



Office of Graduate Fellowships

Graduate Fellowships Opportunities:

National Science Foundation

Introduction

The National Science Foundation (NSF), is an independent U.S. federal government agency founded by Congress in 1950 to promote scientific research and inquiry among U.S. researchers and research institutions. By funding scientific and academic research, NSF seeks to maintain the United States' position at the forefront of global scientific progress and discovery and to support research that contributes to the health, welfare, defense, and prosperity of the nation.

NSF funds research and educational initiatives in the STEM fields (Science, Technology, Engineering, and Mathematics) and Social Sciences. With an annual budget of \$7.5 billion in 2016, NSF is one of the largest sources of funding for academic research in the United States – serving as the primary funding source for nearly a quarter of all federally supported research at U.S. colleges and universities. In some fields, including the social sciences, mathematics, and computer science, NSF is the largest single source of federal funding.

Although most graduate students have heard of NSF, trying to figure out which NSF grant programs are open to graduate students, who qualifies for them, and how to apply can be confusing. This document provides a brief overview of these opportunities.

Getting to Know NSF

First, let's review a few general facts about NSF funding and clear up some common misconceptions:

Who can apply to NSF graduate student opportunities?

- NSF funds research in the social and behavioral sciences as well as STEM fields and “hard sciences.” Some interdisciplinary fields and STEM Education projects are also supported. Students should take the time early in their graduate career to familiarize themselves with NSF funding opportunities for their discipline.
- U.S. citizenship is not a requirement. GRFP and EAPSI opportunities (described below) are open to permanent residents as well as citizens. NSF dissertation grants are open to international students as well.
- Graduate students may apply directly to the NSF awards described below. Many graduate students mistakenly believe that they cannot apply to NSF for individual funding, and that instead their faculty advisor must apply, receive the grant, and then hire them using the grant funds. While NSF does offer some grants that work in this way, they also offer awards directly to graduate student applicants.
- NSF awards are not limited by age, race, ethnicity, gender, or any other identity factor. One of NSF's major goals is to promote diversity in science and scientific outreach and education amongst underserved communities. To this end, members of underrepresented groups (which in some fields may include women) are “encouraged to apply.” However, the deciding factors for NSF awards will be (1) the intellectual merit of the proposal; and (2) the potential of the research for a broader impact both within the scientific community and in society at large.

What does NSF fund?

- NSF funds research in all fields of fundamental science, engineering, and social science EXCEPT the medical and health sciences, which are under the purview of NIH. NSF is most interested in “basic” research that extends the horizons of our scientific knowledge, including “high risk-high payoff” research where outcomes are uncertain but potentially transformative. Though many of the ideas NSF-funded scientists are working on have potential technological or commercial applications, NSF focuses on basic rather than applied science. The emphasis is on increasing *knowledge* rather than on immediate applications.
- NSF does not hire researchers or directly operate its own laboratories or research facilities. Instead, it supports scientists, engineers, and educators directly through their home institutions – usually a university or college. This means that NSF's orientation is toward academic science and discovery – the production of new knowledge and insights into how things work. This also means that it is very important for grantees to demonstrate not only their own merit but also the preparedness of their institution to support and foster their work.
- NSF considers two dimensions of merit when evaluating funding proposals: **intellectual merit** (the potential of the research to advance knowledge and contribute to scientific understanding of phenomena) and **broader impacts** (the potential of the research to benefit society and contribute to the achievement of specific, desired societal outcomes, such as increased scientific literacy and a more informed populace, better science education, technological advances, insights and solutions to problems affecting the nation and the world, and so on.)

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Which NSF Programs Are Open to Graduate Student Applicants?

Three types of NSF grants are offered directly to graduate students, each providing a different type and level of support:

- **NSF Graduate Research Fellowship Program (GRFP)**
- **NSF Doctoral Dissertation Research Grants (DDRIG or DDIG)**
- **NSF East Asia Pacific Summer Institutes (EAPSI)**

Let's look at the basic facts for each of these categories of awards:

(1) NSF GRFP: For New Graduate Students in STEM and Social Science Fields

- Open to ALL NSF-supported fields.
- Open to U.S. citizens and permanent residents studying in the U.S.
- Provides three years of funding, including stipend (\$34,000), tuition, and access to other research and professional development opportunities through NSF.
- This program targets research-oriented Master's or Ph.D. students during the first years of graduate study. Most candidates will have two chances to apply: (1) Concurrent with their first application to graduate school, typically as a college senior or a BA/BS graduate returning for graduate study. If awarded, the student will take the fellowship with them to graduate school. (2) During the first or second year in graduate school. Applicants who are already in graduate school may apply only once – during *either* the first or second year, but not both. You must be working on your first graduate degree; candidates who have already completed a Master's degree are usually ineligible – though exceptions exist for unusual circumstances.
- Application deadline falls annually in late October / early November.
- This application is submitted directly by the student & does not require the participation of OSP.
- Ready to learn more? Here is the NSF GRFP web site: <http://www.nsfgrfp.org/>

(2) NSF Doctoral Dissertation Grants

Some disciplinary / subject-area divisions within NSF offer doctoral dissertation grants. These grants are used by advanced doctoral students to support direct costs of dissertation research. For example, the funds can be used to pay for research-related travel or fieldwork (domestic or international), compensation of research subjects, software, datasets, and/or research materials. Funds cannot be used to pay for tuition or for the applicant's day-to-day living expenses outside of research-related travel. The applicant submits a budget stating the amount they are requesting. Awards depend on the budget requested by the student, but are typically under \$20,000.

- Open to U.S. citizens, permanent residents, and international students.
- Applicant must be advanced to doctoral candidacy with a formally approved dissertation topic at the time of application.
- Deadlines vary by field. Some fields run two funding cycles per year.
- Funding levels vary by field, but in most cases awards are under \$20,000.
- This application must be submitted a week in advance of NSF's deadline via GMU's Office of Sponsored Programs. The dissertation advisor's name will be listed as PI.
- Ready to learn more? Here is where you can look on NSF's web site to see which programs offer doctoral dissertation research grants: http://www.nsf.gov/funding/education.jsp?fund_type=2

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(3) NSF East Asia and Pacific Summer Institutes (EAPSI)

- Open to ALL NSF-supported fields.
- Open to Master's and Ph.D. level researchers who are U.S. citizens or permanent residents.
- This grant supports collaborative summer research in China, Japan, Taiwan, Korea, Australia, New Zealand, and Singapore. The applicant must propose an independent program of research to be undertaken in collaboration / cooperation with an institution in the host country, who must agree to support the fellow during their time on-site. Applicants may submit only one application (to one host country) per cycle.
- The award consists of a \$5,000 summer stipend and round trip airfare to the host country, plus funding to participate in a pre-departure orientation program in Washington D.C. EAPSI partner agencies in the host country pay in-country living expenses during the period of summer research.
- Application is due annually in November.
- This application is submitted to NSF directly by the student and does not require the participation of OSP.
- Ready to learn more? Here is the NSF EAPSI program site:
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5284&org=NSF

How the Office of Graduate Fellowships Can Help

The Office of Graduate Fellowships provides support to Mason graduate students applying to all NSF awards. (Support is also available for undergraduate seniors/recent alumni applying to the GRFP.) Application processes for NSF awards can be involved, and require scrupulous attention to detail on a variety of fronts, from eligibility requirements to the formatting of the application. Prospective applicants are urged to work closely with their academic mentors and make use of the support services of the Office of Graduate Fellowships to ensure the greatest chances of a successful submission. Support services include:

- Consultation about which grant programs are the best fit for you.
- Navigating and troubleshooting the application.
- Feedback on application statements / proposals / essays.
- Budget assistance.
- Assistance in coordinating with OSP (if necessary.)
- General fellowship advising.