

# Research Development & Grant Writing News

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## Planning for Narrative Synergy

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By Mike Cronan, co-publisher

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Synergy in the research narrative is given ***lip service by many but planned for by few***. This holds especially true as funding solicitations have come to expect increasingly transformational and hence transdisciplinary research solutions to complex technical challenges. Too many think of synergy as pixie dust, a narrative glitter sprinkled on the project description a day or two prior to the due date, rather than understanding it for what it truly is: a long-planned-for structural framework and connective tissue. It evolves along with the project's vision, goals, and objectives and guides how research ideas are developed, discussed in team meetings, and described in multiple iterations of narrative text. This continuous development of narrative synergy becomes especially critical when integrating multiple research strands developed by multiple authors.

In short, interdisciplinarity imposes challenging conditions on the development and writing of a proposal. The first of these conditions is the team nature of these proposals, which requires mastering team dynamics not encountered in single-PI proposals, or proposals with a few PIs all from similar disciplines. No doubt, narrative synergy is the *Yellow Brick Road* of successful proposals, regardless of the scale of interdisciplinarity or number of team members. But as the number of research thrusts or strands increases, along with the number of team members and different disciplines needed to address the research thrusts, so do the challenges. Clearly, the rallying cry or narrative gold standard for interdisciplinary team proposals is "*Synergy Not Silos*." However, like most slogans, this one is easy to say but hard to achieve.

A lack of narrative synergy is one of the more commonly noted failings addressed by reviewers of declined proposals. While perhaps not explicitly stating "*this proposal lacks synergy*" as a reason for not funding a proposal, reviewers often make many comments that implicitly signal a lack of narrative synergy. For example, they may note that a proposal is long on "*what you will do*" and short on "*how you will do it*," a common failing of declined proposals.

***Synergies reveal themselves mostly in the "how" and not so much in the "what."***

Reviewers may note that your proposed project "*does not seem innovative or novel, nor does it sufficiently differentiate itself from current research approaches to warrant funding*." Innovative and novel research and novel approaches to the proposed research require two conditions to be recognized: first, they must in fact exist. Second, they must be revealed through narrative synergies that describe the **interdependencies and relational importance** of each proposed research strand to every other strand.

Moreover, narrative synergy answers the most common core question reviewers and program officers will expect you to address **with detail and specifics rather than vague generalities puffed up with self-anointing superlatives**. Specifically, for example, reviewers will expect you (a) to describe how your team configuration promotes research synergy, (b) to give **specific** examples of expected synergies, (c) to describe the value of perhaps three to five linked research project thrust areas over each thrust area funded individually, and (d) to give

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details of project management strategies that promote synergy and bring value-added benefits to the research fields.

These are challenging core questions that need to be addressed. ***Remember, synergy reveals itself best in thoughtfully chosen project details and specifics and not in glowing generalities claiming synergy but not demonstrating it.*** So, for example, each of the preceding expectations of program officers and reviewers might be answered with an introductory sentence that quickly sets up a listing of specific details ***focusing on the how*** and not on the what of the desired synergy.

Clearly, proposals that include multiple research partners pose a particular challenge to the coherence of a project narrative. Individual team members typically contribute individual narrative statements featuring their prior and future research, but with little or no recognition of how that research will integrate with other team members' contributions to the proposed project. These "stand-alone" statements fail to describe how each research strand complements every other strand, adding up to an integrated set of contributions to the project's vision, goals, and objectives. These individual narrative contributions often do not address the overarching questions that motivate the research, nor do they describe each of the multiple research strands in a context that clearly demonstrates their relationship to the motivating questions or hypotheses.

Too often, these typically one- to four-page descriptive only contributions to a proposal resemble a series of isolated numbers comprising the combination to a safe, but lacking the sequence required to open it. In the case of a project narrative, the combination needed for funding must be a logically ordered sequence of questions, or hypotheses, or perhaps statements of need for the research, depending on the agency and type of research, that explain the novel and significant features of the research activities described in the narrative.

Descriptions of research activities or capacities improperly sequenced and explained within the overarching context of a research vision, goals, and objectives turn the narrative into something of a mystery. You don't want reviewers noting to themselves and other review panel members after reading the narrative that "it is not at all clear why all these descriptions about various research capacities are important and what exactly this research team intends to do." However, this will be the result if the research narrative evolves, to use the current vernacular, as a collection of "stove-piped" or "siloed" contributions by multiple authors. Here, synergy will be required to illuminate the value-added benefits of your research to the field or the agency mission or both.

Some common challenges to achieving synergy in the project narrative arise from the fact that the vision is still evolving as the research contributors draft their narrative contributions. In another case, the overarching questions motivating the research have yet to be fully defined, or are in the process of being redefined. The vagueness or incompleteness of the research vision can increase the likelihood that a first full draft of the proposal will read as a series of siloed, unintegrated statements. The earlier you intervene to correct this flaw, the better chance you have of achieving the synergy needed to convince reviewers to recommend funding for your proposal.

Moreover, it is often the case that the research team members attempt to do too many important tasks simultaneously but in isolation from each other, here again thwarting synergy. In these cases, finding time to draft text is often difficult enough, let alone adding the

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requirement of reading and considering others' contributions as you draft your own. This difficulty can be compounded by electronic communications among team members that fluctuate between periods of silence punctuated by a cascade of electronic messages, often including drafts of graphics, figures, and multiple track-edited versions of an evolving project description that can quickly become a blizzard, or rainbow, of track-edit colors.

These issues all cry out for an orderly resolution grounded on a well-crafted proposal development schedule and plan for narrative synergy. This planning tool will help meld the vision and goals of the project and communicate them continuously via a defined production timeline to all of the contributing authors, somewhat akin to the [waggle dance](#) used by honey bees to inform other bees of the location of a food source. This will better ensure that the text evolves in a way that not only describes the importance of each research-specific strand but also describes how it interrelates with every other research strand included in the project description. It is not an easy task, but planning for this integration holds the key to success. The team is well advised to find someone among its own members or from a campus research office who can assist the PI in bringing informed coordination to the proposal development process with the expressed intent of achieving narrative synergy.

Another pitfall to achieving synergy in the research narrative or project description lies in writing about research thrust areas as if the authors were contributing to an edited collection or a journal issue rather than to a single, integrated statement identified as the research vision, goals, and objectives. This occurs most often on multi- or transdisciplinary proposals that evolve ad hoc rather than from a well-planned proposal production schedule, or when the decision to submit this complex proposal occurs only a month or several weeks before the due date. In this last case, the proposal schedule can lead to a "fire drill" in which potential new research partners are added concurrently with the writing of the first drafts of the research narrative.

These situations can produce several drafts of the project description at a rapid rate as multiple contributions are added to the narrative. The complete draft of the project description may give the illusion of completeness, but on closer examination it will lack an overarching organizing theme or research vision that synthesizes the component contributions, resulting in a coherent and logically sequenced whole. Correcting this document after it has evolved can be difficult; unfortunately, such a draft is likely to amount to nothing more than a siloed collection of loosely associated research descriptions lacking a narrative thread that can persuade reviewers of its coherence. Once a complete narrative structure has emerged, contributors resist making major renovations to it. However, if the collaborators understand that the first full draft of a research project narrative is best viewed as a preliminary set of loosely associated descriptions, then the principal investigator can call for major revisions designed to produce a more integrated statement.

In the absence of a plan for narrative synergy prior to writing the proposal, it will prove to be difficult to transform a siloed draft into a well integrated and synergistic narrative. Failure is likely to be the outcome.

## Don't Let Your Proposal Wear a Disguise on Halloween

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

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There are many scary costumes your proposal might wear on Halloween, but it is best to forego the annual disguising festivities, not just on Halloween but on any day of the year. Otherwise, you might *inadvertently* disguise the identity of the great research idea put forward in your proposal, resulting in more tricks than treats when it comes to the success of your grant. Of course, the premise here ***assumes that a fundable idea lies cloaked beneath a number of correctable grant writing mistakes*** identified sufficiently before the due date to allow for their correction. Unlike Halloween, when scary costumes earn treats, program officers and reviewers will not reward ideas cloaked in ghoulish disguises. This is a particularly important point to make to new faculty who may just be planning their research career at the time Halloween comes around. ***Research offices can assist them to make sure they don't send off their first proposal to a funding agency wearing an inappropriate costume.***

Unfortunately, a number of all too common scary costumes can so successfully ***disguise a potentially fundable idea that the significance of the idea becomes unrecognizable to reviewers***. To avoid spooking reviewers, not just for proposals due this October 31, but every due date of the coming year, don't submit your proposal cloaked or masked, or wearing one of the more common scary costumes guaranteed to horrify reviewers and program officers alike. There are many ***examples of all too common proposal disguises that will lead to a declined proposal, as detailed below***. In this regard, keep in mind former Deputy Director of NIH William Raub's comment: *"There is no grantsmanship that will turn a bad idea into a good one, but there are many ways to disguise a good idea."* ***So don't disguise your great ideas with the following masks, costumes, or disguises.***

### The Oblivious Mask Trio

Three common disguises worn by many proposals are *The Oblivious Mask Trio*, coming in three versions, but typically together, and unlike the movie *Three Amigos!* with Steve Martin, Chevy Chase, and Martin Short, providing ***no amusement to reviewers whatsoever***: (1) The Oblivious Mask for the ***Tentative Grasp of the Program Guidelines***, (2) The Oblivious Mask for the ***Tenuous Grasp of the Review Criteria***, and (3) The Oblivious Mask for the ***Feeble Grasp of the Agency Mission***. A proposal wearing **mask 1** may have several outcomes, none good. The most extreme of these is to find your proposal returned without review, but more often, it will just receive a poor review and be assigned a "do not fund" recommendation. Surprisingly, the failure of both new and more experienced investigators to carefully **read** and **reread** and **reread** and follow the program solicitation guidelines is one of the more common causes of a negatively reviewed proposal. In some cases, it comes from the mistaken belief that an RFP need not be read carefully because research agencies always fund good ideas. This belief unfortunately abbreviates the more accurate statement that research agencies fund good ideas that ***advance the agency mission or research priorities*** in the ***specific ways defined in the solicitation guidelines***. Good ideas untethered to the research realities of the funding agency mission have little chance of success. A proposal wearing **mask 2** will clearly not be able to



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incorporate responses in the research narrative that address the review criteria in a convincing way. Wearing mask 2 is somewhat like attempting to play a competitive game without understanding what does or does not constitute points or a winning score. A proposal wearing **mask 3** will prevent you from writing a persuasive research narrative that convinces the agency that your research advances its mission in a significant way, either at the project or program level, or, in some cases, at the level of strategic research priorities, and brings value-added benefits to the agency mission or the field. Regardless, it is difficult to make a compelling case for the relevance and value-added benefits of your research to the agency mission or research priorities if you understand little or nothing about the mission, culture, and funding priorities of the agency itself, or about the role the agency plays in advancing national research priorities.

### **The Wishful Thinking Mask: Blurred Distinction between Basic and Applied Research**

Too often in the search for research funding, the applicant makes an unrealistic assessment of whether the research proposed is truly fundamental research, e.g., to NSF, NIH, DOE, or DARPA, or amounts to applied research inappropriate for a basic research agency, or to basic research programs in mission agencies that fund both basic and applied. This critical distinction requires a very candid self-assessment prior to developing and writing a proposal to avoid the mistake of submitting an applied research proposal to a basic research agency. You must ask and answer the specific question: ***“At this particular agency, will my research be characterized as basic or applied?”*** Moreover, it can be a more challenging distinction to make on research solicitations that do not clearly spell out specific research objectives that assist the potential applicant in addressing key research questions or testable hypotheses. If you don’t know whether or not your research is appropriately basic for a specific agency, discuss it with a program officer or seek help from a senior colleague well funded at the agency, or experienced as one of its reviewers. ***You need to get this distinction right.***

### **The Comedy of Errors in Grammar, Usage, and Syntax Mask**

While mistaken identity, puns, and word play are charming in Shakespeare's play *The Comedy of Errors*, reviewers will not find them amusing in a research narrative. Inadvertent or careless errors in grammar, usage, and syntax might momentarily bemuse reviewers, or worse, ***provide them with comic relief.*** They will also suggest to them that you are likely to tolerate errors in your research. Moreover, it is not the job of reviewers to reconstruct your true meaning out of a linguistic jumble of poorly structured sentences, jarring and disorderly syntax, and related grammatical errors. If it is possible for a proposal phoenix to rise out of the linguistic ashes of a poorly written research narrative, it will be as a consequence of the author’s recognition and correction of such problems. Authors can learn to recognize such writing errors themselves or they can seek the services of a colleague, research development professional, or editor who can help them ***make the proposal professionally presentable, i.e., free of errors.*** While reviewers are not likely grammarians, they are likely successful authors of funded proposals, hence good writers, and the gold standard for successful proposals is nothing short of perfection, or as close to it as possible.

### **The Poor Writing Disguise**

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Poorly written proposals appear shrouded in a fog that ***introduces ambiguity and hence uncertainty*** into the reviewers' understanding and evaluation of the project research description. ***Ambiguity in grant writing is always punished!*** Poor writing robs the research narrative of clarity, precision, and the persuasiveness needed to convince reviewers to recommend funding. A narrative fog leaves the reviewers unable to see where the narrative argument is going or where it has been. Poor writing offers readers a meandering journey through a blurred landscape without clear waypoints or clear substance, significance, or focus. As H.L. Menken once observed, badly written sentences appear ***"like an army of words marching across the page in search of an idea."***

### The Cloak of Ambiguity

Cloaking devices worked well when first introduced on the *Klingon Bird of Prey*, but they are definitely not for use in a research narrative. ***The cloak of ambiguity will unfortunately obscure the purpose and methods of an otherwise potentially powerful proposal.*** Ambiguity in the research narrative looms like a dense fog. Reviewers and program officers alike will balk at having to navigate a research narrative befogged by poor or careless writing or both, or by an author's inability or unwillingness to make the key narrative distinctions that would clarify the research vision, goals, objectives, rationale, and outcomes. Ambiguity in the narrative imposes upon reviewers and program officers in many ways, ***particularly in asking them to decide what the author actually meant.*** Most reviewers will not have the time, inclination, or patience for this task, and rightfully so, given that it would be difficult to recommend for funding an idea shrouded in ambiguity. Ambiguity in the narrative implies there is ambiguity in the research goals themselves, as well as in how the goals will be achieved. ***Agencies want to know clearly what they are funding and do not want to guess at it.***

### The Boiler Plate Costume

***Truly frightening proposals emerge when authors view them as nothing more than generic boilerplate text easily transplanted from an old proposal to a new one with a few minor adjustments.*** Moreover, there is no more horrifying boiler plate than narrative text ***gathered from the websites*** of research team members, an astonishingly common practice. Attempts to find ***"spare parts for proposals"*** salvaged from prior efforts that now populate the "grant writing cloud" and other so-called "proposal databases" are ill advised (See *Do Not Build Your Proposal Out of Spare Parts*, October 2011).

***A successful proposal grows from the seed of a compelling and exciting new research idea. Recycling is great for environmental sustainability but it has no place in grant writing!*** Every required proposal component that evolves from your new idea must do so in an internally integrated manner that adds a logical synthesis, and hence strength, to the core research idea. Attempts to transplant a modified research narrative from an existing proposal into a new proposal will significantly weaken the overall proposal (see *NSF's Perp Walk for Plagiarism* in the June 2015 issue). Writing a successful project narrative requires many thoughtful iterations of each proposal section that reveal to the reader the relational symmetry of one section to another. ***The well-written and convincing research narrative must clearly evolve to reflect and serve the needs of your specific research vision and the performance metrics required for your success.*** Using so-called boiler plate text in a research narrative will



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likely elicit the same response in reviewers as attempting to pass counterfeit \$100 bills to a Secret Service agent.

So it is important to beware the notion that a new proposal can be a largely borrowed or heavily modeled statement based upon other proposals, or a tattered template shared “in the grant writing cloud.” ***There are not enough immunosuppressant grant-writing techniques available to disguise such “borrowing” from the astute reviewer***, particularly given that the good program officer and reviewer will function as the immune system of a proposal under consideration. If they detect a transplanted research narrative, they should, and most likely will, reject it.

### The Mystery Novel Disguise

Many reviewers may in fact enjoy relaxing with a glass of wine and a well-crafted mystery novel, but it is best to leave the crafting of mystery novels to the practitioners of that genre. It is not a good idea to model your proposal after a mystery novel. Asking reviewers and program officers to play the role of “research detective” charged not with determining “who done it?” but with determining “what research is being proposed here?” will likely come to no good end. Reviewers will not be charmed by a proposal forcing them to play the role of, say, Tony Hillerman’s Lieutenant Joe Leaphorn or Walter Mosley’s Easy Rawlins in order to determine what research you are going to do and why it is significant to the funding agency mission and the disciplinary field. So-called “page turners” are a good thing for the success of a mystery novel but not for the success of a proposal. If reviewers must frantically turn pages to figure out what you propose to do, they will become quickly exasperated rather than intrigued at having to guess at what proposed research might be finally revealed at the end. Get right down to the point in your first paragraph.

### The Research Topic 101 Mask

Just as proposals are not mystery novels, neither are they journal articles or textbooks. While a discussion of the research topic’s background may be warranted to set the stage for the reviewers to understand the significance and context of your research, avoid the mask of writing a long and meandering narrative tour of the general research topic better suited to an introductory textbook 101 on the topic than to technical reviewers. The background information on the topic must be carefully adjusted to the level of topic expertise the reviewers bring to the review process. For this reason, it is important to understand the review process used by specific funding agencies, particularly how reviewers are selected and assigned. For example, NSF recommends describing the technical topic at a level that might be used in a *Scientific American* article, or for what NSF has described as the “***scientifically literate***” reader. Moreover, keep the background discussion tightly focused on what is relevant to your proposed research and avoid the temptation to go beyond that. While time intervals may be central to your research, you need not provide background information on the ammonia maser built in 1949 by NIST as the first proof of an atomic clock.

At many points in the development and writing of a proposal only a preliminary idea exists of what will be proposed. In those situations, it is comforting to begin writing text in hopes that this will “self-ignite” and coalesce into a compelling narrative. Unfortunately, however, this can lead to developing several pages of an overly general introductory narrative

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unable succinctly to inform the reviewers how your research advances the field in some significant way. Moreover, once written, some authors have great difficulty deleting large blocks of text that have lost their relevance to the research narrative as it has matured through multiple drafts. This becomes a particular danger on single-PI proposals without the benefit of a reading by multiple team members. In either case, a thorough “editorial scrub” of the research narrative by an unsentimental editor can help keep the narrative from becoming a “long and winding road,” something fine in a Beatles song but not in a proposal.

### **The Black Hole Disguise**

A narrative black hole exists when an author becomes convinced that the page limit and font format guidelines in the solicitation are insufficient to explain the proposed idea. This becomes apparent when an author comes to the ***dubious conclusion that a proposal narrative improves as the font is reduced to the smallest permissible*** size and all white space is squeezed out of every page to allow more elaboration. In some cases, narrative authors may even try an end run around the font size requirements by placing what is essentially narrative text in graphs, figures, illustrations and tables where smaller fonts are often permissible. Unfortunately, the text eventually becomes so dense that the narrative collapses upon itself and becomes impenetrable to the reviewer. In effect, a too-dense narrative text becomes a laborious read for the reviewers, who will likely balk at the idea of a forced march through dense text imposed on them by an author either unable or unwilling to write a clear and readable research narrative. As Mark Twain once commented in a letter to a friend, “If I had more time I would have written you a shorter letter.” This makes an excellent point. Increasing the density of text and format to the maximum permissible in hopes of including more information that gives your research narrative a competitive advantage is the iron pyrite or “fool’s gold” of grant writing. ***The goal of a research narrative is to communicate the significance of your research to reviewers, not merely to perform an informational data dump.***

### **The Stove-Pipe Disguise**

A proposal narrative disguised as a series of research silos is certain to leave reviewers confused as to the research value lying beneath the stove-pipe costume. Narrative contributions from multiple authors increase the complexity of proposals. Attempts to introduce what are essentially research strangers as research partners with a history of collaboration only after a funding opportunity is identified will be a hard sell to reviewers. Research integration and programmatic synthesis are two key characteristics of competitive proposals. Strategies to ensure the integration of multiple research strands, as well as any other required programmatic components, must begin very early in the proposal process (see *Planning for Narrative Synergy* in this issue). If a research narrative with multiple strands develops over several draft iterations and still remains more like multiple proposals rather than an integrated whole, then it becomes increasingly difficult to correct the narrative without major revisions. Proposals with multiple research and/or educational strands gain significant advantage by adopting early on a proposal narrative integration plan that will demonstrate a clear research synergy. Solipsistic narrative sections are not rewarded in the review process. ***Synergy is the Yellow Brick Road of the successful research narrative. Think synergy not silos!***

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## The Recycled Proposal Mask

Recycling discarded, broken, failed, or unused items is great for the environment but not so good for declined proposals. Like most recycled materials, old proposals are best left at curbside to be removed for chemical or mechanical processing, or more specifically in the case of a research narrative, substantive rethinking. Unlike the Phoenix, a mythical sacred firebird, a declined proposal rarely will have the ability to be reborn from its own ashes. A recycled proposal submitted in an attempt to do so will be quickly “unmasked” by program officers and reviewers for the truth that lies beneath it—a PI unwilling, unable, or too disorganized to rethink and restructure a research narrative in a way that remolds it into an essentially new proposal. This is not an easy task, but it is a necessary one. ***Proposals have a very specific home within a very specific time frame, not a generic home within an open-ended time frame.***

Shopping declined proposals around to multiple agencies is something akin to (pick your analogy) a snipe hunt, wild goose chase, or fool’s errand. ***Proposals are not fungible across agencies, within agencies, or even within programmatic areas within agencies, nor are proposals fungible over time.*** All proposals enjoy fifteen minutes of fame, as Marshall McLuhan might have observed, during the period when reviewers are making the decision to recommend or not recommend funding. However, when a proposal is declined, a resubmit is many months if not a year away in most cases. It is time to begin anew given that a declined proposal, while perhaps not a lemon, certainly had some serious problems that needed fixing. Don’t try to pass it off “as is” like a used car with mechanical or electrical problems to some other unsuspecting buyer, i.e., some other funding agency.

## The Silo Disguise

When an invitation to a “proposal party” arrives in the form of a solicitation wherein research and/or education integration is explicitly addressed as a key factor in the evaluation of the proposal, or research integration across multiple disciplines is implicit in the research objectives and outcomes of interest to the sponsor, don’t show up disguised as research silos or stovepipes. One common and often fatal mistake in writing a proposal that must demonstrate synergy and value-added benefits to multiple research strands is to compose the narrative sections as separate research articles loosely addressing a common research theme without close coordination or integration among principal investigators.

Given the dramatic increase in research funding over the past several years to support research that explores and illuminates the boundaries, interstices, and intersections of multidisciplinary environments in search of new discoveries, it is critical for successful authors to both recognize and avoid siloed sections and ***learn the more difficult skill of writing integrated research narratives.*** If the multiple authors of the multiple research sections of a transdisciplinary proposal cannot demonstrate and clearly describe how the intersections of “disciplinary catalysts” accelerate the research discovery process in the research narrative, then programs officers and reviewers will be unlikely to fund the proposal, trusting that the required research integration might magically happen in practice.

## The “Trust Me” Mask

The “trust me” mask is typically worn by a very vague proposal narrative containing a lot of reminiscence of past accomplishments and accompanied by long descriptive narrative

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sections that read like a textbook, but with only a fuzzy hypothesis and few specifics about what is actually being proposed and its significance. The subtext of the “trust me” proposal is **“just give me the money and great research will happen.”** It often reads like a daisy chain of effusive superlatives, but lacks any grounding in specificity and detail. Reading a “trust me” proposal will put you in mind, here again, of H. L. Mencken’s comment about “an army of words marching across the page in search of an idea.” In other instances, the “trust me” proposal may present a grandiose idea embellished with vague claims of significance. Ultimately, however, the “trust me” proposal, to quote Macbeth’s famous soliloquy, **“is a tale told by an idiot, full of sound and fury, signifying nothing.”** The “trust me” proposal is the research equivalent of a politician promising **“free beer and wide roads.”** It is simply not believable.

### Wearing an NIH Costume to an NSF Costume Party

Perhaps imposter Frank Abagnale, Jr., played in the movie *Catch Me If You Can* by Leonardo DiCaprio, might pull off this disguise successfully, but in most cases it is best not to attempt to wear an NIH costume to an NSF costume party. Some major alterations will be in order. For example, if your NIH costume identifies you as a biochemist able to significantly accelerate the “bench to bedside” benefits of your research in order to impact a specific human disease, you might want to consider wearing a new costume for the NSF party. In this case, your new, **NSF-appropriate costume** might better focus on how you will advance the frontiers of biological knowledge, increase our understanding of complex biological systems, and provide a theoretical basis for original research in many other scientific disciplines. **Unfortunately, wearing the wrong research costume to the wrong agency costume party is a fairly common “fashion faux pas”** not limited to researchers attempting to expand their funding opportunities by moving beyond NIH and including NSF as a potential funder of their research. This faux pas is quickly recognized and noted by reviewers.

### The Claiming Rather than Explaining Mask

In grant writing it is always better to explain than to claim. **Adjectives and superlatives do not have the power to confer legitimacy on your ideas, nor do they communicate anything more than unsubstantiated opinions.** While your intent may be to use adjectives and superlatives to add a compelling “glitter” to the significance of your research narrative, the most likely result is that they will act more like chaff, annoying or distracting reviewers, much like chaff acts as a countermeasure to confuse radar systems. If something is novel, innovative, unique, or compelling about your research, then demonstrate that with the specificity and detail required to prove it. Claiming that your research is novel, innovative, unique, and compelling without proving it by substantive statements and well supported examples is nothing more than wishful thinking, somewhat analogous to the sixteenth-century English proverb **“If wishes were horses, beggars would ride.”** In the case of a research narrative, it is better to heed Benjamin Franklin’s observation: **“Industry need not wish.”** The significance of your ideas should not need the adornment of “linguistic bling” in the form of gushing superlatives. A clear and simple statement directed to reviewers and program officers describing the significance of your idea **with concise details and specificity will suffice.**

### I Love Being in the Weeds Mask

To ensure that reviewers use your proposal as a sleeping aide, overwhelm them with a blizzard of technical minutia achieving the density of a black hole. Take them ever deeper into the disciplinary weeds, page after painful page, extinguishing their hope of finding even a glimmer of significance. Reviewers asked to slog through a seemingly endless series of arcane minutiae will quickly rebel against the numbingly repetitive experience, as desperately as TV meteorologist Phil Connors (Bill Murray) in *Groundhog Day* tries to escape the endlessly repeated series of trivial events. It can be easier to write page after page of familiar technical detail than to write a more disciplined research narrative representing a clear and simple description convincing reviewers of the significance of your research and its likelihood to advance the field in some way. Use technical detail ***judiciously to help prove your case rather than disguise it.***

In some cases, the initial writing of technical detail can help you psychologically “jump start” the proposal narrative so you at least have the illusion of words on the page rather than a blank page. Ultimately, however, technical data dumps are nothing more than listings of technical capacities, expertise, and details ***without any guiding intelligence*** that explains the relational connections among the details and the resultant significance or importance to an agency mission. Excessive technical minutiae in a research narrative unlinked to research relevance forces reviewers into the position of the National Security Agency that gathers massive amounts of global communications but then must mine the “raw data” for relevant information demonstrating a pattern of significance to the agency. Don’t expect reviewers to do that job for you. Use the appropriate amount of technical detail to support your arguments, but never assume that “raw” technical details alone will make the funding case for you.

### The All Hat and No Cattle Disguise

Putting forth grandiose ideas grounded on generalities rather than specifics is a fairly common failing of many proposals. Grand visions, overly ambitious plans, and unfocused ideas cobbled to unbridled enthusiasm will not impress reviewers. While effusive epiphanies may have their place on your back deck with a bottle of wine at sunset, they are most often, thankfully, ephemeral, and should not find their way into a proposal narrative.

### The No-Value-Added Mask

While economists have long argued the merits of a value-added tax (VAT), there is no such debate over the importance of describing the value-added benefits of your research when it comes to writing a successful proposal (see *Make Your Case for Value-Added Benefits* in the August 15 2015 issue). Describing the value-added benefits of your research—to an agency mission, to a scientific field, and in response to the program objectives defined in a solicitation—is a fundamental requirement for competitiveness across all agencies and foundations, regardless of your academic discipline. Surprisingly, such a description is often overlooked or stated unclearly in the project description on many proposals.

Sometimes PIs neglect such a description because they simply have not thought sufficiently about how the proposed research fits into the overall context of an agency’s mission priorities, or considered how the proposed research meets the overall goals and objectives of a specific solicitation. At other times, unfortunately, the PI may be proposing



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research that does not offer sufficient value-added benefits to warrant funding. Funding agencies support research that advances the disciplinary field in some clear and significant way, or advances the agency's mission-critical objectives in a clear way and significant way.

The key words here linked to value-added benefits are “clear,” “significant” and “advances.” The benefits that need to be described in the project narrative represent a “unit of change” that advances the current state of knowledge in a field or discipline and moves it forward in some significant way. The intertwining of value-added benefits and significance needs to be described clearly and succinctly in any research narrative if you hope to capture the interest of program officers and reviewers.

Moreover, the exact nature of the value-added benefits your research offers the funding agency is not a trivial consideration. To address it in the most compelling way requires an understanding of the agency mission objectives at multiple scales—from the level of the agency to a specific solicitation. It also needs your keen assessment of how well your research maps to the agency mission objectives and how it does so in the context of the current state of knowledge in the field. Your ability to capture these multiple contexts and weave a compelling narrative statement describing how your proposed research brings value-added benefits to the funding agency will be a key factor in the success of your proposal.

### The Overly Ambitious Disguise

While it is common during presidential election years to hear politicians promise the equivalent of “*free beer and wide roads*” on every conceivable political topic of potential interest to voters, it is not a good strategy when it comes to crafting a research narrative that you hope will impress program officers and reviewers sufficiently for them to recommend funding. They are a critical audience with sufficient experience to distinguish between what you hope to do and what you can realistically accomplish given the constraints on your time, resources, and expertise.

The overly ambitious project description is a fairly common reason for denying funding to proposals, particularly those submitted by more junior investigators whose earnest enthusiasm may charm reviewers but finally requires them to recommend against funding, with perhaps the suggestion to resubmit a more realistic proposal in the next grant cycle. The education and outreach component of an NSF CAREER proposal, for example, often tempts new investigators to overreach, while others may overreach in the proposal research plan.

In any proposal, however, getting this balance right is critical. If you submit a proposal in which the research narrative seems to suffer from inflationary promises that are out of balance with your budget, current and pending support, resources, expertise, and teaching obligations, among other constraints, you will likely not be funded. Be realistic in what you can and cannot accomplish within the constraints that set your operational boundaries, and then reflect that in your project narrative. ***Reviewers don't fund promises; they fund promises they are convinced can be kept.***

### The Solipsist Disguise

While solipsism is largely dismissed as a frivolous philosophical notion best left to late night discussions in bars bordering college campuses, it does, nonetheless, occasionally manifest itself in proposal narratives. Like its philosophical counterpart, the solipsistic project

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description is self-absorbed and apparently oblivious to the external reality of an audience, i.e., program officers and reviewers, that will pass judgment on the proposal.

The PIs of self-absorbed project narratives typically make several fatal mistakes, all in some way related to an inability to place their ideas in the proper context, specifically, advancing the research and mission-critical objectives of the funding agency. These narrative flaws include ignoring or attempting to circumvent the mission objectives of the sponsoring agency in the mistaken belief that the PI's ideas are so important they should be funded whether or not they respond to the agency's research requirements; ignoring or appearing to be unaware or indifferent to the fact that successful project narratives are written with an audience in mind—program officers and reviewers, who must be convinced of the significance and value-added benefits to funding the proposed research; and ignoring the need to write a research narrative that is easily read, responsive to the specifics of the solicitation, and accessible to program officers and reviewers in making their funding decision. The bottom line here is that funding agencies are not interested in funding promotional “self portraits” of ideas only marginally relevant to the agency mission objectives.

### The Slogan Mask

Passing slogans off as ideas may be sufficient for those running for political office, but it is a really bad idea for those writing a proposal. **Slogans are not ideas.** In writing a project description, particularly for certain types of institutional grants where research and educational objectives are intertwined, such as at NSF, or where institutional transformation of some kind is the desired outcome, such as ADVANCE, project narratives often over rely on slogans or too heavily echo an agency phrases picked up from reports, presentations, and conferences.

While it is important to have a common language to describe common programmatic elements, that common language must be used judiciously and, most importantly, be grounded in the specific context of the institutional objectives that motivate the proposal. Making the claim, for example, that your research is transformational or your proposal integrates research and education in innovative ways amounts only to a slogan without substantive programmatic descriptions in the project narrative that outline the specifics and details to support such a claim. Some authors of what are often institutional proposals of one sort or another, as those mentioned above, or authors of educational components required of research proposals such as the NSF CAREER, make the mistake of sprinkling the narrative with key words and phrases used by the agency in multiple solicitations, reports, and presentations. This seems to be done under the mistaken belief that echoing the language used in agency vision statements can substitute for the hard work of grounding an agency's overarching vision or goals in the unique context of the particular institution or research or educational program.

While echoing back an agency's language or phrasing is important to demonstrate that you understand and are familiar with the agency's mission objectives as well as the specific solicitation to which you are responding, the real work, as is always the case in proposal writing, comes when you must move from the general vision to the specific program that will allow that vision to be achieved within your unique institutional context.

So slogans, terms, and phrases adopted by an agency to describe their overarching vision, such as the NSF terms *innovative*, *transformational*, *research and education integration*, and numerous others, lack substantive meaning until you define them with the specific details

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of your research and/or educational objectives within your unique institutional or programmatic context. Until you perform that hard work, these terms are nothing more than agency vision slogans without substance. Throwing them back at program officers and reviewers without the specificity and detail that gives them substantive meaning will bring no value-added benefit to the agency and no reason to fund your proposal.

### **The “Why Should I Bother to Write a Budget Justification” Mask**

It is wise to treat the budget justification section of the proposal as an opportunity to write a more competitive proposal rather than as an inconvenient boilerplate disconnected from the project description. Whether through inattention or disregard, a poorly written description of the budget justification unlinked to the research narrative risks missing an opportunity to give additional detail and specificity about the operational and management structure of the project, or other factors unique to your proposal.

At the core of a successful proposal must lie a good idea that reviewers judge to be significant, compelling, and meritorious for funding. But it is also the case that your success will depend upon convincing program officers and reviewers that you have the operational and management expertise to manage a research award wisely and successfully over several years or longer, particularly a major award that may involve multiple researchers, post docs, and graduate students, along with other possible program components aligned with the research objectives.

A funded award, after all, represents a major, strategic investment by a research agency in your capacity to perform. Of course, your case for funding is made in the project description in various sections, including in the management and operations sections. However, the budget justification section allows you additional space to explain the budget request at a level of detail that space constraints in the project description may prohibit. In this respect, the budget justification section serves as a functional bridge between the project narrative and the raw budget numbers. It is a place where narrative text and budget numbers may be joined to give reviewers a clearer and deeper understanding of the operational logic of your proposed research and how it will be accomplished using the sponsor’s money.

While the format and content of the budget justification section will vary by agency, and often by program and program size within an agency, it is another important factor in the success of your proposal (if it is a specified component of the solicitation) and, as such, should be approached by the proposal writing team to ensure that it will serve as an illuminating complement to the project description. After all, successful proposals are the sum of an accumulation of marginal advantages, as economists might describe it, whereby every required component of a proposal is brought as close to perfection as possible, recognizing that the aggregate of these factors cumulatively determines the outcome. Failing to give the budget justification section of a proposal the attention it deserves squanders an opportunity to gain further competitive advantage and hence a funded proposal.

### **The Freddy Krueger Mask**

In the seemingly endless series of Freddy Krueger movies beginning with *Nightmare on Elm Street*, the victims all have recurring nightmares and die in their sleep. Program officers and reviewers might also welcome this fate when the “Freddy Krueger Proposal” is submitted

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to their agency for review with every indication that it has come to them by a circuitous route of prior ***serial rejections by other research agencies***. Some of the most egregious examples of horror stories recounted by program officers and reviewers include having to read proposals containing obvious artifacts of prior submittals, such as instances in which a project timeline or most of the research narrative has been clearly copied and pasted into the current proposal from a prior proposal, occasionally so hurriedly as to incorrectly identify the agency to which the “perennial proposal” is currently being submitted.

But even if the most obvious tell-tale signs of a recycled proposal are deleted from the most current resurrection, most reviewers and other readers will quickly recognize other “crime scene” evidence indicating that the proposal’s author is attempting the grant-writing equivalent of “speed dating” funding agencies, perhaps using the same logic that people use in buying lottery tickets. It is fairly easy to recognize when a proposal does not respond to the specific solicitation to which it is being submitted, perhaps because the authors assume such a greatness in the proposed ideas that program officers and reviewers will not care, or eagerly overlook, the fact they are not relevant to the agency mission priorities. Or perhaps authors of recycled proposals assume that all research funding agencies and their programs are fungible, and so a proposal submitted in the past to one of the defense agencies can be tweaked a bit and submitted for an NSF CAREER award.

Unfortunately, the Freddy Krueger Mask is scalable, as the PI’s of large research proposals have likely learned. PI’s should take note, if not actually horrified, when a potential research team member provides an ***“off the shelf”*** narrative contribution that has likely been inserted in many past efforts.

The Achilles Heel of recycled proposals is that they ignore the basics of successful grant writing; specifically, they forget that competitive proposals must contain competitive ideas that respond clearly to the funding agency’s mission priorities or other research objectives defined in the solicitation. Recycled proposals are destined for rejection. Before trying to recycle an old proposal for a new program, it would be wise to heed U.S. House Speaker Sam Rayburn’s observation that “there is no education in the second kick of the mule.” A recycled proposal is most likely to have suffered a series of “mule kicks” by reviewers in the past, and this should be taken to heart for future efforts.

Bottom line: if you are proposing new research ideas, express the significance of those new ideas, and all topic components of them, in newly-crafted writing for every word of the proposal narrative. Success in proposal writing will not be achieved using recycled parts—successful proposals are not renovations of the past but a creation for the future, together with the compelling arguments you make for the place and significance of your research ideas in that future.

### **The “I am a Researcher not a Wordsmith” Mask**

Mark Twain once stated that he never trusted a person who could only spell a word one way. Unfortunately, Mark Twain will not be reviewing your proposal, but rather program officers and reviewers who may not be amused by errors in spelling, grammar, and punctuation, and the resultant ambiguities they create. When it comes to the mechanics of writing a research proposal, it is prudent to assume a level of perfection in grammar, spelling,

and usage equivalent to that of writing a computer program with zero tolerance for coding errors.

While one or perhaps two errors in a major proposal may be tolerated by reviewers, or escape notice, anything more than that will likely draw attention, and not of a positive kind. Reviewers will likely assume, and justifiably so, that sloppy errors in language and usage will translate into sloppy errors in research. Unfortunately, there is no equivalent concept in grant writing to the “Navaho rug flaw,” whereby a purposeful imperfection is woven into a wool rug or blanket to allow evil spirits the opportunity to exit the design.

The last comment you want to read in your reviews is that the proposal was poorly written and contained numerous typos, or was in need of wordsmithing. Reviewers will occasionally comment on how well the research narrative was written, or how poorly it was written. But reviewers rarely recommend funding for poorly written proposals. Fortunately, errors of grammar, usage, and spelling are correctable by taking the time to closely proofread your narrative, or, better yet, by getting a fresh set of eyes on the proposal by an experienced editor.

### **The Unbalanced Disguise**

Balance, proportion, and emphasis are key characteristics of a well-written proposal narrative. While the intentional absence or distortion of these characteristics makes for fanciful Halloween masks of ghoulish, frightening features, an unintentional neglect of these characteristics in the proposal narrative will have a similarly disturbing effect on program officers and reviewers. In the case of the ghoulish Halloween mask, the reward may well be a generous amount of candy. But the ghoulishly distorted proposal that knocks on an agency’s door will likely leave empty handed.

Unfortunately, the rules for a well-proportioned and balanced project narrative are not as easily described as Euclid’s golden triangle, where the ratio of 1.618033 was viewed as proportionally perfect. Of course, the ideal proportion in the project narrative is not something the early Greeks addressed, at least as far as we know, and so it is left to the proposal authors to make sure to appropriately balance the narrative’s many sections.

How do proposal narratives become unbalanced or poorly proportioned? When a single author or a team of authors produces the first draft of a proposal, they will typically write most about what they know best. For example, first drafts often feature a disproportionately long background section that imbalances the narrative. Fortunately, creating the first draft of a proposal by following a template or narrative outline drawn from the solicitation and review criteria will reduce the likelihood of writing an imbalanced project narrative.

However, while a narrative template that outlines the required sections and subsections of any specific project description can reduce imbalance, it does not entirely prevent errors in assigning the weight given to particular sections of the proposal, even in cases where a well-crafted template imposes page limits on sections, or where the solicitation itself imposes page limits on sections. Often, segments receiving the least space in a first draft may emerge as the core sections of the proposal narrative that are not only the most important but also the most challenging to write. These sections tend to relate to the research vision, synergy among project objectives, and the like, which lie at the core of the competitive submittal.



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Balance, proportion, and emphasis in the project description need to be continuously monitored during the writing and internal review process with each thoughtful iteration of the narrative. It is not unusual that initial proposal drafts develop a significant amount of imbalance. This needn't hamper the proposal's success as long as the authors recognize that each subsequent draft of the proposal requires a new rebalancing to account for the revised text.

For instance, authors commonly allow a draft narrative, particularly in the early stages of development, to run well over the page limit to ensure that they cast a broad "narrative net" over all of the ideas with a potential to contribute to the proposal's success. However, as the due date approaches, the process of honing, crafting, and tightening the narrative begins. This is the point at which close attention must be paid to achieving balance among sections of the proposal.

For example, if buffers are not important to the proposed research project, don't spend narrative time on buffers. Check to see whether or not the management plan is appropriate for the scale and scope of the project, or whether the narrative balance reflects the agency's weighting of review criteria, or whether the narrative overemphasizes less important questions asked in the solicitation and underemphasizes the most important questions, or whether the narrative description appears untethered from the budget requests.

***Balance, proportion, and emphasis are key attributes of the well-written, and hence successful, proposal and need to reflect an internal hierarchy of ideas advanced in the narrative and the support requested in the budget to develop those ideas.***

### **The "I Really Need this Grant" Mask**

If you want to strike horror into the hearts of program officers and reviewers alike, then make a need-based arguments to a merit-based research agency. If need is a factor in the review of the proposal, it will be stated as such in the solicitation, e.g., in U.S. Department of Education solicitations, need is sometimes a weighted factor. Moreover, if other non-merit-based factors are part of the review process, then those will be stated in the solicitation as well. For example, in some cases, federal mission agencies look for a geographic distribution in making awards under a specific program. Absent a note in the program solicitation describing review factors other than those related to merit, don't disguise and overshadow a potentially fundable idea by focusing on need-based descriptions rather than the merit of your ideas.

While in some instances at certain funding agencies a compelling description of the need for the project is one review criterion, it is typically not a criterion at the major research funding agencies. Therefore, making need-based pleas in a proposal to a merit-based agency, such as NSF or NIH, arguing that rejecting your proposal amounts to callously shutting down the local orphanage, is not a wise strategy. These arguments are perhaps better directed to a foundation, particularly state or regional foundations, or federal agencies with programs that do account for need as a factor in competitiveness.

Moreover, without guidance from a university research office or members of a university community, some faculty or professional staff without sufficient experience in reading a solicitation closely, or an understanding of the mission and culture of a particular agency, may mistake a research proposal solicitation for an infrastructure support solicitation. This can often be exacerbated when reduced or flat budget appropriations force some university offices

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to adopt unrealistic expectations of finding grant funding to support personnel and administrative infrastructures. Or, this can happen when faculty with a history of internal support for various programmatic infrastructures are forced to look elsewhere for funding due to budget cuts and fiscal redirections. In other cases, it may occur when faculty or professional staff in university offices with a history of funding from need-based agencies and foundations are looking for a new revenue stream to support expanded programs, or for those programs that are being defunded.

While this misinterpretation of a merit-based research agency's mission can be directed to many federal agencies, it is most often directed to the NSF. Taking what is essentially a need-based rather than a merit-based argument to NSF occurs fairly commonly, particularly in the domain of education, where researchers may lack familiarity with NSF's mission and culture.

Helping potential applicants clearly understand the distinction between need- and merit-based agencies or solicitations as early in the proposal development process as possible can save a significant amount of time and resources, not only for those writing the proposals but also for those who must advise, process, or submit those proposals.

## Has Your BAA Been Superseded?

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By Mike Cronan, co-publisher

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At the start of the new fiscal year, many federal research agencies close out an existing BAA (Broad Agency Announcement) and issue a new (superseding) one for the coming fiscal year. While BAAs may stay open for a number of years, others are annual, which makes this a good time to check whether your FY2015 BAA has recently been superseded by one for FY2016. For example, in the case of the Department of Energy, Office of Science, BAA [FY 2016 Continuation of Solicitation for the Office of Science Financial Assistance Program](#) (Funding Opportunity Number: DE-FOA-0001414; CFDA Number: 81.049), an 81-page FOA (Funding Opportunity Announcement) open until September 30, 2016 or until replaced by a successor FOA, was posted to Grants.gov on October 1. The new BAA allows submitting research applications at any time over the coming year in DOE research priorities areas.

Keep in mind that an agency's research priorities, particularly a mission agency such as DOE, may change over the year, and when they do, modifications are posted to Grants.gov. You can keep on top of changes in research priorities under BAAs by signing up for one or both of these RSS feeds: [Modified Opportunities by Agency](#) (receive a listing of recently modified opportunities by agency name) and [Modified Opportunities by Category](#) (receive a listing of recently modified opportunities by category).

That said, BAAs are in many ways generic across federal research agencies in terms of their overall informational format and application process, e.g., a listing and description of agency research priorities and areas of interest for applications, description of the application process, typically through an initial white paper, etc. In the case of the example DOE FY2016 BAA, the Summary Statement indicates:

*"The Office of Science (SC) of the Department of Energy hereby announces its continuing interest in **receiving grant applications for support of work in the following program areas:** Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics. . . . This Funding Opportunity Announcement (FOA), DE-FOA-0001414, is our **annual, broad, open solicitation that covers all of the research areas in the Office of Science and is open throughout the Fiscal Year.** This FOA will remain open until September 30, 2016, 11:59 PM Eastern Time, or until it is succeeded by another issuance, whichever occurs first."*

Given that this 81-page BAA is typical of the length of BAAs across agencies, research offices can help faculty, particularly new faculty, "**drink from this informational fire hose**" that may be somewhat overwhelming to the uninitiated. There is a lot of jam-packed information in BAAs that needs to be read, digested, and acted upon by faculty whose research expertise and interests may map to the general research priority areas published by a specific agency. (At the end of the *Funding Opportunities Section* of this newsletter there is a listing of some currently open BAAs across multiple agencies. A search of Grants.gov for the term "**BAA**" came back with a listing of 78 currently [October 2015] open BAAs across federal agencies.)

One advantage of introducing new and junior faculty to BAAs is that they represent a suite of informational requirements that serve as a rich learning tool related to writing

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successful proposals. They can, therefore, help faculty fairly new to grant writing build a more comprehensive understanding of what constitutes a competitive proposal and the factors that impact competitiveness. Moreover, BAAs represent an often overlooked funding source for new faculty, particularly given that the application process defines a general area of research interest by the agency but allows applicants to more narrowly define their research interests and expertise that might fit the agency mission. BAAs present a “learning tool” for new or junior faculty by requiring them to understand some key areas needed for success in grant writing, for example:

- the importance of ***talking about your proposed research to a program officer*** or BAA POC (point of contact) prior to writing a proposal, preliminary proposal, or white paper;
- the importance of ***linking the proposed research to the agency mission priorities*** detailed or referenced in the BAA;
- the nature of basic or fundamental research as opposed to applied research;
- the importance of having a thorough ***knowledge of an agency’s mission priorities*** to ensure that proposed research brings value-added benefits to the agency mission;
- the importance of following submission and format requirements;
- the importance of reading through a complex set of instructions carefully and being able to resolve ambiguities that may be inherent to a general BAA to make sure an applicant can fit the agency’s research priorities;
- learning how to ***write a white paper*** as a first step towards writing a full proposal—***this is a critical skill that all grant applicants must learn***;
- how to track an agency’s research priorities as they change over time; and
- how an agency will review and evaluate a proposal.

***Finally, a key section of the BAA will detail the agency’s merit review process.*** In the case of this DOE BAA, the following are the merit review criteria:

- Scientific and/or Technical Merit of the Project;
- Appropriateness of the Proposed Method or Approach;
- Competency of Applicant’s Personnel and Adequacy of Proposed Resources; and
- Reasonableness and Appropriateness of the Proposed Budget.

Perhaps most importantly, ***BAAs typically list the evaluation factors the merit reviewers will be asked to consider in making a determination***, as the below factors listed in this recent DOE BAA suggest. Keep in mind as well that all faculty, particularly new and junior faculty, would do well to commit the following to memory for writing any grant to any federal agency :

### **Scientific and/or Technical Merit of the Proposed Research**

- What is the scientific innovation of proposed research?
- What is the likelihood of achieving valuable results?
- How might the results of the proposed work impact the direction, progress, and thinking in relevant scientific fields of research?

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- How does the proposed work compare with other efforts in its field, both in terms of scientific and/or technical merit and originality?
- Is the Data Management Plan suitable for the proposed research and to what extent does it support the validation of research results?

### **Appropriateness of the Proposed Method or Approach**

- How logical and feasible are the research approaches?
- Does the proposed research employ innovative concepts or methods?
- Are the conceptual framework, methods, and analyses well justified, adequately developed, and likely to lead to scientifically valid conclusions?
- Does the applicant recognize significant potential problems and consider alternative strategies?

### **Competency of Applicant's Personnel and Adequacy of Proposed Resources**

- What is the past performance and potential of the Principal Investigator (PI)?
- How well qualified is the research team to carry out the proposed research?
- Are the research environment and facilities adequate for performing the research?
- Does the proposed work take advantage of unique facilities and capabilities?

### **Reasonableness and Appropriateness of the Proposed Budget**

- Are the proposed budget and staffing levels adequate to carry out the proposed research?
- Is the budget reasonable and appropriate for the scope?



## Developing Timelines and Milestone Charts for Your Proposal

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By Lucy Deckard co-publisher

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Many solicitations require that you provide a schedule, timeline or milestone chart for your proposal, and even when they aren't explicitly required it's often a good idea to include one. These schedules can serve a number of essential functions:

- They help reviewers understand how you plan to stage and conduct your project tasks (and in the process, reassure the reviewers that you actually do have a detailed action plan).
- They help provide evidence that you have a plan to finish the work in the time allotted.
- They provide an easy-to-find list of the main tasks you need to accomplish in order to achieve your proposed goals.
- For team proposals, they can also provide a summary of who will have responsibility for which tasks.

However, many PIs are unsure how to develop timelines and milestone charts. Below we provide an overview of various approaches to developing this component of your proposal.

### Understand the Expectations of Your Funder

When developing a project schedule, it's important to understand the level of detail expected by your funder. Of course, if the solicitation specifically states what must be included in the project schedule, you need look no further. However, solicitations are often not that explicit. In that case, consider the culture of your funder and the complexity of your project.

Basic research agencies such as NSF, NIH and the DOE Office of Science are accustomed to giving researchers broad discretion in how they conduct their basic research projects, so you don't need to provide a highly detailed schedule, but you do need to communicate your approach and the major tasks you will need to accomplish as part of that approach. Therefore, schedules for single-PI or small team proposals to basic research agencies are typically high-level, with several subtasks under each main objective or aim, specified based on semester or quarter. Even so, don't make it so high level that it doesn't communicate your plan of work (such as just including your aims or objectives by year). So, for example, if you were a reviewer considering Schedule 1 in a proposal...

**Schedule 1** (main objectives only)

Task	Year 1	Year 2	Year 3	Year 4	Year 5
Objective 1: Development of the hoosit					
Objective 2: Assess XYZ					
Objective 3: Integrate the hoosit with XYZ					

...what is your impression of how well the PI has planned the proposed project compared to if Schedule 2 provided more detail as below?

# Research Development & Grant Writing News

**Schedule 2 (with objectives and tasks)**

Task	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Objective 1: Development of the hoosit</b>					
Integration and calibration					
Optimization of frumpits measurement methodology					
<b>Objective 2: Assess XYZ</b>					
XYZ spectroscopy					
MOA microscopy					
ABC testing					
Pandax studies					
<b>Objective 3: Integrate the hoosit with XYZ</b>					
Instrument integration					
Instrument testing					
Demonstration					

For larger team proposals or more logistically complex projects, even the basic research agencies are likely to expect a more detailed schedule. Think about your project from the reviewers' and program officers' point of view. Are logistics likely to be a challenge? Are there several tasks (perhaps led by different members of the team) that must be coordinated? Is there one critical task that could derail the project if it isn't accomplished on time? What is the "critical path," i.e., the sequence of tasks that determine when the project will be completed? If these and similar schedule-related questions are likely to be of concern to your reviewers, be sure to include enough detail in your schedule to show you have a plan to address them. For team proposals, it's usually a good idea to indicate next to the task who will be leading that task.

In addition, mission agencies often expect more detailed project plans and more finely detailed schedules. For example, the Department of Defense tends to place a high priority on scheduling and accountability, and often expects schedules down to the month (and even sometimes down to the week). In these cases, a project schedule could take up a half page or more. However, this is not always the case, so you should talk to your DoD Program Officer to determine what the expectations are for the particular program.

## What is the Difference Between a Scheduled Task and a Milestone?

Many PIs, particularly those who haven't worked in industry, are confused by the requirement that "milestones" be shown. Simply put, a milestone is an event that occurs (or should occur) at a specific point in time and is an important indicator of progress of your project. It might be the start or completion of an important task (e.g., "all study subjects have been recruited," or "flight testing begins"), a deadline such as "final report submitted", or a short event, such as "meeting of External Advisory Board." If your project has any "deliverables," i.e., products (hardware, software, data, reports, etc.) that you must supply to the funder, the dates when you will provide those deliverables usually should be specified as milestones. Milestones, which are often shown as triangles or diamonds, are usually interspersed within the schedule along with tasks that require some significant length of time. When you specify these milestones, remember that, should you win the grant, they will be key indicators that the funder will use to determine whether your project is on schedule, so consider carefully where you place these milestones and make sure they are realistic.

## Research Development & Grant Writing News

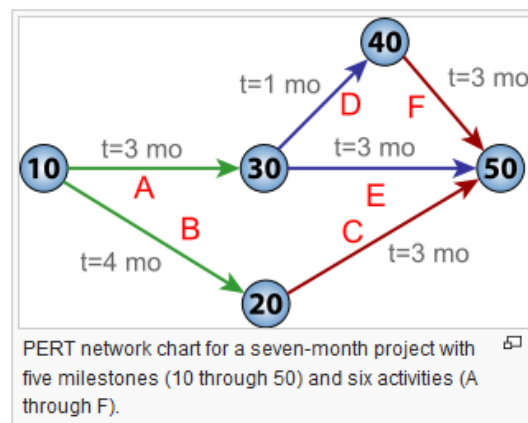
The Gantt charts shown above are very simple and don't show the relationships between various tasks: for example, cases where one task can't be started until a previous task has been completed. However, you can configure your Gantt task to do that using arrows to indicate tasks that depend on each other (Schedule 3).

**Schedule 3. Gantt chart with milestones that also indicates dependent tasks**

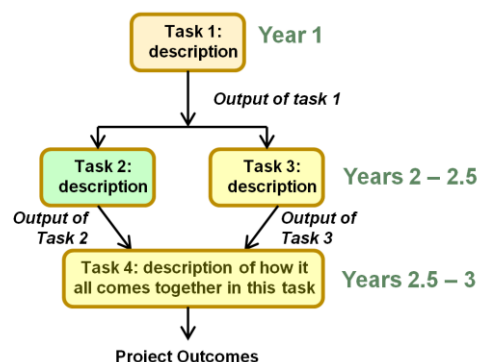
Task	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Objective 1: Development of the hoosits</b> (Dr. Jones lead)					
Integration and calibration					
Optimization of frumpits measurement methodology					
<b>Objective 2: Assess XYZ</b> (Dr. Wang lead)					
XYZ spectroscopy					
MOA microscopy					
ABC testing					
Pandax studies					
<b>Objective 3: Integrate hoosit with XYZ</b> (Dr. Ramirez lead)					
Instrument integration					
Instrument testing					
Demonstration					
<b>Final report submitted</b>					

### Formatting

The most commonly used format for providing schedules is the Gantt Chart, such as the ones shown in Schedule 1 through 3 above. While Gantt charts at the level shown above are of limited use in actual project planning, they are easy to read in a proposal and don't take up too much space. Gantt charts can easily be generated using MS Word's table function or Excel. There are also numerous Gantt chart software packages available for use in the actual planning and management of your project, such as [GanttProject](#), which is free. Flow charts are also sometimes used, such as Program Evaluation and Review Technique (PERT) Charts (Figure 1). This format has the advantage that you can show the critical path, but it is relatively difficult to read and takes up quite a bit of space in a proposal. For this reason, you may be asked to provide a Gantt chart in your proposal and then, after the award or as a supplement, be asked to provide a PERT or similar chart with more detail. A modified flow chart with better labeling can help show the work flow, which may be helpful in some



**Figure 1.** Wikipedia's example of a PERT chart, which is usually used more for project management because of its complexity.



**Figure 2.** A task flow chart that provides information on how the tasks interrelate as well as some general scheduling information.

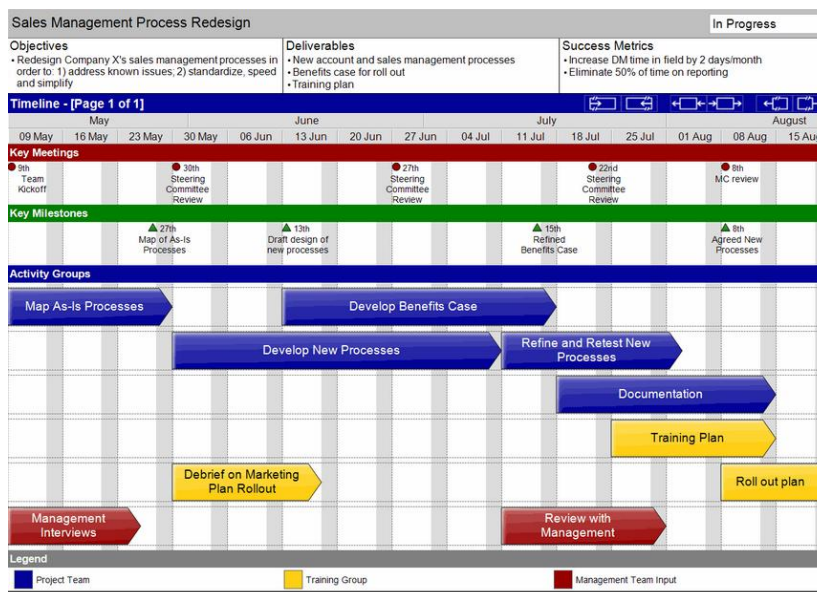
# Research Development & Grant Writing News

cases where the work flow may be confusing to reviewers (Figure 2).

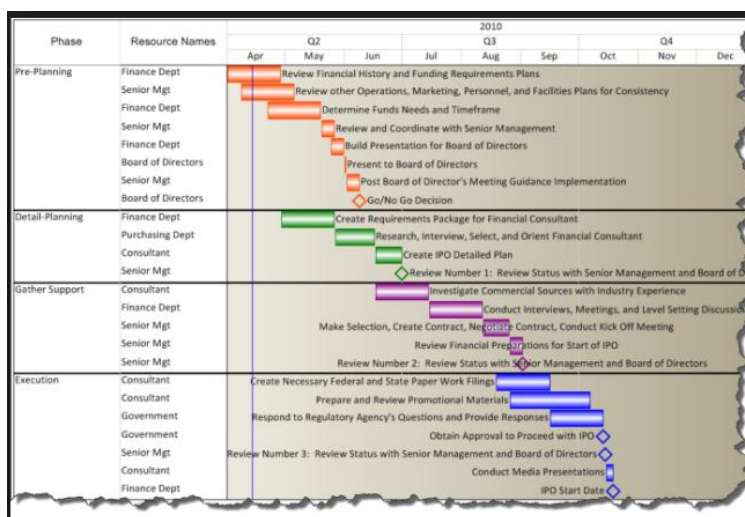
## Other Formats

There are also a number of other formats (usually versions of Gantt charts), many of which are produced by project management software. The figures below provide some examples. The key to deciding on which format to use is to put yourself in the reviewer's place and think about what that reviewer needs to know about how your project will get done, what likely questions they will have, and what risks you need to address. The answers to these questions will help determine the level of detail and kind of information you should include.

**Most importantly, be absolutely sure to double-check that the tasks and timing that you show in your schedule are consistent with what you say in your proposal text and with your budget.**



**Figure 3.** This version of a Gantt chart is produced by [Swiftlight project management software](#).



**Figure 4.** Another example with project phases resources (which could also be faculty team members or project thrusts/themes) from [Chronicle Graphics](#).

# Research Development & Grant Writing News

## Research Grant Writing Web Resources

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### Opportunities to Learn More About NIH's Peer Review Process

The NIH Center for Scientific Review (CSR) presents several new resources to help you understand the peer review process. In November, CSR will host two "Meet the Experts in NIH Peer Review" webinars on the application submission and review processes, one for research project grant (R01) applicants, and the other for university research administrators. To learn more and sign up for these sessions, [read the announcement in the NIH Guide](#). In addition to making NIH experts available through these webinars, CSR recently published resources for peer reviewers to use in sharing their valuable first-person insights with colleagues and trainees at their home institution. CSR's new outreach resources include slides, handouts and videos. Read more about these resources [on the CSR website](#). CSR is the portal for receipt and referral of NIH grant applications, and, for the majority of those applications, handles their review for scientific and technical merit. Stay on top of news from CSR [by reading more in their Peer Review Notes update](#).

### Two New Webinars for R01 Grant Applicants and Research Administrators

The NIH Center for Scientific Review (CSR) is hosting in November 2015. These webinars are designed to give participants useful insights into our application submission and peer review processes. CSR is the portal for NIH grant applications and their review for scientific and technical merit.

Each Webinar Will Have a Different Focus

Webinar Focus	Date	Registration Sites
University Research Administrators	Nov. 5, 2015	<a href="#">Register Now</a>
Fellows Research Project Grants (R01)	Nov. 6, 2015	<a href="#">Register Now</a>

All of the webinars will run from 2:00 to 4:00 p.m. EST, including a 30 minute Q&A period.

Viewers Will See Presentations by Four-Five CSR/NIH Experts

- The Review of Your NIH Grant Application Begins Here
- What You Need to Know about Application Receipt and Referral
- How Your Application Is Reviewed
- Key Things to Know About the NIH Grants Program
- Jumpstart Your Career with CSR's Early Career Reviewer Program (R01 webinar only)

How to Participate in the Webinar

- Go to our registration sites above to register for the webinar you wish to join by Monday, October 29. You will not need to download special software. You will just need a reliable Internet connection and browser.
- Submit questions for the Q&A session before or during the webinar by sending them to the moderator at [AskExperts@csr.nih.gov](mailto:AskExperts@csr.nih.gov).
- Go to [www.csr.nih.gov/webinar](http://www.csr.nih.gov/webinar) on the day/time your webinar is scheduled. Click on the link that will be provided there to view it.

# Research Development & Grant Writing News

## View Archived Webinars

View our 2015 Webinars and PowerPoints about a month after broadcast: They will be posted on our [webinar](#) webpage.

View our 2014 archived webinars and PowerPoint slides now: 01, R15, Small Business and Fellowship grants are available via our [webinar](#) webpage.

View our 2014 Archived Videos Now

Webinar Focus	Date	View the Video PowerPoint Slides	
Research Project Grants (R01)	Nov. 10, 2014	<a href="#">Click</a>	<a href="#">Click</a>
Fellowship Awards	Nov. 5, 2014	<a href="#">Click</a>	<a href="#">Click</a>
Academic Research Enhancement Awards (R15)	Nov. 4, 2014	<a href="#">Click</a>	<a href="#">Click</a>
Small Business Grants (SBIR/STTR)	Nov. 7, 2014	<a href="#">Click</a>	<a href="#">Click</a>

Download Webinar MP4 Video Files

- [Research Project \(R01\) Webinar](#)
- [Fellowship Award Webinar](#)
- [Academic Research Enhancement Award \(R15\) Webinar](#)
- [Small Business Grant \(SBIR/STTR\) Webinar](#)

Get Your Questions Answered

If you have questions the Webinars can't answer, check out the following resources:

- General Questions: visit the [CSR](#) website or the [NIH Grants and Funding](#) review websites.
- Specific questions about the Grant Process: The [NIH Information Service](#).
- Questions About CSR or the Review of Your Application: contact a [CSR Scientific Review Officer](#) in your field.
- Questions About the Assignment of Your Application: visit CSR's Division of Receipt and Referral [Web Page](#) or send DRR Staff an [email](#).

Find an NIH Program Officer

Search the [RePORTER](#) for projects similar to yours and see which program officers are assigned to those grants. Or go to an NIH institute or center's [Website](#) and look at the organizational chart and talk to an appropriate division director or branch chief about your interests.

## NIH Application Missteps—Weak Project

### Application Missteps—Weak Project

NIH explores common application pitfalls, noting how to sidestep them, with advice from those in the know: program and scientific review officers who have years of experience overseeing the grant process. Based on what they've seen applicants do wrong, they share tips on how to write a strong research proposal. First on our list of pitfalls to avoid: proposing a weak project, i.e., a project that reviewers will likely not score well for any one of the following flaws:

- Lack of significance
- Proposed project is a fishing expedition
- Problem more complex than investigator may realize



# Research Development & Grant Writing News

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## Lack of Significance

By having a project with little significance—one of the standard NIH initial peer review criteria—you likely seal your fate of not faring well in review. That's why it's absolutely critical to avoid this fatal flaw.

### ***Ask yourself key questions***

When thinking about the significance aspect of your application, you may find it helpful to answer for yourself the questions reviewers consider when they assess significance:

- Does the project address an important problem or a critical barrier to progress in the field?
- If the Specific Aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved?
- How will successfully completing the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Along this line of questioning, Frank DeSilva, scientific review officer (SRO), [Scientific Review Program](#), also suggests: To help reviewers better understand the significance of an application, investigators should make an effort to address the following questions: ***Why is the work important? How will it push the field forward? What is the potential long-term effect that this research will have on science and public health? If an applicant does not clearly articulate these points, reviewers will likely lose enthusiasm for the application.*** Ultimately, the applicant must present a convincing case that the proposed research is a worthy investment of taxpayer dollars. [READ MORE](#)

## NIH Application Missteps—Misfiring on Innovation

In the above article "[Application Missteps—Weak Project](#)," NIH pointed out a common application pitfall and how to sidestep it, with advice from those in the know: program and scientific review officers who have years of experience overseeing the grant process. Next on our list of frequent stumbling blocks: innovation. Here we show you how to clear this hurdle.

As one of the standard NIH initial peer review criteria, innovation is used to assess how much a project can 1) shift the current research paradigm or 2) refine, improve, or propose a new application of an existing concept, method, instrumentation, or clinical intervention. In deciding which part of the definition to satisfy, take note that you don't need to make one giant leap for science.

Taking incremental steps is fine as long as you clearly show how your project will move the ball down the field, adding significantly to knowledge and pushing its frontier forward, as illustrated by the graphic on the right.

In short, you should be on the cutting edge without going over the edge. With this in mind, be aware that paradigm-shifting research can be an uphill climb, especially for new investigators or people entering a new field. You'll have to convince reviewers that it's feasible and that your preliminary data are strongly supportive of a possible paradigm shift, while being aware that some reviewers might think that challenging the status quo means challenging their world view or research.

Depending on your circumstances, a better plan may be to take the second approach. Most investigators, whether new or experienced, choose this route by showing how their

## ***Research Development & Grant Writing News***

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proposed research is new and unique, e.g., explores new scientific avenues, has a novel hypothesis, or will create new knowledge.

Along those lines, a program officer in our [Division of AIDS](#) (DAIDS) expands on how applicants can demonstrate innovation: "Innovation can take many forms. It can include using a new technology. It might involve developing new animal models or combining disciplines to tackle a problem. [READ MORE](#)

### **Reminder: NIH Regional Seminar in San Diego, October 14-16, 2015**

**Don't miss out on these great opportunities at this year's final [NIH Regional Seminar on Program Funding & Grants Administration](#):**

- About 45 NIH grants, review, policy and program officials are excited to meet you and share their expertise on the application process, peer review, and award management.
- A redesigned track for new investigators provides step-by-step guidance on navigating NIH programs to advance your career.
- 15 minute meetings to chat 1:1 with NIH & HHS faculty during the [Meet the Experts](#) sessions (meet with one expert or as many as you can fit into your schedule!)
- Over 45 different session topics offered during the two-day seminar.
- OMB Uniform Guidance and what it means for NIH & you – straight from NIH policy officials.
- Two sessions on peer review – one for investigators, and one for research administrators!
- Trainee discount of \$50 continues throughout registration.
- Optional pre-seminar [Workshop on Human Research Protections](#) (HHS OHRP & NIH) offers a 5.75 *AMA PRA Category 1 Credit™* – ideal for early-stage investigators and trial coordinators involved in human subjects research.
- Optional pre-seminar workshops on electronic Research Administration are still available. Hurry, as these [workshops](#) are filling quickly!
- Interaction with over 600 attendees from around the world.
- The opportunity to attend a seminar on the west coast for the first time in years!
- And so much more...you have to see it to believe it! Check out the [agenda](#) today!

## *Educational Grant Writing Web Resources*

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### [President Signs STEM Education Bill Into Law](#)

President Obama yesterday signed into law the STEM Education Act of 2015. The law has three parts: it (1) expands research and training opportunities for math and science teachers through a prominent National Science Foundation (NSF) scholarship program, (2) boosts research in informal STEM education at the NSF, and (3) explicitly incorporates computer science into the definition of STEM education for federal purposes. The bill received largely bipartisan support, although one prominent Member of Congress expressed concern that a broader definition of STEM education had not been used. With a unanimous consent motion in the Senate and near unanimous support in the House, Congress sent H.R. 1020 to President Obama's desk for his signature on October 1. The law authorizes NSF to continue its focus on the informal and out-of-school STEM learning activities and environment. It also amends the NSF Robert Noyce Master Teaching Fellowship to expand eligibility to mathematics and science teachers who currently possess a bachelor's degree in their field. The Master Teaching Fellowships provide teachers support toward a master's degree and leadership training in order to prepare them to become master teachers. The law also explicitly includes computer science in the definition of STEM for the purpose of carrying out STEM education activities at key federal agencies. The singling out of computer science among other disciplines that could also have been included was of concern to Rep. Eddie Bernice Johnson (D-TX), the Ranking Member of the House Committee on Science, Space, and Technology. She would have preferred that broader language inclusive of the geosciences and social sciences had been used.

### [A Values-Engaged, Educative Approach for Evaluating Education Programs: A Guidebook for Practice](#)

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

In the second dimension of values engagement, evaluators pay special attention to the values of diversity and equity. Diversity refers to the traditional socio-demographic markers such as class, gender, race, alongside the multiple other ways people are different from one another such as talents, humor, learning styles. Equity in this approach is concerned with the

## *Research Development & Grant Writing News*

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treatment of diverse program participants and other relevant stakeholders. Treatment refers to access and the opportunity to participate and benefit from a program. These three strands of equity in an education program access, participation, and accomplishment are all important areas of focus for the values-engaged education program evaluator. This special focus on equity draws attention to the particular educational histories, contexts, and needs of the children, youth, and adult learners who remain underserved by our public schools and our community education programs. In this evaluation approach, an equitable education program is one in which all potential participants particularly those least well served in that context have opportunities for participation, meaningful learning, and accomplishment.

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

### Revealing knowledge bases of educational research

**Abstract:** Educational research covers a diverse area of topics ranging from psychological principles of learning and the role of language in cognition to the history of educational institutions and education's economic impact. Such diversity presents integration challenges and questions how research can be connected so that collective knowledge may advance. We used a scientometric analysis to examine the knowledge bases of educational research and present a global map that consists of 18 research clusters or subfields that are connected by distinct sets of references. The nature of these sets of references varied, breaking down differently into theory-based, method-based, domain-based, empirical and consensus document references. Five of the clusters are centrally focused on research in education in that they appear to concentrate on teaching and learning directly.

Five other clusters are more peripherally focused on research in education because they also work on other topics. A comparison of the clusters with AERA Divisions and SIGs show some close one-to-one matches and we argue that this gives evidence for clusters grouping articles in way relevant to communities of practice. Lastly, we examined the place of educational research within research in social sciences and found that educational research is distributed across diverse fields, actively incorporating and connecting multiple disciplines. Our interactive on-line maps of research in education can be used by students, researchers and practitioners to explore the collectively built knowledge bases of research in education.

Please note that those interested in portfolio analysis may find aspects of Dr. Lund's talk to be of interest. **To Join the Webinar:** Please register at:

<https://nsf.webex.com/nsf/j.php?RGID=ra49f536db7d272aee3b2bad73136b4e2> by 11:59pm EST on Thursday, September 24, 2015.

### Cyberlearning: Revealing knowledge bases of educational research

## *Research Development & Grant Writing News*

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**Abstract:** Educational research covers a diverse area of topics ranging from psychological principles of learning and the role of language in cognition to the history of educational institutions and education's economic impact. Such diversity presents integration challenges and questions how research can be connected so that collective knowledge may advance. We used a scientometric analysis to examine the knowledge bases of educational research and present a global map that consists of 18 research clusters or subfields that are connected by distinct sets of references. The nature of these sets of references varied, breaking down differently into theory-based, method-based, domain-based, empirical and consensus document references. Five of the clusters are centrally focused on research in education in that they appear to concentrate on teaching and learning directly. Five other clusters are more peripherally focused on research in education because they also work on other topics. A comparison of the clusters with AERA Divisions and SIGs show some close one-to-one matches and we argue that this gives evidence for clusters grouping articles in way relevant to communities of practice. Lastly, we examined the place of educational research within research in social sciences and found that educational research is distributed across diverse fields, actively incorporating and connecting multiple disciplines. Our interactive on-line maps of research in education can be used by students, researchers and practitioners to explore the collectively built knowledge bases of research in education.

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by 11:59pm EST on Thursday, September 24, 2015.

### School Composition and the Black-White Achievement Gap

This NCES study, the first of its kind, used the 2011 NAEP grade 8 mathematics assessment data. Black students at the national level, on average, scored 30 points lower than their White peers in 2011. Among the results highlighted in the report, the study indicates that the achievement gap between Black and White students remains whether schools fall in the highest density category (i.e., schools that composed of at least 60 percent Black students) or the lowest density category (i.e., schools that composed of less than or equal to 20 percent Black students). When accounting for factors such as student socioeconomic status and other student, teacher, and school characteristics, Black students, and Black male students in particular, scored lower in the highest- rather than the lowest density schools. Further, the portion of the Black-White achievement gap attributed to within-school differences (e.g., how schools internally distribute resources and treat students) is larger than the portion attributed to between-school differences (e.g., how schools vary in technology, updated textbooks, and qualified teachers).

**You are invited to participate in the following webinar on MSPnet.**

[MSPnet Academy: Infusing Computational Thinking into Science Education](#)

Presenters: Irene Lee, Maureen Psaila-Dombrowski, Paige Prescott

Sep 21, 2015 at 2:00 PM (Eastern)

**Description:** The Santa Fe Institute has been developing programs and curricula that infuse computational thinking into Science education for the past 12 years. In this webinar we will

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describe how the study of Complex Adaptive Systems through computer modeling and simulation fits into existing science frameworks and classes, share information about our program and curricula, and describe the professional development needed to prepare Science teachers to address the computational thinking practices presented in the NRC framework and NGSS. Capacity is limited and access is first-come, first served. Please RSVP to confirm your attendance. Early admission (10 minutes prior to the scheduled starting time) will be granted to those who respond "yes".

To RSVP, go to <http://hub.mspnet.org/wr.cfm/454/202819/D8SBEHAc40Zv86aCYBGE>.



# *Research Development & Grant Writing News*

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## *Agency Research News*

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### Food-Energy-Water White Papers

#### **Tell NSF Your Research Funding Needs**

The National Science Foundation (NSF) is proposing a new program called Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS) to fund fundamental research about these connections. This is a unique opportunity for the American Society of Agronomy (ASA) to engage with NSF to recommend research-funding priorities that could advance our research needs and Science Frontiers. ASA, in conjunction with Crop Science Society of America (CSSA) and Soil Science Society of American (SSSA), is calling for white papers to help inform the NSF as they develop the research priorities for INFEWS. The Science Policy Committees will review the white papers and compile a final document that represents the consensus to submit formally to NSF. The white papers will also be available on a public online forum where they can be downloaded and viewed freely. **Final Deadline: November 27, 2015.**

### DoD Announces Agenda for Energy Action Month Activities

October is National Energy Action Month (EAM), and showcases a national effort to underscore how critical energy is to our national prosperity, security, and environmental well-being. In commemoration of National Energy Action Month, the DoD is hosting a month of energy events and activities.

- [USD \(AT&L\) Kick-off Memo](#)
- [DoD EAM Webinar Series Schedule \(draft\)](#)

Other resources include:

- [Executive Order 13693: Planning for Federal Sustainability in the Next Decade](#)
- [Whitehouse.gov Energy Action Month](#)
- [Energy.gov Energy Action Month](#)

### Inconsistent, Duplicative Regulations Undercut Productivity of U.S. Research Enterprise; Actions Needed to Streamline and Harmonize Regulations, Reinvigorate Government-University Partnership

#### Dear Colleague Letter: Optics and Photonics (OP)

Through this Dear Colleague Letter, NSF encourages innovative research proposals on optics and photonics that are relevant to one or more Divisions in the Directorates for Mathematical and Physical Sciences (MPS), Engineering (ENG), Biological Sciences (BIO), and Computer and Information Science and Engineering (CISE). Currently the OP Program encompasses efforts of more than 30 disciplinary programs within 9 divisions; the detailed list of the disciplinary programs involved and of the research areas of particular interest to each division is given in the document [PD 15-9102](#).

### Science Organizations Highlight Societal Benefits of the Geosciences

# *Research Development & Grant Writing News*

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## **Economic Impact Analysis Tool: How does your grant-funded project impact the local economy?**

The Economic Impact Analysis (EIA) tool shows how your project's spending on staff, supplies, equipment and other expenses benefits your community. Based on information you provide, this tool uses formulas to estimate economic impact of grant program investments on local economies. These calculations help rural program grantees assess performance, and advocate for resources that contribute to program sustainability and improved health care for rural populations.

- [Learn more about the Economic Impact Analysis Tool](#)

How does it work?

You will be asked to provide information about your project's spending over several different categories. The tool calculates a summary based on your answers, populations you serve and service locations. We've provided an example to show you what to expect.

- [See an example scenario](#)
- [View the user guide](#)

Calculate an Economic Impact Scenario

To use the EIA tool, you will need to [log in to your RAC account](#).

Don't have a RAC account? [Create your account now](#).

[Information needed to calculate your scenario](#)

## **Volunteer for NASA Review Panels**

To increase the pool of un-conflicted reviewers NASA is seeking subject matter experts to serve as mail-in reviewers of proposals and/or in-person reviewers to engage in discussions at a face-to-face panel meeting. New researchers (including post doctoral fellows) are welcome to apply as they provide fresh insight from people close to the most current research. Just follow the links below to the volunteer review forms and indicate the fields in which you consider yourself to be a subject matter expert and click the boxes. If your skills match our needs for this review NASA will contact you to discuss scheduling. Currently seeking reviewers for:

- [ROSES 2015 C.11 Discovery Data Analysis](#)
- [ROSES 2015 C.19 Hayabusa2 Participating Scientist Program](#)
- [ROSES 2015 C.14 Planetary Science and Technology Through Analog Research](#)
- [ROSES 2015 C.9 the Mars Data Analysis Program](#)

## **Notice of Intent (NOI) : Funding Opportunity Announcement DE-FOA-0001383 Building Energy Efficiency Frontiers and Innovation Technologies (BENEFIT) - 2016**

The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Building Technologies Office (BTO), a Funding Opportunity Announcement (FOA) entitled "Building Energy Efficiency Frontiers & Innovation Technologies (BENEFIT) - 2016". This FOA supports a combination of early-stage topics (Innovations) with later-stage, roadmap-driven topics (Frontiers) that complement the core funding provided by the program. Because of their different focuses (Innovations: early-stage; Frontier: later-stage, roadmap-driven), this FOA is divided into two sections: an Innovations and a Frontiers section with an additional optional BUILD supplement. Research and Development (R&D) topics under the Innovations section are at an earlier stage of R&D, compared to those under the Frontiers section. Applications for a

## ***Research Development & Grant Writing News***

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BUILD Supplement cannot be submitted as standalone applications. The purpose of this Notice is to provide potential applicants advance notice that the Building Technologies Office, on behalf of the Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE), intends to issue a FOA titled, "Building Energy Efficiency Frontiers & Innovation Technologies (BENEFIT) - 2016". NO APPLICATIONS WILL BE ACCEPTED THROUGH THIS NOTICE. Please do not submit questions or respond to this Notice of Intent. Prospective applicants to the FOA should begin developing partnerships, formulating ideas, and gathering data in anticipation of the issuance of this FOA. It is anticipated that this FOA will be posted to [EERE Exchange](#) December 2015.

# *Research Development & Grant Writing News*

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## *Agency Reports, Workshops & Research Roadmaps*

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### [Optimizing the Nation's Investment in Academic Research: A New Regulatory Framework for the 21st Century: Part 1](#)

Research universities are critical contributors to our national research enterprise. They are the principal source of a world-class labor force and fundamental discoveries that enhance our lives and the lives of others around the world. These institutions help to create an educated citizenry capable of making informed and crucial choices as participants in a democratic society. However many are concerned that the unintended cumulative effect of federal regulations undercuts the productivity of the research enterprise and diminishes the return on the federal investment in research. Optimizing the Nation's Investment in Academic Research reviews the regulatory framework as it currently exists, considers specific regulations that have placed undue and often unanticipated burdens on the research enterprise, and reassesses the process by which these regulations are created, reviewed, and retired. This review is critical to strengthen the partnership between the federal government and research institutions, to maximize the creation of new knowledge and products, to provide for the effective training and **education** of the next generation of scholars and workers, and to optimize the return on the federal investment in research for the benefit of the American people.

### [New Report Recommends Streamlining, Harmonizing Regulations for Federally Funded Research](#)

Continuing expansion of federal research regulations and requirements is diminishing the effectiveness of the U.S. scientific enterprise and lowering the return on the federal investment in research by directing investigators' time away from research and toward administrative matters, says a new congressionally mandated report from the National Academies of Sciences, Engineering, and Medicine. The report identifies specific actions Congress, the White House, federal agencies, and research institutions should take to reduce the regulatory burden.

Steps should also be taken to strengthen the nation's government-university research partnership, which is currently under stress, the report says. It urges Congress to create a public-private Research Policy Board to support this partnership and cooperative efforts to streamline research policies going forward. The report also calls upon universities to demand the highest standards in institutional and individual behavior, noting that some institutions have failed to respond appropriately to researchers' transgressions.

"Federal regulations and reporting requirements, which began as a way to exercise responsible oversight, have increased dramatically in recent decades and are now unduly encumbering the very research enterprise they were intended to facilitate," said Larry Faulkner, chair of the committee that conducted the study and wrote the report, and president emeritus of the University of Texas, Austin. "A significant amount of investigators' time is now spent complying with regulations, taking valuable time from research, teaching, and scholarship."

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Academic institutions and individual investigators often receive research funding from multiple federal agencies, but approaches to similar requirements – such as grant proposals, disclosure of financial conflict of interest, and animal care – are not harmonized across agencies. Regulations, reporting requirements, and congressional mandates frequently overlap, resulting in duplication of effort, multiple reporting of the same information in different formats, and multiple submissions of information on different schedules. Conflicting guidance on compliance requirements has created uncertainty and confusion, often leading universities to implement overly prescriptive procedures in an effort to avoid penalties, thereby adding to the administrative burden.

### **The Gulf Research Program Annual Report 2013-2014**

The 2013-2014 annual report highlights the establishment and first activities of the Gulf Research Program, an independent, science-based program founded in 2013. Through grants, fellowships, and other activities, the Gulf Research Program seeks to enhance oil system safety and the protection of human health and the environment in the Gulf of Mexico and other regions along the U.S. outer continental shelf with offshore oil and gas operations. This report reviews some of the Gulf Research Program's key accomplishments and demonstrates how what was learned throughout the planning process shaped the Program's foundation - from its strategic vision to the initial funding opportunities. The Gulf Research Program will build on this foundation while evolving to meet new challenges during its 30-year duration, 2013-2043. Each year, the Gulf Research Program will produce an annual report to summarize how funds were used. These reports will review accomplishments, highlight activities, and, over time, assess metrics to determine how the Gulf Research Program is progressing in accomplishing its goals. The 2013-2014 annual report is the first report in this series.

### **NIH addresses the science of diversity**

In a new co-authored perspective, NIH Chief Officer for Scientific Workforce Diversity, Hannah Valentine, M.D., and NIH Director Francis S. Collins, M.D., Ph.D., offer a fresh take on scientific workforce diversity – approaching it as a scientific opportunity rather than as an intractable problem. They posit that diversity is a research challenge that can be pursued through the scientific method. In their piece, Collins and Valentine outline four challenges facing the biomedical community's efforts to diversify the scientific workforce: the impact of scientific workforce diversity on the quality and outputs of biomedical research itself; evidence-based approaches to recruitment, retention, and career advancement; psychosocial factors like unconscious bias and stereotype threat that influence who joins biomedicine and who leaves; and scalable strategies to disseminate and sustain scientific workforce diversity nationwide for the long term. Collins and Valentine welcome more basic and applied research on the science of diversity. Beyond ensuring fairness in scientific workforce representation, recruiting and retaining a diverse set of minds and approaches is vital to harnessing the complete intellectual capital of the nation. It is abundantly clear from research – much of it in the business, social sciences, and educational literature – that diversity improves team performance and has many other positive benefits. What is less clear – and where we need more research – is how diversity plays out in scientific settings. [\*\*MORE\*\*](#)

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## Healthy, Resilient, and Sustainable Communities After Disasters: Strategies, Opportunities, and Planning for Recovery

In the devastation that follows a major disaster, there is a need for multiple sectors to unite and devote new resources to support the rebuilding of infrastructure, the provision of health and social services, the restoration of care delivery systems, and other critical recovery needs. In some cases, billions of dollars from public, private and charitable sources are invested to help communities recover. National rhetoric often characterizes these efforts as a "return to normal." But for many American communities, pre-disaster conditions are far from optimal. Large segments of the U.S. population suffer from preventable health problems, experience inequitable access to services, and rely on overburdened health systems. A return to pre-event conditions in such cases may be short-sighted given the high costs - both economic and social - of poor health. Instead, it is important to understand that the disaster recovery process offers a series of unique and valuable opportunities to improve on the status quo. Capitalizing on these opportunities can advance the long-term health, resilience, and sustainability of communities - thereby better preparing them for future challenges.

*Healthy, Resilient, and Sustainable Communities After Disasters* identifies and recommends recovery practices and novel programs most likely to impact overall community public health and contribute to resiliency for future incidents. This book makes the case that disaster recovery should be guided by a healthy community vision, where health considerations are integrated into all aspects of recovery planning before and after a disaster, and funding streams are leveraged in a coordinated manner and applied to health improvement priorities in order to meet human recovery needs and create healthy built and natural environments. The conceptual framework presented in *Healthy, Resilient, and Sustainable Communities After Disasters* lays the groundwork to achieve this goal and provides operational guidance for multiple sectors involved in community planning and disaster recovery.

*Healthy, Resilient, and Sustainable Communities After Disasters* calls for actions at multiple levels to facilitate recovery strategies that optimize community health. With a shared healthy community vision, strategic planning that prioritizes health, and coordinated implementation, disaster recovery can result in communities that are healthier, more livable places for current and future generations to grow and thrive - communities that are better prepared for future adversities.

## Interior Department Releases National Seed Strategy for Landscape Scale Rehabilitation and Restoration

As part of a comprehensive, science-based strategy to address the threat of wildfires that are damaging landscapes across the West, the Department of the Interior today announced the release of a [National Seed Strategy](#) for rehabilitation and restoration to help foster resilient and healthy landscapes. The Strategy, developed in partnership with the Plant Conservation Alliance and the U.S. Department of Agriculture, is meant to guide ecological restoration across major landscapes, especially for those lands damaged by rangeland fires, invasive species, severe storms and drought. The Strategy is in place to put emphasis on the importance of planting appropriate seeds to help grow plant life and pollinator habitat, which are critical natural defenses against climate change. "Having the right seed in the right place at the right time makes a major difference in the health of our landscapes," said U.S. Secretary of the



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Interior Sally Jewell. "This is a collaborative effort to ensure that we're taking a landscape level approach to supporting lands that are more resilient to drought, intense fires and invasive species."

In 2012, more than two million acres of sagebrush habitat burned in four western states. Now, worsening landscape scale disturbances, like wildfires and drought, have exacerbated land managers' need for mechanisms that build a natural defense against a changing climate. In the East, Hurricane Sandy caused widespread damage to native plant habitats that stabilize soils, filter water and absorb storm surges. A chronic shortage of native seed for restoration purposes left those landscapes vulnerable to hostile species and erosion, while undermining their ability to build up resilience, support wildlife and economic activity. The National Seed Strategy outlines coordinated and focused research, as well as improvements in seed production and restoration technology to increase the availability of genetically appropriate, locally adapted seed. The research findings identified in the Strategy will inform the development of new management tools to aid in restoration planning and implementation.

### **Envisioning the Future of Health Professional Education: Workshop Summary**

Envisioning the Future of Health Professional Education discusses opportunities for new platforms of communication and learning, continuous education of the health workforce, opportunities for team-based care and other types of collaborations, and social accountability of the health professions. This study explores the implications that shifts in health, policy, and the health care industry could have on HPE and workforce learning, identifies learning platforms that could facilitate effective knowledge transfer with improved quality and efficiency, and discusses opportunities for building a global health workforce that understands the role of culture and health literacy in perceptions and approaches to health and disease.

### **Healthy, Resilient, and Sustainable Communities After Disasters: Strategies, Opportunities, and Planning for Recovery**

In the devastation that follows a major disaster, there is a need for multiple sectors to unite and devote new resources to support the rebuilding of infrastructure, the provision of health and social services, the restoration of care delivery systems, and other critical recovery needs. In some cases, billions of dollars from public, private and charitable sources are invested to help communities recover. National rhetoric often characterizes these efforts as a "return to normal." But for many American communities, pre-disaster conditions are far from optimal. Large segments of the U.S. population suffer from preventable health problems, experience inequitable access to services, and rely on overburdened health systems. A return to pre-event conditions in such cases may be short-sighted given the high costs - both economic and social - of poor health. Instead, it is important to understand that the disaster recovery process offers a series of unique and valuable opportunities to improve on the status quo. Capitalizing on these opportunities can advance the long-term health, resilience, and sustainability of communities - thereby better preparing them for future challenges.

### **Support for Forensic Science Research: Improving the Scientific Role of the National Institute of Justice**

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Reliable and valid forensic science analytic techniques are critical to a credible, fair, and evidence-based criminal justice system. There is widespread agreement that the scientific foundation of some currently available forensic science methods needs strengthening and that additional, more efficient techniques are urgently needed. These needs can only be met through sustained research programs explicitly designed to ensure and improve the reliability and validity of current methods and to foster the development and use of new and better techniques. This task is challenging due to the broad nature of the field.

Concerns have been raised repeatedly about the ability of the criminal justice system to collect and analyze evidence efficiently and to be fair in its verdicts. Although significant progress has been made in some forensic science disciplines, the forensic science community still faces many challenges. Federal leadership, particularly in regard to research and the scientific validation of forensic science methods, is needed to help meet the pressing issues facing state and local jurisdictions.

This report reviews the progress made by the National Institute of Justice (NIJ) to advance forensic science research since the 2009 report, *Strengthening Forensic Science in the United States: A Path Forward* and the 2010 report, *Strengthening the National Institute of Justice. Support for Forensic Science Research* examines the ways in which NIJ develops its forensic science research priorities and communicates those priorities as well as its findings to the scientific and forensic practitioner communities in order to determine the impact of NIJ forensic science research programs and how that impact can be enhanced.

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## *New Funding Opportunities*

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### **Content Order**

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

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

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

#### **[FY 2016 Continuation of Solicitation for the Office of Science Financial Assistance Program](#)**

The Office of Science (SC) of the Department of Energy hereby announces its continuing interest in receiving grant applications for support of work in the following program areas: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics. On September 3, 1992, DOE published in the Federal Register the Office of Energy Research Financial Assistance Program (now called the Office of Science Financial Assistance Program), 10 CFR 605, as a Final Rule, which contained a solicitation for this program. Information about submission of applications, eligibility, limitations, evaluation and selection processes and other policies and procedures are specified in 10 CFR 605. This Funding Opportunity Announcement (FOA), DE-FOA-0001414, is our annual, broad, open solicitation that covers all of the research areas in the Office of Science and is open throughout the Fiscal Year. **This FOA will remain open until September 30, 2016**, 11:59 PM Eastern Time, or until it is succeeded by another issuance, whichever occurs first. This annual FOA DE-FOA-0001414 succeeds FOA DE-FOA-0001204, which was published October 1, 2014.

#### **[DE-FOA-0001428 Innovative Development in Energy-Related Applied Science \(IDEAS\) 2015](#)**

This announcement is purposely broad in scope to encourage the submission of the most innovative, out-of-the-box ideas in energy technology. Since the first law of thermodynamics states that energy is always conserved, i.e. it can never be created or destroyed, our principal concern is with the conversion of energy into useful energy or maximizing usable energy (exergy). Useful energy can take many forms including: radiant energy from lights, electrical energy for appliances, thermal energy to heat homes, mechanical energy for transportation, chemical energy in the form of food, and energy used to make products. From the second law of thermodynamics, the entropy of a system cannot decrease when converting energy from one form to another (&#916;S &#8805; 0), the end effect being that all useful energy humans

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consume ultimately results in the production of heat that is radiated into space, except for a few exceptions such as the energy embedded in products. It is therefore our endeavor to identify technologies that enable the efficient and cost-effective conversion between or within the various different forms of energy (Figure 2) while minimizing exergy destruction. Within this general framework, ARPA-E seeks transformative ideas that enable the most efficient, economical, sustainable, and environmentally benign conversion of energy while minimizing exergy destruction. **Open to September 30, 2016. Applicants may submit Concept Papers at any time during the open period of this FOA.**

### Atmospheric System Research Program–New Data Products

The Atmospheric System Research Program (ASR) in the Climate and Environmental Sciences Division (CESD), Office of Biological and Environmental Research (BER) of the Office of Science (SC), U.S. Department of Energy (DOE), supports research on key cloud, aerosol, precipitation, and radiative transfer processes that has the potential to improve the accuracy of regional and global climate models. The ASR program hereby announces its interest in research grant applications to develop new proof-of-concept data products from ARM site instruments, such that new data products represent novel and improved information involving geophysical variables that in turn are utilized by regional and global climate models. Of most interest are improved data products for those geophysical quantities that currently exhibit large errors or uncertainties and/or have been limiting the predictability of climate models. **Pre-application November 3; full January 13.**

### Atmospheric System Research Program

The Atmospheric System Research Program (ASR) in the Climate and Environmental Sciences Division (CESD), Office of Biological and Environmental Research (BER) of the Office of Science (SC), U.S. Department of Energy (DOE), supports research on key cloud, aerosol, precipitation, and radiative transfer processes that has the potential to improve the accuracy of regional and global climate models. The ASR program hereby announces its interest in research grant applications for observational, data analysis, and/or modeling studies that use data from CESD, including the Atmospheric Radiation Measurement (ARM) Climate Research Facility and the ASR Program, to improve understanding and model representation of processes involving Boundary Layer or Mixed Phase Clouds, Ice Clouds, and the Aerosol Life Cycle, and to study Convective Processes using results from ARM campaigns. **Pre-application November 3; full January 20.**

### Environmental System Science

The Office of Biological and Environmental Research (BER) of the Office of Science (SC), U.S. Department of Energy (DOE) hereby announces its interest in receiving applications for research in Environmental Systems Science (ESS), including Terrestrial Ecosystem Science (TES) and Subsurface Biogeochemical Research (SBR). The mission of the Climate and Environmental Sciences Division (CESD) within BER is to advance a robust predictive understanding of Earth's climate and environmental systems and to inform the development of sustainable solutions to the Nation's energy and environmental challenges. The goal of the Environmental System Science (ESS) activity in the Office of Biological and Environmental Research (BER) is to advance

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a robust predictive understanding of terrestrial environments, extending from bedrock to the top of the vegetated canopy and from molecular to global scales in support of DOE's energy and environmental missions. Using an iterative approach to model-driven experimentation and observation, interdisciplinary teams of scientists work to unravel the coupled physical, chemical and biological processes that control the structure and functioning of terrestrial ecosystems across vast spatial and temporal scales. This FOA will consider applications that focus on measurements, experiments, modeling or synthesis to provide improved quantitative and predictive understanding of terrestrial ecosystem and/or subsurface processes that can affect the cycling and transport of carbon, water, nutrients, and contaminants. All projects are required to clearly delineate an integrative, hypothesis-driven approach and clearly describe the existing needs/gaps in state-of-the-art models. Applicants should provide details on how the results of the proposed research, if successful, will be incorporated into numerical models of subsurface systems and/or terrestrial ecosystems. **Pre-Application Due Date: 11/13/2015 at 5 PM Eastern Time; (A Pre-Application is required) Encourage/Discourage Date: 12/4/2015 at 5 PM Eastern Time; Full Application Due Date: 1/22/2016 at 11:59 PM Eastern Time.**

### Urban Waters Small Grants

Under this announcement, the U.S. Environmental Protection Agency (EPA) is soliciting proposals, as described below, from eligible applicants for projects that will advance EPA's water quality and environmental justice goals. Proposed projects will address urban runoff pollution through diverse partnerships that produce multiple community benefits, with emphasis on underserved communities. Note that proposed project activities must take place entirely within one of the Eligible Geographic Areas, as illustrated on the interactive map provided on the Urban Waters Small Grants mapping website at <http://www2.epa.gov/urbanwaters/urban-waterssmall-grants-mapping>. EPA's Urban Waters Program helps local residents and their organizations, particularly those in underserved communities, restore their urban waters in ways that also benefit community and economic revitalization. One of the ways the Urban Waters Program is accomplishing this mission is through the Urban Waters Small Grants Program. This program recognizes that healthy and accessible urban waters can help grow local businesses and enhance educational, recreational, social, and employment opportunities in nearby communities. **Due Nov. 20.**

### Fiscal Year 2016 NOAA Gulf of Mexico Bay-Watershed Education and Training (B-WET) Program

The National Marine Fisheries Service Southeast Region (Fisheries Southeast Regional Office) is seeking proposals under the Gulf of Mexico B-WET Program. The Gulf of Mexico B-WET program is a competitive, environmental education, grants program that promotes locally relevant, experiential learning in the K-12 environment. Funded projects provide Meaningful Watershed Educational Experiences (MWEEs) for students, related professional development for teachers, and help to support regional education and environmental priorities in the Gulf of Mexico. This program addresses NOAA's Long-Term Goal of "Healthy Oceans: Marine fisheries, habitats, and biodiversity are sustained within healthy and productive ecosystems" and "NOAA's Engagement Enterprise Objective for An engaged and educated public with an

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improved capacity to make scientifically informed environmental decisions". **Due December 11.**

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

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

### **Ocean Exploration 2016 Funding Opportunity**

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

### **F15AS00466 Wildlife Without Borders - Africa Program Department of the Interior**

Central Africa is a globally important region for forest and biodiversity conservation. The U.S. Fish and Wildlife Service (USFWS) works closely with national governments, U.S. agencies, and a range of other partners to ensure a strategic, results-based approach to wildlife conservation in the region. In collaboration with U.S. Agency for International Development's (USAID) Central



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

### **DE-FOA-0001437 Environmental System Science Department of Energy - Office of Science**

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

### **Division of Environmental Biology (core programs) (DEB)**

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

### **DoD USAMRMC FY16 Broad Agency Announcement for Extramural Medical Research**

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

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

- [HHS Grants Forecast](#)
- [American Cancer Society Index of Grants](#)
- [SAMHSA FY 2014 Grant Announcements and Awards](#)
- [DARPA Microsystems Technology Office Solicitations](#)
- [Open Solicitations from IARPA \(Intelligence Advanced Research Projects Activity\)](#)
- [Bureau of Educational and Cultural Affairs, Open Solicitations, DOS](#)
- [ARPA-E Funding Opportunity Exchange](#)
- [DOE Funding Opportunity Exchange](#)
- [NIAID Funding Opportunities List](#)
- [NPS Broad Agency Announcements \(BAAs\)](#)
- [NIJ Current Funding Opportunities](#)
- [NIJ Forthcoming Funding Opportunities](#)
- [Engineering Information Foundation Grant Program](#)
- [Comprehensive List of Collaborative Funding Mechanisms, NORDP](#)
- [ARL Funding Opportunities — Open Broad Agency Announcements \(BAA\)](#)
- [HHS Grants Forecast](#)
- [American Psychological Association, Scholarships, Grants and Awards](#)
- [EPA 2014 Science To Achieve Results \(STAR\) Research Grants](#)
- [NASA Open Solicitations](#)
- [Defense Sciences Office Solicitations](#)
- [The Mathematics Education Trust](#)
- [EPA Open Funding Opportunities](#)
- [CDMRP FY 2014 Funding Announcements](#)
- [Office of Minority Health](#)
- [Department of Justice Open Solicitations](#)
- [DOE/EERE Funding Opportunity Exchange](#)
- [New Funding Opportunities at NIEHS \(NIH\)](#)
- [National Human Genome Research Institute Funding Opportunities](#)
- [Army Research Laboratory Open Broad Agency Announcements \(BAA\)](#)
- [SBIR Gateway to Funding](#)
- [Water Research Funding](#)
- [Fellowship and Grant Opportunities for Faculty Humanities and Social Sciences](#)
- [DARPA Current Solicitations](#)
- [Office of Naval Research Currently Active BAAs](#)
- [HRSA Health Professions Open Opportunities](#)
- [NIH Funding Opportunities Relevant to NIAID](#)
- [National Institute of Justice Current Funding Opportunities](#)
- [Funding Opportunities by the Department of Education Discretionary Grant Programs](#)
- [EPA's Office of Air and Radiation \(OAR\) Open Solicitations](#)

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- [NETL Open Solicitations](#)
- [DoED List of Currently Open Grant Competitions](#)
- [Foundation Center RFP Weekly Funding Bulletin](#)

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

### **Integrated Earth Systems (IES)**

Integrated Earth Systems (IES) is a program in the Division of Earth Sciences (EAR) that focuses on the continental, terrestrial and deep Earth subsystems of the whole Earth system. The overall goal of the program is to provide opportunity for collaborative, multidisciplinary research into the operation, dynamics and complexity of Earth systems at a budgetary scale between that of a typical project in the EAR Division's disciplinary programs and larger scale initiatives at the Directorate or Foundation level. Specifically, IES will provide research opportunities for the study of Earth systems that operate across components of the Earth encompassing the core of the Earth to the top of the critical zone with a specific focus on subsystems that include all or part of the continental, terrestrial and deep Earth subsystems at all temporal and spatial scales (NROES, 2012). IES will provide opportunities to focus on Earth systems connected to topics which include (but are not limited to) the continents; the terrestrial, surficial Earth systems including physical, chemical and biotic dimensions; linkages among tectonics, climate, landscape change, topography and geochemical cycles including core and mantle processes. **Due November 16.**

### **Early Career Research Program Department of Energy - Office of Science**

The Office of Science of the Department of Energy hereby invites grant applications for support under the Early Career Research Program in the following program areas: Advanced Scientific Computing Research (ASCR); Biological and Environmental Research (BER); Basic Energy Sciences (BES), Fusion Energy Sciences (FES); High Energy Physics (HEP), and Nuclear Physics (NP). The purpose of this program is to support the development of individual research programs of outstanding scientists early in their careers and to stimulate research careers in the areas supported by the DOE Office of Science. **Due Nov. 19.**

### **Interdisciplinary Behavioral and Social Science Research**

The Interdisciplinary Behavioral and Social Science Research (IBSS) competition promotes the conduct of interdisciplinary research by teams of investigators in the social and behavioral sciences. Emphasis is placed on support for research that involves researchers from multiple SBE disciplinary fields and that integrates scientific theoretical approaches and methodologies from multiple SBE disciplinary fields. Emphasis also is placed on the significance of expected intellectual contributions that are likely to yield generalizable insights and information that will enhance theoretical perspectives and advance basic knowledge and capabilities across multiple SBE disciplinary fields. Although the IBSS competition will consider any proposal that addresses a topic for which the proposal makes a compelling case that the research will enhance broader theoretical understanding across multiple social and behavioral science fields, social and behavioral science researchers are especially encouraged to submit proposals for research on

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one of the following three broadly defined topics: Population Change; Sources and Consequences of Disparities; and Technology, New Media, and Social Networks. **Due Dec. 1.**

### **Fiscal Year 2016 Office of Naval Research Young Investigator Program (YIP)**

The Office of Naval Research (ONR) is interested in receiving proposals for its Young Investigator Program (YIP). ONR's Young Investigator Program (YIP) seeks to identify and support academic scientists and engineers who are in their first or second full-time tenure-track or tenure-track-equivalent academic appointment, have begun their first appointment on or after 01 Nov 2010, and who show exceptional promise for doing creative research. The objectives of this program are to attract outstanding faculty members of Institutions of Higher Education (hereafter also called "universities") to the Department of the Navy's research program, to support their research, and to encourage their teaching and research careers. **Due Dec. 1.**

### **NIJ FY 16 Graduate Research Fellowship in Science, Technology, Engineering, and Mathematics**

The Graduate Research Fellowship in Science, Technology, Engineering, and Mathematics (GRF-STEM) provides awards to accredited academic institutions to support graduate research leading to doctoral degrees in areas that are relevant to ensuring public safety, preventing and controlling crime, and ensuring the fair and impartial administration of criminal justice in the United States. **Due December 15.**

### **NIJ Graduate Research Fellowship Program in the Social and Behavioral Sciences**

The Graduate Research Fellowship Program in Social and Behavioral Sciences provides awards to accredited academic institutions to support graduate research leading to doctoral degrees in areas that are relevant to ensuring public safety, preventing and controlling crime, and ensuring the fair and impartial administration of criminal justice in the United States. NIJ is investing in doctoral education by supporting universities that sponsor students who demonstrate the potential to successfully complete doctoral degree programs in disciplines relevant to the mission of NIJ and who are in the final stages of graduate study. **Due December 15.**

### **N00014-15-R-SN16 Stand-Off and Remote Improvised Explosive Device Detection and Neutralization**

Office of Naval Research along with many government agencies have invested in research and development of various concepts of detecting explosive threats (mines, IEDs, and Home-Made Explosives) and their related components (metallic and non-metallic) at stand-off distances. While improvement in sensitivity and selectivity of explosive detection sensors have increased, challenges still remain to acquire relevant information rapidly enough to maintain an operational tempo while maintaining a safe stand-off distance in expeditionary operation (vehicle or other small platform operation). Most of the current optical and Radio Frequency (RF) solutions suffer poor collection efficiency due to severe scattering from the targets, hence, not capable of providing sufficient coverage. Ideal solutions should include determination of all types of explosives, provide sufficient coverage rate enabling detection, classification, and identification all the explosive threats from a moving platform. In order to address these

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challenges, this announcement is seeking innovative research topics that can address the following research areas. **Due December 17.**

### **GCC-GRANT-SEP-15-001 Spill Impact Component Planning Grants Gulf Coast Ecosystem Restoration Council**

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

### **NIJ FY 16 Research and Development in Forensic Science for Criminal Justice Purposes**

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

## **Open Solicitations and BAAs**

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

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

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



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

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

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

### **APS-OAA-15-000048 U.S. Agency for International Development (Higher Education Partnerships for Innovation and Impact (HEPII) Annual Program Statement (APS)**

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

### **DARPA-BAA-15-39 DSO Office-wide BAA Department of Defense**

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

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practice. **Open to July 2, 2016.**

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

This Broad Agency Announcement (BAA), which sets forth research areas of interest to the [Army Research Laboratory](#) (ARL) Directorates and Army Research Office (ARO), is issued under the paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), which provides for the competitive selection of basic research proposals. Proposals submitted in response to this BAA and selected for award are considered to be the result of full and open competition and in full compliance with the provision of Public Law 98-369, "The Competition in Contracting Act of 1984" and subsequent amendments. **Open June 1, 2012 to March 31, 2017.**

## [W911NF-12-R-0012 Army Research Office Broad Agency Announcement for Basic and Applied Scientific Research](#)

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

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

## [ARL Core Broad Agency Announcement for Basic and Applied Scientific Research for Fiscal Years 2012 through 2017](#)

### [University Small Grants Broad Agency Announcement](#)

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

## [HM0210-14-BAA-0001 National Geospatial-Intelligence Agency Academic Research Program](#)

NGA welcomes all innovative ideas for path-breaking research that may advance the GEOINT mission. The NGA mission is to provide timely, relevant, and accurate geospatial intelligence (GEOINT) in support of national security objectives. GEOINT is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. GEOINT consists of imagery, imagery intelligence, and geospatial information. NGA offers a variety of critical GEOINT products in support of U.S. national security objectives and Federal disaster relief, including aeronautical, geodesy, hydrographic, imagery, geospatial and topographical information. The NGA Academic Research Program (NARP) is focused on innovative, far-reaching basic and applied research in science, technology, engineering and mathematics having the potential to advance the GEOINT mission. The objective of the NARP is to support innovative, high-payoff research that provides

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the basis for revolutionary progress in areas of science and technology affecting the needs and mission of NGA. This research also supports the National System for Geospatial Intelligence (NSG), which is the combination of technology, systems and organizations that gather, produce, distribute and consume geospatial data and information. This research is aimed at advancing GEOINT capabilities by improving analytical methods, enhancing and expanding systems capabilities, and leveraging resources for common NSG goals. The NARP also seeks to improve education in scientific, mathematics, and engineering skills necessary to advance GEOINT capabilities. It is NGA's intent to solicit fundamental research under this BAA. Fundamental research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from Industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reason. (National Security Decision Directive (NSDD) 189, National Policy on the Transfer of Scientific, Technical, and Engineering Information). NGA seeks proposals from eligible U.S. institutions for path-breaking GEOINT research in areas of potential interest to NGA, the DoD, and the Intelligence Community (IC). **Open to September 30, 2017.**

### **AFRL Research Collaboration Program**

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

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

Announcement for Basic, Applied, and Advanced Scientific Research. This Broad Agency Announcement (BAA), which sets forth research areas of interest to the United States Army Research Institute for the Behavioral and Social Sciences, is issued under the provisions of paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), which provides for the competitive selection of proposals. Proposals submitted in response to this BAA and selected for award are considered to be the result of full and open competition and in full compliance with the provisions of Public Law 98-369 (The Competition in Contracting Act of 1984) and subsequent amendments. The US Army Research Institute for the Behavioral and Social Sciences is the Army's lead agency for the conduct of research, development, and analyses for the improvement of Army readiness and performance via research advances and applications of the behavioral and social sciences that address personnel, organization, training, and leader development issues. Programs funded under this BAA include basic research, applied research, and advanced technology development that can improve human performance and Army readiness. The funding opportunity is divided into two sections- (1) Basic Research and (2) Applied Research and Advanced Technology Development. The four major topic areas of research interest include the following: (1) Training; (2) Leader Development; (3) Team and Inter-Organizational Performance in Complex Environments; and (4) Soldier/Personnel Issues.

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Funding of research and development (R&D) within ARI areas of interest will be determined by funding constraints and priorities set during each budget cycle. **Open to February 5, 2018.**

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

This effort is an open-ended BAA soliciting innovative research concepts for the overall mission of the Human-Centered Intelligence, Surveillance, & Reconnaissance (ISR) Division (711 HPW/RHX). It is intended to generate research concepts not already defined and planned by RHX as part of its core S&T portfolio. The core RHX mission is to develop human-centered S&T that (1) enables the Air Force to better identify, locate and track humans within the ISR environment and (2) enhance the performance of ISR analysts. To accomplish this mission, the RHX core S&T portfolio is structured into three major research areas: (1) Human Signatures - develop technologies to sense and exploit human bio-signatures at the molecular and macro (anthropometric) level, (2) Human Trust and Interaction – develop technologies to improve human-to-human interactions as well as human-to-machine interactions, and (3) Human Analyst Augmentation – develop technologies to enhance ISR analyst performance and to test the efficacy of newly developed ISR technologies within a simulated operational environment. The RHX mission also includes research carried over from the Airman Biosciences and Performance Program. While not directly linked to the core S&T strategic plan, there exists a unique capability resident within RHX to address critical Air Force operational and sustainment needs resulting from chemical and biological hazards. Research areas include contamination detection, hazard assessment and management, individual and collective protection, and restoration and reconstitution of operational capability. **Open to Feb. 12, 2018.**

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

The AFRL/RIEA branch performs Research and Development (R&D) across a broad area of Air Force Command, Control, Communications, Computers/Cyber, and Intelligence (C4I). All applicable "INTs" are investigated with emphasis on Ground Moving Target Indication (GMTI), Electronic Intelligence (ELINT), Signals Intelligence (SIGINT), Image Intelligence (IMINT), Non Traditional Intelligence, Surveillance and Reconnaissance (NTISR), and Measurement and Signature Intelligence (MASINT). The APEX Center is used to perform analysis for seedling efforts, provide baseline tool development for major programs, and to provide realistic operational systems/networks/databases for integration efforts. The APEX Center resources will be used by the Government to perform the necessary research, development, experimentation, demonstration, and conduct objective evaluations in support of emerging capabilities within the Processing and Exploitation (PEX) area. Software tools, data sets, metrics (Measures of Performance/Measures of Effectiveness), and analysis are needed for the Government to perform the vetting, maturing, and analysis of efforts related to PEX, e.g. Automatic Tracking, Activity Based Intelligence, Entity, Event & Relationship (EER) Extraction, Association & Resolution (A&R), Analysis & Visualization (A&V), Social Network Analysis, Network Analytics, Pattern Discovery, Scalable Algorithms, and Novelty Detection. The AFRL APEX Center is the AFRL/RI gateway into the cross-directorate PCPAD-X (Planning & Direction, Collection, Processing & Exploitation, Analysis & Production, and Dissemination eXperimentation) initiative. **Open to FY 2018.**

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

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

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

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

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

The Air Force Research Laboratories and 711th Human Performance Wing are soliciting white papers (and later technical and cost proposals) on the following research effort. This is an open ended BAA. The closing date for submission of White Papers is 17 Nov 2019. This program deals with science and technology development, experimentation, and demonstration in the areas of improving and personalizing individual, team, and larger group instructional training methods for airmen. The approaches relate to competency definition and requirements analysis, training and rehearsal strategies, and models and environments that support learning and proficiency achievement and sustainment during non-practice of under novel contexts. This effort focuses

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on measuring, diagnosing, and modeling airman expertise and performance, rapid development of models of airman cognition and specifying and validating, both empirically and practically, new classes of synthetic, computer-generated agents and teammates. An Industry Day was held in November 2014. Presentation materials from the Industry Day and Q&A's are attached. If you would like a list of Industry Day attendees, send an email request to [helen.williams@us.af.mil](mailto:helen.williams@us.af.mil) **Open until November 17, 2019.**



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

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