For Applicants to the NSF Graduate Research Fellowship Program

Joerg Schlatterer
GRFP Program Director
• Independent federal agency created in 1950

• Mission
  – To promote the progress of science
  – To advance the national health, prosperity, and welfare
  – To secure the national defense

• Funds ~20% of all federally supported basic research conducted by America's colleges and universities
• Independent federal agency created in 1950

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GRFP Goals

• To select, recognize, and financially support individuals who have demonstrated the potential to be high achieving scientists and engineers, early in their careers.

• To broaden participation in science and engineering of underrepresented groups, including women, minorities, persons with disabilities and veterans.
GRFP Key Elements

Five Year Award – $138,000

- Three years of support
  - $34,000 Stipend per year
  - $12,000 Educational allowance to institution

- Professional Development Opportunities:
  GROW: International Research
  GRIP: Internships

- Supercomputer access: XSEDE

- Career Life Balance (family leave)
GRFP Unique Features

- Awarded to individual
- **Flexible:** choice of project, advisor & program
- **Unrestrictive:** No service requirement
- **Portable:** Any accredited U.S. institution
  - MS, MS and PhD, PhD

- **2010 - 2016:** 2,000 Fellowships each year
  - 2016: ~16,800 Applications - ~12% success rate
GRFP Solicitation (NSF 16-XXX)

- Contains the following information:
  - Program description
  - Award information
  - Eligibility requirements
  - Application preparation
  - Submission instructions
  - Application review criteria

New Solicitation will be published July/August 2017.
GRFP Eligibility

• U.S. citizens and permanent residents
• Early-career: undergrad & grad students
• Pursuing research-based MS and PhD
• Science and Engineering
• Enrolled in accredited institution in US by Fall

Academic Levels

• 1: Seniors/baccalaureates; no graduate study
• 2: First-year graduate students
• 3: Second-year grad students
  – ≤ 12 months of graduate study by August
• 4: >12 months graduate study
  – Interruption in graduate study of 2+ years (can have MS degree)
Change to eligibility for this year’s competition:

- Students already enrolled in graduate school may apply only once, in their 1\textsuperscript{st} or 2\textsuperscript{nd} year
- Those who applied as 1\textsuperscript{st} year graduate students last year (2015) can apply as 2\textsuperscript{nd} year graduate students in 2016
- There are no changes to eligibility for undergraduates, post-baccalaureate, or returning students

**RATIONALE:**

- Increase success rate for applicants
- Increase diversity of applicant pool and institutions
- Ease workload for applicants, referees, reviewers
- Maximize benefits of receiving the fellowship early

Dear Colleague Letter (NSF 16-50), FAQ (NSF 16-051)
GRFP Fields of Study

- Chemistry
- Computer & Information Science/Engineering
- Engineering
- Geosciences
- Life Sciences
- Materials Research
- Mathematical Sciences
- Physics and Astronomy
- Psychology
- Social Sciences
- STEM Education
• Joint science-professional degree programs
  – e.g. **MD/PhD, JD/PhD**
• Business administration or management
• Counseling, Social work
• Education (except in science and engineering education)
• History (except in history of science)
• **Research with disease-related goals**
• **Clinical study**
  o **patient-oriented research**
  o **epidemiological and behavioral studies**
  o **outcomes research**
  o **health services research**
GRFP Application Timeline

- **July/August**: Solicitation Posted
- **late October**: Applications Due
- **Early November**: Reference Letters Due
- **March - April**: Recipients Announced
- **May 1**: Acceptance of Award and Declaration of Tenure/Reserve
- **June 1 or Sept. 1**: Fellowship Year Begins
Complete Application Package:

1) Personal Information, Education & Work Experience, Proposed Field of Study, Academic honors, Publications

2) Personal, Relevant Background and Future Goals Statement (3 pages)

3) Graduate Research Statement (2 pages)

4) Transcripts (uploaded electronically)

5) Three letters of reference (received by X Nov 2016, 8 pm ET)

DEADLINES: October/November 2016
Please see new Solicitation for application details and requirements
Preparing a GRFP Application

Personal Statement

Demonstrate potential for STEM research

• Experiences, personal and professional, that contributed to your motivation to pursue a STEM career and your preparation for it.

• Previous research/industrial/professional experiences

  What was the project?
  What was your part of the project?
  Where was this research done?
  Why was this project worth doing?
  How did your part of the project fit into the whole?
  What have you learned?
  Advanced course work

• Career aspirations and goals

  How have your experiences shaped your goals?
Preparing a GRFP Application

Research Statement
Describe your Research Plan
• Demonstrate understanding of research plan and methodology
• Communicate research idea and approach

Address NSF’s review criteria
Two National Science Board-approved review criteria:

- Intellectual Merit
- Broader Impacts

NSB is the governing board of the National Science Foundation & policy advisors to the president and congress
Intellectual Merit and Broader Impacts

- How important is the proposed activity to advancing knowledge within its own field or across different fields?

AND

- How well does the proposed activity benefit society or advance desired societal outcomes?

* Separate sections for Intellectual Merit and Broader Impacts
Demonstrated intellectual ability and other accepted requisites for scholarly scientific study, such as the ability to:

- Plan and conduct research
- Work as a member of a team as well as independently
- Interpret and communicate research
Broader Impacts

Societal benefits include, but not limited to:

- Impact of project or individual student on society
- Increased participation of underrepresented groups, women/ minority, students with disabilities, veterans
- Improved STEM education in schools and teacher development
- Impact on society: Increased public scientific literacy; increased public engagement with science and technology
- Community outreach: science clubs, radio, TV, newspaper
- Potential to impact diverse, globally competitive workforce
- Increased partnerships between academia, industry and others
- Leadership potential
Assessment

Intellectual Merit

- Academic performance; grades, curricula, awards, etc.
- Graduate Research plan
- Research/professional experience
- Reference letters

Broader Impacts

- Prior accomplishments and future plans
- Individual experiences
- Potential benefit(s) to society
- Community outreach
- Reference letters
• Applications are reviewed by panels of disciplinary and interdisciplinary scientists and engineers.

• Applications assigned to panels based on the applicant’s chosen Primary Field(s) of Study and the discipline(s) represented.

• Applicants are advised to select the Primary Field of Study that is most closely aligned with the proposed graduate program of study.

• Holistic evaluation.
Holistic review is a flexible, individualized way of assessing an applicant’s interests and competencies by which balanced consideration is given to experiences, attributes, and academic achievements and, when considered in combination, how the applicant has demonstrated potential for significant achievements in science and engineering.
### Holistic Review in GRFP

<table>
<thead>
<tr>
<th>Application Component</th>
<th>Intellectual Merit</th>
<th>Broader Impacts</th>
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<tbody>
<tr>
<td>Personal Statement</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Research Statement</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Transcripts</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Reference Letters</td>
<td>Yes</td>
<td>Yes</td>
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**Overall Rating**

<table>
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<tr>
<th></th>
<th>Intellectual Merit</th>
<th>Broader Impacts</th>
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<tbody>
<tr>
<td>Applicant receives <strong>Ratings and Comments</strong> for both, Intellectual Merit and Broader Impacts.</td>
<td>E/VG/G/F/P</td>
<td>E/VG/G/F/P</td>
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**Rating Key**

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
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<tbody>
<tr>
<td>E</td>
<td>Excellent</td>
</tr>
<tr>
<td>VG</td>
<td>Very Good</td>
</tr>
<tr>
<td>G</td>
<td>Good</td>
</tr>
<tr>
<td>F</td>
<td>Fair</td>
</tr>
<tr>
<td>P</td>
<td>Poor</td>
</tr>
</tbody>
</table>
Before Applicants Begin, they should ask themselves

- What's special, unique, distinctive, and/or impressive about you or your life story?

- What details of your life might help the reviewers better understand you or set you apart from other applicants?

- When did you become interested in this field, and what have you learned about it (and about yourself) that has convinced you that you are well suited to this field?

- How have you learned about this field—through classes, readings, seminars, work or other experiences, or conversations with people already in the field?

- What reasons can you give for the reviewers to be interested in you?
Reference Letters

- Three reference letters are required
- Applicant can upload contact information of up to 5 reference letter writers
- Select reference letter writers carefully (familiarity with you as a person is important)

As a reference letter writer keep in mind:

- Intellectual Merit and Broader Impacts (give specific examples)
- Deadline: Nov X, 2016
Advice for Applicants

• Start early
• Read Solicitation, and read it again
• Read NSF GRFP websites
• Select and confirm reference letter writers
• Pay attention to Merit Review criteria
• Identify several colleagues and have them comment on multiple statement drafts
• Share your application materials and the merit review criteria with reference writers
• Monitor receipt of reference letters (3 required for review)
GRFP Resources

- NSF GRFP Website (nsf.gov/grfp)
  - Solicitation and links
- NSF GRFP FastLane Website (fastlane.nsf.gov/grfp)
  - Application, guides, announcements
- GRFP Website (nsfgrfp.org)
- Graduate Research Opportunities Worldwide (GROW) [www.nsf.gov/grow](http://www.nsf.gov/grow)
- Graduate Research Internship Program (GRIP) [www.nsf.gov/grip](http://www.nsf.gov/grip)
- Current & former Fellows
- Phone & e-mail
  - 866-NSF-GRFP (673-4737)
  - info@nsfgrfp.org
Applying to Graduate School

Disclaimer

• Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.
How is Graduate School Different?

A different kind of learning, a different kind of teaching:

– More depth, more detail, faster pace
– Stronger emphasis on primary literature
– Transition to you being your own teacher
– Increased emphasis on critical thinking
Before applying

• **Talk** with your professors about universities in your field of interest with strong graduate programs. Ask for recommendations about advisors at these institutions.

• **Check** NSF and other federal agency websites for research grants in your area of interest; read the Abstracts and contact the P.I.s

• **Read** papers by several advisors to see if area of research is of interest to you. Write to several potential advisors; don’t define your interests too narrowly or too broadly.

• **Meet** with potential advisors, visit the school, talk with current students of that advisor, and with other students in the graduate program.
Graduate Admissions

Four aspects

1. Academic preparation
   • Transcripts, standardized test scores (GRE)

2. Communication skills
   • GRE, personal statement

3. Intellectual maturity
   • Personal statement, recommendation letters

4. Research training
   • Personal statement, recommendation letters
Preparing the Application

• Have several people read your statement of purpose (including faculty).

• Sections should include:
  1. Why you are applying to graduate school
  2. Your background as it relates to preparation for Graduate School
  3. Your research interests (broadly defined)
  4. Mention the advisors with whom you’d like to work (and why you chose them), and any relevant correspondence you have had with them

• Include a resume or describe relevant job experience (if you have been out of school for a while)
Before you begin, ask yourself:

• What's special, unique, distinctive, and/or impressive about you or your life story?

• What details of your life might help the committee better understand you or set you apart from other applicants?

• When did you become interested in this field, and what have you learned about it (and about yourself) that has convinced you that you are well suited to this field?

• How have you learned about this field—through classes, readings, seminars, work or other experiences, or conversations with people already in the field?

• What reasons can you give for the admissions committee to be interested in you?
Your Personal Statement

• Tell a story: who are you?
• Why do you want to go to graduate school?
• What research experience do you have?
• What are your goals?
• What do you know about this University / Department?
Who are you?

• Why do you want to go to Graduate School?
• What experience(s) lead you to this?
  – Favorite class?
  – Motivating Person?
  – Research experience
• What are your long-term goals?
• Other interesting things about you?
Relevant Experience

• Describe your research / training / professional experience
  – What was the project?
  – What was your part of the project?
  – Where was this research done?
  – Advanced course work

• Why was this project worth doing?
  – How did your part of the project fit into the whole?
Future Goals

• How have your experiences shaped your goals?

• Why this particular field for further training?
  – Well thought out, connected to previous experiences

• What are your immediate / short-term goals?

• What about your long-term goals?
Why this school?

• Provide evidence you have read and understand information on our web sites
• How does the school / program / department to which you are applying help you meet your goals? (customize your statement for each school)
• Are there specific professors whose research you are particularly interested in?
RULES TO REMEMBER

• Strive for depth rather than breadth: focus on one or two key themes, ideas, or experiences

• Try to tell the reader something that no other applicant will be able to say

• Provide the reader with insight into what drives you

• Be yourself, not the “ideal” applicant

• Get creative and imaginative in the opening remarks

• Address the school's unique features that interest you, including professors

• Focus on the positive in the personal statement; consider an addendum to explain deficiencies

• Evaluate experiences, rather than describe them

• Proofread carefully for grammar, syntax, punctuation, word usage, and style
Things to avoid

DO NOT...

- Restate your resume
- Complain about the "system" or circumstances in your life
- Talk about money as a motivator
- Solely discuss the school’s rankings
- Use boring, clichéd intros or conclusions, such as:
  “Allow me to introduce myself. My name is...”
  “I would like to thank the admissions committee for considering my application.”
  “It is my sincere hope that you will grant me the opportunity to attend your fine school.”
- Get the name of the school wrong
When you decide to apply: MS or Ph.D.?

Master’s Degree

Advantages

1. Chance to get research experience, determine if you like it and have skills
2. More guidance during research work
3. Shorter completion time; less debt
4. More career options and jobs
5. Opportunity to go to another program for a PhD
6. Flexibility with respect to research directions

Drawbacks

1. Less independence during your research work
2. Earning potential may be less
3. Less time to be fully immersed in your research
When you decide to apply: MS or Ph.D.?

PhD Degree

Advantages
1. More research independence
2. The required degree for certain jobs (e.g. faculty)
3. Greater earning potential usually
4. More career options and jobs
5. Steward of the discipline

Drawbacks
1. More independence during your research work
2. Fewer career options and jobs
3. Less diversity in your training if you didn’t get a Master’s degree first
4. Difficulties if you and your advisor aren’t a good match
5. More difficult to change research focus and career directions.