Graduate Research Fellowships

The Review

Reviewers see many applications (>30). **Write your application with the reviewers in mind.**

- Make your application simple, clear, and easy to read.
- Show your excitement and potential.
- Reviewers are not all experts in your particular area. Use language that any scientist can understand and emphasize the significance and innovativeness of your ideas.

GRFP's 2 Review Criteria

Intellectual Merit

The potential to advance knowledge.

Broader Impacts

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

Reviewers are instructed to…

- give **full** consideration to *both* criteria - in review *and* decision making processes
- assess each applicant individually, holistically
- comment on the strengths & weaknesses of the application with respect to IM and BI

Reviewers seek evidence of ***past*** IM & BI

and make inference about an applicant's ***potential*** for IM & BI.

"Indicators" of Intellectual Merit

- academic preparation, performance & honors
- previous research experiences
- engagement with international researchers
- mentoring younger researchers
- quality/rigor of proposed graduate research project

***Generally,* highly competitive applicants also have:**

* scholarly publications, presentations &/or posters
* *exceptional* reference letters

"Indicators" of Broader Impacts

- previous & proposed research with BI outcomes
- educational outreach with lay audiences
- engagement with diverse audiences
  - age, race, ethnicity, gender, disabilities, income, veterans, or underserved individuals living in isolated areas

***Some* reviewers also make note of:**

* service learning & study abroad (global engagement)
* leadership & teamwork; communication skills
* teaching any age, any level

The following 5 elements should be considered in the review for both criteria (from NSF):

1.What is the potential for the proposed activity to:

a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit);

b. Benefit society or advance desired societal outcomes (Broader Impacts)?

2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?

3. 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?

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

5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Fields marked with a red asterisk must be complete before saving.
Highlighted fields denote fields sent to the applicant. All other fields are for NSF internal use only.

Save | Cancel

Intellectual Merit Rating*	○ Excellent ○ Very Good ○ Good ○ Fair ○ Poor In the context of the five review elements, please evaluate the strengths and weaknesses of the application with respect to intellectual merit.
Intellectual Merit Comments*	
Broader Impacts Rating*	○ Excellent ○ Very Good ○ Good ○ Fair ○ Poor In the context of the five review elements, please evaluate the strengths and weaknesses of the application with respect to broader impacts.
Broader Impacts Comments*	
Summary Statement*	
Overall Score*	Score must be a whole integer between 1 – 50.
Additional Discussion	☐ Use this checkbox if you would like to propose this application for potential discussion.

Lets compare examples of 2 successful NSF applications – very different backgrounds and experiences:

Marreo-Ortiz (Chemistry, 2015)

Walker (Biomedical Engineering, 2016)

- http://www.clairemckaybowen.com/fellowships.html

What profile does a "typical" winner have?

- STEM Outreach
- Enthusiasm and Drive
- Previous research experience
- Attends conferences and presents research
- Leadership
- Mentorship

Some examples of reviewer comments:
http://www.malloryladd.com/nsf-grfp-advice.html

•Advice from established reviewers

General GRFP Statement Advice

- Connect the [statements] in a way that tells your story (i.e., who you are, what you have accomplished, and what your plans are beyond school).
- I need to know how the applicant became excited about research.
- Demonstrate cross-cultural competency and your potential to work on international research teams of the future. For example, discuss what you learned from study abroad or international travel (e.g., where you went, what you did, what you learned). Or explain how you have worked alongside international faculty and/or students and postdocs from other countries.
- Be sure to connect how your experiences have prepared you for a diverse and global society.

Previous Research Experiences:

- The most competitive applicants have already participated in research and published their findings.
- Writing that shows clearly that the research excites the applicant; the applicant has shown initiative in seeking out research projects and, has shown sustained interested has publications (conference or journal).
- Typically a competitive applicant has two or more research experiences. Include a terse description of these activities, the conclusions, how they fit into a wider arena of science, and their relationship to the applicant's further plans.
- Each experience must include some type of presentation or publication to demonstrate the applicant can transfer their scientific experiences to a wider public audience.

Research Topic:

- Articulate your thoughts in a way that will inform/educate those who are

Broader Impacts:

- The [statements] clearly show that the applicant genuinely values service activities, including assisting K-12 youth, service organizations, Habitat for Humanity, etc., typically for a year or more (not just months).
- Examples of broader impacts may be being a role model as someone from an underrepresented group, engaging non-scientists in data collection, disseminating your research results to the general public or through Extension, or working with young children to discover your major.
- Applicants should have a history of the broader impacts. For example, they should be tutoring, sharing their research experiences with others, and performing outreach activities currently and in the past. Include specific details about these past efforts. Merely saying they will be done in the future is not convincing.

Research Topic:

- Articulate your thoughts in a way that will inform/educate those who are unfamiliar with your specific research area and leave a positive response from those who are experts in your field.
- Don't copy from a grant.
- Use scientific terms that are understood by researchers across fields of study. For example, don't use an acronym without explaining it.
- Reviewers must read quickly and efficiently; your score will go down considerably if your [statement] lacks clarity.
- Does your research address a global issue or have implications for helping people from other countries? Address how you might collaborate with international researchers in the US, abroad or virtually.

Self Scoring Rubric for the GRFP Essays: Critique Your Drafts

Instructions: This is NOT an official document. Rather, the purpose of this scoring rubric is to help you improve the quality of your essay drafts. After you have completed your essays, think about the overall impression you will make with reviewers. To be competitive, each criterion must rate at least a "2." However, to become highly competitive, proposals must also include elements from the "3" column. Suggestion: When you ask others for feedback on your draft essays, you can share a copy of this rubric. It will help them focus on the key elements you should improve in order to have a highly competitive application packet.

	Not competitive		Competitive	Highly competitive
Sample Criterion	**0 (major revisions needed)**	**1 (revisions necessary)**	**2 (meets requirements)**	**3 (elements of top essays)**
1. Content				
a. answer the questions in their entirety	did not follow instructions; lacks clarity; digresses	some sections lack detail; circular discussion	exactly followed instructions; clear; adequate details	novel or intriguing approach; matches NSF's priorities, goals
b. **intellectual merit** *	hypothesis or research questions unclear; illogical; unrealistic; wrong methods	need for the research not well argued; methods lack detail; pitfalls	necessary skills; access to adequate resources; rigorous methods; appropriate citations	will advance knowledge; potentially transformative; international collaboration
c. **broader impacts***	failed to address; includes assertions or assumptions; no past/current efforts	lacks specifics; too loosely connected to scope of work; promises too much	current outreach & teaching efforts; pubs & presentations; future plans well reasoned	interdisciplinary implications; benefits to society; engages diverse groups; partnerships
2. Personal Qualities (confirmed by strong reference letters)				
a. characteristics	personality and characteristics do not emerge; cutesy; indifferent reference letters	too modest or brags; needs tangible *examples* of skills; generic reference letters	motivated; **ethical;** confident; dependable; shows initiative; determination; good letters	insightful; strives for excellence; solid performance; articulate; exceptional letters
b. potential to establish a research career	no discussion of having acquired prerequisite skills	lacks detail; does not connect related skills learned in other settings	team work; learns from past mistakes; problem solver; perseverance despite setbacks	range of research & outreach experiences; a leader; ability to monitor & assess self; grants
c. intellect & discipline-specific knowledge	fails to describe knowledge gained through college, work or life lessons	discusses educational experience only	essays are thoughtful & solidly constructed; discipline-related terms; scholarly	understands issues/trends in discipline; articulates a research agenda; analytical
d. potential for leadership in within or across disciplines	failed to address leadership	mentioned volunteerism or service, but did not address leadership skills	describes skills gained from leadership roles at school, in community, or other outreach	*active* in national organizations; commitment to discipline; peer mentoring; professionalism
3. Mechanics				
a. format and page limit	did not follow instructions exactly; omitted keywords or title	research plan has missing section or is out of order; overuse of bold, italics, etc.	exactly followed instructions; consist format and font; citations included	effective use of white space, and bold face or italics; uses subheads for each section
b. readability	grammatical errors; jargon; malapropisms;	repetition; too many clauses in a sentence; wordiness; awkward wording	error free; highly understandable; good flow; transitions between paragraphs; succinct	scholarly use of discipline-related terms; essays complement one another

*Discussion of review criteria http://www.nsfgrfp.org/how_to_apply/review_criteria

NIH F31 Predoctoral Fellowships

Some examples:
https://www.niaid.nih.gov/grants-contracts/sample-applications#f31

Table 3. Review Criteria for Individual NRSA (F31) Applications.

1. Fellowship Applicant	Are the applicant's academic record and research experience of high quality? Does the applicant fellow have the potential to develop as an independent and productive researcher in biomedical, behavioral or clinical science?
2. Sponsors, Collaborators, and Consultants	Are the research qualifications (including successful competition for research support) and mentoring track record of the sponsor(s) appropriate for the proposed fellowship? Are there (1) evidence of a match between the research interests of the applicant fellow and the sponsor (including an understanding of the applicant's research training needs) and (2) a demonstrated ability and commitment of the sponsor to assist in meeting these needs? Are the qualifications of any collaborator(s) and/or consultant(s), including their complementary expertise and previous experience in fostering the training of fellows, appropriate for the proposed research project?
3. Research Training Plan	Is the proposed research plan of high scientific quality and does it relate to the applicant fellow's training plan? Is the training plan consistent with the applicant fellow's stage of research development? Will the research training plan provide the applicant fellow with individualized and supervised experiences that will develop research skills needed for his/her independent and productive research career?

4. Training Potential	Does the proposed research training plan have the potential to provide the applicant fellow with the requisite individualized and supervised experiences that will develop his/her research skills? Does the proposed research training have the potential to serve as a sound foundation that will lead the applicant fellow to an independent and productive career?
5. Institutional Environment & Commitment to Training	Are the research facilities, resources (e.g., equipment, laboratory space, computer time, subject populations), and training opportunities adequate and appropriate? Is the institutional environment for the scientific development of the applicant fellow of high quality, and is there appropriate institutional commitment to fostering the applicant fellow's training as an independent and productive researcher?
Other Considerations	Protections for Human Subjects. For research that involves human subjects, reviewers will evaluate the justification for involvement of human subjects and the proposed protections from research risk relating to their participation according to the following five review criteria: 1) risk to subjects, 2) adequacy of protection against risks, 3) potential benefits to the subjects and others, 4) importance of the knowledge to be gained, and 5) data and safety monitoring for clinical trials.

Inclusion of Women, Minorities, and Children. When the proposed project involves clinical research, the committee will evaluate the proposed plans for inclusion of minorities and members of both genders, as well as the inclusion of children. For additional information on review of the Inclusion section, please refer to Human Subjects Protection and Inclusion Guidelines.

Vertebrate Animals. The committee will evaluate the involvement of live vertebrate animals as part of the scientific assessment according to the following five points: 1) proposed use of the animals, and species, strains, ages, sex, and numbers to be used; 2) justifications for the use of animals and for the appropriateness of the species and numbers proposed; 3) adequacy of veterinary care; 4) procedures for limiting discomfort, distress, pain and injury to that which is unavoidable in the conduct of scientifically sound research including the use of analgesic, anesthetic, and tranquilizing drugs and/or comfortable restraining devices; and 5) methods of euthanasia and reason for selection if not consistent with the AVMA Guidelines on Euthanasia. For additional information on review of the Vertebrate Animals section, please refer to Worksheet for Review of the Vertebrate Animal Section.

Training in the Responsible Conduct of Research. Taking into account the circumstances of the fellow, including level of experience, the reviewers will address the following questions. Does the plan satisfactorily address the format of instruction, e.g., lectures, coursework, and/or real-time discussion groups? Do plans include a sufficiently broad selection of subject matter, such as conflict of interest, authorship, data management, human subjects and animal use, laboratory safety? Do the plans adequately describe the role of the sponsor/mentor or other faculty involvement in the fellow's instruction? Does the plan meet the minimum requirements for RCR, i.e., eight contact hours of instruction every four years? Plans and past record will be rated as ACCEPTABLE or UNACCEPTABLE, and the summary statement will provide the consensus rating of the review committee. Applications rated UNACCEPTABLE will not be funded until the applicant provides an acceptable, revised plan.

Review Criteria

- Fellowship Applicant
  - Academic and research record
  - Development potential
- Sponsors, Collaborators, and Consultants
  - Track record
  - Matching research interests?
  - Adequate research funds?

- Research Training Plan
  - High scientific quality
  - Time-frame feasible
  - Is project sufficiently distinct
- Training Potential
  - Potential to provide mentored developmental experiences
  - Will it facilitate the applicants transition to next career stage

- Institutional Environment & Commitment to Training
  - Are resources adequate and appropriate

- Questions?