Volume 7, Issue 5: January 15, 2017

Table of Content

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Mike Cronan, PE (Texas 063512, inactive) has 23 years of experience developing and writing successful team proposals at Texas A&M University. He was named a **Texas A&M University System *Regents Fellow*** (2001-2010) for developing and writing A&M System-wide grants funded at over $100 million by NSF and other funding agencies. He developed and directed two research development and grant writing offices, one for Texas A&M's VPR and the other for the Texas Engineering Experiment Station (15 research divisions state-wide).

Lucy Deckard (BS/MS Materials) worked in research development and grant writing at Texas A&M University and across the A&M System for nine years. She directed A&M's ***New Faculty Research Initiative (2004-09)***, helping junior faculty System-wide jumpstart their research careers with federal agency funding. She served as associate director of two research development and grant writing offices. She founded ARFS in 2010.

About the editor

Katherine E. Kelly, Ph.D., is a retired English professor from Texas A&M University. She is the author of several books and numerous articles and served as a contributing editor for an academic journal for five years. She provides **editorial services** to *RD&GW News* and to ARFS clients on proposals, journal articles, and manuscripts.

Topics of Interest URLs

(Back to Page 1)

'Twas the night before grant deadline
NIFA Announces $858,500 in Funding to Foster the Agricultural Science Workforce
Tracker (AAAS Science Magazine): We're letting you know when Trump's Cabinet nominees talk about science and climate
A 21st Century Cyber-Physical Systems Education
The Retraction Watch 2016 year in review — and a sneak peek at our database
Webinar - Updates to the NSF Proposal & Award Policies & Procedures Guide (PAPPG)
Proposal & Award Policies & Procedures Guide (PAPPG), January 2017
NIH and AHRQ Update Font Guidelines for Applications to Due Dates On or After January 25, 2017
Frequently Asked Questions (FAQs) on Proposal Preparation and Award Administration
NSF INCLUDES: Design and Development Launch Pilot Preliminary Proposal Webinar
Security Challenges in the Landscape of Emerging Digital Financial Services
Revised SF424 (R&R) Application Guides and Supplemental Instructions Available (NOT-OD-17-023)
A Data-Based Assessment of Research-Doctorate Programs in the United States (with CD)
State Government R&D Expenditures Total More than $2.2 Billion in FY 2015
National Science and Technology Council Sprinting to the Finish Line with New Releases
Scientific Discovery through Advanced Computing: Partnership in Nuclear Energy Research
Forensic Science Research and Development: Dear Colleague Letter From Nancy Rodriguez, FY 2017
Former Lawrence Livermore National Laboratory Scientist Charged for Fraud Relating to Intelligence
Advanced Research Projects Activity Research Program
New Regional Educational Laboratories Announced
A 21st Century Cyber-Physical Systems Education
BigGIS: A Continuous Refinement Approach to Master Heterogeneity and Uncertainty in Spatio-Temporal Big Data
One Year (or so) of "Open Mike"
The Strange Case of the Minnesota Iceman
National Alliance for Broader Impacts is pleased to announce the 5th annual NABI Summit, held April 26-28th, 2017 at Skamania Lodge, Stevenson WA
Dear Colleague Letter: Improving Graduate Student Preparedness for the Chemistry Workforce
NIJ-Sponsored Course or Event: National Commission on Forensic Science Meeting , Twelfth Meeting
Renewables Provide Majority of New US Generating Capacity through November 2016
Journal retracts all papers by education researcher, bringing his total to 21
"My time and energy were stolen:" Peer reviewer reacts to retraction
S&T January 2017 FaceBook Town Hall: Applying for S&T Basic and Applied Research Funding
Gifted students benefit from ability grouping
FFAR seeks ideas and input as we develop and deploy research in seven Challenge Areas
Introducing the FFAR Pollinator Health Fund
Request for Comments: Climate Science Special Report
CBO to Release Budget and Economic Outlook on January 24
Presidential Early Career Awards for Scientists and Engineers
Older, fitter adults experience greater brain activity while learning
ERIC Releases New Database Fields
New Regional Educational Laboratories Announced
Evaluation of the Congressionally Directed Medical Research Programs Review Process

Don't Force Your Reviewers to Think Too Much

By Mike Cronan, co-publisher
(Back to Page 1)

Sabermetrics, for example, as used in the empirical analysis of baseball statistics to gather enormous amounts of data to answer very specific questions related to performance patterns to better inform the drafting or trading of players, or data analytics, the collection, storage, maintenance, and analysis of Big Data in search of predictive patterns, is very much an area of significant funding in both the private sector and by federal research agencies, e.g., NSF's recent solicitation Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA). Faculty and research office professionals alike will confront Big Data, in one version or another, for years to come, when writing the research narrative of many proposals.

However, one common error made in research proposals, or in large institutional proposals such as AGEP, ADVANCE, INCLUDES, etc., is to ***conflate or confuse Big Data as a research topic with a requirement for providing validating data in a proposal to strengthen your case for funding***. In the latter case, Big Data is Bad Data. This comes about when large amounts of data, either in table, graphical, or narrative formats, are presented to the reviewers in the research narrative and, when permitted, in appendices, in a way that forces them into the role of a sabermetrician, or a data analytics specialist, in order for them to understand (decode, decrypt, interpret, translate) the point of all the data presented to them. In effect, too much data can be as bad, or worse, than insufficient or no data at all.

It is not the reviewer's job to mine data in a research narrative in order to determine whether or not to recommend funding. That is the job of those who plan, develop, and write the proposal. It is their job to offer ***sufficient data to validate the justification and value of proposed activities***, but no more than that. It is a mistake to overwhelm reviewers with too much data, forcing them to do the work of those writing the narrative by effectively expecting them to search for, find, and then extract the most relevant data upon which to make a funding decision. Unfortunately, there is a tendency, particularly on large partnership proposals and multi-institutional alliances, such as the NSF AGEP due last December 9, for proposal authors to subject reviewers to a blizzard of institutional data in the hope that they will expend the effort to interpret it and then to draw the right conclusion. Good luck with that! ***The proposal narrative is not a bin into which poorly explained data should be dumped***.

The reviewer reading such a data-dense proposal can be compared to a traveler who opens Google or Apple Maps on an IPhone and, instead of encountering a clearly mapped journey, instead sees a table of trigonometric functions from which she must make navigational calculations to move from point A to point B. Success in funding, however, comes from giving reviewers an experience equivalent to opening up Apple Maps which presents multiple route options in a logical and stepwise fashion for an optimized journey.

The reviewers' journey through a proposal narrative should be designed in this way if there is to be any chance of a funding recommendation. When it comes to presenting data in the research narrative, or, if permitted, referencing data in an Appendix, make sure to avoid the

many pitfalls of a reviewer's "bad road trip" through the research narrative and the data chosen to justify and validate the research plan.

In the case of institutional proposals and multi-institutional alliances, ***it is important to have a data plan*** (not to be confused with a required Data Management Plan placed in supplemental documents or appendices) for the data needed to support the project, along with a clear statement of ***who will provide it, and when***. It is often the case that some institutional data will need to be collected by a university office not experienced with the often 24/7 tempo of large-team grant narrative production. In other cases, data from alliances may be incomplete or not easily integrated. In yet other cases, data may come from annual performance reviews of prior agency support. Regardless, it is most often the case that a plan to manage the acquisition of relevant narrative data needs to be in place from the get go so that when it is needed in the research narrative to validate a point, it is available and appropriate.

Moreover, too often **the formatting of data** in a research narrative is not given sufficient thought, particularly as it relates to how the data are integrated with the research narrative section(s) that discuss the data and its significance, or with an evaluation section or logic model, if those are required. Data might best be presented as tables, graphics, figures, etc. Of course when a proposal fails to specify a minimum font size, some authors choose a font so small that reviewers are required to wear jeweler's glasses to read them.

The most important and challenging decision to be made relative to data is selecting which data to include and which to exclude in the narrative, and how best to discuss the included data in the narrative to make the most convincing case for funding. In most cases, the absence of important data will present itself to the author or reviewer of a narrative section as the section is written. But the bottom line is always that you do not want to make the reviewers think too much about the data—it should be made clear and obvious to them why the data are important in validating the project plan. Their role reading your research narrative is not as a miner toiling in a data mine to extract and guess at the most important nuggets of information but as someone who is given the most important data in an easily accessible format that allows them to make an informed decision on the proposal without a struggle. Always make life easy for reviewers. ***Tell them in a convincing way what you want them to think.*** If you do that in a compelling way, then funding will be a foregone conclusion.

To Submit or Not to Submit

By Mike Cronan, co-publisher

(Back to Page 1)

To submit or not to submit, that is the question, as Hamlet noted in his famous soliloquy that has bedeviled grant writers for centuries. This question presents itself in various flavors to faculty ruminating on a possible submittal(s). In one flavor, it may be asked by a new faculty member seeking the best strategy for submitting an NSF CAREER award, perhaps wondering whether to submit as a first-year assistant professor, or to wait a year or two. In other flavors, it may be asked by a senior faculty member considering two possible funding options for a research center. In yet other flavors, it may be asked by a faculty member who finds two "golden opportunity" funding solicitations with nearly identical due dates, thereby requiring proposal development activities to run concurrently.

In yet another flavor, those with an impending promotion and tenure decision looming may fear that they have insufficient research funding in hand for a positive outcome. In these cases, the candidates are tempted to write and submit a flurry of proposals under the mistaken belief that the more proposals submitted the more they are likely to have funded. Unfortunately, unlike buying more lotto tickets to increase the chance of success, the outcome in grant writing is nearly always the opposite. Funded proposals are not like the flip of a coin whereby the more times the coin is flipped the closer the outcome converges on an equal number of heads and tails, or, in this case, funding or no funding.

Since the coin is fair, each flip has an equal chance of coming up heads or tails. But with proposals, each submittal is not fair but extremely biased by the skill of those writing the research narrative in the same way a loaded or weighted die is biased to favor a certain outcome. However, unlike in craps, where a loaded die is cheating, ***in grant writing, a loaded or biased proposal is what we all*** **aspire to.** It is weighted in favor of funding by doing a series of things in a close to perfect way, including "biasing" the proposal in favor of a funding recommendation by revealing to reviewers what will be done, why it will be done, how it will be done, and why the proposed hypothesis or the question answered is significant to the field and brings value-added benefits to the agency mission, etc.

To address these items in a compelling way, the author must develop a thoughtfully constructed proposal development plan biased in favor of narrative perfection. To address them in an uncompelling way is to submit a flurry of proposals in a matter of several months. These proposals will be biased in favor of failure. Who has not been surprised to learn that someone who submitted 10 or 12 proposal in a 12-month period received funding for none of them?

Given the above, research offices can provide a real service to faculty by holding an informed discussion about the differences between a realistic proposal workload and narrative production timeline plan and an overly ambitious commitment to multiple concurrent proposals or to a series of sequential proposals. After all, proposal success is driven by the quality and not the quantity of proposal submissions.

It is also in the interests of research offices to commit time and personnel to proposal efforts that are most competitive for funding. Time and experience are two of the most

valuable resources a research office has to offer faculty in support of their proposal aspirations. It's therefore self defeating for all involved when either of those resources is squandered on multiple efforts by one overly ambitious PI with no real chance of success.

For faculty who may feel that they haven't yet attained the funding success needed for their promotion and tenure, research offices can design a more balanced and less frantic funding path by ensuring that the proposals submitted are well planned with a realistic timeline for narrative production. They should ensure, in particular, that several poorly planned proposals do not cannibalize each other. After all, a team of research office professionals has gained a significant advantage in biasing a proposal in favor of funding. The team's "corporate memory," gained over time, gives them an experience base well grounded on best planning practices that ensure proposals optimize their competitiveness.

What Does 2017 Hold for Mission Agencies?

By Mike Cronan, co-publisher

(Back to Page 1)

This is a question not now answerable with any more clarity and certainty than speculation permits. But over the coming months, the research directions of the mission agencies will be revealed based on new leadership directions under the Secretaries of Agriculture, Commerce (NOAA, NIST), Defense, DHS, Education, Energy, HHS (NIH and 10 other operating divisions) HUD, Interior, Labor, State, Transportation, or Executive Leaders of Justice, EPA, NASA, NEA, and NEH. However, it is an important question for faculty and the research offices supporting them to begin to answer as they try to identify potential research funding directions and opportunities over the coming year.

It has long been the pattern in federal agency research that funding allocations to mission agencies, and particularly the internal allocation of those funds representing the priorities of the Executive Branch, can change significantly year by year to support the agenda of the Executive Branch, whereas funding directions at NSF and NIH change more slowly, given the long-term nature of basic research.

In this regard, on December 12, AAAS noted that "Last week, Congress passed a continuing resolution (CR) to avoid a government shutdown and extend last year's government funding levels until April 28, 2017. While the CR ensures that government agencies can stay in operation, it also raises questions of its own. A CR typically keeps agencies from starting any new programs, and encourages agencies to spend more conservatively, even on previously-funded operations and activities. It is also, however, a routine event at this point: the current year represents the 20th year in a row in which Congress has had to pass at least one CR… When the CR expires at the end of April, 2017 – more than halfway through the fiscal year – Congress will need to work with the incoming Trump Administration to either finalize FY 2017 appropriations (see current roundup), or enact another stopgap measure to avoid a shutdown."

The bottom line here is that a lot of ambiguity and uncertainty and very little clarity will guide faculty and research offices' attempts to answer the fundamental question: "***where is the research money going to be in 2017, how much, and for what***? An equally important question will depend upon the answer to the previous one: "***what new research funding priorities will be put in place at federal agencies and what research programs now in place will be diminished or eliminated***?"

There is no harm done in attempting to anticipate some research funding scenarios for each of the above noted federal agencies in 2017 in order to better anticipate and position funding strategies over the coming 18 months. This is particularly true as the funding process is continuously informed by multiple sources, e.g., AAAS R&D Budget Analysis and Science Policy News from AIP (see American Institute of Physics: National Science and Technology Council Sprinting to the Finish Line with New Releases) and Science Magazine (Tracker: We're letting you know when Trump's Cabinet nominees talk about science and climate).

For example, there has been considerable reporting on a possible $1 trillion infrastructure plan in 2017, but what would that mean? ***It would be safe to assume it would mean something good for engineering research in every discipline***. Infrastructure can be a

very big umbrella, including roads, bridges, airports, ports, inland waterways, rail, mass transit, etc. (see ASCE's Report Card for America's Infrastructure from 2013 with a new report due in 2017), along with water and wastewater systems, hazardous waste, and energy. In the latter case, there will be a new Secretary of Energy, but what exactly will this mean in terms of federal support for modernizing the electrical grid and making it secure, as well as for 4th generation nuclear, fossil fuels, renewables, and storage, etc. (See Unfinished Business: Energy Policy Bill Runs Out of Fuel.)

As the geologists like to say, "*If you don't ask the right questions, the rock won't answer."* This is good advice in terms of positioning for what will likely be changes in funding priorities across many of the federal agencies in the coming years. Beginning a process of continuously improving an understanding of where research funding will be in the coming year based on various inputs and sources, including your own observations, will be very helpful in navigating future funding opportunities from federal mission agencies and basic agencies alike, and coming up with a strategic funding plan that best maps your institutional capacities to the future funding environment.

For instance, malicious hacking of computer systems and networks is much in the news lately; however, its long term implications will most likely be in the area of cyber-physical systems. It would be hard to imagine a $1 trillion effort on infrastructure renewal without a major effort put into protecting the new infrastructure from bad actors. As the smart grid and other infrastructures are modernized there will have to be new ways of protecting them from malicious attack. For example, the grid and many other cyber-physical infrastructures, such as the newly ubiquitous autonomous vehicles and drones, have spatial-temporal system vulnerabilities to GPS signal spoofing by malicious counterfeiting of the timestamps that allow the device position to be determined by the light speed lag of GPS satellite signals. This is all food for thought for how research offices approach the coming changes across the federal research agencies, particular as priority areas begin to reveal themselves in the coming months (see Critical Resilient Interdependent Infrastructure Systems and Processes FY17).

More challenging, however, will be determining future funding priorities, ***particularly what programs are in and which are out***, at predominately non-technical mission agencies, such as the U.S. Department of Education, Department of Justice, Department of Interior, NEA, NEH, etc. For example, in the case of NEH, the chairman is appointed for a four-year term by the President with the advice and consent of the Senate. The current Chairman, James A. Leach, was appointed in May of 2013 and will be replaced this coming May.

As another example, it will remain to be seen whether the current research funding priorities and program areas of focus designated by the current Director of the National Institute of Justice will be continued under a new Attorney General (*Director's Corner: Upcoming Funding Opportunities for Fiscal Year 2017*). This issue was raised in the January 11 Senate hearing on the Attorney General nominee and the signal was that DOJ/NIJ grants would be reviewed. Moreover, research funding priorities and programs at the U.S. Department of Education under a new Secretary of Education will likely have a significant impact on how faculty and research offices plan proposals to that agency.

That said, it is a reasonable assumption that determining research program funding priorities in the disciplines of the social and behavioral sciences and the humanities will be a bit more murky than doing so in the technical disciplines. But regardless of the discipline or agency,

faculty and research offices will need to begin the strategic planning process now to best position themselves for success in research funding over the coming few years.

Understanding Energy's Bioenergy Technologies Office

By Mike Cronan, co-publisher
(Back to Page 1)

Numerous interagency partnerships have existed for over a decade as federal agency research priorities become more interdisciplinary in order to address increasingly complex scientific challenges. These include several current federal agency research collaborations, e.g., the NSF/USDA NIFA partnership on INFEWS (Innovations at the Nexus of Food, Energy and Water Systems) due March 6, as well as the below noted agency partnership of DOE/USDA. Whether or not the nature, scope, and focus of these kinds of interagency partnerships will change, particularly with new agency Secretaries at DOE and USDA, remains to be seen. But it is not unreasonable to assume that change will come. One important role for research offices will be "bird dogging" that change and assessing how it will affect future research funding directions ***and, consequently, grant writing strategies.***

For example, DOE's Bioenergy Technologies Office (BETO) "establishes partnerships with key public and private stakeholders to develop and demonstrate technologies for producing cost-competitive ***advanced biofuels from non-food biomass resources***, including cellulosic biomass, algae, and wet waste (e.g., biosolids). BETO works with a broad spectrum of industrial, academic, agricultural, and nonprofit partners across the United States ***to develop and demonstrate commercially viable, high-performance biofuels, bioproducts, and biopower made from renewable, U.S. biomass resources that reduce our dependence on imported oil while lowering greenhouse gas emissions***."

As noted in the January 6 **Integrated Biorefinery Optimization** RFA, EERE, BETO, and USDA NIFA announced a joint funding opportunity to support Integrated Biorefinery Optimization (IBO). DOE notes that the agency has "funded biorefinery technology development projects since 2002 to meet two EERE performance goals: (1) reduce dependence on imported oil, thereby enhancing energy security; and (2) spur the creation of a sustainable domestic bio-industry. USDA NIFA has funded programs and projects that target vital topical areas related to the development of regional systems for the sustainable production of biofuels, industrial chemicals, biopower, and biobased products as well as invested in America's scientific corps and developing workforce in bioenergy, bioproducts, and the bioeconomy."

Moreover, as noted in BETO's 258-page Bioenergy Technologies Office Multi-Year Program Plan (March 2016), BETO has developed a coordinated framework for managing its portfolio based on systematically investigating, evaluating, and selecting the most promising opportunities across a wide range of emerging technologies and technology-readiness levels. This approach is intended to support a diverse technology portfolio in **applied** research and development, while identifying the most promising targets for follow-on industrial-scale demonstration with increasing integration and complexity. Key components of the portfolio include the following:

- R&D on productive and competitive advanced **algal systems,**
- R&D on sustainable, high-quality **feedstock supply systems,**
- R&D on **biomass conversion technologies,**

- Demonstration and validation of integrated biorefinery technologies up to industrial scale, and
- Crosscutting sustainability, analysis, and strategic communications activities.

BETO Releases Strategic Plan

On December 29, 2016, BETO released its new strategic plan, titled ***Strategic Plan for a Thriving and Sustainable Bioeconomy***, and noted the following: "The strategic plan lays out BETO's mission to accomplish its vision in a dynamic setting that realizes changes in the energy landscape, advances in technology, growing environmental awareness, and public expectations. The strategic plan is BETO's blueprint on how it will tackle the challenges and opportunities that lie ahead in building a sustainable U.S. bioeconomy. It sets the foundation for the development of BETO's **multi-year program plans**, annual operating plans, and technology program areas. It also takes a crosscutting approach to identify opportunities to adapt and align BETO activities and project portfolios with those in both the public and private sectors. As part of the Office of Energy Efficiency and Renewable Energy (EERE), BETO crafted its strategic plan to align with the goals in EERE's ***2016–2020 Strategic Plan and Implementing Framework***. BETO's *Strategic Plan for a Thriving and Sustainable Bioeconomy* centers around four key opportunities:

- Enhancing the bioenergy value proposition
- Mobilizing our nation's biomass resources
- Cultivating end-use markets and customers
- Expanding stakeholder engagement and collaboration.

"Each of these key opportunities, BETO notes, "reflects paths for BETO to support its mission to develop and demonstrate transformative and revolutionary sustainable bioenergy technologies for a prosperous nation. The strategic plan outlines goals for each of these key opportunities, which will be implemented through a range of substrategies and measured by specified success indicators."

"BETO supports national energy security, development of a clean energy economy, and environmental sustainability goals through developing and transforming domestic renewable biomass resources into commercially viable, ***high-performance biofuels, bioproducts, and biopower***. BETO achieves this by conducting targeted research, development, and demonstration supported by public and private partnerships," the agency notes.

"In October of 2016, BETO identified, via stakeholder engagements through a request for information (RFI) and a **Biorefinery Optimization Workshop**, areas in which ***DOE and USDA-NIFA can effectively support technology development and engineering solutions to economically and sustainably overcome technology barriers***. This current funding opportunity announcement will be coordinated and co-funded by BETO and USDA-NIFA. It seeks applications for projects focused on lowering technical and financial risk, addressing challenges encountered with the successful scale-up, and reliable, continuous operation of IBRs. Upon conclusion of the review process, meritorious proposals may be recommended for funding by either of the participating agencies.

This FOA invites applications for the following four topic areas:

- **Topic Area 1:** Robust, continuous handling of solid materials (**dry and wet feedstocks, biosolids, and/or residual solids remaining in the process**) and feeding systems to reactors under various operating conditions.

- **Topic Area 2:** High-value products from **waste and/or other under-valued streams** in an IBR.
- **Topic Area 3:** Industrial separations within an IBR.
- **Topic Area 4:** Analytical modeling of solid materials (**dry and wet feedstocks, and/or residual solids remaining in the process**) and reactor feeding systems.

This work supports DOE's **Office of Energy Efficiency and Renewable Energy's** mission to accelerate deployment of energy efficiency and renewable energy technologies to strengthen U.S. energy security, economic vitality, and environmental quality. To view the full FOA, visit the **EERE Exchange**. The submission deadline for concept papers is February 6, 2017, and the submission deadline for full applications is April 3, 2017. To apply for this FOA, applicants must **register** with the EERE Exchange. Presentations from the Biorefinery Optimization Workshop, hosted by the U.S. Department of Energy's Bioenergy Technologies Office on October 5–6, 2016, are available here: **View workshop presentations**."

For related funding opportunities outside of BETO, see link **HERE**.

In conclusion, over the past eight years there has been a fair amount of certainty in the funding directions of federal research agencies and that information has been reasonably easy to obtain from a variety of sources, most often the agency itself. While there have been uncertainties in the final research budget allocations approved by Congress that went well into the current fiscal year, all in all, with some Google digging, there was sufficient information available to allow research offices to assist faculty with strategic funding plans. However, agency research priories will likely now change in a more significant way with new leadership coming in at the federal research agencies. This makes it important for research offices to keep abreast of these changes in a more focused way until the future funding landscape clarifies, thereby allowing strategic positioning to what will be the "new normal."

Funding for Cybersecurity Research

By Lucy Deckard, co-publisher
(Back to Page 1)

Cybersecurity and the consequences of lapses in cybersecurity have dominated much of the news lately, but Federal agencies that fund research have long realized that research to improve cybersecurity is critical. As a result, there are a number of diverse sources of potential funding to support cybersecurity research. As a researcher, it's important to understand how the mission, priorities and culture of each funder influences how it approaches cybersecurity research and how it evaluates research proposals. Below is an overview of the various funders who may be interested in supporting your cybersecurity-related research.

NSF

NSF is by far the biggest federal funder of computer science research, so it's not surprising that they also are a big funder of cybersecurity research. Below are some of the NSF programs that fund cybersecurity research:

- Cybersecurity Innovation for Cyberinfrastructure (CICI) – This program within the Advanced Cyberinfrastructure division of the Computer & Information Science & Engineering Directorate (CISE) funds "development and deployment of hardware and software technologies and techniques to protect research cyberinfrastructure across every stage of the scientific workflow." Proposals are due March 1, 2017.
- Secure and Trustworthy Computing (SaTC) – This is a cross-cutting program that is supported by CISE as well as the Directorates of Social and Behavioral Sciences (SBE), Engineering (ENG), Math and Physical Sciences (MPS), and Education and Human Resources (EHR). This program funds "proposals that address cybersecurity and privacy, and draw on expertise in one or more of these areas: computing, communication and information sciences; engineering; economics; education; mathematics; statistics; and social and behavioral sciences. Proposals that advance the field of cybersecurity within a single disciple or efforts that span multiple disciplines are both encouraged." This program funds small, medium and large projects (see solicitation for the respective dollar amounts), which are further classified into CORE, EDU (cybersecurity education),STARSS (Secure, Trustworthy, Assured and Resilient Semiconductors and Systems), and TTP(Transition to Practice) proposals. Note that since this program is partially supported by SBE, projects with strong behavioral or social science components are likely to fit well here.
- CyberCorps Scholarships for Service (SFS) – focuses on cybersecurity education and workforce development
- Other NSF programs such as Cyber Physical Systems, Cyber-human Systems, and Cultivating Cultures of Ethical STEM also support proposals with cybersecurity elements as long as they relate to the principal focus of the program.

DARPA

DARPA's Information Innovation Office funds a range of projects related to cybersecurity, including Active Authentication and Active Cyber Defense. DARPA funds research through unsolicited proposals to long-range BAAs, proposals to targeted BAAs, and proposal to the Young Faculty Awards program (for early career faculty).

IARPA

Modeled on DARPA, IARPA focuses on high-risk, high-payoff research that can provide the nation with an intelligence advantage. A number of their programs could support relevant research with a focus on cyber security, including Cyber-attack Automated Unconventional Sensor Environment (CAUSE), Multimodal Objective Sensing to Assess Individuals with Context (MOSAIC), Trusted Integrated Chips (TIC) and Virtuous User Environment (VirtUE).

National Security Agency

The NSA's Information Assurance Program conducts intramural research on a range of issues, some of which are related to cybersecurity. While this program doesn't have formal extramural grant programs, it may be possible to develop collaborations with NSF researchers.

Department of Defense

DoD's Cyber Strategy is here. For cybersecurity research, look at the long-range BAAs for AFOSR (Information Operations and Security), ONR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance Code 31, and Human and Bioengineered Systems in Code 34, which includes social/organizational science)and ARO (Computing Science Area 5, and Network Science Area 10, which includes Social and Cognitive Networks (10.2)) to identify relevant programs to which you might apply for funding (after talking to the PO).

Other Resources

A description of the White House's National Cybersecurity Research and Development Strategic Plan can be found here.

Performing an Autopsy on Declined Proposals

Reprinted from Volume 4, Issue 9: May 14, 2014

By Mike Cronan, co-publisher
(Back to Page 1)

A declined proposal should be considered a crime scene. A forensic autopsy needs to be performed to determine its cause of death. If this step is not taken, the cause of death will never be clearly known, thereby exposing a resubmission or other future proposals to a similar unfortunate demise. Proposal death can frequently be attributed to a "*communicable disease*" that may infect other proposals in the future. For example, poor writing, one of most common communicable proposal diseases, is highly infectious, making robust ideas seem sickly, and leaving a trail of declined proposals in its wake.

Therefore, it will be important to make that determination and put in place the appropriate quarantine protocols to prevent the viral spread of narrative errors from one proposal to another. Regardless, the "*body in evidence,*" in this case the declined proposal, and the evidentiary documents, e.g., the solicitation, reviewers' and program officer comments, and any observations made by program officers, are all part of the autopsy. So when you get a declined proposal, put a toe tag on it and start the process of identifying the cause of death to help ensure future proposal do not meet a similar fate.

The forensic autopsy of a declined proposal needs to consider all factors, from an accumulation of small contributing weaknesses, none of which in and of themselves caused the demise of the proposal but in aggregate proved fatal, to the catastrophic failure of one or more major proposal components, such as the failure of the research vision and goals to excite the reviewers and convince them the research is significant and fundable. The statement of research vision and goals functions as the heart of the proposal. A failure here is always fatal. If this turns out to be the cause of a proposal's death, then some major lifestyle changes are going to have to be put in place before a resubmittal.

Any proposal autopsy will look to identify the usual causes of proposal death, for example: the research ideas did not impress the reviewers as advancing the field or agency mission in an important way; the research plan was overly ambitious, disorganized, and unrealistic; the research team did not present sufficient preliminary data or describe a history of research collaboration (e.g., funding, papers, patents); the research narrative was poorly written and poorly organized; the rationale for the research was not convincing; the management plan failed to gain the reviewers' confidence that the research goals would be achieved; the research narrative read like a collection of loosely associated rather than interdependent research objectives—silos rather than synergy, etc..

Unlike in crime procedurals, such as those portrayed by Ducky the pathologist on NCIS, you will have some help conducting an autopsy on a declined proposal--the reviewers and program manager will have conducted their own preliminary autopsy during the review process, or at the very least provide you with some "eye witness" testimony as to what caused the demise of your proposal. How helpful this information proves to be in determining your proposal's cause of death can vary greatly. It is not uncommon to review the reviewers in this

process to help you make a judgment of the value of their comments to a resubmission or to a new proposal in the future. Moreover, many failings in one proposal may well be generic to any proposal you write. So keep this in mind and be on the lookout for review comments that go beyond the particular proposal and signal flaws you might make in any proposal.

Moreover, some reviewers do an excellent job, some do a good job, and some do a poor job. But typically, with several or more reviewers, you will be provided with some solid information that will help you determine your proposal's cause of death. Keep in mind that, on a declined proposal, a conscientious fair review that is thoughtful, detailed, and specific is much more helpful than an unexplained excellent review.

In many ways, the forensic autopsy of a declined proposal is similar to the red teaming process you may have used in analyzing the solicitation and in reviewing the proposal just prior to the due date. If a red team was used in writing the proposal, then those red team members should play a role in the autopsy, particularly on proposals for which a resubmission is planned.

The real issue, however, is that too often no strategic plan exists for conducting a forensic autopsy of a declined proposal. In many cases, reviews are distributed to the team members as pdf files that may or many not be examined in any great detail, or only given a cursory review by some but not all of the research team, and are largely forgotten by the time of a resubmittal.

However, a team-based forensic autopsy of proposal reviews is of great value, particularly when the process includes as a team member someone from a research office who has helped analyze and decode reviews for many faculty for many programs across many agencies over many years. In the case of smaller, individual PI grants, particularly those such as the NSF CAREER, it is enormously helpful to conduct a forensic autopsy of the reviews with a CAREER-funded colleague or someone from a research office who has assisted many young faculty with those awards.

Of course, the forensic autopsy of a declined large-team grant is critical to going forward with a resubmittal or developing other team grants with the core research group in the future. It is often said that elite professional athletes, for example Tom Brady and Payton Manning, spend countless hours watching game films to, in part, understand the flaws and mistakes made in both execution and strategy. In many ways, large team grants characterized by interdisciplinarity and complex research challenges are the elite and most institutionally prestigious grants to obtain. Putting in place a process to conduct a forensic autopsy to determine the flaws and mistakes in the research narrative of a declined proposal is the first step in a successful resubmission.

Research Grant Writing Web Resources

(Back to Page 1)

Take A Look At NIH's New Application Instructions

Reading and following application instructions is key to a smooth application submission process. This is why we're continually seeking to make it easier for you to find and understand the information you need. If you take a look at the December release of our application guide, you will see that we've worked really hard to simplify the language and presentation of our application instructions.

A recent Guide notice highlights our changes:

- We have completely rewritten form instructions for clarity.
- We added headings and labeling to distinguish instructions from supporting information.
- We clarified what is required and optional throughout the instructions.
- We highlight updated instructions with a new symbol: In the web (HTML) version of the application instructions, you can use your mouse to hover over the icon to read an explanation of the change.

Recent changes continue to be summarized for your convenience in the Significant Changes section of the application instructions.

Strategic Plan of the Fogarty International Center at NIH

Fogarty's updated Strategic Plan will advance the global health research agenda by building on past and current Fogarty investments and successes in a way that responds to the changed landscape in global health. Fogarty investments will continue to advance the goals and sustain the leadership of the NIH and the U.S. government in biomedical research, while improving the health of Americans and populations across the globe.

Strategic Plan Goals

Goal 1: Build research capacity through INDIVIDUALS, INSTITUTIONS and NETWORKS to meet future and evolving global health challenges

Strategic Priorities

- Support training of INDIVIDUALS to build future research leaders in the U.S. and low- and middle-income countries (LMICs).

  Fogarty Strategic Plan
  [PDF, 6M, 51 pages]
- Invest in INSTITUTIONS as sustainable platforms for research in LMICs.
- Promote research NETWORKS.
- Stimulate linkages among disciplines to address complex global health problems.

Goal 2: Stimulate innovation in the development and implementation of technologies and other locally relevant solutions to address global health problems

Strategic Priorities

- Support the enhanced use of information and communication technologies to facilitate and improve health research education.
- Encourage innovation in the development and implementation of mobile and other technologies, systems, and policies to address global health problems.

Goal 3: Support research and research training in implementation science
Strategic Priorities

- Expand investment in research and research training in implementation science across programs.
- Catalyze interaction between researchers, policymakers and program implementers to promote uptake of evidence into global health policy and practice.

Goal 4: Advance research on prevention and control of the dual burden of communicable and noncommunicable diseases and disabilities
Strategic Priorities

- Support research and research training in clinical, behavioral and population sciences.
- Identify ways to leverage investments in communicable diseases, including HIV, to better address the dual burden of disease.

Goal 5: Build and strengthen partnerships to advance global health research and research capacity
Strategic Priorities

- Engage and support the NIH Institutes and Centers to advance their research agendas for global health.
- Forge partnerships at home and abroad to leverage complementary interests and strengths.
- Convene global experts to address priority research questions and catalyze new areas of science.

Educational Grant Writing Web Resources

(Back to Page 1)

A Progression and Bundling Model for Developing Integrated, Socially-Relevant Science and Engineering Curricula Aligned with the Next Generation Science Standards, Grades 6-8

As an increasing number of school districts around the country adopt the Next Generation Science Standards (NGSS), curricula aligned with these standards are in demand. Progression models provide a foundation for developing curricular units that sequentially support one another to guide students through coherent learning. Various models are possible for a given set of standards. The selected model must address the unique conditions and needs of the education initiative. Here we present and explain a progression model and bundling of the 59 performance expectations for the NGSS middle-school grade band. This model, the Unit Challenge Progression Model, provides the basis for developing units that engage students in addressing challenges of societal relevance while learning and applying content and practices from multiple STEM (science, technology, engineering, and mathematics) disciplines in a coherent progression. Preliminary results from pilot testing of curricular units indicates that the bundling of performance expectations presented here, and the incorporation of supporting subcomponents of performance expectations, help to achieve integration of STEM disciplines while allowing for learning of STEM content within units. This progression model continues to be refined as additional curricular units are pilot-tested in schools.

Cascading Influences: Long-Term Impacts of Informal STEM Experiences for Girls

This report, by Dale McCreedy and Lynn D. Dierking, summarizes National Science Foundation-funded research that investigated whether girls-only, informal STEM experiences have long-term influences on young women's lives. The authors present key findings of the study, barriers to success that were identified, and recommendations for informal STEM educators.

Effective STEM Programs for Adolescent Girls: Three Approaches and Many Lessons Learned

This article, published in Afterschool Matters, describes three successful programs to engage adolescent girls in STEM: Techbridge, Girls Go Techbridge, and Access for Young Women. Effective strategies implemented by the programs include developing collaborations, creating an engaging and relevant curriculum, and inspiring career exploration.

Solving the Equation: The Variables for Women's Success in Engineering and Computing

More than ever before, girls are studying and excelling in science and mathematics. Yet the dramatic increase in girls' educational achievements in scientific and mathematical subjects has not been matched by similar increases in the representation of women working as engineers and computing professionals. Just 12 percent of engineers are women, and the number of women in computing has fallen from 35 percent in 1990 to just 26 percent today. This research report, published by AAUW, asks why there are still so few women in the critical fields of engineering and computing -- and explains what we can do to make these fields open to and desirable for all employees.

Agency Research News

(Back to Page 1)

Introducing the FFAR Pollinator Health Fund

Please join the Foundation for Food and Agriculture Research to discuss the Pollinator Health Fund, a new $10 million commitment from FFAR to meet pressing pollinator health research needs. Presenters will discuss:

•FFAR's research interests related to pollinator health

•How to partner with FFAR to advance research in this important field.

The webinar will close with an open Q&A session.

Instructions for joining the webinar will be sent in a confirmation email from Eventbrite. Please register now as space is limited. Monday, January 23, 2017. 10:00 AM – 11:00 AM EST

Dear Colleague Letter: Request for Information on Future Needs for Advanced Cyberinfrastructure to Support Science and Engineering Research (NSF CI 2030)

In the past two decades, advanced cyberinfrastructure has become a critical element of science and engineering research – a result of the increasing scope and accuracy of simulations of natural and engineered systems as well as the growing volume of data generated by instruments, simulations, experiments and observations. The National Science Foundation (NSF) embraces an expansive, ecosystem view of research cyberinfrastructure – spanning advanced computing resources, data and software infrastructure, workflow systems and approaches, networking, cybersecurity and associated workforce development – elements whose design and deployment are motivated by evolving research priorities as well as the dynamics of the scientific process. The critical role of this broad spectrum of shared cyberinfrastructure resources, capabilities and services – and their integration – in enabling science and engineering research has been reaffirmed by the National Strategic Computing Initiative, which was announced in July 2015, and in the National Academies' 2016 report on Future Directions for NSF Advanced Computing Infrastructure to Support U.S. Science and Engineering in 2017-2020. While these efforts are computing-centric, they expose the inherent inseparability of computing from the larger cyber ecosystem. With this DCL, NSF seeks input that provides a holistic view of the future needs for advanced cyberinfrastructure for advancing the Nation's research enterprise.

In 2009, NSF undertook a community-informed analysis of cyberinfrastructure needs that led to the formulation of a vision, a strategy, and a set of programmatic initiatives together comprising the current NSF-wide effort entitled Cyberinfrastructure for 21st Century Science and Engineering (CIF21). Since that analysis, many changes have taken place in terms of scientific challenges and opportunities as well as technological progress. To continue to take full advantage of the potential provided by cyberinfrastructure to advance science and engineering research, NSF is beginning to formulate an updated strategy as well as concrete plans for future investments in this area. In this endeavor, NSF will focus on complementing and supporting forward-looking cyberinfrastructure for research that institutions and universities are unlikely to be able to deploy on their own. In addition, NSF seeks to stimulate innovative use of cyberinfrastructure for research to spur advances not otherwise possible, particularly in

emerging areas of science and engineering research. Finally, NSF supports the exploration of approaches to sustainability that address the unique needs of research cyberinfrastructure, including the scientific, technical and human aspects of cyberinfrastructure.

In this Request for Information (RFI), NSF encourages community input to inform the Foundation's strategy and plans for an advanced cyberinfrastructure that will enable the frontiers of science and engineering to continue to advance over the next decade and beyond (NSF CI 2030). This whole-of-NSF activity recognizes that researchers in different disciplines may need different resources; may have differing priorities for access, interoperability, and continuity; and may require external expertise to address the most critical problems in their discipline. We therefore strongly encourage researchers in all fields of science, engineering and education to respond to this Request for Information.

Agency Reports, Workshops & Research Roadmaps

(Back to Page 1)

A 21st Century Cyber-Physical Systems Education

Cyber-physical systems (CPS) are "engineered systems that are built from, and depend upon, the seamless integration of computational algorithms and physical components." CPS can be small and closed, such as an artificial pancreas, or very large, complex, and interconnected, such as a regional energy grid. CPS engineering focuses on managing inter- dependencies and impact of physical aspects on cyber aspects, and vice versa. With the development of low-cost sensing, powerful embedded system hardware, and widely deployed communication networks, the reliance on CPS for system functionality has dramatically increased. These technical developments in combination with the creation of a workforce skilled in engineering CPS will allow the deployment of increasingly capable, adaptable, and trustworthy systems.

Engineers responsible for developing CPS but lacking the appropriate education or training may not fully understand at an appropriate depth, on the one hand, the technical issues associated with the CPS software and hardware or, on the other hand, techniques for physical system modeling, energy and power, actuation, signal processing, and control. In addition, these engineers may be designing and implementing life-critical systems without appropriate formal training in CPS methods needed for verification and to assure safety, reliability, and security.

A workforce with the appropriate education, training, and skills will be better positioned to create and manage the next generation of CPS solutions. *A 21st Century Cyber-Physical Systems Education* examines the intellectual content of the emerging field of CPS and its implications for engineering and computer science education. This report is intended to inform those who might support efforts to develop curricula and materials; faculty and university administrators; industries with needs for CPS workers; and current and potential students about intellectual foundations, workforce requirements, employment opportunities, and curricular needs.

Innovations in Federal Statistics: Combining Data Sources While Protecting Privacy

Federal government statistics provide critical information to the country and serve a key role in a democracy. For decades, sample surveys with instruments carefully designed for particular data needs have been one of the primary methods for collecting data for federal statistics. However, the costs of conducting such surveys have been increasing while response rates have been declining, and many surveys are not able to fulfill growing demands for more timely information and for more detailed information at state and local levels. Innovations in Federal Statistics fosters a paradigm shift in federal statistical programs that would use combinations of diverse data sources from government and private-sector sources in place of a single census, survey, or administrative record. This first publication of a two-part series discusses the challenges faced by the federal statistical system and the foundational elements needed for a new paradigm.

A Data-Based Assessment of Research-Doctorate Programs in the United States (with CD)

A Data-Based Assessment of Research-Doctorate Programs in the United States provides an unparalleled dataset that can be used to assess the quality and effectiveness of doctoral programs based on measures important to faculty, students, administrators, funders, and other stakeholders.

The data, collected for the 2005-2006 academic year from more than 5,000 doctoral programs at 212 universities, covers 62 fields. Included for each program are such characteristics as faculty publications, grants, and awards; student GRE scores, financial support, and employment outcomes; and program size, time to degree, and faculty composition. Measures of faculty and student diversity are also included.

The book features analysis of selected findings across six broad fields: agricultural sciences, biological and health sciences, engineering, physical and mathematical sciences, social and behavioral sciences, and humanities, as well as a discussion of trends in doctoral education since the last assessment in 1995, and suggested uses of the data . It also includes a detailed explanation of the methodology used to collect data and calculate ranges of illustrative rankings.

Included with the book is a comprehensive CD-ROM with a data table in Microsoft Excel. In addition to data on the characteristics of individual programs, the data table contains illustrative ranges of rankings for each program, as well as ranges of rankings for three dimensions of program quality: (1) research activity, (2) student support and outcomes, and (3) diversity of the academic environment.

New Funding Opportunities

(Back to Page 1)

Content Order

New Funding Posted Since December 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 work as well.]

New Funding Solicitations Posted Since December 15 Newsletter

Subsurface Biogeochemical Research
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 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 SBR program is to advance a robust predictive understanding of how watersheds function as complex hydrobiogeochemical systems and how these systems respond to perturbations caused by changes to climate, land use/cover, contaminant loading and compounding disturbances. 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 environments across vast spatial and temporal scales. State-of-science understanding, captured in conceptual theories and models, is translated into a hierarchy of computational components and used to predict the system dynamics and evolution in response to natural and anthropogenic forcing. 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. **Pre-Application Due Date: 02/07/2017; Application Due Date: 04/05/2017**

NIJ FY17 Research and Evaluation for the Testing and Interpretation of Physical Evidence in Publicly Funded Forensic Laboratories
With this solicitation, NIJ seeks proposals for research and evaluation projects that will: 1. Identify and inform the forensic community of best practices through the evaluation of existing laboratory protocols; and 2. Have a direct and immediate impact on laboratory efficiency and

assist in making laboratory policy decisions. The intent of this program is to direct the findings of the research and evaluation toward the identification of the most efficient, accurate, reliable, and cost-effective methods for the identification, analysis, and interpretation of physical evidence for criminal justice purposes. **Due February 27.**

Centers for Oceans and Human Health 3: Impacts of Climate Change on Oceans and Great Lakes (COHH3) (P01)

The purpose of this FOA is to invite applications for multi-component projects that will investigate the impact of climate change on emerging public health threats associated with marine and Great Lakes Basin environments. The focus of the program will be to support research on the exposures, toxicities and human health impacts that arise in these environments and how climate change is influencing these factors now and in the future. The FOA solicits applications that will achieve program goals through integrated, multidisciplinary scientific approaches and a community engagement component. **Due March 7.**

Office of Naval Research (ONR) Immersive Sciences for Training, Education, Mission Rehearsal, and Operations

The Office of Naval Research, Expeditionary Maneuver Warfare and Combating Terrorism S&T Department (Code 30) is soliciting white papers and proposals for basic research in immersive sciences. The Navy and Marine Corps seeks to use augmented reality (AR) and mixed reality technologies to improve training and operations for infantry combat personnel; with a specific focus on small unit leaders (e.g. Squad Leader). This includes a range of applications, including augmented training environments that can simulate environments, assets, and friendly/opposing forces and operational tools that can overlay useful virtual information onto the real-world environment. While the Navy and Marine Corps have envisioned these applications, this research opportunity is focused more on the development of the scientific area than on capability. In support of this goal, the Immersive Sciences research program seeks to address basic research challenges in three key areas: automated methods for generating content and/or behaviors for use augmented and mixed reality technologies (with an emphasis on AR); valid, reliable, and objective measures of presence and immersion; and a human-factors based taxonomy of visualization and interaction in AR. **Due March 9.**

Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA)

The BIGDATA program seeks novel approaches in computer science, statistics, computational science, and mathematics, along with innovative applications in domain science, including social and behavioral sciences, education, biology, the physical sciences, and engineering that lead towards the further development of the interdisciplinary field of data science. The solicitation invites two categories of proposals:

- Foundations (F): those developing or studying fundamental theories, techniques, methodologies, and technologies of broad applicability to big data problems, motivated by specific data challenges and requirements; and
- Innovative Applications (IA): those engaged in translational activities that employ new big data techniques, methodologies, and technologies to address and solve problems in specific

application domains. Projects in this category must be collaborative, involving researchers from domain disciplines and one or more methodological disciplines, e.g., computer science, statistics, mathematics, simulation and modeling, etc. Proposals in both categories must include a clear description of the big data aspect(s) that have motivated the proposed approach(es), for example: the scalability of methods with increasing data volumes, rates, heterogeneity; or data quality and data bias; etc. Innovative Applications proposals must provide clear examples of the impacts of the big data techniques, technologies and/or methodologies on (a) specific domain application(s). **Due March 15.**

Systems Biology: The Next Generation for Infectious Diseases (U19)

This Funding Opportunity Announcement (FOA) solicits applications to establish Systems Biology Centers that use systems biology approaches to build predictive models for infectious diseases. These models will be derived from hypotheses related to systems-level host/pathogen molecular interactions during infection or treatment using integrated datasets generated from a combination of high-throughput (HTP) experimental approaches, including omics technologies and computational approaches. Importantly, the Centers must clearly integrate experimental approaches and computational modeling to test and validate hypotheses of significance to the infectious diseases field. The scope of this work requires that interdisciplinary teams be formed that are capable of pursuing coordinated activities that bridge disparate scientific disciplines and expertise in microbiology, immunology, infectious diseases, microbiome, HTP experimental and omics technologies, together with experts in mathematics, physics, bioinformatics, computational biology, machine learning and statistical methods and modeling. Bringing multidisciplinary groups together creates opportunities for synergy that would rarely happen otherwise. The research teams within each Center may be composed of investigators located at one institution, or may be formed through a consortium of different institutions. **Due March 15.**

STEM + Computing Partnerships (STEM+C)

As computing has become an integral part of the practice of modern science, technology, engineering and mathematics (STEM), the STEM + Computing Partnerships program seeks to address the urgent need to prepare students from the early grades through high school in the essential skills, competencies, and dispositions needed to succeed in a computationally-dependent world. Thus, STEM+C advances the integration of computational thinking and computing activities in early childhood education through high school (pre-K-12) to provide a strong and developmental foundation in computing and computational thinking through the integration of computing in STEM teaching and learning, and/or the applied integration of STEM content in pre-K-12 computer science education. **Due March 29.**

W.E.B. Du Bois Program of Research on Race and Crime FY 2017

The W.E.B. Du Bois Program furthers the Department's mission by advancing knowledge regarding the confluence of crime, justice, and culture in various societal contexts. It supports research on the intersections of race, offending, victimization, and the fair administration of justice for both juveniles and adults. This solicitation seeks investigator-initiated proposals to conduct research on topics linked to race and crime in violence and victimization, crime and

prevention, and justice systems (policing, courts, community and institutional corrections). For FY2017, NIJ is particularly interested in research on homicide and other violence in minority communities, and criminal court topics. Funding categories include: 1) W.E.B. Du Bois Scholars who are advanced in their careers; and 2) W.E.B. Du Bois Fellows who are early in their careers. **Due March 31.**

URL Links to New & Open Funding Solicitations

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

- HRSA Health Professions Open Opportunities
- NIH Funding Opportunities Relevant to NIAID
- National Institute of Justice Current Funding Opportunities
- Funding Opportunities by the Department of Education Discretionary Grant Programs
- EPA's Office of Air and Radiation (OAR) Open Solicitations
- NETL Open Solicitations
- DoED List of Currently Open Grant Competitions
- Foundation Center RFP Weekly Funding Bulletin

Solicitations Remaining Open from Prior Issues of the Newsletter

Critical Resilient Interdependent Infrastructure Systems and Processes FY17 (CRISP)
The goals of the Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP) solicitation are to: (1) foster an interdisciplinary research community of engineers, computer and computational scientists and social and behavioral scientists, that creates new approaches and engineering solutions for the design and operation of infrastructures as processes and services; (2) enhance the understanding and design of interdependent critical infrastructure systems (ICIs) and processes that provide essential goods and services despite disruptions and failures from any cause, natural, technological, or malicious; (3) create the knowledge for innovation in ICIs so that they safely, securely, and effectively expand the range of goods and services they enable; and (4) improve the effectiveness and efficiency with which they deliver existing goods and services. **Due February 8.**

Algorithms for Modern Power Systems (AMPS)
The Algorithms for Modern Power Systems (AMPS) program will support research projects to develop the next generation of mathematical and statistical algorithms for improvement of the security, reliability, and efficiency of the modern power grid. The program is a partnership between the Division of Mathematical Sciences (DMS) at the National Science Foundation (NSF) and the Office of Electricity Delivery & Energy Reliability (OE) at the U.S. Department of Energy (DOE). **Due February 13.**

Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES) Design and Development Launch Pilots
Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES) is a comprehensive national initiative designed to enhance U.S. leadership in science, technology, engineering and mathematics (STEM) discoveries and innovations focused on NSF's commitment to diversity, inclusion, and broadening participation in these fields. NSF INCLUDES supports efforts to create networked relationships among organizations whose goals include developing talent from all sectors of society to build the STEM workforce. This initiative seeks to improve collaborative efforts aimed at enhancing the preparation, increasing the participation, and ensuring the contributions of individuals from groups that have traditionally been underrepresented and underserved in the STEM enterprise: women, persons with disabilities, African Americans/Blacks, Hispanic

Americans, American Indians, Alaska Natives, Native Hawaiians, Native Pacific Islanders, and persons from economically disadvantaged backgrounds. Significant advancement in the inclusion of these groups will result in a new generation of STEM talent and leadership to secure our nation's future and long-term economic competitiveness. The objective is to develop networks that involve representative organizations and consortia from different sectors that are committed to a common agenda that comprehensively solves a specific STEM-inclusion problem. The long-term goal of NSF INCLUDES is to support innovative models, networks, partnerships, technical capabilities and research that will enable the U.S. science and engineering workforce to thrive by ensuring that traditionally underrepresented and underserved groups are represented in percentages comparable to their representation in the U.S. population. Researchers and practitioners at minority serving institutions are strongly encouraged to participate in this activity given their experience and expertise in broadening participation. **Preliminary February 14. Full May 16.**

Systems Biology: The Next Generation for Infectious Diseases (U19)

This Funding Opportunity Announcement (FOA) solicits applications to establish Systems Biology Centers that use systems biology approaches to build predictive models for infectious diseases. These models will be derived from hypotheses related to systems-level host/pathogen molecular interactions during infection or treatment using integrated datasets generated from a combination of high-throughput experimental approaches, including omics technologies and computational approaches. Importantly, the Centers must clearly integrate experimental approaches and computational modeling to test and validate hypotheses of significance to the infectious diseases field. **LOI February 15.**

Dimensions of Biodiversity FY2017

Despite centuries of discovery, most of our planet's biodiversity remains unknown. The scale of the unknown diversity on Earth is especially troubling given the rapid and permanent loss of biodiversity across the globe. The goal of the Dimensions of Biodiversity campaign is to transform, by 2020, how we describe and understand the scope and role of life on Earth. This campaign promotes novel integrative approaches to fill the most substantial gaps in our understanding of the diversity of life on Earth. It takes a broad view of biodiversity, and focuses on the intersection of genetic, phylogenetic, and functional dimensions of biodiversity. Successful proposals must integrate these three dimensions to understand interactions and feedbacks between and among them. While this focus complements several core programs in BIO, it differs by requiring that multiple dimensions of biodiversity be addressed simultaneously, in novel ways, to understand their synergistic roles in critical ecological and evolutionary processes, especially pertaining to the mechanisms driving the origin, maintenance, and functional roles of biodiversity. The Dimensions of Biodiversity program again includes partnerships with the National Natural Science Foundation of China (NSFC) and São Paulo Research Foundation (FAPESP) of Brazil in fiscal year 2017. **Due February 21.**

Research and Development in Forensic Science for Criminal Justice Purposes

The U.S. Department of Justice (DOJ), Office of Justice Programs (OJP), National Institute of Justice (NIJ) is seeking applications for funding of basic or applied research and development in

forensic science for criminal justice purposes. This program furthers the Department's mission by sponsoring research to provide objective, independent, evidence-based knowledge and tools to meet the challenges of criminal justice, particularly at the state and local levels. NIJ's Forensic Science Technology Working Group (TWG) assists in identifying and prioritizing operational needs and requirements of the field. The forensic science needs discussed at the FY 2015 TWG meeting may be found on NIJ.gov and are intended to facilitate proposal development. See: Forensic Science Technology Working Group: Operational Requirements. **Due February 27**.

Research and Development in Forensic Science for Criminal Justice Purposes

With this solicitation, NIJ seeks proposals for basic or applied research and development projects. An NIJ forensic science research and development grant supports a discrete, specified, circumscribed project that will: (1) increase the body of knowledge to guide and inform forensic science policy and practice, or (2) lead to the production of useful material(s), device(s), system(s), or method(s) 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. The forensic science operational needs discussed at NIJ's FY 2015 Forensic Science TWG meeting may be found on NIJ.gov, and are intended to assist in proposal development. Additional research needs of the forensic science community can be found at the Organization of Scientific Area Committees website. **Applications Due: February 28, 2017**

NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)

The program seeks: 1) to increase the number of low-income academically talented students with demonstrated financial need obtaining degrees in STEM and entering the workforce or graduate programs in STEM; 2) to improve the education of future scientists, engineers, and technicians, with a focus on academically talented low-income students; and 3) to generate knowledge to advance understanding of how factors or evidence-based curricular and co-curricular activities affect the success, retention, transfer, academic/career pathways, and graduation in STEM of low-income students. **Due March 29.**

USDA-NIFA-BRAP-006174 Biotechnology Risk Assessment Research Grants Program (BRAG)

The purpose of the BRAG program is to support the generation of new information that will assist Federal regulatory agencies in making science-based decisions about the effects of introducing into the environment genetically engineered organisms (GE), including plants, microorganisms — such as fungi, bacteria, and viruses — arthropods, fish, birds, mammals and other animals excluding humans. Investigations of effects on both managed and natural environments are relevant. The BRAG program accomplishes its purpose by providing federal regulatory agencies with scientific information relevant to regulatory issues. See RFA for details. Visit the NIFA website to access a factsheet on the Center of Excellence (COE) designation process, including COE criteria, and a list of programs offering COE opportunities in fiscal year 2016. You can also review a recording of COE outreach webinars held in February and March of

2015 from the site. The COE webpages will be updated throughout FY 2016 with additional information, such as a summary of comments received from stakeholders. **Due March 30.**

DOD University Small Grants BAA for Energy-related Basic, Applied, Advanced Research Projects of interest to Dept. of Defense **Due by April 1, 2017**

DARPA Information Innovation Office BAA

I2O sponsors basic and applied research in three thrust areas:

Cyber. As human activity has moved into cyberspace, cyber threats against our information systems have grown in sophistication and number, and protecting and assuring information is a matter of national security. Progress in the cyber security of best-of-breed systems has been significant over the last few years, giving us hope that we are no longer facing an impossible task. Looking to the future, I2O challenges itself with the goal: Win at Cyber. The I2O defensive cyber research and development (R&D) portfolio is focused on high-end cyber threats, including advanced persistent threats (cyber espionage and cyber sabotage) and other sophisticated threats to embedded computing systems, cyber-physical systems, enterprise information systems, and national critical infrastructure. I2O develops technologies that create software that is provably secure, applications that enhance cyberspace situational awareness, and systems for planning military operations in the cyber domain. Exploration of offensive methods is undertaken to inform the defensive cyber R&D and to establish viability of developed techniques with transition partners.

Analytics. Exponential increases in computation, storage, and connectivity have combined over the past five years to fundamentally alter science, engineering, commerce, and national security. Going under names such as “big data,” “machine learning,” and “analytics,” empirical modeling and data-driven approaches are providing powerful insight and competitive advantage for astute practitioners from biology to sports to finance. Through new analytics, algorithms, and software ecosystems, the modern data-centric paradigm exploits the increasingly dense, detailed measurements produced by networked sensors to optimize products, services, operations, and strategy. I2O is working to keep the Department of Defense (DoD) at the forefront of data-driven design and decision-making with the goal: Understand the World. I2O explores fundamental mathematical and computational issues such as complexity and scalability and develops applications in high-impact areas such as intelligence, software engineering, and command and control. I2O coordinates its R&D with the national security community to ensure timely transition of tools and techniques.

Symbiosis. The world is moving faster than humans can assimilate, understand, and act. At present we design machines to handle well-defined, high-volume or high-speed tasks, freeing humans to focus on complexity. I2O envisions a future in which machines are more than just tools that execute pre-programmed instructions. Rather, machines will function more as colleagues. Towards this end, I2O sets a goal: Partner with Machines. The symbiosis portfolio develops technologies to enable machines to understand speech and extract information contained in diverse media, to learn, to reason and apply knowledge gained through experience, and to respond intelligently to new and unforeseen events. Application areas in which machines will prove invaluable as partners include: cyberspace operations, where highly-scripted, distributed cyber attacks have a speed, complexity, and scale that overwhelms human

cyber defenders; intelligence analysis, to which machines can bring super-human objectivity; and command and control, where workloads, timelines and stress can exhaust human operators. **Due August 25.**

Research Interests of the Air Force Office of Scientific Research BAA-AFRL-AFOSR-2016-0007
The Air Force Office of Scientific Research "we, us, our, or AFOSR" manages the basic research investment for the U.S. Air Force. As a part of the Air Force Research Laboratory (AFRL), our technical experts discover, shape, and champion research within the Air Force Research Laboratory, universities, and industry laboratories to ensure the transition of research results to support U.S. Air Force needs. Using a carefully balanced research portfolio, our research managers seek to foster revolutionary scientific breakthroughs enabling the Air Force and U.S. industry to produce world-class, militarily significant, and commercially valuable products. Our focus is on research areas that offer significant and comprehensive benefits to our national warfighting and peacekeeping capabilities. These areas are organized and managed in two scientific Branches: Engineering and Information Sciences (RTA) Physical and Biological Sciences (RTB). **Open until superseded**.

Open Solicitations and BAAs

[BAA's remain open for one or more years. During the open period, agency research priorities may change or other modifications are made to a published BAA. If you are submitting a proposal in response to an open solicitation, as below, check for modifications to the BAA at Grants.gov or by utilizing Modified Opportunities by Agency to receive a Grants.gov notification of recently modified opportunities by agency name.]

US Special Operations Command Broad Agency Announcement
This BAA is intended to solicit extramural research and development ideas, and is issued under the provisions of the Competition in Contracting Act of 1984 (Public Law 98-369), as implemented in Federal Acquisition Regulation 6.102(d) (2) and 35.016. This announcement provides a general description of USSOCOM's research areas of interest, general information, evaluation and selection criteria, and proposal/application preparation instructions. In accordance with FAR 6.102, projects funded under this announcement 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. Projects that are for the development of a specific system or hardware procurement will not be considered. The selection process is highly competitive and the quantity of meaningful proposal/applications (both pre-proposal/pre-applications and full proposal/full applications) typically received exceed the number of awards that available funding can support. This BAA provides a general description of USSOCOM'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. **Open to May 14, 2017.**

W911NF-12-R-0012 Army Research Office Broad Agency Announcement for Basic and Applied Scientific Research

The purpose of this Broad Agency Announcement (BAA) is to solicit research proposals in the engineering, physical, life, and information sciences for submission to the Army Research Office (ARO) for consideration for possible funding. For ease of reference, this BAA is an extraction of the ARO sections of the Army Research Laboratory BAA. (www.arl.army.mil/www/default.cfm?page=8). **Open to May 31, 2017**

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**.

DARPA-BAA-16-46 Defense Sciences Office Office-wide

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 game-changing technologies for U.S. national security. In support of this mission, the DSO Office-wide BAA invites proposers to submit innovative basic or applied research concepts in one or more of the following technical areas: Mathematics, Modeling and Design; Physical Systems; Human-Machine Systems; and Social Systems. Each of these areas is described below and includes a list of example research topics that highlight several (but not all) potential areas of interest. Proposals must investigate innovative approaches that enable revolutionary advances. DSO is explicitly not interested in approaches or technologies that primarily result in evolutionary improvements to the existing state of practice. **Open until June 22, 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.**

Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology Department of Defense

All responsible sources from academia and industry may submit proposals under this BAA. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals. However, no portion of this BAA will be set aside for Small Business or other socio-economic participation. All businesses both small and large are encouraged to submit proposals and compete for funding consideration. B. Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, are not eligible to receive awards under this BAA. However, teaming arrangements between FFRDCs and eligible principal Offerors are allowed so long as such arrangements are permitted under the sponsoring agreement between the Government and the specific FFRDC. C. Navy laboratories, military universities, and warfare centers as well as other Department of Defense and civilian agency laboratories are also not eligible to receive awards under this BAA and should not directly submit either white papers or full proposals in response to this BAA. If any such organization is interested in one or more of the programs described herein, the organization should contact an appropriate ONR Technical POC to discuss its area of interest. The various scientific divisions of ONR are identified at http://www.onr.navy.mil/. As with FFRDCs, these types of federal organizations may team with other eligible sources from academia and industry that are submitting proposals under this BAA. D. University Affiliated Research Centers (UARCs) are eligible to submit proposals under this BAA unless precluded from doing so by their Department of Defense UARC contract. E. Teams are also encouraged and may submit proposals in any and all areas. However, Offerors must be willing to cooperate and exchange software, data and other information in an integrated program with other contractors, as well as with system integrators, selected by ONR. **Open to September 30, 1917.**

HM0210-14-BAA-0001 National Geospatial-Intelligence Agency Academic Research Program

NGA welcomes all innovative ideas for path-breaking research that may advance the GEOINT mission. The NGA mission is to provide timely, relevant, and accurate geospatial intelligence (GEOINT) in support of national security objectives. GEOINT is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. GEOINT consists of imagery, imagery intelligence, and geospatial information. NGA offers a variety of critical GEOINT products in support of U.S. national security objectives and Federal disaster relief, including aeronautical, geodesy, hydrographic, imagery, geospatial and topographical information. The NGA Academic Research Program (NARP) is focused on innovative, far-reaching basic and applied research in science, technology, engineering and mathematics having the potential to advance the GEOINT mission. The objective of the NARP is to support innovative, high-payoff research that provides the basis for revolutionary progress in areas of science and technology affecting the needs and mission of NGA. This research also supports the National System for Geospatial Intelligence (NSG), which is the combination of technology, systems and organizations that gather, produce, distribute and consume geospatial data and information. This research is aimed at advancing GEOINT capabilities by improving analytical methods, enhancing and expanding systems

capabilities, and leveraging resources for common NSG goals. The NARP also seeks to improve education in scientific, mathematics, and engineering skills necessary to advance GEOINT capabilities. It is NGA's intent to solicit fundamental research under this BAA. Fundamental research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from Industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reason. (National Security Decision Directive (NSDD) 189, National Policy on the Transfer of Scientific, Technical, and Engineering Information). NGA seeks proposals from eligible U.S. institutions for path-breaking GEOINT research in areas of potential interest to NGA, the DoD, and the Intelligence Community (IC). **Open to September 30, 2017.**

NOAA-NFA-NFAPO-2016-2004791 FY2016 to FY2017 NOAA Broad Agency Announcement
This notice is not a mechanism to fund existing NOAA awards. The purpose of this notice is to request applications for special projects and programs ***associated with NOAA's strategic plan and mission goals***, as well as to provide the general public with information and guidelines on how NOAA will select proposals and administer discretionary Federal assistance under this Broad Agency Announcement (BAA). **This BAA is a mechanism to encourage research, education and outreach, innovative projects, or sponsorships that are not addressed through our competitive discretionary programs**. Funding for activities described in this notice is contingent upon the availability of Fiscal Year 2016 and Fiscal Year 2017 appropriations. Applicants are hereby given notice that funds have not yet been appropriated for any activities described in this notice. Publication of this announcement does not oblige NOAA to review an application beyond an initial administrative review, or to award any specific project, or to obligate any available funds. **Open to September 30, 2017.**

NOAA-OAR-SG-2016-2004772 National Sea Grant College Program 2016-17 Special Projects
The purpose of this notice is to request proposals for special projects associated with the National Sea Grant College Program's (Sea Grant) strategic focus areas, and to provide the general public with information and guidelines on how Sea Grant will select proposals and administer Federal assistance under this announcement. This announcement is a mechanism to encourage research or other projects that are not normally funded through Sea Grant national competitions. This opportunity is open only to Sea Grant Programs. Section III of this announcement describes eligibility requirements in more detail. Funding has not yet been made available to support applications submitted to this Federal Funding Opportunity (FFO), but such funding may become available during the year. Section II.A. below describes individual competition announcements that will be used to announce when funding is available; any restrictions or requirements on such funding, such as matching funds; and other funding details. Awards will be made under this FFO only if funds have been announced as provided in this FFO. **Open to September 30, 2017.**

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

BARDA (full announcement) encourages the advanced research, development and acquisition of medical countermeasures such as vaccines, therapeutics, and diagnostics, as well as innovative approaches to meet the threat of Pandemic Influenza in support of the preparedness mission and priorities of the HHS Public Health Emergency Medical Countermeasures Enterprise (PHEMCE) articulated in the 2014 PHEMCE Implementation Plan. The Implementation Plan is located on the ASPR website: http://www.phe.gov/Preparedness/mcm/phemce/Documents/2014-phemce-sip.pdf The Pandemic and All Hazard Preparedness Act Pub. L. No. 109-417, 42 U.S.C. § 241 et seq. (PAHPA; http://www.gpo.gov/fdsys/pkg/PLAW-109publ417/pdf/PLAW-109publ417.pdf) and The Pandemic and All Hazard Preparedness Reauthorization Act Pub. L. No. 113-5, (PAHPRA: http://www.gpo.gov/fdsys/pkg/PLAW-113publ5/pdf/PLAW-113publ5.pdf) authorizes BARDA to (i) conduct ongoing searches for, and support calls for, potential qualified countermeasures and qualified pandemic or epidemic products; (ii) direct and coordinate the countermeasure and product advanced research and development activities of the Department of Health and Human Services; (iii) establish strategic initiatives to accelerate countermeasure and product advanced research and development (which may include advanced research and development for purposes of fulfilling requirements under the Federal Food, Drug, and Cosmetic Act or section 351 of this Act) and innovation in such areas as the Secretary may identify as priority unmet need areas; and (iv) award contracts, grants, cooperative agreements, and enter into other transactions, for countermeasure and product advanced research and development. Development Area of Interest: The purpose of this BAA is to solicit proposals that focus on one or more of the following area of interest as listed below: Development Area of Interest; Personal Protective Equipment (Mask and Respirators) for Influenza Infection for All- Hazards; Full-Featured Continuous Ventilators for Influenza and All-Hazards; Influenza Test Systems and Diagnostic Tools; Influenza Therapeutics; Influenza Vaccines BARDA anticipates that research and development activities awarded from this Broad Agency Announcement (BAA) will serve to advance the knowledge and scientific understanding of candidates' to protect the civilian population of the United States against pandemic influenza and serve to advance candidate medical countermeasures towards licensure or approval by the Food and Drug Administration (FDA). **Open to Oct. 24, 2017.**

AFRL Research Collaboration Program

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

FY17 Funding Opportunity Announcement for Navy and Marine Corps Science, Technology, Engineering & Mathematics Education, Outreach and Workforce Program

The ONR seeks a broad range of proposals for augmenting existing or developing innovative solutions that directly maintain, or cultivate a diverse, world-class STEM workforce in order to maintain the U.S. Navy and Marine Corps' technological superiority. The goal of any proposed

effort must provide solutions that will establish and maintain pathways of diverse U.S. citizens who are interested in uniformed or civilian DoN (or Navy and Marine Corps) STEM workforce opportunities. As the capacity of the DoN Science and Technology (S&T) workforce is interconnected with the basic research enterprise and STEM education system, ONR recognizes the necessity to support efforts that can jointly improve STEM student outcomes and align with Naval S&T current and future workforce needs. This announcement explicitly encourages projects that improve the capacity of education systems and communities to create impactful STEM educational experiences for students including active learning approaches and incorporating 21st century skills. Projects must aim to increase student engagement in STEM and persistence of students in STEM degrees, while improving student technical capacity. ONR encourages proposals to utilize current STEM educational research for informing project design and advancing our understanding of how and why students choose STEM careers and opportunities of naval relevance. While this announcement is relevant for any stage of the STEM educational system, funding efforts will be targeted primarily toward the future and current DoN (naval) STEM workforce in High School, all categories of Post-Secondary institutions, the STEM research enterprise, and efforts that enhance the current naval STEM workforce and its mission readiness. **Open to December 31, 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) Solider/Personnel Issues. Funding of research and development (R&D) within ARI areas of interest will be determined by funding constraints and priorities set during each budget cycle. **Open to February 5, 2018.**

BAA-HPW-RHX-2014-0001 Human-Centered Intelligence, Surveillance Air Force Research Lab
This effort is an open-ended BAA soliciting innovative research concepts for the overall mission of the Human-Centered Intelligence, Surveillance, & Reconnaissance (ISR) Division (711 HPW/RHX). It is intended to generate research concepts not already defined and planned by

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

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

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

PAR-16-242 Bioengineering Research Grants (BRG) (R01) Department of Health and Human Services National Institutes of Health

The purpose of this funding opportunity announcement is to encourage collaborations between the life and physical sciences that: 1) apply a multidisciplinary bioengineering approach to the solution of a biomedical problem; and 2) integrate, optimize, validate, translate or otherwise accelerate the adoption of promising tools, methods and techniques for a specific research or clinical problem in basic, translational, or clinical science and practice. An application may

propose design-directed, developmental, discovery-driven, or hypothesis-driven research and is appropriate for small teams applying an integrative approach to increase our understanding of and solve problems in biological, clinical or translational science. **Open to May 9, 2019.**

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

BAA-AFRL-RQKMA-2016-0007 Air Force Research Laboratory, Materials & Manufacturing Directorate, Functional Materials and Applications (AFRL/RXA) Two-Step Open BAA

Air Force Research Laboratory, Materials & Manufacturing Directorate is soliciting White Papers and potentially technical and cost proposals under this two-step Broad Agency Announcement (BAA) that is open for a period of five (5) years. Functional Materials technologies that are of interest to the Air Force range from materials and scientific discovery through technology development and transition, and support the needs of the Functional Materials and Applications mission. Descriptors of Materials and Manufacturing Directorate technology interests are presented in the context of functional materials core technical competencies and applications. Applicable NAICS codes are 541711 and 541712. **Open to April 20, 2021.**

Academic Research Funding Strategies, LLC (Page 1)

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What We Do--

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

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- Training for Faculty - Workshops, seminars and webinars on how to find and compete for research funding from NSF, NIH, DoE and other government agencies as well as foundations. Proposal development retreats for new faculty.
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- Editing and proof reading of journal articles, book manuscripts, proposals, etc.
- Facilities and Instrumentation - Assistance in identifying and competing for grants to fund facilities and instrumentation
- Training for Staff - Professional Development for research office and sponsored projects staff

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