

National Science Foundation Graduate Research Fellowship Program



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Info: <http://www.nsf.gov/> (search for GRFP)
Application: <https://www.fastlane.nsf.gov/grfp/>

The information presented in this presentation represents the presenter's opinion and is not an official NSF position

Major Change in Eligibility for FY17

On March 7 2016, NSF issued a Dear Colleague Letter alerting the community to a change in NSF GRF eligibility for FY17:

- Any students who has not yet started graduate school, and who intends to start graduate school the following year, may apply. (No change)
- Any students who has started graduate school may only apply ONCE to the GRF, either in their first or beginning of their second year of graduate study. (Big change! However, this rule is not retroactive for 2nd year graduate students who applied last year)

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.

How does NSF decide what to fund?

- 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 (\$34,000 per year) and tuition/fee payment (\$12,000 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 (2)?

- Students in early stages of a graduate program
 - Seniors
 - Students in joint BS/MS programs; however, completion of a graduate program outside the joint program disqualify the applicant.
 - Graduate students who have completed no more than 24 semester hours or 36 quarter hours of full-time graduate study or its equivalent by August 1st prior to the program deadline; However, students who have started their graduate program may only apply ONCE.
 - Students with extenuating circumstances (see the solicitation for details)

Who is eligible (3)?

- 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

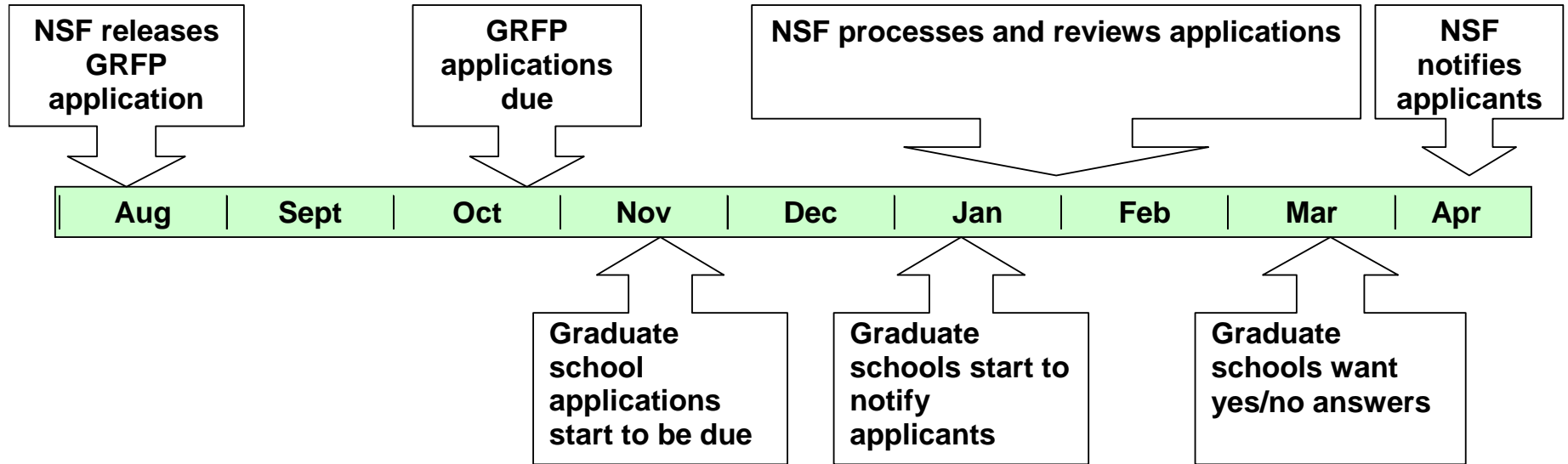
Who is eligible (4)?

- Students are eligible at 3 different points during their early stages of graduate study:
 - senior year of college
 - either
 - before or during 1st year of graduate school, or
 - beginning of 2nd year of graduate school
- You can apply at most twice
- Each application is independent; i.e., none of the reviewers know if you have applied previously and the panel of reviewers changes each year
- You can submit only 1 application per cycle

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 field
- If you don't comply, your application will be returned. NSF doesn't make exceptions. They have over 17,000 applications to deal with
- NSF plans to award 2,000 fellowships in FY 17

GRFP Timeline



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 FAQ and the answer to your question isn't there

Your obligations

- You must be enrolled at a U.S. institution of higher learning
 - for an advanced degree (masters or doctorate)
 - in a research-based program
 - in a STEM field supported by NSF
 - by the following Fall
- You have to let NSF know what you are doing each year
- You have 5 years to spend 3 years of support
- You cannot concurrently hold two Federal fellowships

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

- A research idea and plan of execution
- **Two** well-thought-out, well-expressed essays
 - Personal statement (3 pages)
 - Research statement (2 pages)
- 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”

Well-Expressed Essays

- Think
- Reflect
- Allow plenty of time
- Take time between revisions to reflect
- Get feedback from your advisor and your reader(s)
- Keep the evaluation criteria in mind as you write. Everything you include in your essay should help convince the reviewer that you meet the evaluation criteria
- *Know the writing style in your field*

NSF Evaluation Criteria

- Intellectual Merit
- Broader Impacts

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

GRF Application Review Criteria

- Reviewers are asked to consider
 - what the applicants want to do,
 - why they want to do it,
 - how they plan to do it,
 - how they will know if they succeed, and
 - what benefits could accrue if the project is successful.
- These issues apply both to the technical aspects of the research plan and to the way in which it may make broader contributions.

Intellectual Merit

The potential of the applicant to advance knowledge based on a holistic analysis of the complete application, including the

- personal statement,
- relevant background,
- future goals,
- graduate research statement,
- strength of the academic record,
- description of previous research experience,
- publication/presentations, and references

Broader Impacts

The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

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 (3 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 plan 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 GRF
 - 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 prompt

- Please outline your educational and professional development plans and career goals. How do you envision graduate school preparing you for a career that allows you to contribute to expanding scientific understanding as well as broadly benefit society?
- NSF fellows are expected to become globally engaged knowledge experts and leaders

Personal Statement

- What motivates you to pursue a research-based graduate degree?
- Provide concrete evidence, not general statements
- Write in chronological order
- Describe experiences and link them to your desire and ability to do research (see next slide)
- List any publications or presentations
- Talk about your intellectual and career goals

Personal Statement (2)

- For previous research/project activities
 - What got you involved?
 - What was your role in the project?
 - Did you work independently or as part of a team?
 - What did you do?
 - What did you learn (e.g. how to plan & conduct research, how interpret & communicate results, technical skills, future interests, ...)?

Research Statement Prompt

- Present an original research topic that you would like to pursue in graduate school. Describe the research plan, your general approach, as well as any unique resources that may be needed to accomplish your research goal ... Address the potential of the research to advance knowledge and understanding within science as well as potential for broader impacts on society.

Research Statement

- Present a decidable hypothesis or answerable question
- Give the big picture – why is this question important?
- Present a feasible plan that will generate knowledge that addresses the hypothesis/question
- Cite what is known in the field and how your work will expand what is known

Research Statement (2)

- Your research statement should
 - reflect your own thinking & work
 - demonstrate your understanding of research principles
 - be internally consistent – no contradictions and no ambiguities.
 - be clear and concise
 - address broader impacts

Research Statement (3)

- 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, ...)

Where do 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.

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 GRF letter for you, you can ask him/her to write you a letter for anything

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

What's after the NSF GRF?

- Once you have written an application for the NSF GRFP, you have a good start on writing for any of the following:
 - NASA Graduate Student Researchers Program (GSRP)
 - <http://fellowships.hq.nasa.gov/gsrp/>
 - EPA fellowships
 - <http://www.epa.gov/ncer/fellow/>
 - DOD: National Defense Science and Engineering Graduate Fellowships
 - <http://www.asee.org/ndseg>
 - National Security Education Program (NSEP)
 - <http://www.nsep.gov/>
- *Note: you should apply for all that you are eligible for, but you if you get the NSF fellowship, you can't accept any others

Other sources of information

- **CMU**
 - **Office of Assistant Vice Provost for Graduate Education grad-ed@cmu.edu**
- **Pitt**
 - **Honors College, Director of National Scholarships and International Programs**
- **<http://www.nsfgrfp.org>**
- **<http://grants.gov>**
- **<http://www.finaid.org>**

Writing the GRFP Application

- Professor Julia Deems
 - Tuesday September 15, 4:30-6:00
 - CMU, Doherty Hall 1212

 - Friday September 18, noon-1:30pm
 - CMU, Hamburg Hall 1000

Questions?