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NATIONAL SCIENCE FOUNDATION

Agency Site: http://www.nsf.gov

OVERVIEW

The National Science Foundation (NSF) was one of several agencies created after World War II to help preserve the federal government/academic research alliance that had developed during the War. Legislation to create NSF turned into a five-year process of negotiations between Congress and two Presidents that was finally signed by Harry Truman in 1950 (Source: NSF: A Brief History, George Mazuzan). NSF is an independent federal agency – meaning while it resides within the Executive Branch, it is not a Cabinet-level department or part of the Executive Office of the President. Rather, NSF is responsible to the President; but Congress provides yearly appropriations for the agency, has oversight authority, and confirms all Presidential appointments of agency personnel.

Specific Interests

NSF funds research in natural, physical, social, and behavioral sciences; computer science; engineering; and education. NSF also supports educational improvement efforts in science, technology, engineering, and mathematics (STEM) education.

Approach

The agency mission "includes support for all fields of fundamental science and engineering, except for medical sciences" (Source: NSF What We Do Website). To meet this mission, NSF supports external research efforts in academia and industry; the agency does not maintain laboratories or perform in-house research. In 2016, NSF launched a new long-term research agenda called Big Ideas, and engaged the research community in identifying them: Future of Work, Growing Convergence Research, Harnessing the Data Revolution, Mid-scale Research Infrastructure, Navigating the New Arctic, NSF 2026, NSF INCLUDES, Quantum Leap, Understanding the Rules of Life, and Windows on the Universe.

AGENCY ORGANIZATION

The NSF Director and Deputy Director are charged with overseeing agency operations. Another key component of NSF is the National Science Board (NSB), consisting of 24 members drawn from both industry and academia. The NSB is responsible for establishing policies for the agency, and also makes recommendations concerning research and education policies for the President and Congress. All these leadership positions are six-year Presidential appointments confirmed by Congress. (Source: NSF FY2019 Agency Financial Report, MD&A – p. 7)

NSF has seven Directorates supporting research and education efforts, each headed by an Assistant Director:

- Biological Sciences
- Computer and Information Science and Engineering
- Education and Human Resources
- Engineering
- Geosciences
- Mathematical and Physical Sciences
- Social, Behavioral, and Economic Sciences

NSF GRANTS PROCESS

Proposals may be submitted in response to NSF program solicitations and announcements (solicited proposals) or may be generated by researchers in areas responsive to agency interests (unsolicited proposals). NSF's ***Proposal and Award Policies and Procedures Guide (PAPPG)***, updated yearly, is the main source of information for those preparing and submitting proposals as well as for subsequent award management.

NSF supports a variety of proposal types including standard research grants, two small grants programs (one designed to respond to unanticipated events and the other to support research at earlier stages), an interdisciplinary research grant option, and the Faculty Early Career Development (CAREER) Awards supporting early career faculty in their dual roles as researchers and educators. (Source: 2020 PAPPG, pp. II 34-46)

Proposals are submitted electronically through NSF's FastLane System. This system is also used for award reporting, and to perform award searches. NSF and other federal agencies are working toward a new proposal processing system called Research.gov; when fully functional, this new system will replace FastLane.

FY 2019 Awards/Success Rates

This past year, NSF reviewed 41,033 grant proposals and made 11,252 new awards, resulting in a 27% overall

funding rate. The average award size in FY2019 was $197,530 (total costs). NSF has over 54,000 active awards in its portfolio. (Source: NSF FY2019 Agency Financial Report, MD&A – p. 6, 16-17)

Contact with Program Officers (POs):
NSF encourages Principal Investigator (PIs) to interact with Program Officers who are experts in their fields. POs often help prospective PIs best situate their proposals to meet program objectives. NSF POs exercise considerable power – they control their own budgets, decide on type of review process, select reviewers, and make the funding recommendations after analysis of reviewer comments. A valued tradition at NSF is that, in addition to permanent program officers, the agency also brings in academic scientists and engineers who serve as POs on a temporary basis (known as rotators), bringing fresh perspective to the agency and serving as NSF ambassadors when they return to their home institutions. (Source: NSF FY2019 Agency Financial Report, MD&A – p. 8)

Typical NSF Proposal Process:
1) PI determines suitability of proposed project to NSF Directorate/Division/Program missions
2) PI contacts Program Officer with questions
3) PI completes proposal
4) Proposal is submitted via NSF's electronic system, FastLane
5) PO selects and assigns reviewers for proposal competition
6) Assigned reviewers provide PO with proposal comments, deciding which proposals reach the highest standards
7) After analyzing reviewers' comments, PO makes funding recommendations to the Division Director
8) Division Director finalizes funding decisions and forwards to Division of Grants and Agreements for award processing
9) Successful PI and institution receive award notice

Proposal Review Process
NSF's merit review process involves peer review by outside reviewers, generally three per proposal. Many reviewers use FastLane for proposal review. Some POs also plan in-person or online panel sessions. The agency used about 29,000 peer reviewers in FY2019. The merit review criteria, set by the National Science Board, are:

1. Intellectual Merit
2. Broader Impacts (see 2020 NSF PAPPG, p. III-2).

Once in possession of all reviewer comments, the PO makes funding recommendations to the Division Director who finalizes funding selections.

**NSF
PROPOSAL & REVIEW PROCESS**
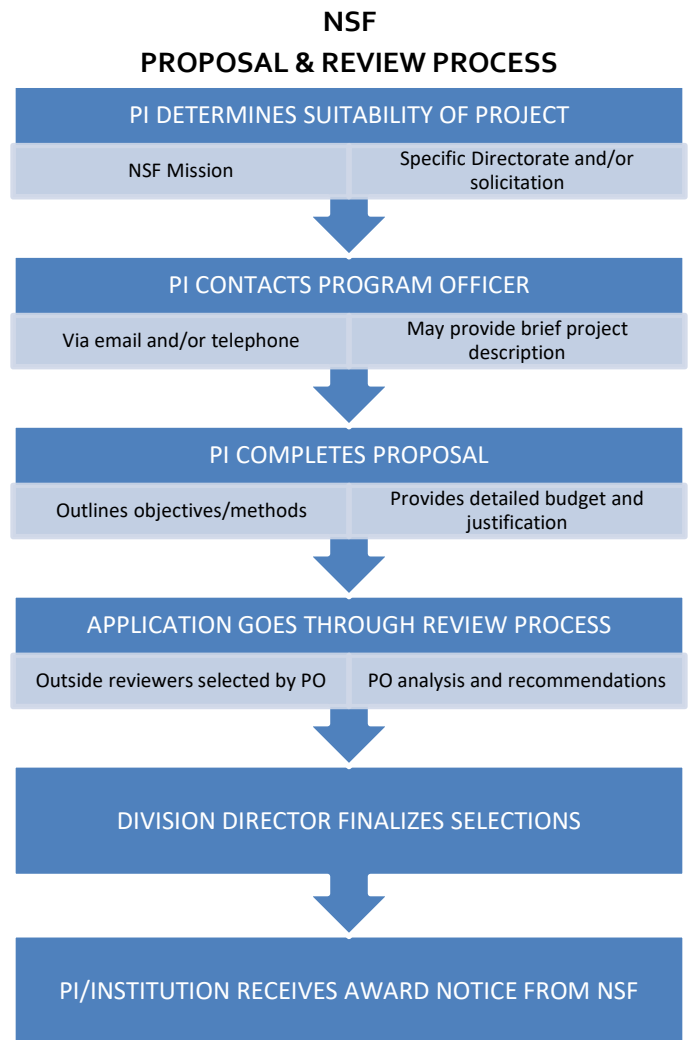
What Happens Next?
After the review process ends, many POs contact PIs to discuss budgets and any necessary changes in work scope. This is generally a good sign that the project will be funded, and most PIs receive their awards a month or so later.

Principal Investigators whose proposals are declined for funding receive reviewer feedback and additional information on why their proposals were not selected. PIs are also encouraged to discuss declinations with POs to obtain further clarification about their proposal status and how best to address reviewer comments when resubmitting. Resubmissions to NSF always take the form of a new proposal but should incorporate PO and reviewer suggestions.