

NSF Proposal Writing

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Key Documents

NSF Strategic Plan

http://www.nsf.gov/news/strategicplan/nsfstrategicplan_2011_2016.pdf

Funding Opportunities

<http://www.nsf.gov/funding/>

Grant Proposal Guide (2013)

<http://www.nsf.gov/pubs/policydocs/pappguide/nsf13001/gpgprint.pdf>

Proposal and Award Policies and Procedures Guide, January 2013

http://www.nsf.gov/pubs/policydocs/pappguide/nsf13001/nsf13_1.pdf

Application Guide

<https://www.nsf.gov/pubs/policydocs/grantsgovguide0113.pdf>

Merit Review Guide

http://www.nsf.gov/bfa/dias/policy/merit_review/

Video Resources

<http://www.youtube.com/watch?v=FaPXdKwiUD8&feature=youtu.be>

(this one, three videos, is for NIH, but still relevant)

<http://public.csr.nih.gov/aboutcsr/contactcsr/pages/contactorvisitsrpages/nih-grant-review-process-youtube-videos.aspx>

Other Resources

Project management tool (Gantt charts: www.gantt.com, this is a free resource)

Manual on how to write memorable sentences: "Made to stick: Why Some Ideas Survive and Others Die" by Chip & Dan Heath

Proposal Notes

Some calls require a "preliminary" proposal (short proposal then you are invited to submit or not).

Limited to five pages:

- Personnel (1 page) - list key personnel and describe roles.
- Project Description (4 pages):
 1. "Conceptual Framework" or "Objectives" or "Specific Aims"
 2. "Rationale and Significance" or "Background"
 3. "Hypotheses" or "Research Question(s)"
 4. "Research Approach" or "Experimental Plan"
 5. "Broader Impacts"

Formal Proposal Sections

- Project Summary
- Table of Contents
- Project Description
 - Project Background and Rationale
 - Project Hypotheses/Objectives
 - Having done a pilot study is looked upon very favorably
 - Project Methodology
 - Project Implementation Plan
 - Project Personnel
 - Project Timeline
 - Results from Prior NSF Support
- References Cited
- Biographical Sketch(es)
- Budget and Justification
- Current and Pending Support
- Facilities, Equipment and Other Resources
- Data Management Plan
- Postdoctoral mentoring plan
- Special Information and Supplementary Documentation
- Suggested Reviewers

Notes on the goal/objectives

You need one general goal and a few detailed objectives (3-4), given as precise actions, not vague questions. The objectives should be SMART:

- Specific (one does not rely on the other)
- Measurable
- Attainable
- Realistic
- Timebound

Notes on Formatting

Make sure you follow formatting directions to the letter. An incorrectly formatted proposal will be denied/returned without review.

- Restrictions on typefaces that can be used:

Arial, Courier New, or Palatino Linotype at font sizes of 10 points or larger

Times New Roman at a font size of 11 points or larger

Computer Modern family of fonts at a font size of 11 points or larger

- No more than 6 lines of text within a vertical space of 1 inch.
- Margins, in all directions, must be at least an inch.
- Proposals that are non-compliant will be returned without review.

Merit Review Criteria

These elements should be considered in the review for both criteria:

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); and
 - 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 institution to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?

Note about "Broader Impact" – it's MANDATORY to say you are serving the "under-represented population" as part of your impact statement, it is apparently a key phrase that people get marked down on for not including. It's also important to *detail precisely* the role of student and the training/mentoring efforts. Do not neglect the students or put them aside of your research project. They have to play an important role (don't give the impression that your grad students will take care of the undergrads without any contribution of yourself, do not offer monthly meetings only, show that you'll mentor every member of your team in a professional and fair way)

Note about "adequate resources available to the PI" – You must clarify whether the technique/instrument mentioned in your proposal is available at the home institution, and if it is through collaboration, you also need clarify whether technique/instrument is feasible (e.g., already applied for user time etc.).

Also, it appears that it's not recommended to include the words "Objectives", "Intellectual Merit" and "Broader Impact" in the Project Summary explicitly. It's intended that people are to read your paragraphs and identify those elements for themselves.

http://www.nsf.gov/bfa/dias/policy/merit_review/

General Remarks on Merit Review

- Try to write "with the reviewer's hat" and make the work as easy as possible for the reviewer
- The first page (abstract/summary) is the most important, many proposals get eliminated on the first page.
- If your proposal doesn't fit in the solicitations, go talk to the program manager about submitting it to the unsolicited program.
- Always include preliminary data/work to try to show your team has experience for the work and that the team members can work together
- No acronyms or limited number (and do not forget to define them!)
- Start 3 months in advance, as you will need the equivalent of 1 month of full time work to build up a competitive proposal

- Don't submit at the last minute (leave yourself a week or so)
- Read the instructions carefully, follow them precisely, be careful with grammar/typo
- Broader impacts section is now very important. Do not forget to mention underrepresented group somewhere.
- Including a timeline in your proposal somewhere is important.
- Good to write quickly a 2-pages summary of your ideas for submitting a grant and go discussing it with a NSF Project Officer.
- It is a good learning opportunity to serve as NSF proposal reviewer, so please volunteer to review proposals!

Biographical Sketch Notes, include (2 pages max)

- (a) Professional Preparation
- (b) Appointments
- (c) Publications: up to 5 most closely related to the proposed project and up to 5 other significant publications, whether or not related to the proposed project.
- (d) Synergistic Activities: up to 5 examples that demonstrate the broader impact of the individual's professional and scholarly activities that focuses on the integration and transfer of knowledge as well as its creation.
- (e) Collaborators & Other Affiliations:

Collaborators and Co-Editors (during the 24 months preceding the submission of the proposal)
Graduate Advisors and Postdoctoral Sponsors. A list of the names of the individual's own graduate advisor(s) and principal postdoctoral sponsor(s), and their current organizational affiliations.

Thesis Advisor and Postgraduate-Scholar Sponsor. A list of all persons (including their organizational affiliations), with whom the individual has had an association as thesis advisor, or with whom the individual has had an association within the last five years as a postgraduate-scholar sponsor. The total number of graduate students advised and postdoctoral scholars sponsored also must be identified.

If structure of biographical sketches deviates from guidelines, the proposal will be returned to the author.

Sample Evaluation Form

Criterion I: Intellectual Merit

Intellectual Strengths: Please evaluate the IM strengths of the proposal. Do not summarize the proposal; explain what makes it strong.

Intellectual Weaknesses: Please elaborate on the IM weakness of the proposal. Do not summarize the proposal; explain what the weaknesses are using evaluative statements.

Criterion II: Broader Impacts

Please remove this text before approving – Broader impact strengths and weaknesses should include training of students, public outreach, underrepresented groups, international involvement, conservation issues, software/freeware development, databases and web-based products, etc. Include evaluative statements on the quality of the broader impacts.

Also include comments on the Post-Doctoral Mentoring Plan, if applicable.

Broader Impact Strengths: Please evaluate the BI strengths of the proposal. Do not summarize them; explain what makes the strong.

Broader Impact Weaknesses: Please elaborate on the BI weakness of the proposal. Do not just summarize them; explain what the weaknesses are using evaluative statements.

Data Management Plan

Please evaluate the data management plan (not included in the 15 page project description limit, this is a separate section, 2 page limit)