National Science Foundation
Graduate Research Fellowship
Information Session

In Your Packets:
- Rack Card
- Program
- Finding Fellowships
- Helpful Resources for NSF-GRF Applicants
- PowerPoint Slides
- NSF-GRF Program Solicitation

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Overview of Presentation
- The National Science Foundation
- Purpose of the Graduate Research Fellowship
- Benefits and Eligibility
- Review Criteria
- Application Format
- Application Review Process
- Award Determination and Announcement

William Hahn
Georgetown University
The National Science Foundation

Federal agency created in 1950 to "promote the progress of science; to advance the national health, prosperity, and welfare; to secure national defense"

Supports research and education in Science, Technology, Engineering and Math (STEM) disciplines - all fields but clinical biomedical areas (covered by NIH)

NSF annually awards $11,000+ research grants, a proposed $1.5 billion new graduate fellowships (student as awardees), graduate training, and 11-50,000 research assistantships (via grants to Principal Investigators)

NSF Graduate Research Fellowship

Select, recognize, and financially support, early in their careers, individuals with the demonstrated potential to be high achieving scientists and engineers

Broaden participation in science & engineering of underrepresented groups

GRFP is a critical program in the NSF's overall strategy to develop the globally engaged workforce necessary to ensure the Nation's leadership in advancing science and engineering research and innovation

Three years of support provided for graduate study that leads to a research-based master's or doctoral degree in STEM or STEM education

NSF GRF Benefits (FY18 Solicitation)

READ PROGRAM SOLICITATION CAREFULLY!

- Three years of support over a five year period
- Annual stipend of $34,000 - cost of living to student
- Fellow support of $12,000 - cost of education allowance paid to institution - remainder covered by university
- Cyber infrastructure access via XSEDE

GRF Eligibility Criteria

Academic level

- Seekers, must be enrolled in graduate study
- First-year, Second-year grad students (no more than 12 months of graduate postbaccalaureate or professional degree study as of Aug 1 prior to submission) except to maintain credentials, post-Baccalaureate programs must count as grad programs
- If 12 months graduate study, only under extenuating circumstances including: - in receipt of military or agency operations centers if unsure - only one submission as a graduate student

Citizenship

- U.S. Citizen, National or Permanent Resident

Discipline

- Research-based Masters or PhD in NSF-supported Field of study (e.g. diversity in various fields, especially BIO/ED)

Review Criteria

Potential to advance knowledge and understanding within or across different fields (Intellectual Merit) and benefit society or advance desired societal outcomes (Broader Impacts)

Creative, original, or potentially transformative concepts

Plan is well-reasoned, well-organized, and based on a sound rationale

Plan incorporates a mechanism to assess success

Applicant is qualified to conduct the proposed activities

Adequate resources available for the proposed activities

Intellectual Merit Criterion

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the investigator (individual or team) to conduct the proposed activity? Is there sufficient access to resources?

- Academic performance & background (grades, course)
- Awards/ honors
- Communication skills
- Research experience
- International experience
- Interdisciplinarity
- Publications/presentations
- Research plan
- Choice of institution
- References

2/9/2018
Broader Impacts Criterion

"Achievement of societal relevant outcomes"
Accomplished through the research itself, activities directly related to specific research projects or that are complementary to the project.
Full participation of women, persons with disabilities, and minorities underrepresented in STEM fields
STEM education and educator development at any level - increased public scientific literacy & development of STEM workforce
Partnerships between academia, industry, and others
Improved national security
Increased economic competitiveness of the US
Enhanced infrastructure for research and education

Broader Impacts Criterion

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated locally to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

Application Materials - GRFP FastLane

Personal, Relevant Background, and Future Goals
Statement (3 pages incl. figs)
Graduate Research Plan Statement (2 pages incl. figs)
Three Letters of Reference (reviewed with two)
Transcripts (uploaded into FastLane)
(GRS Scores NOT ACCEPTED)
NSF Proposal and Award Policies and Procedures Guide

Personal Statement, Relevant Background, and Future Goals

Three pages—provide the narrative of your story
Your motivation, passion, & potential to contribute to scientific research, education, and innovation
Examples of leadership skills, creativity, perspective & unique characteristics (avoid jargon)
How the GRFP will assist you with career goals
Opportunity for evaluators to see you as a person and understand what "makes you tick"
Chance to respond to broader impact merit criterion - How will you contribute to science and society?

Relevant Background

Emphasize experience relevant to your application but include all examples of "research", even if not in field
List experience with hypothesis formulation and testing, experimental design, data management and analysis, interpretation of results, dissemination of findings
Highlight what you did (independence) but discuss collaborators (teamwork) and leadership
A global perspective is important - mention international experience, collaborators, research opportunities, etc.
List any publications, posters, presentations, prizes, awards, grants, special recognition, etc.

Graduate Research Statement

Introduce general theorems of study and importance - a few references will demonstrate understanding of field
Panelists are experts in general field, may not be experts in your specific research specialty - avoid jargon
Describe your motivation to go into that area and discuss plans to prepare for that field of study - mention school(s), degree program, potential advisor, etc.
Spell out specific details of your research and study plan but avoid jargon, specific experimental details, etc.
Comment on the broader impacts of your activities
Let the reader know of your career plans, even if tentative
Demonstrate flexibility ("plan B")
Letters of Reference

Three required - should you know you as scientist and person
Will compare you with NSF Graduate Research Fellows & other successful students they have known based on: potential to make unique contributions to discipline, ability to conduct original research, leadership potential, productive member of scientific community, and originality of plan of study
Will state their role in assisting with the application
Provide referees sufficient time; share application materials with them; ask for advice
Track letters on FastLane - remind referees about deadline

Panelist Review of Applications

Applications are sent to panelists in December allowing several weeks for review
Applications are scored numerically for overall merit by three panelists.
Applications are also ranked by each panelist using standard NSF categorical ranks (poor/fair/average/very good/excellent)
Panelists comment on intellectual merit and broader impacts criteria highlighting strengths and areas for improvement - comments are provided to applicants

Panel Review of Applications

Program office normalizes the numerical scores using a z-score approach and ranks applications by an average of these scores
Virtual panel sessions held in Jan & Feb to permit discussion and recommendations to NSF
Applications with inconsistent z-scores are discussed and/or re-evaluated
Final ranking is primary determinant of award choice - NSF uses rank and other factors to determine awardees and honorable mention

Award Announcement

Usually in late March or early April
Awarded and recipients of Honorable Mention listed on the program FastLane
Final numbers dependent upon funding made available to the program office
Success rates across disciplines not always equal
"An individual may not accept the Graduate Research Fellowship if the individual accepts or is supported by another federal graduate fellowship."

Contact Information

NSF GRF description, solicitation, and links:
http://www.nsf.gov/grfp/
Online application, user guides, & official announcements:
http://www.fastlane.nsf.gov/grfp/
Operations Center, Outreach, Helpdesk: http://www.nsfgrfp.org
855-NSF-GRFP (673-473)  
help@nsfgrfp.org
Program Evaluation

The NSF-GRF Application
-Tips on Writing the Statements-

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Graduate College
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Personal, Relevant Background, & Future Goals Statement

“Describe your personal, educational, and/or professional experiences that motivate your decision 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 your activity to advancing knowledge in STEM fields as well as the potential for broader societal impact.”

Experiences That Have Motivated You

- Start the essay with at least one paragraph about your life.
  - This fellowship is about YOU.

- Showcase your uniqueness.

- Present your past as though it all makes perfect sense.
  - Convergence

Preparation

Give a complete picture of each activity.
- Basic facts.
- Goal/approach.
- Your role.
- Your experience in that role.
- Concrete results:
  - IM and/or BR
  - Show: don’t tell.

Show; don’t tell.

Tell: I am passionate about sharing my knowledge with young students. I believe that scientists have an obligation to train the next generation, and I look forward to making teaching and mentoring a central part of my graduate studies and my career.

Show: For two semesters I volunteered at Leaf Elementary School in Urbana as part of Engineering Outreach every Monday morning. I led a class of 3rd grade students to conduct scientific projects that I designed to demonstrate some known physical phenomena. Each session began with a brief discussion on the subject of the day, followed by some hands-on activities together with the students. Some past projects included making Silly Putty (polymers), writing a visible LED circuit, and making thermometers using a sealed cup and a straw (thermal expansion). My students’ many questions have been inspiring; they’ve also taught me how to gauge my explanations to match their level of understanding.

Emphasize

- Leadership
- Teamwork
- Promoting diversity
- International engagement
- Results
- Dissemination

Bottom line: Show that you’re on the road to becoming a publicly engaged scholar.
Graduate Research Plan Statement

"Present an original topic that you would like to pursue in graduate school. Describe the research idea, your general approach, as well as any unique resources that may be needed for accomplishing the research goal (i.e., access to national facilities or collections, collaborations, overseas work, etc.). You may choose to include important literature citations. Address the potential of the research to advance knowledge and understanding within science as well as the potential for broader impacts on society."

1. Original topic:
   - research idea
   - approaches
   - resources

2. Potential → IM & BI

Research Idea/Approach/Resources

What? – question/hypothesis

Why? – background/significance

How? - methods
**Structure is Good**

**Sample Outlines**

I. Problem Statement  
II. Hypothesis  
III. Methods  
IV. Anticipated Results  
V. Intellectual Merit  
VI. Broader Impacts  
VII. Citations

I. Introduction  
II. Literature Review  
III. Objectives  
IV. Research Plan  
V. Intellectual Merit  
VI. Broader Impacts  
VII. Citations

**Headings for IM & BI**

“Therefore, applicants must include separate statements on Intellectual Merit and Broader Impacts in their written statements in order to provide reviewers with the information necessary to evaluate the application with respect to both criteria... Applicants include headings for Intellectual Merit and Broader Impacts in their statements.”

**Style**

- 1st person, active voice.
- Simple, direct sentences.
- Short paragraphs, with short descriptive headings.
- Minimal jargon.
- Write respectfully, and with confidence.

**Citations**

Use sparingly

Highly abbreviated format is OK:

2. Gramimb & Rate, 1986.  
3. Leander et al. 2009 Compass in How To.  
5. West & Holcomb 2009.  
Letters of Recommendation

Extremely important
Help your recommenders
Time
Materials
Discussion

Get Feedback

Advisor

Departmental review panels
Talk with your Director of Graduate Studies

Office of External Fellowships: one-on-one review
Protocol:
Complete drafts (both essays)
Already reviewed by advisor
At least 4 weeks before NSF deadline

NSF Graduate Research Fellows

TeKisha Rice
Human Development & Family Studies

Sarah Bonson
Chemistry

Q&A