National Science Foundation
Graduate Fellowship

HTTP://WWW.NSFGRFP.ORG/
NSF: Who

- ~2000 recipients
- U.S citizens or nationals
- 1st and 2nd year students
- Students from these Masters AND PhD programs:
  - Sciences: Chemistry, Computer/Information Science, Engineering, Geosciences, Life Sciences, Math, Physics, Psychology
  - Social Sciences: Anthropology, Communications, Economics, Geography, Linguistics, Political science, Psychology, Sociology
  - STEM education and learning research
NSF: What

- 3 years of support
- $30,000 stipend (likely to increase to $32,000 in 2013)
- $12,000 cost of education allowance
- Supercomputer access
NSF: When

• Application Deadline: November 13-19, 2012 (specific date varies by field)
NSF: Application

- Personal Statement
- Previous Research Experience Essay
- Proposed plan of Research Essay
- Three letters of recommendation
- Transcripts
NSF: Application

• Personal Statement
  ▫ 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 do you have that make you a qualified applicant?
  ▫ How will receiving the fellowship contribute to your career goals?
  ▫ How do these activities address the Intellectual Merit and Broader Impacts criteria?
NSF: Application

• Personal Statement
  ▫ Consider highlighting:
    • motivation
    • potential as leader/team member
    • intelligence/achievements
    • willingness to question/ problem solve/ learn from mistakes/ seek knowledge
    • transferable skills/qualities that will make you good professional
    • long range goals/career aspirations
    • how you intend to contribute to future profession
    • community engagement/volunteer service
NSF: Application

- Previous Research Experience Essay
  - What are all of your applicable 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?
NSF: Application

• Previous Research Experience Essay
  ▫ **Consider highlighting:**
    • past experiences that help prepare you to conduct research (research, methods courses, projects, employment, study abroad, etc)
    • skills
    • previous research findings
    • publications/presentations
    • international connections
    • ability to work on teams and in interdisciplinary settings
    • potential to become leader in your field
    • understanding of how research fits in with larger field
NSF: Application

- Proposed plan of Research Essay
  - What issues in the scientific community are you most passionate about?
  - Do you possess the technical knowledge and skills necessary for conducting this work, or will you have sufficient mentoring and training to complete the study?
  - Is this plan feasible for the allotted time and institutional resources?
  - How will my research contribute to the "big picture" outside the academic context?
  - How does your proposed research address the Intellectual Merit and Broader Impacts criteria?
NSF: Application

- Proposed plan of Research Essay
  - **Consider highlighting:**
    - specific testable hypothesis (or hypotheses)
    - background/justification for study (should address significant problem/need—make it sound VERY important)
    - project should be feasible-- resources available on campus for this project
  - Suggested format:
    - Introduction/problem statement, hypothesis, methods, anticipated results/findings, expected significance/broader impacts, short list of important literature citations
NSF: Application

- Intellectual Merit
- Broader Impacts
- Ratings:
  - Excellent
  - Very Good
  - Good
  - Fair
  - Poor
- We’ll examine these in detail
  - For 2\textsuperscript{nd} years—help what to highlight
  - For 1\textsuperscript{st} years—help direct you to activities you may want to engage in before next year to improve your application (if not awarded)
  - If you plan to stay in academia, always looking for these opportunities to build “intellectual merit” or “broader impacts” will be worthwhile for research grants, post doc fellowships, etc.
Intellectual Merit

• How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields?
• How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.)
• To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts?
• How well conceived and organized is the proposed activity?
• Is there sufficient access to resources?
Intellectual Merit

Panelists will consider factors including:

- the strength of the academic record
- proposed plan of research and whether it is potentially transformative
  - revolutionizing entire disciplines; creating entirely new fields; or disrupting accepted theories and perspectives — in other words, those endeavors which have the potential to change the way we address challenges in science, engineering, and innovation.
- description of previous research experience
- references
- appropriateness of the choice of institution relative to the proposed plan for graduate education and research.
Broader Impacts

- How well does the activity advance discovery and understanding while promoting teaching, training, and learning?
- How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?
- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?
NSF Examples of Broader Impacts Activities

• How well does the activity advance discovery and understanding while promoting teaching, training, and learning?
  ▫ **Integrate research activities into the teaching** of science, math & engineering at all educational levels (K-12, undergrad science majors, non-science majors, & grad students)
  ▫ **Include students** as participants in the proposed activities as appropriate
  ▫ **Participate in the recruitment, training, and/or professional development of K-12 science and math teachers.**
  ▫ Develop **research-based educational materials** or contribute to databases useful in teaching (e.g., K-16 digital library).
  ▫ Partner with researchers and educators to develop effective means of **incorporating research into learning** and education.
  ▫ Encourage **student participation at meetings and activities of professional societies.**
  ▫ **Establish special mentoring programs** for high school students, undergraduates, graduate students, and technicians conducting research.
  ▫ Involve graduate and post-doctoral researchers in **undergraduate teaching** activities.
  ▫ Develop, adopt, adapt or disseminate **effective models & pedagogic approaches to science, mathematics and engineering teaching.**
Broader Impacts

How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?

- Establish research and education collaborations with students and/or faculty who are members of underrepresented groups.
- Include students from underrepresented groups as participants in the proposed research and education activities.
- Establish research and education collaborations with students and faculty from non-Ph.D.-granting institutions and those serving underrepresented groups.
- Make campus visits and presentations at institutions that serve underrepresented groups.
- Establish research and education collaborations with faculty and students at community colleges, colleges for women, undergraduate institutions, and EPSCoR institutions.
- Mentor early-career scientists and engineers from underrepresented groups who are submitting NSF proposals.
- Participate in developing new approaches (e.g., use of information technology and connectivity) to engage underserved individuals, groups, and communities in science and engineering.
- Participate in conferences, workshops and field activities where diversity is a priority.
Broader Impacts

- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
  - Identify and establish **collaborations** between disciplines and institutions, among the U.S. academic institutions, industry and government and with international partners.
  - Stimulate and support the development and dissemination of next-generation instrumentation, multi-user facilities, and other shared research and education platforms.
  - Maintain, operate and modernize shared research and education infrastructure, including facilities and science and technology centers and engineering research centers.
  - Upgrade the computation and computing infrastructure, including advanced computing resources and new types of information tools (e.g., large databases, networks and associated systems, and digital libraries).
  - Develop activities that ensure that **multi-user facilities are sites of research and mentoring for large numbers of science and engineering students.**
Broader Impacts

Will the results be disseminated broadly to enhance scientific and technological understanding?

- Partner with museums, nature centers, science centers, and similar institutions to develop exhibits in science, math, and engineering.
- **Involve the public or industry**, where possible, in research and education activities.
- Give science and engineering presentations to the broader community (e.g., at museums and libraries, on radio shows, and in other such venues.)
- Make data available in a timely manner by means of databases, digital libraries, or other venues such as CD-ROMs.
- **Publish in diverse media** (e.g., non-technical literature, and websites, CD-ROMs, press kits) to reach broad audiences.
- Present research and education results in formats useful to policy-makers, members of Congress, industry, and broad audiences.
- Participate in multi- and interdisciplinary conferences, workshops, and research activities.
- **Integrate research with education activities** in order to communicate in a broader context.
Broader Impacts

• What may be the benefits of the proposed activity to society?
  ▫ Demonstrate the linkage between discovery and societal benefit by providing specific examples and explanations regarding the potential application of research and education results.
  ▫ **Partner** with academic scientists, staff at federal agencies and with the private sector on both technological and scientific projects to integrate research into broader programs and activities of national interest.
  ▫ Analyze, interpret, and synthesize research and education results in formats understandable and useful for non-scientists.
  ▫ **Provide information for policy formulation** by Federal, State or local agencies.
Additional Resources...

- NSF GRFP homepage
- GSRC Fellowship Proposal Library
  - Funding Peer Office Hours:
    - M 2:30-4:30pm, W 9:30-10:45am, F 3-5pm
    - Appointments (email fundingpeer@graddiv.ucsb.edu)
- Other Websites:
  - https://jshare.johnshopkins.edu/deyler1/public_html/NSFappguide.htm
  - http://gradschool.missouri.edu/financial/assistantships-fellowships/fellowships/external/nsf-research-fellowship/
- GradPost (tips, writing workshops, etc.)
- Our panel today!
  - Jessica Kubick-Sutherland: Biomolecular Science and Engineering
  - Jeremy Rude: Environmental Science and Management
  - Will Ryan: Psychology
  - Stacy Shiffler-Copp: Physics