The **National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc.** (GEM) fellowship programs span the entire recruitment, retention, and professional development spectrum. GEM's principal activity is the provision of graduate fellowships at the MS and Ph.D. levels coupled with paid summer internships. **Due by Nov. 15.**

New Funding Opportunities and Competitive Proposal Development Resources

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New NIH Notices of Intent to Publish RFAs--

- **Notice of Intent to Publish a Request for Applications for Gulf Oil Research Consortia: Impacts on Health of Residents (U19)—[more](#).** The National Institute of Environmental Health Sciences, in partnership with several NIH Institutes/Centers/Offices, intend to promote a new initiative by publishing a Request for Applications (RFA) to solicit applications to examine the impacts of the Deepwater Horizon Disaster on health and quality of life of the general population residing in the Gulf Coast Region. The intent of this RFA is to create one or more community-based participatory consortia of university-community partners to address the health issues of concern to the residents.
- **Notice of Intent to Publish a Request for Applications for Comprehensive Partnerships to Reduce Cancer Health Disparities (CPRCHD)—[more](#).** The Center to Reduce Cancer Health Disparities, National Cancer Institute announces the intent to publish a Funding Opportunity Announcement (FOA) for the implementation of Comprehensive Partnerships between Community Serving Institutions (CSI) (formerly referred to as Minority Serving Institutions, or MSIs) and NCI-designated Cancer Centers (CC) or groups of Centers.
- **Scientific Meetings for Creating Interdisciplinary Research Teams in Basic Behavioral and Social Science Research—[more](#).** The National Institutes of Health (NIH) solicits Research Conference Grant (R13) applications for scientific meetings aimed at building interdisciplinary research teams in basic behavioral and social science research (b-BSSR).

New NSF Dear Colleague Letters--

- **Submission Of Unsolicited Proposals To NSF Programs That Address The Interdisciplinary Topic Of Physical And Engineering Sciences In Cancer Biology—[more](#).** NSF, in collaboration with the National Cancer Institute, will accept and review *investigator-initiated proposals*. It is anticipated that programs in the Engineering Directorate, including Divisions of [Civil, Mechanical, and Manufacturing Innovation](#) (CMMI), [Chemical, Bioengineering, Environmental, and Transport Systems](#) (CBET), and [Electrical, Communications, and Cyber Systems](#) (ECCS), and the Mathematical and Physical Sciences Directorate's Division of [Materials Research](#) (DMR, [Biomaterials Program](#)) will accept proposals on this interdisciplinary topic.
- **NSF Graduate Research Fellows Nordic Research Opportunity—[more](#).** The Division of Graduate Education and the Office of International Science and Engineering announce an international research opportunity for NSF Graduate Research Fellows. Available as a Supplemental Award, this special opportunity will enable Fellows to gain international research experience and establish collaborations with counterparts at Norwegian, Finnish, Danish or Swedish research institutions.
- **Information on Gulf Oil Spill MRI RAPID Submission —[more](#).** In light of the recent oil spill in the Gulf of Mexico, NSF has highlighted the Rapid Response Research (RAPID) mechanism (<http://www.nsf.gov/pubs/2010/nsf10060/nsf10060.jsp>) as a means for NSF to receive and

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review proposals having severe urgency with regard to availability of, or access to, data, facilities or specialized equipment, as well as quick-response research on natural or anthropogenic disasters and similar unanticipated events. RAPID is a special grant mechanism developed specifically to respond to unusual circumstances where a timely response is essential to achieving research results.

- **Social, Behavioral, and Economic Research Related to the Gulf Oil Spill and Other Disasters—[more](#).** The consequences of the Gulf oil spill seem likely to be broad and long-lasting. There are local, state, regional, national, and international aspects to the situation, and an unusual confluence of biological, geological, and human elements. This Gulf oil spill is the latest in a series of disasters that provide opportunities to examine the ways in which people and organizations anticipate, prepare for, respond to, and emerge from disasters.
- **Rapid Response Research Grants Available for Gulf of Mexico Oil Spill Research—[more](#).** RAPID is a special grant mechanism developed specifically to respond to unusual circumstances where a timely response is essential to achieving research results. To help determine whether the proposed research is appropriate for NSF's RAPID funding, potential investigators must contact the NSF program officer(s) most germane to the proposal topic before submitting a RAPID proposal.
- **Research on STEM Learning in Formal and Informal Settings in CAREER Proposals—[more](#).** The Faculty Early Career Development (CAREER) Program is a NSF-wide activity that offers awards in support of faculty early in their independent careers. The purpose of this letter is to clarify and extend the guidelines included in Program Solicitation NSF 08-557 (<http://www.nsf.gov/pubs/2008/nsf08557/nsf08557.htm>) as they relate to proposals submitted to the Division of Research on Learning in Formal and Informal Settings.
- **Announcement of Target Date for Submission of Proposals to Division of Physics for FY 2011 Funding Cycle—[more](#).** The target date for proposal submission to programs in the Division of Physics varies according to program. For proposals competing for FY 2011 (which begins October 1, 2010) funds, the target date for unsolicited proposals submitted to most programs is **September 29, 2010**.
- **Supplemental Opportunity for Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) Community College Research Teams (Phase IICC)—[more](#).** The Small Business Community College Research Teams Supplement (henceforth referred to as SBIR/STTR Phase IICC) will award research supplements to existing SBIR/STTR Phase II grantees that are able to host a research team from a community college. This supplement opportunity is intended to further SBIR/STTR Phase II research and facilitate progress toward their grant goals while providing a substantial scientific research experience for the community college research team.
- **2012 EFRI Topic Ideas —[more](#).** The purpose of this letter is to invite the research community to submit suggestions for topics to be considered for the FY 2012 Program Solicitation of the Office of Emerging Frontiers in Research and Innovation (EFRI). This is not a request for submission of a single research proposal idea but rather of an emerging transformational area of research and innovation. You may submit your ideas by accessing the following website <http://nsf.gov/eng/efri/efri2012/> and submitting your candidate topic idea along

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with a one-page description. Please follow the instructions provided. The deadline for submission is September 30, 2010.

NSF Graduate & Post-Doctoral Fellowships & Graduate Programs

- **Alliances for Graduate Education and the Professoriate (AGEP)**—[more](#). Informed by multiple NSF-funded evaluations and assessments of the AGEP program as a whole (available upon request) and by discussions with AGEP Principal Investigators and other interested individuals, the **NSF has concluded that some modifications to this successful program will enable it to fulfill its goals even more effectively**. Accordingly, to give interested institutions time and support to develop stronger, more innovative and more successful AGEP alliances, NSF is **soliciting proposals and plans to award a series of smaller grants in FY2011**.
- **Graduate Research Fellowship Program (GRFP)**—[more](#). The NSF expects to award 2,000 Graduate Research Fellowships under this program solicitation pending availability of funds.
- **Postdoctoral Research Fellowships in Biology (PRFB)**—[more](#). Announces a **new competitive area 2**, Intersections of Biology and Math and Physical Sciences. Competitive area 1, Broadening Participation, is unchanged.

[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.

[Office of Atmospheric Programs](#)

Non-Construction Market-Based Approaches to Reducing Greenhouse Gas Emissions Through Energy Efficiency in Homes and Buildings

This notice announces the availability of funds and solicits proposals that advance national, regional, state, and local energy efficiency programming by utilizing market-based approaches to program design and delivery. **Closing Date: October 27, 2010**

[Comparative Analysis of Marine Ecosystem Organization \(CAMEO\)](#)

The purpose of the CAMEO 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. They can be employed in lieu of direct experimentation where controlled manipulation at relevant temporal and spatial scales is not possible. Well-designed comparative studies use existing gradients in ecosystem features to reveal how those features are manifest in processes and

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structures. Comparative analysis may be applied across ecosystems, within ecosystems through time, or across modeling approaches. **Due January 7.**

Vocational Training and Education for Clean Energy (VOC TEC)

USAID intends to award a worldwide Leader with Associate (LWA) Cooperative Agreement for the VOCational Training and Education for Clean energy, or VOC TEC. The purpose of this program is to bolster the capacity of local stakeholders to sustain renewable energy investments, primarily in decentralized clean energy technologies and hybrid renewable energy-hydrocarbon systems. **The focus of the program will be on distributed energy systems, specifically wind, solar PV, micro-hydro, and hybrid energy systems utilizing any of these three technologies along with fossil-fueled generators.** Emphasis will be on developing local capacity to assemble, design, install, operate, and maintain facility-specific or community-level micro-grid systems. **Due Oct. 27.**

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.**

FY 2010 National Wetland Program Development Grants

The U.S. Environmental Protection Agency (EPA) is soliciting proposals from eligible applicants for projects that develop or refine state/tribal/local government wetland programs as a whole, or individual components of those programs. Wetland Program Development Grants (WPDGs) must be used by applicants to address one or more of the core elements of a wetlands program (i.e., Monitoring and Assessment; Voluntary Restoration and Protection; Regulatory Approaches; and Wetland-Specific Water Quality Standards) identified in Section I.B National Priority Area. **Due Oct. 21.**

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 vouchered 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, 2010.**

Centers for Disease Control and Prevention

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Stay updated with new content from the CDC. From this page you can [subscribe to CDC or other US Government RSS feeds](#) or view their contents directly on this page without having to use an aggregator. [CDC's Procurement and Grants Office](#).

U.S. Army Research Laboratory [Funding Opportunities](#)

U.S. Department of Education

[FEDERAL REGISTER](#) Announcements; Application Notices, Requests for Comment

[Forecast Of Funding Opportunities](#) Under The Department Of Education Discretionary Grant Programs For Fiscal Year (FY) 2010, (As of August 13, 2010)

[Energy Production with Innovative Methods of Geothermal Heat Recovery](#)

The U.S. Department of Energy's Geothermal Technologies Program is partnering with the technical community to advance geothermal systems research and development throughout the United States.

[Bill & Melinda Gates Foundation Grand Challenges in Global Health](#)

The Bill & Melinda Gates Foundation is now accepting grant proposals for [Round 6 of Grand Challenges Explorations](#), an initiative to encourage innovative and unconventional global health solutions. Anyone can apply - from any experience level, from any discipline, and from any organization, including colleges and universities, government laboratories, research institutions, non-profit organizations and for-profit companies. Proposals will be accepted by the Foundation via an online portal **until November 2, 2010**.

[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. 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.

[Research Corporation for Science Advancement](#)

Research Corporation for Science Advancement is a private operating foundation that aids basic research in the physical sciences (astronomy, chemistry, and physics mainly) at U.S. colleges and universities. It supports ideas independently proposed by college and university faculty members and carries on activities related to science advancement.

[Fulbright NEXUS Regional Scholar Program](#)

The Fulbright Regional Network for Applied Research (NEXUS) Program will bring together a network of junior scholars, professionals and mid-career applied researchers from the United States and other Western Hemisphere nations for a series of three seminar meetings and a Fulbright exchange experience. **Due November 15**.

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[National Humanities Center Fellowships 2011-2012](#)

The National Humanities Center offers 40 residential fellowships for advanced study in the humanities during the academic, September 2011 through May 2012. **Due by Oct. 15.**

[Unsolicited Proposals to Robert Wood Johnson Foundation](#)

While RWJF awards most of its grants through [calls for proposals](#) (CFPs), we also award grants in response to unsolicited proposals in our [Human Capital](#), [Pioneer](#) and [Vulnerable Populations](#) program areas. RWJF accepts unsolicited proposals at any time in these three program areas and issues awards throughout the year. There are no deadlines.

[Faculty and Student Teams Program](#)

FaST is a cooperative effort between the Department of Energy (DOE) Office of Science and the National Science Foundation (NSF). Faculty from colleges and universities with **limited research facilities** and those institutions serving populations, women, and minorities underrepresented in the fields of science, engineering, and technology are encouraged to apply for the FaST program. The FaST program will support a team comprised of one faculty member and 2 – 3 undergraduate students. Potential areas of collaboration are based upon the [Project Descriptions](#) described at the specific DOE Office of Science laboratory. [Frequently Asked Questions](#).

[Research in Undergraduate Institutions \(RUI\)](#)

The Research in Undergraduate Institutions (RUI) activity supports research by faculty members of predominantly undergraduate institutions through the funding of (1) individual and collaborative research projects, (2) the purchase of shared-use research instrumentation, and (3) Research Opportunity Awards for work with NSF-supported investigators at other institutions.

[Research Funding Opportunities for New and Young Faculty](#)

These programs are intended for late postdoctoral investigators and new faculty, usually those at or below the rank of Assistant Professor. Consult each program's web page for more information and actual deadlines. (Compilation by UC-Berkeley)

Research Development & Grant Writing News

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

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What We Do--

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

- 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