NSF Graduate Research Fellowship (GRFP)

Emily Lemmon
Department of Biological Science

What is the GRFP?

Goals:

1. Recognize & support early-career scientists with high potential for significant achievement.

2. Broaden participation in STEM fields.
What is the GRFP?

In a 5-yr period
• 3 years of full graduate support
  • $138,000 ($34,000/yr stipend plus tuition+fees)
  • Career-life balance support possible
• 2100 awards; ~12,000 applicants 2022, 18% funding rate

Eligibility
• US Citizen, national, or permanent resident
• Have not completed any grad degree by Aug 1 of the submission year unless (1) joint BS/MS program and no additional grad work; (2) At least 2 years off.
• NO MD/PhD, JD/PhD, Management, Social work;
  NO support for clinical research, health services
When should I apply?

Senior undergraduates
Post-baccalaureates who have not started grad school
Must be prepared to enroll the fall after you receive the award
APPLY!

First year graduate students
Apply only if highly competitive against other first AND second years

Fall of your second year grad school
Last shot - APPLY!

Highly competitive = demonstrates high potential to make significant achievements in STEM

- Past achievements predict future success
- GPA, awards, research experience, letters, great essays, clear past broader impacts and plans for future broader impacts of your work.
- Publications, presentations definitely help

How to apply

Fastlane: https://www.fastlane.nsf.gov/grfp/Login.do
How to register
Accessing sections of the application
Personal information, education, work experience

“The easy stuff”
Add details to make your achievements clear

Proposed field of study
Choose carefully, and consult your advisors!

Transcripts
Grades count; GREs do not

3 letters of recommendation (VERY IMPORTANT!)

Personal, relevant background & future goals (3 pp.)
Tell your story; concrete details discuss individual research experienced; craft a coherent and integrated whole, not a list

Graduate research plan statement (2 pp.)
Demonstrate ability to plan and conduct research; why is it original, important, innovative? Future steps? Alternate interpretations?
2020 GRFP deadlines

All applications are due at 5:00 p.m. local time, based on applicant’s mailing address.

October 17, 2022
Life Sciences

October 18, 2022
Computer and Information Science and Engineering
Materials Research
Psychology
Social Sciences
STEM Education and Learning

October 20, 2022
Engineering

October 21, 2022
Chemistry
Geosciences
Mathematical Sciences
Physics and Astronomy

October 28, 2022
Reference letter deadline

Selection Criteria

What is the potential of the proposed activity to:

Advance knowledge and understanding within its own field or across different fields (**Intellectual Merit**)?

Benefit society or advance desired societal outcomes (**Broader Impacts**)?

Rating: Excellent; Very Good; Good; Fair; Poor

**MUST** be strong under BOTH criteria;
*Labelled Intellectual Merit and Broader Impact statements must be in each essay*
Intellectual Merit

Definition: The potential to advance knowledge
Considers: Creativity, originality

Personal Statement: Evidence of prior achievement, personality, recognition
convince reviewers that you have intellectual merit

Research Statement: Importance and relevance of the proposed work
convince reviewers that your proposed research outcomes have intellectual merit

Broader Impacts

Definition: Potential to benefit society or advance desired societal outcomes

Personal Statement: Evidence of prior engagement or interest relevant to your proposed plan
show reviewers that you have experiences and qualifications that contribute to your ability to carry out your plan, and sincere commitment to its outcome

Research Statement: Detail your Broader Impacts plan in a way that naturally flows from some aspect of the research plan
convince reviewers that you can and will carry out your BI plan, and that it will effectively accomplish something that meets the description of at least one of the major 5 types of broader impacts.
Fatal Flaws (Advice from a Panelist)

Panelists advised to weight Intellectual Merit and Broader Impacts equally

- Weak *history* of Broader Impacts (in Personal Statement)
- Weak *future* plan for Broader Impacts related to proposed research (in Research Statement)
- Too vague of Broader Impacts—need both specific history (not laundry list, but a story) and specific future plan
- Too mundane of Broader Impacts
- Too much overly personal information or too negative in Personal Statement
- Weak Intellectual Merit in Research Statement

---

Broader Impacts Ideas

*Finding Fluorescence*

Illuminate the unseen world around you

- **ABCD**
- **GET STARTED**
- **VIEW MAP**
- **UPLOAD DATA**

Help scientists make new discoveries in your own backyard. All you need is a black light and a flashlight. Perfect for a family activity or to add a little extra exploration to your camping trip.

Many organisms are biofluorescent; they are able to absorb light and re-emit it in a longer wavelength. New discoveries of biofluorescent organisms are made everyday. We need your help to expand our knowledge of what organisms fluoresce.

Finding Fluorescence is a resource to teach about biofluorescence, get people interested in and interested about making discoveries, and to document the presence or absence of biofluorescence in the vast number of species across the species, or biotic, areas, accessible to scientists of all ages.
Broader Impacts: Science Education

Broader Impacts: K-12 Activities

Lab Activities for Classrooms

Biofluorescence provides a unique opportunity to teach and learn about the three main topics of science (biology, chemistry, and physics) in one lesson. Find downloadable worksheets linked below. These can be used in the classroom or at home. Check back often as new modules are continually added and being expanded upon to provide resources for students of all ages.

Use the language menu at the top of the page to visit the Spanish version of the site and download the worksheets below in Spanish.

Classroom Resources

MODULES:
- Biology of Biofluorescence Worksheet
- Chemistry of Biofluorescence Worksheet
- Physics of Biofluorescence Worksheet
- Finding Fluorescence Lab
Broader Impacts: Citizen Science

Bonus Material
To assess Intellectual Merit and Broader Impacts, Panelists are instructed to consider:

To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?

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?

How well qualified is the individual, team, or organization to conduct the proposed activities?

Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

---

**Broader Impacts**

Advance discovery and understanding while promoting teaching, training, and learning, for example, by training graduate students, mentoring postdoctoral researchers and junior faculty, involving undergraduates in research experiences, and participating in the recruitment, training, and professional development of K-12 mathematics and science teachers.

Broden participation of under-represented groups, for example, by establishing collaborations with students and faculty from institutions and organizations serving women, minorities, and other groups under-represented in the mathematical sciences.

Enhance infrastructure for research and education, for example, by establishing collaborations with researchers in industry and government laboratories, developing partnerships with international academic institutions and organizations, and building networks of U.S. colleges and universities.

Broaden dissemination to enhance scientific and technological understanding, for example, by presenting results of research and education projects in formats useful to students, scientists and engineers, members of Congress, teachers, and the general public.

Benefits to society may occur, for example, when results of research and education projects are applied to other fields of science and technology to create startup companies, to improve commercial technology, to inform public policy, and to enhance national security.
Encouragement

Awardees are not composed of only Ivy League superstars!

Diversity is an asset: students from rural areas, underrepresented groups, disabled, economically-disadvantaged, first generation college or graduate student, financial challenges

Talk about these things in your personal statement!

Applicants who have overcome major challenges and persevered are likely to succeed—write about your experience