The NSF Graduate Research Fellowship Program

Solicitation NSF 15-597
UC Davis Introductions
October 3, 2014

Neil Schore
Professor of Chemistry
NSF GRFP National Review Panel

Deborah McCook
Senior External Fellowship Advisor, UCD NSF GRFP Coordinator
Office of the Vice Provost and Dean of Graduate Studies
email: dlmccook@ucdaivs.edu

Kristin Provost
External Fellowship Advisor, UCD NSF GRFP Coordinator
Office of the Vice Provost and Dean of Graduate Studies
email: dlmccook@ucdaivs.edu

National Science Foundation Graduate Research Fellowship Program
Apply at: www.fastlane.nsf.gov/grfp/
NSF Graduate Research Fellowship Program Goals

- To increase the Nation’s human capacity in science and engineering by providing fellowships for early-career graduate students who pursue research-based master’s and doctoral degrees in NSF-supported disciplines.

- To support the development of a diverse and globally engaged US science and engineering workforce.

Apply at: www.fastlane.nsf.gov/grfp/
GRFP Unique Features

- Flexible: choice of project, advisor & program
- Unrestrictive: No service requirement
- Portable: Any accredited U.S. institution
  - MS → PhD
- 2,000 Fellowships offered annually, 2010 - 2015
  - 2015: 16000 Applications = 12.5% success rate
GRFP Successes

- 48,000 Fellowships awarded since 1952
- 40 Nobel Laureates
- 450 members of the National Academy of Sciences
- Founders of corporations to authors of books
- Higher Ph.D. completion rates
- Enhanced diversity
GRFP Key Elements

• Five Year Award – $138,000
• Three years of support
  • $34,000 Stipend per year
  • $12,000 Educational allowance to institution (UCD OGS pays balance)
• International research funding opportunity through GROW
• Research Internship Program (GRIP)
• Access to XSEDE cyberinfrastructure resources
• Career Life Balance (family leave)
GRFP General Eligibility

- U.S. citizens, nationals, and permanent residents
- Early-career students *
- Pursuing research-based MS or PhD in NSF fields
- Enrolled in accredited U.S. institution by Fall 2016
- Applicants must self-certify in the application that they meet the GRFP Eligibility criteria
*GRFP Academic Level Eligibility*

**Eligible Academic Levels**

- Seniors/baccalaureates; no graduate study
- First year graduate students
- Second-year grad students
  - \( \leq 12 \) months of graduate study by August 1
- \( >12 \) months graduate study – only if there has been an interruption in graduate study of at least 2 consecutive years prior to Nov 2014 (can have MS degree).
GRFP Supported Disciplines

- Chemistry
- Computer and Information Science and Engineering
- Engineering
- Geosciences
- Life Sciences
- Materials Research
- Mathematical Sciences
- Physics and Astronomy
- Psychology
- Social Sciences
- Science, Technology, Engineering and Mathematics Education (research-focused)
Not Supported by NSF GRFP

- Practice-orientated professional degree programs: medical, dental, law, or public health programs or joint science-professional degree programs, e.g., MD/PhD, JD/PhD, etc.

- Clinical, counseling, business administration or management, social work, education, education (except research-focused STEM Education programs or history of science)

See Solicitation (www.nsfgrfp.org)
GRFP Application & Cycle

- **Application:** Solicitation NSF 15-597

- **Fastlane** Electronic Application Portal
  - [https://www.fastlane.nsf.gov/grfp/Login.do](https://www.fastlane.nsf.gov/grfp/Login.do) open August 1st

- **Deadlines:** Oct 26th – Oct 30th
  (varies by field)
  - Letter Writer Deadline: November 5, 2015, 5pm PST

- **Best Time to Start Preparing:** August

- **Awards:** Announced late March to early April

National Science Foundation Graduate Research Fellowship Program

Information: [www.nsf.gov/grfp](http://www.nsf.gov/grfp) and [www.nsfgrfp.org](http://www.nsfgrfp.org)

Applicant Deadlines 2014

October 26, 2015
Geosciences
Life Sciences

October 27, 2015:
Computer and Information Sciences and Engineering
Engineering
Materials Research

October 29, 2015:
Psychology
Social Sciences
STEM Education and Learning

October 30, 2015:
Chemistry
Mathematical Sciences
Physics and Astronomy

~ Applications Must Be Submitted by 5:00 pm PST ~
GRFP Complete Application

NSF FastLane

- Personal, Relevant Background and Future Goals Statement (3 pages)
- Graduate Research Statement (2 pages)
- Transcripts (all undergrad and most recent grad) uploaded into FastLane
- Three letters of reference required
- Additional information required for some candidates

See Solicitation for eligibility requirements on www.nsfgrp.org
Preparing a competitive application

1. Read the Solicitation carefully
2. Address the two NSF Merit Review Criteria (Intellectual Merit and Broader Impacts)
3. Check for spelling and grammatical errors
4. Verify essays and transcripts uploads
5. You must certify that this is your own original work
6. You must self-certify your eligibility according to the criteria in the Solicitation
7. Make sure you Press “Submit” button
8. Regularly check application status for # of reference letters
9. Make sure you are enrolled in graduate school by Fall 2015
How do you envision graduate school preparing you for a career that allows you to contribute to expanding scientific understanding as well as broadly benefit society?

Describe your personal, educational and/or professional experiences that motivate your decision to pursue advanced study.

Include examples of any research and/or professional activities in which you have participated. Present a concise description of the activities, highlight the results and discuss how these activities have prepared you to seek a graduate degree. Specify your role in the activity including the extent to which you worked independently and/or as part of a team.

Describe the contributions of advancing knowledge in STEM fields as well as the potential for broader societal impacts. (See Solicitation, Section VI, for more information about Broader Impacts)
Present an **original research topic** that you would like to pursue in graduate school.

- Describe the research idea and your general approach.
- Describe the **unique resources** that may be needed for accomplishing the research goal (e.g., access to national facilities or collections, collaborations, overseas work).
- **Address the potential of the research to advance knowledge and understanding** within science as well as the potential for **broader impacts on society**.
- **Recommended:** Literature citations if relative.
Application Review Process

- Applications are reviewed by panels of disciplinary and interdisciplinary scientists and engineers
- Applications **assigned** to panels based on the applicant's chosen Primary Field(s) of Study and the discipline(s) represented
- Applicants are advised to select the Primary Field of Study that is most closely **aligned** with the proposed graduate program of study
- **Holistic evaluation**: a flexible, individualized way of assessing an applicant’s interests and competencies by which balanced consideration is given to experiences, attributes, and academic achievements and, when considered in combination, how the applicant has demonstrated potential for significant achievements in science and engineering.
Two National Science Board-approved Review Criteria:

**Intellectual Merit:**

*How important is the proposed activity to advancing knowledge within its own field or across different fields?*

**Broader Impacts:**

*How well does the proposed activity benefit society or advance desired societal outcomes?*
Intellectual Merit Assessment

- Academic performance
- Research plan
- Appropriate choice of institution
- References
- **Research experience**
The potential of the applicant to perform scholarly scientific study and advance knowledge based on the totality of the content in the application including:

• the strength of the academic record
• the proposed plan of research
• the description of previous research experience
• publication/presentations, and references

And the ability to:

• Plan and conduct research
• work as a member of a team as well as independently
• Interpret and communicate research
Broader Impacts Assessment

- Prior accomplishments
- Future plans
- Individual experiences
- Potential to reach diverse audiences
- Potential benefit to society
Panelists may consider the following with respect to the Broader Impacts:

• How well does the activity advance discovery and understanding while promoting teaching, training and learning?

• How well does the proposed activity broaden participation of underrepresented groups, women/minority, students with disabilities, veterans?

• To what extent will it enhance infrastructure for research and education?

• Will results be disseminated broadly?

• What may be the benefits of proposed activity to society?
Examples of Broader Impact

**Advance discovery and understanding – promoting teaching, training & learning**

- Integrate research activities into teaching of science, math, engineering at all levels.
- Include students as participants in proposed research activities as appropriate.
- Develop research based educational materials.
- Encourage student (all levels) participation at meeting and activities of professional societies.
- Establish mentoring programs for high school students, undergrads, grad students, technicians.

**Broaden participation of underrepresented groups**: women, underrepresented minorities, certain academic institutions and some geographic areas that are less than full participants in science

- Establish research and education collaborations with students and faculty who are underrepresented
- Include underrepresented students and groups in proposed research of educational activities.
- Mentor early career scientists and engineers from underrepresented groups.
- Participate in workshops, conferences and field activities where diversity is a priority.
- Establish collaborations with faculty and students at community colleges, colleges for women, undergraduate institutions.

National Science Foundation Graduate Research Fellowship Program
Information: [www.nsf.gov/grfp](http://www.nsf.gov/grfp) and [www.nsfgrfp.org](http://www.nsfgrfp.org)
Examples of Broader Impact continued

Benefits to society

- Contribute to public understanding of the environment, commercial technology, public policy, health or safety or other aspects of public welfare.
- Explain the potential application of research and/or education results for the benefit of society.
- Provide information for policy formulation by Federal, State or local agencies.
- Communicate research and education results in formats understandable and useful for non-scientists.
- Integrate research with federal agencies and the private sector.

Enhance infrastructure for research and education

- Establish collaborations between disciplines and US academic institutions, industry and with International partners.
- Stimulate and support development of next generation instrumentation, new software multi-user facilities, other shared research and education platforms.
Examples of Broader Impact continued

Broad dissemination to enhance scientific and technological understanding

- Partner with museums, nature centers, science centers to develop exhibits in science, engineering and math.
- Give science and engineering presentations to the broader community (libraries, radio shows)
- Make research findings available in timely manner (publications and presentations)
- Publish in diverse media (e.g., non-technical literature, websites, press kits, CD-ROM’s) to reach broad audiences.
- Present research and education results to policy makers (Congress, industry)
- Involve the public or industry in research and education activities.
The following elements should be considered in the review for Intellectual Merit and Broader Impacts criteria:

1. What is the potential for the proposed activity to:
   a. **advance knowledge and understanding** within its own field or across different fields (Intellectual Merit); and
   b. **benefit society** or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and **explore creative, original, or potentially transformative concepts**?
3. Is the plan for carrying out the proposed activities **well-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 to conduct 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?
**Reference Letters**

- Choose at least **three** reference writers (you may request up to five)

  *Select your reference writers carefully, as they will provide important information about your potential as a leader, researcher, and educator – familiarity with you as a person is important*

- Allow letter writers ample time to prepare their letters

- Share your application materials and the merit review criteria (letters need to address Intellectual Merit and Broader Impacts)

- Track letter submission using FastLane
Evaluation of applications

- Panelists are academic and research experts in general discipline, not necessarily in your research topic

- Panelists rate your application using the two Merit Review Criteria, Intellectual Merit and Broader Impacts

- NSF requests panelists to provide constructive comments (applicants receive anonymous copies of the reviews)

- Panels make recommendations to NSF

- NSF awards fellowships and honorable mentions
Besides constructive feedback, the application is great preparation for:

- Graduate school applications
- Other award applications
- Job applications
- Writing publications
- Professional connections

2015
2,000 Awards
15,000 Applications
~ 12.5% Success

You are encouraged to apply.
### UCD Success

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Fellows</th>
<th>New</th>
<th>Continuing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 - 16</td>
<td>139</td>
<td>29</td>
<td>110</td>
</tr>
<tr>
<td>2014 - 15</td>
<td>139</td>
<td>27</td>
<td>112</td>
</tr>
<tr>
<td>2013 - 14</td>
<td>122</td>
<td>34</td>
<td>88</td>
</tr>
<tr>
<td>2012 - 13</td>
<td>109</td>
<td>31</td>
<td>78</td>
</tr>
<tr>
<td>2011 - 12</td>
<td>101</td>
<td>43</td>
<td>58</td>
</tr>
<tr>
<td>2010 - 11</td>
<td>70</td>
<td>27</td>
<td>43</td>
</tr>
<tr>
<td>2009 - 10</td>
<td>44</td>
<td>21</td>
<td>23</td>
</tr>
</tbody>
</table>
Resources at nsfgrfp.org

- Tips for applying
- Frequently asked questions (FAQ)
- Find GRFP contacts
- Important links for the GRFP
- Panelist registration
Resources

NSF GRFP Website (nsf.gov/ grfp)
• Solicitation
• FAQ and Guide links

Fastlane.nsf.gov/ grfp
• Online application, user guides, official announcements

Phone and email
• 866-NSF-GRFP (673-4737)
  info@nsfgradfellows.org
UCD FACULTY MENTORS
NOTE: MENTORING AVAILABILITY IS AT THE DISCRETION OF THE MENTOR

• Alan L. Balch, Distinguished Professor, Chemistry
  albalch@ucdavis.edu
• Enoch Baldwin, Professor of Cellular and Molecular Biology, epbaldwin@ucdavis.edu (limited availability Fall 2014)
• Robert Berman, Professor, Neurological Surgery
  rberman@ucdavis.edu
• Patricia Boeshaar, Senior Lecturer, Physics
  boeshaar@physics.ucdavis.edu
• Tom Cahill, Professor Emeritus, Physics
  tacahill@ucdavis.edu
• Debbie Elliott-Fisk, Professor, Wild, Fish & Conservation Biology, delliottfisk@ucdavis.edu
• Barbara Horwitz, Professor, Neurobiology, Physiology & Behavior, bahorwitz@ucdavis.edu
• Anne A. Knowlton, Professor, Cardiovascular Division, aaknowlton@ucdavis.edu
• Kent Leach, Associate Professor, Biomedical Engineering, jkleach@ucdavis.edu
• Peter Lindert, Professor Emeritus, Economics
  phlindert@ucdavis.edu
• Kai Liu, Associate Professor, Physics
  kailiu@ucdavis.edu
• Jay R. Lund, Professor, Civil and Environmental Engineering, jrlund@ucdavis.edu
• Ted Powers, Professor, Cellular and Molecular Biology, tpowers@ucdavis.edu
• Neil Schore, Professor, Department of Chemistry, neschore@ucdavis.edu
• Mark Schwartz, Professor of Environmental Science & Policy | Population Biology
  mwschwartz@ucdavis.edu
• Dewey Ryu, Professor, Chemical Engineering & Material Science, ddyryu@ucdavis.edu
• Aram Yengoyan, Distinguished Professor, Anthropology
  aayengoyan@ucdavis.edu
• David Smith, Professor
  Anthropology, djsmith@ucdavis.edu
• Louie Yang, Assistant Professor, Entomology
  lhyang@ucdavis.edu
UCD FELLOW MENTORS

NOTE: MENTORING AVAILABILITY IS AT THE DISCRETION OF THE MENTOR

- Ryan Barry, Human Development
  rabarry@ucdavis.edu
- Carmen Cortez, Ecology
  ccorsez@ucdavis.edu
- Anahita Hamidi, Neuroscience
  ahamidi@ucdavis.edu
- Randi Jimenez, Hort. & Agronomy
  randi_jimenez@yahoo.com
- Susan Lagle, Anthropology
  selagle@ucdavis.edu
- Ciera Martinez, Plant Biology
  Ciera.martinez@gmail.com
- Kay Watt, Integrated Genetics
  kaywatt@ucdavis.edu
- Christy Rogers Hollifield, Human Develop.
  crrogers@ucdavis.edu
- Alex Webster, Biogeochemistry/Ecology
  ajwebster@ucdavis.edu
- Henry “Hoby” Wedler, Chemistry
  hobywedler@gmail.com
- Molly Townsend, Biomedical Engineering
  mttownsend@ucdavis.edu
- Dan Stark, Mechanical & Aeronautical Engineering
  danstark@ucdavis.edu
- John Mola, Ecology, johnmmola@ucdavis.edu
- Caitlyn Peterson, Int’l Agriculture Dev
  capeterson@ucdavis.edu
- Carolyn Parworth, Agriculture & Envir Chem,
  clparworth@ucdavis.edu
- Jenna Rodriguez, Hydrologic Sciences
  jmmartin@ucdavis.edu