



NSF Graduate Research Fellowship Program
Division of Graduate Education
Directorate for Education and Human Resources

Erick Jones, Gisele Muller-Parker
GRFP Program Directors
grfp@nsf.gov

nsf.gov/grfp
www.nsfgrfp.org



Goals of presentation

- I. **Provide an Overview** of NSF's current context for graduate education and preparation of the future workforce

- II. **Highlight** how NSF EHR/DGE Graduate Research Fellowship Program is addressing graduate preparedness through **professional development opportunities**

- III. **Gather Your Input:** what should NSF be thinking about as we develop new initiatives to support graduate education?



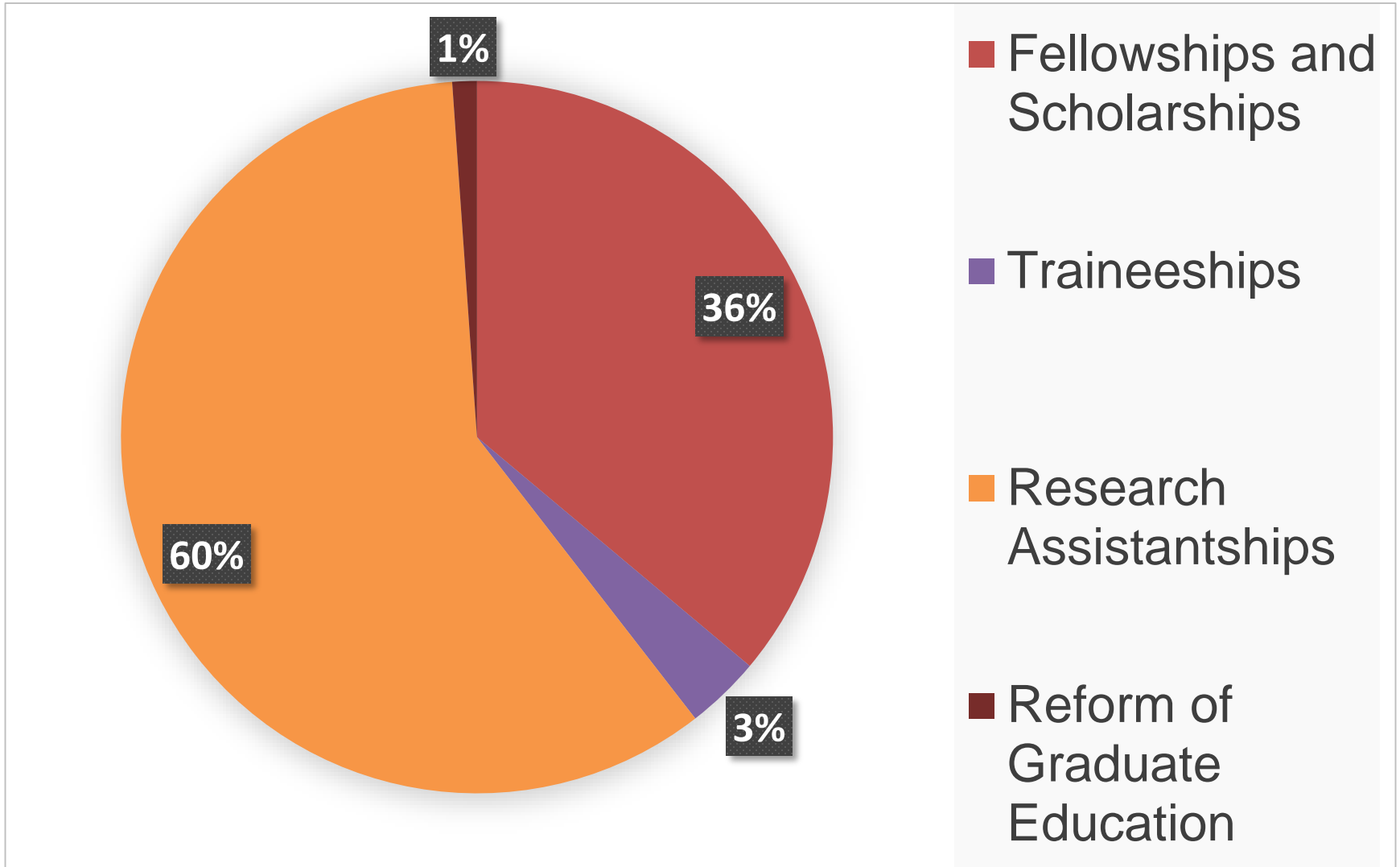
NSF Investment Focus

- *Training* in national STEM priority areas
- *Innovative models* for graduate education with potential for scalability
- *Research knowledge base* to inform improvements in graduate education
- ***Professional development*** of graduate students for both academic and non-academic careers



NSF Graduate Education Investments

\$985.68 M (FY 2014 Estimate)





Why fellowships?

For undergraduate seniors and beginning graduate students:

- Prestige of the fellowship opens doors to graduate school
- Greater choice of research advisors
- Freedom to do their own research
- More time to do their research
- Establishes connections with federal funding agencies at an early stage, useful for future sponsored research opportunities
- 5 years as Fellow: 3 years of support; additional opportunities

For undergraduate and graduate institutions:

- Prestige – fellowship recipients enhance national image
- High quality graduate students selected by an independent competitive process
- Inclusive of undergraduates, women, minorities, persons with disabilities and veterans we need to recruit!



What is the GRFP? Goals and Key Elements

- To select, recognize, and financially support individuals early in their careers with the demonstrated potential to be high achieving scientists and engineers
- To broaden participation in science and engineering of underrepresented groups, including women, minorities, persons with disabilities, and veterans

Five Year Award to individual students – \$138,000

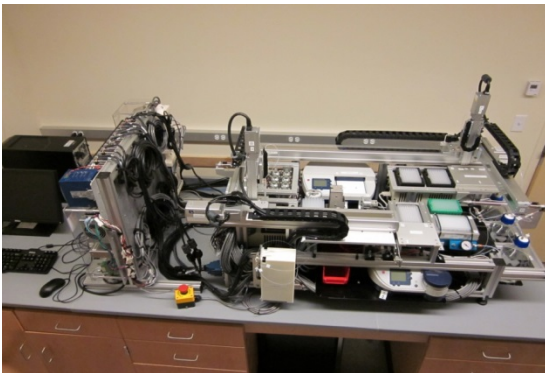
- Three years of financial support
 - \$34,000 Stipend per year
 - \$12,000 Educational allowance to institution
- **2010 - 2016:** 2,000 Fellowships each year
 - 2016: 16,000 Applications - ~12.5% success rate





GRFP Successes

- 50,000 Fellows
 - 42 Nobel Laureates
 - 450 Members of the National Academy of Sciences
- Higher Ph.D. completion rates
 - Greater % of women and URM than national population of PhD completers



The Multiplex Automated Genome Engineering (MAGE) platform.
Credit: Harris Wang, PhD, Harvard University





GRFP Diversity



NSF Graduate Research Fellow

Tonya N. Williams

- NSF Fellow at North Carolina (Fiber and Polymer Science Program)
- Her interest in chemistry, color and their applications, paired with an awareness of the toxicological profile of various colorants, has motivated her to pursue a career in green chemistry.
- To launch a career in this field, she is involved in research that will help change the "face" of hair coloration. Specifically, she is focusing on designing environmentally benign hair colorants.

Credit: Amanda Padbury, North Carolina State University College of Textiles

Discovery
Celebrating Black History Month
with our research fellows

http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=137630

Demographics of current Fellows

URM	25%
Women	53%



Key enduring program elements

- Awarded to individuals who apply directly to NSF and who are selected through a national competition
- Fellowship provides recognition (prestige) and financial support for high-ability individuals regardless of their financial status
- Fellows have the freedom and flexibility to choose their graduate institutions and to choose to explore their own ideas and research directions



GRFP Solicitation (NSF 16-588)

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

Graduate Research Fellowship Program (GRFP)

PROGRAM SOLICITATION
NSF 16-588

REPLACES DOCUMENT(S):
NSF 15-597



National Science Foundation

Directorate for Biological Sciences

Directorate for Computer & Information Science & Engineering

Directorate for Education & Human Resources
Division of Graduate Education

Directorate for Engineering

Directorate for Geosciences

Directorate for Mathematical & Physical Sciences

Directorate for Social, Behavioral & Economic Sciences

Office of Integrative Activities

Office of International Science and Engineering

Application Deadline(s) (received by 5 p.m. local time of applicant's mailing address):

October 24, 2016

Life Sciences, Geosciences

October 25, 2016

Computer and information Science and Engineering, Engineering, Materials Research

October 27, 2016

Psychology, Social Sciences, STEM Education and Learning

October 28, 2016

Chemistry, Mathematical Sciences, Physics and Astronomy

October 23, 2017

Life Sciences, Geosciences

October 24, 2017

Computer and information Science and Engineering, Engineering, Materials Research

October 26, 2017

Psychology, Social Sciences, STEM Education and Learning

October 27, 2017

Chemistry, Mathematical Sciences, Physics and Astronomy

October 22, 2018

Life Sciences, Geosciences

October 23, 2018

Computer and information Science and Engineering, Engineering, Materials Research

October 25, 2018

Psychology, Social Sciences, STEM Education and Learning



GRFP Eligibility

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



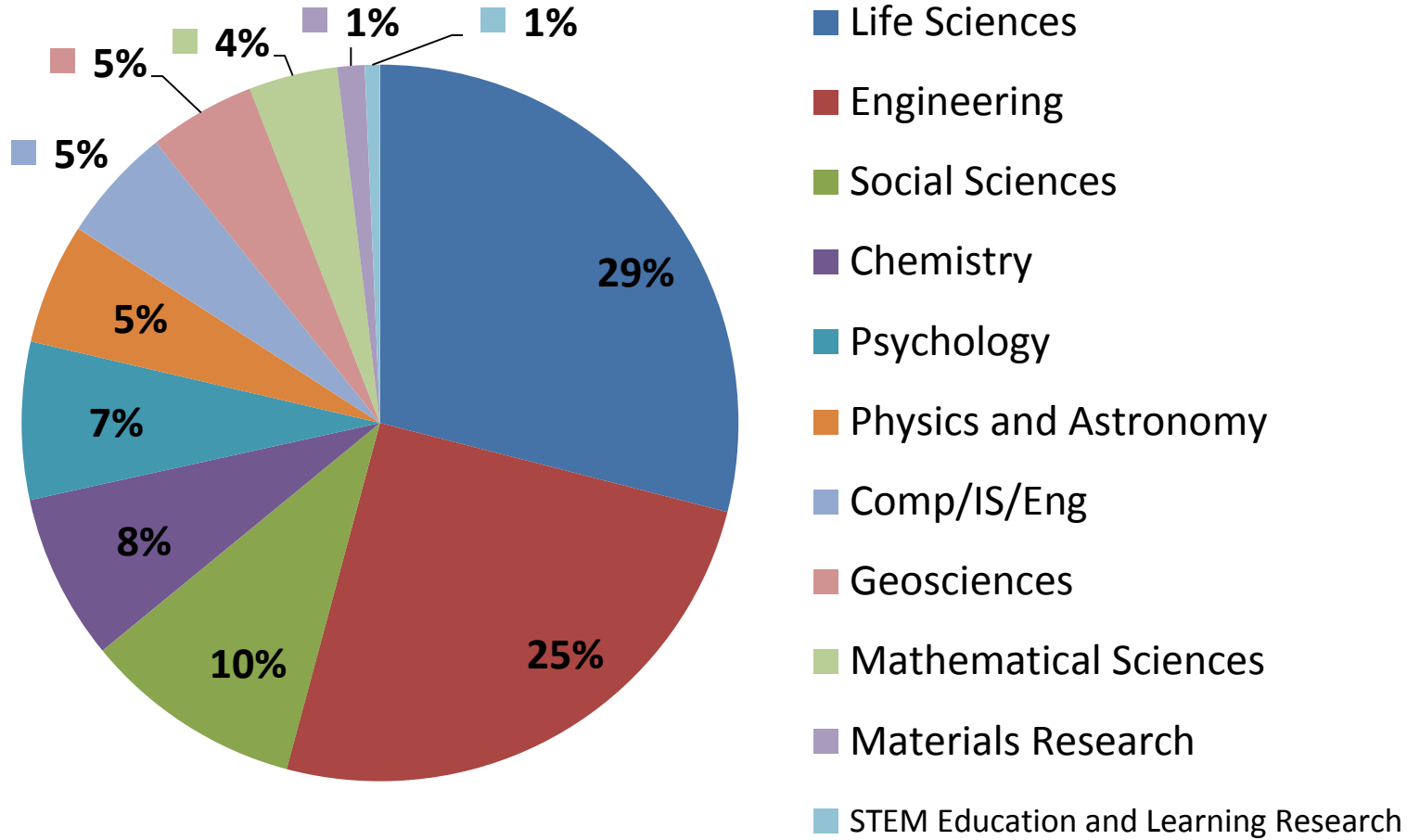
Academic Levels

- **1: Seniors or baccalaureates with no graduate study yet**
- **2: First-year graduate students**
- **3: Second-year graduate students**
(≤ 12 months of graduate study by August)
- **4: >12 months graduate study, with interruption in graduate study of 2+ years (can have MS degree)**





Fields of Study of current Fellows





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 & Learning Research

GRFP Field of Study	Years
Agriculture	1958-1993
Agronomy	1965-1993
Animal Husbandry	1964 – (1974-84)
Horticulture	1964-2010
Plant Pathology	1991-2010
Phytopathology	1964-1990
Soil Science	1964-1990
Veterinary Science	1964-1993



GRFP Research topics of Fellows

<u>Area</u>	<u># of NSF Fellows</u>
• Agriculture	84 Fellows
• Food	233 Fellows
• Natural Resources	89 Fellows
• Animal Science	234 Fellows
• Freshwater	14 Fellows

Total: 654 active Fellows (out of 8,500)



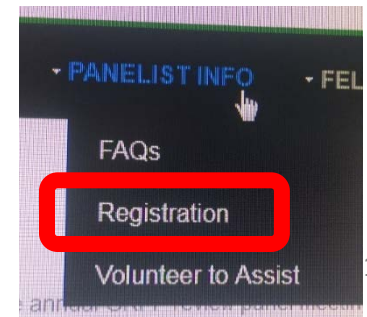
Promoting GRFP on Campus

- Establish “GRFP champions” at university admin level
- Publicize GRFP on campus: focus on domestic students, undergrads and beginning grad students
- Identify faculty willing to mentor applicants
 - Encourage faculty to register to serve as reviewers for GRFP
- Establish peer mentoring system
 - Formal courses, informal advisement
- Hold workshops
 - Find faculty advisors and Fellows willing to participate
- Utilize GRFP’s web resources



GRFP on Campus

- Promote benefits of GRFP to undersubscribed departments
 - Juniors (REU), seniors, beginning grad students
- Partner/engage with Honors College and honors programs, REU Site Coordinators
- Reach out to GRFP Resource People on www.nsfgrfp.org
- Engage local/campus GRFP Coordinating Officials (www.fastlane.nsf.gov/grfp/)
- Support courses on science communication and proposal writing, include peer review



Sign up as a REVIEWER/PANELIST at www.nsfgrfp.org



- **Outline**

- Program Definition
- Relationship to NSF Graduate Research Fellows
- Program Details
- Current GRIP Highlight
- Common Questions/Challenges



Graduate Research Internship Program

Definition



To provide professional development experiences to NSF Graduate Research Fellows through research opportunities with **Federal Agencies.**



Graduate Research Internship Program (GRIP)



Details

- GRIP provides **GRFP Fellows** with opportunities to develop their professional skills and networks
- Fellows conduct mission-related, collaborative research projects at federal facilities and national laboratories

NSF 16-015 Dear Colleague Letter: www.nsf.gov/grip

Current Partners

- Office of Naval Research
- Smithsonian Institution
- Department of Homeland Security
- Federal Bureau of Investigation
- Environmental Protection Agency
- National Oceanic & Atmospheric Administration
- U.S. Census Bureau
- U.S. Geological Survey
- ***U.S. Dept. of Agriculture***

How Do I Find an Intern Opportunity?

Common Questions/Challenges

- **Consult the Agency webpages (links available on NSF GRIP sites).**
- **Ask your advisor, other faculty, postdocs, graduate students in your lab/department.**
- **Read the literature in your field.**
 - **Authors of articles with intriguing or complementary results, methodologies, etc.**

- Funding
- About Funding
- Browse Funding Opportunities A-Z
- Due Dates
- Find Funding
- Merit Review
- Policies and Procedures
- Preparing Proposals
- Recent Opportunities
- Small Business
- Transformative Research

Home > Funding

Email Print Share

Division of Graduate Education

Graduate Research Internship Program (GRIP)

CONTACTS

Name	Email	Phone	Room
Erick Jones	grip@nsf.gov	703-292-8694	
Gisele Muller-Parker	grip@nsf.gov	703-292-8694	

PROGRAM GUIDELINES

Apply to PD 16-7172 in FastLane. (standard [NSF Proposal & Award Policies & Procedures Guide](#) proposal preparation guidelines apply.)

SYNOPSIS

The new internship initiative described in the [GRIP Dear Colleague Letter 16-015](#) expands opportunities for NSF Graduate Fellows to enhance their professional development by engaging in mission related research experiences with partner agencies across the federal government. **GRIP is open only to NSF Graduate Fellows, recipients of the Graduate Research Fellowship Program (GRFP) award.**

Research internship opportunities are available through the Partner Agencies listed below in the Related URL section of this webpage. More internship opportunities with additional partner agencies are anticipated in the near future. Please see application details in the [Dear Colleague Letter 16-015](#) and via the individual agency links or emails below.

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RELATED PROGRAMS

[NSF Graduate Research Fellowship Program](#)

[Graduate Research Opportunities Worldwide](#)

RELATED URLS

[Census - U.S. Census Bureau](#)

[DHS - Department of Homeland Security email](#)

[EPA - Environmental Protection Agency](#)

[FBI - Federal Bureau of Investigation](#)

[NOAA - National Oceanic and Atmospheric Administration](#)

[ONR - Office of Naval Research](#)

[SI - Smithsonian Institution](#)

[USDA - Department of Agriculture](#)

[USGS - U.S. Geological Survey](#)

[AOR Certification form for GRIP](#)

Sample Agency Opportunities Page (May differ by Agency)

Program	Project Title	Point of Contact	Location	Duration	Primary Field of Study	Secondary Field of Study
Sort by <input type="text" value="Project Title"/>	Order <input type="text" value="Asc"/> <input type="button" value="Apply"/>					
California Water Science Center	A Critical Assessment of Recent Soil Dating Methods in Coastal Wetlands Are you interested in coastal wetlands and how they form in the landscape? In this internship you will learn about wetland formation and how carbon accumulates in wetland soils over time. In addition, you will learn how to critically evaluate soil dating methods that are currently being used to report carbon accumulation to the US EPA and the Intergovernmental Panel on Climate Change. Read More	Judith Drexler drexler@usgs.gov	Sacramento, CA	Up to 12 months	EAR Earth Sciences	Geochemistry (soils), Coastal Wetlands
National Research Program	A National-scale River Corridor Model The need for better models and more effective use of data to characterize river corridor transport processes is keenly felt, from evaluating the effectiveness of river and watershed management practices all the way to clarifying regulatory authority under the Clean Water Act. Read More	Jud Harvey jwharvey@usgs.gov	Reston, VA	Up to 12 months	EAR Earth Sciences	Geomorphology (fluvial), Computer Modeling
Western Ecological Research Center, Patuxent Wildlife Research Center	A tale of two coasts: tidal marsh persistence with changing climate and sea-level rise Tidal wetlands are an important management concern because of their ability to attenuate storm surges, sequester carbon, improve water quality, and provide habitat for tidal marsh-dependent species. The overall goal of this project is to improve our understanding of the combined effects of inundation, due to sea-level rise and storm surges, and other climate factor on tidal marsh physical and biological processes to provide guidance to natural resource managers to reduce these threats and increase resilience. Read More	Karen Thorne kthorne@usgs.gov	San Francisco Bay Estuary Field Station – Vallejo CA, Patuxent Wildlife Research Center – Laurel, MD	12 months	DEB Environmental Biology	Ecology (wetlands), Climate Change
Crustal Geophysics and Geochemistry	Airborne geophysical imaging of weak zones on Mt. Iliamna, Alaska toward understanding volcanic	Carol Finn cfinn@usgs.gov	Denver, CO	9 – 12 months	EAR Earth Sciences	Volcanology, Remote Sensing



GRIP Fellow

- NSF Fellow (Engineering – Energy Engineering)
- GRIP Fellow in USDA-ARS Greenhouse Production Research Group
- Optimized control strategies for greenhouse climate control systems

Quote from application:

“Through this internship, the Fellow will learn about greenhouses, plant physiology, and plant production..... Much of the Fellow’s research experience so far has revolved around heat transfer and energy efficiency. Through this internship the Fellow will build skills by applying them to a new domain. In addition, the Fellow will be exposed to a new research perspective through the mentoring of a plant scientist, as opposed to professors trained as engineers. The Fellow believes this type of thinking will help him succeed in future collaborations with biologists.”

GRIP FAQ

**What are the qualities of a
“great” application?**



NSF Graduate Research Internship Program

- **On time:**
 - Dec 4th & May 6th each year
- **Professional Description and Professional Development Plan**
 - Discuss Agency & Lab
 - Discuss Opportunity
 - Discuss Agency Scientist
 - Describe Research Opportunity
 - *Describe Individual Development Plan*
- Biographical Sketch (Resume)
 - Use NSF Guidelines *
- Letter of Endorsement from Advisor
- Start early getting an AOR Form (signed)

* https://www.nsf.gov/pubs/policydocs/pappguide/nsf15001/gpg_2.jsp#IIC2f



NSF Priority Goal: FY16-17

STEM Graduate Student Preparedness

NSF 16-067

Dear Colleague Letter: Improving Graduate Student Preparedness for Entering the Workforce, Opportunities for Supplemental Support

April 15, 2016

- Encourage enhanced mentoring & skills beyond academia
- Encourage theory and/or evidence-based strategies to enhance and expand training in essential professional skills
- Enhance interdisciplinary training and collaborations through development of activities that encourage graduate student preparedness for entering the workforce

Special Section on non-GRFP GRIPs for Directorate for Geosciences (GEO) with NOAA and USGS

– Summary of Opportunity

- The Directorate for Geosciences (GEO) invites advisors of PhD students currently supported on active research grants to apply for supplemental funding to enhance the professional development of their students.
- Funding is available to support professional development experiences through research internships developed in partnership with the U.S. Geological Survey (USGS) and the National Oceanic and Atmospheric Administration (NOAA) as described in the Graduate Research Internship Program (GRIP)

<http://www.nsf.gov/pubs/2016/nsf16067/nsf16067.pdf>