

National Science Foundation Graduate Research Fellowship Program



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Info: <http://www.nsf.gov/> (search for GRFP)
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=6201&org=HRD
Application: <https://www.fastlane.nsf.gov/grfp/>

What are NSF's Goals?

- The National Science Foundation (NSF) is an independent federal agency created by Congress in 1950 “**to promote the progress of science; to advance the national health, prosperity, and welfare; ...**”
- NSF is the only federal agency whose mission includes **support for all fields of fundamental science and engineering**, except for medical sciences. They are tasked with keeping the United States at the **leading edge of discovery** in areas from astronomy to geology to zoology.
- NSF's task of identifying and funding work at the frontiers of science and engineering is not a “top-down” process. NSF operates from the “bottom up,” keeping close track of research around the United States and the world, maintaining constant contact with the research community to identify ever-moving horizons of inquiry, monitoring which areas are most likely to result in spectacular progress and **choosing the most promising people to conduct the research.**

Advice for writing any proposal

- Find out what the goals are for the group giving out the money
- Decide whether your goals align with the funder's goals
- If they do, write a proposal that persuades the funders that, if you are given the money, you will help them meet their goals

Why should you apply?

- Clarify your educational goals
- Stipend (\$30,000 per year) and tuition/fee payment (\$10,500 per year) for 3 years
- Research independence
- Prestige
- Career enhancement
- **You can help NSF meet its goals**

Who is eligible?

- US Citizens or Nationals[†] or permanent residents

[†] The term “national” designates a native resident of a commonwealth or territory of the United States, such as American Samoa, Guam, Puerto Rico, U.S. Virgin Islands, or the Northern Mariana Islands.

Who is eligible?

- Students in early stages of a PhD
 - Seniors
 - Graduate students who have completed no more than 12 months of full-time graduate study or its equivalent by August 31st prior to the program deadline
 - Applicants may be eligible based on extenuating circumstances, such as a significant change of field (including change from a professional to a research-oriented graduate program), interruption in graduate study for financial reasons, or career interruption due to family or medical reasons. The interruption must be for a period of more than two years prior to November 2010

Who is eligible?

- You can apply at 3 times during early stage graduate study:
 - senior year of college
 - before or during 1st year of graduate school,
 - beginning of 2nd year of graduate school
- You can apply more than once
- Each application is independent; i.e., none of the reviewers know if you have applied previously and the panel of reviewers changes each year

Who is eligible?

- Students in fields funded by NSF
 - Biology
 - Computer and Information Sciences
 - Engineering
 - Geosciences
 - Math
 - Physical Sciences
 - Science Statistics
 - Social, Behavioral Sciences
 - STEM[†] Education and Learning

† Science, Technology, Engineering and Math

Logistics

- You must use Fastlane, NSF's on-line document submission system
- Don't wait until the last minute; Fastlane can become clogged and you won't get your application in
- As soon as you have a good version for a section, upload it to Fastlane. It's better to have a not-quite-perfect essay than no essay
- Follow ALL instructions for formatting, page length, deadlines. Deadlines vary by program
- If you don't comply, your application will be returned. NSF doesn't make exceptions. They have over 12,000 applications to deal with

Rules

1. Start Now

- There is no rule that says you must wait until the week before a proposal is due to begin working on it

2. Follow all instructions exactly

- If something is ambiguous, ask. There is an extensive FAQ on the NSF GRFP web site. Check the FAQ. If you don't find the answer in the FAQ, ask the contact person named on the NSF web site

Rules

3. Provide all information requested and answer all questions asked
 - Create a list of the information requested to make certain you cover everything
4. Make a timeline
 - Adapt the checklist from the handout for your circumstances

Rules

5. Check the FAQ

- Email addresses and phone numbers are included in the RFP. Only write/call if you have read EVERY question in the RFP and the answer to your question isn't there

Miscellaneous facts

- You have to let NSF know what you are doing each year
- You have 5 years to use 3 years of funding
- You can put the fellowship on reserve twice, but you have to be enrolled as a student when your fellowship is on reserve.

What do you need to write a competitive NSF GRFP application?

- A great research idea
- Three well-thought-out, well-expressed essays
- A reflective, pro-active approach
- A research mentor to critique your research plan
- A good reader to critique your application *in toto*

Research mentor

- You need someone in your field to coach you on your research proposal. You need someone who is knowledgeable in your field who knows the values and styles of the field.

Reader

- You need someone who is a good reader; that is, someone who can give you feedback, not on the mechanical details of your writing, but on how your application conveys the argument that you will fulfill NSF's goal of funding the students who have the greatest potential to “promote the progress of science; to advance the national health, prosperity”

Where do great research ideas come from?

- Your own research and thinking
 - Your advisors and professors
 - Journals in your field
 - Other graduate students and colleagues
-
- However, the research question has to be your question.

Well-Expressed Essays

- Think.
- Reflect.
- Allow plenty of time
- Take time between revisions to reflect
- Get feedback from your advisor and your reader(s)
- *Know the writing style in your field*

Evaluation Process

- Applications are grouped into research areas
- A panel of experts from academia, industry and government reviews the applications in a particular area
- Applications from seniors are evaluated separately from applications from graduate students
- Each panel makes funding recommendations to NSF

Application Evaluation Criteria

- Intellectual Merit
- Broader Impacts

You must address these criteria in your essays. Your recommenders must also address these criteria.

Intellectual Merit

- Demonstrated intellectual ability
- Ability to:
 - Plan and conduct research
 - Work as a member of a team and work independently
 - Interpret & communicate research findings
- Strength of the academic record, proposed plan of research, description of previous research experience, references, and appropriateness of the choice of institution

Broader Impacts

Contributions that:

- Integrate research & education at all levels, infuse learning with excitement of discovery, assure that findings & methods are communicated to a large audience
- Encourage diversity
- Enhance scientific & technical understanding
- Benefit society

Broader Impacts

Note 1: Your research and your broader impact have to be connected.

Note 2: You don't have to meet every aspect of Broader Impact. Making a contribution in one of these aspects is sufficient.

Note 3: All the proposals in your panel will be on the same topic, so the research topic *per se* can't be your broader impact. The question is what are *you* going to *do* while you are a graduate student to help increase the impact of STEM research?

How will you address
Intellectual Merit
and
Broader Impacts
in your Application?

Essays and Recommendations

- Personal, professional or educational experiences that contribute to your desire to pursue study in STEM (2 page)
- Previous research experience (2 pages)
- Proposed plan of research (2 pages)
- 3 letters of recommendation

Writing the Application

- Be truthful.
- Be complete.
- Reviewers must be convinced that 1) your proposed research is outstanding and 2) you can do it.
- Be certain you address the Intellectual Merit and Broader Impacts criteria
- All of the parts of your application should fit together and reinforce each other. Don't waste space repeating information.

Suggestions

- Find a good reader (or two) before you start to write. Be sure they understand the goals of the NSF GRFP
- Talk to the people who will be writing letters for you before you start to write
- Ask for lots of advice (people are flattered when asked for advice). Only take the advice that fits you

Writing the essays

- Organize your narrative
 - Make a list of all the information that makes you a good candidate for the NSF GRFP
 - List all your research and project experiences
 - List all your extra-curricular activities, particularly those involving STEM
 - Make a rough draft of the argument of your application
 - Allocate each idea on your list to an element of your application; that is to one of the essays or to one of the letters of recommendation

Grammar counts!

- ✓ No misspellings
- ✓ Proper sentences
- ✓ Proper grammar
- ✓ Correct punctuation

Avoid phrases like: It is obvious. It is apparent. As previously stated.

Take out every “very,” “pretty,” “actually,” in your narrative.

Avoid technical jargon when possible

Does what you have written make sense? Read it aloud. Ask others to read it. Do they understand it? Do they enjoy reading it?

Write in the active voice. Whether you use 1st or 3rd person depends on your field

Your writing style counts

Personal Statement

- What motivates you to pursue a PhD?
- Provide concrete evidence, not general statements
- Chronological order is easiest to write
- Describe experiences and link them to your desire to do research
- Talk about your intellectual and career goals
- Don't repeat information given in other sections

Prior Research Experience

- Describe any previous research activities
 - Explain our specific role in the research; did you work independently or as part of a team
 - Discuss what you learned from your research (how to plan & conduct, work independently or as part of a team, learn interpret & communicate results – elaborate on this)
 - Separate undergraduate from graduate research
 - If you haven't done research, describe activities that prepared you to undertake research, e.g. projects and internships
 - List any publications or presentations

Proposed Research

- Present a decidable hypothesis or answerable question
- Give the big picture – why is this question important
- Cite what is known in the field and how your work will expand what is known
- Be sure it reflects your own thinking & work
- Demonstrate your understanding of research principles

Proposed Research

- Use references to support your proposal.
- Don't promise something you cannot deliver.
- It is OK to use the same words as are used in the instructions.
- Make sure your proposal is internally consistent – no contradictions and no ambiguities.
- Be clear, concise, original

Proposed Research

- Think of your proposed research as a proof-of-concept that you can find a good question and design a feasible plan to answer that question.
- You are writing a proposal, not a contract.
- The reviewers are funding *you* (the way you think, what you've achieved, your motivation, your preparation, your potential, ...)

Letters of Recommendation

- Provide the faculty member with a draft reminding him/her of what you have done that provides evidence of your qualifications for each evaluation criterion
- The letters add at least 6 pages to your application! You can suggest topics to the recommender that you couldn't fit in your application
- You can ask recommenders to explain events that affected your performance. When you say it, it's an excuse; when a recommender says it, it's an explanation.
- Once a faculty member has written a GRFP letter for you, you can ask him/her to write you a letter for anything

What's after the NSF GRFP?

- Once you have done the NSF GRFP most other applications are subsets of it
 - NASA Graduate Student Researchers Program (GSRP)
 - <http://fellowships.hq.nasa.gov/gsrp/>
 - DOD: National Defense Science and Engineering Graduate Fellowships
 - <http://www.asee.org/ndseg>
 - NSEP
 - <http://www.iie.org/programs/nsep>

Other sources of information

- CMU: Fellowships and Scholarships Office
- Pitt: Honors College, Director of National Scholarship and International Programs
- <http://www.nsfgrfp.org>
- <http://www.finaid.org>

Questions?