Proposal Writing for a Mission Agency
(mainly DOD, DOE, ED, EPA and NASA)
Young Investigator/Early Career Opportunities
Where to Look and How to Pitch

Also see http://www.spo.berkeley.edu/fund/newfaculty.html

Dr. James S. Murday
DC Office of Research Advancement
University of Southern California
202 824 5863
murday@usc.edu
DC Office of Research Advancement
Organization Chart

Vice President
Research
Randolph Hall

Executive Director
Steven Moldin

Physical Sciences
James Murday

Intel & Cyber
Allan Olson

Med/Bio Sciences
Steven Moldin

Office Manager
Natasha Walker

Science Writer
Dan Barker

Science Writer
Alexis Takahashi

Program Manager
Richard May

Project Specialist
Ashley Gordon

Project Specialist
Amber Gray

Project Assistant
Allison Hu
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
Strategically targeted activities
Proposal preparation - editorial and scientific contributions
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 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 early career / young faculty programs

1. Department of Defense (DOD)
2. Department of Energy (DOE)
3. Nuclear Regulatory Commission (NRC)
4. National Aeronautics and Space Agency (NASA)
5. Environmental Protection Agency (EPA)
6. US Department of Education (ED)

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
Where to Look for YIP/Early Career Programs
outside of NSF and NIH

Department of Defense (DOD)

DTRA YIP
DARPA Young Faculty http://www.darpa.mil/Opportunities/Universities/Young_Faculty.aspx
CDMRP New Investigator http://cdmrp.army.mil/

Department of Energy (DOE)

Early Career http://science.energy.gov/early-career/

Nuclear Regulatory Commission (NRC)

Faculty Development Grant http://www.nrc.gov/about-nrc/grants.html

National Aeronautics and Space Administration (NASA)

SMD New Investigator http://nspires.nasapsrs.com/external/solicitations/summary.do?method=init&solId={AEF75D0F-2272-7DE7-D52A-295B47C8F5CF}&path=open
AD Nancy Roman Fellowship http://science.nasa.gov/researchers/sara/student-programs/nancy-grace-roman-technology-fellowships-astrophysics-early-career-researchers/
Space Technology Research Grants Program, Early Career Faculty - NNH14ZOA001N

Environmental Protection Agency (EPA)

Human and Ecological Health Impacts Associated with Water Reuse and Conservation Practices - EPA-G2014-STAR-F2
Water Quality Benefits - EPA-G2015-STAR-A1

Department of Education (ED)

Early Career Development and Mentoring http://ies.ed.gov/funding/ncser_rfas/ncser_earlycareer.asp

National Geospatial Intelligence Agency (NGA)

https://www1.nga.mil/PARTNERS/RESEARCHANDGRANTS/Pages/AcademicResearchProgram.aspx

USDA National Institute of Food and Agriculture (NIFA)


Department of Justice - National Institute of Justice
Research and Development in Forensic Science for Criminal Justice Purposes NIJ-2016-4305
Where to Look for YIP/Early Career Programs
NSF and NIH

National Science Foundation (NSF) - Phil Taylor / Paul Ronney CER presentations
  CAREER http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214
  BRIGE http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503160

National Institute of Health (NIH) - Steve Moldin CER presentation for NIH; Carl Castro for DOD Medical
  New and Early Stage Investigator http://grants.nih.gov/grants/new_investigators/index.htm
  Career Development Awards http://grants.nih.gov/training/careerdevelopmentawards.htm
Pasteur Quadrant

- Pure basic research
  - NSF
  - BOHR QUADRANT

- Use-inspired basic research
  - Mission Agency Science
  - PASTEUR QUADRANT

- Applied research
  - Mission Agency Engineering
  - EDISON QUADRANT

- Quest for fundamental understanding?
  - High
  - Low

- Consideration of use?
  - Low
  - High

- Social/Behavioral Sciences - but this will be changing
Presidential Early Career Award Science and Engineering (PECASE)

Who:
• Nominations only by participating Federal Agencies including:
• Nominees must hold tenure-track positions at U.S. Univ. or College or at Agency intramural laboratories
• Must be U.S. citizen, national or permanent resident
• Some agencies require less than 5 years from highest degree
• Typically each agency nominates candidates from its own young investigator/early career awardees and/or from its intramural laboratories

What:
White House award to recognize some of the finest scientists and engineers who, while early in their research careers, show exceptional potential for leadership at the frontiers of scientific knowledge during the twenty-first century.

How Much: ~$200K/yr for five years (cost borne by nominating agency)

When: Submitted in October by Agencies

<table>
<thead>
<tr>
<th>Year</th>
<th>USC Awardees</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Mo El-Naggar</td>
<td>AFOSR</td>
</tr>
<tr>
<td>2009</td>
<td>Andrea Armani</td>
<td>ONR</td>
</tr>
<tr>
<td>2007</td>
<td>Li Zhang</td>
<td>NIH</td>
</tr>
<tr>
<td>2004</td>
<td>Elaine Chew</td>
<td>NSF</td>
</tr>
<tr>
<td>2003</td>
<td>Cyrus Shahabi</td>
<td>NSF</td>
</tr>
</tbody>
</table>
## Guide to Defense/Security Funding - Index to MAPS Charts

<table>
<thead>
<tr>
<th>Chart #s</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 3</td>
<td>Contents</td>
</tr>
<tr>
<td>4 - 16</td>
<td>Overview Perspectives, including suggestions on working with DOD Program Officers</td>
</tr>
<tr>
<td>17 - 30</td>
<td>By Academic Disciplines</td>
</tr>
<tr>
<td>31 - 41</td>
<td>Air Force Office of Scientific Research (AFOSR)</td>
</tr>
<tr>
<td>42 - 51</td>
<td>Army Research Office (ARO)</td>
</tr>
<tr>
<td>52</td>
<td>Army Corps of Engineers</td>
</tr>
<tr>
<td>53 - 55</td>
<td>Army Medical Research and Materials Command (AMRMC)</td>
</tr>
<tr>
<td>56</td>
<td>Army Research Institute for Behavioral and Social Science (ARI)</td>
</tr>
<tr>
<td>57 - 72</td>
<td>Office of Naval Research (ONR)</td>
</tr>
<tr>
<td>73 - 75</td>
<td>Naval Post-Graduate School (NPSG)</td>
</tr>
<tr>
<td>76 - 105</td>
<td>Defense Advanced Research Projects Agency (DARPA)</td>
</tr>
<tr>
<td>106 - 125</td>
<td>Defense Threat Reduction Agency (DTRA)</td>
</tr>
<tr>
<td>126</td>
<td>High Energy Laser (HEL)</td>
</tr>
<tr>
<td>127</td>
<td>High Performance Computing</td>
</tr>
<tr>
<td>128</td>
<td>MINERVA (social science)</td>
</tr>
<tr>
<td>129 - 133</td>
<td>University Research Initiative (URI, including MURI, DURIP)</td>
</tr>
<tr>
<td>134 - 140</td>
<td>Defense Medical Research and Development Program (DMRDP)</td>
</tr>
<tr>
<td>141 - 152</td>
<td>Congressionally Directed Medical Research Program (CDMRP)</td>
</tr>
<tr>
<td>153</td>
<td>Telemedicine and Advanced Technology Research Center (TATRC)</td>
</tr>
<tr>
<td>154</td>
<td>US Department of Veterans Affairs</td>
</tr>
<tr>
<td>155</td>
<td>University Affiliated Research Centers</td>
</tr>
<tr>
<td>156 - 161</td>
<td>Young Investigator / Early Career</td>
</tr>
<tr>
<td>162</td>
<td>Defense Science Study Group</td>
</tr>
<tr>
<td>163</td>
<td>Defense Computer Study Group</td>
</tr>
<tr>
<td>164</td>
<td>Presidential Early Career Award for Science and Engineering (PECASE)</td>
</tr>
<tr>
<td>165</td>
<td>National Security Science and Engineering Faculty Fellow (NSSEFF)</td>
</tr>
<tr>
<td>166 - 169</td>
<td>National Defense Education Program (NDEP)</td>
</tr>
<tr>
<td>170 - 171</td>
<td>DOD Education Resources</td>
</tr>
</tbody>
</table>
DOD Young Investigator/Young Faculty Programs

Who: Outstanding new faculty members at institutions of higher education, to support their defense related research, and to encourage their teaching and research careers

Army, Air Force (AF), Navy must be US citizen / permanent resident
DARPA and DTRA have no citizenship or residency requirement

Army/AF/DTRA - received Ph.D. or equivalent degrees within the last five years
Navy/DARPA – tenure track assistant/associate professors within 5 years of appointment
Army, Navy and DARPA require tenure track positions

What: Topics must conform with program officer interests

How Much:
Army - not to exceed $50K/yr for three years
Air Force - $120K/yr for three years
Navy - up to $170K/yr for three years, possibility of additional support for capital equipment or collaborative research with a Navy laboratory
DTRA - $100K/yr for up to five years
DARPA - up to $250K/yr for up to two years (with possible $500K for third year)

When: “Anytime” for Army
Oct 9, 2015 for the Air Force FY16 competition (AFOSR BAA 2015-0003)
Dec 1, 2015 for Naval FY16 competition (N00014-R-F013)
Jan 30, 2015 for the DTRA FY15 competition (HDTRA1-11-16-BRCWMD-BAA, Amend 4)
Apr 9, 2015 for the DARPA FY15 competition (DARPA RA-15-23)

Where: See BAAs on websites (identified in subsequent charts)

Listing of prior AF, Navy, DARPA awardee information available from DC Office for FY07-FY15
Army Young Investigator Award

**Who:** This program is open to resident aliens and U.S. citizens holding tenure track positions at U.S. universities and colleges who have held their graduate degrees (Ph.D. or equivalent) for fewer than five years at the time of application.

**What:** Attract to Army research outstanding young university faculty members, to support their research, and to encourage their teaching and research careers.

Strongly encourage informal discussions with the cognizant Army Research Office (ARO) technical program manager before submission of a formal proposal.

A supporting letter from the applicant's Department Chairperson, Dean, or other official who speaks for the university regarding support for and commitment to the applicant. Strong university support for the applicant is essential. This support can include the applicant's 9-month academic salary, release time from administrative responsibilities, the purchase of equipment, support for the applicant's graduate students, waiver of indirect costs, departmental cost sharing, start-up funding, and so on.

**How Much:** YIP awards not to exceed $50K per year for three years

**When:** Proposals may be submitted at any time.

**Where:** Broad Agency Announcement for Basic and Applied Scientific Research FY12 – FY17   
W911NF-12-R-0012-02  YIP information on page 50

<table>
<thead>
<tr>
<th>USC Awardees</th>
<th>Year</th>
<th>Name</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
<td>Fei Sha</td>
<td>CS</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>Michelle Povinelli</td>
<td>EE</td>
</tr>
</tbody>
</table>
**AF Young Investigator Award (YIP)**

**Who:** The individual award will be made to a U.S. institution of higher education, industrial laboratory, or non-profit research organization where the principal investigator is employed on a full-time basis and holds a regular position.

The principal investigator must be a U.S. citizen, national, or permanent resident who has received a Ph.D. or equivalent degrees in the last five years (on or after 1 Jan 2010 for the FY16 competition)

**What:** foster creative basic research in science and engineering, enhance early career development of outstanding young investigators, and increase opportunities for the young investigators to recognize Air Force mission and the related challenges in science and engineering.

Proposals addressing the research areas of interest for the Air Force Research Laboratory will be considered. The basic research areas of current interest are available on-line at the AFOSR web site: http://www.wpafb.af.mil/AFRL/afosr/

**How Much:** The estimated value of each award is approximately $120K per year for three years. Exceptional proposals will be considered individually for higher funding level and/or longer duration (up to five years upon a successful review during the third year).

**When:** proposal due 09 Oct 2015 for FY16 competition (Solicitation released late Aug 2015)

**Where:** Air Force Fiscal Year 2016 Young Investigator Research Program  
AFOSR-BAA-2015-0003

<table>
<thead>
<tr>
<th>Year</th>
<th>Awards</th>
<th>Proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2015</td>
<td>57</td>
<td>200+</td>
</tr>
<tr>
<td>FY 2014</td>
<td>42</td>
<td>234</td>
</tr>
<tr>
<td>FY 2013</td>
<td>40</td>
<td>192</td>
</tr>
<tr>
<td>FY 2012</td>
<td>48</td>
<td>220</td>
</tr>
<tr>
<td>FY 2011</td>
<td>43</td>
<td>202</td>
</tr>
<tr>
<td>FY 2010</td>
<td>38</td>
<td>202</td>
</tr>
<tr>
<td>FY 2009</td>
<td>39</td>
<td>210</td>
</tr>
</tbody>
</table>

**USC Awardees**

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Jahan Dawlaty</td>
<td>Chem</td>
</tr>
<tr>
<td>2012</td>
<td>Morteza Dehghani</td>
<td>ICT</td>
</tr>
<tr>
<td></td>
<td>Greg Ver Steeg</td>
<td>ISI</td>
</tr>
<tr>
<td>2010</td>
<td>Mohamed El-Naggar</td>
<td>Physics</td>
</tr>
<tr>
<td>2008</td>
<td>Stephen Cronin</td>
<td>EE</td>
</tr>
<tr>
<td></td>
<td>Chunqi Jiang</td>
<td>EE</td>
</tr>
</tbody>
</table>
Naval Young Investigator Program

Who: Principal Investigator of a proposal must be a U.S. citizen, national, or permanent resident (on the date proposals are due), in their first or second full-time tenure-track or tenure-track-equivalent academic appointment and for FY2015 have begun their first appointment on or after 01 Nov 2009

What: The objectives of this program are to attract outstanding faculty members of Institutions of Higher Education to the Department of the Navy's research program, to support their research, and to encourage their teaching and research careers.

Applications should contact a Program Officer, who is the point-of-contact for a specific technical area, to discuss their research ideas. Brief informal pre-proposals may be submitted to facilitate these discussions. Application will likely need a long CV with all evidence of leadership as opposed to the typical short biosketch, i.e. organizing conferences, other grants, etc... Also letters of support from dean and chair.

How Much: Proposals may request up to $170K per year for three (3) years. These funds may be budgeted against any reasonable costs related to the conduct of the proposed research, for example, salary for the Young Investigator, graduate student support, supplies, and operating expenses. Additional funds (beyond the basic $170K yearly amount) for capital equipment which enhances the Young Investigator's proposed research may be requested for the first budget period, based on the needs of the research. The basic $170K per year award can be supplemented through a "matching funds" enhancement available only to those receiving an ONR Young Investigator award.

When: proposal due 01 Dec 2015 for the FY16 competition (Solicitation released 10 Sep 2015)

Where: Fiscal Year 2016 ONR Young Investigator Program, N00014-15-R-F013

FY15 - 36 awards out of 383 proposals
FY14 - 24 awards out of 280 proposals
FY13 - 16 awards out of 369 proposals
FY12 - 26 awards out of 310 proposals
FY11 - 21 awards out of 270 proposals
FY10 - 17 awards out of 211 proposals
FY09 - 15 awards out of 193 proposals

USC Awardees
2012 Rahul Jain EE
2012 Andrea Hodge CEMS
2012 Noah Malmstadt CEMS
2009 Andrea Armani CEMS
2008 David Kempe Computer Sci
DEFENSE THREAT REDUCTION AGENCY (DTRA)
Research and Development Enterprise
Basic and Applied Sciences Directorate

Who: Faculty who received a Ph.D. or equivalent degree within 5 years of date of the pre-application white paper submission. No requirement for US citizenship or permanent residency

What: Proposals that focus on exploratory aspects of a unique problem, a high risk approach, or innovative research in subjects with potential for high impact to CWMD science in the topics for Period E (2015):

- PerE-YIP-Topic 1: Methodologies for Autonomous Radiological and Multi-mode Information Collection
- PerE-YIP-Topic 2: Advancing Nuclear Forensic Methods for Collecting and Analyzing Post-Detonation Debris
- PerE-YIP-Topic 3: Development of Models for the Time Evolution of Realistic Multilayered Networks in Response to Large-Scale Damage
- PerE-YIP-Topic 4: Machine Learning Methods for Network Analysis
- PerE-YIP-Topic 5: Semantic Representation
- PerE-YIP-Topic 6: Model Framework for Societal Responses to Nuclear Events
- PerE-YIP-Topic 7: Epigenetics of Response to Radiation
- PerE-YIP-Topic 8: Determining the Mechanistics of Surface Interactions and Affects on Catalytic Efficiency in Tethered Enzyme Systems
- PerE-YIP-Topic 9: Understanding Xray Interactions that lead to arc Formation in Solar Arrays
- PerE-YIP-Topic 10: Techniques, Methods, and Structures for Characterizing Radiation Effects in Emerging Nanoscale Memory and Logic Materials and Devices
- PerE-YIP-Topic 11: Chemistry of Chemical Agents, Simulants and Precursors
- PerE-YIP-Topic 12: Alternative Signatures and Characterization Methods for Monitoring Potential CBRN Sites

When: 30 Jan 2015    Phase I White Paper Submission Deadline for Period E

How Much: $100K/yr for up to five years

Where: Basic Research for Combating Weapons of Mass Destruction (C-WMD)
HDTRA1-11-16-BRCWMD-BAA Amendment 4 - Dec 2014

In 2011 competition ~15 awards
In 2009 competition ~15 awards
Defense Advanced Projects Agency (DARPA) Young Faculty Award
http://www.darpa.mil/Opportunities/Universities/Young_Faculty.aspx

**Who:** Participation is limited to untenured Assistant or Associate Professors within 5 years of appointment to a tenure-track position at a U.S. institution of higher learning. DARPA is particularly interested in identifying outstanding researchers who have previously *not been performers on DARPA programs,* but the program is open to all qualified applicants with innovative research ideas. There is no prohibition against a non-U.S. citizen/a Permanent Resident/here on a Green Card/etc., from submitting a proposal for consideration; nor is it a requirement of the RA that the submitter be eligible to obtain a U.S. security clearance.

**What:** The YFA program will provide high-impact funding to those faculty early in their careers in order to develop their research ideas in the context of Defense needs. The announcement contains detailed descriptions of the specific interest areas to be addressed. The RA solicits ground-breaking single investigator proposals for research and development in the areas of Physical Sciences, Engineering, Mathematics, Medicine, Biology, Information and Social Sciences of interest to DARPA's Defense Sciences Office (DSO), and Microsystems Technology Office (MTO). Proposed research should focus on innovations that will enable revolutionary advances; high-risk/high-payoff ideas are strongly encouraged. Proposers should familiarize themselves with and address the Heilmeyer Catechism.

Topic POCs are unable to accommodate any meetings/calls; you may send questions to DARPA-RA-15-23@darpa.mil

**How much:** Two years of funding at $250K each year. Of the entire 2014 YFA class, four of the most promising recipients may be selected for a third year supported by $500K each in funding. Each recipient will be assigned a DARPA program manager with closely aligned research interests.

**When:** Proposals due April 9, 2015 for the FY15 competition (Solicitation released Feb 2015)

**Where:** Research Announcement Young Faculty Award, DARPA-RA-15-23

<table>
<thead>
<tr>
<th>Year</th>
<th>Awards</th>
<th>Proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY14</td>
<td>28</td>
<td>226</td>
</tr>
<tr>
<td>FY13</td>
<td>25</td>
<td>560</td>
</tr>
<tr>
<td>FY12</td>
<td>51</td>
<td>405</td>
</tr>
<tr>
<td>FY11</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>FY10</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>

**USC Awardees**

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Mike Chen</td>
<td>EE</td>
</tr>
<tr>
<td>2012</td>
<td>Andrea Hodge</td>
<td>CEMS</td>
</tr>
<tr>
<td></td>
<td>Yongseung Yoon</td>
<td>CEMS</td>
</tr>
<tr>
<td>2008</td>
<td>Hossein Hashimi</td>
<td>EE</td>
</tr>
</tbody>
</table>
NSF funding isn't enough to maintain a group. While some focus on NIH, in my field, going to DoD (army, navy, air force) is the way. All three branches of DoD have young investigator programs (YIPs). To be eligible, you have to be a U.S. citizen, and you must be no more than 5 years out from your PhD. These requirements whittle down the playing field, so your chances of being funded - if you're eligible - are seemingly high. (Although the last ONR YIP funding rate was < 10%, sigh).

The problem is with getting your foot in the door. For NSF, you can submit an idea - your idea with whatever application you like. But for DoD, you need to bounce ideas off of the program manager to find what fits into their program. If you've got a great idea but it doesn't fit in with the goals of DoD, then it won't get funded. So in other words, communicating with a program director prior to submission is critical.

Now for the YIP. I am exceedingly frustrated with the way program managers in DoD uniformly ignore young investigators - even those inquiring about YIP. You can call, email, send in unsolicited white papers, and there is a brick wall of silence. It's not just me. Mr. JP has the brick wall. Colleagues get the brick wall. So then, I ask, who is getting these YIPs? I talked with one colleague who is a star, and he gets the brick wall from other military branches. With this particular YIP that he got, someone actually wrote back. Other advice is to arrange appointments with the PMs when you are in DC. That's a great idea, and I would love for that to happen. But my emails and calls saying, "Hey, I'm in your neck of the woods, let's talk," get ignored.

Comments contributed to the above posting:

1. I got the ARO young investigator. Like you, most of the people I called or emailed ignored me. I repeatedly called or emailed until I got one or two on the phone, but they were not terribly interested. Eventually, I found a program manager who I had met before at a conference. When I called him, he remembered seeing my talk, was very friendly, and was interested in my applying for the YIP. Don't worry, keep persisting. Use any connection you can find -- ask your postdoc advisor and grad school advisor who they are funded by and if they can send an email introducing you. For DARPA, I believe it is less dependent on the program manager as all applications are handled by one person, rather than different applications going to the PM closest to that field. PS: DARPA PM's are not supposed to talk to you about the YIP in particular. I got a very cold brush-off when I tried it. This is different from the usual modus operandi for seed grants and other DARPA funding. ONR, ARO and AFOSR PM's will in principle talk to you if you can get a hold of them.

2. To get any of the DOD young investigator awards, you must make a connection with the PM. They have to *want* to fund you as part of their program, as these awards are usually partly YIP funds partly PM's program's funds. You ought to go to Washington and talk to the PM in person, email white papers, etc., and cultivate a relationship, otherwise it's a no go. A good way is to be introduced to a PM by a senior well funded colleague. Then you start emailing the PM and try to deepen the relationship. It takes time but is worth it. I don't think any of them are particularly easy to get a hold of, though, so don't take it personally if the don't answer email or voicemail.
Congressionally Directed Research Medical Programs (CDMRP)
Career Development Awards

Historical Record for Career Development Awards:

- Peer Reviewed Cancer (PRCRP) 2014, 2013, 2012
- Peer Reviewed Orthopedic (PRORP) 2010
- Ovarian Cancer (OCRP) 2009, 2008
- Prostate Cancer (PCRP) 2009, 2008
- Neurofibritosis (NFRP) 2002
- Breast Cancer (BCRP) 2001, 2000

Career Development Award - an example - Peer Reviewed Cancer Research Program (PRCRP)

Principal Investigator: Independent investigator at the level of Assistant Professor or equivalent at the time of the award
- Research with emphasis in discovery must be in one or more of the FY12 PRCRP Topic Areas
- Supports investigator in the early stages of their career (within 5 years for first faculty appointment)
- Preliminary data not required
- Clinical trials will not be supported
- Maximum funding for the entire period of performance is $240,000 for direct costs (plus indirect costs)
- Maximum period of performance is 2 years
Congressionally Directed Research Medical Programs (CDMRP)
New Investigator Award

Historical Record for New Investigator Awards:
- Neurofibratosis (NFRP) 2014 - 2006
- Bone Marrow Failure (BMFRP) 2010
- Prostate Cancer (PCRP) 2009 - 2006
- Peer Reviewed Cancer (PRCRP) 2009

New Investigator Award - an example - Neurofibratosis Research Program (NFRP) 2012

Principal Investigator: An independent investigator at or below the level of Assistant Professor (or equivalent). Please note that graduate students, postdoctoral fellows, and other "mentored" researchers are not eligible for this award; or an established independent investigator in an area other than NF at or above the level of Assistant Professor seeking to transition into a career in NF research.
- Must not have received more than $300,000 in total direct costs for NF research as a PI of one or more federally funded, non-mentored peer reviewed grants;
- Must not have received a New Investigator Award previously from any program within the CDMRP

New Investigator Award applications must include preliminary data that is relevant to the proposed project
- Maximum funding for the entire period of performance is $400,000 for direct costs (plus indirect costs)
- Maximum period of performance is 3 years
Defense Sciences Study Group (DSSG)
DARPA/IDA  http://dssg.ida.org/index.html

Who:
• Faculty member in science, engineering, or related discipline, preferably within 15 years of PhD
• Outstanding academic accomplishments and likely future leader
• Must be a U.S. citizen able to acquire a security clearance

What: The Defense Science Study Group (DSSG) seeks to develop and maintain strong links between the national security community and emerging leaders in the fields of science and technology. The DSSG identifies the nation’s most outstanding scientists and engineers early in their careers, educates them on national security issues, and fosters their long-term interest and involvement in the national security community. Over the course of the two-year program (approximately 20 days/year), those invited to participate focus on defense policy, related research and development, and the systems, missions, and operations of the armed forces. Over the course of 8 sessions, spread out over the two years, members interact with top-level officials from the Defense Department, as well as senior officials of other government organizations such as the Department of Energy, various intelligence agencies, and Congress. The program has also produced over 200 national defense-related research projects.

How Much: covers expenses

When: Nominations for DSSG 2018-2019 will be accepted through Jan 2017.

Where: Forward your resume or CV and a letter of recommendation from your Provost, Dean or Defense Science Study Group Member, Mentor, Alumni or Advisor, through the following mail or email address:

Institute for Defense Analyses
ATTN: DSSG Nominations
4850 Mark Center Drive
Alexandria, VA 22311-1882
Email: dssg@ida.org

Dr. Robert E. Roberts
Chief Scientist IDA
703.845.2100
rroberts@ida.org

Dr. Matthew Goodman
DARPA DSO
571 218 4681
matthew.goodman@darpa.mil

USC Awardees:
2010-11  John Heidemann  ISI
<table>
<thead>
<tr>
<th>Chart #s</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 - 11</td>
<td>DOE Overview</td>
</tr>
<tr>
<td>12 - 45</td>
<td>Basic Research - Office of Science (SC)</td>
</tr>
<tr>
<td>13 - 18</td>
<td>SC Overview</td>
</tr>
<tr>
<td>19 - 21</td>
<td>Advanced Computing for Scientific Research</td>
</tr>
<tr>
<td>22 - 29</td>
<td>Basic Energy Sciences</td>
</tr>
<tr>
<td>30 - 34</td>
<td>Biological and Environmental Research</td>
</tr>
<tr>
<td>35 - 37</td>
<td>Fusion Energy Science</td>
</tr>
<tr>
<td>38 - 39</td>
<td>High Energy Physics</td>
</tr>
<tr>
<td>41 - 43</td>
<td>Nuclear Physics</td>
</tr>
<tr>
<td>44 - 45</td>
<td>Workforce Development for Teachers and Scientists</td>
</tr>
<tr>
<td>46 - 63</td>
<td>Applied Research - Office of Energy</td>
</tr>
<tr>
<td>47 - 49</td>
<td>Electricity Delivery and Energy Reliability</td>
</tr>
<tr>
<td>50 - 55</td>
<td>Energy Efficiency and Renewable Energy</td>
</tr>
<tr>
<td>55</td>
<td>Advanced Manufacturing Office</td>
</tr>
<tr>
<td>56 - 59</td>
<td>Fossil</td>
</tr>
<tr>
<td>60 - 63</td>
<td>Nuclear</td>
</tr>
<tr>
<td>64 - 71</td>
<td>ARPA-E</td>
</tr>
<tr>
<td>72 - 74</td>
<td>National Nuclear Security Administration (NNSA)</td>
</tr>
</tbody>
</table>
DOE Office of Science
FY2016 Early Career Research Program
http://science.energy.gov/early-career/

Who:
- Principal Investigators are within 10 years of receiving a Ph.D. from year of solicitation, and are either untenured assistant on the tenure track, or untenured associate professors on the tenure track at a U.S. academic institution.
- No limit on U.S. citizenship
- A PI may not participate in more than three Office of Science Early Career Program competitions

What: The purpose of this program is to support the development of individual research programs of outstanding scientists early in their careers and to stimulate research careers in the areas supported by the DOE Office of Science. Letters of recommendation are not allowed. A department chair letter is not required and should not be included.

The Early Career Research Program supports efforts in the following program areas: Advanced Scientific Computing Research (ASCR); Biological and Environmental Research (BER); Basic Energy Sciences (BES), Fusion Energy Sciences (FES); High Energy Physics (HEP), and Nuclear Physics (NP). Details in the program announcement. The specific topics are not identical to the DOE generic research announcement.

How Much: The minimum award size is $150K per year for five years for universities. The university award is intended to pay up to three months’ summer salary for the Principal Investigator (PI) to supplement the normal, academic-year salary.

When: Preapplication (white paper, required)

Where: DE-FOA-0001386 for most recent announcement

FY 2016 released Aug 2, 2015 - prelim appl due 10 Sep 2015;
FY 2015 released Aug 1, 2014 - prelim appl due 11 Sep 2014; 50 (33 Univ) selected out of 620 proposals
FY 2013 released Jul 20, 2012 - white paper due 6 Sept 2012; 65 (44 Univ) selected out of 770 proposals
FY 2012 released Jul 19, 2011 - white paper due 1 Sept 2011; 68 (43 Univ) selected out of 850 proposals
No USC Awardees as of 2015; listing of all prior awardee information available from DC Office.
Who: Eligible recipients are probationary, tenure-track faculty in the first 6 years of their career, who have been determined by the grantee institution to be committed to an academic career in Nuclear Engineering, Health Physics, Radiochemistry, Probability Risk Assessment (Levels 2 or 3) or other related disciplines.

What: This program provides funding to support nuclear science, engineering, and related disciplines to develop a workforce capable of supporting the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear materials. This announcement is for faculty development grants.

The objectives of the Faculty Development Program are to attract and retain highly-qualified individuals in academic teaching careers. The grants specifically target probationary, tenure-track faculty during the first 6 years of their career and new faculty hires in the following academic areas: Nuclear Engineering, Health Physics, Radiochemistry, Probability Risk Assessment (Levels 2 & 3) and related disciplines.

How Much: Awards issued under this FOA are $100K total costs (i.e., direct cost plus facilities and administrative costs) per year for each faculty recipient plus up to an additional $50K per year, to the extent matched by your institution, for up to 3 years.

Where: NRC-HQ-84-14-FOA-0002
## Guide to NASA Research: Index to MAPS Funding Charts

<table>
<thead>
<tr>
<th>Chart #s</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 - 5</td>
<td>NASA Overview</td>
</tr>
<tr>
<td>6 - 17</td>
<td>Science Mission Directorate</td>
</tr>
<tr>
<td>7 - 16</td>
<td>Divisions and ROSES Research Announcement</td>
</tr>
<tr>
<td>17</td>
<td>Salmon Research Announcement</td>
</tr>
<tr>
<td>18 - 21</td>
<td>Aeronautics Research Mission Directorate</td>
</tr>
<tr>
<td>22 - 25</td>
<td>Human Exploration and Operations Systems Mission Directorate</td>
</tr>
<tr>
<td>26 - 31</td>
<td>Space Technology Mission Directorate</td>
</tr>
<tr>
<td>32</td>
<td>Office of the Chief Technologist</td>
</tr>
<tr>
<td>33</td>
<td>NASA Centers</td>
</tr>
<tr>
<td>34</td>
<td>NASA University (Minority Institutions) Research Centers</td>
</tr>
</tbody>
</table>
NASA Science Mission Directorate
Young Investigator Program in Earth Science

Who: Tenure or non-tenure track University position; U.S. citizen or have lawful status of permanent residency (i.e., holder of a U.S. Permanent Resident Card, also referred to as the Green Card). He/she must be a recent Ph.D. recipient, defined as having graduated on or after January 1 of the year that is no more than five years before the issuance date of the ROSES NRA.

What: The New Investigator Program (NIP) in Earth Science is designed to encourage the integration of Earth system research and education by scientists and engineers at the early stage of their professional careers. The program encourages scientists and engineers at academic and/or research institutions to develop a broader sense of responsibility for effectively contributing to the improvement of science education and public science literacy; it provides an opportunity for the investigators to develop partnerships and/or enhance their skills, knowledge, and ability to communicate the excitement, challenge, methods, and results of their work to teachers, students, and the public. The Earth Science Division (ESD) places particular emphasis on the investigators' ability to promote and increase the use of space-based remote sensing through the proposed research and education projects.

The basic research Focus Areas appropriate for the NIP are: Carbon Cycle and Ecosystems; Climate Variability and Change; Water and Energy Cycle; Atmospheric Composition; Weather, and Earth Surface and Interior. In applied scientific research, the ESD encourages efforts to discover and demonstrate practical uses of NASA Earth science data, knowledge, and technology. In technological research, the ESD aims to foster the creation and infusion of new technologies into space missions in order to enable new scientific observations of the Earth system or reduce the cost of current observations. The ESD also promotes innovative development in computing and information science and engineering of direct relevance to ESD.

How Much: Awards range between $80-$120K per year for a period of up to three years.

When: Competed in alternate years

Where: NRA: Research Opportunities in Space and Earth Sciences (ROSES) - 2015 NNH14ZDA001N-NIP Topic A36
NASA Planetary Science Division

Early Career Fellowship Program

Who: The Early Career Fellowship (ECF) program was established to support the development of individual research programs of outstanding scientists early in their careers and to stimulate research careers in the areas supported by the Planetary Sciences Division.

What: This program consists of two components offered by the Planetary Science Division through the ROSES solicitations. The first is the selection of an Early Career Fellow, following the submission and selection of a research proposal to any participating Planetary Science Research Program element of this ROSES-2015 NRA. The second is an opportunity for current Fellows (selected in a prior solicitation) to apply for start-up funds once they obtain a permanent or equivalent position.

How Much: unspecified

When: Rolling submissions until end of current ROSES

Where: NRA: Research Opportunities in Space and Earth Sciences (ROSES) - 2015 NNH14ZDA001N-NIP Topic C16
NASA Astrophysics Division

Nancy Roman Grace Technology Fellowships for Early Career Researchers

**Who:** Outstanding early career researchers, including postdoctoral researchers, nontenured faculty members, term civil servants, and employees who intend to develop careers involving innovation and technology development for space astrophysics

**What:** The RTF is structured into three components with specific gates for entering the next phase. The first component is a one-year Concept Study Phase to generate the detailed plans and commitments for developing the proposed space astrophysics technology. A subset of the Technology Fellows will be selected to continue the fellowship and implement the plans conceived during the Concept Study. This Development Phase, the second component of the RTF structure, is for an additional four-year duration. Finally, the third component is an opportunity for Fellows in the four-year Development Phase to apply for start-up funds when they obtain a tenure-track, permanent civil service, or equivalent position.

**How Much:** unspecified

**When:** Rolling submissions until end of current ROSES

**Where:** NRA: Research Opportunities in Space and Earth Sciences (ROSES) - 2015 NNH14ZDA001N-NIP Topic D9
Who: The PI must be a recent Ph.D. recipient, defined as having graduated on or after January 1 of the year that is no more than seven years before the issuance date of the STRO-ECF NRA. The PI must be an untenured Assistant Professor on the tenure track at the sponsoring U.S. university at the time of award. The PI must be a U.S. citizen or have lawful status of permanent residency (i.e., holder of a U.S. Permanent Resident Card, also referred to as a Green Card).

What: Areas closely aligned with NASA's Space Technology Roadmaps and priorities identified by the National Research Council. These priorities include extending and sustaining human activities beyond low Earth orbit, exploring the evolution of the solar system and potential for life elsewhere, and expanding our understanding of Earth and the universe.

How Much: $200K per year for as long as three years

When: The Early Career Faculty (ECF) Appendix NNH15ZOA001N-15ECF-B1 was released on February 25, 2015. The ECF Appendix is expected to be released at least biannually and will feature specific topics.

Where: Solicitation NNH15ZUA001N (FY2015) All proposals must be submitted electronically through NSPIRES or through Grants.gov (www.grants.gov)
## Guide to Environmental Protection Agency (EPA) Research: Index to Charts

<table>
<thead>
<tr>
<th>Chart #s</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>3- 6</td>
<td>Office of Research and Development Overview</td>
</tr>
<tr>
<td>7 - 10</td>
<td>National Center for Environmental Research Extramural Programs</td>
</tr>
</tbody>
</table>
Environmental Protection Agency
Early Career Awards

Who: PIs with outstanding promise at the Assistant Professor or equivalent level. Principal investigators from applicant institutions applying for the early career portion of the Request for Applications (RFA) must meet the following additional eligibility requirements:
1. Hold a doctoral degree in a field related to the research being solicited by the closing date of the RFA;
2. Be untenured at the closing date of the RFA;
3. By the award date, be employed in a tenure-track position (or tenure-track-equivalent position) as an assistant professor (or equivalent title) at an institution in the U.S., its territories, or possessions.

What: EPA supports leading edge extramural research in exposure, effects, risk assessment, and risk management through competitions for STAR grants and fellowships. Specific topics for early career awards are announced, with recent examples:
- Water Quality Benefits - EPA-G2015-STAR-A2

How Much: Up to a total of $350K for early career awards, including direct and indirect costs, with a maximum duration of three years.

When: See the specific RFA

Where: http://www.epa.gov/ncer/guidance/
**Guidance to Dept of Education (ED) Research Funding**

**Chart Index**

<table>
<thead>
<tr>
<th>Chart #s</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 - 4</td>
<td>Overview of ED</td>
</tr>
<tr>
<td>5-15</td>
<td>Institute of Education Sciences (IES)</td>
</tr>
<tr>
<td>10-12</td>
<td>National Center for Education Research (NCER)</td>
</tr>
<tr>
<td>13-15</td>
<td>National Center for Special Education Research (NCSER)</td>
</tr>
<tr>
<td>16-17</td>
<td>Office of Special Education and Rehabilitative Services (OSERS)</td>
</tr>
<tr>
<td>18</td>
<td>Office of Innovation and Improvement (OII)</td>
</tr>
<tr>
<td>19</td>
<td>Office of Postsecondary Education (OPE)</td>
</tr>
<tr>
<td>20</td>
<td>Office of Elementary and Secondary Education (OESE)</td>
</tr>
<tr>
<td>21</td>
<td>Office of Educational Technology (OET)</td>
</tr>
</tbody>
</table>
Research Training Program in Special Education: Early Career Development and Mentoring

http://ies.ed.gov/funding/ncser_rfas/ncser_earlycareer.asp

Who:
• Eligible Principal Investigators (PI) must have completed their doctoral degree or postdoctoral program within 3 years of the application due date.
• Eligible PIs must hold a tenure-track position (e.g., Asst Prof) or research faculty position at an institution of higher education, or must have accepted an offer for such a position to begin before the start of the award.
• Must be a citizen or permanent resident of US
• Eligible PIs may not have been a PI or co-PI on a research grant from the Institute in the past.

What: The Early Career Development and Mentoring Program is designed to provide new investigators support to further develop methodological, content, and grant writing expertise needed to develop a strong line of research that includes federal funding. An important aspect of this program is the requirement that the research and training be guided closely by an experienced scientist. The program intends to provide new investigators with protected time in their faculty positions during which they can concentrate more intensively on developing research skills and their program of research.

How Much: up to $400K for up to 4 years

When: Letter of Intent due 21 May 2015; application by 20 Aug 2015

Where: CFDA 84.324B
Suggestions for Success

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

Participate in Agency activities
  Workshops, meetings
  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
Program Officers

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 PO datasheet, and information on prior awards (sometimes available from DC office)

• Use “elevator pitch” to open contact, gain attention - your unique idea and its 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

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

#### 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

#### Know Yourself
- Appropriate experience/resources - but don’t dwell on your past work

#### Format and brevity are important
- Grammar and spelling count

#### Proofread your proposal before it is sent
- Submit on time and confirm its correct transmission

---

**A picture is worth a thousand words**

![Image of Calvin and Hobbes comic strip](image)
### Proposal Development
NSF Vice Mission Agencies

<table>
<thead>
<tr>
<th>NSF</th>
<th>Mission Agency - Basic Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. Interest in most S&amp;E</td>
<td>Interest restricted to S&amp;E pertinent to mission need</td>
</tr>
<tr>
<td>most proposals will “fit somewhere”</td>
<td><strong>a proposal must interest the program officer</strong></td>
</tr>
<tr>
<td>1b. Knowledge inspired - Bohr Quadrant</td>
<td>Use inspired (agency mission) - Pasteur Quadrant</td>
</tr>
<tr>
<td>more funding in science than in engineering</td>
<td>likely more funding in engineering than in science</td>
</tr>
<tr>
<td>(but can include Pasteur when addressing topics of societal importance)</td>
<td></td>
</tr>
<tr>
<td>1c. Basic monies only, with tweaks such as</td>
<td>Basic, but applied monies may be also available</td>
</tr>
<tr>
<td>I-CORP, I/UCRC, GOALI, SBIR/STTR</td>
<td>(applied tends to have milestones and deadlines)</td>
</tr>
<tr>
<td>1d. Impact on S&amp;E knowledge</td>
<td>Impact on S&amp;E knowledge and addressing agency mission priorities essential</td>
</tr>
<tr>
<td>addressing national/Intl priorities useful</td>
<td>Generally none - perform the promised research</td>
</tr>
<tr>
<td>2. Additional requirements for:</td>
<td></td>
</tr>
<tr>
<td>broadening participation</td>
<td></td>
</tr>
<tr>
<td>education, underrepresented</td>
<td></td>
</tr>
<tr>
<td>wider-scale Impact, International</td>
<td></td>
</tr>
<tr>
<td>data management</td>
<td></td>
</tr>
<tr>
<td>Post Doc nurturing</td>
<td></td>
</tr>
<tr>
<td>3. Program officer triage for rule compliance</td>
<td>Program officer triage on basis of content / interest</td>
</tr>
<tr>
<td>except for EAGER, RAPID, INSPIRE</td>
<td></td>
</tr>
<tr>
<td>4. Review by panel</td>
<td>Review by program officer with possible input from others</td>
</tr>
</tbody>
</table>

**Abbreviations:**
- 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
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
Office of Research Advancement
Assets Available for Assistance
http://web-app.usc.edu/web/ra_maps/search/
Timely Access to new Opportunities

DC Office of Research Advancement

E-mail Alerts
Grants.gov
GrantsNet (medical/biological)
FedBizOpps (FBO)
Environmental Protection Agency (EPA)
NASA's Office of Space Science Research Announcements
NIH Guide to Grants and Contracts
National Science Foundation (NSF)
National Institute for Standards and Technology (NIST)
ED Institute for Educational Sciences
National Institute of Justice (NIJ)
Defense Threat Reduction Agency (DTRA)
National Endowment for the Humanities

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
Mission Agency Program Summary (MAPS)
http://web-app.usc.edu/web/ra_maps/search/

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
   - Chart numbers in the text above reference the Agency Research Program Chart files.

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

<table>
<thead>
<tr>
<th>Agency</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHQR</td>
<td><a href="http://www.gold.ahrq.gov/">http://www.gold.ahrq.gov/</a></td>
</tr>
<tr>
<td>CDC</td>
<td><a href="http://wwwn.cdc.gov/fundingprofiles/fundingprofilesria/">http://wwwn.cdc.gov/fundingprofiles/fundingprofilesria/</a></td>
</tr>
<tr>
<td>DOE SC</td>
<td><a href="https://pamspublic.science.energy.gov/WebPAMSEExternal/interface/awards/AwardSearchExternal.aspx">https://pamspublic.science.energy.gov/WebPAMSEExternal/interface/awards/AwardSearchExternal.aspx</a></td>
</tr>
<tr>
<td>DTRA</td>
<td><a href="http://www.dtrareviews.com/register.html">http://www.dtrareviews.com/register.html</a> (infer from presentations)</td>
</tr>
<tr>
<td>EPA</td>
<td><a href="http://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/recipients.welcome/displayOption/grants">http://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/recipients.welcome/displayOption/grants</a></td>
</tr>
<tr>
<td>NIH</td>
<td><a href="http://report.nih.gov/">http://report.nih.gov/</a></td>
</tr>
<tr>
<td>NIJ</td>
<td><a href="http://nij.gov/funding/awards/Pages/welcome.aspx">http://nij.gov/funding/awards/Pages/welcome.aspx</a></td>
</tr>
<tr>
<td>NIST</td>
<td>the various program websites generally have a list of prior awardees for that program</td>
</tr>
<tr>
<td>NSF</td>
<td><a href="http://www.nsf.gov/awardsearch/">http://www.nsf.gov/awardsearch/</a></td>
</tr>
<tr>
<td>NEA</td>
<td><a href="http://arts.gov/grants/recent-grants">http://arts.gov/grants/recent-grants</a></td>
</tr>
<tr>
<td>NEH</td>
<td>the various program websites have a list of prior awardees for that program</td>
</tr>
<tr>
<td>NRC</td>
<td><a href="http://www.nrc.gov/about-nrc/grants/awards/index.html">http://www.nrc.gov/about-nrc/grants/awards/index.html</a></td>
</tr>
</tbody>
</table>

### 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**
  - Hazelrigg, NSF
- **CAREER Proposal Writing Tips**
  - Pei
- **CAREER Program Presentation (2013)**
  - LA Salle, NSF
- **Writing a Successful CAREER Proposal**
  - Vigeant, Univ Hartford

### Other
- **USC Research Advancement**
  - [http://research.usc.edu/for-investigators/proposal-and-grantwriting/](http://research.usc.edu/for-investigators/proposal-and-grantwriting/)
- **A Tips for Authoring Grant Proposals**
  - Hill, Univ Wisc-Madison
- **Tips on Writing a Competitive Grant Proposal**
  - Clary, Western SARE
- **Writing a good grant Proposal**
  - Jones, Microsoft
- **Guide for Writing a Funding Proposal**
  - Levine, Mich State Univ.
- **Obtaining Federal Funding**
  - Wardle, NSF
- **NSF Guide for Proposal Writing**
  - NSF 04-016
- **The R&D Proposal**
  - Yoder, Office of Naval Research
- **Demystifying DoD Research Funding**
  - Palmer, Army Research Office
- **NASA Writing Research Proposals**
  - Hertz, NASA Headquarters
- **NIH Writing your application**
  - [http://grants.nih.gov/grants/writing_application.htm](http://grants.nih.gov/grants/writing_application.htm)
- **USDA NIFA General Proposal Writing Tips**
- **EPA Writing a Competitive Proposal**
  - [http://www.epa.gov/ogd/recipient/tips.htm](http://www.epa.gov/ogd/recipient/tips.htm)

---

### USC Center for Excellence in Research Workshops
- **Developing Funded Research Proposals**
  - Randy Hall
- **Writing Compelling NSF Proposals**
  - Paul Ronney
- **Developing NIH Grant Applications**
  - Steve Moldin
- **Obtaining DOD Medical Research Funding**
  - Carl Castro
- **Writing Persuasive Proposals**
  - Bonnie Lund
- **NSF CAREER Award Proposal Workshop**
  - Phillip Taylor
## Postdoctoral Fellowships

### Selected Opportunities - some continuing, others ephemeral

<table>
<thead>
<tr>
<th>Organization/Program</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science.gov</td>
<td><a href="http://www.science.gov/internships/graduate.html">http://www.science.gov/internships/graduate.html</a></td>
</tr>
<tr>
<td>Grant Forward</td>
<td><a href="https://www.grantforward.com/index">https://www.grantforward.com/index</a></td>
</tr>
</tbody>
</table>

### DOD/EPA/FHWA/NIST laboratories
- **NRC Research Associateship Program**
  - [http://sites.nationalacademies.org/pga/rap/](http://sites.nationalacademies.org/pga/rap/)
  - [http://nrc58.nas.edu/RAPLab10/Opportunity/Programs.aspx](http://nrc58.nas.edu/RAPLab10/Opportunity/Programs.aspx)
- **ASEE**
- **ORAU**
  - [http://www.orau.org/arltpostdocfellowship/](http://www.orau.org/arltpostdocfellowship/)

### Intel Community
- **Postdoctoral Fellows Res Program**
  - [http://www.icpostdoc.org/](http://www.icpostdoc.org/)

### NASA
- [http://nasa.orau.org/postdoc/](http://nasa.orau.org/postdoc/)
- **New (Early Career) Investigator Program in Earth Science - ROSES 2015 A-35**
- **Fellowships for Early Career Researchers - ROSES 2015 C-16**
- **Nancy Grace Roman Technology Fellowships in Astrophysics for Early Career Researchers - ROSES 2015 D-9**
- **National Space Biomedical Research Institute Fellowships**
  - [http://www.nsbri.org/firstaward/](http://www.nsbri.org/firstaward/)

### NSF
- **Arctic Research Opportunities**
- **Atmospheric and Geospace Sciences Postdoctoral Research Fellowships**
- **Centers of Research Excellence in S&T (CREST) and HBCU Research Infrastructure for S&E (RISE)**
- **Documenting Endangered Species**
- **GeoPrisms Program**
- **International Research Fellowship Program**
- **Law and Social Sciences**
- **Mathematical Sciences Postdoctoral Research Fellowships**
- **NSF Astronomy and Astrophysics Postdoctoral Fellowships**
- **NSF Earth Sciences Postdoctoral Fellowships**
- **NSF Fellowships for Transformative Computational Science using CyberInfrastructure**
- **Pan-American Advanced Studies Institutes Program**
- **Postdoctoral Research Fellowships in Biology**
- **SBE Postdoctoral Research Fellowships**
- **ASEE/NSF Corporate Postdoctoral Fellowship for Engineers**

### USDA NIFA
- **AFRI Education and Literacy Initiative**
USC DC Research Advancement Office

Services

Research Funding
- Research initiative alerts
- Collaborations across schools, other institutions
- Federal funding agency advocacy
- Strategically targeted activities
- Proposal preparation - editorial and scientific contributions
- Repository with Mission Agency Program Summary (MAPS) resources
- Searchable MAPS Program/Program Officer database
- Database with listings of prior early awardees (when available)

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 - budget/details  rlmay@usc.edu
Dan Barker - editorial/details  djbarker@usc.edu
Alexis Takahasu - 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  aolson@usc.edu