NSF Merit Review Process and Research Pro

Outline

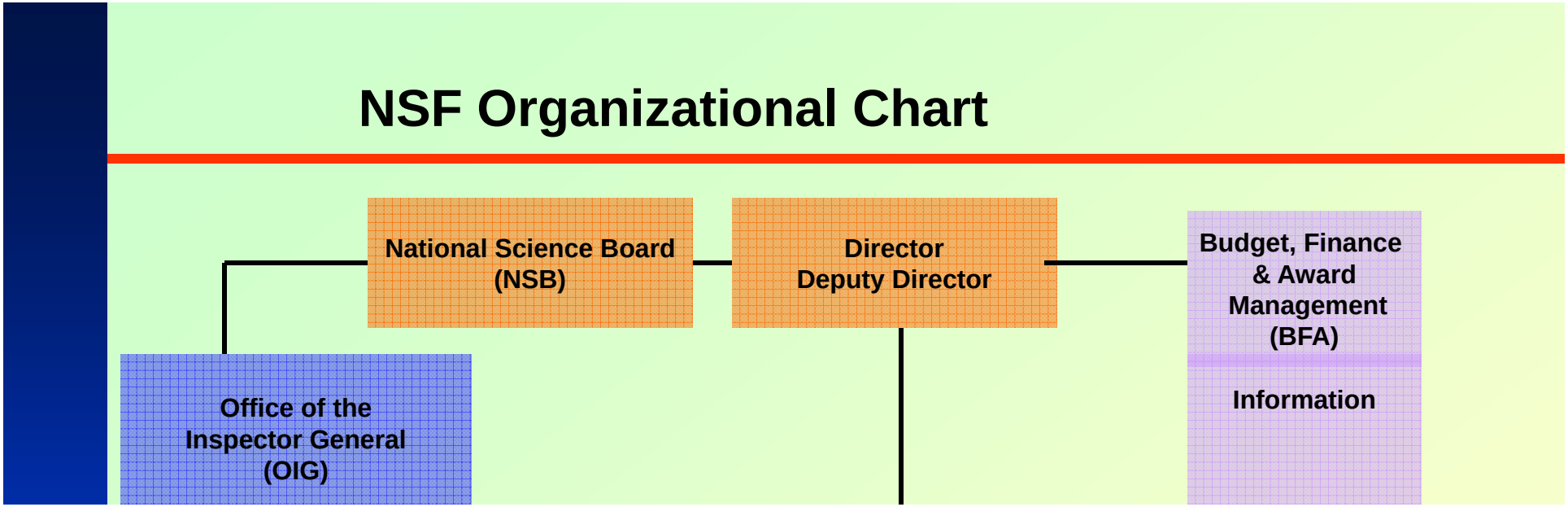
Background: About NSF & me

Mechanics of proposal process

National Science Foundation

- Not a foundation
- Established by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare…"
- Independent agency—outside Cabinet
- Guided by National Science Board
- Merit review (from ONR) & COV (since mid-1970s) to award grants & evaluate process
- Permeable—borrows university faculty
- Translator and transducer

NSF Organizational Chart



Proposal Submission

How?

- Via FastLane (https://www.fastlane.nsf.gov) *or* Grants.gov (http://www.grants.gov)

Who?

- Universities and colleges
- Non-profit, non-academic organizations
- For-profit organizations
- State and local governments

To whom?

- Categories of Funding Opportunities

Wh

Proposal Submission - Categories of Funding Opportunities

Program Description (or Announcement)

- broad, general descriptions of programs
- accepts investigator-initiated proposals

Proposal Submission - What?

Letters of Intent

- **Only if required by the program**
  - Intent: to help NSF gauge size and range of competition
  - Content: PI's and co-PI's names, proposed title, list of possible participating organizations, and synopsis
  - Not externally evaluated or used to decide on funding

Preliminary Proposal

- **Only if required by the program**
  - Intent: reduce proposal preparation effort, increase quality of full proposals, inform review process
  - Contents: based on the program
  - Review and decisions: merit review to aid decisions
    - Invite or not; Encourage or not

Full Proposal

- **Typical submission to NSF**

Proposal Submission - When?

Published in program descriptions and solicitations

Target dates

- dates after which proposals still accepted, but may miss a particular panel

Deadline dates

- dates after which proposals will not be accepted for review

Submission Windows

- designated periods of time during which proposals accepted for review

Accepted any time – After speaking with a Program Director

- e.g. SGER (Small Grants for Exploratory Research), conference/workshop proposals, supplements

Words of Caution

Plan Ahead!!

- Don't wait until the last minute.
- Don't count on getting a time extension

Submission

- Check before you submit
  - Print out from FastLane to ensure pdf conversion is correct
- Work with your Sponsored Projects Office

After submission

- Acknowledgment and FastLane proposal status page
- FastLane Proposal File Update module
  - Parts of a proposal *may* be replaced after submission
  - Don't count on this, the word is *may*, not *can*.

Proposal review process

Administrative Review

- Printed, checked, transferred to Division/Office
- Assigned to program, cluster, section, etc.

NSF Merit Review

NSF invests in the best ideas from the most capable people, as determined by competitive merit review.

Merit Review Criteria

Intellectual merit

- Creativity and originality and *transformative potential*
- Potential to advance knowledge
- Concep

A scholarly interlude on merit review

Ways To Allocate Funds For Science

Legislators may allocate funds

- Earmarking and Pork Barrelling

- + Democratic
- + Legitimate
- + Distributional fairness
- - "Political"
- - Inexpert
- - Culturally corrosive
- ... More than $4.5B (est.) spent by earmark

Another Way To Allocate

Strong Manager (DARPA)

- + Flexible and responsive
- 0 Assumes clear objectives and standards
- 0 Requires outcome accountability
- 0 May not work for all aims or fields
- - Projects have defined objectives, programs

One Final Option...

Formula funding

- **$$=** $\alpha\xi + \beta\psi +$

So….

Merit review is a choice…

- There are alternatives.

NSF made its choice at “birth,” has adapted over the decades, and thrived through merit review

Merit review informs and guides POs, who are active scientific decision makers—a mixed model

And some purposes of merit review are subtle ….

Merit review in principle…

A process for "grading the grain" and allocating scarce resources, of course.

- **NIH: reviewers are asked to evaluate the science, the whole science, and nothing but the science of a proposal**

But it is also much more…

A Source of Expert Advice

Mode of Scholarly Communication

Original ideas circulate among influential scientists, which helps prepare the field to accept them

People may become aware of or involved in activities (workshops, meetings, panels,

Enactment of Professional Authority

Distinguishes science from other endeavors (we don't use merit review to make most allocation decisions!)

- **Symbolic importance as a badge of cultural distinctiveness and professional autonomy**

Creates a "preserve" for evaluation and decision making that is relatively free of other considerations (e.g., politics, fads).

Competing Values

Merit Review Criteria

Intellectual merit

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- Potential to advance knowledge
- Concep

Merit Review

Mail Reviews

- **Identifying reviewers:**
  - Reviewer suggestions by the PI
  - Program Director's knowledge of the research area
  - References listed in proposal
  - Recent meeting programs of professional societies
  - Recent authors in scientific and engineering journals

Basis for decisions: Reviews

Written Reviews

- Substance of the review is more important than the rating.
- Program Director analyzes reviews.
  - Fairness
  - Substance of the reviews
  - Technical problems raised in the reviews
  - Reasons for the reviewer concerns or enthusiasm
  - Information not available to the reviewer (e.g. updates)
- Program Director sometimes obtains additional reviews or comments from the PI

Basis for Decisions: A Balanced Portfolio

Innovation and Creativity

- **Potentially transformative proposals**

Breadth of research areas

Priority areas and systems

Demographics and Diversity

Broadening participation

Institutional impact- RUI, EPSCOR, etc.

Integration of research & education

International collaborations

Outline

You now have an expert's understanding of the proposal review and decision processes

Research proposal preparation

- **Getting started**
- **The proposal & proposal writing tips**

Research proposal preparation

A good proposal is a good idea, well e

Step 1: Getting started

There is no substitute for a good idea!

Find the right program early!

- It's better to do this well before you write, than after you get your reviews back.

Develop your brilliant idea

Key Questions

- What do you intend to do?
- Why is the work important?
- What does the literature provide?
- How are you going to do the work?

Make sure it is original and exciting

- Survey the literature
- Talk with others in the field

Convince people that you can do it

- Obtain preliminary data
- Develop arguments to support feasibility
- Determine available facilities and resources
  - What you have
  - What collaborators can help with

Finding the right program

What to look for:

- Goal of program or announcement
- Eligibility
- Special requirements
- Deadlines or target dates

Read the program description or solicitation carefully.

Where:

- www.nsf.gov
- Program Directors (phone, email)
- MyNSF

MyNSF
http://www.nsf.gov/mynsf/

Step 2: The Proposal

The Grant Proposal Guide

Get it -

Parts of a Proposal

- Cover sheet and certifications
- Project summary
  - Both intellectual merit and broader impacts described
- Table of contents
- Project description
- References cited
- Biographical sketches
- Budgets and justification
- Current and pending support
- Facilities, equipment and other resources
- Special information/documentation
  - NO reprints, preprints, letters of endorsement
- Single Copy Documents
  - Reviewer suggestions, deviation authority, confidential information, etc.

Project Summary

This page is critical:

- It influences which program or panel will review your proposal.
- It must address both review criteria
  - If not, then returned without review.

Intellectual Merit

- Describe the research problem & its importance
- State the overall goal and specific aims
- Describe how the aims will be achieved

Broader Impacts

- Educational & outreach activities; infrastructure; dissemination of results; underrepresented

Project Description

15 pages to cover:

Objectives and expected significance

Relation to present state of knowledge

Advice: Project Description

A proposal is not a linear document p

Advice: The reader over your shoulder

- The reviewer may not be an expert in your specific field
- Make it easy for reviewers to like your proposal—show you're committed, engaged
- Lost on page one is lost forever
- Figures and tables get your point across clearly
- You cannot predict what a reviewer will notice

Advice: Be reasonable

Be aware of the scope:

- "Too ambitious" vs. "Too narrow"

Be honest and up-front:

- Address issues, don't try to hide them
- Acknowledge possible research complications problems and have

Biographical Sketch

Professional Preparation

Appointments

Publications

- **5 closely related**

Budget

Current and Pending Support

List everything

- current, pending, and anticipated

Be careful of overlap

- Perception of overlap could be detrimental in the review.

Dual submissions

- Only when they are allowed

Why do some proposals fail?

Absence of original ideas or hypotheses

- Incremental
- Not exciting or original

Errors

- Unclear or incomplete expression of aims
- Faulty logic or experimental design
- Less than rigorous presentation

Unrealistic, sloppy or incomplete

Resources and facilities not in place

- PI qualifications/expertise not evident
- Necessary collaborations not documented

If you have to resubmit…

Stay calm!

- **Take ten… breaths, hours, days**

Funding and afterwards

Funding

- Budget and scope may be negotiated before award
- Funding may be as a standard grant (all $ at once) or continuing grant ($ released annually).

Afterwards

- Do what you promised (*pretty much*)
- Notifications & Requests via FastLane
- Supplement opportunities
  - REU - Research Experience for Undergraduates
  - ROA - Research Opportunity Awards
  - RET - Research Experience for Teachers
- Submit annual and final reports

Getting Support in Proposal Writing

NSF Publications

- Program Solicitations
- Grant Proposal Guide
- Web Pages
- Funded Project Abstracts
- Reports, Special Publications

Program Directors

- Incumbent
- Former "Rotators"

Mentors on Campus

Previous Panelists

Serving As A Reviewer

Sponsored Research Office

Successful Proposals


US NSF - National Science Foundation - Microsoft Internet Explorer provided by National Science Foundation
SEARCH
Program Areas
Select One
Quick Links
News
For the News Media
Bipedal Bots Star at AAAS Media Briefing
Select One
About NSF
View Staff Directory
Search Staff Directory
NSF supports great television, inspiring museum exhibits, breathtaking IMAX films, and compelling radio.
Priority Areas
Science and
Career Opportunit
Contracting Oppo
MyNSF
Sign up for email alerts & more
Events Calendar
Need Help?
Help Center