



Research Opportunities in the Biological Sciences at NSF

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Agenda

THE NATIONAL SCIENCE FOUNDATION
PROPOSAL PREPARATION
FUNDING OPPORTUNITIES FOR THE
BIOLOGICAL SCIENCES

Distinctive Features of NSF

- Emphasis on integrating research and education
- Close interaction with universities
- Rotator system: many program directors are on loan from universities, labs or industry
- Reviews are advisory; program directors make funding decisions



National Science Board

National Science Foundation
Director Deputy Director

Office of Inspector General

Office of the Director

- Legislative & Public Affairs
- Equal Opportunity Prog.
- General Counsel
- Cyber Infrastructure
- International Science & Engineering
- Integrative Activities
- Polar Programs

Directorates

- BIOLOGICAL SCIENCES
- COMPUTER and INFORMATION SCIENCE and ENGINEERING
- EDUCATION and HUMAN RESOURCES
- ENGINEERING
- MATH AND PHYSICAL SCIENCES
- SOCIAL, BEHAVIORAL and ECONOMIC SCIENCES



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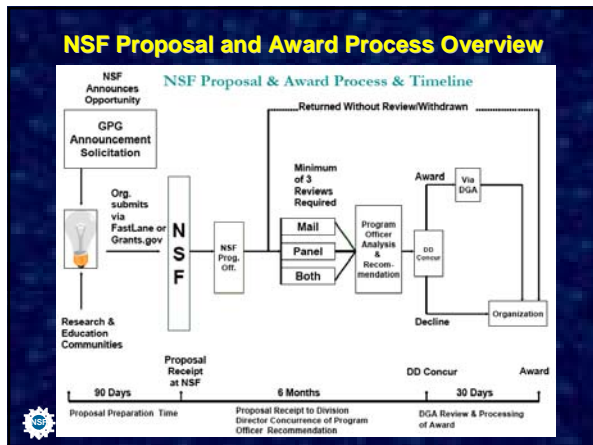
NSF home page www.nsf.gov



What Makes a Proposal Competitive?

- Likely high impact
- New and original ideas
- Critical approach
- Sound scientific rationale
- Succinct, focused project plan
- Knowledge of subject area or published, relevant work
- Experience in essential methodology
- Realistic amount of work
- Sufficient detail

NSF Proposal and Award Process Overview



Sections of the Proposal

- Cover Sheet
- Project Summary
- Table of Contents
- Project Description
 - Results from Prior NSF Support
 - Intellectual Merit
 - Broader Impacts
 - (Goal and Objectives, Justification, Background, Preliminary Studies, Proposed Work, Timeline)
- References Cited
- Biographical Sketch(es): Brief CV, Publications (10), Synergistic Activities, Collaborators, Graduate Advisors and Postdoctoral Sponsors
- Budget

Intellectual Merit

- Objectives for the period of the proposed work and expected significance
- Relation to longer-term goals of the PI's project
- Relation to the present state of knowledge in the field, to work in progress by the PI under other support and to work in progress elsewhere
- Outline the general plan of work
- Broad design of activities to be undertaken
- Clear description of experimental methods and procedures

Reviewers' Criteria for 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?

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

What are "Broader Impacts"?

1. Integrate research and education
 - Include students as participants in the proposed activities
 - Participate in the recruitment, training of K-12 teachers
 - Encourage student participation at meetings of professional societies
2. Broaden the participation of underrepresented groups
 - Establish collaborations
 - Include students from underrepresented groups in research/teaching
 - Make presentations at institutions
 - Participate in conferences, workshops where diversity is a priority
3. Enhance the infrastructure
 - Establish collaborations between disciplines and institutions
 - Maintain/operate/modernize shared research and ed. infrastructure
 - Upgrade the computation and computing infrastructure



What are "Broader Impacts"?

4. Results disseminated broadly
 - Partner with institutions to develop exhibits in science
 - Give science and engineering presentations to the broader community
 - Make data available by means of databases, digital libraries, etc.
 - Publish in diverse media
 - Participate in multi- and interdisciplinary conferences/workshops
5. Benefits to society at large
 - Link discovery and societal benefit by providing specific examples
 - Interpret research results in formats understandable for non-scientists.



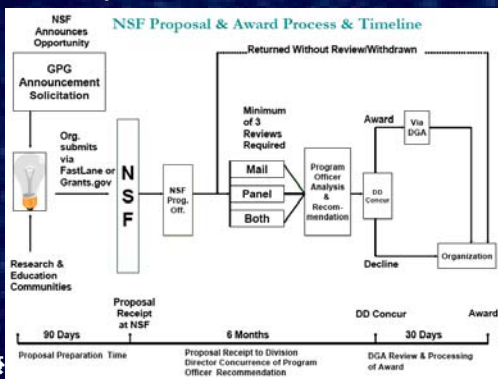
Reviewers' Criteria for Broader Impacts

1. How the project will integrate research and education by advancing discovery and understanding while at the same time promoting teaching, training, and learning
2. Ways in which the proposed activity will broaden the participation of underrepresented groups
3. How the project will enhance the infrastructure for research and/or education
4. How the results of the project will be disseminated broadly to enhance scientific and technological understanding
5. Potential benefits of the proposed activity to society at large



NSF FastLane

NSF Proposal and Award Process Overview



After submission, now what?

Review Information Provided to PI

When a decision has been made (whether an award or a decline), you will receive electronically through FastLane:

- description of the context in which the proposal was reviewed
- copies of all reviews used in the decision
- copy of panel summary

In addition, if not otherwise provided in the panel summary, the PI is provided an explanation (written or telephoned) of the basis for the declination.



What can happen to an unsuccessful proposal?

Return Without Review

- is inappropriate for funding by the National Science Foundation;
- does not meet NSF proposal preparation requirements
- is not responsive to the GPG or program announcement/solicitation;
- does not meet an announced proposal deadline date;
- was previously reviewed and declined and has not been substantially revised

Reconsideration

You may request reconsideration through the Program Officer or the cognizant Division Director.

The aim of any reconsideration is to ensure that NSF's review has been fair and reasonable, both substantively and procedurally. The scientific and technical merits may be examined within the context of budget availability and program priorities.



Grant Proposal FAQs

FACT: NSF Program Officers make recommendations to fund or decline a proposal.

DISCUSSION: External review panels do not make funding decisions. The analysis and evaluation of proposals by external reviewers provide information to NSF Program Officers in making their recommendations to award or decline a proposal.

FACT: Most proposals that are awarded do not receive all "Excellents."

DISCUSSION: It is not true that a proposal must receive all "Excellents" to be funded; in fact, most proposals that are awarded do not receive all "Excellents." Furthermore, even if you get all "Excellents," you may not be funded.



Grant Proposal FAQs

FACT: Principal Investigators submit on average about 2.1 proposals for every award they receive.

DISCUSSION: A common misconception is that once declined, you will always be declined. However, NSF statistics show that on average, Principal Investigators submit about 2.1 proposals for every award they receive. That is, many Principal Investigators who receive awards also have been declined. Another common misconception is that one cannot get funded on a first submission. However, NSF statistics show that, in 2006, 45% of new PIs received their first award on their first attempt.



Types of Proposal Submission

Solicited vs. Unsolicited

- Unsolicited proposals are associated with regular research programs (check websites and GTP)
 - Solicited proposals have a published Program Solicitation (Program Announcement)
- | | |
|---|--|
| <input type="checkbox"/> Target dates | <input type="checkbox"/> Submission Windows |
| <input type="checkbox"/> No deadlines (e.g. workshops, SGERs) | <input type="checkbox"/> Letters of Intent |
| <input type="checkbox"/> Deadlines | <input type="checkbox"/> Preliminary proposals |



Approximate target dates for unsolicited proposals

January 10
July 10



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GENERAL CONSIDERATION



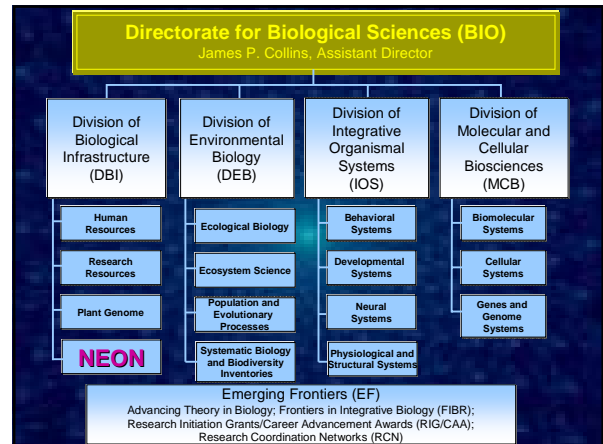


National Science Foundation Funding Opportunities



Where's
the
treasure?

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




Division of Environmental Biology

POPULATION AND EVOLUTIONARY PROCESSES CLUSTER
 POPULATION BIOLOGY
 EVOLUTIONARY GENETICS
 POPULATION ECOLOGY*

SYSTEMATIC BIOLOGY AND BIODIVERSITY INVENTORIES CLUSTER
 SYSTEMATIC BIOLOGY
 BIODIVERSITY SURVEYS AND INVENTORIES (BSI)
 PARTNERSHIPS ENHANCING EXPERTISE IN TAXONOMY (PEET)

ECOLOGICAL BIOLOGY CLUSTER
 ECOLOGY
 POPULATION ECOLOGY*
 LONG TERM RESEARCH IN ENVIRONMENTAL BIOLOGY (LTREB)

ECOSYSTEM SCIENCE CLUSTER
 ECOSYSTEMS
 LONG TERM ECOLOGICAL RESEARCH (LTER) SITES




Faculty Early Career Development Program (CAREER)

Announcement: NSF 05-579

- Supports teacher-scholars
- Supports plans that effectively integrate research and education
- BIO minimum of \$500,000 for 5 years
- Check eligibility criteria




Research Initiation Grants to Broaden Participation in Biology (RIG BP)

Announcement: NSF 06-567

- Expand the population of role models who will interact with an increasingly diverse student population, the workforce of the future
- Fund biological research projects that use innovative ways to attract and retain members of under-represented groups to careers in biology

Contact: Carter Kimsey
ckimsey@nsf.gov




Ecology of Infectious Diseases (EID)


Announcement: NSF 07-513

- Joint NSF and NIH initiative
- Study how large-scale environmental events alter the risks of emergence of viral, parasitic, or bacterial diseases

Award Web Page: <http://nsf.gov/bio/pubs/awards/eid.htm>

Deadline: 2nd in December, annually
 Contact: Sam Scheiner, sscheine@nsf.gov







Microbial Systems in the Biosphere (MSB)

Dear Colleague Letter: NSF 08-77

- Augments funding to programmatic areas throughout the Directorate for research in microbial biology.
- Invites investigators who would have submitted proposals to the recently ended Microbial Observatories and Microbial Interactions and Processes (MO/MIP) solicitation to submit to core program areas in the Biology Directorate



Contact: Matt Kane
mkane@nsf.gov

Life in Transition (LiT)

Dear Colleague Letter: NSF 08-78

- Augments funding to support emerging areas of interdisciplinary research, many of which lie at the intersection of the life and physical sciences.
- Principles and mechanisms of resilience, sustainability, robustness, feedback loops, etc. that govern the interaction of the living and nonliving worlds, including Earth's climate system?
- How is energy transduction managed by living systems of all types and scales and across the diverse range of physical environments found on Earth?
- What constitutes a "core metabolism" and what aspects of metabolic function are related to biological diversification beyond that core?





Assembling The Tree of Life Project (AToL)

Announcement: NSF 07-535

- Constructing a universal Tree of Life for all 1.7 million named species of organisms on earth
- Capitalizes on new computational and genomic technologies
- Encompasses all microbes, fungi, protists, animals and plants
- NEW EMPHASIS: Role of Horizontal Gene Transfer

Contact: Maureen Kearney,
mkearney@nsf.gov




Doctoral Dissertation Improvement Grants (DDIG)

Announcement: NSF 05-607

- Division of Environmental Biology and the Division of Integrative Biology and Neuroscience
- Must pass candidacy by the deadline
- Funds research-related costs only
- Recent changes:
 - increased upper limit to \$12,000
 - allows travel to meetings




Postdoctoral Research Fellowships Biological Informatics

Announcement: NSF 04-539

- Address important scientific questions in biology
- Include a strong linkage between computer, information, computational science and biology
- Develop computational, statistical, and other tools in the collection, organization, dissemination, and use of information to solve problems in biology

Contact: Peter McCartney, pmccartn@nsf.gov




Minority Postdoctoral Research Fellowships

Announcement: NSF 06-586

- Supports training and research in the areas of biology and social, behavioral, and economic sciences
- Offers travel grants for graduate students to visit prospective sponsors
- Provides starter research grants for Fellows

Deadline: November 5, 2007
Contact: Carter Kimsey, ckimsey@nsf.gov



NSF Needs You!



EArly-concept Grants for Exploratory Research (EAGER)

Supports exploratory work in its early stages on untested, but potentially transformative, research ideas or approaches ("high risk-high payoff").

- involves radically different approaches
- applies new expertise
- engages novel disciplinary or interdisciplinary perspectives

PI(s) must contact the NSF program officer(s) prior to submission of an EAGER proposal.

- why this project is appropriate for EAGER funding
- why it does not "fit" into existing programs
- why it is a "good fit" for EAGER

Only internal merit review is required for EAGER proposals.

Requests may be for up to \$300K and of up to two years duration.

