Applying for the NSF Graduate Fellowship

A workshop for prospective applicants

September 6, 2018
LSU NSF GRFP workshop team

- **Drew Lamonica Arms**, Director of Fellowships and Professional in Residence, Honors College
- **Jennifer Baumgartner**, Associate Professor, School of Education and Faculty Chair, CxC
- **Cristina Caminita**, Head of Research and Instruction Services, LSU Libraries, [ccamin1@lsu.edu](mailto:ccamin1@lsu.edu)
- **Sarah Ferstel**, Program Manager, LSU Discover, [sferst1@lsu.edu](mailto:sferst1@lsu.edu)
- **Carol Friedland**, Associate Professor, Department of Construction Management, [friedland@lsu.edu](mailto:friedland@lsu.edu)
- **Marybeth Lima**, Professor of Biological & Agricultural Engineering and Director, CCELL, [mlima1@lsu.edu](mailto:mlima1@lsu.edu)
Workshop overview

- Basic information on the Fellowship
- How the selection process works
- The ideal candidate for the NSF graduate Fellowship
- How to prepare the best application
Basic information on the Fellowship

Can be found at

Fellows receive
- Three years of support
  - $34,000 annual stipend
  - $12,000 cost-of-education allowance to your school
  - Your university must exempt you from all tuition and fees!
Basic information on the Fellowship

- Eligibility requirements
  - Applicants must be United States citizens or nationals, or permanent resident aliens of the United States.
  - The term "national" designates a native resident of a commonwealth or territory of the United States, such as American Samoa, Guam, Puerto Rico, United States Virgin Islands, or the Northern Mariana Islands. It does not refer to a citizen of another country who has applied for United States citizenship.
Eligibility: undergraduate and post-baccalaureate

- Individuals may apply as an undergraduate senior as well as post-baccalaureate, before beginning graduate training.
Eligibility: graduate students

- Graduate students are limited to only one application to the GRFP, submitted either in the first or beginning of the second year of graduate school.

- Applicants must not have completed more than one academic year of graduate study by August 1 of the year the application is submitted.
Eligibility: As an individual returning to graduate education:

- Applicants who have completed more than one academic year of graduate study or earned a previous graduate or professional degree are eligible only if they have had an interruption in graduate study of at least two consecutive years immediately prior to the application deadline. To be eligible, applicants must not have engaged in any graduate coursework during the interruption, and cannot be enrolled in a graduate program at the time of the deadline. Applicants should address the reasons for the interruption in graduate study in the Personal, Relevant Background and Future Goals Statement.

- Questions on eligibility: info@nsfgrfp.org
You are not eligible if

- You completed the requirements for any graduate or professional degree by August 1, 2018, unless
  - You completed a joint baccalaureate-master's (BS/MS) program and have not completed any further graduate study outside this joint program unless the graduate coursework was required to establish or maintain credentials in a profession such as teaching.
You are not eligible if

- You completed the requirements for any graduate or professional degree by August 1, 2018, unless
  - You have had an interruption in graduate study of at least two consecutive years prior to November 1, 2018 and have completed no additional graduate study as of August 1, 2018.
Eligibility: disciplines

- Fellowships are awarded for graduate study leading to research-based master's and doctoral degrees in science, technology, engineering or mathematics (STEM) or in STEM education.

- Individuals are not eligible to apply if they will be enrolled in a practice-oriented professional degree program such as medical, dental, law, and public health degrees at any time during the fellowship.

- Individuals are not eligible to apply if they will be enrolled in graduate study focused on clinical practice, counseling, social work, patient-oriented research, epidemiological and medical behavioral studies, outcomes research, and health services research.
Basic information on the Fellowship: due dates

- All applications must be submitted through Fastlane by 5:00 local time on the following days:
  - October 22, 2018 (Monday):
    - Geosciences
    - Life Sciences
Basic information on the Fellowship: due dates

- October 23, 2018 (Tuesday):
  - Computer and Information Science and Engineering
  - Engineering
  - Materials Research

- October 25, 2018 (Thursday):
  - Psychology
  - Social Sciences
  - STEM Education and Learning
Basic information on the Fellowship: due dates

- October 26, 2018 (Friday):
  - Chemistry
  - Mathematical Sciences
  - Physics and Astronomy

- November 2, 2018 (Friday), 5:00 EST!
  - Reference letters due for all fields of study
Basic information on the Fellowship

- The application process involves
  - Registering online in FastLane (NSF’s platform for electronic submission of your application)
  - Inputting in “the basics” of the application
    - Personal information
    - Education and other experience
    - Field(s) of study
    - Graduate school information
    - Academic transcripts
Basic information on the Fellowship

- The application process involves
  - Having three people write letters of recommendation (must be submitted on time)
  - Writing two statements (essays):
    - Personal, Relevant Background and Future Goals Statement
    - Graduate Research Statement (proposed research)
Statement requirements

- Standard 8.5" x 11" page size
- 12-point, Times New Roman font or Computer Modem (LaTeX) font
- 10-point font may be used for references, footnotes, figure captions and text within figures
- 1" margins on all sides
- Single spaced or greater line spacing.
Statement requirements

- 3-page limit for the Personal, Relevant Background and Future Goals Statement
- 2-page limit for the Graduate Research Statement
- References, figures, and citations are included in page limits.
Statement requirements

- Character spacing should use normal (100%) single-line space option. Do not condense line spacing or reduce the character spacing scale. Adherence to type size, character spacing, and page length is necessary to ensure that no applicant will have an unfair advantage, by using smaller type or line spacing to provide more text in the application.

- Images may be included in your statements. However, they will be produced only in black and white. All images, footnotes, endnotes, and other citations are included in the page limit.
How the selection process works

- After submission, your application will be reviewed by a panel of experts, usually professors in your field of study.

- The panelists will review your application with respect to two criteria:
  - Intellectual merit
  - Broader impacts
The following elements should be considered in the review for both criteria:

- What is the potential for 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)?

- To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
The following elements should be considered in the review for both criteria:

1. 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?

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

3. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?
Broader impacts may be accomplished
- through the research itself
- through the activities that are directly related to specific research projects
- through activities that are supported by, but are complementary to, the project.

NSF values the advancement of scientific knowledge and activities that contribute to achieving societally relevant outcomes.
Such outcomes include, but are not limited to:

- full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM);

- improved STEM education and educator development at any level

- increased public scientific literacy and public engagement with science and technology

- improved well-being of individuals in society
Such outcomes include, but are not limited to:

- development of a diverse, globally competitive STEM workforce
- increased partnerships between academia, industry, and others
- improved national security
- increased economic competitiveness of the US
- and enhanced infrastructure for research and education.
To evaluate the intellectual merit criterion, panelists will consider:

- The potential of the applicant to advance knowledge based on a holistic analysis of the complete application, including:
  - The personal, relevant background, future goals statement
  - Graduate research plan statement
  - Strength of the academic record
  - Publication/presentations
  - References

- Panelists will not consider your GRE score!
To evaluate the broader impacts criterion, panelists will consider:

- The potential of the applicant for future broader impacts as indicated by:
  - Prior accomplishments and future plans
  - Individual experiences
  - Potential benefit(s) to society
  - Community outreach
  - Reference letters
How the selection process works

- After review, applicants are placed in groups indicating their likelihood of being funded
- NSF makes final award selections
- Awards are announced in the spring (by early April)
The ideal candidate for the NSF graduate Fellowship

- I have taught more than 25 NSF graduate fellows from LSU
  - Undergraduate GPAs ranged from 3.1 to 4.0
  - Most completed undergraduate research
  - All had some form of extracurricular activity
  - All worked very hard on their applications
    - At least 6 drafts of each essay was common

- About half the students were funded the subsequent time they applied (use the reviewer comments to improve your next application)
The ideal candidate for the NSF graduate Fellowship

- Is a Renaissance scholar
- Has fully addressed intellectual merit and broader impacts criteria in their application
- Is a reflective practitioner or scholar
  - Everyone applying has good grades and excellent personal character; you must set yourself apart from the other applicants
On being a reflective practitioner

- We tend to focus on the what (concrete experience)
- Go beyond “the what” in both your statements
- Answer: What, so what, now what?
  - **What**: “I did research on…”
  - **So what**: “Through my experience, I learned…” (academic AND personal)
  - **Now what**: “My philosophy is…”; “Based on these experiences, my next step is…”
Reflection prompts for the proposed research statement

<table>
<thead>
<tr>
<th>Reflection Prompt</th>
<th>Topic Statements or Ideas to Address Prompts</th>
</tr>
</thead>
</table>
| **What?**         | • The objectives of this research are…  
                    • The hypothesis of this project is…   |
| **So what?**      | • The anticipated results of this study are…
                    • I believe that my hypothesis will be proved true because… |
| **Now what?**     | • In the proposed project, I anticipate potential problems with xxx (measurement limitations, interactions, etc.). If I encounter these problems, I will (explain how you would solve the problem).  
                    • The implication of this study is… |
# Reflection prompts for the personal, relevant background, and future goals statement

<table>
<thead>
<tr>
<th>Reflection Prompt</th>
<th>Topic Statements or Ideas to Address Prompts</th>
</tr>
</thead>
</table>
| **What?**         | - Tell the story of how you became interested in your discipline.  
                    - I conducted research on (describe) |
| **So what?**      | - Through my experience, I learned...(state what you learned about research, practice, yourself, and/or society)  
                    - Based on these experiences, my next step is... |
| **Now what?**     | - My research philosophy is...  
                    - My future plans are and they are critical to my discipline and/or society because... |
How to prepare the best application (in our opinion)

- Start NOW
- Choose your recommendation letter writers carefully
  - Provide a full resume, copies of your essays, and directions (see next slide) to reference letter writers
  - Make sure that the reference knows you well
  - Ask at least four people to contribute letters!
  - You will use three of them
Help your references help you

Give them this link: http://www.nsfgrfp.org/reference_writers/requirements

- 2-page limit
- On letterhead and signed
- Explain nature of the relationship to the applicant
- Address the NSF Merit Review Criteria of Intellectual Merit and Broader Impacts of candidate
- Assess applicant's potential for contributing to a globally-engaged United States STEM workforce
- Evaluate applicant's academic potential and prior research experiences
- Evaluate applicant's proposed research
How to prepare the best application (in our opinion)

- The **graduate research essay (proposed research)** is very important: focus on intellectual merit
- You are trying to prove that you know how to do research!
  - This statement should be on a research project that you come up with yourself
  - Use “I,” not, “we,” to reinforce the fact that NSF is considering **YOU**, the individual, in this application.
    - NSF is funding the person, not the project!
Suggested sections, graduate research statement

- Title
- Keywords
- Introduction/background information, including a testable hypothesis and/or research objectives
- Materials and methods (for testing your hypothesis and/or research objectives)
- Expected results and potential pitfalls
- Intellectual merit statement
- Broader impacts statement
How to prepare the best application (in our opinion)

- The most common mistakes in the proposed research essay:
  - Spending too much space on the introduction
  - Skipping over or glossing over expected results

- In research, results are the name of the game, so make sure that you focus on this portion of the essay

- Be a reflective practitioner! Can you take your expected results a step further?
  - How do the expected results tie back to your objectives or hypothesis?
  - Research seldom works the way we planned; in which part of your study do you think results will be the most difficult to obtain? Why? How might you overcome this difficulty? (These are potential pitfalls.)
How to prepare the best application (in our opinion)

- The most common mistakes in the proposed research essay:
  - Not explicitly mentioning intellectual merit or broader impacts
  - What are the overall implications of your proposed work?
How to prepare the best application (in our opinion):

Personal, Relevant Background & Future Goals Statement
Gather your “data”

Before starting the essay, **write out** answers to these questions:

- Why are you **fascinated** by your research area?
- What **examples of leadership skills and unique characteristics** do you bring to your chosen field?
- What **personal and individual strengths** make you a qualified applicant?
- How will receiving the fellowship contribute to your **career goals**?
Gather your data

- What are all of your applicable (research) experiences?
  - For each experience, what were the key questions, methodology, findings, and conclusions?
  - Did you work in a team and/or independently? How did you assist in the analysis of results?
  - How did your activities address the Intellectual Merit and Broader Impacts criteria?
Analyze, interpret your “data”

It’s not enough for a statement to relate personal information about your background or future goals. You need to interpret what the facts say about you. If you’re having trouble, consider these traits called “Habits of Mind.”* How does your narrative reflect one or more of them? Your readers are likely to recognize them as key intellectual and practical characteristics of a successful researcher.

Persistence  
Curiosity  
Ability to collaborate  
Responsible risk taking  
Problem-solving abilities  
Ability to draw connections

Openness  
Responsibility  
Flexibility  
Engagement  
Metacognition  
Creativity

* From “Framework for Success in Postsecondary Writing,” a publication of NCTE and WPA.
Additional advice

- Share your personal character and experiences in the context of your passion to do research

- Don’t just talk about what you have done--be a reflective practitioner
  - Philosophy?
  - Impact on science, the public, society, culture?

- If you have not completed a formal undergraduate research experience, you must frame your prior work in terms of discovery; prove that you know how to do research through your experiences
How to prepare the best application (in our opinion)

- For both essays
  - Don’t just “mark the dots” with your words, connect them **too—in this context, nuance is everything**
    - The intellectual merit of this proposed research is…
    - The broader impacts of this research are…
  - Don’t overdo it—but at the same time, you want your reviewers to think that you can change the world
Connecting the dots

- My career path was inspired through my personal experiences with the Muscular Dystrophy Association (MDA). I became involved with MDA at the age of eight when I was diagnosed with Charcot-Marie-Tooth (CMT) Disease. CMT is a neuromuscular disease that affects the peripheral nerves and causes muscle weakness and atrophy, tightness in muscles and joints, and some loss in sensation of the feet and hands. Through the generosity of others’ time and monetary gifts, I was able to attend summer camp for one week every year. I remember my first year at camp, and realizing how lucky I was as I got to know other campers. I had a lot of pain and wore leg braces, but I was not in a wheelchair. My goal is to design and create assistive medical devices, particularly orthotics and prosthetics, that will allow those with physical limitations to lead a life free of confinement and ultimately result in children being active participants in activities instead of watching from the sidelines.
Connecting the dots

- My career path was inspired through my personal experiences with the Muscular Dystrophy Association (MDA). I became involved with MDA at the age of eight when I was diagnosed with Charcot-Marie-Tooth (CMT) Disease. CMT is a neuromuscular disease that affects the peripheral nerves and causes muscle weakness and atrophy, tightness in muscles and joints, and some loss in sensation of the feet and hands. Through the generosity of others’ time and monetary gifts, I was able to attend summer camp for one week every year. I remember my first year at camp, and realizing how lucky I was as I got to know other campers. I had a lot of pain and wore leg braces, but I was not in a wheelchair. Camp made me more aware of what I could do, but also more aware of what some of my peers could not. This knowledge fired my career goal: to design and create assistive medical devices, particularly orthotics and prosthetics, that will allow those with physical limitations to lead a life free of confinement and ultimately result in children being active participants in activities instead of watching from the sidelines.
How to prepare the best application (in our opinion)

- Enlist the assistance of a mentor(s) who will critique your essays
  - Your research mentor and/or one of your references
  - Honors Students: Dr. Drew Arms
  - LSU Discover students: Sarah Ferstel
  - LA-STEM/HHMI students: Dr. Isiah Warner or Ms. Melissa Crawford
  - McNairs Scholars: Joe Givens
  - Social Science, Dr. Emily Elliott, eelliott@lsu.edu
  - CxC lab: sign up for appointment at: http://www.lsu.edu/academicaffairs/cxc/writing.php
  - Workshop personnel! (Lima)
How to prepare the best application (in our opinion)

- Self-critique as if you were a reviewer; also give to a friend to review
- Use all the space allotted to you for each essay
  - Fitting your essays into two or three pages should be agonizing
  - Multiple drafts are recommended
- Co-authorship on a refereed journal article is a real “feather in your cap”
How to prepare the best application

• Get guidance from successful applications: Google "example NSF graduate fellowship" and see what comes up!
  - University of Cincinnati site
  - University of Illinois site
  - Don’t forget that example applications might have 3 essays (old format)—the format you are doing has two essays (personal statement essay and previous experience essay are now combined)

• The Fellowship is worth about $28,000 per page of essay that you write! Put in that kind of effort!

• If you have already applied, address the comments from NSF proposal reviewers
Other Resources: on writing

- **Guide to Proposal Writing from the NSF**

- **General writing advice, see especially writing for the sciences**

- **Advice on writing personal statements--Purdue OWL**
Next steps

There are a number of events to support your application through the CIRTL network (LSU in conjunction with other universities) and at LSU.

- Graduate Fellow panel discussion, September 13 (CIRTL)
  - Live synchronous session
- Having trouble writing? We can help! September 27 (LSU)
- Draft critique workshop, October 8 (LSU)
- Addressing the BI criterion in your application (CIRTL)
  - Video available for viewing starting October 8
CIRTL network

- Participate in the synchronous online session, led by students who have received a GRFP award. Talk in smaller groups with award recipients in a discipline similar to your own. This session will take place at 2:30-4:30 PM CT on Thursday, September 13th, 2018.

- **Register ASAP at**
  https://www.cirtl.net/users/sign_in

- Registering will also provide you access to videos of this presentation, the aforementioned panel discussion, and the broader impacts workshop.
Next steps: LSU workshops

- Having trouble writing? Come hang out with us and let us help!
  - Thursday, September 27, 4:30 - 6:00 pm, Tureaud 206.
  - Focused workshop on developing the broader impacts, intellectual merit, or narrative part of your application

- We will send you a link to sign up for this workshop!
Next steps: LSU workshops

- Evaluation of your fellowship applications by LSU faculty and your peers
  - Monday, October 8, 4:30-6:30 -- Draft Review Session, Room 206 Tureaud
  - Bring 3 copies of the draft of your application for critique; you will also critique others’ drafts
- We will send you a link to sign up for this workshop
GOOD LUCK!!

- Get started now!
  - Create an account on Fastlane
  - Begin working on your essays
  - Contact your reference letter writers