

# *A Rough Guide to Awards and External Funding Opportunities*



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**November 2011**

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## **Contents:**

- 1. Why to apply for Awards and External Funding Opportunities**
  - 2. Tips on how to win a Graduate Fellowship**
  - 3. References and Selected Awards and Funding Opportunities**
  - 4. Contact Information and recent Awardees**
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## **1. WHY TO APPLY FOR AWARDS AND EXTERNAL FUNDING OPPORTUNITIES**

- ✓ A great career opportunity for you (and your CV!)
- ✓ Fellowships can pay for your stipend, tuition, travel and research expenses
- ✓ Independence of research
- ✓ Free your time for research (instead of, e.g., TA'ing, summer jobs etc.)

## **2. TIPS ON HOW TO WIN A GRADUATE FELLOWSHIP**

[see: <http://chronicle.com/jobs/news/2006/05/2006051101c/printable.html>]

- ✓ **Make time**  
As with any writing project, applying for a fellowship demands a substantial, polished, well-thought-out product: cramming at the last minute will not produce your best work.
- ✓ **Do your homework**  
Search for the best opportunities out there; ask to your advisor, other faculty members, the graduate student office. Once you've decided which fellowships to apply for, it's time to gather information: which topics are most often supported? and which rarely get the nod? Read all of

the material supplied by the grant agency. Tailoring your proposal to the interests of the agency or foundation is critical. Parse the call for proposals thoroughly, and make sure your proposal deals with all the criteria. Read as many successful proposals as you can find. Hit up previous winners in your department for their proposals, and ask for their advice.

✓ **Narrow your focus**

A few students enter graduate school knowing exactly what they want to study. If you are one of them, build on what you have already done. Many students don't have such focus, although most have some idea of the areas that interest them. Find out which are the hot topics in your areas of interest. Search the literature and ask the faculty, postdocs and senior grad students.

✓ **The Idea**

It can be of your own design (Finding a question that follows logically from an existing line of inquiry is a great way to go, e.g. reading the “Conclusions” of research papers). An equally valid approach is to look to your adviser or another professor for a topic, or merely for guidance on a topic you've identified.

You need to be able to boil down your research goal to a specific question you propose to ask, rather than discussing a general examination of a topic. Explicitly laying out your approach as a test of null and alternate hypotheses will force you to clarify your thinking about the research you plan to pursue, and it will help you explain it unambiguously.

✓ **The style**

Write clearly. Minimize your use of jargon. Format appropriately: underline your hypothesis, italicize key points, put big ideas in boldface type, use bullets – but don't overuse! Use figures and graphics where appropriate: a strong visual element can be well worth the words you trade for it.

✓ **It's about you!**

Don't forget that most graduate-student fellowships are intended to support a person, not an actual product. Your main task is to demonstrate that you can conceptualize and present a strong potential research path: agencies are usually fine if you later switch your research topic. Outline a “doable” research program, relevant to the grant agency's goals. Try to demonstrate a clear knowledge of the subject.

✓ **Drafts!**

Rewriting again and again your proposal will tighten your prose, clarify your ideas, and polish your proposal. It will also help you ferret out typos. Ideally, faculty/researchers in your field will carefully read and improve your drafts. Others who are not as expert (friends, family, and peers) can evaluate your writing and logic: if what you are trying to say is unclear to a fellow student, chances are it will be unclear to the evaluation committee!

✓ **Recommenders**

It's important to offer evidence that your work has the support of your department: Grant agencies want to know that faculty members are invested in your success. It doesn't hurt if your

recommenders are prominent in your field of interest. However, it is more important to have someone in your corner who writes well and wants to be your champion than to choose a big name who is not invested enough in your success to put the effort into writing a glowing appraisal. Give your recommenders copies of your draft proposal well before they write their letters. Better yet, give them a copy of it well before it is due, and solicit their feedback. The more they invest in you, particularly if you might work in their research group, the better off you are.

✓ **Apply!**

The odds may seem against you, but this *is* a worthwhile exercise. Accept that your chances might be slim (everybody's are!), and approach the process as an opportunity to explore an idea that you actually want to pursue, without attachment to the notion of a big payoff. However your fellowship application turns out, you will gain valuable experience and a much deeper understanding of a field of interest to you. You might also get a dissertation topic out of it, or, equally valuable, the knowledge that you don't want to explore that topic. You will also gain a template for future proposals. Some fellowships will even send you copies of reviewer's comments, which will help you recraft your proposal for resubmission.

And, maybe, you will be rewarded by a fellowship...

### **3. “TEN SIMPLE RULES FOR GETTING GRANTS”**

by Philip E. Bourne and Leo M. Chalupa

<http://www.ploscompbiol.org/article/info:doi/10.1371/journal.pcbi.0020012>

#### **Rule 1: Be Novel, but Not Too Novel**

Good science begins with new and fresh ideas. The grant writing process should be a pleasure (no, we are not kidding), for it allows you to articulate those ideas to peers who have to read your grants but not necessarily your papers. Look at grant writing as an opportunity to have an impact. Feel passionate about what you are writing—if you are not passionate about the work, it is probably not a good grant and is unlikely to get funded. “Me-too” science will not get funded when funding levels are low. On the other hand, science that is too speculative will not be supported either, particularly when funds are tight—sad but true.

#### **Rule 2: Include the Appropriate Background and Preliminary Data as Required**

You need to convince reviewers that the work you propose needs to be done and that you are the best person to do it. Different granting programs require differing amounts of preliminary data. For certain programs, it can be said that the work must be essentially done before the grant is awarded, and that the funds are then used for the next phase of the research program. There is some truth in this. So where appropriate, do provide some tantalizing preliminary result, making sure to tell the reviewers what these results imply with respect to the specific aims of your proposal. In formulating the motivation for your proposal, make sure to cite all relevant work—there is nothing worse than not appropriately citing the work of a reviewer! Finally, convince the reviewer that you have the technical and scientific background to perform the work as proposed.

#### **Rule 3: Find the Appropriate Funding Mechanism, Read the Associated Request for Applications Very Carefully, and Respond Specifically to the Request**

Most funding organizations have specific staff to assist in finding funding opportunities, and most funding agencies have components of their Web sites designed to help investigators find the appropriate programs. Remember, programs want to give away money—the jobs of the program's staff depend on it. The program staff can help you identify the best opportunities. If your grant does not fit a particular program, save your time and energy, and apply elsewhere, where there is a better programmatic fit.

#### **Rule 4: Follow the Guidelines for Submission Very Carefully and Comply**

Many funding bodies will immediately triage grants that do not comply with the guidelines—it saves the program time and money. This extends to all the onerous supporting material—budget justification, bibliographies, etc. Get them right and keep them updated for future applications. Even if it goes to review, an inappropriately formulated application may aggravate the reviewers, and will have a negative impact even if the science is sound. Length and format are the most frequent offenders.

#### **Rule 5: Obey the Three Cs—Concise, Clear, and Complete**

The grant does not have to fill the allotted page count. Your goal should be to provide a complete reckoning of what is to be done, as briefly as possible. Do not rely on supplements (which may not be allowed) or on Web sites (review may be actively discouraged since it has the potential to compromise anonymity). Specify the scope up-front and make sure it is realistic with respect to the funds requested. A common temptation for inexperienced grant writers is to propose to do too much. Such applications are usually judged as overly ambitious and consequently poorly rated.

## **Rule 6: Remember, Reviewers Are People, Too**

Typically, reviewers will have a large number of grants to review in a short period. They will easily lose concentration and miss key points of your proposal if these are buried in an overly lengthy or difficult-to-read document. Also, more than likely, not all the reviewers will be experts in your discipline. It is a skill to capture the interest of experts and nonexperts alike. Develop that skill. Unlike a paper, a grant provides more opportunity to apply literary skills. Historical perspectives, human interest, and humor can all be used judiciously in grants to good effect. Use formatting tricks (without disobeying rule 4), for example, underlining, bolding, etc., and restate your key points as appropriate. Each section can start with a summary of the key points.

## **Rule 7: Timing and Internal Review Are Important**

Give yourself the appropriate lead time. We all have different approaches to deadlines. Ideally, you should complete a draft, leave sufficient time to get feedback from colleagues, and then look at the grant again yourself with a fresh eye. Having a spectrum of scientific colleagues who are similar to the likely reviewer pool critique your grant is very valuable.

## **Rule 8: Know Your Grant Administrator at the Institution Funding Your Grant**

At the end of the day, this person is your best advocate. How well you understand each other can make a difference. Many grant administrators have some measure (limited to complete) discretionary control over what they fund. The more they know and understand you and your work, the better your chances of success. Do not rely just on E-mail to get to know the grant administrator. Do not be intimidated. Talk to them on the telephone and at meetings where possible—they want to help.

## **Rule 9: Become a Grant Reviewer Early in Your Career**

Being on review panels will help you write better grants. Understanding why grants get triaged before complete review, how a panel reacts to a grant, what the discretionary role of program officers is, and what the role of oversight councils is provide valuable lessons for writing successful grants of your own and for giving others advice about this process.

## **Rule 10: Accept Rejection and Deal with It Appropriately**

Rejection is inevitable, even for very good grants when funding levels are low. Learn to live with rejection and to respond appropriately. Do not be defensive; address each criticism head on and respond with facts and not emotional arguments. When resubmission is necessary, make it very clear to the reviewer that you understand what was wrong the first time. Indicate precisely how you have fixed the problems. In the resubmitted application, never argue with the validity of the prior review. If the grant was close to being funded the first time around, remind the reviewers of that fact by including the previous score if appropriate, and make it crystal clear why this version is much improved.

## 4. REFERENCES AND OTHER AWARDS AND FUNDING OPPORTUNITIES

### General Websites/Useful resources:

- UCSC Graduate Division [<http://graddiv.ucsc.edu/aid/fellowships.php>]
- GrantsNet [<http://sciencecareers.sciencemag.org/funding>]
- NSF GRFP [<http://www.nsfgradfellows.org/>]
- NASA [<http://university.gsfc.nasa.gov/programs/graduate.jsp>]
- Grants.gov [<http://www.grants.gov/>]
- The National Academies, Fellowships Off. [<http://www7.nationalacademies.org/fellowships/>]

### Selected Funding Opportunities

#### (a) *The NSF Graduate Research Fellowship Program*

- **Description:** “The National Science Foundation aims to ensure the vitality of the human resource base of science, technology, engineering, and mathematics in the United States and to reinforce its diversity by offering approximately 1,100 graduate fellowships in this competition. The Graduate Research Fellowship provides three years of support for graduate study leading to research-based master’s or doctoral degrees and is intended for students who are in the early stages of their graduate study.”

The Graduate Research Fellowship stipend currently is \$30,000 for a 12-month tenure period; The cost of education allowance currently is \$10,500 per tenure year. Fellows are allowed an additional one-time \$1,000 International Research Travel Allowance.

All awards will be for a maximum of three years usable over a five-year period.

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- **Deadline:** For applicants (Physics & Astronomy): November 15, 2011
- **Who can apply:** restricted to citizens, nationals, or permanent resident aliens of the US; in addition: “Individuals are typically eligible to apply during the senior year of college, after graduating from college but prior to entering graduate school, during the first year of graduate school, or prior to completing the first term of the second year of graduate school.”
- **What you need to prepare:** The application is fully electronic, and can be accessed at <http://www.fastlane.nsf.gov/grfp/>. It includes three 2-pages essays on: Personal statement (personal, professional, and educational experiences; don’t forget the “broader impact” requirement!), Previous Research Experience and Proposed Plan of Research.
- **What if you don’t get it:** “The NSF accords Honorable Mention to meritorious applicants who do not receive fellowship awards. This is considered a significant academic achievement

nationwide and provides access to cyber infrastructure resources through the TeraGrid for a period of one year following notification of the Honorable Mention.”

**(b) Department of Energy Computational Science Graduate Fellowship [Krell Fellowship]**

**Info:** \$32,400 stipend, \$1,000/yr research allowance, \$2,500 for computer support

**Requirements:** US citizens, first and second year grad students

**Website:** <http://www.krellinst.org/csgf/index.shtml>

**Deadline:** January 10, 2012

**(c) Department of Energy Stewardship Science Graduate**

**Info:** \$32,400 stipend, \$1,000/yr research allowance, all tuition and fees; Fields: high energy density physics, low-energy nuclear science, properties of materials under extreme conditions, hydrodynamics

**Requirements:** US citizens, first and second year grad students

**Website:** <http://www2.krellinst.org/ssgf/index.shtml>

**Deadline:** January 18 (currently unspecified)

**(d) Harriett G. Jenkins Predoctoral Fellowship Program [NASA]**

**Info:** full-time underrepresented (women, minorities, and persons with disabilities) graduate students in science, technology and education with financial support for their education in NASA-related disciplines. Students are selected for a fellowships that include an annual 10-week, hands-on research experience at the Jet Propulsion Laboratory (JPL) or a NASA Center. Fellowship tenure is three years for doctorate-seeking candidates \$16,000 for the time spent at a NASA facility during the summer via a research mini-grant . There is additional support for tuition (up to \$8500) and travel expenses.

**Requirements:** for (US citizen) women, ethniv minorities, seniors, master’s students

**Website:** <http://university.gsfc.nasa.gov/programs/jpfp.jsp>

**Deadline:** early February 2

**(e) NASA Earth and Space Science Fellowship**

**Info:** fellowship support on research projects of interest to the student and NESSF mentor; 1yr renewable up to 3 years.

**Requirements:** US citizens

**Website:** <http://university.gsfc.nasa.gov/programs/gsrp.jsp>

**Deadline:** mid-February

**(f) National Defense Science and Engineering Graduate (NDSEG) Fellowship**

**Info:** DoD annually supports 8,000 graduate students in fields important to defense needs.

**Requirements:** US citizens

**Website:** <https://www.asee.org/ndseg/>

**Deadline:** early January

**(g) Hertz Fellowships**

**Info:** Option 1 - Five Year Hertz \$31,000/ 9-month personal stipend, Full tuition equivalent, Renewable for up to 5 years; Option 2 - Five-Year Coordinated Hertz Period - Two Years \$36,000/ 9-month personal stipend Full tuition equivalent

**Requirements:** restricted to US citizens

**Website:** <http://www.hertzfoundation.org/>

**Deadline:** 10/31/11

**(h) Ford Foundation Diversity Fellowships**

**Info:** Online application

**Requirements:** US citizens, outstanding academic record

**Website:** <http://www7.nationalacademies.org/fordfellowships/>

**Deadline:** 11/14/11

**(Very partial list of) Local Recipients of Graduate Fellowships you can contact:**

- ✓ Max Wainwright (NSF Fellow)
- ✓ Eddie Santos (NSF Fellow)
- ✓ Jonathan Cornell (NSF Fellow)
- ✓ Tim Linden (NASA NESSF recipient, DoE Fellow)

**(Very partial list of) List of Other Fellowships/Award opportunities:**

AAAS Science & Technology Policy Fellowships

Alexander von Humboldt Fellowships

American Association of University Women

Black Alliance for Educational Options Scholarships

Charlotte W. Newcombe Doctoral Dissertation Fellowships

Fulbright Fellowship programs

Department of Defense National Defense Science and Engineering Graduate Fellowship Program

Easley National Scholarship Program

Gates Millennium Scholars Program

GE and LuLac Scholarship Funds

GEM -- National Consortium in Engineering and Science For Graduate Degrees for Minorities

Heinz Dissertation Award

Hispanic College Fund

Hispanic Scholarship Fund

International Research and Exchanges Board

International Students Scholarships & Aid Help

Josephine de Kármán Fellowships

Madison and Lila Self Graduate Fellowship

Marshall Sherfield Scholarships



Murray Research Center at Radcliffe College  
NASA Bioastronautics and Fundamental Space Biology Postdoctoral Research Program  
Nature Jobs  
National Physical Science Consortium Graduate Fellowships For Minorities and Women in Physics  
NSF Integrative Graduate Education and Research Traineeships Program  
NSF Other Graduate and Postdoctoral Support  
NSF Minority Postdoctoral Research Fellowships  
National Security Education Program  
Northeast Consortium for Faculty Diversity (Visiting Dissertation Fellowships)  
Oak Ridge Institute for Science and Education  
Pew Charitable Trusts Education Division  
Population Council Fellowships  
Presidential Freedom Scholarships  
President's Postdoctoral Fellowship Program  
Project 1000  
Public Policy and International Affairs Fellowship (at AED)  
Rhodes Scholarships at Oxford  
Santa Fe Institute  
Sarnoff Endowment  
Semiconductor Research Corporation  
Social Science Research Council  
Spencer Foundation  
Student Inventors Scholarships  
Student Video Scholarships  
Thurgood Marshall Scholarship Fund  
Truman Foundation  
Union Sponsored Scholarships and Aid  
U.S. Department of Energy High-Performance Computer Science Fellowship  
U.S. Department of Energy National Nuclear Security Administration Stewardship Science Graduate Fellowship  
U.S. Department of Homeland Security Undergraduate Scholarships and Graduate Fellowships <http://www.epa.gov/>  
United States Gold Association Fellowship  
University of Central Florida Nanoscience Technology Center Fellowships  
Venture Scholars  
Whitaker Foundation  
Woodrow Wilson National Fellowship Foundation