Dear Conference Attendee:

Welcome to the National Science Foundation Grants Conference hosted by Carnegie Mellon University. We hope that you find attendance at the conference to be useful and productive.

We have included presentations on the flash drive provided in your packets. They are also posted on the conference and NSF websites at: [http://www.nsf.gov/bfa/dias/policy/outreach.jsp](http://www.nsf.gov/bfa/dias/policy/outreach.jsp).

Please feel free to let us know if there is anything that we can do to help make the conference a better learning experience. We would also appreciate any comments that you may have to help improve future events of this kind. Evaluations will be distributed electronically during the conference. We also encourage additional feedback via e-mail to outreach@nsf.gov.

Sincerely,

Jean Feldman  
Head, Policy Office  
Division of Institution & Award Support  
Office of Budget, Finance & Award Management
Agenda

Sunday, November 13, 2016
2:00 - 5:00 PM  Conference Pre-Registration (Hotel Lobby)

Monday, November 14, 2016
7:00 - 8:00 AM  Conference Registration & Continental Breakfast (Grand Ballroom Foyer and Urban Room)
8:00 - 8:15 AM  Welcoming Remarks (Grand Ballroom)
8:15 - 8:45 AM  Introduction & NSF Overview (Grand Ballroom): This session will cover the National Science Foundation’s purpose, mandate, organizational structure, program and budget highlights (including current budget status), trends, areas of special emphasis, and other special initiatives.

Presenters:  Martha Rubensten, Chief Financial Officer & Office Head; Office of Budget; Finance & Award Management
Jeremy Leffler, Outreach Specialist; Office of Budget, Finance & Award Management, Division of Institution & Award Support

8:45 - 9:15 AM  Types of NSF Funding Opportunities (Grand Ballroom): Learn about the various mechanisms NSF uses to fund proposals such as RAPID, EAGER, Ideas Labs, and Conferences, to name a few. They’re not all the same!

Presenter:  Jean Feldman, Head, Policy Office; Office of Budget, Finance & Award Management; Division of Institution & Award Support

9:15 - 9:35 AM  Refreshment & Networking Break (Grand Ballroom Foyer)

9:35 - 11:45 AM  Proposal Preparation (Grand Ballroom): NSF Program Officers will review how and when to prepare a proposal, including discussion of what constitutes a project and a proposal of high quality. Presenters will discuss do’s and don’ts, recent procedural changes, as well as the various sources of NSF programmatic opportunities.

Presenters:  Jean Feldman, Head, Policy Office; Office of Budget, Finance & Award Management; Division of Institution & Award Support
Randy Phelps, Staff Associate; Office of the Director; Office of Integrative Activities
Sankar Basu, Program Director; Directorate for Computer & Information Science & Engineering; Division of Computing and Communications Foundations
Sonia Esperança, Program Director; Directorate for Geosciences; Division of Earth Sciences

11:45 - 1:00 PM  Luncheon (Grand Ballroom)
1:00 - 2:40 PM

**Merit Review Process (Grand Ballroom):** NSF Program Officers will discuss the philosophy of merit review and how it works, as well as ad hoc and multi-tiered reviews. Presenters will also cover the role of the Program Officer, timing of proposal submissions, reviewer selection, release of reviewer comments, and conflict-of-interest issues related to merit review.

**Presenters:**
- Christopher Sanford, Program Director; Directorate for Biological Sciences; Division of Biological Infrastructure
- Elizabeth VanderPutten, Deputy Division Director; Directorate for Education & Human Resources
- Hao Ling, Program Director, Directorate for Engineering; Division of Electrical, Communications & Cyber Systems
- Larry Rudolph, General Counsel; Office of the Director; Office of the General Counsel
- Robert O’Conner, Program Director; Directorate for Social, Behavioral & Economic Sciences; Division of Social & Economic Sciences

2:40 - 3:00 PM

**Refreshment & Networking Break (Grand Ballroom Foyer)**

3:00 - 4:00 PM

**Concurrent Sessions:** Program Officers will talk about specific programs and initiatives, and will answer your pressing questions. In addition, NSF administrative staff will offer an NSF IT Modernization / Research.gov session.

**Biological Sciences (BIO) (Oliver CL-Floor)**
- Christopher Sanford, Program Director; Directorate for Biological Sciences; Division of Biological Infrastructure

**Computer & Information Science & Engineering (CISE) (Carnegie III - CL Floor)**
- Sankar Basu, Program Director; Directorate of Computer & Information Science & Engineering; Division of Computing and Communication Foundations

**Education & Human Resources (EHR) (Conference Center B - CL Floor)**
- Elizabeth VanderPutten, Deputy Division Director; Directorate for Education and Human Resources; Division of Research on Learning in Formal and Informal Settings

**Engineering (ENG) (Phipps -CL-Floor)**
- Hao Ling, Program Director; Directorate for Engineering; Division of Electrical, Communications & Cyber Systems

**Mathematical & Physical Sciences (MPS) (Vandergrift -CL-Floor)**
- Lora Billings, Program Director; Directorate for Mathematical & Physical Sciences; Division of Mathematical Sciences

**NSF IT Modernization / Research.gov* (Conference Center C -CL Floor)**
- William Daus, IT Project Manager; Office of Information & Resource Management Division of Information Systems

**Social, Behavioral & Economic Sciences (SBE) (Franklin & Greene -17th Floor)**
- Robert O’Connor, Program Director; Directorate for Social, Behavioral & Economic Sciences; Division of Social & Economic Sciences
4:00 - 4:15 PM  **Refreshment & Networking Break** *(Grand Ballroom Foyer)*

4:15 - 5:00 PM  **Award Management** *(Grand Ballroom)*: This session will address award requirements and conditions, and will outline the responsibilities of those involved in the award process—principal investigators, grantee institutions, Program Officers, research administrators, and agency grants officials.

**Presenters:**
Jeoffrey Vieceli, Head; Systems Office; Office of Budget, Finance & Award Management; Division of Institution & Award Support
Kim Bub, Staff Associate; Office of Budget, Finance & Award Management; Division of Grants & Agreements

5:00 - 6:00 PM  **Reception & Networking Event Co-hosted by NSF and Carnegie Mellon University** *(Urban Room)*

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**Tuesday, November 15, 2016**

7:00 - 8:00 AM  **Conference Registration & Continental Breakfast** *(Grand Ballroom Foyer and Urban Room)*

8:00 - 9:00 AM  **NSF Policy Update** *(Grand Ballroom)*: This session will provide an update to NSF policies and procedures that affect proposal preparation, merit review, and award administration.

**Presenter:**
Jean Feldman, Head, Policy Office; Office of Budget, Finance & Award Management; Division of Institution & Award Support

9:00 - 9:20 AM  **Refreshment & Networking Break**

9:20 - 10:20 AM  **Concurrent Sessions**: Program Officers and administrative staff will talk about specific programs and initiatives, and will answer your pressing questions. Sessions include International Programs and NSF Award Cash Management Service & Financial Reporting Processes as well as an Emerging Research Institution Roundtable.

**Education & Human Resources (EHR)** *(Conference Center B - CL Floor)*
Elizabeth VanderPutten, Deputy Division Director; Directorate for Education and Human Resources; Division of Research on Learning in Formal and Informal Settings

**Emerging Research Institution (ERI) Roundtable** *(Carnegie III - CL Floor)*
Dale Bell, Division Director; Office of Budget, Finance & Award Management; Division of Institution & Award Support

Heather Lenee Thomas, Policy Specialist (IPA); Policy Office; Division of Institution and Award Support

Jeremy Leffler, Outreach Specialist; Office of Budget, Finance & Award Management; Division of Institution and Award Support

**Engineering (ENG)** *(Phipps -CL-Floor)*
Hao Ling, Program Director; Directorate for Engineering, Division of Electrical, Communications & Cyber Systems

**Geosciences (GEO)** *(Vandergrift - CL-Floor)*
Sonia Esperança, Program Director; Directorate for Geosciences; Division of Earth Sciences
NSF Award Cash Management Service (ACMS) & Financial Reporting Processes* (Conference Center C - CL Floor)
Christopher Berner, Operating Accountant; Office of Budget, Finance & Award Management; Division of Financial Management

Social, Behavioral & Economic Sciences (SBE) (Franklin & Greene -17th Floor)
Robert O’Connor, Program Director; Directorate for Social, Behavioral & Economic Sciences; Division of Social & Economic Sciences

10:20 - 10:40 AM Refreshment & Networking Break (Grand Ballroom Foyer)

10:40 - 11:20 AM Office of Inspector General (Grand Ballroom): Staff from the Office of Inspector General (OIG) will discuss the roles and responsibilities of the OIG, as well as how it serves the NSF customer communities. Issues arising from current audits and investigations will also be covered.
Presenter: Maria Maguire, Assistant Inspector General for Audit (Acting); Office of the Inspector General

11:20 - 12:00 PM Office of International Science and Engineering (Grand Ballroom): The Office of International Science and Engineering (OISE) supports programs to expand and enhance leading-edge international research and education opportunities for U.S. scientists and engineers, especially at the early career stage. Staff will discuss the OISE role in coordinating activities as well as how to incorporate international components in NSF proposals.
Presenter: Joseph T. Miller, Program Manager; Office of International Science and Engineering

12:00 - 1:15 PM Luncheon (Grand Ballroom)

1:15 - 2:15 PM Concurrent Sessions: Program Officers and administrative staff will talk about specific programs and initiatives, and will answer your pressing questions. In addition, sessions will cover the Major Research Instrumentation Program and Post Award Monitoring & Compliance.

Biological Sciences (BIO) (Oliver -CL-Floor)
Christopher Sanford, Program Director; Directorate for Biological Sciences; Division of Biological Infrastructure

Computer & Information Science & Engineering (CISE) (Franklin & Greene -17th Floor)
Sankar Basu, Program Director; Directorate of Computer & Information Science & Engineering; Division of Computing and Communication Foundations

International Research & Education Collaboration: Opportunities & Resources at NSF* (Phipps - CL-Floor)
Joseph T. Miller, Program Manager; Office of International Science and Engineering

Major Research Instrumentation (MRI) Program* (Conference Center C -CL Floor)
Randy Phelps, Staff Associate; Office of the Director; Office of Integrative Activities

Mathematical & Physical Sciences (MPS) (Vandergrift - CL-Floor)
Lora Billings, Program Director; Directorate for Mathematical & Physical Sciences; Division of Mathematical Sciences
Post Award Monitoring & Compliance* (Conference Center B - CL Floor)
Beatriz Azor, Cost Analyst; Office of Budget, Finance & Award Management; Division of Institution & Award Support

2:15 - 2:30 PM Refreshment & Networking Break (Grand Ballroom Foyer)

2:30 - 4:00 PM Faculty Early Career Development (CAREER) Program (Grand Ballroom): Learn about this Foundation-wide activity that offers NSF’s most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars.

Presenter: Sonia Esperança, Program Director; Directorate for Geosciences; Division of Earth Sciences

4:00 PM Conference Wrap-up & Adjournment (Grand Ballroom)

* These sessions will only be offered once.
Breakout Session Descriptions

NSF Directorates Sessions

A representative from each NSF Directorate will provide an overview of the programs supported by each respective disciplines. Don’t miss your chance to ask questions in these smaller group sessions.

Biological Sciences (BIO): The BIO Directorate supports research to advance understanding of the principles and mechanisms governing life. Research studies extend across systems that encompass biological molecules, cells, tissues, organs, organisms, populations, communities, and ecosystems up to and including the global biosphere. Comprehensive concepts that bridge and unify the diverse areas of biology include complexity, robustness, communication, resilience, adaptability, and cooperation. Achieving a coherent understanding of the complex biological web of interactions that is life is a major challenge of the future. This challenge will require that knowledge about the structure and dynamics of individual biological units, networks, sub-systems and systems be compiled and connected from the molecular to the global level and across scales of time and space. Integral to all activities across the directorate is a commitment to integrate research and education, broaden participation, and promote international partnerships.

Computer & Information Science & Engineering (CISE): The Directorate for Computer and Information Science and Engineering has four goals: (1) to enable the U.S. to uphold a position of world leadership in computing, communications, and information science and engineering; (2) to promote understanding of the principles and uses of advanced computing, communications and information systems in service to society; (3) to support and provide advanced cyberinfrastructure to enable and accelerate discovery and innovation across all disciplines; and (4) to contribute to universal, transparent and affordable participation in an information-based society. To achieve these, CISE supports investigator initiated research in all areas of computer and information science and engineering, fosters broad interdisciplinary collaboration, helps develop and maintain cutting-edge national computing and information infrastructure for research and education, and contributes to the development of a computer and information technology workforce with skills essential for success in the increasingly competitive global market.

Education & Human Resources (EHR): The mission of EHR is to achieve excellence in U.S. science, technology, engineering and mathematics (STEM) education at all levels and in all settings (both formal and informal) in order to support the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians and educators and a well-informed citizenry that have access to the ideas and tools of science and engineering. The purpose of these activities is to enhance the quality of life of all citizens and the health, prosperity, welfare and security of the nation. Goals of the EHR Directorate are to: (1) prepare the next generation of STEM professionals and attract and retain more Americans to STEM careers; (2) develop a robust research community that can conduct rigorous research and evaluation that will support excellence in STEM education and that integrates research and education; (3) increase the technological, scientific and quantitative literacy of all Americans so that they can exercise responsible citizenship and live productive lives in an increasingly technological society; and (4) broaden participation (individuals, geographic regions, types of institutions, STEM disciplines) and close achievement gaps in all STEM fields.

Engineering (ENG): The ENG Directorate promotes the progress of engineering in the U.S. in order to enable the nation’s capacity to perform. Its investments in engineering research and education aim to build and strengthen a national capacity for innovation that can lead over time to the creation of new shared wealth and a better quality of life. While scientists seek to discover what is not yet known, engineers apply fundamental science to design and develop new devices and engineered systems to solve societal problems. Engineering research shapes our world through the design and development of devices and systems that meet many different kinds of human needs, including new technologies for improved health care, enhanced safety and security, and long-term economic prosperity. Most NSF programs in engineering are funded through the Directorate for Engineering, which also sponsors NSF’s Small Business Innovation Research (SBIR) program.

Geosciences (GEO): The mission of the GEO Directorate is to support research in the atmospheric, earth, ocean, and polar sciences. GEO funds basic research that advances the frontiers of knowledge and drives technological innovation while improving our understanding of the many processes that affect the global environment. These
processes include the role of the atmosphere and oceans in climate, the planetary water cycle, and ocean acidification. Support is provided for interdisciplinary studies that contribute directly to national research priorities such as understanding, adapting to, and mitigating the impacts of global change; developing and deploying integrated ocean observing capabilities to support ecosystem-based management; and understanding future availability of fresh water. Lives are saved and property is preserved through better prediction and understanding of natural environmental hazards such as earthquakes, tornados, hurricanes, tsunamis, drought, and solar storms. Basic research supported by GEO enables preparation for and subsequent mitigation of, or adaptation to, the effects of these and other disruptive natural events. In addition, as the primary U.S. supporter of fundamental research in the polar regions, GEO provides interagency leadership for U.S. polar activities.

The Geosciences breakout session will only be offered once.

Mathematical & Physical Sciences (MPS): The mission of the MPS Directorate is to harness the collective efforts of the mathematical and physical sciences communities to address the most compelling scientific questions, educate the future advanced high-tech workforce, and promote discoveries to meet the needs of the nation. The scope of scientific and educational activity supported in MPS is enormous, ranging from phenomena at cosmological distances, to environmental science on the human scale, through quantum mechanical processes in atomic and subatomic physics, to phenomena of the unimaginably small. MPS researchers explore the abstract ideas, concepts, and structures of mathematics as well as more tangible “stuff”—the materials used in our everyday lives. They use tools ranging from desktop instruments to synchrotron light sources, accelerators, radio and optical telescopes, and high magnetic fields. The rapid development of computational and communications capabilities is leading to the development of a new set of tools that enable new kinds of science—cyberscience.

Social, Behavioral & Economic Sciences (SBE): NSF’s Directorate for Social, Behavioral, and Economic (SBE) Sciences supports basic research on people and society. The SBE sciences focus on human behavior and social organizations and how social, economic, political, cultural, and environmental forces affect the lives of people from birth to old age and how people in turn shape those forces. SBE scientists develop and employ rigorous methods to discover fundamental principles of human behavior at levels ranging from cells to society, from neurons to neighborhoods, and across space and time. Such fundamental principles help us understand patterns of stability and change at the individual, group, organizational, and societal levels that can be applied to promote the progress of science and to advance the national health, prosperity, and welfare. Through its various core disciplinary and interdisciplinary programs, as well as contributions to cross-directorate NSF investments, SBE supports approximately 5,000 scientists, educators, and students in a typical year. Understanding human behavior individually and in groups has far-reaching impacts from optimizing child development to safeguarding our troops; from exploring the origins of our species to finding our way with GPS; from understanding the state of the science and engineering enterprise to securing cyberspace.

Additional Breakout Sessions

The following breakout sessions cover an array of topics from information on NSF’s International and Major Research Instrumentation Programs to discussions about NSF’s business and financial services. NSF Program and administrative representatives look forward to speaking with you and answering your specific questions in these smaller group sessions. Each of the following breakout sessions will only be offered once.

Emerging Research Institution (ERI) Roundtable: This session is specifically for organizations relatively new to managing Federal funds (fewer than 15 NSF awards) and will focus on policies and best practices for internal controls, preparing for audits, as well as understanding Federal and NSF policies, procedures, and other administrative requirements. Join our panel of experts from NSF’s Office of Budget, Finance, and Award Management (BFA) for an open dialogue and an opportunity to interact with other organizations. Bring your questions, experiences, and war stories!

International Research & Education Collaboration - Opportunities & Resources at NSF: NSF representatives from the Office of International Science and Engineering (OISE) will discuss OISE’s role in funding international projects and will highlight international research opportunities and students’ research abroad programs supported across NSF. OISE works across disciplinary and geographic boundaries to lead and coordinate strategic programs and opportunities that advance research excellence and innovation; develop human and infrastructure capacity critical to the U.S. science and engineering enterprise; and promote global engagement of scientists and engineers at all
career stages. OISE carries out its functions through close partnership with the NSF Directorates and through its own program activities including administering prestigious honorary award programs and professional internships for aspiring scientists and engineers.

**NSF IT Modernization / Research.gov:** Research.gov is the modernization of FastLane, providing the next generation of grants management capabilities for the research community. Research.gov currently provides easy access to research-related information and grants management services in one location. The modernization includes moving legacy FastLane capabilities to a new, modern portal platform. Programmatic and financial reporting services are already available on Research.gov. Come to this panel discussion to learn about these and future changes, ask questions about NSF’s plans for electronic research administration, and share what you think the priorities should be so NSF can best serve the research community.

**Major Research Instrumentation (MRI) Program:** NSF’s Major Research Instrumentation (MRI) Program catalyzes new knowledge and discoveries by empowering the nation’s scientists and engineers with state-of-the-art research instruments that are, in general, too costly and/or not appropriate for support through other NSF programs. The program provides organizations with opportunities to acquire major instrumentation that supports the research and research training goals of the organization and that may be used by other researchers regionally or nationally. Come to this crosscutting session to learn more about what types of awards are made by the program, eligibility criteria, and cost sharing requirements.

**NSF Award Cash Management Service (ACMS) & Financial Reporting Processes:** Representatives from the Division of Financial Management (DFM) will provide an overview of NSF’s grant payment and reporting processes. Topics will include ACMS, monitoring activities, program income, grant accrual validation, improper payments, and cancelling appropriations.

**Post Award Monitoring & Compliance:** Representatives from the Cost Analysis & Audit Resolution Branch of DIAS will cover the oversight and monitoring of Federal awards. Topics will include the overall Federal context for oversight, stewardship of Federal funds, the “NSF Gold Standard” model for award portfolio monitoring and business assistance, compliance issues, and other common areas of concern.
Breakout Room Assignments

Monday, November 14, 2016

3:00-4:00 PM  Biological Sciences (BIO) (Oliver, Floor CL)
              Computer & Information Science & Engineering (CISE) (Carnegie III, Floor CL)
              Education & Human Resources (EHR) (Conference Center B, Floor CL)
              Engineering (ENG) (Phipps, Floor CL)
              Mathematical & Physical Sciences (MPS) (Vandergrift, Floor CL)
              NSF IT Modernization / Research.gov* (Conference Center C, Floor CL)
              Social, Behavioral & Economic Sciences (SBE) (Franklin & Greene, Floor 17)

Tuesday, November 15, 2016

9:20-10:20 AM  Education & Human Resources (EHR) (Conference Center B, Floor CL)
               Emerging Research Institution (ERI) Roundtable* (Carnegie III, Floor CL)
               Engineering (ENG) (Phipps, Floor CL)
               Geosciences (GEO)* (Vandergrift, Floor CL)
               NSF Award Cash Management Service (ACMS) and Financial Reporting Processes* (Conference Center C, Floor CL)
               Social, Behavioral & Economic Sciences (SBE) (Franklin & Greene, Floor 17)

1:15-2:15 PM  Biological Sciences (BIO) (Oliver)
              Computer & Information Science & Engineering (CISE) (Carnegie III, Floor CL)
              International Research & Education Collaboration: Opportunities & Resources at NSF* (Phipps, Floor CL)
              Major Research Instrumentation (MRI) Program* (Conference Center C, Floor CL)
              Mathematical & Physical Sciences (MPS) (Vandergrift, Floor CL)
              Post Award Monitoring & Compliance* (Conference Center B, Floor CL)

* These sessions will only be offered once.
Introduction and NSF Overview
Martha Rubenstein
Chief Financial Officer and Office Head, Office of Budget, Finance & Award Management

Introduction and NSF Overview
Topics Covered

- Origins of NSF
- NSF Organization
- NSF Budget in the Federal Context
- NSF Fiscal Year 2017 Budget
- Funding Trends
- Key Documents
- Questions

“Ask Early, Ask Often!”
“To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense...”
Basic research results in general knowledge and an understanding of nature and its laws. This general knowledge provides the means of answering a large number of important practical problems.

- Vannevar Bush
• Independent Agency
• Supports basic research & education
• Uses grant mechanism
• Low overhead; highly automated
• Discipline-based structure
• Cross-disciplinary mechanisms
• Use of Rotators/IPAs
• National Science Board
How NSF is Organized

- National Science Board (NSB)
  - Office of the Inspector General (OIG)
  - Mathematical & Physical Sciences (MPS)
    - Geosciences (GEO)
    - Information & Resource Management (IRM)
    - Budget, Finance & Award Management (BFA)
    - Education & Human Resources (EHR)
    - Social, Behavioral & Economic Sciences (SBE)
    - Computer & Information Science & Engineering (CISE)
    - Engineering (ENG)
  - Office of International Science & Engineering
  - Office of Integrative Activities
  - Office of Legislative & Public Affairs
  - Office of the General Counsel
  - Office of Diversity & Inclusion

Director Deputy Director

Director

NSF

Carnegie Mellon University
FY 2017 Request: Total R&D by Agency

Budget Authority in Billions of Dollars

Total R&D = $152.3 billion
Total NSF Request

- $7.964 billion
  - $501 million increase
  - 6.7 percent over FY 2016

Enacted

- Two Funding Sources
  - $7.564 billion, discretionary funding (+1.3 percent)
  - $400 million, new one-time mandatory/direct spending authority
NSF by the Numbers

- **$8B** FY 2017 budget request
- **93%** funds research, education and related activities
- **49,000** to reflect 2016

- **12,000** awards funded
- **2,000** NSF-funded institutions
- **350,000** NSF-supported researchers

- Fund research in all S&E disciplines
- Funds STEM education & workforce
- **217** Nobel Prize winners
As a Percentage of Total Federal Support

<table>
<thead>
<tr>
<th>Field</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPUTER SCIENCE</td>
<td>82%</td>
</tr>
<tr>
<td>BIOLOGY</td>
<td>68%</td>
</tr>
<tr>
<td>SOCIAL SCIENCES</td>
<td>67%</td>
</tr>
<tr>
<td>MATHEMATICS</td>
<td>61%</td>
</tr>
<tr>
<td>ENVIRONMENTAL SCIENCES</td>
<td>59%</td>
</tr>
<tr>
<td>ENGINEERING</td>
<td>41%</td>
</tr>
<tr>
<td>PHYSICAL SCIENCES</td>
<td>40%</td>
</tr>
<tr>
<td>ALL SCIENCE AND ENGINEERING FIELDS</td>
<td>24%</td>
</tr>
</tbody>
</table>
## NSF Budget by Appropriation ($ in Millions)

<table>
<thead>
<tr>
<th>Appropriation</th>
<th>FY 2017 Request</th>
<th>Change over FY 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research &amp; Related Activities</td>
<td>$6,425.44</td>
<td>$391.79 6.5%</td>
</tr>
<tr>
<td>Education &amp; Human Resources</td>
<td>$952.86</td>
<td>$72.86 8.3%</td>
</tr>
<tr>
<td>Major Research Equipment &amp; Facilities Construction</td>
<td>$193.12</td>
<td>-$7.19 -3.6%</td>
</tr>
<tr>
<td>Agency Operations &amp; Award Management</td>
<td>$373.02</td>
<td>$43.02 13.0%</td>
</tr>
<tr>
<td>National Science Board</td>
<td>$4.38</td>
<td>*</td>
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<tr>
<td>Office of Inspector General</td>
<td>$15.20</td>
<td>*</td>
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<tr>
<td><strong>Total NSF</strong></td>
<td><strong>$7,964.02</strong></td>
<td><strong>$500.53 6.7%</strong></td>
</tr>
</tbody>
</table>

Totals may not add due to rounding.

* denotes <$50,000 or <1%
NSF Funding Profile, FY 2016 - 2017

Research Grants Awards

<table>
<thead>
<tr>
<th></th>
<th>FY 2016 (Actual)</th>
<th>FY 2017 (Estimate)</th>
<th>FY 2017 (Estimate)*</th>
</tr>
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<tbody>
<tr>
<td>Awards</td>
<td>8,800</td>
<td>9,300</td>
<td>10,100</td>
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<tr>
<td>Competitive Proposals</td>
<td>32,200</td>
<td>33,900</td>
<td>34,900</td>
</tr>
<tr>
<td>Funding Rate (%)</td>
<td>21%</td>
<td>22%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Legend:
- **Awards**
- **Competitive Proposals**
- **Funding Rate (%)**
What to Watch

• Currently under Continuing Resolution until Dec. 9
• Further Action on FY 2017 Appropriations
• NSF’s Reauthorization
• FY 2018 Request
NSF Appropriations Dates Versus Start of Federal Fiscal Year Oct. 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Days from October 1</th>
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<tbody>
<tr>
<td>2016</td>
<td>77</td>
</tr>
<tr>
<td>2015</td>
<td>75</td>
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<td>27</td>
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<tr>
<td>1991</td>
<td>34</td>
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Distribution by Average Reviewer Ratings

- No Score: 1,374
- Poor to Fair: 1,573
- Fair to Good: 10,711
- Good to Very Good: 17,565
- Very Good to Excellent: 5,058
- Excellent: 3,190

Awards: 2,179, 99, 2,442, 3,962, 1,132
NSF Award Portfolio

- Over $27 billion in total award funding
- Over 42,000 active awards
  - Standard and continuing grants
  - Cooperative agreements
  - Graduate research fellowships
  - Other awards
- Over 2,000 Awardees
  - Universities / 4-year colleges
  - Non-profit organizations
  - For-profit organizations
  - Community colleges
  - Other awardees

**Type of Award Instrument**

- 65% Standard Grant
- 32% Continuing Grant
- 2% Fellowships
- 1% Cooperative Agreement
- <1% Other Awards

**Type of Awardee Institution**

- 91% Universities / 4-year colleges
- 4% Non-Profit
- 1% For Profit
- 2% Community College
- 2% Other
Conference Award Portfolio

• Carnegie Mellon University
  ▪ 437 active awards totaling $266.6 million
  ▪ 3,466 lifetime awards totaling $1.4 billion

• Conference Attendees
  ▪ 96 of 113 organizations registered have 14,305 active awards totaling $10.3 billion
Key Documents

• Proposal & Award Policies & Procedures Guide

• Fiscal Year 2017 Budget Request
  ▪ www.nsf.gov/about/budget/fy2017/index.jsp

• NSF Strategic Plan for Fiscal Years 2014-2018

• NSB Report on Merit Review
Ask Early, Ask Often!

nsf.gov/staff
nsf.gov/staff/orglist.jsp
nsf.gov/about/career_opps/rotators/index.jsp
Funding Types

National Science Foundation
Fall Grants Conference

Pittsburgh, PA - November 14 & 15 - Carnegie Mellon University
Jean Feldman
Head, Policy Office; Office of Budget, Finance & Award Management; Division of Institution & Award Support

Funding Type Overview
Types of NSF Proposals

- Research
- RAPID & EAGER
- RAISE
- GOALI
- Ideas Lab
- FASED
- Conferences
- Equipment
- Travel
- Facility / Center
- Fellowships
The RAPID funding mechanism is for projects having a severe urgency with regard to availability of, or access to data, facilities or specialized equipment, including quick-response research on natural or anthropogenic disasters and similar unanticipated events.
EArly-concept Grants for Exploratory Research (EAGER)

This work is considered especially "high risk-high payoff" because it involves radically different approaches, applies new expertise, or engages novel disciplinary or interdisciplinary perspectives.

The EAGER funding mechanism may be used to support exploratory work in its early stages on untested, but potentially transformative, research ideas or approaches.
• Supports bold, interdisciplinary projects
• Proposals may be up to $1 million and five years and require the approval of two different programs of NSF
• Submitted as a single project with subawards
• Must address how the project is better suited for RAISE than a regular NSF proposal
• Internally reviewed
Grant Opportunities for Academic Liaison with Industry (GOALI)

• Stimulates collaboration between academic research institutions and industry
• Funding requested either in conjunction with a regular proposal to a standing program or as a supplement to an existing NSF award
• Proposer must contact NSF Program Officer prior to submission
• Special interest is focused on opportunities for:
  ▪ Interdisciplinary university-industry teams where industry provides critical research expertise;
  ▪ Faculty, postdoctoral fellows and student to conduct research and gain experience in an industrial setting; and
  ▪ Industrial scientists and engineers to bring industry’s perspective and integrative skills to academe.
Ideas Lab

Supports the development and implementation of creative and innovative project ideas that have the potential to transform research paradigms and/or solve intractable problems.

Project ideas typically will be high-risk/high-impact, as they represent new and unproven ideas, approaches and/or technologies.

Modeled on the "sandpit" workshops that are a key component of the United Kingdom Research Council’s "IDEAs Factory" program.
• Designed to reduce or remove barriers to participation in research and training by persons with physical disabilities by providing special equipment and assistance under NSF awards
• Encourages persons with disabilities to pursue careers in science and engineering
• NSF Program Officers make decisions what constitutes appropriate support on a case-by-case basis.
• Requests are made in conjunction with regular competitive proposals or as supplemental funding requests to existing NSF awards.
Conferences

• NSF supports conferences in special areas of science and engineering that bring experts together to discuss recent research or education findings or to expose other researchers or students to new research and education techniques.

• Conferences will be supported only if equivalent results cannot be obtained at regular meetings of professional societies.

• Proposals should generally be made at least a year in advance of the scheduled date.
Proposals for specialized equipment may be submitted by an organization for:

- Individual investigators;
- Groups of investigators within the same department;
- Several departments;
- Organization(s) participating in a collaborative or joint arrangement;
- Components of an organization; or
- A region.

One individual must be designated as PI.

Investigators may be working in closely related areas or their research may be multidisciplinary.

Major Research Instrumentation (MRI) Program for large-scale instrumentation acquisition.
• Proposals for travel support for U.S. participation in international scientific and engineering meetings held abroad are handled by the NSF organizational unit with program responsibility for the area of interest.

• Group travel awards are encouraged as the primary means of support for international travel.

• Group travel proposals may request support only for the international travel costs of the proposed activity.
• Centers exploit opportunities in science, engineering and technology in which the complexity of the research problem(s) or the resources needed to solve the(se) problem(s) require the advantages of scope, scale, change, duration, equipment, facilities, and students that can only be provided by an academic research center.

• Most Center awards are limited to a maximum duration of ten years and are often subject to mid-course external merit review.
• Two types of fellowships include Graduate Research Fellowships and Postdoctoral Fellowships
• Fellowships provide support for fellows with a focus on educational developments such as curricula development, training or retention.
• Consult the relevant program solicitation for further details.
• Fellowship programs available at:
  ▪ [nsf.gov/funding/education.jsp?fund_type=3](nsf.gov/funding/education.jsp?fund_type=3)
Ask Early, Ask Often!

nsf.gov/staff
nsf.gov/staff/orglist.jsp
nsf.gov/about/career_opps/rotators/index.jsp
Panelists

**Sankar Basu**  
Program Director, Directorate for Computer & Information Sciences & Engineering; Division of Computing and Communication Foundations

**Sonia Esperança**  
Program Director, Directorate for Geosciences; Division of Earth Sciences

**Jean Feldman**  
Head, Policy Office, Office of Budget, Finance & Award Management; Division of Institution & Award Support

**Randy Phelps**  
Staff Associate, Office of the Director; Office of Integrative Activities
Topics Covered

• Find Funding Opportunities
• Proposal & Award Policies and Procedures Guide
• Types of Proposal Submissions
• Sections of an NSF Proposal
• Postdoctoral Mentoring Plans
• Data Management Plans

“Ask Early, Ask Often!”
NSF Funding & Research Community

SPECIAL NOTICES

NSF and Congress: Latest Actions
NSF releases DRAFT Proposal & Award Policies & Procedures Guide (PAPPG) in the Federal Register for public comment
Science Policy
Dear Colleague Letter: NSF INCLUDES (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science)
New Steps to Enhance Transparency and Accountability at the National Science Foundation, Important Notice No. 137, January 13, 2015
NSF Strategic Plan for FY 2014-2018

EVENT CALENDAR

AUGUST 22, 2016 - AUGUST 22, 2016
National Science Foundation at the American Chemical Society Meeting, August 22-24, 2016
OUTREACH

AUGUST 23, 2016 - AUGUST 23, 2016
National Science Foundation at the American Chemical Society Meeting, August 22-24, 2016
OUTREACH

FUNDING OPPORTUNITIES

Search Funding Opportunities
Enter search term
GO

or Search by Program Area
Select One
GO

VIEW ALL FUNDING OPPORTUNITIES

Proposal and Award Policies and Procedures Guide
Prepare a Proposal
Upcoming Due Dates
Submit Proposal to FastLane
Other Ways to Find Funding

Use Grant.gov’s Search Feature
What is the Proposal & Award Policies & Procedures Guide?

The Proposal & Award Policies & Procedures Guide (PAPPG) contains documents relating to NSF's proposal and award process. It has been designed for use by both our customer community and NSF staff and consists of two parts.

- Part I is NSF’s proposal preparation and submission guidelines
- Part II is NSF’s award and administration guidelines
What is the Proposal & Award Policies & Procedures Guide?

• Provides guidance for preparation and submission of proposals to NSF
• Describes process – and criteria – by which proposals will be reviewed
• Outlines reasons why a proposal may not be accepted or returned without review
• Describes process for withdrawals, returns, and declinations
• Includes policies to guide, manage, and monitor the award and administration of grants and cooperative agreements
Types of Funding Opportunities

**Program Descriptions**
• Proposals for a **Program Description** must follow the instructions in the GPG.

**Program Announcements**
• Proposals for a **Program Announcement** must follow the instructions in the GPG.

**Program Solicitations**
• Proposals must follow the instructions in the **Program Solicitation**; the instructions in the GPG apply unless otherwise stated in the solicitation.

**Dear Colleague Letters**
• Dear Colleague Letters are notifications of opportunities or special competitions for supplements to existing NSF awards.
What to Look for in a Program Announcement or Solicitation

- Goal of Program
- Eligibility
- Special proposal preparation and/or award requirements
Sample Cover Page of a Solicitation

**Discovery Research PreK-12 (DRK-12)**

**PROGRAM SOLICITATION**
**NSF 15-592**

**REPLACES DOCUMENT(S):**
**NSF 13-601**

National Science Foundation

Directorate for Education & Human Resources
Research on Learning in Formal and Informal Settings

**Full Proposal Deadline(s) (due by 5 p.m. proposer’s local time):**
- December 07, 2015
- December 05, 2016
- First Monday in December, Annually Thereafter

Program Solicitation Number

NSF Directorates and Offices providing funding for this opportunity
**Award Information**

**Anticipated Type of Award:** Standard Grant or Continuing Grant

**Estimated Number of Awards:** 35 to 45 per year. It is anticipated that about 10-15 Level I awards, 15-20 Level II awards, 5-10 Level III awards, and 5 Conference/Synthesis awards will be made in FY 2016, pending availability of funds.

**Anticipated Funding Amount:** $50,000,000

Pending availability of funds, NSF anticipates having approximately $100,000,000 available over the two fiscal year period FY2016-2017 for support of the DRK-12 portfolio. Approximately $50,000,000 will be available for the FY2016 competition and approximately $50,000,000 will be available for the FY2017 competition.

Normal limits for funding requests of DRK-12 proposals are as follows: (1) Level I projects up to $450,000 with duration up to three years; (2) Level II projects up to $3,000,000 with duration up to four years; and (3) Level III projects up to $5,000,000 with duration up to five years. The three levels of funding should align with the maturity of the proposed work, the size and scope of the empirical effort, as well as the capacity of the interdisciplinary team to conduct the proposed research.
Eligibility Information

Who May Submit Proposals:
The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

Who May Serve as PI:
There are no restrictions or limits.

Limit on Number of Proposals per Organization:
There are no restrictions or limits.

Limit on Number of Proposals per PI or Co-PI:
There are no restrictions or limits.
Types of Proposal Submissions

Proposals may be submitted at any time

NO DEADLINES

F. When to Submit Proposals

Proposers should allow adequate time for NSF review and processing of proposals (see GPG Chapter I.H for further information). Many NSF programs accept proposals at any time. Other programs, however, establish due dates for submission of proposals. The following types of due dates are utilized by NSF:

1. **Target dates**: dates after which proposals will still be accepted, although they may miss a particular panel or committee meeting.

2. **Deadline dates**: dates after which proposals be returned without review by NSF. The deadline date will be waived only in extenuating circumstances. Such a deviation only may be authorized in accordance with GPG Chapter II.A.
Types of Proposal Submissions

TARGET DATES

Talk to the Program Office if you think you might miss the date

F. When to Submit Proposals

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Types of Proposal Submissions

DEADLINE DATES

Proposals will not be accepted after this date and time (5 p.m. submitter’s local time)

F. When to Submit Proposals

Proposers should allow adequate time for NSF review and processing of proposals (see GPG Chapter I.H for further information). Many NSF programs accept proposals at any time. Other programs, however, establish due dates for submission of proposals. The following types of due dates are utilized by NSF:

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Types of Proposal Submissions

SUBMISSION WINDOWS

Proposals will not be accepted after this date and time (5 p.m. submitter’s local time)

3. Submission windows: designated periods of time during which proposals will be accepted for review by NSF. It is NSF’s policy that the end date of a submission window converts to, and is subject to, the same policies as a deadline date.
Types of Proposal Submissions

LETTERS OF INTENT

Enables better management of reviewers and panelists

1. Letters of Intent

Some NSF program solicitations require or request submission of a letter of intent (LOI) in advance of submission of a full proposal. An LOI is not a binding document. The predominant reason for its use is to help NSF program staff gauge the size and range of the competition, enabling earlier selection and better management of reviewers and panelists. In addition, the information contained in an LOI is used to help avoid potential conflicts of interest in the review process.

An LOI normally contains the Principal Investigator’s (PI’s) and co-PI’s names, a proposed title, a list of possible participating organizations (if applicable), and a synopsis that describes the work in sufficient detail to permit an appropriate selection of reviewers. An LOI is not externally evaluated or used to decide on funding. The requirement to submit an LOI will be identified in the program solicitation, and such letters are submitted electronically to NSF. Failure to submit a required LOI identified in a program solicitation will result in a full proposal not being accepted or returned without review.
Types of Proposal Submissions

PRELIMINARY PROPOSALS

Sometimes required, sometimes optional

2. Preliminary Proposals

Some NSF program solicitations require or request submission of a preliminary proposal in advance of submission of a full proposal. The three predominant reasons for requiring submission of a preliminary proposal are to:

- reduce the proposers' unnecessary effort in proposal preparation when the chance of success is very small. This is particularly true of exploratory initiatives when the community senses that a major new direction is being identified, or competitions that will result in a small number of awards;

- increase the overall quality of the full submission; and

- assist NSF program staff in managing the review process and in the selection of reviewers.
• Proposals that do not contain the following required sections may not be accepted by FastLane:
  ▪ Project Summary
  ▪ Project Description
  ▪ References Cited
  ▪ Biographical Sketch(es)
  ▪ Budget
  ▪ Budget Justification
  ▪ Current and Pending Support
  ▪ Facilities, Equipment and Other Resources
  ▪ Data Management Plan
  ▪ Postdoctoral Mentoring Plan (if applicable)
Some proposal documents are for “NSF Use Only” and are not provided to reviewers

- Authorization to deviate from proposal preparation requirements
- List of suggested reviewers to include or not to include
- Proprietary or privileged information
- Proposal certifications
- Information about collaborators and other affiliations
Sections of an NSF Proposal

Cover Sheet (Required)
Many of the boxes on the cover sheet are electronically prefilled as part of the FastLane login process.

Example from FastLane
Project Summary (Required)
Text boxes must contain an Overview and Statements on Intellectual Merit and Broader Impacts.
Proposals that do not separately address the Overview and both Merit Review criteria in text boxes will not be accepted by FastLane.
Project summaries with special characters must be uploaded as a PDF document.
Project Description (Required)
Proposers should address what they want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful.

A separate section within the narrative must include a discussion of the broader impacts of the proposed activities.
References Cited (Required)
Reference information is required, and proposers must follow accepted scholarly practices in providing citations for source materials.

(v) Group Proposals
NSF encourages submission of proposals by groups of investigators; often these are submitted to carry out interdisciplinary projects. Unless stipulated in a specific program solicitation, however, such proposals will be subject to the 15-page Project Description limitation established in Section (ii) above. PIs who wish to exceed the established page limitations for the Project Description must request and receive a deviation in advance of proposal submission. (GPG Chapter II.A contains information on deviations.)

(vi) Proposals for Renewed Support
See GPG Chapter V for guidance on preparation of renewal proposals.

e. References Cited
Reference information is required. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. (See also GPG Chapter I.C.2.d.(iii)(d)) If the proposer has a website address readily available, that information should be included in the citation. It is not NSF's intent, however, to place an undue burden on proposers to search for the URL of every referenced publication. Therefore, inclusion of a website address is optional. A proposal that includes reference citation(s) that do not specify a URL is not considered to be in violation of NSF proposal preparation guidelines and the proposal will still be reviewed.

Proposers must be especially careful to follow accepted scholarly practices in providing citations for source materials relied upon when preparing any section of the proposal. While there is no established page limitation for the references, this section must include bibliographic citations only and must not be used to provide parenthetical information outside of the 15-page Project Description.

f. Biographical Sketch(es)

(i) Senior Personnel
A biographical sketch (limited to two pages) is required for each individual identified as senior personnel. (See GPG Exhibit II.6 for the definitions of Senior Personnel.)

Proposers may elect to use third-party solutions, such as NIH’s SciEio to develop and maintain their biographical sketch. However, proposers are advised that they are still responsible for ensuring that biographical sketches created using third-party solutions are compliant with NSF proposal preparation requirements.

Do not submit any personal information in the biographical sketch. This includes items such as: home address; home telephone, fax, or cell phone numbers; home e-mail address; drivers’ license numbers; marital status; personal hobbies; and the like. Such personal information is not appropriate for the biographical sketch and is not relevant to the merits of the proposal. NSF is not responsible or in any way liable for the release of such material. (See also GPG Chapter III.H.)
Biographical Sketches (Required)

Biographical sketches are required for all senior project personnel and must not exceed two pages in length, per individual.
Budget (Required)

Each proposal must contain a budget for each year of support requested. The budget justification should be no more than three pages for all years of the project combined. Proposals containing subawards must include a separate budget justification of no more than three pages for each subaward.
Information regarding budgetary guidelines can be found in both the GPG and in the Award & Administration Guide (AAG), as well as NSF program solicitations.

**Amounts Should Be:**
- Realistic and reasonable
- Well-justified and should establish need
- Consistent with program guidelines

**Eligible costs consist of:**
- Personnel
- Equipment
- Travel
- Participant support
- Other direct costs (e.g., subawards, consultant services, computer services, and publications costs)
Inclusion of voluntary committed cost sharing is prohibited in solicited & unsolicited proposals. To be considered voluntary committed cost sharing, the cost sharing must meet all of the standards of 2 CFR § 215.23, to include identification of cost sharing on the NSF budget. Line M will be “grayed out” in FastLane.

Organizations may, at their own discretion, continue to contribute any amount of voluntary uncommitted cost sharing to NSF-sponsored projects.
Facilities, Equipment, and Other Resources (Required)
This section of the proposal is used to assess the adequacy of the organizational resources available to perform the effort proposed.

Facilities, Equipment, and Other Resources

**Instructions:** Upload an aggregated description of the internal and external resources (both physical and personnel) that the organization and its collaborators will provide to the project, should it be funded. Describe only those resources that are directly applicable. The description should be narrative in nature and must not include any quantifiable financial information. If there are no Facilities, Equipment, or Other Resources identified, a statement to that effect should be indicated in this section and uploaded into FastLane. See GPG II.C.2.i for more information.

[Upload File]
Current and Pending Support (Required)
This section of the proposal calls for information on all current and pending support for ongoing projects and proposals.

Example from FastLane
Special Information and Supplementary Documentation
This segment should alert NSF officials to unusual circumstances that require special handling; more information can be found in the GPG Chapter II.C.2.j.

Text from the GPG

Except as specified below, special information and supplementary documentation must be included as part of the Project Description (or part of the budget justification), if it is relevant to determining the quality of the proposed work. Information submitted in the following areas is not considered part of the 15-page Project Description limitation. This Special Information and Supplementary Documentation section also is not considered an appendix. Specific guidance on the need for additional documentation may be obtained from the organization’s sponsored projects office or in the references cited below.

1. Postdoctoral Researcher Mentoring Plan. Each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. In no more than one page, the mentoring plan must describe the mentoring that will be provided to all postdoctoral researchers supported by the project, regardless of whether they reside at the submitting organization, any subrecipient organization, or at any organization participating in a simultaneously submitted collaborative project. Proposers are advised that the mentoring plan must not be used to circumvent the 15-page Project Description limitation. See GPG Chapter II.D.5 for additional information on collaborative proposals. Mentoring activities provided to postdoctoral researchers supported on the project will be evaluated under the Broader Impacts review criterion.

Examples of mentoring activities include, but are not limited to: career counseling; training in preparation of grant proposals, publications and presentations; guidance on ways to improve teaching and mentoring skills; guidance on how to effectively collaborate with researchers from diverse backgrounds and disciplinary areas; and training in responsible professional practices.

2. Plans for data management and sharing of the products of research. Proposals must include a supplementary document of no more than two pages labeled “Data Management Plan”. This supplementary document should describe how the proposal will conform to NSF policy on the dissemination and sharing of research results (see AAG Chapter V.I.D.4), and may include:

   1. the types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project;
   2. the standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies);
   3. policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;
   4. policies and provisions for re-use, re-distribution, and the production of derivatives; and
Special Information and Supplementary Documentation

- Letters of Collaboration
- Data Management Plans
- Post doctoral Mentoring Plans

Special Information and Supplementary Documentation
• Proposals that include funding to support postdoctoral researchers must include a description of the mentoring activities that will be provided for such individuals.
• Proposed mentoring activities will be evaluated as part of the merit review process, under NSF’s Broader Impacts merit review criterion.
• Proposals that identify a postdoc on the budget but do not include a maximum one-page mentoring plan as a supplementary document will be prevented from submission in FastLane.

• For collaborative proposals, the lead organization must submit a mentoring plan for all postdoctoral researchers supported under the entire collaborative project.
Mentoring activities may include:

- Providing career counseling, training in the preparation of grant proposals, or training in responsible professional practices
- Developing publications and presentations
- Offering guidance on techniques to improve teaching and mentoring skills
- Providing counseling on how to effectively collaborate with researchers from diverse backgrounds and disciplinary areas
Data Management Plan Requirements

• All proposals are required to include, as a supplementary doc, a Data Management Plan of up to two pages.
• Plan should describe how the proposal will conform to NSF policy on dissemination and sharing of research results.
• A valid Data Management Plan may include only the statement that no detailed plan is needed, as long as a clear justification is provided.
• Plan will be reviewed as part of the Intellectual Merit and/or Broader Impacts of the proposal.
Dissemination and Sharing of Research Results

NSF DATA SHARING POLICY

Investigators are expected to share with other researchers, data more than incremental cost and within a reasonable time the primary data, samples, physical collections and other supporting materials created or gathered in the course of work under NSF grants. Grantees are expected to encourage and facilitate such sharing. See Award & Administration Guide (AAG) Chapter VI.D.4.

NSF DATA MANAGEMENT PLAN REQUIREMENT 3

Proposals submitted or due on or after January 16, 2011, must include a supplementary document of no more than two pages titled Data Management Plan. This supplementary document should describe how the proposal will conform to NSF policy on the dissemination and sharing of research results. See Grant Proposal Guide (GPG) Chapter III.C.2 for full policy implementation.

REQUIREMENTS BY DIRECTORATE, OFFICE, DIVISION, PROGRAM, OR OTHER NSF UNIT

Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are provided below. If guidance specific to the program is not provided, then the requirements established in Grant Proposal Guide, Chapter III.C.2 apply.

Please note that if a specific program solicitation provides guidance on preparation of data management plans, such guidance must be followed.

- Biological Sciences Directorate (BIO)
  - Directorate-wide Guidance
- Computer & Information Science & Engineering (CISE)
  - Directorate-wide Guidance
- Education & Human Resources Directorate (EHR)
  - Directorate-wide Guidance
- Engineering directorates (including)
  - Directorate-wide Guidance
- Geosciences Directorate (GEO)

www.nsf.gov/bfa/dias/policy/dmp.jsp
Ask Early, Ask Often!

nsf.gov/staff
nsf.gov/staff/orglist.jsp
nsf.gov/about/career_opps/rotators/index.jsp
Panelists

Hao Ling
Program Director, Directorate for Engineering; Division of Electrical, Communications & Cyber Systems

Robert O’Connor
Program Director, Directorate for Social & Behavioral Sciences; Division of Social & Economic Sciences

Larry Rudolph
General Counsel, Office of the Director; Office of the General Counsel

Christopher Sanford
Program Director, Directorate for Biological Sciences, Division of Biological Infrastructure

Elizabeth VanderPutten
Deputy Division Director, Directorate for Education & Human Resources; Division of Research on Learning in Formal & Informal Settings
Topics Covered

- Proposal and Award Timeline
- Proposal Preparation and Submission
  - Reminders When Preparing Proposals
- Proposal Review and Processing
  - Program Officer Review
  - Proposal Review Criteria
  - Types of Reviews
  - Becoming a Reviewer
  - Managing Conflicts of Interest
  - Funding Decisions
- Award Processing
  - Issuing the Award

“Ask Early, Ask Often!”
Reminders When Preparing Proposals

- Read the funding opportunity; ask a Program Officer for clarifications if needed
- Address all the proposal review criteria
- Understand the NSF merit review process
- Avoid omissions and mistakes
- Check your proposal to verify that it is complete!
Proposal Review and Processing

NSF Announces Opportunity
Research & Educational Communities
Submit

NSF Program Officer

Ad Hoc
Panel
Combination
Internal

Program Officer Analysis and Recommendations
DD Concur

Can be returned without review/withdrawn

Organization

Award
Decline

Proposal Receipt at NSF
90 Days
Proposal Preparation

6 Months
Proposal Receipt to DD Concurrency of PO Recommendation

30 Days
DD Concur

Award

DGA Review & Process
Upon receipt at NSF, proposals are routed to the PI-designated program office.

NSF staff conducts a preliminary review to ensure they are:
- Complete;
- Timely; and
- Conform to proposal preparation requirements.

NSF may not accept a proposal or may return it without review if it does not meet the requirements above.

If the proposal is outside the scope of the program, the program officer usually tries his/her best to transfer it to the most appropriate program for evaluation.
The Grant Proposal Guide (GPG) contains detailed guidelines on proposal preparation and a description of the Merit Review Criteria:

A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF’s mission “to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.” NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.
Proposals Not Accepted or Returned Without Review

if it does not contain all of the required sections, as described in GPG Chapter II.C.2.

• Per the GPG Project Summary Requirement:
  ▪ Must include an overview and separate statements on Intellectual Merit and Broader Impacts.

• Per the GPG Project Description Requirement:
  ▪ Must contain, as a separate section within the narrative, a section labeled “Broader Impacts of the Proposed Work.”
  ▪ Must include results from prior NSF support in the past 5 years.

• Per the GPG Data Management Plan Requirement:
  ▪ Must be included as a supplementary document.

• Postdoctoral Researcher Mentoring Requirement (if applicable):
  ▪ Proposals that include postdoctoral researchers must include a description of the mentoring activities that will be provided for such individuals.
• It is inappropriate for funding by the National Science Foundation.
• It is submitted with insufficient lead time before the activity is scheduled to begin.
• It is a full proposal that was submitted by a proposer that has received a “not invited” response to the submission of a preliminary proposal.
• It is a duplicate of, or substantially similar to, a proposal already under consideration by NSF from the same submitter.
Other Reasons for Return of Proposals Without Review

• It does not meet NSF proposal preparation requirements, such as page limitations, formatting instructions, and electronic submission, as specified in the GPG or program solicitation.
• It is not responsive to the GPG or program announcement/solicitation.
• It does not meet an announced proposal deadline date (and time, where specified).
• It was previously reviewed and declined and has not been substantially revised.
• It duplicates another proposal that was already awarded.
NSF Proposal & Award Process Timeline

- NSF Announces Opportunity
- Research & Educational Communities
- Submit

**NSF Program Officer**
- Ad Hoc
- Panel
- Combination
- Internal

**Program Officer Analysis and Recommendations**
- DD Concur

**Can be returned without review/withdrawn**

- Proposal Receipt at NSF
- 90 Days
- Proposal Preparation

- 6 Months
- Proposal Receipt to DD Concurrence of PO Recommendation

- 30 Days
- DGA Review & Process

- Award via DGA
- Organization
- Decline
- Award

Carnegie Mellon University
Merit Review Criteria: Guiding Principles

• All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.

• NSF projects, in the aggregate, should contribute more broadly to achieving societal goals.

• Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects.
• When evaluating NSF proposals, reviewers should consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits would accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers are asked to evaluate all proposals against two criteria:

  ▪ **Intellectual Merit**: The Intellectual Merit criterion encompasses the potential to *advance knowledge*; and

  ▪ **Broader Impacts**: The Broader Impacts criterion encompasses the potential to *benefit society* and contribute to the achievement of specific, desired societal outcomes.
Five Review Elements

• The following elements should be considered in the review for both criteria:

• What is the potential for the proposed activity to:
  ▪ **advance knowledge** and understanding within its own field or across different fields (Intellectual Merit); and
  ▪ **benefit society** or advance desired societal outcomes (Broader Impacts)?

• To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?

• Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?

• How well qualified is the individual, team, or institution to conduct the proposed activities?

• Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?
Review Format in FastLane

Reviewers provide feedback to NSF based on the Review Criteria and the Review Elements

Review Criteria and Elements are available as reviewers provide feedback

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
   a. advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
   b. benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-organized, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or institution to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to intellectual merit.

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In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to broader impacts.

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Please evaluate the strengths and weaknesses of the proposal with respect to any additional solicitation-specific review criteria, if applicable.

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Proposal Review and Processing

- NSF Announces Opportunity
- Research & Educational Communities
  - Submit
  - NSF Program Officer
  - Ad Hoc
  - Panel
  - Combination
  - Internal
  - Program Officer Analysis and Recommendations
  - DD Concur
  - Via DGA
  - Organization
  - Award
  - Decline

- Proposal Receipt at NSF: 90 Days
- Proposal Receipt to DD Concurrence of PO Recommendation: 6 Months
- DD Concur: 30 Days
- DGA Review & Process

Can be returned without review/withdrawn
Types of Reviews

• Ad hoc: Proposals sent out for review
  ▪ *Ad hoc* reviewers usually have specific expertise in a field related to the proposal.
  ▪ Some proposals may undergo *ad hoc* review only.

• Panel: Face-to-face sessions conducted by reviewers mainly at NSF but also in other settings
  ▪ Panel reviewers usually have a broader scientific knowledge.
  ▪ Some proposals may undergo only a panel review.
  ▪ Some proposals may undergo reviews by multiple panels (especially for those proposals with crosscutting themes).
Types of Reviews

- **Combination:** Some proposals may undergo supplemental ad hoc reviews before or after a panel review.

- **Internal:** Review by NSF Program Officers only
  - Examples of internally reviewed proposals:
    - Proposals submitted to Rapid Response Research Grants (RAPID)
    - Proposals submitted to Early-concept Grants for Exploratory Research (EAGER)
    - Proposals for conferences or workshops
How are Reviewers Selected?

- Types of Reviewers Recruited:
  - Reviewers with specific content expertise
  - Reviewers with general science or education expertise

- Sources of Reviewers:
  - Program Officer’s knowledge of the research area
  - References listed in proposal
  - Recent professional society programs
  - Computer searches of S&E journal articles related to the proposal
  - Former reviewers
  - Reviewer recommendations included in proposal or sent by email

- Three or more external reviewers per award are selected.
How Do I Become a Reviewer?

• Contact the NSF Program Officer(s) of the program(s) that fit your expertise:
  ▪ Introduce yourself and your research experience.
  ▪ Tell them you want to become a reviewer for their program.
  ▪ Ask them when the next panel will be held.
  ▪ Offer to send a 2-page CV with current contact information.
  ▪ Stay in touch if you don’t hear back right away.
What is the Role of the Reviewer?

• Review all proposal material and consider:
  ▪ The two NSF merit review criteria and any program specific criteria.
  ▪ The adequacy of the proposed project plan including the budget, resources, and timeline.
  ▪ The priorities of the scientific field and of the NSF program.
  ▪ The potential risks and benefits of the project.

• Make independent written comments on the quality of the proposal content.
What is the Role of the Review Panel?

- Discuss the merits of the proposal with the other panelists
- Write a summary based on that discussion
- Provide some indication of the relative merits of different proposals considered
Why Serve on an NSF Panel?

• Gain first-hand knowledge of the merit review process
• Learn about common problems with proposals
• Discover proposal writing strategies
• Meet colleagues and NSF Program Officers managing the programs related to your research
• The primary purpose is to remove or limit the influence of ties to an applicant institution or investigator that could affect reviewer advice.

• The secondary purpose is to preserve the trust of the scientific community, Congress, and the general public in the integrity, effectiveness, and evenhandedness of NSF’s merit review process.
Examples:
- Current employment at the institution
- Other association with the institution, such as being a consultant
- Being considered for employment or any formal or informal reemployment arrangement at the institution
- Any office, governing board membership, or relevant committee membership at the institution
Personal Relationships with Investigator or Project Director

• Examples:
  ▪ Known family or marriage relationship
  ▪ Business partner
  ▪ Past or present thesis advisor or thesis student
  ▪ Collaboration on a project or book, article, or paper within the last 48 months
  ▪ Co-edited a journal, compendium, or conference proceedings within the last 24 months
Proposal Review and Processing

- NSF Announces Opportunity
- Research & Educational Communities
- Submit

- Proposal Receipt at NSF
- 90 Days Proposal Preparation

- Ad Hoc
- Panel
- Combination
- Internal

Program Officer Analysis and Recommendations

- Can be returned without review/withdrawn

- DD Concur
- 30 Days DGA Review & Process
- Award

- Via DGA
- Organization
- Decline
- Award
- Decline
Funding Decisions

• The merit review panel summary provides:
  ▪ Review of the proposal and a recommendation on funding.
  ▪ Feedback (strengths and weaknesses) to the proposers.

• NSF Program Officers make funding recommendations guided by program goals and portfolio considerations.

• NSF Division Directors either concur or reject the Program Officers’ funding recommendations.
• Reviewer ratings (such as: E, V, G, F, P)
• Analysis of how well proposal addresses both review criteria: Intellectual Merit and Broader Impacts
• Proposal strengths and weaknesses
• Reasons for a declination (if applicable)

If you have any questions, contact the cognizant Program Officer.
• Verbatim copies of individual reviews, excluding reviewer identities
• Panel Summary or Summaries (if panel review was used)
• Context Statement (usually)
• PO to PI comments (formal or informal, written, email or verbal) as necessary to explain a decision
Examples of Reasons for Declines

• The proposal was not considered to be competitive based on the merit review criteria and the program office concurred.
• The proposal had flaws or issues identified by the program office.
• The program funds were not adequate to fund all competitive proposals.
Points to consider:

- Do the reviewers and the NSF Program Officer identify significant strengths in your proposal?
- Can you address the weaknesses that reviewers and the Program Officer identified?
- Are there other ways you or your colleagues think you can strengthen a resubmission?

Again, if you have questions, contact the cognizant Program Officer.
NSF Reconsideration Process

Explanation from Program Officer and/or Division Director

Written request for reconsideration to Assistant Director within 90 days of the decision

Request from organization to Deputy Director of NSF
Possible Considerations for Funding a Competitive Proposal

- Addresses all review criteria
- Likely high impact
- Broadening participation
- Educational impact
- Impact on institution/state
- Special programmatic considerations (e.g. CAREER/RUI/EPSCoR)
- Other support for PI
- “Launching” versus “Maintaining”
- Portfolio balance
Proposal Review and Processing

1. **NSF Announces Opportunity**
2. **Research & Educational Communities**
3. **Submit**

**NSF Program Officer**

- Ad Hoc
- Panel
- Combination
- Internal

**Program Officer Analysis and Recommendations**

- **DD Concur**
- Award
- Via DGA
- Organization
- Decline

**Can be returned without review/withdrawn**

- Proposal Receipt at NSF: **90 Days**
- Proposal Receipt to DD Conurrence of PO Recommendation: **6 Months**
- DD Concur: **30 Days**

**Carnegie Mellon University**
• NSF’s Division of Grants and Agreements (DGA) reviews the recommendation from the program office for business, financial, and policy implications.

• NSF’s grants and agreements officers make the official award as long as:
  ▪ The institution has an adequate grants management capacity.
  ▪ The PI/Co-PIs do not have overdue annual or final reports.
  ▪ There are no other outstanding issues with the institution or PI.
For More Information

Go to NSF’s Home Page (http://www.nsf.gov)
Ask Early, Ask Often!

nsf.gov/staff
nsf.gov/staff/orglist.jsp
nsf.gov/about/career_opps/rotators/index.jsp
Kim Bub
Staff Associate
Division of Grants & Agreements (DGA)

Jeff Vieceli
System Administrator & Head, Systems Office
Division of Institution & Award Support (DIAS)

Award Management
Topics Covered

• NSF Award Process
• Awardee Responsibilities - Keys to Success
• Post Award Notifications and Requests
  ▪ No Cost Extensions
  ▪ Cancelled Appropriations
  ▪ Award Transfer
• Reasons for Delays in Award Processing
• Project Reports
• Other Tips
• Award Monitoring
• General Resources and Org Charts

“Ask Early, Ask Often!”
NSF Award Process - Overview

Proposal Preparation/Submission

Program Review

Recommend?

YES

Submit to DGA for Review

3 Branches

EHR, BIO & SBE
Specialist Admin Review

MPS & GEO
Specialist Admin Review

ENG, CISE & OIIA
Specialist Admin Review

Award?

YES

Grants Officer Approval

Award Notice

NO

Declination Letter

From the Program Office

NO

Declination Letter

From DGA

From DGA

YES

Proposal Preparation/Submission

Program Review

Recommend?

NO

Declination Letter

From the Program Office
What Kind of Awards are Issued by DGA?

**Assistance Awards** - the principal purpose of which is to transfer anything of value from NSF to the grantee for them to carry out a public purpose; and not to acquire property or services for NSF’s direct benefit or use.

- **Grants** *(Standard and Continuing)*
- **Cooperative Agreements**
- **Fellowships**

How Many Actions Does DGA Process?
DGA typically approves approximately 17,000 funded actions, and 4,000 non-funded actions each year.
### NSF Award Process

**In Fiscal Year 2016: DGA Approvals**

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Amount (In Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Grants</td>
<td>9,219</td>
<td>$3,307</td>
</tr>
<tr>
<td>Continuing Grants</td>
<td>2,399</td>
<td>$ 653</td>
</tr>
<tr>
<td>Cooperative Agreements</td>
<td>63</td>
<td>$ 255</td>
</tr>
<tr>
<td>Fellowships</td>
<td>405</td>
<td>$  86</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12,086</td>
<td>$4,031</td>
</tr>
</tbody>
</table>

Other funding actions - (Award increments and supplements)

- Total: 5,235
- Amount: $2,080

Non-funding actions – (No cost extensions and other no funds actions)

- Total: 3,950
Awardee Responsibilities – Keys to Success

• Compliance with Federal rules
• Adherence to award terms and conditions
• Read your award notice carefully! It may include project or award-specific requirements, such as:
  ▪ Funding restrictions
  ▪ Special reporting requirements
  ▪ Special terms and conditions or other instructions
• Consistent with NSF policies and institutional policies
• Prudent management of funds:
  ▪ Allowable
  ▪ Allocable
  ▪ Reasonable
  ▪ Necessary
Awardee Responsibilities - Keys to Success

• Follow your institutional policies
• If I have questions about the award, who do I contact?

PI:
  ▪ Your NSF Program Officer for technical/scientific questions
  ▪ Your Sponsored Research Office (SRO) for administrative questions

SRO:
  ▪ DGA Portfolio Manager for award specific questions
  ▪ NSF Policy Office for general questions
# Post-Award Notifications and Requests

## Consolidated List of Notifications and Requests (not all-inclusive)

<table>
<thead>
<tr>
<th>Type of Grantee Notification = Awardee Authority</th>
<th>Submitted By</th>
<th>Who Reviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grantee-Approved No-Cost Extension</td>
<td>AOR</td>
<td>Program Officer</td>
</tr>
<tr>
<td>Significant Changes in Methods or Procedures</td>
<td>PI</td>
<td>Program Officer</td>
</tr>
<tr>
<td>Significant Changes, Delays or Events of Unusual Interest</td>
<td>PI</td>
<td>Program Officer</td>
</tr>
<tr>
<td>Annual and Final Cost Share Notification by Recipient</td>
<td>AOR</td>
<td>Program Officer</td>
</tr>
<tr>
<td>Conflicts of Interest that cannot be satisfactorily managed, imposition of conditions or restrictions when a conflict of interest exists</td>
<td>AOR</td>
<td>OGC</td>
</tr>
</tbody>
</table>

## Type of Grantee Request = NSF Approval Required

<table>
<thead>
<tr>
<th>Submitted By</th>
<th>Who Reviews and Recommends?</th>
<th>Who Approves?</th>
<th>Amendment or Notice?*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subawarding, Transferring or Contracting Out Part of an NSF Award</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>First NSF-Approved No-Cost Extension</td>
<td>AOR</td>
<td>Program Officer</td>
<td>Program Officer</td>
</tr>
<tr>
<td>Second NSF-Approved No-Cost Extension</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>Change in Objectives or Scope</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>Long-Term Disengagement of the PI/PD or co-PI/co-PD</td>
<td>AOR</td>
<td>Program Officer</td>
<td>Program Officer</td>
</tr>
<tr>
<td>Change in Person-Months Devoted to the Project</td>
<td>AOR</td>
<td>Program Officer</td>
<td>Program Officer</td>
</tr>
<tr>
<td>Addition of co-PI/co-PD</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>Withdrawal of PI/PD or co-PI/co-PD</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>Substitute (Change) PI/PD or co-PI/co-PD</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>PI/PD or co-PI/co-PD Transfer from One Organization to Another</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>Pre-award Costs in Excess of 90 Days</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>Salaries of Administrative or Clerical Staff</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>Travel Costs for Dependents</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>Rearrangements/Alterations (Construction)</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>Reallocation of Funds for Participant Support Costs</td>
<td>AOR</td>
<td>Program Officer</td>
<td>Program Officer</td>
</tr>
<tr>
<td>Additional categories of participant support costs other than those described in 2 CFR § 200.75</td>
<td>AOR</td>
<td>Program Officer</td>
<td>DGA</td>
</tr>
<tr>
<td>Change to cost sharing commitments reflected on Line M of the NSF award budget</td>
<td><strong>AOR, via email</strong></td>
<td>Program Officer/DGA</td>
<td>DGA</td>
</tr>
</tbody>
</table>

**Notes:**


*You will always be notified when the award is amendment. Program Officer’s have the option to send or not send approval notices. Check research.gov for the status of your request.

**Requests to change cost share commitments must be emailed. Best practice is to email both the NSF Program Officer and the DGA Portfolio Manager.
What about More Time: No Cost Extensions

• Cannot be used for awards with $0 balance
• Not intended just to use up remaining funds ($$)
• Submit Grantee Approved NCE at least 10 days prior to end date
  ▪ Must be within 6-months of the end date of the award
• Submit NSF-approved NCE at least 45 days prior to end date
• Research.gov will automatically determine what type of NCE is appropriate based upon eligibility
• May submit an NSF-approved NCE “late”, but will need to include a reason for being late
• Research.gov will block submission of a NCE if the revised end date extends the award beyond the appropriation cancellation date.
  ▪ Most NSF funds have a limited period of availability to expend funds (usually six years from the appropriation year) before the appropriation cancels.
  ▪ NSF will notify grantees of any canceling appropriations on open awards in order for grantees to properly and responsibly expend and draw down funds before the end of the fiscal year.
What about More Time: No Cost Extensions

- Research.gov will block submission of a NCE if the revised end date extends the award beyond the **appropriation cancellation** date.

  - Most NSF funds have a limited period of availability to expend funds (usually six years from the appropriation year) before the appropriation cancels.

  - NSF will notify grantees of any canceling appropriations on open awards in order for grantees to properly and responsibly expend and draw down funds before the end of the fiscal year.
Cancelled Appropriations

Edit Notification/Request
Grantee-Approved No-Cost Extension

Appropriated Funds have expired for this award. No Notification/Request can be submitted for this award.

Award Number:
End Date: 11/30/2016
Status: Forwarded to AOR

Reminder: This one time extension may not be exercised merely for the purpose of using the unliquidated balances.

Revised End Date: 11/30/2017 (Always expires on the last day of the month)

Justification for Grantee-Approved No-Cost Extension:

Characters remaining: 978 (out of 1200 max)
• Grants are awarded to the Organization and not the PI
• If the PI is moving to a new Organization
  ▪ Nominate new PI
    • Request to sub-award with the new Organization
  ▪ Agree to transfer the grant
  ▪ Terminate the grant
Proposal Budgets – Unallowable/Unjustified Costs
• Participant Support Costs
• Other Direct Costs
• Subawards:
  ▪ Be sure that sub-recipient budgets and budget justifications are included as part of the proposal budget or post award Addition of Sub-award request.
  ▪ Make sure you have a plan in place for monitoring sub-awards (see Uniform Guidance, 2 § CFR 200)
  ▪ Remember, the relationship is between the prime and the sub-awardee
• Other: Itemize other direct costs clearly in the budget justification and beware of unallowable costs.
• Indirect Costs: Charge in accordance with your most recent federally negotiated rate agreement.
• Budget Justifications: Address all proposed costs by NSF line item.
Solicitation Requirements
• DGA reviews the solicitation to ensure budgetary and administrative conditions are in accordance with the solicitation.

Research involving Human Subjects or Vertebrate Animals
• Except under very limited circumstances (see the NSF PAPPG for details), IRB and IACUC Certifications must be submitted to the NSF Program Officer before DGA can issue an award. DGA will look for such documentation before making an award.

Overdue Reports
• No future funding
• No administrative actions
• Can impact other PI’s awards
• PO can return final report up to 30 days after approval date
• Report status can’t be re-set for annual reports
Annual Project Reports (APRs):
• Due annually every year of the project except the final year
• Report on technical progress
• Must be approved by the Program Officer

Final Project Report (FPR):
• This is the final annual report
• This is not intended to be a cumulative report
• Report on technical progress
• Must be approved by the Program Officer

Project Outcomes Report for the General Public (POR):
• Brief summary of the project for the public
• Not approved by the NSF
• The NSF sends “reminder” notices for all reports – when they are due and when they become overdue

• The report requirements for an award are available to the PI and all Co-Pis via Research.gov

• The SRP also can run a report to show reports for their awards that are due and overdue

• The PI and all Co-Pis may submit the reports

• The SRO does not have access to submit the reports

• When in doubt, call the NSF – PO or Help Desk
• Organization Policies and Procedures should be written and kept up to date

• Follow Research.gov and FastLane directions and edits

• Read error messages received in Research.gov and FastLane – make screen shots to include in emails to Help Desk and PO
  ▪ For Research.gov questions, call the Research.gov Help Desk at 1-800-381-1532
  ▪ For FastLane questions, call FastLane at 1-800-673-6188

• Award notices are sent to the Organization SRO

• Publications are pulled from the APR and FPR
Potential NSF Monitoring

• Programmatic Site Visits

• Division of Institution & Award Support (DIAS) contracted desk reviews

• DIAS Advanced Monitoring Site Visit Program in conjunction with the Division of Grants & Agreements (DGA)

• Division of Financial Management (DFM) baseline monitoring including active payment monitoring and post award financial activity reviews

• Office of Inspector General (OIG) audits
Online Resources

Find how to get assistance with your award from the Division of Grants & Agreements

Direct Links to PAPP-G

Find Award Conditions

nsf.gov/awards/managing/

The Grant General Conditions, Research Terms and Conditions, Cooperative Agreement Conditions, and Special Conditions pages provide the full text of the terms and conditions used to manage NSF grants and cooperative agreements. Topics covered include awardee responsibilities, Federal requirements, pre-award costs, no-cost extensions, significant project changes, travel, allowable costs, project reports, final report requirements, and more.

The Policy Office, in the Division of Institutions and Award Support, provides general proposal & award policy guidance for use by the NSF proposer and awardee community. The Policy Office page includes NSF-specific regulations, policies and procedures, other Federal regulations, information regarding important NSF policies, answers to frequently asked questions, award conditions, as well as other valuable information.

The NSF conducts outreach on proposal preparation and award administration, through Regional Grant Conferences, other targeted outreach programs, as well as FastLane outreach activities.

The Division of Grants and Agreements is responsible for the award of all NSF grants and agreements recommended for support by NSF program offices, with the exception of the Foundation's portfolio of large facility cooperative agreements. From pre-award through closeout, DGA conducts a variety of business, financial, and administrative reviews to ensure compliance with award terms and conditions, NSF policies and procedures, and federal rules and regulations. Pre- and post-award reviews of awardee organizations are conducted in coordination with DGA and by the Division of Institutions and Award Support through its Cost Analysis and Audit Resolution Branch. The Cooperative Support Branch under the Division of Acquisition and Cooperative Support is responsible for negotiation, award, administration, monitoring and oversight of complex cooperative agreements for Federal Funded Research Centers (FFRDCs), major research facilities, and other large facilities in various stages of the facility lifecycle. The Cash Management Branch of the Division of Financial Management manages the awardee payment processes. Quick links to the NSF offices that support Award Management functions, Foundation news impacting awardees, and related information and answers to Frequently Asked Questions (FAQs) are also provided on the DGA site to assist awardees with managing their awards.
Division of Grants and Agreements

DGA Front Office
- Staff Associate
  - Staff Associate
    - Staff Associate
  - Branch Chief
    - Team Lead
  - Grant Specialist
- Grant Administrator
- Contractor
- Student
- IPA

Jamie French
DGA Division Director
703-292-8644
jhfrench@nsf.gov

(vacant)
Director of Operations
703-292-xxxx
e-mail@nsf.gov

Website:
- nsf.gov/bfa/dga/

Organizational chart:
- nsf.gov/bfa/dga/docs/liaison.pdf

Website:
- nsf.gov/bfa/dga/

Organizational chart:
- nsf.gov/bfa/dga/docs/liaison.pdf

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Main Office; 703-292-8210
Effective: 11/1/2016

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• Pixburgh or Picksburgh = Pittsburgh
• Stillers = Steelers
• Worsh = Wash
• Sammich = Sandwich
• Pop = Soda
• Dahntahn = Downtown
• Iggle = Eagle
• Keller = Color
• Ketch = Catch
• Redd up = Make Ready or Tidy Up
• Slippy = Slippery
• D’jeet or d’jeetyet = Did you eat / Did you eat yet?
• Yunz or Yinz = You Ones or Y’All
Ask Early, Ask Often!

nsf.gov/staff
https://www.nsf.gov/bfa/dga/
NSF Policy Update

National Science Foundation
Fall Grants Conference

Pittsburgh, PA - November 14 & 15 - Carnegie Mellon University
Jean Feldman
Head, Policy Office; Office of Budget, Finance & Award Management; Division of Institution & Award Support

NSF Policy Update
Topics

- Proposal & Award Policies & Procedures Guide (PAPPG)
- Significant Changes
- Automated Compliance Checking
- Proposal Submission Modernization
- NSF Electronic Research Administration (ERA) Forum
- Single ID
- NSF is Moving

“Ask Early, Ask Often!”
PAPPG Implementation Schedule

Published: October 25, 2016
Effective Date: January 30, 2017
PAPPG Implementation

• Proposals submitted, or due, on or after January 30, 2017

• Solicitations with before and after deadline dates
  ▪ Preliminary & Full Proposals
PAPPG – Significant Changes (Part I)

- Elimination of separate recognition of the Grant Proposal Guide (GPG) and Award & Administration Guide (AAG)
  - Entire document referred to as PAPPG (Parts I & II)
  - Chapters will be sequentially numbered from I-XII

- Increased clarity regarding terms such as types of submissions and types of proposals.
• Greater clarity on instructions for proposals submitted late due to natural or anthropogenic disasters.

• Single Copy Document explaining nature of the event.
Collaborator & Other Affiliations Information

- Thesis Advisor and Postgraduate Scholar Sponsor replaced with Ph.D. Advisor
- Instructions added for placement of this section in separately submitted collaborative proposals
Cost sharing coverage enhanced with increased coverage on the difference between voluntary committed and voluntary uncommitted cost sharing.

Inclusion of indirect cost rates lower than negotiated rates is considered voluntary committed cost sharing.
Human Subjects – New coverage has been added on 45 CFR 690.118, including new template. Additional FAQs will be added on this topic.

New award clause for projects involving human subjects:
- It is the grantee’s responsibility to ensure that any human subjects work conducted under this award has an Institutional Review Board (IRB) approval, where required, and that such approval remains valid at all times that human subjects work is conducted under the award. Failure to comply with this condition will result in suspension and/or termination of the award.
Notification of 45 CFR 46.118 Determination for a Project Lacking Immediate Plans for Involvement of Human Subjects, their Data, or their Specimens

Date: 
Principal Investigator: 
Grant or Protocol #: 
Grant or Protocol Title: 

On <date>, it was determined that the above-referenced grant or protocol meets the requirements of 45 CFR 46.118. The study will involve research with human subjects for which the protocol is not yet fully developed.

One year from the date identified above, the Authorized Organizational Representative is required to either:

• verify that the project continues to lack immediate plans for the involvement of human subjects, their data, or their specimens; or
• provide documentation to the cognizant NSF Program Officer to demonstrate that IRB approval has been obtained.

No work with human subjects, including recruitment, may be conducted under this protocol or grant until IRB approval has been obtained.

Please contact <individual> with any questions.
Vertebrate Animals

Additional clarity has been added regarding departures from the Guide for the Care and Use of Laboratory Animals. Such departures must be approved by the IACUC and based on scientific, veterinary, medical must, or animal welfare issues.

New award clause for projects involving the use of vertebrate animals:

- It is the grantee’s responsibility to ensure that any vertebrate animal work conducted under this award has an Institutional Animal Care and Use Committee (IACUC) approval, where required, and that such approval remains valid at all times that vertebrate animal work is conducted under the award. Failure to comply with this condition will result in suspension and/or termination of the award.
• Environmental requirements have been supplemented with a standard Organizational Environmental Impacts Checklist
  ▪ Proposers may be requested to submit supplemental post submission information to NSF
• A new section has been added to Chapter II on Special processing instructions
  ▪ Special Processing Instructions addresses issues such as Proprietary or Privileged Information, Collaborative Proposals, Beginning Investigators, Vertebrate Animals, Human Subjects, etc.

• Separate section developed for Types of Proposals which describes the various types of proposals that may be submitted to NSF such as RAPID, EAGER, etc.
Two new proposal types are being added:

- Research Advanced by Interdisciplinary Science and Engineering (RAISE); and
- Grant Opportunities for Academic Liaisons with Industry (GOALI)
<table>
<thead>
<tr>
<th>GOALI</th>
<th>RAISE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• FastLane will add a new supplementary document, ‘GOALI-Industrial PI Confirmation Letter’</td>
<td>• FastLane will add a new supplementary document:</td>
</tr>
<tr>
<td>• New instructions and reminder messages in FastLane File upload screen when user selects GOALI proposal type</td>
<td>‘RAISE PO Concurrence Email’</td>
</tr>
<tr>
<td>• 2 new compliance checks:</td>
<td>• 3 new compliance checks:</td>
</tr>
<tr>
<td>▪ At least one Co-PI exists on the proposal</td>
<td>▪ ‘RAISE-Program Officer Concurrence Email’ must be uploaded at time of submission</td>
</tr>
<tr>
<td>▪ A GOALI-Industrial PI Confirmation Letter has been uploaded</td>
<td>▪ Award budget must be less than or equal to $1 Million</td>
</tr>
<tr>
<td></td>
<td>▪ Award duration must be less than or equal to 5 years</td>
</tr>
</tbody>
</table>
International Travel Grants have been expanded to address support for both domestic and international travel.
The role of the student on the project must be used to determine how the student is compensated.

Participant support costs should be used to defray the costs of students participating in a conference or training activity related to the project.

Student employees are compensated for services rendered and their level of compensation is tied to the number of hours worked.

A student cannot be compensated partially as an employee and as a participant.
• NSF-Approved Extension
  - Grantees made aware of limited time period of availability of funds due to cancelation of appropriations.

• Addition of co-PI/co-PD
  - Provides instructions for AOR to submit this request to NSF

• Travel & Temporary Dependent Care Costs
  - Costs of employees on travel status are limited to those authorized by 2 CFR § 200.474
Automated Proposal Compliance Checking

- NSF continues to invest in expanding auto-compliance checking capabilities to reduce administrative burden levels on both NSF programs and the research community.

- Core PAPPG proposal section, page count, budget, and deadline requirements are checked during proposal preparation and submission activities in FastLane.

- The next release of auto-compliance checks in January 2017 will support additional standard proposal type requirements and include checks for new types of proposals such as RAISE and GOALI.

### Automated Proposal Compliance Checking

#### Automated Proposal Compliance Checks Performed by System as of January 25th, 2016.*

<table>
<thead>
<tr>
<th>Compliance Check</th>
<th>Funding Opportunity Type</th>
<th>Error / Warning</th>
<th>Funding Mechanism Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Research</td>
</tr>
<tr>
<td>Proposal Section Exists Checks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Project Summary is required.</td>
<td>GPG Program Description Program Announcement</td>
<td>ERROR</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Program Solicitation</td>
<td>ERROR</td>
<td>✓</td>
</tr>
<tr>
<td>2. Project Description is required.</td>
<td>GPG Program Description Program Announcement</td>
<td>ERROR</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Program Solicitation</td>
<td>ERROR</td>
<td>✓</td>
</tr>
<tr>
<td>3. References Cited is required.</td>
<td>GPG Program Description Program Announcement</td>
<td>ERROR</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Program Solicitation</td>
<td>WARNING</td>
<td>✓</td>
</tr>
<tr>
<td>4. Biographical Sketch(es) is required.</td>
<td>GPG Program Description Program Announcement</td>
<td>ERROR</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Program Solicitation</td>
<td>WARNING</td>
<td>✓</td>
</tr>
<tr>
<td>5. Primary Budget is required.</td>
<td>GPG Program Description Program Announcement</td>
<td>ERROR</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Program Solicitation</td>
<td>ERROR</td>
<td>✓</td>
</tr>
<tr>
<td>6. Budget Justification for the Primary Organization is required.</td>
<td>GPG Program Description Program Announcement</td>
<td>ERROR</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Program Solicitation</td>
<td>WARNING</td>
<td>✓</td>
</tr>
<tr>
<td>7. Budget Justification for each Subrecipient Organization that exists is required.</td>
<td>GPG Program Description Program Announcement</td>
<td>ERROR</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Program Solicitation</td>
<td>WARNING</td>
<td>✓</td>
</tr>
</tbody>
</table>

• Project Summary Enhancements
  - Effective September 26, the Project Summary text boxes will be checked for one page in length;
  - It must contain the three required sections: Overview, Statement on Intellectual Merit and Statement on Broader Impacts.
  - Previous character count will be discontinued.
  - A Project Summary with special characters may still be submitted as a supplementary document.

Note that proposals submitted in Grants.gov do not follow the FastLane automated compliance checks and will be returned without review if the proposal is not in compliance with NSF proposal submission policies.
Proposal Submission Modernization (PSM)

- PSM is a multi-year initiative to modernize the proposal submission capabilities currently in FastLane and implement new capabilities in Research.gov.
- It aims to reduce the administrative burden to the research community and NSF staff associated with preparation, submission, and management of proposals.
- In FY 2016, NSF has focused on establishing requirements, developing proposal section modernization concepts, and setting up the back-end application infrastructure.
- Plans for next year include a pilot launch for a single solicitation in Research.gov.
• New initiative to gather opinions, perspectives and feedback around NSF ERA activities.

• A webinar was held in April 2016 to review Forum logistics and to share preliminary PSM modernization concepts.

• Last webinar event was **September 28, 2016**

• Additional information and registration at: [https://www.nsf.gov/bfa/dias/policy/era_forum.jsp](https://www.nsf.gov/bfa/dias/policy/era_forum.jsp)

• Sign up for forum notifications by sending an email to: NSF-ERA-FORUM-subscribe-request@listserv.nsf.gov
NSF is introducing a new way to register and manage profiles using ONE single identity (Single ID) across all NSF systems.
• NSF is moving from Arlington to Alexandria.
• August – October 2017
• What this means for you
For More Information

Ask Early, Ask Often!

nsf.gov/staff
nsf.gov/staff/orglist.jsp
nsf.gov/about/career_opps/rotators/index.jsp
Who We Are

Assistant Inspector General for Audit

Internal Audit

External Audit

Audit Services and Data Analytics

Counsel to the Inspector General Legal/Legislative

Senior Advisor/WB Ombudsman

Assistant Inspector General for Investigations

Research Integrity & Admin Investigations (Investigative Scientists)

Program Integrity (Special Agents)

Office of Investigations Legal Division (Investigative Attorneys)

Proactive/Analytic Evaluations (Investigators and Analysts)

Investigations Specialists (including Forensic Accounting) and Support Staff
What We Do

- Office of Audit
  - We conduct internal/external audits:
    - Financial
    - Performance

- Office of Investigations
  - We investigate allegations of:
    - Fraud, waste, and abuse
    - Research misconduct
    - Violations of law, regulation, directive, or policy

- Outreach
  - We invest in outreach:
    - Presentations
    - Briefings
    - Publications and Brochures
Office of Audit

- Audit NSF-funded grants, contracts, and cooperative agreements
- Determine if claimed costs are allowable, reasonable, and allocated properly
- Oversee annual NSF financial statement audit and IT security review
- Promote economy/efficiency in NSF financial, administrative, and programmatic operations
Developing the Audit Workplan

- **Work Required by Law**
  - Agency Financial Statement Audit (CFO Act)
  - Federal Information Security Modernization Act (FISMA)
  - Improper Payment Elimination and Recovery Act (IPERA)
  - Digital Accountability and Transparency Act of 2014 (DATA Act)

- **OIG Risk-based Assessments**
  - Continuous Monitoring

- **Congressional Requests**

- **National Science Board and NSF Suggestions**

- **Referrals from Investigations**

- **NSF Management Challenges**
Distribution of FY 2017 Audit Work (Estimated Cost)

- OIG Discretionary: External 55%
- NSF-Requested: 15%
- OIG Discretionary: Internal 10%
- Required/Single Audit: 20%

Total Direct Cost FY 17 Audit Work (estimated) $6.2 million
Award Administration

Grant Recipient Responsibilities

We Look At

- Financial management system and expenditures
- Accuracy and timelines of reporting, notifications
- Participant support, sub-award monitoring
- Effort reporting

Common Findings

- No approvals, no procedures for determining allowable costs
- Unsupportable, unallocable, and unallowable expenses
- Purchases before the award effective date
- Equipment charges that do not benefit the award or are unreasonable
- Indirect expenses inappropriately claimed on participant support costs
- Travel expenses that do not benefit the award
Cost Compliance

Costs must be allowable, reasonable, allocable, documented, and consistent in treatment

We Look At
All costs claimed on NSF awards. We use data analytics to identify risk areas.

Common Findings
- **Unsupported** expenditures
  - Reimbursements not documented (invoices, etc.)
- **Unallowable** expenditures
  - Direct charges for costs in the indirect pool
  - Meals, non-related travel, alcohol
  - Unapproved changes in participant support
Framework for Grant Oversight

- Data analytics-driven and risk-based methodology
  - Identify institutions that may not be using Federal funds properly; identify questionable expenditures
- Life cycle approach to oversight
  - Mapping of end-to-end process to identify controls
  - 100% review of key financial and program information
  - Focus attention on expenditure anomalies
- Complements traditional oversight approaches
End to End Process for Grant Oversight

- Funding Over Time
- Conflict of Interest
- False Statements
- False Certifications
- Duplicate Funding
- Inflated Budgets
- Candidate Suspended/Debarred

- Unallowable, Unallocable, Unreasonable Costs
- Inadequate Documentation
- General Ledger Differs from Draw Amount
- Burn Rate
- No/Late/Inadequate Reports
- Sub-awards, Consultants, Contracts
- Duplicate Payments
- Excess Cash on Hand/Cost transfers
- Unreported Program Income

- No/Late Final Reports
- Cost Transfers
- Spend-out
- Financial Adjustments
- Unmet Cost Share

DATA ANALYSIS

Dr. Brett M. Baker, 2010
Example: Equipment Charges Incurred Immediately Before Grant Expiration Date

<table>
<thead>
<tr>
<th>GRANT ID</th>
<th>OBJECT DESCRIPTION</th>
<th>GRANT EXPIRATION DATE</th>
<th>TRANSACTION DATE</th>
<th>LEDGER POST DATE</th>
<th>FINANCIAL AMOUNT</th>
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<tbody>
<tr>
<td>XXXXX42</td>
<td>CONSTRUCTION AND ACQUISITION</td>
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<td>09/30/2009</td>
<td>10/06/2009</td>
<td>51,851.22</td>
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</table>

**Same day as expiration**

<table>
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<th>GRANT ID</th>
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<tbody>
<tr>
<td>XXXXX27</td>
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<td>07/31/2010</td>
<td>06/04/2010</td>
<td>08/11/2010</td>
<td>31,621.56</td>
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**57 days before expiration**

<table>
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<th>TRANSACTION DATE</th>
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</thead>
<tbody>
<tr>
<td>XXXXX77</td>
<td>INVENTORIAL EQUIPMENT</td>
<td>08/31/2009</td>
<td>07/16/2009</td>
<td>09/10/2009</td>
<td>23,163.75</td>
</tr>
</tbody>
</table>

**46 days before expiration**

**TOTAL** 106,636.53
Office of Investigations

- Detect and prevent fraud
- Investigate criminal, civil, administrative matters
- Address alleged wrongdoing involving proposals and awards and those who conduct business with, or work for, NSF
Allegations

- Allegations
  - Violation of law, regulations, award conditions, or policies
  - Mismanagement
  - Waste of funds
  - Abuse of authority

- Type of Allegations Received
  - Fraud
  - False Statements
  - Theft or abuse of government funds
  - Plagiarism or intellectual theft
  - Falsification/Fabrication of data
  - Employee Misconduct
  - Conflict of Interest
  - Failure to share data
Sources* of Allegations

- Principal Investigators/co PIs
- NSF Program Officers
- Other NSF Employees
- Review Panelists
- Government Agencies
- Graduate Students
- University Administrators
- Contractors
- Anonymous Hotline Callers or Informants

*Anyone may confidentially contact OIG to report potential wrongdoing
Investigative Process

- Determine jurisdiction; identify issues
- Objectively gather evidence
- As appropriate, refer to audit or other OIG
- Prepare written Report of Investigation
- Work with DoJ, state prosecutors, NSF, and awardees to develop appropriate resolutions that protect the interests of the Federal Government and the U.S. taxpayer
Administrative Cases

Violations of Regulations

- Research Misconduct
  - NSF regulation tracks OSTP’s Federal policy
  - Defines Fabrication, Falsification, Plagiarism (FFP) and defines “research”

- COIs, Violations of Confidentiality, etc.

- Human Subject’s Research
Administrative Cases

- Currently 115+ cases open
- Results can include LOR, certifications, debarment, and recovery of funds
- 12 RM findings and 5 debarments in 2015
- Human Subject’s violations are increasing as is data fabrication by graduate students
- CAREER awards – reminder that PI must remain in tenure track position
Criminal/Civil Cases

- **Violation of Statutes:**
  - False Claims – 18 U.S.C. § 287
  - Mail Fraud – 18 U.S.C. § 1341
  - Wire Fraud – 18 U.S.C. § 1343
  - Civil False Claims – 31 U.S.C. § 3729(a)

- **Abuse of federal rules and regulations**

- Other actions that could compromise the integrity, efficiency, and operations of NSF
Outcomes of Investigations

- Refer to law enforcement authorities
  - Criminal or civil matters may result in:
    - Prosecution
    - Settlement Agreement / Compliance Agreement
    - Fines, Reimbursements, Incarceration

- Refer to NSF
  - Administrative matters may result in:
    - Termination/ Restrictions on Awards
    - Certifications / Assurances
    - Suspensions / Debarments
    - Reprimands / Retractions

- Refer to OIG Audit
Criminal Prosecutions

- Our jurisdiction follows NSF funds
- ~ 110 civil/criminal investigations underway
- Recently concluded prosecution of SBIR company owners
- Both convicted of
  - Wire fraud (7 counts)
  - Aggravated identity theft (5 counts)
  - Falsification of records (2 counts)
- Owners sentenced to 12 & 15 years in prison, and debarred for 15 years
Whistleblower Protection

• A core value of OIG is protecting NSF employees, contractors, and grantees who step forward to identify potential wrongdoing

• Federal law prohibits retaliation for providing information reasonably believed to evidence
  • a violation of law, rule, or regulation
  • gross mismanagement
  • gross waste of funds
  • abuse of authority, or
  • a substantial and specific danger to public health and safety
Whistleblower Protection

- **NSF federal employees** are protected if they make a whistleblower disclosure to the US Office of Special Counsel, the OIG, or a supervisor.
- **Employees of NSF contractors and grantees** are currently* protected if they make a whistleblower disclosure to their management, an OIG, or an official responsible for investigating misconduct.
- **Both** federal employees and contractor/grantee employees are also protected for communications to Congress or the media.

* 5-year Pilot Program, starting July 1, 2013. 41 USC 4712
Whistleblower Protection Ombudsman

William J. Kilgallin
Senior Advisor, Investigations
National Science Foundation
Office of the Inspector General
(703)292-4993
wkilgall@nsf.gov
OIG Outreach

- Presentations at conferences and seminars
  - For students, PIs, and administrators
  - OIG outreach visit can be requested

- Fact sheets and brochures, briefings, conference presentations

- OIG Semiannual Report
When should you contact OIG?

- Report significant administrative or financial problems
- Report allegations of wrongdoing
  - Research misconduct
  - Fraud / theft involving NSF funds
  - Violation of regulation, directive, or policy
Contact NSF OIG

- **Internet:**

- **Mail:**
  - 4201 Wilson Blvd., Arlington, VA 22230

- **Phone:**
  - 703-292-7100

- **Hotline:**
  - 1-800-428-2189

- **E-mail Hotline:**
  - oig@nsf.gov
Questions?

Marie Maguire  
Director, Internal Audit  
Office of Inspector General  
National Science Foundation  
703-292-5009
International Research & Education Collaboration: Opportunities & Resources at NSF

NSF Grants Conference
14-15 October 2016

Joe Miller
Office of International Science & Engineering
jtmiller@nsf.gov
The U.S. in the Global R&D Landscape

- U.S. R&D spending up 1% to $465B or ~2.8% of GDP
- ~$1.6 Trillion invested in R&D around the world
- Total global investments in R&D (% of GDP) will stay relatively steady throughout the world in 2014
- US share of global R&D spending down 0.6% since 2012; Asia’s up by 2.1%
- China’s R&D spending could surpass U.S. by early 2020’s
World of R&D 2013

Size of circle reflects the relative amount of annual R&D spending by the indicated country.
Global R&D expenditures, by region: 2011

Billions of U.S. PPP dollars

North America $462 (32.2%)
Central America and Caribbean $0.6 (< 0.1%)
South America $36 (2.5%)
Europe $345 (24.0%)
Middle East $31 (2.1%)
Africa $11 (0.8%)
Central Asia $35 (2.5%)
East and Southeast Asia $456 (31.8%)
South Asia $36 (2.5%)
Australia and Oceania $24 (1.6%)

World total = $1,435

PPP = purchasing power parity.

NOTES: Foreign currencies are converted to U.S. dollars through PPPs. Some country figures are estimated. Countries are grouped according to the regions described by The World Factbook, available at www.cia.gov/library/publications/the-world-factbook/index.html.


Science and Engineering Indicators 2014
Figure 5-22
Share of world’s S&E articles with international collaboration, by S&E field: 1997 and 2012

Percent

1997  2012

Astronomy   Geosciences   Computer sciences   Mathematics   Physics   Biological sciences   Agricultural sciences   Medical sciences   Engineering   Psychology   Chemistry   Social sciences   Other life sciences

NOTES: Data are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than their year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating institution or country is credited one count). Internationally coauthored articles may also have multiple domestic coauthors.


Science and Engineering Indicators 2014
Figure 5-23
Share of S&E articles internationally coauthored, by selected country: 2002 and 2012

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than their year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating institution or country is credited one count). Internationally coauthored articles may also have multiple domestic coauthors.


Science and Engineering Indicators 2014
US Researchers Less Likely to Co-Publish Internationally

Highly cited (top1%) scientific articles by type of collaboration 2006-2008
As a percentage of highly cited scientific articles worldwide

Source: OECD calculations, based on Scopus Custom Data, Elsevier, December 2009
Statlink: http://dx.doi.org/10.1787/836087047406
North American Student Mobility is Flat

Figure 1.20. Evolution in the number of students enrolled outside their country of citizenship (2000, 2009)

This figure shows the growth of foreign tertiary student enrolment, by regional grouping, over the past nine years.

International NSF Strategic Plan

NSF support for international collaboration aims to:

• Advance the FRONTIERS of Science and Engineering
  o ACCESS to unique expertise, facilities, and phenomena
  o LEVERAGE limited resources
  o EXCHANGE insights and techniques

• Prepare a GLOBALLY-ENGAGED U.S. S&E workforce
  o NURTURE capable young researchers with strong networks overseas
  o DEVELOP a global perspective
  o FACILITATE mobility
Core Values for International Engagement

• Intellectual partnerships and clear mutual benefit

• U.S. students and junior researchers engaged internationally

• Networks that link expertise and resources
Office of International Science & Engineering (OISE)

**Internal**
- Diplomatic “desk officers” for NSF
- Support NSF Directorates and Offices
- Leverage Resources and Expertise
- Test New Models

**External**
- Engage the US Research Community
- Strengthen Partnerships with Foreign Counterparts
- Cooperate with other U.S. Government Agencies
Most international research and education activities are funded by NSF disciplinary programs:

- As part of regular awards
- As supplements to regular awards
Some NSF International Opportunities with External Partners

- Dimensions of Biodiversity
- Collaborative Research in Computational Neuroscience
- Partnerships for International Research and Education (PIRE)
- Belmont Forum Collaborative Research Action
- Graduate Research Opportunities Worldwide (GROW)
- Partnerships for Enhanced Engagement through Research (PEER)
- Several Directorates/Division (SBE, GEO, BIO/DEB) offer lead agency agreements
Developing a Globally Engaged Workforce

- Research Experiences for Undergraduates (REU)
- International Research Experiences for Students (IRES)
- East Asia Pacific Summer Institutes (EAPSI)
- Graduate Research Opportunities Worldwide (GROW)
- (International) Postdoctoral Research Fellowship Program
International Research Experience for Students

IRES:

- Develop a more globally engaged S&E workforce
- Supports small group of students for focused research experience overseas
- Graduate and/or undergraduate students
- $250,000 maximum budget for up to three years
East Asia & Pacific Summer Institutes

EAPSI:

• Introduce U.S. STEM graduate students to S&E research in East Asia & Pacific
• Foster student-initiated professional relationships to facilitate future international research collaborations
• 8-10 week summer research program in 7 locations
  - Australia (25 positions), China (40), Japan (65), Korea (25), New Zealand (15), Singapore (15), Taiwan (25)
• Open to grad students who are U.S. citizens or permanent residents
• Partnership with counterpart funding agencies
Graduate Research Opportunities Worldwide

- GROW offers opportunities for 3-12 month international research collaborations to NSF Graduate Research Fellows
- 15 Current Partners
  - Australia, Brazil, Chile, Denmark, Finland, France, India, Ireland, Japan, Korea, the Netherlands, Norway, Singapore, Sweden and Switzerland
- Expanding partnerships for future
- Contact: grow@nsf.gov
• Partnerships for International Research and Education (PIRE)
• Partnerships for Enhanced Engagement in Research (PEER)
• Science Across Virtual Institutes (SAVI)
• Global Venture Fund (GVF)
Partnerships for International Research & Education

- ISE-managed flagship research program
- Frontier research that leverages complementary expertise of all partners
- Extensive overseas research opportunities for US students/early career researchers
- 5 year awards; average award $4.5M
- ~50 active awards across all NSF disciplines
- Currently proposals are under review
  - Biennial competition
Partnerships for Enhanced Engagement in Research

PEER supports collaborators in developing countries

- USAID provides funding
- U.S. investigator must have active NSF award, may request supplement if partner receives funding
- Only certain countries eligible (check website)
- USAID – development objectives
- Managed by National Academies
Science Across Virtual Institutes (SAVI)

Platform for teams of NSF-funded investigators to:

• **Network** with partners abroad
• **Leverage** resources to advance shared research interests
• **Engage students** in international collaboration.
• SAVI is a mechanism, not a stand-alone program
  • ISE and NSF Directorate support
  • Support from counterpart agencies overseas
Global Venture Fund (GVF)

- **INTERNAL** NSF Mechanism
- **Co-funding** of proposals with true intellectual collaboration with foreign partners
  - New and renewal proposals
  - Supplement requests
  - RAPIIDs, EAGERs
  - Workshop, conference proposals
- **$10,000-$50,000, in principle**
- Contact ISE country program officer
Keys to Success in ISE Funding

• Top-notch science question
  o Demonstrate how the collaboration enhances the research
• Involve U.S. students, junior researchers
  o Prepare, mentor, and assess
  o Pay them: travel, living costs, stipends
• Meaningful attention to diversity
• Include bio-sketch of key collaborator(s)
• Include letter(s) of support from collaborator(s)
• Work with others in your institution
• Know and observe special rules, e.g.
  o Fly America Act
  o Visa regulations
• Consult OISE program officer early in process
International Science and Engineering (ISE) Section

About International Collaboration & Funding at NSF

NSF highly values international collaboration, as it is critical to keeping the United States globally competitive at the frontiers of knowledge, leading to transformational S&E breakthroughs.

ISE serves as the focal point for international collaborative activities across NSF while working across the Foundation to co-fund awards and supplements in cooperation with NSF’s disciplinary directorates.

To fulfill this unique role, ISE hosts three overseas NSF offices. Located in Paris, Tokyo, and Beijing, these offices promote collaboration among U.S. and foreign scientists and engineers, serve as liaison between NSF and its overseas counterparts, and report on developments in the international science and engineering community.

Links to the international offices, the ISE staff directory, and other ISE resources, are on the left side of this page.

Investigators based at a U.S. research institution may include international dimensions in new proposals that they intend to submit to NSF’s disciplinary directorates or to ISE, or they may request supplemental funding for their existing NSF awards. NSF can support the costs associated with participation of U.S.-based researchers (including students) engaged in international collaboration. U.S. investigators are advised to consult early in the application process with both the disciplinary program manager and an ISE country program manager.

Proposals for international collaboration should fully address the first criterion below, as well as one or more of the subsequent criteria:

• True intellectual collaboration with foreign research partner (Proposals must include foreign counterparts in at least 2 projects. If a foreign institution will serve as the lead foreign institution, it is the principal investigator.)
For Further Information
jtmiller@nsf.gov
Thank You!
Faculty Early Career Development (CAREER) Program

Sonia Esperança, Ph. D.
Program Director, Earth Sciences
Member, CAREER Coordinating Committee

http://www.nsf.gov/career
New Solicitation being prepared for clearance by the end of the year.

Deadlines expected to be in third week of July.
Support for New Investigators

• All NSF programs support new investigators as part of regular ("core") research competitions

• About 1/3 of proposals submitted to NSF in 2016 were by new investigators (never funded by NSF)

• Success rate of new investigators typically lag behind those of previously funded PIs

• Faculty Early-Career Development (CAREER) Program
  – Most prestigious awards to help a junior faculty member develop activities that can effectively integrate research and education within the context of his/her organization.
Goals of the CAREER Program

- Provide stable support for five years to allow the career development of outstanding new teacher-scholars in the context of the mission of their organization.
- Build a foundation for a lifetime of integrated contributions to research and education.
- Provide incentives to Universities to value the integration of research and education.
- Increase participation of those traditionally underrepresented in science and engineering.
Investigator Eligibility Criteria

• Hold a doctoral degree in a field supported by NSF by proposal deadline
• Be employed in a tenure-track (or tenure-track equivalent) position at an eligible institution by Oct 1st following deadline
• Have educational responsibilities at the eligible institution
• Have not previously received a CAREER award
• Have not had more than two CAREER proposals reviewed
Institutional Eligibility

• Academic institutions in the U.S., its territories or possessions, and the Commonwealth of Puerto Rico that award degrees in fields supported by NSF.

• Non-profit, non-degree-granting organizations such as museums, observatories or research labs may also be eligible to submit proposals, if the eligibility requirements of the PI's position are satisfied.

• NSF encourages proposals from different institutional types, including Minority Serving and Undergraduate Institutions.
CAREER or Regular proposal?

• CAREER proposals are single PI projects that include research and education activities that are integrated, innovative and ambitious
• CAREER requires support from the Department Chair
• The CAREER goals are lofty – CAREER awards are a lot of work
• Are you at the right stage in your career to undertake the commitments of a CAREER award?
• Have you discussed your ideas with mentors, fellows, program officers?
• Have you demonstrated to others in the community that you have the commitment to both research and education?
CAREER varies across NSF
(Program Expectations)

• CAREER proposals are submitted to, and reviewed by one or more of the disciplinary research programs
• Assessment of Departmental Letter plays a role in the review of the proposal
• Typical award size vary by Directorate/Division/Program
• Expectations for scope of research and education activities varies with community norms
• Talk to Division Contact(s) for additional information (http://www.nsf.gov/crssprgm/career/contacts.jsp)
• For interdisciplinary proposals, contact all relevant Program Directors or Division Contacts
CAREER varies across NSF
(Merit Review)

• Ad hoc + Panel (with other proposals in the Program)
  ➢ most of GEO (AGS uses ad hoc only)
  ➢ BIO and SBE
• Primarily dedicated CAREER Panels
  ➢ ENG, CISE, EHR
  ➢ MPS varies by Division:
    ✓ AST : Panel only
    ✓ CHE, DMR – Mix of ad hoc and panels
    ✓ DMS – mostly panels (2 programs ad hoc only)
CAREER Proposal Ingredients

• A compelling research plan
• An innovative but feasible education plan
• A plan for the effective integration of both sets of activities (evaluation plan is a big plus)
• Departmental Letter demonstrating commitment to the career development of the investigator
• Letters of Collaboration (not of support) when appropriate
• A budget that is consistent with the scope of the research and education activities
Education Component - Critical to Success!

• Your education component should be innovative but doable
• Demonstration of previous results with successful education activities is a plus
• Leverage activities at your institution that have relevance to your research
• Make sure that the education activities are well integrated with the research or the workload will not be manageable
• State who will benefit from the proposed activities
• Demonstrate that the activities are having impact on the stakeholders
• Play on your strengths as a teacher-scholar
Integration of Research and Education

How will your research impact your education goals and how will your education activities feed back into your research?

- Involving others (graduate, undergraduates, K-12, high school teachers, public) in your research using new tools, laboratory methods, field components, web outreach, cyber networks, etc...
- Partnering with those in other communities, especially those traditionally underrepresented in Sciences and Engineering
- Bringing the excitement of your research topics to help in the education of others
- Searching for new methods to deliver your research results to a broader audience than those in the immediate research community
- Using the broader community to gather data for your scientific pursuits ("citizen science")
Departmental Letter (2 pages)

- Commitment to the PI’s proposed CAREER research and education activities
- Description of how the PIs career goals and responsibilities mesh with that of the organization and department
- Description of how the department will contribute to the professional development of the PI with mentoring and whatever is needed to forward the PIs efforts to integrate research and education
- Statement that indicates how the PI is eligible for the CAREER program
Letter(s) of Collaboration

• **Project Description or Facilities, Equipment and Other Resources** must document the nature of all project collaborations, such as:
  - Intellectual contributions to the project
  - Permission to access a site, use instrumentation or facility
  - Offer to furnish samples / materials for research
  - Logistical support / evaluation services
  - Mentoring of U.S. students at a foreign site

• **Letter should contain a single-sentence statement of collaboration:**
  - “If the proposal submitted by Dr. [name of the PI] entitled [proposal title] is selected for funding by the NSF, it is my intent to collaborate and/or commit resources as detailed in the Project Description.”
  - Must not recommend or endorse PI or project
CAREER personnel and budgets

• Co-PIs are not allowed

• Consultants, sub-awards, and other personnel are allowed

• International activities are encouraged and may be supported by the Office of International Science and Engineering (OISE)

• Programs may support buy out of academic year time for teaching intensive institutions (check with your Program Officer)

• Some programs may choose making more awards at lower total budgets (check with your Program Officer)
Most Common Mistakes made by PIs (IM)

• Work is too close to what has been done before - i.e., Incremental advance
• Techniques and methodology are not cutting edge
• Project has too large a scope or is too narrowly focused to be exciting
• Proposed methods/research plan are not likely to yield results that will address the stated goals of the project
• The experiment/theoretical/analytical design is flawed
• Resources not available or PI does not have demonstrated expertise in it
Most Common Mistakes made by PIs (BI)

- Education component is generic and what is expected of any PI in your field - one more student is not enough!
- Unrealistic education activity - "will impact K-12 education in the state of X"
- Reinventing the wheel - another blog, another website
- Research and education plans are not aligned or integrated – “parallel lines that will never intersect”
- Lack of understanding of what is effective in education - literature search helps here too
- Not highlighting Broader Impacts that go beyond education
PECASE (Presidential Early Career Award in Science and Engineering)

• PECASE Eligibility – Be a US Citizen or US Permanent Resident by the time of nomination to the White House’s Office of Science and Technology Policy
• Several federal agencies nominate individuals for the PECASE (over 100 nominees in total)
• 20 nominees are put forward from NSF each year selected from recent CAREER awardees
• Number of nominees per Directorate is based on number of awards made in the Directorate
PECASE (Presidential Early Career Award in Science and Engineering)
QUESTIONS ?
Chris Sanford, Program Director

BIO: Division of Biological Infrastructure

NSF Grants Conference
Pittsburgh PA Nov. 14 & 15 2016
Overview

- Orientation - Directorate of Biological Sciences
- BIO Science, our mission and priorities
- BIO Divisions/Clusters/Programs
- Information
Demystifying NSF & the BIO Directorate

Arlington, VA (current)

Alexandria, VA (2017)
NSF Big Ideas

Looking Ahead: Ten Big Ideas

RESEARCH IDEAS
- Navigating the New Arctic
- Harnessing Data for 21st Century Science and Engineering
- Work at the Human-Technology Frontier: Shaping the Future
- Understanding the Rules of Life: Predicting Phenotype
- The Quantum Leap: Leading the Next Quantum Revolution
- Windows on the Universe: The Era of Multi-messenger Astrophysics

PROCESS IDEAS
- Growing Convergent Research at NSF
- NSF-INCLUDES: Enhancing Science and Engineering through Diversity
- Mid-scale Research Infrastructure
- NSF 2050: Seeding Innovation
The BIO Mission

Enabling discoveries to understand life
Bio Divisions/Clusters/Programs

Directorate for Biological Sciences (BIO)
- Division of Biological Infrastructure (DBI)
- Division of Environmental Biology (DEB)
- Division of Integrative Organismal Systems (IOS)
- Division of Molecular and Cellular Biosciences (MCB)

Emerging Frontiers (EF)
Division of Emerging Frontiers (EF)

- **Multidisciplinary** research and networking activities that arise from *disciplinary* research
- **Current Programs**
  - Next Generation Networks For Neuroscience (NeuroNex)
  - MacroSystems Biology and Early NEON Science
  - Origin of Life Ideas Lab
Core Divisions of BIO

Division of Biological Infrastructure (DBI)
- Human Resources
- Research Resources

Division of Environmental Biology (DEB)
- Ecosystem Science
- Evolutionary Processes
- Population and Community Ecology
- Systematics & Biodiversity Science

Division of Integrative Organismal Systems (IOS)
- Behavioral Systems
- Developmental Systems
- Neural Systems
- Physiological & Structural Systems
- Plant Genome Research Program

Division of Molecular and Cellular Biosciences (MCB)
- Cellular Dynamics and Function
- Genetic Mechanisms
- Molecular Biophysics
- Systems and Synthetic Biology
Research aims to understand life processes at the molecular, subcellular and cellular levels.

– Cellular Dynamics and Function
– Genetic Mechanisms
– Molecular Biophysics
– Systems and Synthetic Biology

Current solicitation: NSF 13-510
– One deadline per year

Division of Integrative Organismal Systems

• Supports research aimed at improving our understanding of organisms (plant, animal, microbe) as integrated units of biological organization.
  – Behavioral Systems*
  – Developmental Systems*
  – Neural Systems*
  – Physiological and Structural Systems*
  – Plant Genome Research Program*
  – Plant-Biotic Interactions (16-511)

• Solicitations:
  
  * IOS Pre and full proposals: NSF 17-508
  * IOS/PGRP Full proposal only - accepted anytime: NSF 16-614
The National Plant Genome Initiative (NPGI) started in 1998

- Focus on **plants & processes of agricultural importance**
- Supports developing tools, resources, training and hypothesis-driven basic research on a **genome-wide** scale
- Requirements: rapid release and full sharing of all data and tools.

Division of Environmental Biology

• Supports fundamental research on the *origins, functions, relationships, interactions, and evolutionary history* of populations, species, communities, and ecosystems.
  — Ecosystems Science
  — Evolutionary Processes
  — Population and Community Ecology
  — Systematics and Biodiversity Science

• Solicitation: NSF 17-512
  — Preliminary Proposals Required

Division of Biological Infrastructure

- Research Resources Cluster
  - Advances in Biological Informatics
  - Collections in Support of Biological Research
  - Improvements in Facilities, Communications, and Equipment at Biological Field Stations and Marine Laboratories
  - Major Research Instrumentation
  - Instrument Development for Biological Research
Division of Biological Infrastructure

- Human Resources Cluster
  - Postdoctoral Research Fellowships in Biology (PRFB)
  - Research Coordination Networks (RCN)
  - Research Experiences for Undergraduates (REU)

- Centers
  - NEON
  - Synthesis Centers
  - Science and Technology Centers
Resources for Information

Integrative Organismal Systems (IOS)

IOS supports fundamental research aimed at understanding organisms as units of biological organization, encouraging the use of integrative, interdisciplinary approaches to solving complex problems in organismal biology.

Announcements

- CSBR Update Read More
- Coordinating Global Brain Projects Event Read More
- Origin of Life: A Joint Ideas Lab Activity Read More

News

- Rabies could spread to Peru’s coast by 2020 September 13, 2016
- A global conversation to advance brain research Sept. 19 September 12, 2016
- Revving the microbial engine: Horsepower vs. fuel efficiency in bacterial genomes
Or.....

Follow us on social media!

www.nsf.gov/social

BIO blogs: www.nsfbio.com
BIO Buzz
DBInfo
DEBrief
MCB Blog
IOS InFocus

Call your Program Officer!
If you need to get in touch with me:

Chris Sanford (csanford@nsf.gov)
703-292-2209
Why does the National Science Foundation invest in STEM education?

“We shall have rapid or slow advance on any scientific frontier depending on the number of highly qualified and trained scientists exploring it.”

Vannevar Bush

Science: The Endless Frontier
The National Science Foundation

Office of the Director
France A. Córdova

National Science Board

Biological Sciences

Computer and Information Science and Engineering

Engineering

Education and Human Resources

Geosciences

Mathematical and Physical Sciences

Social, Behavioral, and Economic Sciences
EHR Mission:
• Develop a diverse workforce ready to advance the frontiers of science and engineering for society
• Grow and sustain a STEM-literate public
STEM Workforce and STEM-Literate Public

- STEM Workforce
- Graduate School
- Undergraduate Education
- Postdoctoral Experiences
- Community College
- High School
- Middle School
- Elementary School
- Early Childhood Education
STEM Workforce and STEM-Literate Public

- Virtual Worlds
- Making
- Augmented Reality
- Games
- Museums
- Online Learning
- Science Centers
- Social Media
- Citizen Science
- After-school Programs
EHR is committed to an inclusive STEM enterprise for science and society.

- $953 million FY 2017 request
- 4,243 proposals
- 147,000 EHR-supported researchers
- 831 awards funded
- 650 EHR-funded Institutions
- Funds all S&E disciplines
- Funds research in STEM education
- 42 former GRF fellows received Nobel Prize

*Other than the FY 2017 request, numbers shown are based on FY 2015 activities.*
Federal Science, Technology, Engineering, and Mathematics (STEM) Education 5-Year Strategic Plan

Priority Areas

- P-12 STEM education
- Undergraduate education
- Graduate education
- Broadening participation
- Public engagement
- Coordination and evaluation

DIRECTORATE FOR EDUCATION AND HUMAN RESOURCES
## Federal STEM Education 5-Year Strategic Plan

<table>
<thead>
<tr>
<th>Priority Area</th>
<th>Goal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P-12 STEM Education</strong></td>
<td>100,000 new K-12 STEM teachers by 2020 and support existing STEM teacher workforce</td>
</tr>
<tr>
<td><strong>Undergraduate Education</strong></td>
<td>Graduate 1 million additional students with degrees in STEM fields over a decade</td>
</tr>
<tr>
<td><strong>Graduate Education</strong></td>
<td>Provide basic research expertise, professional development, and specialized skills development to graduate-trained STEM professionals</td>
</tr>
<tr>
<td><strong>Broadening Participation</strong></td>
<td>Increase number of underrepresented minorities graduating in STEM and improve women’s participation where they are significantly underrepresented</td>
</tr>
<tr>
<td><strong>Youth &amp; Public Engagement</strong></td>
<td>Support a 50% increase in the number of youth who have authentic STEM experiences each year</td>
</tr>
<tr>
<td><strong>Governance &amp; Coordination</strong></td>
<td>Build new models for leveraging assets and expertise Build and use evidence-based approaches</td>
</tr>
</tbody>
</table>
EHR’s Focal Areas

- Learning & Learning Environments
- Broadening Participation & Institutional Capacity
- Workforce Development
EHR Core Research (ECR) across all themes: EHR invests in foundational research for the strategic improvement of STEM education.
## Program Focus in the EHR Directorate

<table>
<thead>
<tr>
<th>EHR Division</th>
<th>Learning and Learning Environments</th>
<th>Broadening Participation in STEM</th>
<th>STEM Professional Workforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research on Learning (DRL)</td>
<td>ECR -Learning DR-PK12 AISL</td>
<td>ECR includes:</td>
<td>• STEM+C Partnerships for the 21&lt;sup&gt;st&lt;/sup&gt; Century ITEST - Innovative Technology Experiences for Students and Teachers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Research on Gender in Science and Engineering (GSE)</td>
<td>• CSforAll</td>
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<td></td>
<td>• Research in Disabilities Education (RDE)</td>
<td>• ITEST</td>
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<tr>
<td>Graduate Education (DGE)</td>
<td>Project and Program Evaluation (PPE) Building Community &amp; Capacity in Data (BCC)</td>
<td>ECR- <strong>STEM Professional Workforce</strong> CyberCorps: Scholarship for Service (SFS) Graduate Research Fellowship (GRF) National Research Traineeship (NRT)</td>
<td></td>
</tr>
<tr>
<td>Human Resource Development (HRD)</td>
<td>ADVANCE AGEP HBCU-UP TCUP</td>
<td>ECR- <strong>Broadening Participation and Capacity Building</strong> LSAMP</td>
<td></td>
</tr>
<tr>
<td>Undergraduate Education (DUE)</td>
<td>ECR-Learning Environment</td>
<td>Excellence Awards in Science and Engineering - PAEMST &amp; PAESMEM CREST</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improving Undergraduate STEM Education (IUSE)</td>
<td>Advanced Technological Education (ATE) Robert Noyce Teacher Scholarship Program S-STEM Scholarship Program</td>
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</tr>
<tr>
<td>Research on Learning in Formal and Informal Settings (DRL)</td>
<td>Core Research &amp; Development (ECR)</td>
<td>ECR* includes:</td>
<td>STEM+C Partnerships for the 21st Century</td>
</tr>
<tr>
<td></td>
<td>DR-K12- (Discovery Research K-12 )</td>
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<td>ITEST - Innovative Technology Experiences for Students and Teachers</td>
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<td></td>
<td>AISL- Advancing Informal STEM Learning</td>
<td>• Research in Disabilities Education (RDE)</td>
<td>CSforAll</td>
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<tr>
<td></td>
<td>Big Data</td>
<td>• AISL and ITEST are BP emphasis programs</td>
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## Program Focus in DUE

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<td>IUSE- Improving Undergraduate STEM Education</td>
<td>Robert Noyce Teacher Scholarship Program (NOYCE)</td>
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<td></td>
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<td>S-STEM = Scholarship in STEM Program</td>
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## Program Focus in DGE

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<td>Graduate Education (DGE)</td>
<td>Project and Program Evaluation (PPE)/Promoting Research and Innovation in Methodologies for Evaluation (PRIME)</td>
<td>• EHR Core Research: Workforce Development (ECR)*</td>
<td>• NSF Innovation Corps (I-Corps)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• SFS- CyberCorps: Scholarship for Service</td>
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<td>• GRF - Graduate Research Fellowship</td>
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<td>• NRT- National Research Traineeship</td>
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<td></td>
<td>• INSPIRE-Integrated NSF Support Promoting Interdisciplinary Research and Education</td>
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<tr>
<td></td>
<td></td>
<td>• NSF Innovation Corps (I-Corps)</td>
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Research and Evaluation

• All EHR awards are expected to contribute to knowledge about STEM learning and learning environments, workforce development or broadening participation.

• Research
  – Is integral to the project
  – Contributes to generalizable knowledge
  – Depending on the research questions, can be qualitative, quantitative or mixed

• Evaluation
  – All projects must have a way to assess process or outcomes
  – Depending on the solicitation, evaluation needs to be independent but can be done by an external firm, an advisory board or through peer review
Common Guidelines

• Foundational Research and Early-Stage or Exploratory Research
• Design and Development Research
• Efficacy Research
• Effectiveness Research
• Scale-up Research

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<td>• ADVANCE-Increasing the Participation and Advancement of Women in S &amp; E careers</td>
<td>*Core Research &amp; Development (ECR)</td>
<td>• PAEMST- Presidential Awards for Excellence in Mathematics and Science Teaching</td>
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<tr>
<td>(HRD)</td>
<td>• AGEP-Alliances for Graduate Education and the Professoriate</td>
<td>LSAMP- Louis Stokes Alliances for Minority Participation</td>
<td>• PAESMEM- Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring</td>
</tr>
<tr>
<td></td>
<td>• HBCU-UP-Historically Black Colleges and Universities Undergraduate Program</td>
<td></td>
<td>• CREST- Centers of Research Excellence in Science and Technology</td>
</tr>
<tr>
<td></td>
<td>• TCUP- Tribal Colleges and Universities Programs</td>
<td></td>
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</tbody>
</table>
NSF INCLUDES (16-544, 16-408; new one on the way)

Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science

• Comprehensive initiative to enhance U.S. leadership in science and engineering by seeking and developing STEM talent from all sectors and groups in our society

• Long-term goal

Support innovative models, networks, partnerships, and research that enable the U.S. science and engineering workforce to thrive by ensuring that all groups are represented in percentages comparable to their representation in the U.S. population

FY 2016: NSF 16-544, 16-081, $15.5M
FY 2017 Budget Request $16M
Using Collective Impact*- style approaches to scaling social innovation

<table>
<thead>
<tr>
<th></th>
<th>FY16</th>
<th>FY17</th>
<th>FY18 and beyond</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design and Development</strong></td>
<td>2 year awards @ $300K (30-40 awards)</td>
<td>2 year awards @ $300K</td>
<td>2 year awards @ $300K</td>
</tr>
<tr>
<td><strong>Launch Pilots</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Alliances</strong></td>
<td></td>
<td>5 year awards @ $12.5M (3-5 awards)</td>
<td>5 year awards @ $12.5M</td>
</tr>
<tr>
<td>may be funded in FY 17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Backbone Organizations</strong></td>
<td>Conferences and Workshops</td>
<td>5 year award(s) @ $3.5M</td>
<td>5 year awards @ $3.5M</td>
</tr>
<tr>
<td>may be funded in 17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>PI Meeting Evaluation &amp; Assessment</td>
<td>Link to BP Portfolio Evaluation &amp; Assessment</td>
<td>Link to BP Portfolio Evaluation &amp; Assessment</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Key elements INCLUDES is looking for

- Design & Development
  Launch Pilots in FY16, FY17

- Novel systems approaches and collective impact-style strategies

- New research, models, networks, and partnerships to scale social innovations

- Leverage the current Broadening Participation Portfolio

- Collaborative alliances spanning education levels, public and private sectors,...
NSF INCLUDES Alliances

• Up to five NSF INCLUDES Alliances will be funded beginning in FY 2017 or FY 2018
• Alliances will involve the most promising launch pilot activities
• Design and Development Launch Pilots may be reconfigured by adding new partners, collaborators or networks = new Alliance team
• Alliances may focus on emerging fields in science and engineering or established fields - key is to advance BP
• Each Alliance to be funded for 5 years at $2.5M per year
Research, Development, and Model-Building for STEM Learning:

A Core Knowledge
- Foundational Research
- Early Stage and Exploratory Research

B Design and Development Projects

C Impact: Studies
- Efficacy Studies
- Effectiveness Studies
- Scale-up Studies

Common Guidelines for Education Research & Development
Prospective Principal Investigators

- Engage with NSF
- Answer fundamental questions
- Seek Collaborations
- Strengthen Interdisciplinary Partnerships
- Communicate – early and often!
Engage with NSF

• Submit Proposals
• Serve as Reviewers & Panelists
• Be Active as Workshop Participants and Organizers
• Consider Being a Rotator
  http://www.nsf.gov/about/career_opps/rotators/index.jsp

For information on a particular EHR division and program, go to the EHR website and choose a division.

Contact NSF Program Directors for questions and suggestions
Answer fundamental questions

**Goals**
- What are you trying to accomplish?
- What will be the outcomes?

**Rationale**
- Why do you believe that you have a good idea?
- Why is the problem important?
- How does it tie into previous literature/efforts?
- Why is your approach promising?

**Evaluation**
- How will you manage the project to ensure success?
- How will you know if you succeed?

**Dissemination**
- How will others find out about your work?
- How will you interest them?
- How will you excite them?
Stay connected

• NSF: www.nsf.gov
• Proposal and Award Policies and Procedures Guide (PAPPG): http://
• Guide to Programs: www.nsf.gov/funding/browse_all_funding.jsp
• Award Information: www.nsf.gov/awardsearch
• FastLane: www.fastlane.nsf.gov
• Data Management Plan: www.nsf.gov/bfa/dias/policy/dmp.jsp
• Funding Opportunities: www.nsf.gov/funding
Thank You!

Elizabeth VanderPutten
evanderp@nsf.gov
Purpose and Format

Purpose
Provide organizations new to NSF awards an opportunity to ask questions about policies and best practices for managing federal funds

Format
Open forum for discussion and dialogue, with questions coming from organizations
Panelists

Beatriz Azor, Cost Analyst
Cost Analysis and Audit
Resolution Branch, DIAS

Dale Bell, Division Director
DIAS

Kim Bub, Staff Associate
DGA

Jean Feldman, Head, Policy Office, DIAS

Jeremy Leffler, Outreach Specialist, Policy Office, DIAS

Jeff Vieceli, Head, Awards Systems Office, DIAS
NSF.gov hosts a range of guidance to assist awardees with managing NSF-funded awards

<table>
<thead>
<tr>
<th>NSF Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prospective New Awardee Guide (PNAG)</strong> – highlights the accountability requirements associated with federal awards and contains information to assist in preparing the documents NSF requires to conduct pre-award administrative and financial reviews.</td>
</tr>
<tr>
<td><strong>Uniform Guidance, NSF Implementation Webinar</strong> – presents changes in NSF policy with the implementation of the Uniform Guidance. Slides from the presentation are also available. The presenter is Jean Feldman, Head of the NSF Policy Office.</td>
</tr>
<tr>
<td><strong>About Award Cash Management Service (ACM$)</strong> – provides information on how to use the NSF ACM$ system for grant-by-grant award payments and post-award financial processes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key NSF Divisions, Offices, and Branches</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Division of Financial Management (DFM)</strong> – provides financial services to the NSF research community (NSF staff, grantees, and vendors).</td>
</tr>
<tr>
<td><strong>Division of Grants and Agreements (DGA)</strong> – processes and issues award agreements. DGA also conducts business, financial, and award administrative reviews to ensure awardee and grant compliance. DGA Grants &amp; Agreements Officers can assist with grant-specific questions.</td>
</tr>
<tr>
<td><strong>DIAS/Cost Analysis and Audit Resolution (CAAR) Branch</strong> – performs cost analyses, resolves audit findings pertaining to NSF awards, and conducts various award monitoring activities that provide business assistance to awardees.</td>
</tr>
<tr>
<td><strong>DIAS/Policy Office</strong> – develops and issues proposal and award policy for the NSF programs, leads outreach efforts, and assists awardees with policy-related questions.</td>
</tr>
<tr>
<td><strong>DACS/Cooperative Support Branch (CSB)</strong> – carries out the negotiation, award, administration, monitoring, and oversight of complex cooperative agreements for large facilities.</td>
</tr>
</tbody>
</table>
Financial Assistance Organizations

A number of associations and organizations provide information on best practices in the areas of internal controls and grants management processes.

Direct Resources:
- Federal Demonstration Partnership (FDP)
- National Council of University Research Administrators (NCURA)
- National Grants Management Association (NGMA)
- Society for Research Administrators International (SRA)

Related Resources:
- Association of Government Accountants (AGA)
- National Academy of Public Administration (NAPA)
- U.S. General Accountability Office (GAO)
For More Information

Ask Early, Ask Often!

nsf.gov/staff

nsf.gov/staff/orglist.jsp

nsf.gov/about/career_opps/rotators/index.jsp

policy@nsf.gov
NSF Directorate for Engineering

Hao Ling
NSF Grants Conference
November 14 – 15, 2016
Presentation Outline

- NSF Organization Charts and Data
- Proposal Opportunities in ENG
- Advice on Proposal Writing
- Q/A
ENG and SBIR/STTR R&RA Budgets ($M)

- ENG
- ENG ARRA
- SBIR/STTR
- SBIR/STTR ARRA

ENG by the Numbers: FY 2016

- Total number of proposals: **12,574**
- Total number of new awards: **2,502**
- Total number of research proposals (excludes SBIR/STTR and I-Corps Teams): **9,614**
- ENG funding rate (excludes SBIR/STTR and I-Corps Teams): **16%**
- Estimated number of researchers and students supported: **23,350**
- Supported 19 ERCs, 3 STCs, 75 I/UCRCs, and 3 research facility networks
Electrical, Communications, and Cyber Systems (ECCS)

Deputy Division Director
Dominique Dagenais (acting)

Division Director
Fil Bartoli

Senior Engineering Advisor
Larry Goldberg

Electronics, Photonics, and Magnetic Devices (EPMD)
Dominique Dagenais
Nadia El-Masry
Mahmoud Fallahi
Dimitris Pavlidis
Usha Varshney

Communications, Circuits, and Sensing Systems (CCSS)
Hao Ling
Jenshan Lin
Chengshan Xiao
Shubhra Gangopadhyay
Mona Zaghoul

Energy, Power, Control and Networks (EPCN)
Kishan Baheti
Eyad Abed
Alireza Khaligh (expert)
Civil, Mechanical, and Manufacturing Innovation (CMMI)

**Senior Advisor**  
Bruce Kramer

**Division Director**  
Deborah Goodings

**Deputy Division Director**  
George Hazelrigg

**Advanced Manufacturing**
- Cybermanufacturing Systems  
  Bruce Kramer
- Manufacturing Machines and Equipment  
  Steven Schmid
- Materials Engineering and Processing  
  Tom Kuech, Alexis Lewis, Mary Toney
- NanoManufacturing  
  Khershed Cooper

**Mechanics and Engineering Materials**
- Biomechanics and Mechanobiology  
  David Fyhrie
- Design of Engineering Material Systems  
  Mary Toney, Kara Peters
- Mechanics of Materials and Structures  
  Kara Peters, Thomas Kiegmund
- Natural Hazards Engineering Infrastructure  
  Joy Pauschke, William Miller, Erica Stein, Deanna DiGiovanna

**Operations, Design and Dynamical Systems**
- Dynamics, Control and Systems Diagnostics  
  Jordan Berg
- Engineering and Systems Design  
  Richard Malak
- Service, Manufacturing & Operations Research  
  Diwakar Gupta
- Systems Science  
  Richard Malak

**Resilient and Sustainable Infrastructures**
- Civil Infrastructure Systems  
  David Mondonca
- Natural Hazards Engineering Research Infrastructure  
  Joy Pauschke, Kishor Mehta
- Geotechnical Engineering and Materials  
  Richard Fragaszy
- Structural and Architectural Engineering  
  Yick Hsuan
- Infrastructure Mgmt. and Extreme Events  
  David Mondonca
Engineering Education and Centers (EEC)

- Large-scale research investments in ENG
- Supports collaboration with industry and other stakeholders to promote innovative research and education

**Engineering Research Centers (ERC)**
- Three generations (50 centers total) since 1985
- New Nano-Systems ERCs (NERCs) in FY12

**Nanoscale Science and Engineering Centers (NSEC)**
- 19 NSECs since 2001
- 3 graduated NSECs from FY01 class

**Network for Computational Nanotechnology**
- Cyber-resource for nanotechnology theory, modeling and simulation
- nanoHUB.org gateway for nanotechnology research and education
- > 180k users globally
Industrial Innovation and Partnerships (IIP)

- Fostering partnerships to advance technological innovation
- For small business: SBIR/STTR
  - small business research proposals aimed at pursuing opportunities to commercialize products and services
  - Solicitations only
- For academia: I-Corps, GOALI, I/UCRC
ENG Investments

NSF ENG MISSION

Investing in engineering research and education and fostering innovations for benefit to society
Presentation Outline

- NSF Organization Charts and Data
- Proposal Opportunities in ENG
- Advice on Proposal Writing
- Q/A
ENG Funding Opportunities

I. Core Programs

II. Crosscutting and NSF-Wide Solicitations
1. Core Programs

- Unsolicited proposals
  - **Submission Window:** *Once or Twice a Year*
  - **Award Size for Unsolicited:** ~ *$360K for three years*
  - **Funding Rate:** ~ *16%*
ECCS Areas of Interest

- Fundamental research issues underlying electronic and photonic device and component technologies, power, controls, computation, communications, sensing and cyber technologies

- The integration and networking of intelligent systems at the nano, micro and macro scales
  - for healthcare, homeland security, disaster mitigation, energy, telecommunications, environment, transportation, manufacturing, and other systems-related areas

- ONE submission window per year: Oct. 1 – Nov. 1
CBET Areas of Interest

Chemical and biochemical systems
- processing and manufacturing of products with chemical and renewable resources

Bioengineering and engineering healthcare
- integration of engineering and life science to solve biomedical problems

Environmental engineering and sustainability
- reduction of adverse effects of solid, liquid, and gaseous discharges into land, waters, and air that result from human activity

Transport, thermal and fluids phenomena
- thermal, mass, and momentum transport that enable new technological solutions (energy, environment, manufacturing, health care, ...)

ONE submission window per year: October 1 – 20
CMMI Areas of Interest

Advanced Manufacturing
- transformative advances in manufacturing and materials processing, with emphases on efficiency, economy, sustainability and scalability

Mechanics and Engineering Materials
- understanding the properties and use of materials in engineered and natural systems

Resilient and Sustainable Infrastructures
- innovation to advance resilience and sustainability of civil infrastructure and distributed infrastructure networks

Operations, Design and Dynamic Systems
- decision-making aspects of engineering, including design, control, optimization and systems science

1. Core Programs

- Unsolicited proposals
  - Submission Window: *Once or Twice a Year*
  - Award Size for Unsolicited: ~ $360K for three years
  - Funding Rate: ~ 16%

- CAREER awards
  - Submission Deadline: *July 21, 2016*
  - Award Size: $500K for five years
CAREER

- Foundation-wide activity that offers NSF’s most prestigious awards for faculty members beginning their independent careers.
- Provides stable support at a sufficient level and duration to enable awardees to develop careers as outstanding researchers and educators who effectively integrate teaching, learning, and discovery.
- Be employed as an assistant professor as of October 1 following submission.
- Have not competed more than two times previously in the CAREER program.
FY16 CAREER RECIPIENTS

- Supports early-career investigators who exemplify the role of teacher–scholar
- Stimulates breakthrough research ideas and encourages risk-taking and innovative thinking among young investigators
- 160 ENG CAREER awards in FY 2016, [http://1.usa.gov/1SQ1BmJ](http://1.usa.gov/1SQ1BmJ)
1. Core Programs Cont’d

- **Major Research Instrumentation (MRI)**
  - **Deadline:** *Second Wednesday in January (1/11/2017)*
  - **Award Size:** ~$100K to $4M

- **Supplements**
  - Research Experience for Undergraduates (REU)
  - Research Experience for Teachers (RET)
  - Industry-university collaboration (GOALI)
  - International (co-funding with OISE)
2. Crosscutting and NSF-Wide Solicitations

- Enhancing Access to the Radio Spectrum (EARS)
- Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS)
- Understanding the Brain (UtB)
- Cyber-Physical Systems (CPS)
- Critical Techniques and Technologies for Advancing Big Data Science & Engineering (BIGDATA)
- National Nanotechnology Infrastructure Network (NNIN)
- National Robotics Initiative (NRI)
- Cyber Science, Engineering and Education for Sustainability (Cyber SEES)
- Designing Materials to Revolutionize and Engineer our Future Program (DMREF)
- Scalable Nanomanufacturing (SNM)
- Failure-Resistant Systems (FRS)
Enhancing Access to the Radio Spectrum (EARS)

- Presidential memo (2010): *Unleashing the Wireless Broadband Revolution*
  
  “NSF, in consultation with the FCC and NTIA, should fund wireless research and development that will advance the science of spectrum sharing.”

- Enhancing radio spectrum efficiency and leading to greater access to wireless services for all Americans

- FY 2012-2016: **ENG, CISE, and MPS** investment in EARS totals nearly $67 million

- FY 2017: New **SpecEES** (Spectrum Efficiency, Energy Efficiency, and Security) program, jointly supported by ENG and CISE, to build on EARS investment
Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS)

- Advance understanding of the FEW system through quantitative and computational modeling
- Develop real-time, cyber-enabled interfaces that improve understanding of the behavior of FEW systems and increase decision support capability
- Enable research that will lead to innovative solutions to critical FEW problems
- Grow the scientific workforce capable of studying and managing the FEW systems

Illustration credit: Nicolle R. Fuller, Sayo-Art LLC

NSF-wide initiative (led by GEO and ENG/CBET) in collaboration with USDA/NIFA
Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP)

- Improves the resilience, interoperation, performance, and readiness of critical infrastructure

- Jointly supported by ENG, CISE, and SBE to enhance understanding, design, and innovation of Interdependent Critical Infrastructure (ICI) systems and processes to deliver essential goods and services despite disruptions, whether human-induced or natural

Credit: ©Fotolia/ collage N. Hanacek
Emerging Frontiers in Research and Innovation (EFRI)

- Supports higher-risk, higher-payoff opportunities that:
  - Are potentially transformative
  - Address a national need or grand challenge

- Recent topic areas:
  - 2-D Atomic-Layer Research and Engineering (FY14-15)
  - Advancing Communication Quantum Information Research in Engineering (ACQUIRE) (FY16-17)
  - New Light and Acoustic Wave Propagation: Breaking Reciprocity and Time-Reversal Symmetry (NewLAW) (FY16-17)

- 4-year awards at ~$500K per year
- Letters of Intent ➔ Preliminary Proposal ➔ Full Proposal
These solicitations typically have

- Targeted program goals
- Specified budget limit
- PI requirements
  - Minimum no. of PIs per proposal
  - Limit on no. of proposals per PI
- Solicitation-specific review criteria
How to find a complete list of solicitations?

Electrical, Communications and Cyber Systems (ECCS) Active Funding Opportunities

- **Title**: Computational and Data-Enabled Sciences and Engineering (CD&SE)
  - **Program Guidelines**: Full Proposal: December 9, 2016
- **Title**: IUSE / Professional Formation of Engineers: REvolutizing engineering and computer science departments (IUSE/PE: RED)
  - **Program Guidelines**: Letter of Intent: December 9, 2016
- **Title**: National Science Foundation Research Traineeship (NRT) Program
  - **Program Guidelines**: Letter of Intent: December 9, 2016
- **Title**: ADVANCE: Increasing the Participation and Advancement of Women in Academic Sciences and Engineering Careers
  - **Program Guidelines**: Letter of Intent: December 9, 2016
- **Title**: Innovation Corps Teams Program (I-Corps Teams)
  - **Program Guidelines**: Full Proposal: December 15, 2016
- **Title**: Secure and Trustworthy Cyberspace (SaTC)
  - **Program Guidelines**: Full Proposal: December 15, 2016
- **Title**: EPSCoR Research Infrastructure Improvement Program: Track-2 17-503 Focused EPSCoR Collaborations (II Track-2 FEI)
  - **Program Guidelines**: Letter of Intent: January 10, 2017
- **Title**: ADVANCE: Increasing the Participation and Advancement of Women in Academic Sciences and Engineering Careers
  - **Program Guidelines**: Full Proposal: January 11, 2017
- **Title**: Major Research Instrumentation Program (MRI)
  - **Program Guidelines**: Full Proposal: January 11, 2017
- **Title**: Scalable Nanomanufacturing for Integrated Systems (SNM-15)
  - **Program Guidelines**: Full Proposal: January 13, 2017
- **Title**: Designing Materials to Revolutionize and Engineer our Future (DMREF)
  - **Program Guidelines**: Full Proposal: January 17, 2017
- **Title**: IUSE / Professional Formation of Engineers: REvolutizing engineering and computer science Departments (IUSE/PE: RED)
  - **Program Guidelines**: Full Proposal: January 18, 2017
- **Title**: Spectrum Efficiency, Energy Efficiency, and Security (SpecIES) 16-516
  - **Program Guidelines**: Full Proposal: January 18, 2017

**Page**: Previous | Next (Showing: 16-30 of 91)
Presentation Outline

- NSF Organization Charts and Data
- Proposal Opportunities in ENG
- Advice on Proposal Writing
- Q/A
Before You Start

- Identify the most appropriate program for your proposal.
- Volunteer to serve on proposal review panels to learn where the bar is.
When You Write

- NSF supports basic research, not development. Start by asking a scientific question.

- Clearly describe the current state-of-the-art. Then show how your proposed work will significantly exceed the SOA.
Aftermath

- Try, try and try again, even if you don’t succeed the first 6 times.
- However, do take reviewers’ comments to heart to improve your proposal.
Presentation Outline

- NSF Organization Charts and Data
- Proposal Opportunities in ENG
- Advice on Proposal Writing
- Q/A
NSF Grants Conference
Pittsburgh, PA
November 14-15, 2016

Directorate for Geosciences (GEO)

Sonia Esperança, Ph. D.
Division of Earth Sciences
sesperan@nsf.gov
Directorate for Geosciences: Our Mission

• Supports research in atmospheric, earth, polar and ocean sciences

• Address the Nation’s need to understand, predict and respond to environmental events and changes in order to use the Earth’s resources wisely
Era of Observation and Simulation
Division of Atmospheric and Geospace Sciences (AGS)

• Further our understanding of weather, climate and the solar-terrestrial system by expanding the fundamental knowledge of the composition and dynamics of the Earth’s atmosphere and geospace environment

• Support large, complex facilities required for research in the atmospheric and solar-terrestrial sciences
Division of Earth Sciences (EAR)

- Improve the understanding of the structure, composition, and evolution of the Earth and the processes that govern the formation and behavior of the solid Earth
- Support theoretical, computational, laboratories and field stations and state-of-the-art scientific infrastructure
Division of Earth Sciences

Surface Earth Processes Section
- Education & Human Resources
- Hydrologic Sciences
- Geomorphology & Land Use Dynamics
- Sedimentary Geology & Paleobiology
- Geobiology & Environmental Geochemistry

Deep Earth Processes Section
- Instrumentation & Facilities
- Integrated Earth Systems
- EarthScope
- Geophysics
- Petrology & Geochemistry
- Tectonics
Division of Ocean Sciences (OCE)

- Enhance understanding of all aspects of the global oceans and their interactions with the solid earth and the atmosphere
- Support major shared-use oceanographic facilities including research vessels and manned deep diving submersibles
Division of Ocean Sciences

Marine Geosciences Section
- Marine Geology & Geophysics
- Chemical Oceanography

Integrative Programs Section
- Ship Operations
- Oceanographic Facilities
- Oceanographic Instrumentation & Technical Services
- Oceanographic Technology & Interdisciplinary Coordination
- Ocean Sciences Education
- Ocean Drilling

Ocean Sciences Section
- Biological Oceanography
- Physical Oceanography

Ocean Sciences Education
Division of Polar Programs (PLR)

• Polar regions are unique natural laboratories to investigate Earth and its systems, explore the geographical frontier, perform science in extreme conditions.

• Support basic research and its operational activities in the Arctic and the Antarctic.
### Fiscal Year 2017 Budget Request

#### R&RA Funding
(Dollars in Millions)

<table>
<thead>
<tr>
<th>Category</th>
<th>FY 2015 Actual</th>
<th>FY 2016 Estimate</th>
<th>FY 2017 Request</th>
<th>Change over FY 2016 Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Sciences</td>
<td>$736.19</td>
<td>$744.17</td>
<td>$790.52</td>
<td>$46.35</td>
</tr>
<tr>
<td>Computer &amp; Information Science &amp; Engineering</td>
<td>932.98</td>
<td>935.82</td>
<td>994.80</td>
<td>58.98</td>
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<tr>
<td>Engineering</td>
<td>923.53</td>
<td>916.19</td>
<td>1,002.73</td>
<td>86.54</td>
</tr>
<tr>
<td>Geosciences</td>
<td>1,319.04</td>
<td>1,318.54</td>
<td>1,398.83</td>
<td>80.30</td>
</tr>
<tr>
<td>Mathematical &amp; Physical Sciences</td>
<td>1,376.32</td>
<td>1,349.15</td>
<td>1,436.45</td>
<td>87.30</td>
</tr>
<tr>
<td>Social, Behavioral &amp; Economic Sciences</td>
<td>276.19</td>
<td>272.20</td>
<td>288.77</td>
<td>16.57</td>
</tr>
<tr>
<td>Office of International Science and Engineering</td>
<td>48.46</td>
<td>49.10</td>
<td>52.05</td>
<td>2.95</td>
</tr>
<tr>
<td>Integrative Activities</td>
<td>427.46</td>
<td>447.06</td>
<td>459.86</td>
<td>12.80</td>
</tr>
<tr>
<td>U.S. Arctic Research Commission</td>
<td>1.41</td>
<td>1.43</td>
<td>1.43</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total, R&amp;RA</strong></td>
<td><strong>$6,041.57</strong></td>
<td><strong>$6,033.65</strong></td>
<td><strong>$6,425.44</strong></td>
<td><strong>$391.79</strong></td>
</tr>
</tbody>
</table>

Totals may not add due to rounding.
Fiscal Year 2017
Budget Request by Division

<table>
<thead>
<tr>
<th>GEO Funding</th>
<th>FY 2015 Actual</th>
<th>FY 2016 Estimate</th>
<th>FY 2017 Request</th>
<th>Change Over FY 2016 Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmospheric and Geospace Sciences (AGS)</td>
<td>$252.18</td>
<td>$253.67</td>
<td>$267.92</td>
<td>$14.25  5.6%</td>
</tr>
<tr>
<td>Earth Sciences (EAR)</td>
<td>178.31</td>
<td>179.39</td>
<td>191.68</td>
<td>12.29  6.9%</td>
</tr>
<tr>
<td>Integrative and Collaborative Education and Research (ICER)</td>
<td>84.22</td>
<td>83.74</td>
<td>94.95</td>
<td>11.22  13.4%</td>
</tr>
<tr>
<td>Ocean Sciences (OCE)</td>
<td>361.31</td>
<td>359.89</td>
<td>379.42</td>
<td>19.53  5.4%</td>
</tr>
<tr>
<td>Polar Programs (PLR)</td>
<td>443.02</td>
<td>441.85</td>
<td>464.86</td>
<td>23.01  5.2%</td>
</tr>
<tr>
<td>U.S. Antarctic Logistical Support (USALS)</td>
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<td><strong>Total, GEO</strong></td>
<td><strong>$1,319.04</strong></td>
<td><strong>$1,318.54</strong></td>
<td><strong>$1,398.83</strong></td>
<td><strong>$80.30</strong>  6.1%</td>
</tr>
</tbody>
</table>

Totals may not add due to rounding.
GEO Modes of support

- Unsolicited proposals from all scientists with interests in the geosciences
- Special competitions, often interdisciplinary
- Integration of research and education in geosciences
- Support for infrastructure, instrumentation, facilities
- Post-doctoral fellowship programs and workforce development programs
Cross-cutting Programs

- Faculty Early Career Program (CAREER)*
- Research in Undergraduate Institutions (RUI)
- Research Experiences for Undergraduates (REU)*
- Early Concept Grants for Exploratory Research (EAGER) *
- Grants for Rapid Response Research (RAPID) *

*contact Program Director before submitting
GEO Program Due Dates*

- **Atmospheric Sciences**: no due dates; proposal may be submitted any time

- **Earth Sciences**: January and July, no deadlines in some programs

- **Ocean Sciences**: February and August

- **Polar Programs**: ARC October, ANT April

- **Cross-cutting/special programs**: see solicitation or Dear Colleague Letter

*Check the NSF web site for actual dates and updates to requirements when developing a proposal*
GEO Instrumentation and Facilities - Funding opportunities

- Major Research Instrumentation (MRI and MRI-R²)
  
  $100,000 to $6M -- proposals requesting less than $100,000 will be considered only from non-Ph.D. granting organizations

- Improvements in Facilities, Communications, and Equipment at Biological Field Stations and Marine Laboratories (FSML)

- Earth Sciences: Instrumentation and Facilities (EAR/IF)

- EPSCoR Research Infrastructure Improvement Program: Inter-Campus and Intra-Campus Cyber Connectivity (RII C2)
GEO Instrumentation & Facilities
- Access

- GEO observing, analytical and supercomputing facilities are available to NSF PIs, students, and sometimes researchers funded by other sources.

- Each facility has its own application and review process.

- Users range from individual PIs and students to large international field campaigns.

- E.g. NCAR supercomputers, aircraft, radar; UNOLS fleet, Arctic and Antarctic logistic programs
GEO EAR Postdoc Fellowship

Support

- 24 months grant period
- $174K total directly to fellows

Eligibility

- Be US citizen, national, or permanent resident
- Have or will receive PhD by start of fellowship
- Not have worked more than 18 FTE months in positions requiring PhD
- Research within EAR purview

GOALS

- recognize investigators with significant potential
- fund research on topics supported by EAR and implementation of a broadening participation plan
- enable and establish leaders within the community
- support fellows at any appropriate U.S. or foreign host institution

Program Solicitation – 15-568
Deadline – January 10, 2017
More info: lpatino@nsf.gov
Improving Undergraduate STEM Education: Pathways into Geoscience (IUSE: GEOPATHS)

Program Solicitation - NSF 16-584

- Letter of Intent due (required) – August 15, 2016
- Full Proposal Deadline – October 11, 2016

Two Funding Tracks

- **GEOPATHS-EXTRA** - Engaging students in the geosciences through extra-curricular experiences and training - research universities/very high research activity in Carnegie classification not eligible

- **GEOPATHS-IMPACT** - Improving pathways into the geosciences through institutional collaborations – smooth transitions from high school to college, 2yr institutions to 4 yr. institutions, bachelors to grad school, or university to workforce
Partnerships in Geosciences Education

Tribal Colleges and Universities Program Solicitation

NSF 16-531

April 14th annually

The PArtnerships for Geoscience Education (PAGE) strand provides support for collaborations that will improve TCUP institutions' instructional capacity in geosciences; attract, retain, and support TCUP students in internships and research endeavors deemed to be necessary for a complete curriculum offering; and engage partner universities to provide an academic grounding and a successful transition for students who wish to study or attain degrees in geosciences.
Dear Colleague Letters

• GRIP Dear Colleague Letter (NSF 16-015) For those with Graduate Research Fellowships – supplements for Internships

• Improving Graduate Student Preparedness for Entering Workforce (NSF 16-067) – supplements for any active awards
EarthCube

• GEO partnership with CISE to create an integrated data management infrastructure across the geosciences through existing and new developments
• This cyberinfrastructure is currently being developed: Participate through community governance: www.earthcube.org
• NSF solicitation NSF 16-514 will be amended with new calls for proposals in the late Fall: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504780

Initiative: Cyberinfrastructure framework for 21st century Science, Engineering, and Education (CIF21)
INFEWS: Innovations at the Nexus of Food, Energy, and Water Systems

Growing populations, changes in land use, and increasing geographic and seasonal variability in precipitation patterns are placing ever-increasing stresses on the critical resources of food, energy and water (FEW).

https://foodenergywater.wordpress.com/

Amy Landis studies the feasibility of restoring soils degraded by industrial wastes and other pollutants for growing bioenergy crops. Credit: Jessica Hochreiter/Arizona State University
Goals of INFEWS

• Understand the FEW system (of systems) through integrated systems modeling;

• Create methodologies for effective data integration/cyber elements;

• Research innovative solutions and technologies; and,

• Support education, workforce, and community development.
## Risk and Resilience Initiative

### Risk and Resilience Funding by Directorate

<table>
<thead>
<tr>
<th>Directorate</th>
<th>FY 2015 Actual</th>
<th>FY 2016 Estimate</th>
<th>FY 2017 Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>CISE</td>
<td>$5.50</td>
<td>$6.00</td>
<td>$6.00 CRISP</td>
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<td>ENG</td>
<td>12.00</td>
<td>12.00</td>
<td>14.00 CRISP</td>
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<td>GEO</td>
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<td>17.75 PREEVENTS</td>
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<tr>
<td>MPS</td>
<td>-</td>
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<tr>
<td>SBE</td>
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<td>4.90 CRISP</td>
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<td><strong>Total</strong></td>
<td><strong>$19.34</strong></td>
<td><strong>$41.15</strong></td>
<td><strong>$43.15</strong></td>
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</table>

Totals may not add due to rounding.

### Overarching risk & resilience goals

- Improve predictability & risk assessment, increase resilience
- Reduce impact of extreme events on life, society, economy
Prediction of and Resilience Against Extreme Events (PREEVENTS)

• Primary targets – must address both to be eligible
  • Enhance understanding of fundamental processes underlying natural hazards and extreme events
  • Improve capability to model and forecast such hazards and events

• Tracks
  • Track 1: Conferences to foster new communities & interdisciplinary approaches, proposals any time
  • Track 2: Projects addressing both goals, extending beyond typical for GEO programs, deadline 20 Sept for groups that submitted LOI in July
  • Also: Internal-only co-funding process

• Questions? Solicitation 16-562, email preevents@nsf.gov

Initiative : Risk and Resilience
NSF Award Cash Management Service
Agenda

- GCMS Monitoring Activities
- Small Business Innovation Research (SBIR)
- Returning Funds to NSF
- Questions
- Open Discussion
Grantee Cash Management Section
Monitoring Activities
GCMS Monitoring Activities

- Program Income
- Cancelling Funds
- Final Unliquidated Balances
- Balances of Concern
- Future Monitoring Activities
Gross income earned by the grantee that is directly generated by a supported activity or earned as a result of the grant.

Conference Grants are now deductive FL26 Article 4
Program Income Examples

Includes but not limited to:

- Fees charged to register participants for a workshop or conference
- Rental or usage fees charged for use of supplies or equipment purchased with grant program funds
- Services or items fabricated or produced under a sponsored program such as books and publications, software.
- Income from the sale of real property
- Income from Membership fees charged to individuals and organizations for grant related activities

Does not Include:

- Interest earned on deposit made from reimbursement
- Royalties from patents, copyrights, etc.
- Is not your total draw down amount requested for any given period

<table>
<thead>
<tr>
<th>Award #</th>
<th>Fund Authorized</th>
<th>Cash Disbursed</th>
<th>Available</th>
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<tr>
<td>Award 2</td>
<td>$128,500.00</td>
<td>$123,833.32</td>
<td>$4,666.68</td>
</tr>
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</table>
Reporting Worksheet Instructions

The 2014 Proposal and Award Policies and Procedures Guide (PAPPG) requires that all awardee organizations submit a Program Income Reporting Sheet. Starting October 1st all awardee organizations must report the amount of program income earned and expended as of September 30th each year. Awardee organizations will be required to submit the Program Income Reporting Sheet by November 14 in order to report the amount of program income earned and expended as of the end of the previous Federal fiscal year.

Program income is gross income earned by the awardee organization that is directly generated by a supported activity or earned as a result of NSF-funding. This would include things such as fees for services performed, the use or rental of real or personal property acquired under the grant, the sale of commodities or items fabricated under the grant, and license fees. Interest earned on advances of Federal funds is not program income.

Program Income Reporting Worksheet

1. To start, you must first click Download the Program Income Reporting Worksheet at the top of the Program Income page.

2. Once opened, begin by completing the following sections at the top left of the worksheet:
   1. Organization Name: Enter your organization’s name
   2. NSF Organization ID: Enter your organization’s NSF ID (10 characters)
   3. State: Enter your organization’s state abbreviation code (e.g., VA)
   4. Reporting Period: Pre-populated by NSF

3. Next, you will need to list your NSF awards that earned program income. If no awards have program income, skip to Step 8.

4. For each award listed, enter the cumulative amount of program income earned since the start of the award. Please note, program income does not include:
   1. Interest earned on deposit,
   2. Royalties from patents and copyrights,
   3. And is not your total draw down amount requested for any given period.

5. You must also determine the type of program income reported based on award terms and conditions and enter into.
The Program Income Reporting Worksheet will be available to awardees through Research.gov starting October 1\textsuperscript{st}.

Access webpage address: [http://research.gov/programincome](http://research.gov/programincome)

November 14, 2016 was the deadline for awardees to update, certify and submit the Program Income Reporting Worksheet to NSF for FY16.
Results

★Received over _____ program income reports
Each year NSF and our grantees lose $5 to $9 million in canceling funds.

Public Law 101‐510 requires that all federal agencies financially close fixed year appropriation accounts and cancel any remaining balances by September 30th of the 5th year after the period of availability.

Example:
- 2011/2012 Appropriation obligated until 9/30/2012
- Expend funds from obligated year (2011) through 9/30/2017
- Funds cancel on September 30, 2017 – return to US Treasury

The federal appropriation and not the effective/expiration dates of the award determines when it will cancel.
ACM$ will be closing on September 22, 2017 at 12:00pm EDT for year end.

After the cancel date:

- no adjustments
- no extensions

GCMS will continue to reach out to awardees who have cancelling funds throughout FY 2017.
Balances of Concern

- 3 months prior to expiration
- 75% or > unliquidated

Email inquiry
- Is there a problem?
Small Business Innovation Research (SBIR)

- Effective July 1 all new SBIR grants began being paid through ACM$

- First group was 184 grantees

- Expect approximately 600 new grantees after full conversion is complete
Returning Funds to NSF

- ACM$
- Transaction total must be zero dollars or greater
- Mailed Check to NSF Cashier
- Pay.gov, which now includes payment options for:
  - Debit and Credit card,
  - PayPal, and
  - Dwolla
ACM$ Maintenance Tasks

- Clean up Fastlane contacts – contact information is used to send NSF financial related information.

- Clean up draft transactions in ACM$
Updated GCMS Contact List

- **Chris Berner** – Acting Section Head – cmberner@nsf.gov or (703) 292-4335. USP & Foreign Grantees
- **Dorothy Battle** – dbattle@nsf.gov or (703) 292-4440
  AL, AR, CO, DE, FL, ID, IN, KY, LA, MA, MS, OR, PA, RI, SC, TN, UT, WV and All Fellowship Payments
- **Ilene Caruso** – icaruso@nsf.gov or (703) 292-8334
  AK, CA, CT, HI, IA, IL, KS, ME, MO, ND, NH, NM, NV, NY, OH, SD, WA, WY and All SBIR
- **Una Alford (Detailee)** – ualford@nsf.gov or (703) 292-7111
  DC, GA, MD, MT, NE, NJ, OK, VA
- **Judy Chu (Detailee)** – jchu@nsf.gov or 703-292-2546
  AZ, MI, MN, NC, OH, OR, TX, VT.
Open Discussion

- Feedback from the institutions
- Best Practices
- Challenges and concerns
Funding from the Directorate for Social, Behavioral and Economic Sciences

Robert E. O’Connor, Director
Program in Decision, Risk and Management Sciences

Division of Social and Economic Sciences
Directorate for Social, Behavioral, and Economic Sciences
National Science Foundation

Pittsburgh 2016
Outline

• Social Science Research Opportunities
• Submission Procedures
• Separating Awards from Declinations
Why Do You Want NSF Funding?

- Funds curiosity-driven research
- Pays full overhead (no match)
- Provides summer salary support
- Uses the grant mechanism
Opportunities

- Unsolicited competitions
- Special solicitations (e.g., CRI SP)
- Rapid response research (RAPID)
- Early-concept grants for exploratory research (EAGER)
- CAREER grants
- Dear Colleague Letter
- Doctoral dissertation improvement grants
- Research Coordination Networks
Where to Start?

- www.nsf.gov
- Check awards by program, keyword, etc. ([www.nsf.gov/awardsearch/](http://www.nsf.gov/awardsearch/))
- Read solicitation carefully (if not unsolicited competition)
Social and Economic Sciences (SES)

FY 2016 budget: approximately $100 million

- Decision, Risk, & Management Sciences
- Economics (Big Dog)
- Science of Organizations
- Law and Social Science
- Methodology, Measurement & Statistics
- Political Science
- Science, Technology and Society
- Sociology
SES Target Dates

January 15 & August 15
Law and Social Science
Political Science
Sociology

January 16 & August 16
Methods, Measures, and Statistics

January 18 & August 18
Decision, Risk, & Management Sciences
Economics

February 1 & August 1
Science and Society

February 2 & September 3
Science of Organizations
Behavioral and Cognitive Sciences (BCS)

FY 2016 budget: $100 million

• Archaeology & Archaeometry
• Cultural Anthropology
• Cognitive Neuroscience
• Developmental & Learning Sciences
• Geography & Regional Science
• Linguistics
• Perception, Action, & Cognition
• Biological Anthropology
• Social Psychology
January 14 & July 14
Cognitive Neuroscience

January 15 & July 15
Developmental & Learning Sciences
Linguistics
Social Psychology

January 15 & August 15
Cultural Anthropology
Geography & Regional Science

January 20 & August 20
Biological Anthropology

February 1 & August 1
Perception, Cognition and Action

July 1 & December 1
Archaeology
Doctoral Dissertation Improvement Awards

- Archaeology
- Cultural Anthropology
- Decision, Risk, & Management Science
- Economics
- Geography & Regional Science
- Law and Social Science
- Linguistics
- Biological Anthropology
- Political Science
- Science and Society
- Sociology

Directorate for Social, Behavioral, and Economic Sciences
Faculty Early Career Development (CAREER) Program

• Untenured faculty (or comparable)
• Single scholar award
• $400,000, 5-years minimum award
• Three proposals lifetime limit
• July 1 deadline
• “Walk on Water” expectation
Rapid Response Research (RAPID)

- Research when data are ephemeral
- $200,000 maximum; 1 year
- 5-page project description
- Internal review only
- Contact program officer first
Early-concept grants for exploratory research (EAGER)

• Exploratory work on untested, potentially transformative ideas
• High-risk, high-potential payoff
• $300,000 maximum; 2 years
• 8-page descriptive
• Internal review only
• Contact program officer first
Example: Stimulating Research Related to the Science of Broadening Participation

• Submit to relevant SBE program
• Front office to pay half of award
Research Coordination Networks

- Support groups of scholars focused on a theme
- Submit to a program
- Limited to 5-years, $500,000
Special Program: Dynamics of Coupled Natural and Human Systems (CNH)

- Funds quantitative, interdisciplinary analyses of relevant human and natural system processes and complex interactions at diverse scales
- First permanent inter-directorate program (BIO, GEO, SBE)
- November 15, 2016 deadline
Innovations at the Nexus of Food, Energy, and Water

• New program to replace Water Sustainability and Climate
• FY2017 is the second year
• Probably late winter, 2017 deadline
• Disciplines from three directorates required
• Systems framework required
• NIFA of USDA involved
• Big future
Critical Resilient Interdependent Infrastructure Systems and Processes

• Integration of engineering, computer science, and social science

• Three PIs

• February 8, 2017 deadline; $22,900,000


• Big Future
NRT

National Science Foundation Research Traineeship Program

• The new IGERT
• December 9, 2016 letters of intent
• $3M for 5 years in for interdisciplinary graduate education
NSF’s Future?

- FY2017 NSF’s Continuing Resolution runs out December 7, 2016
- The eternal conflict: disciplinary v. inter-disciplinary priorities
- Threats to social science and geoscience
Proposal Structure 1

- Summary (1 page; overview, intellectual merit, broader impacts)
- Description (15 pages)
- References (no limit, but....)
- Biographical sketches (2 pages each)
- Budget
- Budget justification (3 pages)
- COI Matrix
Proposal Structure 2

- Current and pending support (twice)
- Data Management Plan
- Post-Doc Mentoring Plan
- Reviewing Suggestions (optional)
Proposal Process

1. Organization submits via FastLane
2. Proposal Processing Unit
3. Minimum of 3 Reviews Required
   - Ad hoc
   - Panel
   - Both
4. Program Officer Analysis & Recommendation
5. Division Director Concur
6. Award via DGA
7. Returned as Inappropriate/Withdrawn
8. Proposal received by NSF
9. 4 months
10. P.O. Recommend
11. 30 days
12. DGA Review & Processing of Award

Proposal Preparation Time: 4 months
Review of Proposal: 30 days
P.O. Recommend: 4 months
DGA Review & Processing of Award: 30 days
NSF **Sources** of Reviewers

- Program Officer’s knowledge
- References listed in the proposal
- Google
- Community of Science and other databases
- Reviewer’s recommendations
- Investigator’s suggestions
Human Subjects

• No award for a project involving human subjects can be made without prior Institutional Review Board (IRB) approval of the research activity.

• IRB approval is not needed at the time of proposal submission.
Funding Decisions

• Program Officer decision
• Feedback to PI
• Informal and formal notification
• Scope of work and budget discussions
Two Funding Criteria

• Intellectual merit
• Broader impacts
Intellectual Merit?

- NSF funds basic research
- NSF funds basic research
- Intellectual merit means increasing knowledge through developing and examining basic theories or methods
Broader Impacts

- Definition changed 2 or so years ago
- New definition is essentially the utility of the new knowledge for society
- Weak intellectual merit implies weak broader impacts as significant new knowledge is unlikely to emerge
- Remnants of old definition remain (education, outreach, infrastructure, diversity) in some places
Budget Tips

• **Amounts**
  - Reasonable for work -- Realistic
  - Well justified -- Need established
  - In-line with program guidelines

• **Eligible costs**
  - Personnel
  - Equipment
  - Travel
  - Other Direct Costs, Subawards
  - Facilities & Administrative Costs
Myths about NSF

• Only funds scholars at elite graduate institutions
• Only funds “famous” academics
• Once declined, you are likely always to be declined
• Only funds “normal science”
• Advisory committees make funding decisions
Reasons for Declinations

• “Trust-me” proposal
• Not feasible
  – Expertise gaps
  – Insufficient funding
  – Too ambitious
• Incremental contribution
• Bad luck
How to Put Together an Interdisciplinary Team

• Commit for the long haul
  - Be wary if untenured
  - Expect a long development period

• Find a wise and strong leader
  - Proposals need coherence
  - Leaders need to listen and then decide

• Meet for intellectual as well as task-related purposes
NSF vs. NIH

- NSF tends to be smaller
- NSF is more open to risky, exploratory, paradigm-challenging work
- NSF stresses basic research
- NSF has no scoring system, percentile system
- NSF program officers make funding decisions
- NSF uses “revision encouragement” loosely
Advice

- Learn to love rejection
- Team up
- E-mail or call Program Officer with specific questions
- Encourage dissertation improvement grant proposals (check program first)
Useful to submit even if declined

• Revise and resubmit
• Discover other funding sources
• Forces thinking
• Build relationships
• Receive reviews from experts
QUESTIONS??

Contact Bob O’Connor
(703) 292-7263
roconnor@nsf.gov
National Science Foundation

MAJOR RESEARCH INSTRUMENTATION (MRI)

NSF Grants Conference
Pittsburgh, PA

November 15-16, 2016

Dr. Randy L. Phelps
Staff Associate

mri@nsf.gov  703-292-8040
http://www.nsf.gov/od/oia/programs/mri

OFFICE OF INTEGRATIVE ACTIVITIES
Major Research Instrumentation
Top-level Strategic Goals

Supports the acquisition or development of major research instrumentation that is, in general, too costly or not appropriate for support through other NSF programs. The instrument is expected to be operational for regular research use by the end of the award period.

• Supports the acquisition of a shared, major, state-of-the-art instrument, thereby improving access to, and increased use of, a modern research instrument by scientists, engineers and students;

        OR

• Supports the development of the next generation of major instrumentation, resulting in a new type of instrument that is more widely used, and/or opens up new areas of research and research training;

        AND

• Enables academic departments, disciplinary & cross-disciplinary units, and multi-organization collaborations to integrate research with research training.
National Science Foundation

MAJOR RESEARCH INSTRUMENTATION (MRI)

OFFICE OF INTEGRATIVE ACTIVITIES
MRI: Classification of Organizations

- **Ph.D. granting institutions of higher education** are accredited colleges and universities that have awarded more than 20 Ph.D.s or D.Sci.s in all NSF-supported fields during the combined previous two academic years. Additionally, any organization that awards Ph.D. or D.Sci. in NSF-supported fields is considered to be a Ph.D.-granting institution if the only degrees it awards in NSF-supported fields are post-Bachelor's degrees.

- **Non-Ph.D. granting institutions of higher education** are accredited colleges and universities (including two-year community colleges) that award Associate's degrees, Bachelor's degrees, and/or Master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years.

- **Non-degree granting organizations** are those that do not award Associate's degrees, Bachelor's degrees, Master's degrees, and/or Ph.D.s or D.Sci.s. Non-degree-granting organizations also include institutions of higher education that award all of their degrees outside of NSF-supported fields.


OFFICE OF INTEGRATIVE ACTIVITIES
MRI Proposals

• Next Deadline: January, 2017 (TBD)
• Restrictions on organization submission eligibility
• Submission limit - Three (3) per organization: If three proposals are submitted, at least one of the proposals must be for instrument development. (Stay tuned....)
• Cost-sharing at the level of 30% of the total project cost is required for Ph.D.-granting institutions and non-degree-granting organizations. Cost-sharing is not required for non-Ph.D. granting institutions.
• Merit Review - At the time of submission, PI’s are asked to identify an NSF division(s) to review proposal. NSF reserves the right to place proposals in the appropriate division(s) for review.

Note: Subject to change. Please await a likely new solicitation planned for Fall, 2016!
Finding a Home at NSF

National Science Board (NSB) → Director Deputy Director

Office of the Inspector General (OIG)

Biological Sciences (BIO)

Computer & Information Science & Engineering (CISE)

Engineering (ENG)

Geosciences (GEO)

Mathematical & Physical Sciences (MPS)

Social, Behavioral & Economic Sciences (SBE)

Education & Human Resources (EHR)

Budget, Finance & Award Management (BFA)

Information & Resource Management (IRM)

Diversity & Inclusion

General Counsel

Integrative Activities

Legislative & Public Affairs

International S&E

Office of Integrative Activities
What makes for a competitive proposal to the NSF MRI program?
--now and into the future
Understand NSF Before Ever Considering a Proposal!

- Know the NSF Website ([www.nsf.gov](http://www.nsf.gov))
- Identify appropriate funding opportunities ([www.nsf.gov/funding](http://www.nsf.gov/funding))
- Talk to Program Officers in Divisions where you fit
- Know program purpose, goals, and requirements
- Serve as a panelist!
- Talk to successful PIs
- Know NSF’s role compared to other Federal agencies
MRI Proposals

What makes an MRI proposal fail before it is reviewed?

Avoid the Dreaded “Rw/oR”

- Proposals describing activities that fall outside of the scope of those supported by the MRI program;
- Proposals describing activities that fall outside of the scope of those supported by NSF;
- Proposals that exceed an organization’s submission limit;
- Proposals with budgets outside of allowable MRI limits;
- Proposals that do not contain Results from Prior MRI Support in the Project Description;
- Proposals that do not contain required supplemental documentation;
- Proposals that do not contain a Management Plan in the Project Description......

There is a checklist in the solicitation – use it!

Proposals with the above issues (and others) are subject to Return Without Review!

OFFICE OF INTEGRATIVE ACTIVITIES
Q: Shared Use

• Personnel (How many?)
• Research Description
  → Format?
  → Drives Request
  → Bells/Whistles
Q: Management

• A management plan is required and should describe allocation of time to users, anticipated downtime, operations and maintenance, etc.

Great Researcher ≠ Great Manager!
Q: Management

• All NSF proposals must include (or not?) a data management plan (DMP) describing how NSF-funded research will be made available at incremental cost in a reasonable time.

DMP for instruments?
MRI Proposals

What makes an MRI proposal fail during the review?

- Proposals that do not demonstrate adequate institutional commitment;
- Proposals that do not adequately demonstrate how and by whom the instrument will be utilized, operated and maintained – i.e., proposals without a strong management plan;
- Proposals that do not demonstrate shared-use within the institution, and/or among institutions;
- Proposals that request instrumentation that is otherwise reasonably accessible;
- Proposals that do not adequately match the budget to the scope of the project;
- Proposals that do not describe research training, particularly for groups underrepresented in science & engineering or persons with disabilities.

These proposals will be not review well!
MRI Proposals

So what makes an MRI proposal competitive?

Note the term “competitive”, rather than “successful”!

Due (in part) to budget limitations, 20-25% of submitted proposals are funded

Good proposals may not get funded
MRI Proposals

So what makes an MRI proposal competitive?

An obvious first step is to avoid the pitfalls already mentioned!
MRI Proposals
So what makes an MRI proposal competitive?

Build your case on its merits
What is the intellectual merit of the proposed activity?
What are the broader impacts of the proposed activity?

• Describe (enthusiastically) compelling research / research training activities to be undertaken with the instrument.

  Buy/Build it and they will come is not a good reason!

• Demonstrate how your activities will make meaningful contributions within and across disciplines in both research and research training.

  We are the ones best able/positioned to do this work!

• Establishing a need is generally not enough.

  What makes you unique?

• Match your proposed effort to the mission of your institution and describe it in that context.

  MRI awards build institutional capacity
Describe your activities and goals in the context of the mission of your organization.
MRI Proposals
Some Additional Thoughts…

• Demonstrate leadership and commitment to complete the project.  
  *Being a good research scientist is one thing, being a good manager is quite another…*

• How would the project enable the integration of research and education?  
  *MRI is a Research and Research Training program.*

• How would the project enable integrating diversity into NSF programs, projects, and activities?  
  *Saying it will is not enough!*

• Ask for what you need, no more no less.  
  *Bells and whistles are nice, but…*

• Avoiding pitfalls (*i.e.*, “Don’t Do This”) will not guarantee a competitive proposal.  
  *So your proposal is technically flawless but is it compelling?*
The “opposite” of “Don’t Do This” is a vast range of possible approaches, strategies, and designs for your proposal.
Important Takeaway

Submit early and check that what was received at NSF is what you intended to submit!

You can always revise and resubmit proposals prior to the deadline, but not afterwards!
MRI Proposals
Some Additional Thoughts…

Think like a reviewer

• What “story” would you want to hear?
• If you wonder if reviewers will have a concern, almost certainly they will!
• MRI, like other grants programs, is a competition – what makes your proposal stand out?
## 2015 MRI Award Snapshot - Overall

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Reviewed</td>
<td>822 (184 DEV, 638 ACQ)</td>
</tr>
<tr>
<td>Dollars Requested</td>
<td>$532.88 M</td>
</tr>
<tr>
<td>Mean Dollars Requested</td>
<td>$649.07 K</td>
</tr>
<tr>
<td>Median Dollars Requested</td>
<td>$500.00 K</td>
</tr>
<tr>
<td>Number of Awards</td>
<td>167 (35 DEV, 132 ACQ)</td>
</tr>
<tr>
<td>MRI Amount Awarded</td>
<td>$74.18 M</td>
</tr>
<tr>
<td>NSF Amount Awarded</td>
<td>$94.54 M ($103.19 requested)</td>
</tr>
<tr>
<td>Overall Success Rate</td>
<td>20.3%</td>
</tr>
<tr>
<td>Mean Award</td>
<td>$566.10 K</td>
</tr>
<tr>
<td>Median Award</td>
<td>$379.13 K</td>
</tr>
<tr>
<td>Number of Institutions that Participated¹</td>
<td>436</td>
</tr>
<tr>
<td>Number of Institutions Awarded</td>
<td>151</td>
</tr>
</tbody>
</table>

¹ 1 proposal: 175.  2 proposals: 136.  3 proposals: 125.
# 2015 MRI Award Snapshot

## By Institution Type

<table>
<thead>
<tr>
<th></th>
<th>Ph.D.</th>
<th>non-Ph.D.</th>
<th>Non-degree</th>
<th>MSI</th>
</tr>
</thead>
<tbody>
<tr>
<td># reviewed</td>
<td>504 (149 DEV)</td>
<td>292 (27 DEV)</td>
<td>26 (8 DEV)</td>
<td>107 (20 DEV)</td>
</tr>
<tr>
<td>$ Requested</td>
<td>$390.46 M</td>
<td>$125.26 M</td>
<td>$17.17 M</td>
<td>$61.08 M</td>
</tr>
<tr>
<td>Mean request</td>
<td>$774.72 K</td>
<td>$428.96 K</td>
<td>$660.27 K</td>
<td>$570.81 M</td>
</tr>
<tr>
<td>Median request</td>
<td>$588.95 K</td>
<td>$338.44 K</td>
<td>$481.33 K</td>
<td>$505.11 K</td>
</tr>
<tr>
<td># awards</td>
<td>107 (28 DEV)</td>
<td>54 (4 DEV)</td>
<td>6 (3 DEV)</td>
<td>21 (6 DEV)</td>
</tr>
<tr>
<td>NSF $ awarded</td>
<td>$74.10 M</td>
<td>$16.38 M</td>
<td>$4.05 M</td>
<td>$12.32 M</td>
</tr>
<tr>
<td>MRI $ awarded</td>
<td>$55.03 M</td>
<td>$15.66 M</td>
<td>$3.49 M</td>
<td>$9.66 M</td>
</tr>
<tr>
<td>Success rate</td>
<td>21.23%</td>
<td>18.49%</td>
<td>23.07%</td>
<td>19.6%</td>
</tr>
<tr>
<td>Mean award</td>
<td>$692.55 K</td>
<td>$303.39 K</td>
<td>$675.63 K</td>
<td>$586.82 K</td>
</tr>
<tr>
<td>Median award</td>
<td>$492.29 K</td>
<td>$264.76 K</td>
<td>$522.42 K</td>
<td>$394.10 K</td>
</tr>
</tbody>
</table>
Thank You!

OFFICE OF INTEGRATIVE ACTIVITIES
Mathematical & Physical Sciences

Lora Billings, lbilling@nsf.gov
Program Director, Applied Mathematics
Division of Mathematical Sciences
NSF Vision and Goals

• Vision
  • A Nation that creates and exploits new concepts in science and engineering and provides global leadership in research and education

• Mission
  • To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense

• Strategic Goals
  • Transform the frontiers of science and engineering
  • Stimulate innovation and address societal needs through research & education
  • Excel as a Federal Science Agency
NSF in a Nutshell

- Independent agency to support basic research & education
- Grant mechanism in two forms:
  - Unsolicited, curiosity driven (the majority of the $)
  - Solicited, more focused
- All fields of science/engineering
- Merit review: Intellectual Merit & Broader Impacts
- Discipline-based structure, some cross-disciplinary
- Support large facilities
NSF Support of Academic Basic Research in Selected Fields (as a percentage of total federal support)

- All Science and Engineering Fields: 24%
- Physical Sciences: 40%
- Engineering: 41%
- Environmental Sciences: 59%
- Mathematics: 61%
- Social Sciences: 67%
- Biology: 68%
- Computer Science: 82%

Note: Biology includes Biological Sciences and Environmental Biology; excludes National Institutes of Health.
The mission of MPS is to harness the collective efforts of the mathematical and physical sciences communities to address the most compelling scientific questions, educate the future advanced high-tech workforce, and promote discoveries to meet the needs of the Nation.

The MPS Divisions support both disciplinary and interdisciplinary activities and partner with each other and with other NSF Directorates in order to effectively encourage basic research across the scientific disciplines.
Meant to define a set of cutting-edge research agendas and processes

1. NSF INCLUDES (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science): Enhancing Science and Engineering through Diversity
2. NSF 2050: The Integrative Foundational Fund
3. Understanding the Rules of Life: Predicting Phenotype
4. Work at the Human-Technology Frontier: Shaping the Future
5. Mid-scale Research Infrastructure
6. Windows on the Universe: The Era of Multi-messenger Astrophysics
7. Navigating the New Arctic
8. Harnessing Data for 21st Century Science and Engineering
9. The Quantum Leap: Leading the Next Quantum Revolution
10. Growing Convergent Research at NSF
MPS Scientific Opportunities

- Understanding the Brain
- Optics and Photonics
- Midscale Infrastructures
- Physical sciences at the nanoscale
- Quantum Information Science
- Complex systems (multi-scale, emergent phenomena)
- Fundamental mathematical and statistical science
- Sustainability (energy, environment, climate)
- Interface between the physical and life sciences
- CDS&E: Computational and data-enabled science and engineering
Computational- and Data-Enabled Science and Engineering (CDS&E)

Nano-scale Science & Engineering

Software Infrastructure for Sustained Innovation

Science, Engineering & Education for Sustainability (SEES) Shrinking – last chances!

Enhancing Access to the Radio Spectrum (EARS) on hold – may go away

CAREER – apply to Divisions

Career-Life Balance

Understanding the Brain

Optics & Photonics

Graduate Research Fellowship (GRF)

EPSCoR - Experimental Program to Stimulate Competitive Research

Cyber-Enabled Materials Manufacturing and Smart Systems (CEMMSS)

NSF Research Traineeship (NRT, successor to IGERT)

ADVANCE - to develop systemic approaches to increase the representation & advancement of women in academic STEM careers

Clean Energy Technologies

REU, RET

BIGDATA

Ethics Education in Science & Engineering (EESE)

Innovations at the Nexus of Food, Energy and Water Systems (INFEWS)

RUI – self-identify as RUI, impact statement, extra considerations

ROA – part of RUI – research university submits proposal

GOALI & I-Corps
CAREER Program

- NSF's most prestigious awards for junior faculty
- Awardees are selected based on their plan of outstanding research, excellent education, and the integration of research and education within the context of the mission of their organizations, building a firm foundation for a lifetime of leadership.
- Increased participation of those traditionally underrepresented in science and engineering is encouraged.

FY2016

- CISE 28%
- ENG 28%
- MPS 30%
- BIO 12%
- EHR 5%
- GEO 4%
- SBE 4%
TRIPODS aims to bring together the statistics, mathematics, and theoretical computer science communities to develop the theoretical foundations of data science through integrated research and training activities.

- Phase I will support the development of small collaborative Institutes.
- Phase II (to be described in an anticipated future solicitation, subject to availability of funds) will support a smaller number of larger Institutes, selected from the Phase I Institutes via a second competitive proposal process.
Computational and Data-enabled Science and Engineering (CDS&E)

- MPS disciplines are both leading consumers and hard drivers of cyber-capability: their needs force, & their research creates, breakthroughs – in algorithms, in simulation & modeling methods, and in materials for emerging cyber-technology
- CDS&E is a cross-directorate program involving MPS, ENG, and CISE/ACI “to identify and capitalize on opportunities for major scientific and engineering breakthroughs through new computational and data analysis approaches”
- Support for development, adaptation, or utilization of the capabilities offered by advancing both research and infrastructure in computation and data handling
- A “meta-program” – submit through pre-existing funding opportunities – see announcement PD12-8084
Cyber-Enabled Materials Manufacturing and Smart Systems (CEMMSS)

- Partnership with BIO, ENG & CISE
- Advanced Manufacturing
- Designing Materials to Revolutionize and Engineer our Future (DMREF)

- Fundamental research for discovering, modeling, making, optimizing and manufacturing with new materials and material systems

~$65M MPS

Materials Innovation Infrastructure

Computational tools
Experimental tools
Digital Data

Topological Insulators
Research at the Interface of Biological, Mathematical, & Physical Sciences (BioMaPS)

- Adaptive network models
- Biological design strategy for better composite materials
- Computational, Mathematical and Statistical modeling
- Cognitive Science
- Neuroscience

NSF $35M, MPS $18M in FY 2015
Directorate for Mathematical and Physical Sciences (MPS)

- Division of Astronomical Sciences: $246M
- Division of Chemistry: $246M
- Division of Materials Research: $310M
- Division of Mathematical Sciences: $234M
- Division of Physics: $277M
- Office of Multidisciplinary Activities: $35M

Numbers are actual FY 2016 expenditures
Gives statistics, mission statements, initiatives, funding rates, lots of information

Much material also available from the NSF website

Latest version 2015

Astronomical Sciences (AST)

- From the Big Bang to DNA
  - Origin and evolution of the Universe
  - Origin and evolution of galaxies
  - Origin and evolution of planetary and stellar systems

- National astronomy portfolio
  - Three agencies – NSF, NASA, and DoE – & international partnerships
  - Strong tradition of private funding
  - NSF assigned federal stewardship of ground-based astronomy
  - Includes open-access facilities & mission-free unrestricted grants

AST has a strong program in Education and Special Programs (including a major investment in post-docs)
Chemistry (CHE)

- Chemical Synthesis
- Chemical Structure, Dynamics, and Mechanisms A&B
- Theory, Models, and Computational Methods
- Chemical Measurement and Imaging

Integrative Chemistry Activities

- Centers
- Education and Broadening Participation
- Facilities and Instrumentation

Environmental Chemical Sciences
- Chemistry of Life Processes
- Chemical Catalysis
- Macromolecular, Supramolecular, and Nanochemistry

- Major CAREER and REU support
- Collaborations with NIH, DOE, EPA, & USDA
- Core Activities are Individual Investigator Programs

Critical areas of research:
Advanced Manufacturing; Computational and Data Enabled Science & Engineering, Sustainability; BioMAPS; DMREF; Food-Energy-Water
Materials Research (DMR)

- Eight Major Areas:
  1) Ceramics, 2) Electronic and Photonic Materials, 3) Metals and Metallic Nanostructures
  4) Condensed Matter Physics, 5) Condensed Matter & Materials Theory
  6) Biomaterials, 7) Polymers, 8) Solid-State and Materials Chemistry

- Materials Research Science and Engineering Centers (MRSEC)
- National Facilities and Instrumentation
Mathematical Sciences (DMS)

Covers the entire mathematical spectrum

Individual-investigator and group research grants
  » Disciplinary programs (unsolicited)
  » Special Research programs (solicited)

Institutes: National infrastructure for math. sciences
  » Visitors to long term programs, workshops

Workforce: Training the next generation of researchers
  » Postdoctoral fellowships
  » Graduate research training
  » Research experiences for undergraduates

In addition to supporting fundamental research in mathematical sciences, DMS plays an enabling role in all other sciences; DMS has been successful in partnering with other NSF Divisions and Directorates and with other government agencies.
## Mathematical Sciences (DMS)

### Priorities

#### Disciplinary
- Algebra and Number Theory
- Analysis
- Applied Mathematics
- Combinatorics
- Computational Mathematics
- Foundations
- Geometric Analysis
- Mathematical Biology
- Probability
- Statistics
- Topology

#### Interdisciplinary
- Mathematical Sciences Innovation Incubator (MSII)
- Optics and Photonics
- Interface of the Biological and Mathematical Sciences (DMS/NIGMS)
- Algorithms for Threat Detection (ATD)
- Interaction in Basic and Applied Scientific Research in BIO, ENG & MPS (BIOMaPS)
- Secure & Trustworthy Cyberspace (SaTC)
- Designing Materials to Revolutionize and Engineer our Future (DMREF)
- QIS, CIF21, SEES, INSPIRE, BRAIN
- BIGDATA: TRIPODS, QuBBD
Physics (PHY)

Programs (Experiment & Theory)
- Accelerator Science
- Atomic, Molecular, & Optical Physics
- Computational Physics
- Elementary Particle Physics
- Education and Interdisciplinary Research
- Gravitational Physics
- Nuclear Physics
- Particle Astrophysics
- Physics of Living Systems
- Physics Frontiers Centers
- Quantum Information Science

Facilities:
- Large Hadron Collider (LHC)
- Laser Interferometer Gravitational wave Observatory (LIGO)
- National Superconducting Cyclotron Laboratory (NSCL)
- IceCube
Instrumentation

- Both acquisition and development
- Major Research Instrumentation (MRI)
- Divisional instrumentation programs
- Research grants
World Class Major Facilities
Keeping Researchers at the Frontier

NSF

LHC
ARECIBO
NHMFL
NRAO
CHRNS
NOAO-N
NSO
ATST
CHESS
ICECUBE
GEMINI
LSST
ALMA
NOAO-S
LIGO
ALMA
NNIN
NSCL
Median Annualized Award Size and Duration

FY2015

Award duration from one to five years (longer allowed, but rare)
# Funding

Funding in then-year dollars

<table>
<thead>
<tr>
<th></th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16 Est.</th>
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</thead>
<tbody>
<tr>
<td>MPS</td>
<td>1308.7</td>
<td>1249.5</td>
<td>1267.9</td>
<td>1376.3</td>
<td>1349.2</td>
</tr>
<tr>
<td>AST</td>
<td>234.7</td>
<td>232.5</td>
<td>238.4</td>
<td>245.2</td>
<td>246.7</td>
</tr>
<tr>
<td>CHE</td>
<td>234.0</td>
<td>229.0</td>
<td>235.2</td>
<td>246.3</td>
<td>246.3</td>
</tr>
<tr>
<td>DMR</td>
<td>294.4</td>
<td>290.7</td>
<td>267.1</td>
<td>337.6</td>
<td>310.0</td>
</tr>
<tr>
<td>DMS</td>
<td>237.7</td>
<td>219.2</td>
<td>225.0</td>
<td>235.4</td>
<td>234.1</td>
</tr>
<tr>
<td>PHY</td>
<td>277.4</td>
<td>250.7</td>
<td>267.1</td>
<td>276.1</td>
<td>277.0</td>
</tr>
<tr>
<td>OMA</td>
<td>30.4</td>
<td>27.4</td>
<td>35.2</td>
<td>35.7</td>
<td>35.0</td>
</tr>
</tbody>
</table>

No adjustment for inflation

![Graph showing funding trends](image-url)
Merit Review Criteria

- **Three Principles**
  1. Highest quality: advance, even transform, the frontiers of knowledge.
  2. In aggregate, contribute more broadly to achieving societal goals.
  3. Based on appropriate metrics.

- **Two Criteria** (*unchanged*)
  1. Intellectual Merit
  2. Broader Impact

- **Five Elements**
  1. Potential to advance knowledge & benefit society
  2. Creative, original, or potentially transformative concepts?
  3. Well-reasoned, well-organized, sound rationale, & assessed?
  4. Qualified (individual, team, institution)?
  5. Adequate resources?
Merit Review Criteria: Intellectual Merit

- How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields?
- How well qualified is the proposer (individual or team) to conduct the project?
- To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts?
- How well conceived and organized is the proposed activity?
- Is there sufficient access to resources?
Merit Review Criteria: Broader Impacts

- How well does the activity advance discovery and understanding while promoting teaching, training, and learning?
- How well does the proposed activity broaden the participation of underrepresented groups?
- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?
How (not) to Apply

● Ineffective Strategies
  » “Shop a proposal around” from Program to Program
    – It can waste years (not only yours).
    – Program Directors talk to each other
    – We may transfer a proposal to another program
  » Resubmit the same proposal next year
  » Re-brand, combine, stretch or shoehorn
  » Submit multiple proposals without consulting with the Program Director(s)
How to Apply

• How to select a Program a) wrong:
  » Which one has the most money?
  » Which one has the highest success rate?
  » Which one has not turned me down before?

• How to select a Program b) right:
  » Does your topic match the program?
    – Look at previous awards from that program
  » Does your proposal advocate something novel?
  » Is your proposal competitive with funded ones?
    – Volunteer to serve as a reviewer when not applying
ASK EARLY, ASK OFTEN

- Read the paperwork (descriptions, solicitations etc.) with care; ask a Program Director for clarifications
- Contact the Program Director(s) to discuss your project: email with questions or call
- Be familiar with programs and funded projects
  - Guide to Programs: http://www.nsf.gov/funding/browse_all_funding.jsp
  - Award information, including abstracts: http://www.nsf.gov/awardsearch
- Know the audience for your proposal review - it really is a competition!
Know and follow the *current* Grant Proposal Guide (GPG) - it changes! (data management, postdoc mentoring, bio.sketch contents … *ad infinitum*)

Explicitly address Intellectual Merit & Broader Impacts in Project Summary & Project Description & Prior Support

Match and justify the budget to the scope of the proposed work - ask for what you need

Submit proposals **before the last day/hour/minute** !!

*Automated compliance – you won’t see the submit button*

Download your completed proposal back to you to check that what we got is really what you think you sent
What Makes a Strong Proposal?

- New and original ideas *(what?)*
- Sound, succinct, detailed focused plan *(how?)*
- Preliminary data and/or feasibility calculations
- Relevant experience *(why me/us?)*
- Important & timely within field *(why now?)*
- Clarity concerning future direction *(so what?)*
- Well-articulated broader impacts
Get Involved

- Volunteer to be a reviewer and panelist
- Participate in NSF-funded events, workshops, meetings
- Proposals: send your best ideas to NSF
- Get to know your Program Directors
- Keep us informed of your accomplishments
- Work to support collaborative, interdisciplinary research
- Call our attention to things that need improvement
- Suggest strategies to go from basic research to production
- Serve as a program officer (“rotator”) or division director

For a specific MPS program, choose “Quick Links”, top right of http://www.nsf.gov, & click Mathematical & Physical Sciences

Contact NSF Program Directors for questions & suggestions
NSF Grants Conference

Ask Early, Ask Often

Lora Billings
lbilling@nsf.gov
NSF POST AWARD MONITORING & COMPLIANCE

Division of Institution & Award Support
Cost Analysis & Audit Resolution Branch

NSF GRANTS CONFERENCE
BEATRIZ M. AZOR
GRANT AND CONTRACT COST ANALYST

November 14-15, 2016
NSF Grants Conference –Pittsburgh, PA
The Cost Analysis and Audit Resolution (CAAR) Branch is situated within the Office of Budget, Finance & Award Management (BFA)
Discussion Points

- Overview of NSF’s Award Portfolio and Risk-Based Monitoring Strategy
- Highlights of NSF’s Annual Risk Assessment Process
- Description of Selected Advanced Monitoring Activities
- Discussion of Common Areas of Review
NSF is committed to the responsible stewardship of its $27 billion research award portfolio

- Over $27 billion in total award funding
- Over 40,000 active awards
  - Standard and continuing grants
  - Cooperative agreements
  - Graduate research fellowships
  - Other awards
- Over 2,000 awardees
  - Universities/4-year colleges
  - Non-profit organizations
  - For-profit organizations
  - Community colleges
  - Other awardees (including SBIRs, STTRs)

Award portfolio information as of June 30, 2015
NSF uses a risk-based portfolio monitoring strategy that integrates its monitoring activities and focuses monitoring activities on awardees administering higher risk awards.

NSF’s portfolio monitoring strategy has three key components:

- **Annual risk assessment** enables NSF to focus limited advanced monitoring resources on awardees more in need of monitoring and business assistance.

- **Comprehensive monitoring activities** augment routine or automated baseline activities with focused advanced monitoring activities to provide broad coverage of the award portfolio. These activities are designed to mitigate the risk of non-compliance with federal grant management regulations (administrative regulations, cost principles, and audit requirements) and NSF award administration requirements.

- **Gathering feedback and incorporating monitoring results** to enable NSF to better target business assistance activities and to make continuous improvements to the risk assessment model and monitoring procedures.
NSF conducts an annual risk assessment of the awards and awardee institutions within its award portfolio to prioritize awardees for advanced monitoring.
NSF’s monitoring activities, combined with other grant-related activities, provide comprehensive coverage of the entire portfolio.
Baseline Monitoring activities

- **Automated financial report screening** to identify reporting issues that may need further scrutiny; these tests relate to cash-on-hand balances, interest income, program income, adjustments to closed awards, grants closeout, and financial unobligated balances.

- **Grants and Agreements Officer award administration** to provide insight into actual or potential compliance issues; these activities include changes of principal investigator, award transfers, award supplements, no-cost extensions, special payments, and significant budget realignments.

- **Improper Payments - transaction testing** to verify the reasonableness, allocability, and allowability of selected award expenditures. It is also used to ensure source supporting documentation is acceptable.
Advanced monitoring activities
Desk Reviews

- Desk reviews enable NSF to gain an understanding of an institution’s award administration practices and alert NSF to deficiencies. Desk reviews provide a foundation for the site visit’s targeted review activities.

- NSF completes ~100+ desk reviews a year.

- NSF oversees the desk review process by selecting awardees for desk reviews, authorizing review protocols, approving workpapers and summary reports prepared by a contractor. NSF works with awardees to resolve issues identified during the desk review process.

- Analysts gather information from public sources, discussion calls, and awardee-provided documentation to assess the awardee’s capacity to manage Federal funds.

- Desk reviews provide a cost-effective monitoring alternative to resource-intensive site visits.

- A follow-up site visit or BSR may be scheduled for an awardee if the desk review demonstrates a need for additional business assistance.
Advanced monitoring activities

Site Visits

- Site visits assess the extent to which an awardee’s grant management systems enable efficient and effective performance of NSF awards and ensure compliance with federal regulations.

- NSF completes ~30 site visits a year.

- Reviewers assess whether the awardee’s financial management system accurately discloses the financial results of NSF awards and if awardee systems maintain effective control over and accountability for all funds, property, and other assets.

- Through site visits, NSF extends business assistance by offering award administration best practices and answering questions related to NSF expectations and federal award administration policies.

- Awardees with significant deficiencies may be scheduled for follow-up site visits.
Advanced monitoring activities
Business Systems Reviews (BSR)

- BSR’s proactively review business practices of Awardee institutions hosting *large facilities* to ensure their alignment with Federal Regulation and NSF expectations.

- BSR’s reviews business practices in within NSF’s *Federally Funded Research and Development Centers (FFRDC’s)*

- BSR’s are generally conducted at least once per *5-year award cycle* for all large facilities in construction and/or operation.
Documentation of Personnel Expenses

Salaries and wages charged to Federal awards must be supported by a system of internal controls that provides reasonable assurance that the personnel costs incurred are accurate, allowable and properly allocated.

Generally, this system of internal controls should ensure that:

- total compensation paid to individual employees is reasonable according to the work performed on the NSF-supported project;

- the compensation is made in accordance with established policies of the organization; and activities.

- the system must be able to adequately identify whether or not the work performed is considered a direct or an indirect cost, consistent with the organization’s established policies and 2 CFR 200.430.
Documentation of Personnel Expenses nine (9) criteria of records

1. Are supported by system of internal controls
2. Incorporated in official records of entity
3. Reasonably reflect total activity
4. Encompass all compensated activities
5. Comply with accounting policies/practices
6. Support salary/wage distribution
7. Allow for use of budget estimates for interim accounting purposes
8. Allow distribution to be expressed as a percentage of the total
9. Recognize a precise measurement of salary/wage isn’t always feasible or expected in an academic setting.
Participant Support Costs

- Participant Support are direct costs for items such as stipends or subsistence allowances, travel allowances, and registration fees paid to or on behalf of participants or trainees (but not employees) in connection with meetings, conference, symposia or training projects.

- Funds provided for participant support may not be used by awardees for other expense categories without specific prior written approval of the cognizant NSF program officer; therefore, awardees must segregate participants support costs in their accounting system.

- Participants Support costs are not subject to indirect cost application.
Keys to Success for Awardees

- Focus on the objectives of the project/program
- Understand the requirements and expectations (award letter, award terms and conditions, OMB Guidance)
- Implement and adhere to strong internal controls over federal awards
- Document policies and procedures in writing
- Document approvals and conversations between NSF
- *When in doubt...Ask Early and Ask Often!*
Where can I get information on-line?

- Division of Institution & Award Support: http://www.nsf.gov/bfa/dias/index.jsp
- General: http://www.nsf.gov
Our Contact Information

Beatriz M. Azor
Grants and Contract Costs Analyst
Division of Institution and Award Support
Cost Analysis and Audit Resolution Branch

bazor@nsf.gov
703-292-5322
IT Modernization Initiatives at NSF

National Science Foundation
Fall Grants Conference

Pittsburgh, PA - November 14 & 15 - Carnegie Mellon University
Agenda

• Recent Updates and Accomplishments
  ▪ Password Management
  ▪ Proposal Compliance Checking
  ▪ NSF Public Access Repository

• Research.gov – Looking Ahead
  ▪ Proposal Submission Modernization
  ▪ Single ID Across All NSF Systems
  ▪ Impact of NSF Move to Alexandria on IT Systems
On August 1, 2016, NSF implemented a more convenient and secure process for resetting NSF passwords for external users of Research.gov, FastLane, and GRFP officials (approximately 40K users as of 10/21/2016)

Why?
• Improve user experience, reduce user calls to the Help Desk, and update technology to deliver more user-friendly features in the future

What do I need to know?
• NSF awardees and proposers will no longer be able to reach out to Sponsored Projects Offices (SPO) to reset their passwords on FastLane and Research.gov
• The last six passwords cannot be reused, and accounts will be locked for five minutes after the tenth unsuccessful password attempt
Recent Proposal Compliance Checking Updates

• The goals of automated compliance checking are to increase competitive fairness and reduce burden on both NSF programs and the research community.

• Specific automated compliance checks depend on proposal type selected. New compliance checks were added in July 2016. In January 2017, automated compliance checks will be in effect for three new proposal types (GOALI, RAISE, and FASED), and some warnings will become errors across several proposal types.

• Automated proposal compliance checks:
  
  ▪ Deadline Checks (since January 2016) – A warning in the 24 hours preceding the deadline, and an error when past the deadline. So far, 99.5% of proposals submitted on time.
  
  ▪ Section Exists Checks – Checks on eleven sections.
  
  ▪ Page Count Checks – Checks on length of six sections.
  
  ▪ Budget Checks – Eight checks on rules such as caps on amounts, duration, and amounts matching.
  
  ▪ Other Checks – Five checks related to international travel, and human or animal use rules.

Proposals can be compliance checked during proposal preparation at any point.
- Warnings and Errors are displayed after compliance check is selected

**Proposal Errors**

Items listed here will prevent submission. Print this page for reference before returning to the Form Preparation screen.

- International Activities Country Name(s) box on the "Remainder of the Cover Sheet" is not checked - The International Activities Country Name(s) box is not checked on the "Remainder of the Cover Sheet" but the Primary Place of Performance on the Cover Sheet is outside the U.S., its territories or possessions. To correct this error, please check the International Activities Country Name(s) box on the "Remainder of the Cover Sheet" and list the country where the primary place of performance is located.
- Research Administrators can access compliance checking prior to submission through the Research Administration Module.
NSF Public Access Repository

- NSF’s first repository launched: December 2015
- Effective date of Public Access policy: January 2016

Deposit Publications in the NSF Public Access Repository (NSF-PAR)
• Log into Research.gov
• Launch “Deposit publication” from Research.gov
NSF Public Access Repository: Deposit Walk-through

- NSF-PAR: Deposit Publication
Deposit Publication

Enter the DOI number and click 'Submit' to retrieve the publication information from the publisher. Once you have reviewed the information, click 'Next' to proceed.

* Required Fields

Enter Digital Object Identifier (DOI) Number:

10.1103/PhysRevA.84.013414

Submit Clear

Where do I find my DOI number?
Deposit Publication

Please deposit the final accepted version of your publication.

* Required Fields

- **Final Accepted Version file upload (PDF/A format):** What does NSF do with my file?

  - [ ] Changed PDF for an award.pdf
  - [x] Delete

Previous  Next
Deposit Publication

1. Retrieve Publication Info  2. Deposit Final Accepted Version  3. Select Award & Acknowledge  4. Review

Please select the award(s) that this publication should be associated with and acknowledge the statement.

* Required Fields
* Select Award ID:

1464151 - CRIT: CSR: Online Performance Modeling of Opaque C...

* Acknowledgement

I acknowledge the Federal Government's license as set forth in the "Copyrighted Materials" article of the NSF Grant General Conditions.

Add additional award ID
Deposit Publication

1. Retrieve Publication Info
2. Deposit Final Accepted Version
3. Select Award & Acknowledge
4. Review

DOI Number: 10.1103/PhysRevA.84.013414
Publication Title: Pythagorean coupling: Complete population transfer in a four-state system
Journal Name: Physical Review A

*Please note: It may take up to 6 hours for the publication to appear in your Project Report and be visible in the NSF Public Access Repository.*
• Confirmation Page
• Manage deposited publications
NSF Public Access Repository

- Offers full-text access to all NSF-affiliated accepted manuscripts or articles after a 12-month embargo or administrative interval
- NSF uses services provided by the publisher community, including:
  - CHORUS (Clearinghouse for Open Research of the United States)
  - Crossref
  - International Standard Serial Number (ISSN). Over the next year, additional metadata and links to articles will be added as they are submitted to NSF, with anticipated annual growth of 40,000 publicly-accessible articles and manuscripts
Proposal Submission Modernization

Single ID Across All NSF Systems

NSF Move to Alexandria
PSM 2015 Survey

The problem statement

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<tr>
<td>Administrative Burden</td>
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<td>SPO</td>
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Suggestions for potential solutions

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<td>Data Pre-population</td>
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<td>Revision of NSF Solicitations</td>
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Results based on over 16,000 responses from the June 2015 survey sent to 116,638 researchers
Proposal Submission Modernization Vision

• Modernize the applications supporting the merit review process and the user experience

• Reduce administrative burden to the research community and NSF staff associated with preparation, submission, and management of proposals

• Increase efficiencies in proposal preparation, submission, and management

• Improve data quality

• Capture proposal content in a way that supports data analysis
PSM Agile Concept Development

- Follows an Agile process to develop, review, and refine wireframes (webpage mockups) that leverages knowledge of the existing pain points

- Engages external users throughout the process to ensure the overall approach, workflows, and wireframes are consistent with user needs

- Develops features and enhancements to be deployed incrementally (future pilot activity)

<table>
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<tr>
<th>Identify Pain Points and Draft Improvements</th>
<th>Review Concepts with NSF Staff Working Group</th>
<th>Review Wireframes with External Users</th>
<th>Internal Validation and Execution</th>
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<td>• Leverage helpdesk data, 2015 PSM survey, etc. to identify improvement opportunities and create initial concepts</td>
<td>• Review initial concepts and discuss at working group sessions</td>
<td>• Present and test wireframes with external users to validate and refine</td>
<td>• Brief working group, elevate/resolve issues, and begin development</td>
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<td></td>
<td>• Refine as needed</td>
<td>• Usability sessions, FDP, ERA Forum, etc.</td>
<td>• Deliver enhancements incrementally</td>
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Proposal Submission Modernization

- Volunteer for future one-on-one usability testing
  - Sign up with the conference moderators, presenter, or conference representatives at the Registration Desk

- Join the NSF ERA Forum, a new initiative to gather opinions, perspectives, and feedback about NSF electronic research administration activities
  - Sign up by sending an email to: NSF-ERA-FORUM-subscribe-request@listserv.nsf.gov
  - For more information visit: https://www.nsf.gov/bfa/dias/policy/era_forum.jsp

- View the video presentation to the Federal Demonstration Partnership
  - http://sites.nationalacademies.org/PGA/fdp/PGA_174472
NSF will introduce a new way to register and manage user profiles using ONE single identify (single ID) across all NSF Systems

Streamlines all NSF system registrations to a single process

- One user name and password. One account for all relevant systems
- Central way to request or sign up for roles/access to systems

Administrators will no longer need to create accounts and maintain profile information, which allows them to focus on approving and managing roles for their organizations
Impact of NSF Move to Alexandria on IT Systems

• NSF headquarters relocation to Alexandria starting Summer 2017

• System outages in support of the move tentatively scheduled for July 4th weekend

• Monitor advisories on Research.gov or FastLane or sign up for listserv by emailing: system_updates-subscribe-request@listserv.nsf.gov
Additional Resources

• Listserv for updates on events and enhancements to Research.gov and/or FastLane: system_updates-subscribe-request@listserv.nsf.gov

• NSF Public Access
  ▪ NSF’s Public Access Plan:
  ▪ FAQs:
Additional Resources (cont’d)

• Compliance Checks

• Password Reset

• Proposal Submission Modernization
## Current NSF Representatives

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
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## Current NSF Representatives

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### Attendee List – Fall 2016 NSF Grants Conference

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<td>AASCU</td>
<td>Program Advisor</td>
<td>Other</td>
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<td>O’Connor</td>
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<td>Research Administrator</td>
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<td>Assistant Professor of Biochemistry</td>
<td>New/Early Stage Investigator</td>
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<td>Ball State University</td>
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<td>Research Administrator</td>
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<td>Dominic</td>
<td>Esposito</td>
<td><a href="mailto:dominic.esposito@baruch.cuny.edu">dominic.esposito@baruch.cuny.edu</a></td>
<td>Baruch College</td>
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<td>New York</td>
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<td>Howard (Ho Wai)</td>
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<td>Lisa</td>
<td>Reilly</td>
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<td>Jessica</td>
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<td>Assistant Professor</td>
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<td>Daniel</td>
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<td>California</td>
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<td>Carnegie Mellon</td>
<td>Postdoctoral fellow</td>
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### Attendee List – Fall 2016 NSF Grants Conference

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## Attendee List – Fall 2016 NSF Grants Conference

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<td>Rongjun</td>
<td>Qin</td>
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<td>Pam</td>
<td>Schlegel</td>
<td><a href="mailto:schlegel.33@osu.edu">schlegel.33@osu.edu</a></td>
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<td>Haizhong</td>
<td>Wang</td>
<td><a href="mailto:Haizhong.Wang@oregon-state.edu">Haizhong.Wang@oregon-state.edu</a></td>
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<td>Jerrod</td>
<td>Butcher</td>
<td><a href="mailto:jbutcher11@alamo.edu">jbutcher11@alamo.edu</a></td>
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<td>Renee</td>
<td>Rosier</td>
<td><a href="mailto:rlr265@psu.edu">rlr265@psu.edu</a></td>
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## Attendee List – Fall 2016 NSF Grants Conference

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<tr>
<td>Paula</td>
<td>Looney</td>
<td><a href="mailto:plooney@princeton.edu">plooney@princeton.edu</a></td>
<td>Princeton University</td>
<td>Grant and Contract Admin</td>
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<tr>
<td>Mary</td>
<td>Sym</td>
<td><a href="mailto:msym@princeton.edu">msym@princeton.edu</a></td>
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<td>Grant Writer</td>
<td>New Jersey</td>
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<tr>
<td>Elizabeth</td>
<td>Rowe</td>
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<td>Proposal Coordinator</td>
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<td>Jessica</td>
<td>Gretencord-Steiner</td>
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<td>Ellen</td>
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<td>Mark</td>
<td>VanPaemel</td>
<td><a href="mailto:mlvanpaemel@purdue.edu">mlvanpaemel@purdue.edu</a></td>
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<td>Jared</td>
<td>Caughron</td>
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<td>Virginia</td>
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<td>Qiao</td>
<td><a href="mailto:ealpci@cis.rit.edu">ealpci@cis.rit.edu</a></td>
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<td>Associate Professor</td>
<td>Other</td>
<td>New York</td>
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<td>Hillwig</td>
<td><a href="mailto:matthew.hillwig@stvincent.edu">matthew.hillwig@stvincent.edu</a></td>
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<td>Assistant Professor of Biochemistry</td>
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<td>Milo</td>
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<td>Associate Director</td>
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<td>James</td>
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<td>Society of Women Engineers</td>
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<td>April</td>
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<td>South Carolina Research Authority (SCRA)</td>
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<td>Christina</td>
<td>Ragain</td>
<td><a href="mailto:cragain@semo.edu">cragain@semo.edu</a></td>
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<td>Jeff</td>
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<td>Xiao</td>
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<td><a href="mailto:lsgarton@tamu.edu">lsgarton@tamu.edu</a></td>
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<td>Nancy</td>
<td>Smith</td>
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<td>Kathleen</td>
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<td>Jaime</td>
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<td><a href="mailto:jaime.cardenas@rochester.edu">jaime.cardenas@rochester.edu</a></td>
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<td>Kim</td>
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<td>Kiourtii</td>
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<td>Grant Writer</td>
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<td>Margie</td>
<td>Serrato</td>
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<td>ETTINGER</td>
<td><a href="mailto:ettinger@unavco.org">ettinger@unavco.org</a></td>
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<td>Research Administrator</td>
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<td>Joni</td>
<td>Gould</td>
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<td>Pre Award Team Leader</td>
<td>Research Administrator</td>
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<td>Weiss</td>
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<td>Contract and Grant Specialist</td>
<td>Research Administrator</td>
<td>Delaware</td>
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<td>Liu</td>
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<td>Razo</td>
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<td>Research Liaison Officer</td>
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<td>Research Administrator</td>
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<td>Xavier University</td>
<td>Grants Officer</td>
<td>Research Administrator</td>
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ACRONYM LIST

NSF Directorates

ABR  Accomplishment-Based Renewal
ACH  Automated Clearing House (US Treasury)
ACM$  Award Cash Management Service
AD  Assistant Director
ADPE  Automatic Data Processing Equipment
AOR  Authorized Organizational Representative
BFA  Budget, Finance & Award Management
CAAR  Cost Analysis & Audit Resolution Branch
CA/FATC  Cooperative Agreement Financial/Administrative Terms and Conditions
CA/PTC  Cooperative Agreement Programmatic Terms and Conditions
CEQ  Council on Environmental Quality
CFR  Code of Federal Regulations
CGI  Continuing Grant Increment
CMIA  Cash Management Improvement Act
COI  Conflict of Interest
Co-PD  Co-Project Director
Co-PI  Co-Principal Investigator
DACS  Division of Acquisition and Cooperative Support
DAS  Division of Administrative Services
DCL  Dear Colleague Letter
DD  Division Director
DFM  Division of Financial Management
DGA  Division of Grants and Agreements
DHHS  Department of Health and Human Services
DIAS  Division of Institution and Award Support
DOC  Department of Commerce
DUNS  Data Universal Numbering System
DURC  Dual Use Research of Concern
EAGER  EARly-Concept Grants for Exploratory Research
EFT  Electronic Funds Transfer
E.O.  Executive Order
F&A  Facilities & Administrative Costs
FAPIIS  Federal Awardee Performance and Integrity Information System
FAQs  Frequently Asked Questions
FAR  Federal Acquisition Regulation
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<tr>
<td>FASED</td>
<td>Facilitation Awards for Scientists and Engineers with Disabilities</td>
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<td>FDP</td>
<td>Federal Demonstration Partnership</td>
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<td>FEMA</td>
<td>Federal Emergency Management Agency</td>
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<td>Freedom of Information Act</td>
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<td>GOALI</td>
<td>Grant Opportunities for Academic Liaison with Industry</td>
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<td>Government-Owned Equipment</td>
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<td>Government Printing Office</td>
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<td>LOI</td>
<td>Letters of Intent</td>
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<td>MREFC</td>
<td>Major Research Equipment and Facilities Construction Account</td>
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RAISE  Research Advanced by Interdisciplinary Science and Engineering
RAPID  Rapid Response Research
REU    Research Experiences for Undergraduates
ROA    Research Opportunity Awards
RTC    Research Terms and Conditions
RUI    Research in Undergraduate Institutions
SAM    System for Award Management
SBA    Small Business Administration
SBIR   Small Business Innovation Research
SF     Standard Form
SF LLL Disclosure of Lobbying Activities
SPO    Sponsored Projects Office
SSN    Social Security Number
STTR   Small Business Technology Transfer
TDD    Telephonic Device for the Deaf
TTY    Text Telephone
URL    Uniform Resource Locator
USC    United States Code
USDA   US Department of Agriculture
VSEE   Visiting Scientist, Engineer or Educator