Center for Excellence in Research
Apr 6, 2016

Developing and Submitting a Successful Science/Engineering Grant Application to Federal Mission Agencies (with some insights for NSF and NIH)

Dr. James S. Murday
Tel: 202 824 5863 E-mail: murday@usc.edu
10 years at USC
40 years in Dept of Defense S&T at NRL / ONR / OSD
THE MAZES WERE TOO EASY, SO NOW THEY HAVE ME RUNNING THROUGH BUREAUCRACIES AND LOOKING FOR GRANTS.
USC DC Research Advancement Office
Services

Research Funding
- Research initiative alerts
- Collaborations across schools, other institutions
- Federal funding agency advocacy / connections / intel
- Strategically targeted activities
- Proposal preparation - biosketch, letters of support, editorial, budget, and scientific
- Repository with Mission Agency Program Summary (MAPS) resources
- Searchable MAPS Program/Program Officer database
  http://web-app.usc.edu/web/ra_maps/search/
- Database with listings of prior early career/young faculty and Center awardees

Visibility/Prestige
- (Inter)national conferences / workshops
- Strategic partnerships
- Advisory/planning committees

Faculty Development
- Grant-preparation workshops
- Arrange seminar/colloquia – staff from DC Office, federal funding agencies
- Faculty recruitment
Presentation Outline

Introduction to (selected) federal agency science and engineering funding
Perspectives on various agency programs

National Science Foundation (NSF)
1. Department of Defense (DOD)
2. Intel Community (IC)
3. Department of Homeland Security (DHS)
4. Department of Energy (DOE)
5. National Aeronautics and Space Agency (NASA)
6. National Institute of Standards and Technology (NIST)
7. US Department of Agriculture (USDA)
8. US Department of Education (ED)
9. Environmental Protection Agency (EPA)
10. National Oceanic and Atmospheric Agency (NOAA)
11. Department of Transportation (DOT)
12. Department of Justice (DOJ)
13. Department of Health and Human Services (HHS)
14. Other - Dept of State (DOS), National Endowments for Arts and Humanities (NEA and NEH), Administration for International Development (USAID),...

National Institutes of Health (NIH)

Suggestions for selling your ideas to program officers

Resources

Other Pertinent Center of Excellence in Research (CER) Workshops
Dr. Randy Hall Developing Funded Research Programs
Dr. Paul Ronney Writing Compelling NSF Proposals
Dr. Carl Castro Obtaining DOD Medical Research Funding
Dr. Steven Moldin Developing NIH Grant Applications
Ms. Bonnie Lund Writing Persuasive Proposals
National Science Foundation (NSF)
The National Science Foundation (NSF) is the primary Federal agency supporting research at the frontiers of knowledge, across all fields of science and engineering (S&E) and all levels of S&E education.

National Institutes of Health (NIH, HHS)
Fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce the burdens of illness and disability.

Department of Defense (DOD)
All scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields related to long-term national security needs.

Department of Homeland Security (DHS)
Produce revolutionary changes in technologies and capabilities for homeland security.

Intel Communities (IC)
Technologies/methodologies to acquire and process data

Department of Energy (DOE)
Change the landscape of energy demand and supply
Climate Change: Position U.S. to lead on climate change policy, technology, and science

National Aeronautics and Space Administration (NASA)
Expand scientific understanding of the Earth and the universe in which we live.
Advance aeronautics research for societal benefit.

National Institute of Food and Agriculture (NIFA, USDA)
Solve problems critical to making a plant, animal, ecosystem, food system, community, or marketplace work

National Institute of Standards and Technology (NIST, DOC)
Promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology.
Also to play a major role in the Advanced Manufacturing Initiative

Department of Transportation (DOT)
Highway, intelligent transportation and aviation

National Oceanic and Atmospheric Administration (NOAA, DOC)
Conducts research in three major areas: weather and air quality, climate, and ocean and coastal resources.

Department of Education (DoEd or ED)
Research that contributes to school readiness and improved academic achievement.

Environmental Protection Agency (EPA)
Provide the solutions to meet today’s complex environmental and human health challenges.

Department of Justice
Knowledge and understanding of crime and justice issues

Department of Health and Human Services
Protecting the health of all Americans and providing essential human services
Federal “Basic Research” Funding

2016 does not show changes Congress made to the appropriation requests.

Source: AAAS Report: Research & Development series. FY 2015 figures are latest estimates, FY 2016 is the President's request. © 2015 AAAS
National Research Priorities
(e.g., where will “new” Federal money preferentially go - at least under Obama)

National Information Technology, Research, Development  www.nitrd.gov/


Trustworthy Cyberspace  www.whitehouse.gov/blog/2011/12/06/federal-cybersecurity-rd-strategic-plan-released

Global Climate Change  www.globalchange.gov/

Renewable/Sustainable/Clean Energy  www.whitehouse.gov/energy

STEM Education  www.stemedcoalition.org/ Advanced

National Nanotechnology Initiative  www.nano.gov

Advanced Manufacturing / Innovation  www.manufacturing.gov/


Plasmonics and Photonics  www.whitehouse.gov/sites/default/files/microsites/ostp/NSTC/;ac-op_pssc_20140417.pdf

BioEconomy - Synthetic Biology  www.whitehouse.gov/administration/eop/ostp/library/bioeconomy

Neuroscience (including the BRAIN Initiative)  www.whitehouse.gov/the-press-office/2013/04/02/fact-sheet-brain-initiative

Precision Medicine  www.whitehouse.gov/blog/2015/01/21/precision-medicine-improving-health-and-treating-disease

War on Cancer  2016 State of Union Address

Water Summit  TBD

Also see Office of Managment and Budget (OMB) /Office of Science and Technology Policy (OSTP) annual S&T Investment Priorities Memo FY2017 at:
https://www.google.com/search?q=OSTP+OMB+s%26T+guidance+memo&ie=utf-8&oe=utf-8#
# NSF Principal S&E Funding Divisions

http://www.nsf.gov/staff/orglist.jsp

## Directorate for Mathematical & Physical Sciences
- Astronomical Sciences (AST)
- Chemistry (CHE)
- Materials Research (DMR)
- Mathematical Sciences (DMS)
- Physics (PHY)

## Directorate for Biological Sciences
- Biological Infrastructure (DBI)
- Environmental Biology (DEB)
- Integrative Organismal Systems (IOS)
- Molecular & Cellular Biosciences (MCB)
- Office of Emerging Frontiers (EF)

## Directorate for Geosciences
- Atmospheric & Geospace Sciences (AGS)
- Earth Sciences (EAR)
- Ocean Sciences (OCE)
- Polar Programs (PLR)

## Directorate for Engineering
- Chemical, Bioengineering Environmental & Transport (CBET)
- Civil, Mechanical & Manufacturing Innovation (CMMI)
- Electrical Communications & Cyber Systems (ECCS)
- Engineering Education & Centers (EEC)
- Industrial Innovation and Partnerships (IIP)
- Emerging Frontiers and Multidisciplinary Activities (EFMA)

## Directorate for Computer & Information Science & Engn
- Advanced Cyberinfrastructure (ACI)
- Computer & Network Systems (CNS)
- Computing & Communication Foundations (CCF)
- Information & Intelligent Systems (IIS)

## Directorate for Education & Human Resources (EHR)
- Graduate Education (DGE)
- Human Resource Development (HRD)
- Research on Learning in Formal & Informal Settings (DRL)
- Undergraduate Education (DUE)

## Directorate for Social, Behavioral, & Economic Sciences
- Behavioral & Cognitive Sciences (BCS)
- Social & Economic Sciences (SES)
- National Center for Science and Engineering Statistics (NCSES)
- Multidisciplinary Activities (SMA)

## Office of the Director
- Integrative Activities (OIA)
- International Science and Engineering (OISE)
What: Announcements for the many topics

Proposals may be submitted in response to the various funding opportunities that are announced by NSF. These funding opportunities generally fall into three categories:

• program descriptions (PD-XX-YYYY, continuing core programs)
• program announcements (NSF XX-YYY, generally special topic and constrained lifetime)
• center solicitations (also NSF XX-YYY, but are interdisciplinary/cross cutting)

Subscribe to e-alerts for NSF opportunities/events at
https://public.govdelivery.com/accounts/USNSF/subscriber/new?pop=t&qsp=823

When: See NSF announcements - almost all opportunities have specific deadlines

Where: NSF Fastlane (https://www.fastlane.nsf.gov/)


The NSF Days workshop is primarily designed for researchers and educators less experienced in proposing to the NSF. It covers the NSF proposal and merit review process, and those programs that cut across NSF disciplines.

Resources:
USC Center of Excellence in Research (CER) Workshops by Phil Taylor, Paul Ronney and John Gould

NSF Prospective New Awardee Guide, February 2014
www.nsf.gov/publications/pub_summ.jsp?ods_key=pnag

NSF Publication: A Guide for Proposal Writing

NSF Proposal and Award Policies and Procedures Guide (GPG), NSF 16-001


NSF Days (the USC MAPS website has some past NSF Days presentations)
www.nsf.gov/events/event_group.jsp?group_id=20013&org=NSF
<table>
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<th># pages</th>
<th>Topic</th>
<th>Details</th>
</tr>
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<tr>
<td>1</td>
<td>Introduction</td>
<td>- what your topic is and why it is important</td>
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<tr>
<td></td>
<td></td>
<td>- what has been done in this area</td>
</tr>
<tr>
<td></td>
<td>Previous work</td>
<td>- note <strong>what key knowledge is lacking</strong> (not incremental)</td>
</tr>
<tr>
<td>1</td>
<td>Objectives</td>
<td>- very specifically what you will do (<strong>your new insights</strong>)</td>
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<tr>
<td></td>
<td></td>
<td>- how it extends the prior work</td>
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<td></td>
<td></td>
<td>- the <strong>impact (scientific/technological) of your results</strong></td>
</tr>
<tr>
<td>1</td>
<td>Hypotheses</td>
<td>- what you think will happen</td>
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<tr>
<td>5</td>
<td>Approach</td>
<td>- how you will test the hypotheses</td>
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<td></td>
<td></td>
<td>- experimental or computational apparatus, etc.</td>
</tr>
<tr>
<td>2</td>
<td>Closure</td>
<td>- what you will do with the data once you have it</td>
</tr>
<tr>
<td>2</td>
<td>Broader Impact</td>
<td>- applications of the research results and educational merit</td>
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</table>
NSF Proposal Review Panel Dynamics
adapted from Paul Ronney, USC AME

- Typically ~8 panel members, 25 proposals
- Each proposal read fully by at least 3 reviewers - 1 lead, 2 others
- Each of those reviewers discusses his/her opinion, starting with the lead
- Entire panel gives comments / feedback
- Champions are highly valuable - someone who will argue for your proposal
- Reviewers may revise comments based on panel discussion
- Proposals are ranked after all are discussed
- Every panel has different personnel and different dynamics (i.e., be sure to suggest appropriate panelists to your NSF program officer)

- Various programs at NSF are experimenting with other forms of review (to reduce financial and personal time costs), so there may be a somewhat different process - check with the NSF program manager.
# Guide to Defense Basic Research Funding - Index to MAPS Charts

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<th>Chart #s</th>
<th>Topic</th>
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<td>Overview Perspectives, including suggestions on working with DOD Program Officers</td>
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<td>Army Corps of Engineers</td>
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<td>Army Medical Research and Materials Command (AMRMC)</td>
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<td>Army Research Institute for Behavioral and Social Science (ARI)</td>
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<td>Office of Naval Research (ONR)</td>
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<td>Naval Post-Graduate School (NPSG)</td>
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<td>84 - 114</td>
<td>Defense Advanced Research Projects Agency (DARPA)</td>
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<td>115 - 135</td>
<td>Defense Threat Reduction Agency (DTRA)</td>
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<td>High Performance Computing</td>
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<td>MINERVA (social science)</td>
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<td>University Affiliated Research Centers</td>
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<td>Young Investigator / Early Career</td>
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<td>Defense Science Study Group</td>
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<td>Defense Computer Study Group</td>
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<td>Presidential Early Career Award for Science and Engineering (PECASE)</td>
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<td>170</td>
<td>National Security Science and Engineering Faculty Fellow (NSSEFF)</td>
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DOD RDT&E Taxonomy - Primer

Science and Technology ($13B in FY16)

- **BA1 6.1 Basic Research** (TRL 0-1) knowledge of fundamental aspects of phenomena – largely use inspired
- **BA2 6.2 Appl Research** (TRL 2-3) determine means by which a specific need may be met
- **BA3 6.3 Adv Technol Development** development / integration of hardware for field experiment

Development ($57B in FY16)

- **BA4 6.4 Adv Component Devel and Prototype** evaluate integrated technology in realistic environment
- **BA5 6.5 System Devel and Demonstration** for projects without approval for full rate production
- **BA6 6.6 RDT&E Management Support** program managers, ranges, test facilities,…
- **BA7 6.7 Operational Systems Development** support of development acquisition programs or upgrades

Congressionally Directed Medical Research (CDMRP)

- **SBIR 2.9%** (will be 3.2% by FY2017) tax on R&D funding by Agencies with over $100M/yr extramural research
- **STTR 0.35%** (will be 0.4% by FY2017) tax on R&D funding by Agencies with over $1B/yr extramural research

**Abbreviations**

- BA: Budget Activity
- RDT&E: Research, Development, Test & Evaluation
- SBIR: Small Business Innovation Research
- STTR: Small Business Technology Transfer
- TRL: Technology Readiness Level
DOD Basic Research - Principal Funding Offices
http://www.acq.osd.mil/rd/basic_research/program_info/funding.html

Service Research Offices (OXR’s)

Army Research Office (ARO)
Air Force Office of Scientific Research (AFOSR)
Office of Naval Research (ONR)

Defense Advanced Research Projects Agency (DARPA)

Defense Science Office (DSO)
Biological Technologies Office (BTO)
Microsystems Technology Office (MTO)
Information Innovation Office (I2O)
Strategic Technology Office (STO)
Tactical Technology Office (TTO)

Defense Threat Reduction Agency (DTRA)

Basic and Applied Research Directorate (BA)
Chemical and Biological Technologies Directorate (CB)

Army Medical Research and Materiel Command

DMRDP (Defense Medical Research and Development Program)
CDMRP (Congressional adds / DMRDP, fully open competition)

Army Research Inst for Behavioral & Social Sci

CDMRP Congressionally Directed Medical Research Program
Service - Air Force (AFOSR), Army (ARO), Naval (ONR) Basic Research Funding Opportunities (DRS)

What: Largest source of DOD funding for University basic research
Each Service has specifically identified program interests (see solicitations, websites)
Majority invested in single investigator efforts (in contrast to MURI program)
OXR Broad Area Announcements (BAA) are relatively generic
Each Program Officer (PO) has focused interests, linking science with some military need

**OXR PO key to success**

How Much: typically $100 – 200K/yr for three years (with continuation possible)
OXR programs typically have ~20% turnover each year

When: Initial white paper useful (usually required)
Generic BAAs allow submission nominally anytime, but spring/early summer to be timely
Special program announcements have specific due dates
Most funding decisions processed in late fall, early winter – after appropriation bill is passed

Where: See Agency websites / BAAs Mix of paper and electronic (grants.gov)

<table>
<thead>
<tr>
<th>($M)</th>
<th>FY16 estimated</th>
<th>FY17 proposed</th>
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</thead>
<tbody>
<tr>
<td>Army</td>
<td>280</td>
<td>~250</td>
</tr>
<tr>
<td>Air Force</td>
<td>375</td>
<td>~340</td>
</tr>
<tr>
<td>Navy</td>
<td>507</td>
<td>~420</td>
</tr>
<tr>
<td>DARPA</td>
<td>332</td>
<td>~330</td>
</tr>
</tbody>
</table>

DRS - the Defense Research Sciences is a budget line for DOD
MURI - Multidisciplinary University Research Initiative
OXR - umbrella acronym for ONR, AFOSR, ARO
**Physics**

**Physics - ARO**

Atomic and Molecular Physics  
Paul Baker  
919 549 4202  
paul.m.baker4.civ@mail.mil

Condensed Matter Physics  
Marc Ulrich  
919 549 4319  
marc.d.ulrich.civ@mail.mil

Quantum Information Science  
TR Govindan  
919 549 4236  
t.r.govindan.civ@mail.mil

Optics & Fields  
Richard Hammond  
919 549 4313  
richard.t.hammond10.civ@mail.mil

**Physics - AFOSR**

Atomic and Molecular Physics  
Tatjana Curcic  
703 696 6204  
tatjana.curcic@afosr.af.mil

Biophysics  
William (Pat) Roach  
703 696 8450  
william.roach.4@us.af.mil

Electromagnetics  
Arje Nachman  
703 696 8427  
arje.nachman@afosr.af.mil

Laser and Optical Physics  
John Luginsland  
703 588 1775  
john.lugisland@afosr.af.mil

Plasma & Electro-Energetic Phys  
Jason Marschall  
703 696 7721  
Jason.marshall.3@us.af.mil

Quantum Electronic Solids  
Harold Weinstock  
703 696 8572  
harold.weinstock@afosr.af.mil

Remote Sensing & Imaging Phys  
Kent Miller  
703 696 8573  
kent.miller@afosr.af.mil

Ultra-short Pulse Laser-Matter  
Riq Parra  
703 696 8571  
enrique.parra@afosr.af.mil

**Physics - ONR**

Atomic,Molec, Quantum Physics  
Tommy Willis  
703 696 4214  
richard.t.willis@navy.mil

Chaos/Non-linear Physics  
Michael Shlesinger  
703 696 5339  
mike.shlesinger@navy.mil

Directed Energy  
Quentin Saulter  
703 696 2594  
quentin.saulter@navy.mil

Superconducting Technol  
Deborah van Vechten  
703 696 4219  
deborah.vanvechten@navy.mil

**Physical Sciences – DARPA DSO**

Photonics  
Prem Kumar  
703 526 2709  
prem.kumar@darpa.mil

Quantum, Photonics  
James Gimlett  
703 526 2874  
james.gimlett@darpa.mil

*chart updated Jan 2016*
Multidisciplinary University Research Initiatives (MURI in URI budget line)

What: Supports University teams that involve one or more traditional science/engineering disciplines
Topics down-selected by agencies from OXR PO suggestions
~20-25 new topics announced annually by DOD
For prior topics and University awardees from 2007 to present, ask DC Office

How Much:
~$1-2.5M/yr for three years + two additional option years; typically 1.2-1.5M/yr
For FY16

When: Announcement (16 Jun 2015)
White paper (strongly encouraged, not required) (08 Sep 2015)
Full proposal (07 Dec 2015)

Where: ARO / AFOSR / ONR BAA

USC MURI awardees

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Institution</th>
<th>Topic</th>
<th>FY</th>
<th>Department</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Nealson</td>
<td>AFOSR - Bioengineered Fuel Cells: Optimization and Modeling</td>
<td>F17</td>
<td>Army</td>
<td>$53M</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>USC</td>
<td>supporting Institution in four different MURI awards</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>Sukhatme</td>
<td>ONR – Adaptive Networks for Threat and Intrusion Detection</td>
<td>F17</td>
<td>Army</td>
<td>$53M</td>
<td></td>
</tr>
<tr>
<td></td>
<td>USC</td>
<td>supporting institution in one other MURI award</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>USC</td>
<td>supporting institution in four different MURI awards</td>
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</tr>
<tr>
<td>2011</td>
<td>Tambe</td>
<td>ARO - Game Theory for Real World Adversarial Behavior</td>
<td>F17</td>
<td>Air Force</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lidar</td>
<td>ARO - Control of Quantum Systems</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2015</td>
<td>USC</td>
<td>supporting institution in three different MURI awards</td>
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Defense University Research Instrumentation Program (DURIP in URI)

**What:** Acquisition of major equipment to augment current, or develop new, research capabilities to support research in the technical areas of interest to the DoD

Provide equipment to conduct research and to educate new scientists/engineers

Matching funds not required, but is helpful (especially for larger grants)

DOD research grant not required, but is very helpful

OXR program officer support very, very helpful

**How Much:** >$50K, <$1.5 M per award (expect ~180 awards averaging $290K in FY16)

Total funds fluctuate somewhat depending on MURI selections

**When:** In past, typically due in late Aug / early Sept (26 Aug 2016 for FY17)

**Where:** ARO / AFOSR / ONR webpages for the DURIP BAA

USC Awardees

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Description</th>
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<tbody>
<tr>
<td>2012</td>
<td>Cronin</td>
<td>Atomic Layer Deposition System (ONR)</td>
</tr>
<tr>
<td></td>
<td>Narayan</td>
<td>A Versatile Thin-Film Deposition System for Advanced Power Sources Research (ARO)</td>
</tr>
<tr>
<td></td>
<td>Sukhatme</td>
<td>Robotic Platform for Study of Human-Robot Interaction, Motor Control, Perception (ONR)</td>
</tr>
<tr>
<td></td>
<td>Zhou</td>
<td>Maskless Photolithography for Nanoelectronic Device Prototyping and Fabrication (ONR)</td>
</tr>
<tr>
<td>2013</td>
<td>Malmstadt</td>
<td>Instruments for High-throughput analysis of oxidative cell membrane damage (ONR)</td>
</tr>
<tr>
<td></td>
<td>Vashishta</td>
<td>Computing platform for simulation and visualization of insensitive nanoenergetic (ONR)</td>
</tr>
<tr>
<td></td>
<td>Hodge</td>
<td>Instrumentation for TEM sample prep (ONR)</td>
</tr>
<tr>
<td>2014</td>
<td>Armani</td>
<td>Laser for non-linear optics and biophotonics (ONR)</td>
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<td></td>
<td>Egolfopoulos</td>
<td>Hi-resol diagnostics for velocity and scalar field study in turbulent reacting flows (AFOSR)</td>
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<tr>
<td>2015</td>
<td>Armani</td>
<td>Inverted fluorescent microscope (ONR)</td>
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<td></td>
<td>Haiges</td>
<td>A Raman spectrometer for the characterization of high-energy-density materials (ONR)</td>
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<td></td>
<td>Hashemi</td>
<td>Wideband high-dynamic arbitrary signal generator (ONR)</td>
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<tr>
<td></td>
<td>Sha</td>
<td>Understanding representation learning (ARO)</td>
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<tr>
<td></td>
<td>Spedding</td>
<td>Experiments in developing wakes of submerged bodies (ONR)</td>
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<tr>
<td>2016</td>
<td>Cronin</td>
<td>Electron Beam and Magnetic Sputtering System (AFOSR)</td>
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<tr>
<td></td>
<td>Madhukar</td>
<td>Synthesis and Optical Characterization of Metamaterials (ARO)</td>
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<td>Willner</td>
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What: The Defense Medical Research and Development Program (DMRDP), part of the Defense Health Program (DHP), contributes to the Defense Department’s overall investment for medical research and development (R&D) with Research, Development, Testing, and Development (RDT&E) dollars.

The objectives of the DMRDP are:
1. To discover and explore innovative approaches to protect, support, and advance the health and welfare of military personnel, families, and communities;
2. To accelerate the transition of medical technologies into deployed products; and
3. To accelerate the translation of advances in knowledge into new standards of care for injury prevention, treatment of casualties, rehabilitation, and training systems that can be applied in theater or in the clinical facilities of the Military Health System.

The DMRDP has six major program areas:
• Medical Training and Health Information Sciences JPC-1
• Military Infectious Diseases (MID) JPC-2
• Military Operational Medicine JPC-5
• Combat Casualty Care JPC-6
• Radiation Health Effects JPC-7
• Clinical and Rehabilitative Medicine JPC-8

Each major research program area is managed by a committee, called a Joint Program Committee or JPC, which consists of DoD and non-DoD medical and military technical experts. These experts work through a coordinated effort to translate guidance into research and development needs.

When: See program announcements

Where: Executed through the CDMRP process - as recent examples
W81XWH-16-R-BAA1 USAMRMC Generic USAMRMC solicitation
W81XWH-16-R-CRM1 DMRDP Extremity Regeneration Intervention
W81XWH-17-DMRDP-MID-ARA Infectious Diseases Applied Research Award
W81XWH-17-DMRDP-MID-CSA Infectious Diseases Clinical Study Award
Other Medical Related
HDTRA1-14-CHEM-BIO-BAA Amendment 3, 28 Sept 2015

Diagnostics, Detection, and Disease Surveillance Division (CBA)
Topic: CBA-01  In-Situ Protein and Gene Expression Platform Technologies for Host Response Biomarker Methods and Analysis
Topic: CBA-02  Ultra-Rapid, Low Power Multiplexed PCR-based Molecular Diagnostics Point-of-Care Devices
Topic: CBA-03  Pre-Analytical Method Refinement: Novel Bio-Sample Collection, Preservation, and Preparation
Topic: CBA-04  Discovery of Proteomic Signatures to Distinguish Pathogen Growth Conditions
Topic: CBA-05  Personal Chemical Hazard Detector
Topic: CBA-06  New Analytics and Data Sources to Support Global DoD Biosurveillance
Topic: CBA-07  Making Disease Forecasts Actionable: Novel displays, Uncertainty Quantification and Ensemble Approaches
Topic: CBA-08  Field Forward Diagnostics
Topic: CBA-09  Predicting Disease (Re)Emergence
Topic: CBA-10  Evaluation of Wearable Technologies for Early Indication of Health Changes
Topic: CBA-11  Can Social Media Predict the Future?

Translational Medicine Division (CBM)
Topic: CBM-01  Late Discovery and Development of Novel Therapeutic Approaches to Combat Antimicrobial Resistance in Biological Threat Agents
Topic: CBM-02  Advanced Bacterial Antimicrobial and Anti-Infectives with Novel Mechanisms of Action
Topic: CBM-03  Novel Small Molecule Medical Countermeasures Development Targeting Filoviridae Pathogenesis and Resistance
Topic: CBM-04  Animal Model Development for Evaluation of Therapeutic Medical Countermeasures.

Advanced and Emerging Threat Division (CBS)
Topic: CBS-01  Organophosphorus Nerve Agent Medical Countermeasures
Topic: CBS-02  Correlate Bacterial Degradation on Surfaces, in Response to Envir’tal Conditions, with Bacterial Degradation in Aerosols for the Purposes of Validating a Predictive Model.
Topic: CBS-03  Method Development to Quantitatively Determine Microbial Damage
Topic: CBS-04  Environmental Metagenomics to Explore Microbial Community Associations and Seasonal Drift of Ebola and Other DoD-Relevant Pathogens in the AFRICOM AOR.
What:  
Research Programs included in the FY15 CDMRP are ($M):
- 248  Peer Reviewed Medical Research (only for specified topics)
- 125  Traumatic Brain Injury and Psychological Health
- 120  Breast Cancer Research
-  80  Prostate Cancer Research
-  50  Peer Reviewed Cancer – skin, pediatric brain, genetic, non-invasive ablation treatment
-  30  Spinal Cord Injury
-  30  Peer Reviewed Orthopaedic
-  20  Ovarian Cancer Research
-  20  Gulf War Illness Research
-  15  Reconstructive Transplant
-  15  Neurofibromatosis Research
-  15  Neurotoxin Exposure treatment Parkinson’s Research
-  12  Alzheimer
-  10  Lung Cancer Research
-   8  Vision
-   8  Epilepsy
-   8  Amyotrophic Lateral Sclerosis
-   8  Military Burn
-   6  Autism Research
-   6  Tuberous Sclerosis Complex Research
-   5  Multiple Sclerosis
-   4  Alcohol and Substance Abuse
-   3  Bone Marrow Failure
-   3  Duchenne Muscular Dystrophy

Proposals undergo two stage review - first peer, then program

How Much: 1-5 year grants, average of $150K/yr (direct)
If multiyear funded, all funds come from the FY15 appropriation

When:  Various – see website program announcement

Full applications submitted electronically to the Grants.gov website (http://grants.gov).
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Selected Applied Research and Exploratory Development Funding

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## Intelligence Community

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What: Within its Basic Research Portfolio, S&T generally funds quality research projects that meet at least one of these selection criteria:

* Addresses an important Department issue without a near-term solution.
* Pursues a creative solution that addresses a unique, long-term Department need, which is not addressed elsewhere.
* Exploits new scientific breakthroughs (for example, from universities, laboratories, or industry) that could strengthen homeland security.

Generic areas (DHS S&T Divisions) are:
- Border and Maritime Security (BMD) - Tools and Technologies to improve security
- Chem / Bio (CBD) - Awareness and Countermeasures (not in Amendment 6 version)
- Cybersecurity (CSD) - Cybersecurity and information assurance solutions
- Explosives Countermeasures (EXD) - Detection, Mitigation, Response
- First Responder Group (FRG) - identifies/validates/fixes capability gaps
- Office of Standards (STN) - develop/promote use of standards (not in Amendment 6 of LRBAA)
- Resilient Systems (RSD) - develop and deploy solutions

How Much: Nothing specified

When: A white paper submission anytime up to 31 Dec 2018 for LRBAA 14-02

Where: DHS S&T LRBAA14-02 (amendment 9, Dec 2015)
- CSD HSHQDC-14-R-B0005 (Five year BAA for Cybersecurity Division)
- RSD HSHQDC-15-R-00002 (Five year BAA for Resilient System Division)
- CBD HSHQDC-14-R-B0009 (Open BAA with subsequent calls, #9, Apr 2015 most recent)
**What:** Domestic Nuclear Detection Office (DNDO) within the Department of Homeland Security (DHS) invests in frontier research at academic institutions. The ARI Program has two primary objectives:

1. Engage the academic community to advance fundamental knowledge for nuclear and radiological threat detection, nuclear forensics and related sciences with emphasis on fundamental research to solve long-term, high-risk challenges and
2. Develop human capital for the nuclear science and engineering profession.

Topics of interest identified in the latest BAA

- RTA-01 Advanced Analytics supporting the Global Nuclear Detection Architecture (GNDA)
- RTA-02 Studies on Wearable Nuclear Detection and Interdiction
- RTA-03 Model Validation for Nuclear Forensic Applications

**How Much:** ~$3M for new starts in FY16

Single Investigator Awards will average approximately $150K per year
Multi-disciplinary Awards will average approximately $350K per year for durations up to five years.

**When:** For FY16 funding, full proposal deadline 12 June 2015

**Where:** DHS 15-DNDO-077-001

Note that in FY2017 DNDO will be subsumed into a new Chemical, Biological, Radiological, Nuclear and Explosives Office.
Office of the Director National Intelligence (ODNI)
Intelligence Advanced Research Projects Agency (IARPA)
http://www.iarpa.gov/

What:
Anticipating Surprise (OAS) Characterize/ reduce uncertainty through anticipatory intelligence
Incisive Analysis (IA) Maximize insight from the information we collect, in a timely fashion.
Safe & Secure Operations (SSO) Counter new capabilities that would threaten our ability to operate freely and effectively in a networked world.
Smart Collection (SC) Dramatically improve the value of collected data from all sources.

In addition to generic BAAs, there are specific, directed funding opportunities throughout the year.

Seedling ideas are to be for topics that are not addressed by emerging or ongoing IARPA programs or solicitations. It is primarily intended for early stage research that may lead to larger, focused programs through a separate BAA in the future, so periods of performance generally will not exceed 12 months.

Offerors are strongly encouraged to submit a five-page white paper describing their proposed research as their first formal submittal to IARPA before preparing a full proposal.

How Much: DARPA-like funding profiles

When: Early preferred, but at any time up to 10 May 2016 for current generic solicitations

Where:
SMART COLLECTION IARPA-BAA-15-01 generic
INCISIVE ANALYSIS IARPA-BAA-15-02 generic
SAFE AND SECURE OPERATIONS IARPA-BAA-15-03 generic
ANTICIPATING SURPRISE IARPA-BAA-15-04 generic
What:
The Director's Innovation Initiative provides a risk-tolerant environment to invest in cutting edge technologies and high payoff concepts relevant to the NRO’s mission. The projects focus on NRO R&D thrusts such as developing new intelligence sources and methods to solve intractable intelligence problems.

The DII Program funds basic research efforts, e.g., technology readiness levels 1-3, that substantially enhance mission performance and address the areas of interest listed below. The two main areas of interest categories are:

- Aperture Synthesis
- High Bandwidth Quantum-Secured Communications

We anticipate that proposals will be sought from US domestic educational institutions, non-profit and not-for-profit organizations and private industry.

How Much:
Selected projects will receive a maximum of $450K over 3 years

When: For FY2016 call issued Mar 19, 2015 with response date of 24 Apr 2015

Where: BAA NRO000-15-R-0104
What:
DIA is interested in the full range and full scope of possible innovative ideas from all interested and qualified sources, to include participation by, and potentially with, both "traditional and non-traditional " members (e.g. large businesses, small businesses, independent consultants, academic institutions, consortium participants, other).

The DIA is interested in all potential "innovative" concepts/ideas of interest that may fill current gaps, to include effort focused principally on maximizing agency operating efficiency and effectiveness, and access by the DIA to potential or existing state-of-the-art innovations, both technical and otherwise, that may not currently be in use by the agency or that may be in limited use and in need of leveraging across a greater expanse of the collective enterprise. Areas of need, as listed on DIA’s Needipedia webpage are:

1. Prevent Strategic Surprise through Improved Acquisition Support
2. New Analysis Technologies and Methods
3. Enhance Counterintelligence and Security
4. Intelligence Collections
5. Mission Enhancing Science and Technology
6. Improves Mission Support Capabilities
7. Increase Organizational Effectiveness
8. Empower Partnerships

How Much: Smaller (<$650K) initiatives preferred

When: white papers (required) accepted from throughout the open period - to 26 Nov 2018

Where: DIA-BAA-14-01 issued 27 Nov 2013, revised 26 Nov 2014
What:
Path-breaking GEOINT research in areas of potential interest to NGA, the DoD, and the Intelligence Community (IC). Example areas are:
Access to GEOINT data and services
Advancing Geolocation and data uncertainty
Anticipatory Analysis
Computer Vision
Earth, Ocean, and Atmospheric Science supporting GEOINT
Exploiting data from new sources and sensors
GEOINT tradecraft
Geolinguistics
Video Indexing and Search
Video Content Extraction

Graph methods for geospatial data
Image Science
Massive data
Predictive intelligence
Signature development & discovery
Spatio-temporal analysis
Strategic indications and warning
Understanding human activities
Visual analytics for GEOINT

University Research Initiatives (NURI) awards focused on fundamental research in Geospatial Intelligence topics such as those listed above.
Outstanding New Scientific and Technical Innovative Researcher (ONSTIR) Program grants are open to faculty employed by eligible institutions who are U.S. citizens, U.S. nationals, or permanent U.S. residents who have held their doctorate degrees (PhD or equivalent) for less than five years at the time of application.

Offerors are highly encouraged to submit white papers prior to submitting proposals

How Much:
NURI awards have a 2yr base period with a value of up to $300K, with up to 3 one-year options valued at up to $150K per option year.
ONSTIR award grants have a 2yr base period valued up to $200K, with a up to one-year option valued at $100K.

When: White papers anytime before 7 Jan 2016 for Dec 2015 release

Where: Broad Agency Announcement HM0476-16-BAA-0001
# Guide to Dept of Energy Funding

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Information garnered from DOE Budget Submission Presentations, Justifications, and Webpages

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# DOE Science and Engineering

## Principal Funding Offices

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### Applied

| Electricity Delivery and Energy Reliability | OE | http://energy.gov/oe/ |
| Fossil Energy | FE | http://energy.gov/fe/ |
| Nuclear Energy | NE | http://energy.gov/ne/ |

### Adv Research Projects Agency - Energy


### National Nuclear Security Administration

| National Nuclear Security Administration | NNSA | http://nnsa.energy.gov/aboutus/ |
What:
• The mission of the DOE Office of Science is to deliver the scientific discoveries and major scientific tools that transform our understanding of nature and advance the energy, economic, and national security of the United States.
• Prior to submission of an application for a research grant, the PI is encouraged to contact the program manager whose areas of expertise and responsibilities most closely match the topic of the proposed research activities to learn about current funding opportunities and the nature of the work.
• Based on the interaction with a program manager, the PI may be encouraged to submit a pre-application.
• Based on a review of the proposed research, the principal investigator will be either encouraged or discouraged to submit a full application.
• All grants that are funded undergo external peer review.
• The usual term for a new award is three or four years, divided into one-year budget periods.

How much: Varies with the program

When:
Applications may be submitted at any time. However, it is recommended that a full application be sent between June 1st and November 30th in order that SC can make a funding decision by June of the following year.

Where:
DE-FOA-0001404 - FY2016 Continuation of Solicitation for the SC Financial Assistance Program
Applications must be submitted through Grants.gov to be considered for award.
DOE
Energy Efficiency and Reliable Energy (EERE)
Applied Research and Development Programs

What: The programs support research and development of energy efficiency or renewable energy technologies:

Energy Efficiency
• Advanced Manufacturing  
  http://energy.gov/eere/efficiency/advanced-manufacturing
• Buildings  
  http://energy.gov/eere/efficiency/buildings
• Government Energy Mgmt  
  http://energy.gov/eere/efficiency/government-energy-management
• Homes  
  http://energy.gov/eere/efficiency/homes

Renewable Power
• Geothermal  
  http://energy.gov/eere/renewables/geothermal
• Solar  
  http://energy.gov/eere/renewables/solar
• Wind  
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• Water Power  
  http://energy.gov/eere/renewables/water

Transportation
• Bioenergy  
  http://energy.gov/eere/transportation/bioenergy
• Hydrogen and Fuel Cells  
• Vehicles  
  http://energy.gov/eere/transportation/vehicles

When: Various

What: Predictive Science Academic Alliance Program
The centers are either Multidisciplinary Simulation Centers (MSC) or Single-Discipline Centers (SDC) solving a problem that advances basic science/engineering; verification and validation/uncertainty quantification; and contributing towards achieving effective exascale computing, to demonstrate predictive science in a High Performance Computing environment.

How Much: Up to $4M/yr for MSC; $2M/yr for SDC
When: due by June 2012
Where: DE-FOA-0000728

What: Stewardship Science Academic Program
The SSAA Program was developed to support state-of-the-art research at U.S. academic institutions in areas of fundamental physical science and technology of relevance to the Stockpile Stewardship Program mission.
- Properties of Materials under Extreme Conditions and/or Hydrodynamics
- Low Energy Nuclear Science
- Radio Chemistry

How Much: typically $50-300K/yr for up to 3 years
When: due by 27 Oct 2014
Where: DE-FOA-0001067

What: Nuclear Science and Engineering Nonproliferation Research Consortium
A successful consortium is a rich collaborative environment between the university members, their student and faculty researchers, and the DOE National Laboratory scientists and staff. Priority on skill sets:
- nuclear science and engineering;
- nonproliferation, arms control and related verification work;
- remote technologies for proliferation detection;
- nuclear security;
- radiochemistry;
- mass spectrometry.

How Much: $5M for one award as a cooperative agreement to the lead University
When: due by 19 Aug 2015
Where: DE-FOA-0001300
# Guide to NASA Research Funding

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NASA Principal Research Funding Offices
(NSPIRES web site http://nspires.nasaprs.com/external/)

• **Science Mission Directorate (SMD)**
  science.nasa.gov/
  Research Opportunities in Space and Earth Sciences (ROSES, NRA-NNH16ZDA001N)

• **Aeronautics Research Mission Directorate (ARMD)**
  www.aeronautics.nasa.gov/
  Research Opportunities in Aeronautics (ROA, NRA - NNH15ZEA001N)
  Aeronautics Research generates the innovative concepts, and technologies that will enable revolutionary advances in future aircraft

• **Human Exploration and Operations Systems Mission Directorate (HEO)**
  www.nasa.gov/directorates/heo/home/index.html
  Human Exploration Research Opportunities (HERO, NRA NNJ15ZSA001N)
  Joint NASA/ National Space Biomedical Research Institute (NSBRI) research solicitation in support of space exploration, focused on health effects from space radiation and human physiological changes associated with exploration.

• **Space Technology Mission Directorate**
  www.nasa.gov/directorates/spacetech/home/index.html
  Space Technology Research, Development, Demonstration and Infusion 2016 (NNH16ZOA001N)

• **Office of Education**
  www.nasa.gov/offices/education/about/index.html
  Education Opportunities in NASA STEM (EONS, NRA NNH14ZHA001N)

NRA NASA Research Announcement
**What:** Supporting research in science and technology is an important part of NASA's overall mission. NASA solicits this research through the release of various research announcements in a wide range of science and technology disciplines. NASA uses a peer review process to evaluate and select research proposals submitted in response to these research announcements.

To submit a research proposal to NASA, individuals and the organizations with which they are affiliated must be registered in NSPIRES.

**When:** Various

**Where:** NASA Solicitation and Proposal Integrated Review and Evaluation Systems (NSPIRES)
Guide to NIST Research Funding
Index to MAPS Charts
Information garnered from NIST Budget Submission Presentations, Justifications, and Webpages

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Measurement Science and Engineering (MSE) Research Grant Program (2016-NIST-MSE-01)
Support NIST laboratories with research in fields such as: material measurement; physical measurement; engineering; fire research; information technology; neutron research; nanoscale science and technology; standards services; and law enforcement standards.

Precision Measurement Grants (2016-NIST-PMGP-01)
Support researchers in U.S. colleges and universities for experimental and theoretical studies of fundamental physical phenomena.

Standards Services Curricula Development Cooperative Agreement Program (2016-NIST-SSCD-01)
The recipients will work with NIST to strengthen education and learning about standards and standardization.

Nanoelectronics
Supports research and innovation in nanoelectronics through a partnership between NIST and the Semiconductor Research Corp. (SRC).

Centers of Excellence (at Universities) (http://www.nist.gov/coe/)
Establish four competitively selected Centers of Excellence in measurement science areas defined by NIST that will leverage and expand NIST research capabilities.
  - Materials at Northwestern University in 2014
  - Community Resilience at Colorado State University in 2015
  - Forensics Sciences at Iowa State University in 2015

National Network for Manufacturing Innovation (NNMI) - Federal in scope but coordinated at NIST
http://www.nist.gov/amo/
2016-NIST-NNMI-01 Solicitation for NNMIIs that does not have any constraints on the topic
The key objective of the NNMI is to accelerate innovation and transition technology to US manufacturing enterprises. Using redirected Agency funds, a number of institutes are being / have been created:
  - DOD - Additive Manufacturing, Digital Manufacturing and Design, Lightweight Metals, Integrated Photonics, Flexible Hybrid Electronics, and Revolutionary Fibers and Textiles
  - DOE - Wide Bandgap Semiconductors for Power Applications, and Advanced Composites

Institutes that are being competed
DOE - “Smart Manufacturing: Advanced Sensors, Controls, Platforms and Modeling for Manufacturing”
NIST
Extramural Funding Opportunities Website

**What:** Current Funding Opportunities website
Federal Funding Opportunity (FFO) Announcements will be posted in this section (URL below) upon the opening of the applicable application periods. Click on a URL to view the full FFO which contains information about the opportunity, applicant eligibility, application requirements, and directions on how to apply

**When:** Various

**Where:** Office of the Director, NIST Program Information, Current Funding Opportunities
http://www.nist.gov/director/grants/grants.cfm
Guide to NOAA Research Funding

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What:
NOAA conducts and supports climate research, essential oceanic and atmospheric observations, modeling, information management, assessments, interdisciplinary decision support research, outreach, education, and stakeholder partnership development.

Ten competitions covered by the annual (2016) announcement are as follows:

- COM - In Situ Technologies to Contribute to the Tropical Pacific Observing System (TPOS 2020) Project
- AC4 - Fires in the Western US: Emissions and Chemical Transformations
- CVP - AMOC-Climate Linkages in the North and/or South Atlantic
- MAPP – NOAA Climate Test Bed - Accelerating Transition of Research into Operations
- MAPP – Research to Advance Prediction of Subseasonal to Seasonal Phenomena
- COCA - Ecosystem Services for a Resilient Coast in a Changing Climate
- SARP - Water Resources and Extreme Events
- SARP - Coping with Drought Initiative in support of the National Integrated Drought Information System (NIDIS)
- RISA - Existing Regions
- RISA - New Regions

When: Annual Solicitation, for FY2016 (released July 2015)
Letters of Intent for all Competitions due TBD
Full applications for all Competitions due TBD

How Much:
In FY 2016, approximately $14 million will be available for approximately 90 new awards pending budget appropriations. It is anticipated that most awards will be at a funding level between $50K and $300K per year.

Where: Funding Opportunity Number: NOAA-OAR-CPO-2016-2004413
http://cpo.noaa.gov/GrantsandProjects.aspx

COM Climate Observation and Modeling Program
AC4 Atmospheric, Chemistry, Carbon, Cycle and Climate Program
CVP Climate Variability And Predictability Program
MAPP Modeling, Analysis, Predictions and Projections Program
COCA Coastal and Ocean Climate Applications Program
SARP Sectoral Applications Research Program
RISA Regional Integrated Sciences and Applications Program
What: OER supports a continuum of ocean science that makes discoveries via exploration and research, and transitions the new knowledge and capabilities to the rest of NOAA, and the national and international science, technology, and ocean management communities.

Its Strategic Plan outlines four strategic goals:
• Conduct scientific baseline characterizations of unknown or poorly-known ocean basin boundaries, processes, and resources
• Transition ocean exploration discoveries to new research areas and research results to new applications to benefit society
• Increase the pace, scope, and efficiency of exploration and research through advancement of underwater technologies
• Engage audiences through innovative means by integrating science, education and outreach

OER seeks bold, innovative proposals with interdisciplinary approaches and objectives which fall within one (or more) of three categories:
  Ocean Exploration
  Marine Archaeology
  Ocean Exploration Education

When: Funding Opportunity: NOAA-OAR-OER-2016-2004629 (released Feb 2015)
  Two page pre-proposal due date 23 Oct 2015
  Full proposal due 8 Jan 2016

Where: Visit the Ocean Explorer website to see past and present OE-funded activities.
  http://oceanexplorer.noaa.gov/
## Guide to USDA Research Funding

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<td>Forest Service Research Program</td>
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<td>17</td>
<td>Agriculture Research Service (intramural research)</td>
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What:
In the last several years NIFA has issued seven RFAs for the AFRI Program:

- Foundational Program addressing the six AFRI priority areas
  - a) Plant Health and Production and Plant Products
  - b) Animal Health and Production and Animal Products
  - c) Food Safety, Nutrition, and Health
  - d) Bioenergy, Natural Resources and Environment
  - e) Critical Agricultural Research and Extension (CARE)
  - f) Agriculture Systems and Technology
  - g) Agricultural Economics and Rural Communities

- Challenge Areas (6):
  - a) Childhood Obesity Prevention
  - b) Climate Change
  - c) Food Safety
  - d) Global Food Security
  - e) Sustainable Bioenergy
  - f) Water for Agriculture

- NIFA Fellowships Grant Program soliciting Pre and Postdoctoral applications

Applications for AFRI funds may also be solicited through other announcements including supplemental AFRI RFAs or in conjunction with multi agency programs

How Much:
$116M available in the Foundational Program in FY2015. Standard Grants not exceed $500K total (including indirect costs) for project periods of up to 5 years.

When: for the Foundational Program
Letter of Intent Deadline: Required for some programs in the past
Application Deadline: for FY2015 program, due dates range from Mar/Jun 2015

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<td>Office of Elementary and Secondary Education (OESE)</td>
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<td>21</td>
<td>Office of Educational Technology (OET)</td>
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</table>
The Institute of Education Sciences also considers unsolicited applications for research, evaluation, and statistics projects that would make significant contributions to the mission of the Institute. Unsolicited applications are defined as those that are not eligible for funding under the Institute's current grant competitions.

What: Funding Opportunities (with Catalog of Federal Domestic Assistance number)

- Education Research Programs (84.305A)
- Research Training Programs in the Education Sciences (84.305B)
- Education Research and Development Centers (84.305C) - not in 2017
- Statistical and Research Methodology in Education (84.305D)
- Partnerships and Collaborations Focused on Problems of Practice or Policy (84.305H)

- Special Education Research Programs (84.324A)
- Research Training Programs in Special Education (84.324B)
- Low-cost, Short-duration Evaluation of Special Education Interventions (84.324L)

Contact relevant Program Officer(s) for the topic(s) of interest
Submit your (optional but strongly encouraged) Letter of Intent.

When: for FY2017
Full proposal: 4 Aug 2016

Where: Federal Register / Vol. 81, No. 45 / Tues, Mar 15, 2016, page 12085
More detailed RFAs posted at: http://ies.ed.gov/funding
Webinars on the opportunities: http://ies.ed.gov/funding/webinars/previous_webinars.asp
Guide to **EPA** Research Funding  
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<td>National Center for Environmental Research Extramural Programs</td>
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What: NCER’s Science to Achieve Results or STAR program funds research grants and graduate fellowships in numerous environmental science and engineering disciplines through a competitive solicitation process and independent peer review.

In addition, through this same competitive process, NCER periodically establishes large research centers in specific areas of national concern. At present, these centers focus on children’s health, hazardous substances, particulate matter, and estuarine and coastal monitoring.

At present, STAR is focusing on the health effects of:
- particulate matter,
- drinking water,
- water quality,
- global change,
- ecosystem assessment and restoration,
- human health risk assessment,
- endocrine disrupting chemicals,
- pollution prevention and new technologies,
- children’s health, and
- socio-economic research.

When: Periodic, for 2016
- EPA G2016-STAR-A1 - Integrating Human Health and Well-being with Ecosystem Services

Where: See website - http://www.epa.gov/ncer/rfa/
What  EPA is issuing this Request for Applications (RFA) to fund research into issues of water quality and availability related to distribution systems and premise plumbing systems under lower-flow conditions. The National Research Council (NRC) defines “premise plumbing” as that portion of the distribution system from the main water ferrule or water meter to the consumer’s tap in homes, schools, and other buildings. The national scope and high priority of these issues of water quality and availability related to premise plumbing and water distribution systems is evidenced by this NRC report, which attests that a substantial proportion of the nation’s waterborne disease outbreaks is attributable to issues within these systems. Increasing potential incidences of disinfection residual loss due to the high water age will only exacerbate this situation (NRC, 2005).

How Much  $4M for approximately 2 awards with a maximum duration of 3 years. Minimum of 25% matching funds.

When: Proposal due prior to 17 March 2016

Where: EPA-G2016-ORD-B1
# Guide to DOT Research Funding
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DOT Research Programs
http://www.rita.dot.gov/rdt/dot_research_programs.html

Aviation
• Federal Aviation Administration (FAA) Data and Research

Highway
• Federal Highway Administration (FHWA) Research
• Turner-Fairbank Highway Research Center

Maritime
• Maritime Administration (MARAD) Research and Development Activities

Motor Carrier
• Federal Motor Carrier Safety Administration (FMCSA) Analysis, Research and Technology

Hazardous Mat’ls
• Pipeline and Hazardous Materials Safety Administration (PHMSA) Research & Development

Highway Traffic Safety
• National Highway Traffic Safety Administration (NHTSA) Highway Safety Research and Evaluation Program
• NHTSA Vehicle Safety Research

Pipeline
• PHMSA Research & Development

Railroad
• Federal Railroad Administration (FRA) Research and Development

Transit
• Federal Transit Administration (FTA) Research, Technical Assistance & Training

Intermodal Research
• OST-R Intelligent Transportation Systems Joint Program Office
• OST-R Current Research and Publications
• OST-R Maps of Current Research
• DOT Climate Change Center

Cooperative Research Programs
• Airport Cooperative Research Program (ACRP)
• Hazardous Materials Cooperative Research Program (HMCRP)
• National Cooperative Freight Research Program (NCFRP)
• National Cooperative Highway Research Program (NCHRP)
• Transit Cooperative Research Program (TCRP)
Department of Transportation
Office of the Assistant Secretary for Research and Technology
Research, Development and Technology

What:  Research Development and Technology
  • Coordinates DOT's research and development activities and investments
  • Awards and administers grants to universities, including
    • University Transportation Centers
    • FAA Centers of Excellence
    • FHWA University and Grants Programs
    • Sun Grant Initiative
  • Sponsors advanced research

When:  Various

Where:  http://www.rita.dot.gov/rdt/
### Guide to **DOJ** Research Funding

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<td>Office of Juvenile Justice and Delinquency Programs (OJJDP)</td>
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What: NIJ awards grants and agreements for:
- Research, development and evaluation (CFDA 16.560). NIJ funds physical and social science research, development and evaluation projects about criminal justice through competitive solicitations. The focus of the solicitations varies from year to year based on research priorities and available funding.
- Forensic laboratory enhancement. NIJ provides funding through formula and discretionary awards to reduce evidence backlogs and improve the quality and timeliness of forensic science and medical examiner services. Programs include:
  - DNA Backlog Reduction Program (CFDA 16.471)
  - Paul Coverdell Forensic Sciences Improvement Grant Program (16.472)
- Research fellowships. NIJ funds two fellowships through annual solicitations. The focus of the solicitations varies from year to year. Fellowships include:
  - Graduate Research Fellowship (CFDA 16.562)
  - W.E.B. DuBois Fellowship (CFDA 16.566)
  - Visiting Fellowship

Where/When:

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<td>Office of Minority Health (OMH)</td>
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<td>Biomedical Advanced Research and Development Authority (BARDA)</td>
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What:
HHS expands scientific understanding of how to advance health care, public health, human services, biomedical research, and the availability of safe medical and food products. Chief among these efforts are the identification, implementation, and rigorous evaluation of new approaches in science, health care, public health, and human services that reward efficiency, effectiveness, and sustainability.

Pertinent Agencies in DHHS
- ACL  Administration for Community Living  
  (Includes National Institute on Disability, Independent Living, and Rehabilitation Research)
- AHRQ  Agency for Healthcare Research and Quality
- CDC  Centers for Disease Control and Prevention
- FDA  Food and Drug Administration
- HRSA  Health Resources and Services Administration
- NIH  National Institutes of Health
- OASH  Office of the Asst Secretary for Health
- OPHS  Office of the Asst Secretary for Health, Office of Public Health and Science

Where:
Get Ready for Grants Management  
Learn about the steps necessary to successfully compete for and manage a grant.

Grants Policies and Regulations  
http://www.hhs.gov/grants/grants/policies-regulations/index.html
Learn about important policies and regulations related to HHS grants, including important information about audits, reporting, efficient spending, and grant reviews.

Grants Forecast  
http://www.acf.hhs.gov/hhsgrantsforecast/index.cfm
A database of planned grant opportunities proposed by DHHS agencies. Each Forecast record contains actual or estimated dates and funding levels for grants that the agency intends to award during the fiscal year.
Guide to “Other” Research Funding 
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Humanities / Social Science Focused

13-16 Department of State (DOS)
- Bureau of Educational and Cultural Affairs (ECA)
- Bureau of Populations, Refugees and Migration (PRM)
- Bureau of Democracy, Human Rights and Labor (DRL)
  - Embassy initiated

17-18 National Endowment for the Arts (NEA)

19-23 National Endowment for the Humanities (NEH)

24-25 National Archives and Records Administration (NARA)

26 Institute of Museum and Library Services (IMLS)

27 Corporation for National and Community Service
National Institutes of Health (NIH)
Extramural Funding Opportunities
http://grants.nih.gov/grants/guide/

Agency Organization
- Largest agency of Department of Health & Human Services (DHHS)
- 27 Institutes and Centers
  - Organized according to disease focus
  - One center conducts most NIH peer reviews
- 24 institutes provide extramural research support

Broad Areas of Research Interest
- Research of directed or strong indirect relevance to understanding and preventing disease
- Research on basic biological and psychological processes of preferential interest if there is disease relevance

Five Themes toward Research Investment
- Applying high throughput technologies to understand fundamental biology, and to uncover the causes of specific diseases
- Translating basic science discoveries into new and better treatments
- Putting science to work for the benefit of health care reform
- Encouraging a greater focus on global health
- Reinvigorating and empowering the biomedical research community
NIH Grant Mechanism Timetable

Approx. Stage of Research Training and Development

- Graduate/Medical Student
- Post-Doctoral
- Early Career
- Middle Career
- Senior Career

Mechanism of Support

- Predoctoral Institutional Training Grant (T32)
- Predoctoral Individual NRSA (F31)
- Predoctoral Individual MD/PhD NRSA (F30)
- Postdoctoral Institutional Training Grant (T32)
- Postdoctoral Individual NRSA (F32)
- Mentored Research Scientist Development Award (K01)
- Mentored Clinical Scientist Development Award (K08)
- Mentored Patient-Oriented RCDA (K23)
- Mentored Quantitative RCDA (K25)
- Independent Scientist Award (K02)
- Midcareer Investigator Award in Patient-Oriented Research (K24)
- Senior Scientist Award (K05)

T - Training
F - Fellowships
K - Career Development
R - Research Grants
NIH Research Funding Opportunities
Center for Excellence in Research Workshops by Steve Moldin and Sylvia da Costa

**What:** The NIH provides financial support in the form of grants, cooperative agreements, and contracts. This assistance supports the advancement of the NIH mission of enhancing health, extending healthy life, and reducing the burdens of illness and disability. While NIH awards many grants specifically for research, we also provide grant opportunities that support research-related activities, including: fellowship and training, career development, scientific conferences, resource and construction.

- See the announcements http://grants.nih.gov/grants/guide/
- See the specific announcement http://grants.nih.gov/grants/planning_application.htm#search

**How Much:** Varies with program - see announcement

Note that an NIH proposal requests direct monies, indirect costs are added from another account.

**When:** Varies with program - see the specific announcement

**Where:** http://grants.nih.gov/grants/submitapplication.htm
Path to Success at NIH

Step #1: Do your homework; learn a bit about the grant process and the options.

Office of Extramural Research:

IC priorities: http://www.nih.gov/icd/index.html

NIH Guide Provides Weekly Updates on Funding Opportunities:
   http://grants.nih.gov/grants/guide/

NIH RePORTer – lots of statistics and abstracts of funded grants
   http://report.nih.gov/

Step #2: Contact us because...
   We’re from the Government, we’re here to help you!
Take Home Messages

Lots of directions and opportunities at the NIH


- Get to know the Program Director(s) for your scientific area and discuss your ideas
  - Fit with institute mission and priorities
  - Best grant mechanism or program
  - Best study section for review

- Participate in workshops and symposia
  - Get fresh ideas and directions for your research
  - Become known to your peers (i.e. reviewers)

- Participate in review of grant applications (serve on study sections)
Suggestions for Success

Get to know the Agency Program Officer and his/her program interests

Participate in Agency activities
  Workshops, meetings
  Be a proposal reviewer (if available) - no better way to understand what constitutes a credible proposal for that agency / program officer

As you mature in your career, consider a rotational assignment at an Agency
  Very good way to establish / cement personal relationships with other POs
  Good opportunity to broaden one’s vistas

Know the Agency’s review process

Utilize the USC Center for Research Excellence workshops on proposal development

Use your colleagues and the DC Office staff to critique / guide your proposal
Know your program officer

Program officers (PO) have variable latitude at project level (depending on agency)

(DOD - DOE - NASA - NIH - NSF)

Their reputation / professional advancement is tied in part to your success

Make contact with Program Officer before submitting a white paper or proposal

- Be informed - read the descriptive paragraph on the website/announcement, the MAPS PO datasheet, and information on prior awards (available from DC office for selected agencies)
- Use “elevator pitch” to open contact, gain attention - your unique idea(s) and impact
- Be ready for a dialogue - not monologue
- Plumb his/her current interest – website paragraphs are likely dated. This can significantly enhance your prospects by tailoring your ideas to the PO’s interests
- If lukewarm/disinterested response, ask for suggestions on other POs who might be interested
- Also ask after availability of funds – his/her resources may be fully committed

Watch for new Program Officers - they will be interested in creating “their” program
Project Officer Background:
Laura Kienker was a Research Biologist within the Counterterrorism and Forensic Science Research Unit of the FBI Laboratory, where she managed outsourced research projects pertaining to automating the forensic analysis of biological evidence. Prior to joining the FBI, Dr. Kienker directed a Sequencing and Microarray Core Facility for the Center for Immunology at the University of Texas Southwestern Medical Center in Dallas, where she was an Assistant Instructor in the Department of Internal Medicine.

Education
B.A. in Biology and Chemistry from Oberlin College
Ph.D. in Immunology from the University of Pennsylvania

Program:
Metabolic Engineering
The Office of Naval Research (ONR) Metabolic Engineering Program targets the fundamental understanding of metabolic processes in microbes or plants for the production of chemicals of potential utility to the Navy.

Biomaterials and Bionanotechnology
The Office of Naval Research (ONR) Biomaterials and Bionanotechnology Program supports fundamental research that enables the generation of novel, Navy relevant, nano-scale materials and devices.

Illustrative Publications Reflecting Project Officer Research Interests:
Both V(D)J recombination and radio resistance require DNA-PK kinase activity, though minimal levels suffice for V(D)J recombination
Kienker LJ; Shin EK; Meek K
NUCLEIC ACIDS RESEARCH 28(14), 2752-2761  JUL 15 2000
What to Say - and Not Say - to Program Officers
Michael Spires, Office of Sponsored Projects, Smithsonian Institution

“most scholars and researchers would rather undergo a root canal without anesthesia than call a program officer”

**Shalts**
1. Do your homework
2. Be as specific as possible
   - concentrate on big picture, especially outcomes
   - why should they be excited by your proposed work (and its outcomes)
3. When in doubt, ask

**Shalt Nots**
1. Do not call at the office “just to chat”
2. Do not cold call
   - send short email first, summarizing issue(s)
   - ask for PO to call you (with your available dates/times) or to email you back with suggestions on when to contact him/her
3. Do not pester - but be persistent
# Keys to a Compelling Proposal

adapted from
George Hazelrigg, NSF Program Officer
Paul Ronney, USC AME, Active Researcher and Reviewer
S. Joseph Levine, Michigan State, Emeritus Professor

**Hazelrigg**

- Know the program you are engaging
- Pay attention to program requirements
- Know the review process

**Ronney**

- What has been done / its deficiencies
  - At least one really novel, clever idea
- Don’t say “just trust me”
  - Pose specific, testable hypotheses
  - Avoid kitchen sink mentality - what is key
- Where’s the beef
- Explain your end game - outcome(s)

**Levine**

- How extend prior work
  - Needs an original idea
- Strong rationale
- Focused Proposal
- Problem must be important
- Well defined outcomes

**Know Yourself**

- Appropriate experience/resources - but don’t dwell on your past work
- PI has pertinent experience

**Format and brevity are important**

- Grammar and spelling count
- A picture is worth a thousand words
- Clear Writing

**Proofread your proposal before it is sent**

- Submit on time and confirm its correct transmission
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 specific to this project
The Heilmeyer Catechism
Questions New Program Pitches Must Answer

- What are you trying to do? Articulate your objectives using absolutely no jargon
  - Example: “take anthrax off the table as a threat to our forces”
  - What is the new military capability that Semantic Web Services could provide?

- How is it done today, and what are the limits of current practice?
  - Why is this specifically a technology problem?

- What's new in your approach and why do you think it will be successful?
  - All software is Turing-equivalent, so software methodology is usually not relevant
  - What is your argument/analysis that a 10x difference in a technology will result in a new capability?

- Who cares? If you are successful, what difference will it make?
  - Who is the customer for the new idea, and what evidence do you have that any transition will be successful?

- What are the risks and the payoffs?

- How much will it cost? How long will it take?

- What are the midterm and final exams to check for success?
  - Metrics and experimentation plans defined up front
Proposal Development
NSF Vice Mission Agencies

NSF

1a. Interest in most S&E
most proposals will “fit somewhere”

1b. Knowledge inspired - Bohr Quadrant
more funding in science than in engineering
(but can include Pasteur when
addressing topics of societal importance)

1c. Basic monies only, with tweaks such as
I-CORP, I/UCRC, GOALI, SBIR/STTR

1d. Impact on S&E knowledge
addressing national/Intl priorities useful

2. Additional requirements for:
   broadening participation
   education, underrepresented
   wider-scale Impact, International
   data management
   Post Doc nurturing

3. Program officer triage for rule compliance
   except for EAGER, RAPID, INSPIRE

4. Review by panel

Mission Agency - Basic Research

Interest restricted to S&E pertinent to mission need
**a proposal must interest the program officer**

Use inspired (agency mission) - Pasteur Quadrant
likely more funding in engineering than in science

Basic, but applied monies may be also available
(applied tends to have milestones and deadlines)

Impact on S&E knowledge and
addressing agency mission priorities essential

Generally none - perform the promised research

Program officer triage on basis of content / interest

Review by program officer with possible input from others

---

**EAGER** Early Concept Grants for Exploratory Research
**RAPID** Rapid Response Research Grants
**INSPIRE** Integrated NSF Support Promoting Interdisciplinary Research and Education

**I/UCRC** Industry University Cooperative Research Program
**GOALI** Grant Opportunities for Academic Liaison with Industry
**I-CORP** Innovation Corp
**SBIR/STTR** Small Business Innovative Research / Small Business Technology Transfer
Writing Competitive Grants

- Organize your team and plan
- Specific Aims are the bedrock
- Make reviewers your advocates
Planning Meeting Output: Blueprint for Successful Research

Project Title: *really a quick summary*
Principal Investigator(s) and Key Personnel: *defines role, commitment*
Overall goal: *resolve an important issue in a timely manner*
Specific goal: *best stated as a hypothesis (a boastful claim, substantiated by data)*
Impact: *2-3 sentences, define success, distill innovation and significance*

RESEARCH Responsibilities, Costs, Milestones and Timeline

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<th>Overseer Cost</th>
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1. **Validate the ...** *(THIS AIM MUST WORK—i.e. no/low risk here!)*
   1a. Compare... confirm...
   1b. Optimize the dose/time course...

2. **Elucidate the mechanism...** *(May omit for high risk (e.g. R21) grants.)*
   2a.
   2b.
   2c.

3. **Assess the biocompatibility of ... in a ...** *(Transition to next grant.)*

   * High-risk element. Propose and discuss alternatives. Decision point.
Tell your story in five compelling, concise, plain-language paragraphs!

1. **Outline an important medical problem and your timely, innovative solution.** Describe the big picture quantitatively. How can science/engineering help?

2. **Define the challenge for this application.** What is your specific target and hypothesis? How will you get there? How do you know?

3. **State each of your (three) Specific Aims in a single sentence in bold face.** Then, identify strategies, methods, assays to be used, and data expected.

4. **Overview the competencies of the team and the resources.** Why is this the right group at the right place and time? Outline your specific skill sets.

5. **What happens when you succeed? What are the next steps?** How will paradigms shift or treatment change, and what will this project contribute?

**Significance – Innovation – Investigator(s) – Approach – Environment**
How to Win Over the Peer Reviewers

- Own impact: tackle an important and difficult problem
  - engineers beware: lead with an urgent issue, NOT your cool tools/technologies
  - discovery (basic) science plus technology development (non-hypothesis driven)
- Hit all Review Criteria on the “Specific Aims” page
- Balance “the possible” with “the exciting”
  - feasibility = most relevant preliminary data + sound, logical pathway
  - defend assertions with publications (citing reviewers a plus)
  - inspiration << invention = innovation
  - short term objectives inform long term goals
  - milestones > bold, general ideas
  - experience, expertise count
- Define success and point to the next grant/activity
- Good grantsmanship
  - limit jargon/acronyms
  - reinforce (don’t repeat) important ideas
  - use legible/sensible figures
  - strategically place an overview as “eye candy”
  - proofread!
Office of Research Advancement
Assets Available for Assistance
http://web-app.usc.edu/web/ra_maps/search/
DC Office of Research Advancement alerts - roughly daily

### Federal Websites
- GrantsNet (medical/biological) [http://sciencecareers.sciencemag.org/funding](http://sciencecareers.sciencemag.org/funding)

### Agency E-mail Alerts
- Environmental Protection Agency (EPA) [http://epa.gov/ncer/listserv/](http://epa.gov/ncer/listserv/)
- Office of Space Science Research Announcements (NASA) [http://spacescience.nasa.gov/announce/listserv.htm](http://spacescience.nasa.gov/announce/listserv.htm)
- National Endowment for the Arts (NEA) [http://arts.gov/grants/apply-grant/grants-organizations/deadlines](http://arts.gov/grants/apply-grant/grants-organizations/deadlines)
- National Institute of Justice (NIJ) [http://nij.gov/funding/Pages/welcome.aspx](http://nij.gov/funding/Pages/welcome.aspx)
- National Science Foundation (NSF) [https://public.govdelivery.com/accounts/USNSF/subscriber/new?qsp=823](https://public.govdelivery.com/accounts/USNSF/subscriber/new?qsp=823)

### Grant Forward
Grant Forward, by Cazoodle, is a database of grants where users can search for funding opportunities (federal-, state-, foundation- and institution-sponsored research) across all fields, including the sciences, humanities, and arts. Free (i.e., prepaid) to all USC employees. Creating an account is a simple two-step process – just follow the instructions on the New User Quick Guide

#### Funding Opportunity Search
- Search for funding opportunities spread across 39 subject areas and 2009 categories
- Large Database of Sponsors comprising Foundation, Federal and Institutions
- Set up alerts and get opportunities delivered straight to your inbox

#### Researcher Profiles
- Infers researcher's interests from publication pages and other sources to identify funding opportunities that match
- Each funding opportunity is matched to researchers based on research interests and career stage
The DC Office of Research Advancement has created the Federal Mission Agency Program Summaries (MAPS) website to:

1. Connect PIs with appropriate funding agency programs/program officers
2. Assist in development of white papers/charts/elevator pitches

The website can be accessed using one’s USC NetID and Password.

It has the following resources:

1. Search Tab for a searchable database of programs/program officers
   At that website one can do keyword searches to locate the associated mission agency (DHS, DOD, DOE, DOT, ED, EPA, INTEL, NASA, NIST, NOAA and USDA) programs and program officers.

2. Mission Agency Tab (DHS, DHHS, DOD, DOJ, DOE, DOT, ED, EPA, INTEL, NASA, NIST, NOAA, USDA)
   Guide to Agency Funding for FYXX - Chart numbers in the Guides reference the Agency Research Program Chart files.
   Agency Research Program Charts
   Agency Planning Documents

3. Presentation Tab for charts from recent USC Center of Excellence in Research workshops

4. Proposal Tab for reports / guides on writing proposals

5. Email Alerts Tab for URLs at which one can arrange for automatic solicitation updates

6. Grantee Tab for URLs at which one can find information on previous agency awardees

7. Visiting DC Tab for information about DC Office services
Agency Sites Providing Information on Previously Funded Awards

AHQR  http://www.gold.ahrq.gov/
CDC  http://wwwn.cdc.gov/fundingprofiles/fundingprofilesria/
DOE SC  https://pamspublic.science.energy.gov/WebPAMSExternal/interface/awards/AwardSearchExternal.aspx
DOT  http://ntlsearch.bts.gov/researchhub/index.do
DTRA  http://www.dtrareviews.com/register.html (infer from presentations)
https://www.dtrasubmission.net/portal/
EPA  http://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/recipients.welcome/displayOption/grants
NIH  http://report.nih.gov/
NIJ  http://nij.gov/funding/awards/Pages/welcome.aspx
NIST  the various program websites generally have a list of prior awardees for that program
NSF  http://www.nsf.gov/awardsearch/
NEA  http://arts.gov/grants/recent-grants
NEH  the various program websites have a list of prior awardees for that program
NRC  http://www.nrc.gov/about-nrc/grants/awards/index.html

Website Providing Searchable Information on Federal Grants/Contracts

http://usaspending.gov/
(but does not identify the funding agency program officer or the awardee PI)
Resources for Proposal Writing
(available in MAPS or at shown URL)

NSF CAREER
CAREER Proposal Writing
CAREER Proposal Writing Tips
CAREER Program Presentation (2013)
Writing a Successful CAREER Proposal
Broad(er) impacts of the NSF CAREER Proposal

Hazelrigg, NSF
Pei
LA Salle, NSF
Vigeant, Univ Hartford
Schmitz, UNCC

Other
USC Research Advancement
A Tips for Authoring Grant Proposals
Tips on Writing a Competitive Grant Proposal
Writing a good grant Proposal
Guide for Writing a Funding Proposal
Obtaining Federal Funding
NSF Guide for Proposal Writing
The R&D Proposal
Demystifying DoD Research Funding
NASA Writing Research Proposals
NIH Writing your application
USDA NIFA General Proposal Writing Tips
EPA Writing a Competitive Proposal

http://research.usc.edu/for-investigators/proposal-and-grantwriting/
Hill, Univ Wisc-Madison
Clary, Western SARE
Jones, Microsoft
Levine, Mich State Univ.
Wardle, NSF
NSF 04-016
Yoder, Office of Naval Research
Palmer, Army Research Office
Hertz, NASA Headquarters

http://www.epa.gov/ogd/recipient/tips.htm

USC Center for Excellence in Research Workshops
Developing Funded Research Proposals
Writing Compelling NSF Proposals
Developing NIH Grant Applications
Obtaining DOD Medical Research Funding
Writing Persuasive Proposals
NSF CAREER Award Proposal Workshop

Randy Hall
Paul Ronney
Steve Moldin
Carl Castro
Bonnie Lund
Phillip Taylor
# Postdoctoral Fellowships

Selected Opportunities - some continuing, others ephemeral

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<thead>
<tr>
<th>Science.gov</th>
<th><a href="http://www.science.gov/internships/graduate.html">http://www.science.gov/internships/graduate.html</a></th>
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<td>Grant Forward</td>
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<th>DOD/EPA/FHWA/NIST laboratories</th>
<th><a href="http://sites.nationalacademies.org/pga/rap/">http://sites.nationalacademies.org/pga/rap/</a></th>
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<tr>
<td>NRC Research Associateship Program</td>
<td><a href="http://nrc58.nas.edu/RAPLab10/Opportunity/Programs.aspx">http://nrc58.nas.edu/RAPLab10/Opportunity/Programs.aspx</a></td>
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<tr>
<td>ASEEE</td>
<td><a href="http://www.asee.org/fellowship-programs/post-doctoral">http://www.asee.org/fellowship-programs/post-doctoral</a></td>
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<tr>
<td>ORAU</td>
<td><a href="http://www.orau.org/arlpostdocfellowship/">http://www.orau.org/arlpostdocfellowship/</a></td>
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<th>Intel Community</th>
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<td>Postdoctoral Fellows Res Program</td>
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<th>NASA</th>
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<tr>
<td>New (Early Career) Investigator Program in Earth Science - ROSES 2015 A-35</td>
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<td>Fellowships for Early Career Researchers - ROSES 2015 C-16</td>
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<tr>
<td>Nancy Grace Roman Technology Fellowships in Astrophysics for Early Career Researchers - ROSES 2015 D-9</td>
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<tr>
<td>National Space Biomedical Research Institute Fellowships - <a href="http://www.nsbri.org/firstaward/">http://www.nsbri.org/firstaward/</a></td>
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<td>Arctic Research Opportunities</td>
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<td>Atmospheric and Geospace Sciences Postdoctoral Research Fellowships</td>
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<td>Centers of Research Excellence in S&amp;T (CREST) and HBCU Research Infrastructure for S&amp;E (RISE)</td>
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<td>Documenting Endangered Species</td>
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<td>GeoPrisms Program</td>
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<td>International Research Fellowship Program</td>
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<td>Law and Social Sciences</td>
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<td>Mathematical Sciences Postdoctoral Research Fellowships</td>
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<td>NSF Astronomy and Astrophysics Postdoctoral Fellowships</td>
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<td>NSF Earth Sciences Postdoctoral Fellowships</td>
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<td>NSF Fellowships for Transformative Computational Science using CyberInfrastructure</td>
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<td>Pan-American Advanced Studies Institutes Program</td>
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<td>Postdoctoral Research Fellowships in Biology</td>
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<td>SBE Postdoctoral Research Fellowships</td>
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<td>ASEE/NSF Corporate Postdoctoral Fellowship for Engineers</td>
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<th>USDA NIFA</th>
<th><a href="http://nifa.usda.gov/program/afri-education-and-literacy-initiative">http://nifa.usda.gov/program/afri-education-and-literacy-initiative</a></th>
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<tr>
<td>AFRI Education and Literacy Initiative</td>
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</table>
Research Funding
- Research initiative alerts
- Collaborations across schools, other institutions
- Federal funding agency advocacy / connections / intel
- Strategically targeted activities
- Proposal preparation - biosketch, letters of support, editorial, budget, and scientific
- Repository with Mission Agency Program Summary (MAPS) resources
- Searchable MAPS Program/Program Officer database

Visibility/Prestige
- (Inter)national conferences / workshops
- Strategic partnerships
- Advisory/planning committees

Faculty Development
- Grant-writing courses
- Talks – staff from DC Office, federal funding agencies
- Faculty recruitment

Proposal: Budget/Presentation
| Richard May - manager     | rlmay@usc.edu |
| Dan Barker - editorial    | djbarker@usc.edu |
| Alexis Takahashi - editorial | alexist@usc.edu |

Technical
| Steve Moldin - biology, medical, bit of everything | moldin@usc.edu |
| Jim Murday - physical sciences/engineering         | murday@usc.edu |
| Al Olson - cyber and intelligence                  | alolson@usc.edu |