Workshop for Young Investigators

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AS&E Research Office
May 5, 2017

9:00-9:15	**Welcome and Introduction** David R. Williams, AS&E Dean for Research
9:15-10:15	**Junior Faculty Funding Overview and Resources** Debra Haring, Assistant Dean, School of Arts and Sciences Cindy Gary, Assistant Dean, Hajim School of Engineering & Applied Sciences
10:15-11:00	**Faculty Panel (prior awardees and reviewers)**
11:00-11:30	**Q&A**

What to Expect Today

- Overview of multiple funding opportunities for young investigators
- Understanding of resources available to support proposals for funding
- Tips and best practices for specific proposals
- Networking with winners
- Ask questions along the way

DOE Early Career Research Program

- **FOA ID#** DE-FOA-0001625 (released late July 2016)
- **Deadlines:** Pre-application late July (last year 07/28/16) Encourage/Discourage, early October; full proposal mid-November
- **Budget:** Total Costs $750K over 5 years; Cost sharing is not required.
- **Eligibility:**
  - Must be *untenured*
  - PI must be employed in academic position by deadline
  - no more than 10 years since terminal PhD degree
  - only one PI - no co-PIs allowed
  - max. # of submissions – three
  - no citizenship requirement
  - May hold other early career grants, but scope of the project must be different and distinct
- **Other caveats:** No letters of recommendation; no letter from the chair. No letter of intent required. If letters are included, application **will not be reviewed**.

DOE Mission and Divisions

- **Mission:** DOE Office of Science mission is to deliver the scientific discoveries and major scientific tools to transform understanding of nature and advance the energy, economic, and national security of the U.S.

- The **Early Career Research Program**, (now in its 8th year), supports the development of individual research programs of outstanding scientists early in their careers and stimulates research careers in the disciplines supported by the DOE Office of Science.

Basic Science Division in DOE:

I. Advanced Scientific Computing Research (ASCR)

II. Biological and Environmental Research (BER)

III. Basic Energy Sciences (BES)

IV. Fusion Energy Sciences (FES)

V. High Energy Physics (HEP)

VI. Nuclear Physics (NP)

DOE Review Criterion

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following criteria:

1. Scientific and/or Technical Merit of the Project;
2. Appropriateness of the Proposed Method or Approach;
3. Competency of Applicant's Personnel and Adequacy of Proposed Resources; and
4. Reasonableness and Appropriateness of the Proposed Budget.

The following FOA-specific evaluation criteria will also be used during the scientific merit review (peer-review):

1. Relevance to the mission of the specific program (e.g., ASCR, BER, BES, FES, HEP, or NP) to which the application is submitted.
2. Potential for leadership within the scientific community.

DOE: Required for Application

Pre-application is a clear and concise description of the objectives and technical approach of the proposed research. Submitted via PAMS. PIs must register individually.

Submitted via Grants.gov:

- SF424 form
- Project Summary (suitable for dissemination), max 1 page
- Project Narrative (max. 15 pages) to include a DOE cover page information
- All appendices must added to the Project Narrative, **uploaded as one pdf file**
- Appendix I - PI CV (in NSF-style format)
- Appendix II - PI Current & Pending Support
- Appendix III - Bibliography
- Appendix IV - Facilities and Other Resources
- Appendix V - Equipment
- Appendix VI – Data management Plan
- Appendix VII – Other attachments (such as letters of collaboration)
- Budget and Budget justification – preference given to those applications with no subawards (only one PI)

DOE: Tips

- Topics don't change much year to year. In the off season (NOW) reach into topic technical contacts found in FOA for technical fit.
- Register in DOE PAMS system early!
- Review DOE Early Career winners lists and FAQs via URL below (2010-2016 winners and abstracts are posted)
- Michael L. Neidig, Assistant Professor Department of Chemistry most recent winner; Aran Garcia-Bellido, Assistant Professor Department of Physics and Astronomy (2011).
- Highly competitive – DOE states they will fund an average ~32 new awards each year.
- https://science.energy.gov/early-career/

FY18 Air Force YIP

- **BAA ID#** BAA-AFRL-AFOSR-2017-0002
- https://www.grants.gov/web/grants/view-opportunity.html?oppId=292986
- **Deadline(s): June 1, 2017**; all inquires by May 1, 2017
- **Budget:** ~$150K p/year for a total of ~ $450K*; no costs sharing requested
- **Eligibility:**
  - Received a Ph.D. or equivalent degree between 04/01/10 – 04/01/2012
  - U.S. citizen, national, or permanent resident by 10/01/2017
  - Employed on a full-time basis and holds a permanent position
  - Be presently in a tenure-track position and has served as a tenure-track faculty member for no more than two years prior to 04/01/17

- **Other Caveats:** Most awards will start on or after Jan 1 2018.

***Exceptional proposals may be considered individually for higher funding levels and/or a longer duration. Submitted via grant.gov

AFOSR Mission and Divisions

Mission: The overriding purpose of **AFOSR** is to advance the state of the art in areas related to the technical problems the Air Force encounters in developing and maintaining a superior U.S. Air Force; lowering cost and improving the performance, maintainability, and supportability of Air Force weapon systems; and creating and preventing technological surprise.

The objective of the **YIP program** is to foster creative basic research in science and engineering; enhance early career development of outstanding young investigators; and increase opportunities for the young investigator to recognize the Air Force mission and related challenges in science and engineering.

Major priority topic areas:

1. Engineering and Complex Systems (RTA1)
2. Information and Networks (RTA2)
3. Physical Sciences (RTB1)
4. Chemistry and Biological Sciences (RTB2)
5. Other Innovative Research Concepts

AFOSR Review Criterion

Principal Evaluation Criterion:

1. The technical merits of the proposed research and development; Potential relationship of the proposed research and development to Department of Defense missions.
2. The likelihood of the proposed effort to develop new research capabilities and broaden the research base in support of U.S. national defense;
3. The applicant, PI, team leader(s), and key personnel qualifications, capabilities, related experience, facilities, or techniques, or a combination of these factors, that are integral to achieving U.S. Air Force objectives.

Reviewed at the AFSOR by Program Managers.

AFOSR: Required for Application

Proposal must be submitted via grants.gov

- SF424 form
- Project Summary/Abstract (≤300 words, **must** mark as publically releasable)
- Project Narrative (No limit, but elaborate or lengthy proposals not desired)
- Bibliography & References Cited
- Facilities and Other Resources
- *Equipment*
- Other Attachments
- Biographical Sketch
- Current & Pending Support
- R&R Budget Form
- Budget Justification
- Data Management Plan (Optional)

Formatting: Times New Roman or Garamond, 10-2 point; *Do not include brochures, reprints, or presentations beyond those sufficient to present a complete and effective proposal.*

AFOSR Tips

- Previous winners lists – look at lists.
- 2016 (10/16) – 58 awards for $20.8M. AFOSR had over 230 proposals in response to the AFOSR broad agency announcement solicitation. http://www.wpafb.af.mil/News/Article-Display/Article/969772/afosr-awards-grants-to-58-scientists-and-engineers-through-its-young-investigat/
- 2015 (1/16) – 3 new awards made in FY15 round $21.7M total. AFOSR received over 265 proposals in response to the AFOSR YIP broad agency announcement solicitation in Engineering and Information Science and Physical and Biological Science research areas http://www.wpafb.af.mil/News/Article-Display/Article/818455/the-air-force-office-of-scientific-research-awards-grants-to-59-scientists-and/
- 2015 – 56 awards, 200 proposals https://www.eurekalert.org/pub_releases/2015-01/afoo-aag012015.php
- 2014 – 42 awards, 234 proposals https://www.eurekalert.org/pub_releases/2014-01/afoo-agg012714.php
- UR has not been very successful with AFOSR

DARPA Young Faculty Award (YFA)

- **ID#** DARPA-RA-16-63 (Posted end of September)
- **Deadline(s):** Proposers Day: end of October; Executive Summary (like a prelim.) due:11/01; Full FAQs – after second week in January; Full proposal due: mid-January
- **Budget:** max. $250K p/year for either one or two years.
- **Eligibility:**
  - Assistant or Associate Professors
  - U.S. citizen, national, or permanent resident or Foreign Nationals at U.S. Institutions
  - Within eight (8) years of appointment to a tenure-track position
  - Previous YFA recipients are not eligible to apply
  - Non-U.S. individuals may participate to the extent that such participants comply with any necessary nondisclosure agreements, security regulations, export control laws, and other applicable governing statutes.

DARPA Mission and Divisions

- **Mission:** Overarching mission of DARPA to make pivotal investments in *breakthrough* technologies for national security.

- The goal of the **YFA program** is to identify and develop the next generation of rising stars among young faculty who will become scientists and engineers who will focus a significant portion of their future careers on DoD and National Security issues.

- DARPA Divisions:
    I. DARPA's Defense Sciences Office (DSO)
    II. Microsystems Technology Office (MTO)
    III. Biological Technologies Office (BTO)

Multiple special topics in the areas of physical sciences, engineering, materials, mathematics, biology, computing, informatics, social science, and manufacturing.

DARPA Review Criterion

DARPA conducts a scientific/technical review of each conforming proposal.

Proposals are not evaluated against each other since they are not submitted in accordance with a common work statement.

Internally reviewed. If necessary, panels of experts in appropriate areas will be convened.

Proposals will be evaluated using the following criteria listed in descending order of importance:

1. Overall Scientific and Technical Merit
2. Potential Contribution and Relevance to the DARPA Mission
3. Cost Realism

DARPA: Required for Application

Proposers are *strongly encouraged* to submit a **1-page** executive summary (excluding cover page and bibliography) *in advance* of a full proposal. DARPA will respond as to their interest, but proposers may apply, irrespective of submitting and/or receiving feedback.

Full proposal:

Volume I:

- Cover Sheet
- Official transmittal letter
- Executive Summary Slide
- Table of Contents
- Project Narrative/Project Description (max. of 8 pages)
- Administrative and National Policy Requirements (mandatory)
- Bibliography (not to exceed 2 pages)

Volume II:

- Cost proposal

Format: no smaller than 12 point font with 1-inch margins.

DARPA Tips

- Submission is through DARPA BAA system site-
  - https://baa.darpa.mil/
  - (DARPA Extranet Account registration required)
- Technical Proposal separate
- Cost proposals are broken down by year, by task, and by month, and require more detail than an NSF budget (i.e., need to start early in budget process)
- Required docs have prescribed cover pages and formats

NASA Early Career Faculty (Appendix)

- **ID#** SpaceTech–REDDI–2017, NNH17ZOA001N
  - APPENDIX NUMBER: NNH17ZOA001N-17ECF-B1
- **Deadline(s):** Appendix Issued 2/9/17; NOI 3/3/17; Full proposal 3/31/17
- **Budget:** $200K p/year, maximum of 3 years.
- **Eligibility:**
  - Assistant Professors
  - Untenured Assistant Professor on the tenure track at the sponsoring U.S. university at the time of award. **If the PI's appointment is scheduled to change to Associate Professor (either tenure-track or tenured) on/before the award date, he/she is not eligible for an ECF award.**
  - PI must be a U.S. citizen or have lawful status as permanent resident
  - Co-Investigators are not permitted. Collaborators are permitted

NASA Mission

- **Mission:** NASA's Space Technology Mission Directorate (STMD) solicits proposals from accredited U.S. universities for innovative, early-stage space technology research of high priority to NASA's Mission Directorates.

- **Early Career Faculty (ECF) is a component of the Space Technology Research Grants Program awards** grants to accredited U.S. universities on behalf of outstanding faculty researchers early in their careers. ECF challenges early career faculty to examine the theoretical feasibility of ideas and approaches that are critical to making science, space travel, and exploration more effective, affordable, and sustainable.

- **NOTE: Early Stage Innovations (ESI) appears as Appendix B2 under the SpaceTech-REDDI NRA, and NASA Space Technology Research Fellowships (NSTRF) is a separate solicitation.**

NASA Mission Driven Topics

- Seeks proposals on specific space technologies that are currently at low Technology Readiness Levels (TRL). Investment in innovative low-TRL research increases knowledge and capabilities in response to new questions and requirements, stimulates innovation, and allows more creative solutions to problems constrained by schedule and budget. Moreover, it is investment in fundamental research activities that has historically benefited the Nation on a broader basis, generating new industries and spin-off applications

- The topics described in 1.3 are aligned with NASA's Technology Roadmaps http://www.nasa.gov/offices/oct/home/roadmaps/index.html.

- 2017 topics (4 only: Integrated Photonic Sensors and Science Instrument Subsystems; Big Data and Artificial Intelligence Solutions for NASA Data Challenges)

NASA Review Criterion

Reviewers. Both Federal and non-Federal reviewers may be used, and submission of a proposal constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

Peer reviewers are selected with regard to both their scientific expertise and the absence of conflict-of-interest issues. Internally reviewed.

Proposals will be evaluated using the following Evaluation Criteria weighted equally:

1. Relevance
2. Technical Approach
3. Suitability of PI/Team, Resources, and Cost

*6-8 awards as a result of the most recent Appendix

NASA: Required for Application

May submit proposals via NSPIRES or Grants.gov. Need to follow the NSA Guidebook as well as the Appendix call ~ it is confusing. Full proposal:

NASA Guide-book Section	*Proposal Section*	*Maximum Page Length*
2.3.5	1. Table of Contents	1
N/A	2. Overview Chart	1
2.3.6	3. Scientific/Technical/Management Section	11
2.3.7	4. References and Citations	As needed
2.3.8	5. Biographical Sketch	2
N/A	6. Department Letter	2
2.3.9	7. Current and Pending Support	As needed
2.3.10	8. Letters of Collaboration	1 page each, if needed
2.3.11	9. Budget Justification	As needed

Format: no smaller than 12 point font with 1-inch margins.

NASA Tips

- Submission is through NSPIRES or grants.gov. All must have NSIRES account (asked for on cover page)
- The overview chart should be organized as Template (format given)
- Required docs have prescribed cover pages and formats. Collaboration/interaction with NASA researchers should be expected while conducting space technology under these awards.
- NASA Early CAREER winners
  - https://www.nasa.gov/directorates/spacetech/strg/archives_stro.html

ONR Young Investigator YIP

- **BAA ID#** N00014-16-S-FO15
- https://www.onr.navy.mil/Science-Technology/Directorates/office-research-discovery-invention/Sponsored-Research/YIP.aspx
- **Deadline(s):** Inquiries by early October; Full Proposals by early November
- **Budget:** up to $170K p/year for 3 years; additional funds may be requested for equipment in Year 1; no costs sharing requested
- **Eligibility:**
  - Holds a first or second full-time tenure-track (or equivalent) appointment.
  - Has begun her/his first full-time appointment within past 5 years.
  - U.S. citizen, national, or permanent resident by date proposals are due.
  - Awards only to academics at institutions of higher education.

  Other Caveats: Applicants highly encouraged to contact ONR Program Manager ahead of time! White papers **not** solicited and **not** accepted. Brief informal pre-proposals may be submitted to facilitate discussion with PO but not required.

ONR Mission and Programs

- **Mission:** The U.S. Office of Naval Research Global (ONR Global) provides worldwide science & technology based solutions for current/future naval challenges. ONR reaches out to the broad global technical community and the operational fleet/force commands to foster cooperation in areas of mutual interest and to bring the full range of possibilities to the Navy and Marine Corps.

- The **ONR YIP program** objectives are to attract outstanding faculty members of Institutions of Higher Education to the Department of Navy's research program, to support their research, and to encourage their teaching and research careers.

- The majority of the Office of Naval Research (ONR) Discovery and Invention program is executed through six science and technology:
    1. Expeditionary Maneuver Warfare & Combating Terrorism Department (Code 30)
    2. Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (Code 31)
    3. Ocean Battlespace Sensing (Code 32)
    4. Sea Warfare and Weapons (Code 33)
    5. Warfighter Performance Department (Code 34)
    6. Naval Air Warfare and Weapons (Code 35)

ONR YIP Review Criterion

The primary basis for selecting proposals for acceptance will be technical, importance to agency programs and fund availability. Cost realism and reasonableness will also be considered.

NOT peer-reviewed. Cognizant Program Officer and other Government scientific experts perform the evaluation of technical proposals. The ultimate recommendation for award of proposals is made to ONR Contracts and Grant Awards Management for final decision.

The following criteria, all being of equal value, will be used for the evaluation:

1. Past performance and experience of the Principal Investigator, demonstrated by the significance and impact of previous research, publications, professional activities, awards and other recognition, etc.;

2. A creative research proposal, demonstrating the potential for making progress in an ONR research area; and

3. A long-term commitment by the University to the applicant and the proposed research should be detailed in the letter(s) of support from appropriate university official.

ONR: Required for Application

Submitted via Grants.gov using SF424 form

- Technical Proposal – max. 20 pages single-sided; Times New Roman 12 point font, 1 inch margins.
  - Cover Page
  - Project Summary/Abstract (500 character limit)
  - Table of Contents (not part of 20 page limit)
  - Technical Approach and Justification
  - Future Naval Relevance (where applicable)
  - Operational Naval Concept (where applicable)
  - Operational Utility Assessment Plan (where applicable)
  - Anticipated Project Schedule and Milestones
  - Management Approach
  - Bibliography (not part of 20 page limit)
  - Current and Pending (not part of 20 page limit)
  - Curriculum Vitae (not part of 20 page limit)
  - Institutional Letter of Commitment (not part of 20 page limit)
- Cost Proposal:
  - R&R Budget Form
  - Cost breakdown by Government fiscal year and task/sub-task

ONR Tips

- Check in with the program manager in “off season” for technical fit.

- ONR Young Investigator Awardees
  - 2017 - https://www.onr.navy.mil/en/Science-Technology/Directorates/office-research-discovery-invention/Sponsored-Research/YIP/2017-young-investigators
  - 2016 - https://www.onr.navy.mil/en/Science-Technology/Directorates/office-research-discovery-invention/Sponsored-Research/YIP/2016-young-investigator-YIP.aspx
  - 2015 – https://www.onr.navy.mil/Media-Center/Press-Releases/2015/young-investigator-2015-ONR.aspx

- Wendi Heinzelman Hajim Dean and Chen Ding, CS are ONR Young Investigator awardees.

- In 2016, more than 260 proposals were received resulting in 47 Young Investigator awards (18% success rate).

NIH K01 Awards

- **ID#** PA-16-190
- **https://grants.nih.gov/grants/guide/pa-files/PA-16-190.html**
- **Deadline(s):** February 12; June 12; October 12
- **Budget:** Standard modular budget $250K direct costs p/year for 5 years. 8% indirects; no cost-share required.
- **Eligibility:**
  - Must be employed at not-for-profit, higher education institution or research center.
  - Must be registered with ERA Commons, with annual renewal.
  - Current and former PDs/PIs on NIH R01, P01, P50 or other K awards not eligible.
  - By the time of the award, must be U.S. citizen, national, or permanent resident.
  - Must have a mentor; preferably team of mentors who will supervise and advise.
  - Multiple PDs/PIs are not allowed.

Caveat: Not all NIH Institutes and Centers participate in the program. Some use other K mechanisms (e.g., K-12) or this K award for retraining. NIGMS uses K-99 mechanism (Pathways to Independence)

At the time of award, must have a "full-time" appointment at the academic institution; required to commit a minimum of **75%** of full-time professional effort (i.e., min. 9 person-months) to their career development and research training *during the mentored phase*.

NIH Mission and Institutes

- **Mission:** Overall mission of **NIH** is to seek fundamental knowledge about the nature and behavior of living systems and apply that knowledge to enhance health, lengthen life, and reduce illness and disability. The purpose of the **NIH Mentored Research Scientist Development Award (K01)** is to provide support and "protected time" (three, four, or five years) for an intensive, supervised career development experience in the biomedical, behavioral, or clinical sciences leading to research independence.

- These ICs participate in the *parent* program announcement.
  - National Heart, Lung, and Blood Institute (NHLBI)
  - National Human Genome Research Institute (NHGRI)
  - National Institute on Aging (NIA)
  - National Institute on Alcohol Abuse and Alcoholism (NIAAA)
  - National Institute of Allergy and Infectious Diseases (NIAID)
  - National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
  - National Institute of Biomedical Imaging and Bioengineering (NIBIB)
  - *Eunice Kennedy Shriver* Nat'l Institute of Child Health and Human Development (NICHD)
  - National Institute on Deafness and Other Communication Disorders (NIDCD)
  - National Institute of Dental and Craniofacial Research (NIDCR)
  - National Institute on Drug Abuse (NIDA)
  - National Institute of Mental Health (NIMH)
  - National Institute of Nursing Research (NINR)
  - National Center for Complementary and Integrative Health (NCCIH)
  - Division of Program Coordination, Planning and Strategic Initiatives (ORIP)

NIH Review Criterion

All applications submitted to the NIH in support of biomedical and behavioral research are evaluated for scientific and technical merit through the NIH peer review system.

K awards are also evaluated for the candidate's *potential* for developing an independent research program that will make important contributions to the field.

Scored Review Criteria (on quality of):

1. Candidate
2. Career Development Plan/Career Goals and Objectives
3. Research Plan
4. Mentor(s), Co-Mentor(s), Consultant(s), Collaborator(s)
5. Environment & Institutional Commitment to the Candidate
    a) Protections for Human Subjects
    b) Inclusion of Women, Minorities, and Children
    c) Vertebrate Animals
    d) Biohazards
    e) Training in the Responsible Conduct of Research
    f) Resource Sharing Plans
    g) Budget and Period of Support

NIH: Required for Application

- Submitted via ASSIST

  - SF424(R&R) Cover
  - Candidate/PI Information and Goals for Career Development and Research Strategy (12 pages)
  - Specific Aims (1 page)
  - Training in the Responsible Conduct of Research (1 page)
  - Plans and Statements of Mentor and Co-mentor(s) (6 pages)
  - Letters of Support from Collaborators, Contributors, Consultants (6 pages)
  - Description of Institutional Environment (1 page)
  - Institutional Commitment to PIs Research Career Develop. (1 page)
  - Biographical Sketch (5 pages)
  - R&R Budget and Justification

NIH K- Series Tips

- NIH has a wealth of assistance for proposers on their website including: Grant writing tips, podcasts, mock panel review, etc.
- Numerous faculty at UR have received various K awards. Easy to find mentors.
- While submission via Grants.gov is still allowable, best to use online system ASSIST as it's easy to check for errors. ORPA highly encourages ASSIST.
- NIH hosts two Regional Seminars targeting young researchers per year. The next one is in Baltimore on October 25-27.
- Like many sponsors, NIH provides detailed reviews to proposers; K awards are not renewable, but resubmissions are allowed. You might make it during the second submission!
- All K-awards have a requirement for protected time, i.e., a certain level of effort devoted to research. May not be a fit for teaching faculty. Need to discuss lighter teaching load with chair.
- ICs and specific information on their K awards https://grants.nih.gov/grants/guide/contacts/parent_K01.html

NSF CAREER Award

- **ID#** NSF 17-537
- **Deadline(s):** 07/19/17 BIO, CISE, EHR; 07/20/2017 ENG; 07/21/2017 GEO, MPS, SBE
- **Budget:** Min. $400K in total costs, except for BIO, ENG and Polar min. $500K for 5 years
- **Eligibility:**
  - A Principal Investigator (PI) may submit only one CAREER proposal per annual competition.
  - In addition, a Principal Investigator may not participate in *more than three* CAREER competitions.
  - Hold a doctoral degree in a field supported by NSF by the cognizant Directorate's deadline for submission of CAREER proposals;
  - Be engaged in research in an area of science, engineering, or education supported by NSF;
  - Be employed in a tenure-track (or tenure-track-equivalent) position as an assistant professor (or equivalent title) as of October 1 after the proposal submission;
  - Be untenured as of October 1 following the proposal submission; and
  - Have not previously received a CAREER award. (Prior or concurrent Federal support for other types of awards for non-duplicative research does not preclude eligibility.)

Caveat: Must include 2-page letter from chair; estimated new awards 450 p/year.

NSF Mission and Divisions

- **Mission:** Overarching mission of NSF is to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense.

- The intent of the program is to provide stable support at a sufficient level and duration to enable awardees to develop careers, not only as outstanding researchers but also as educators demonstrating commitment to teaching, learning, and dissemination of knowledge.

  NSF Directorates
  - Directorate for Biological Sciences (BIO)
  - Directorate for Computer & Information Science & Engineering (CISE)
  - Directorate for Education & Human Resources (HER)
  - Directorate for Engineering (ENG)
  - Directorate for Geosciences (GEO)
  - Directorate for Mathematical & Physical Sciences (MPS)
  - Directorate for Social, Behavioral & Economic Sciences (SBE)

NSF Review Criterion

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

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

<u>The following elements are considered in the review for both criteria:</u>

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

NSF: Required for Application

Submitted via FastLane.

- For NSF use only: Conflicts of Interest and Suggested Reviewers
- Cover
- Project Summary (1 page with Overview, Intellectual Merit and Broader Impacts)
- Project Description (15 pages)
- Facilities, Major Equipment and Other Resources
- Bibliography
- Biographical Sketch (2 pages-NSF format)
- Current and Pending Support
- Budget
- Budget Justification (3 pages)
- Data Management Plan
- Postdoc Mentoring Plan if budgeting for PD
- Supplementary docs – Chair's letter; estimates for equipment

* Arial, Courier New, or Palatino Linotype at a font size of 10; Times New Roman 11 points, 1 inch margins.

NSF CAREER TIPS

- There is a wealth of resources on the CAREER program.
- Every year AS&E receives between 2-6 CAREER awards - lots of people to tap for advice.
- Recorded CAREER 2015 Workshop available at http://www.rochester.edu/college/research/events.html
- NSF also provides webinars on CAREER; next session is May 22, 2017 1:00PM to 3:00PM. Some divisions also host in-person workshops. Register at: https://www.nsf.gov/events/event_summ.jsp?cntn_id=191332&WT.mc_id=USNSF_13&WT.mc_ev=click
- **Take the educational/broader impacts sections seriously**. We have compiled a compendium of Broader Impacts information available on the Intranet and AS&E research website at: http://www.rochester.edu/college/research/assets/pdf/Good-Stuff-Proposal.pdf

Foundational Opportunities

- Many Young Investigator foundational opportunities exist: Packard Fellowships for Science and Engineering, Pew Scholars in the Biomedical Sciences, Searle Scholars, Sloan Research fellowships, Cottrell Scholars, Beckman Young Investigators, Dreyfus Teacher/Scholar Award.
- Most require nomination or endorsement either by the Provost/Dean for Research or the departmental chair.
- Many of these opportunities are institutionally limited submissions.
- For limited submissions, announcements with instructions for internal applications, are disseminated to listserve from the SVP's Office. *Make sure you are on the listserve by contacting Crystal Holmes in ORPA!*
- ORPA also keeps a listing of those opportunities that are open at http://www.rochester.edu/orpa/funding/limitedsub.html

Foundational Opportunities

- For *non*-limited foundational submissions (Beckman LoI, Sloan, etc.), announcements are made to chairs/PIs via Foundation Relations and/or the dean's office.
- Foundation Relations has competitive intelligence about most of the foundations – it's encouraged, but not mandatory, to utilize their expertise.
- Foundation Relations will help with advice, liaison with the Foundation, and project narrative, not budgets or administrative sections, so still may need to engage departmental staff.
- In all cases, applications to foundations must go through dean's signoff and ORPA.
- Most foundations restrict or do not allow overhead, i.e., F&A costs

Packard Fellowship - Science & Engineering

- **Limited Submission:** The UR Provost invited to select/nominate two early-career professors each year. Only top 50 U.S. schools invited.
- **Funding:** $875K over 5 years, relatively unrestricted.
- **Eligibility:** Candidates must be faculty members, eligible to serve as PIs engaged in research in the *natural and physical sciences or engineering* and must be within the first three years of their faculty careers. Disciplines considered include physics, chemistry, mathematics, biology, astronomy, computer science, earth science, ocean science, and all branches of engineering-no social science.
- **URL:** https://www.packard.org/what-we-fund/conservation-and-science/science/packard-fellowships-for-science-and-engineering/
- **Highly Competitive:** URs most recent awardees are Vas Petrenko (EES) in 2013 and Daven Presgraves (BIO) in 2009.
- **Good stuff:** The Foundation emphasizes support for innovative individual research that involves the Fellows, their students, and junior colleagues, rather than extensions or components of large-scale, ongoing research programs; Funds are directed to fields less generously supported than those that receive large federal funding.
- Internal deadline ~ September; Foundational deadline mid-April, annually

Pew Scholar in the Biomedical Sciences

- **Limited Submission:** The UR Provost invited to select/nominate **one** early-career professor each year. Applicants may apply only twice. 117 top Universities invited.
- **Funding:** $240K over 4 years; 60K p/yr. some restrictions, e.g. < 10% of budget may be used for PI salary.
- **Eligibility:** Must hold a tenure-track appointment *less than 3 years* as of 07/01/2017; Assistant professors must hold doctorate in biomedical sciences, medicine or a related field (Biochemistry, Biology, Biophysics, Biotechnology, Cancer Biology, Cellular Biology, Chemistry, Chemical and Biomolecular Engineering, Developmental Biology, Ecology/Evolutionary Biology, Genetics, Immunology, Microbiology, Molecular Biology Molecular Pharmacology, Neuroscience, Pathology, Pharmaceutical Sciences, Physics.
- **URL:** http://www.pewtrusts.org/en/projects/pew-biomedical-scholars/program-details
- **Highly Competitive:** ~ 20 scholars appointed annually
- **Good stuff:** Tends to fund research aligned with the interests of Advisory Board members, so look at composition of the Board (on website). UR has won this, but not too often. Most recent awardees Ed Brown (BME) 2007 and Laura Calvi (URMC) 2005.
- **Deadline:** Internal - June, Foundational - October 16, 2017. Foundation Relations must send Pew the name of selected candidate in July; only then will portal and instructions become available to nominee.

Sloan Research Fellowship

- **Submission:** Not a limited submission
- **Funding:** $60K (in 2017 thereafter $65K) over 2 years, quite unrestricted.
- **Eligibility:** Must hold a tenure track (or equivalent) position; Tenure-track faculty positions at applicant's institution must include a yearly teaching requirement; must hold a Ph.D. (or equivalent) in *chemistry, computational or evolutionary molecular biology, computer science, economics, mathematics, neuroscience, ocean sciences, physics, or a related field*.
- **URL:** https://sloan.org/fellowships
- **Competitive:** UR has been highly successful (62 awards since 1956) in receiving Sloan Research fellowships; Most recent awardees Mike Neidig 2016 (CHM); Jessica Cantlon 2013 (BCS), John Kessler 2012 (EES) Dan Weix 2012 (CHM).
- **Good stuff:** Fellows are selected on the basis of their independent research accomplishments, creativity, and potential to become leaders in the scientific community through their contributions to their field.
- **Deadline:** September 15, 2017

Edward Mallinckrodt, Jr. Foundation

- **Limited Submission:** The UR Provost invited to select/nominate **one** early-career professor each year.
- **Funding:** $180K ($60K per year) for up to three years.
- **Eligibility:** Faculty members must hold M.D. and/or Ph.D. degrees ; must be in the first to fourth year of a tenure-track position; Applicants with current R01 funding should **not** apply; relevant for all faculty in basic biomedical research.
- **URL:** http://www.emallinckrodtfoundation.org/Guidelines.html
- **Highly Competitive:** 164 applications were submitted last year, but only 4 were awarded – a 2% success rate
- **Good stuff:** Foundation **i**nterested in research with potential to significantly advance the understanding, diagnosis or treatment of disease.
- **Deadline:** Internal deadline in March, Foundational deadline August 1, 2017.

Best Practices

- **Read the Guidelines**! Read them several times. *Follow* the Guidelines!
- Inform those who will help you of your intention to submit, i.e., chair, grants administrator, assistant deans, ORPA (early).
- For federal programs, do some reconnaissance: check award sizes in awards databases like NSF Awards, Reporter, etc. Talk to colleagues who have received the award; peruse sponsor website; ensure you are a good fit for the program by understanding program and sponsor mission and goals; talk to Foundation Relations or anyone with inside knowledge.
- Contact Program officer (early) and engage personally to discuss your project and science. Some POs have a great deal of budgetary discretion.
- Take notice of review criterion; organize your project narrative/proposal so that it will be *easy* for reviewers to see you have met the review criterion.
- Send your narrative to colleagues for critique – give them time to do a good job, and time to revise. Red Team Review, if possible.
- Work with a mentor; attend a boot camp or grant writing workshop.
- Volunteer to review for the program or the sponsor most likely to support your research program.
- Abide by the University policy of submitting final materials to ORPA 5 business days prior to the deadline. Utilize ORPA expertise and compliance check to not have your proposal denied review.

Writing/Editing Tips

- Start Early! Write every day. Don't wait till the last minute. No one writes/edits well under time pressure.
- Use only approved point font type and size (reviewers like larger fonts)
- Do not use figures or tables as filler – everything included should contribute substantively to explain your project
- Everything should be legible – don't use super small point type on figures or tables (10 smallest)
- Use italics and bold *judiciously* for most important points
- DO use white space; organize for ease of reviewing with appropriate headings, indentation, paragraphs
- Avoid overuse of jargon, define all acronyms, use short, direct sentences
- Use **only** the required format, adhere to page/space limits
- Avoid overuse of personalized language
- Avoid conditional language - use present tense when possible, i.e., "I intend; I will", rather than "it is hoped"
- Polish, proofread with no typos. Use proper grammar, ask non-specialist to review for language flow
- Covey your excitement and passion!

Places to Find Opportunities

- http://www.rochester.edu/college/research/assets/pdf/YoungInvestigatorHandbook.pdf

also on Intranet and AS&E Research:
http://www.rochester.edu/college/research/events.html

- Intranet Good Stuff for PIs: https://www.rochester.edu/asei/index.php?logout=true
- UR Fellowships & Awards: https://www.rochester.edu/college/fellowships/
- GENIUS/SMARTS/SPIN: https://spin.infoedglobal.com/Home/GridResults
- Foundation Directory: https://fconline.foundationcenter.org/search/member-index
- Grants.gov: http://www.grants.gov/web/grants/search-grants.html
- FedBizOpps: https://www.fbo.gov/
- Good websites for Young Investigators
  - https://cfr.ucsd.edu/young-investigators/funding-opportunities.html
  - http://www.spo.berkeley.edu/fund/newfaculty.html
  - http://www.csun.edu/research-graduate-studies/funding-opportunities-young-investigatorjunior-faculty
  - http://osp.utah.edu/grant-life-cycle/find-funding/new-junior-faculty.php
- Websites of the specific Agencies and Foundations

  Most federal agencies have e-alert systems-register for these!

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Documents

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Documents » Good Stuff for PIs

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			Fulbright Faculty Workshop Video.pdf	Fulbright Faculty Workshop on 5-5-15	Staff (60)	26 KB	5/22/15 9:50 AM
			Good Stuff for PIs - revised 2016.pdf	Debra Haring	Staff (60)	405 KB	12/6/16 11:35 AM
			Grantsmanship Articles	Debra Haring (owner)	TT Faculty (40)	*N/A*	8/22/14 2:15 PM
			How do I review thee Webinar slides.pdf	Debra Haring	Staff (60)	1.32 MB	2/10/17 9:45 AM
			NIH Rigor Transparency	Debra Haring	Staff (60)	*N/A*	3/18/16 9:34 AM
			NSF CAREER Award Workshop Video.pdf	NSF Faculty Early Career Development Program Workshop on 4-20-15	Staff (60)	48 KB	5/22/15 9:50 AM
			NSF Dos and Don'ts.pdf	Good Stuff for PIs	Staff (60)	82 KB	11/7/14 11:09 AM
			NSF Faculty Workshop Dec 2016.pdf	Debra Haring	Staff (60)	238 KB	2/10/17 9:48 AM
			NSF Return without Review 02.2017.pdf	Debra Haring	Staff (60)	61 KB	2/10/17 9:37 AM
			Resources on the NSF CAREER Award	Debra Haring (owner)	TT Faculty (40)	*N/A*	8/22/14 1:38 PM
			SPIN User Guide.pdf	Debra Haring	Staff (60)	8.18 MB	1/21/16 11:27 AM
			UCAR advice for new investigators.pdf	Debra Haring	Staff (60)	59 KB	4/27/16 11:40 AM
			UR Statistics -updated 2017.pdf	Debra Haring	Staff (60)	86 KB	1/18/17 8:54 AM
			Young Investigators-Early Career Guide.pdf	Debra Haring	Staff (60)	303 KB	4/13/17 3:18 PM

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TOC Grantmanship Articles

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			01. Kraicer.pdf	The Art of Grantsmanship	TT Faculty (40)	294 KB	4/2/14 4:11 PM
			02. Miner.pdf	Guide to Proposal Writing	TT Faculty (40)	226 KB	4/2/14 4:12 PM
			03. European Foundation Center.pdf	Advice To Grantseekers 2005	TT Faculty (40)	61 KB	4/2/14 4:38 PM
			04. Gerli.pdf	How to write a grant 2009	TT Faculty (40)	191 KB	4/2/14 4:13 PM
			05. Browning.pdf	Grant Writing for Dummmies	TT Faculty (40)	3.23 MB	4/2/14 4:14 PM
			06. Porter.pdf	Academics Hard Time	TT Faculty (40)	98 KB	4/2/14 4:16 PM
			07. Levine.pdf	Guide Writing Funding Proposal	TT Faculty (40)	158 KB	4/2/14 4:16 PM
			08. Hensen.pdf	Debunking Myths Grants	TT Faculty (40)	117 KB	4/2/14 4:16 PM
			09. Sanders.pdf	NIH proposals (2002)	TT Faculty (40)	19 KB	4/2/14 4:17 PM
			10. Fischer and Zigmond.pdf	Intro Grant Writing 2008	TT Faculty (40)	253 KB	4/2/14 4:18 PM
			11. Giddings.pdf	Backdoor Grant Funding	TT Faculty (40)	470 KB	4/2/14 4:21 PM
			12. Porter.pdf	Crafting Sales Pitch	TT Faculty (40)	6.76 MB	4/2/14 4:21 PM
			13. Preseworski.pdf	Grants Social Sciences	TT Faculty (40)	787 KB	4/2/14 4:26 PM
			14. Silverman.pdf	Wenner-Gren Grant Proposals	TT Faculty (40)	60 KB	4/2/14 4:26 PM
			15. Gillis.pdf	ACLS Fellowship Proposals	TT Faculty (40)	97 KB	4/2/14 4:29 PM
			16. Orosz.pdf	Program Officers	TT Faculty (40)	77 KB	4/2/14 4:29 PM
			17. Spires.pdf	What to Say and Not Program Officers	TT Faculty (40)	62 KB	4/2/14 4:30 PM
			18. Porter.pdf	Can We talk?	TT Faculty (40)	327 KB	4/2/14 4:31 PM
			19. Science.pdf	Water Duck's Back - Reviews	TT Faculty (40)	62 KB	4/2/14 4:31 PM
			20. Porter.pdf	Grant Reviewers	TT Faculty (40)	1.3 MB	4/2/14 4:32 PM
			21. Miner.pdf	Hard to Please Reviewers	TT Faculty (40)	375 KB	4/2/14 4:32 PM
			22. Morrison.pdf	NIH Specific Aims Template	TT Faculty (40)	40 KB	4/2/14 4:33 PM
			23. Giddings.pdf	Guide to Specific Aims	TT Faculty (40)	133 KB	4/2/14 4:34 PM
			24. NSF Guide.pdf	Guide to Proposal Writing 2013	TT Faculty (40)	207 KB	4/2/14 4:34 PM

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Panel of Awardees & Reviewers:

- **Qiang Lin**, Assistant Professor of Electrical & Computer Engineering (2014 CAREER Winner and 2016 CAREER Reviewer)
- **Michael Neidig**, Wilmot Assistant Professor of Chemistry (2016 DOE Young Investigator and 2015 Sloan Research Fellow)
- **Christie Petrenko**, Research Associate, Clinical & Social Sciences in Psychology, Mt. Hope Family Center (2011 K01 Awardee)
- **Nick Vamivakas**, Associate Professor, The Institute of Optics (2016 CAREER Winner, Young Scientist Prize in Quantum Electronics)