
The Life Cycle of an NSF Proposal

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National Science Foundation (NSF)

- Independent federal agency created by Congress in 1950
- Supports research and education in all STEM disciplines
- Overseen by National Science Board

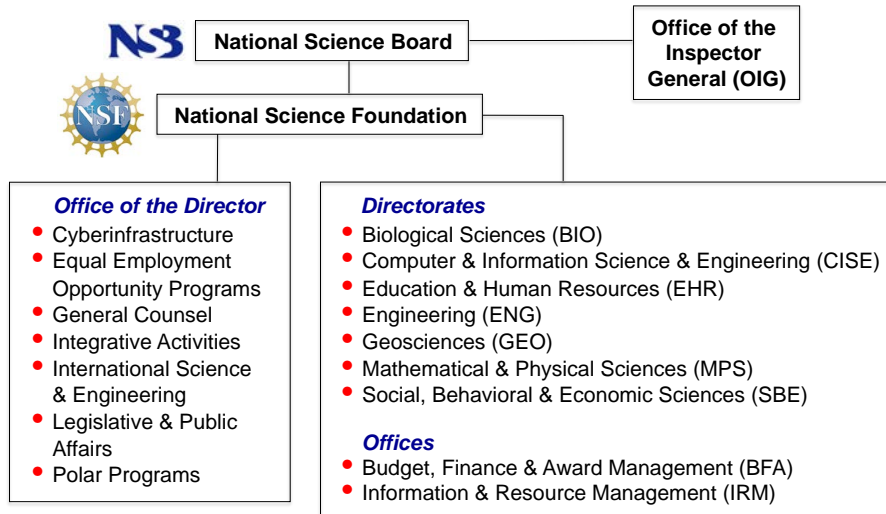


- 49,000 proposals evaluated each year
- 12,000 awards made @ 2,000 colleges & universities
- Annual budget (FY 2017): ~\$7.5 billion

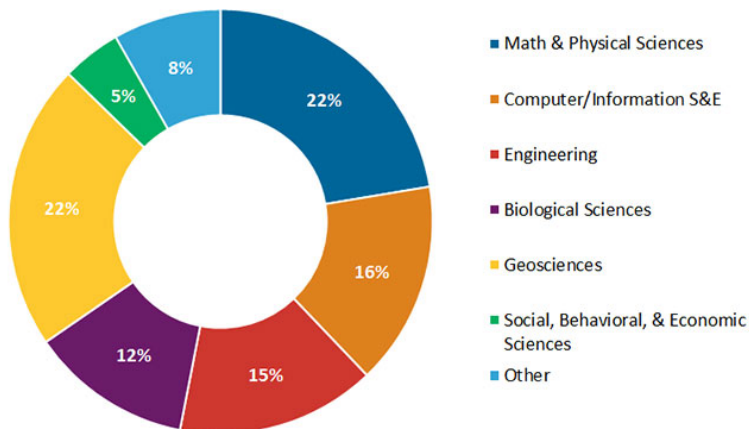
FY 2017 Federal R&D Support

Federal Agency/Program	FY 2016	FY 2017	Change
Department of Agriculture Agriculture and Food Research Initiative	\$350 million	\$375 million	7.10%
Department of Education Pell Grant Maximum Grant	\$5,915	\$5,920	0.10%
Department of Education Title VI International Education Program	\$72.2 million	\$72.2 million	0%
National Institutes of Health	\$32.1 billion	\$34.1 billion	6.20%
National Science Foundation	\$7.464 billion	\$7.472 billion	0.10%
NASA - Science Mission Directorate	\$5.589 billion	\$5.764 billion	3.10%
Department of Energy Office of Science	\$5.35 billion	\$5.39 billion	0.80%
Department of Defense - Basic Research	\$2.309 billion	\$2.276 billion	-1.40%
National Endowment for the Humanities	\$148 million	\$150 million	1.40%

NSF Organizational Chart



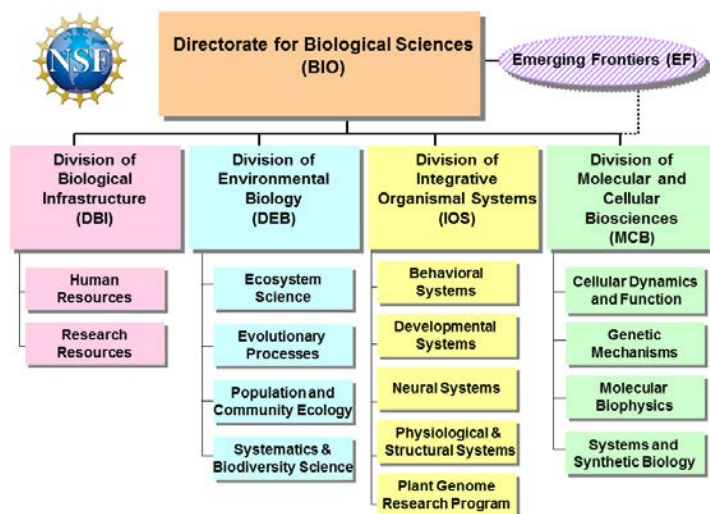
FY16 Funding Balance Between NSF Research Directorates

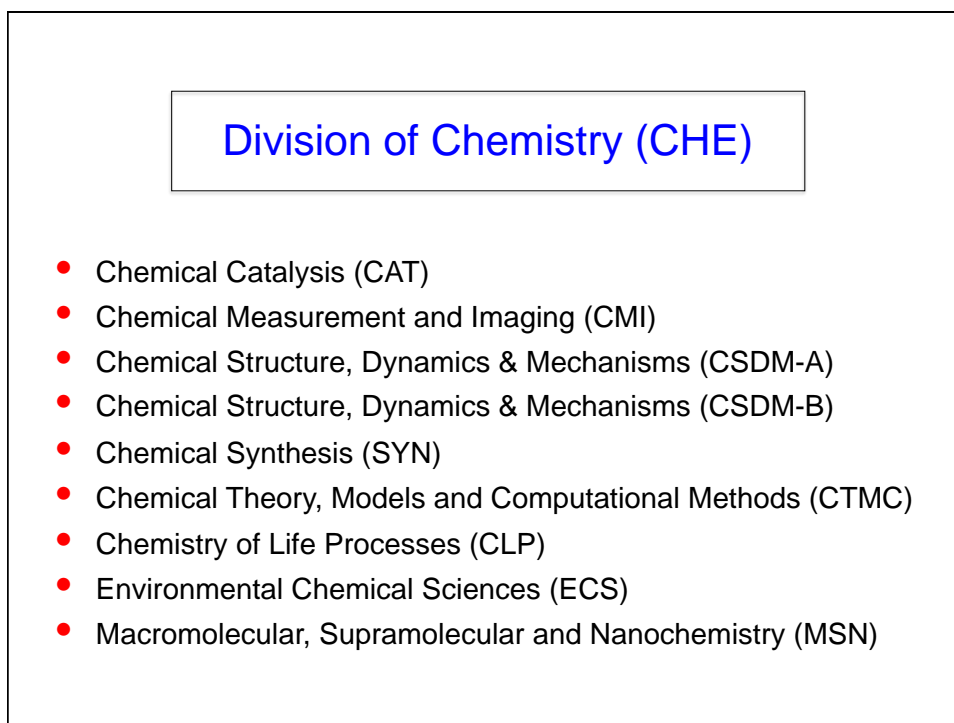
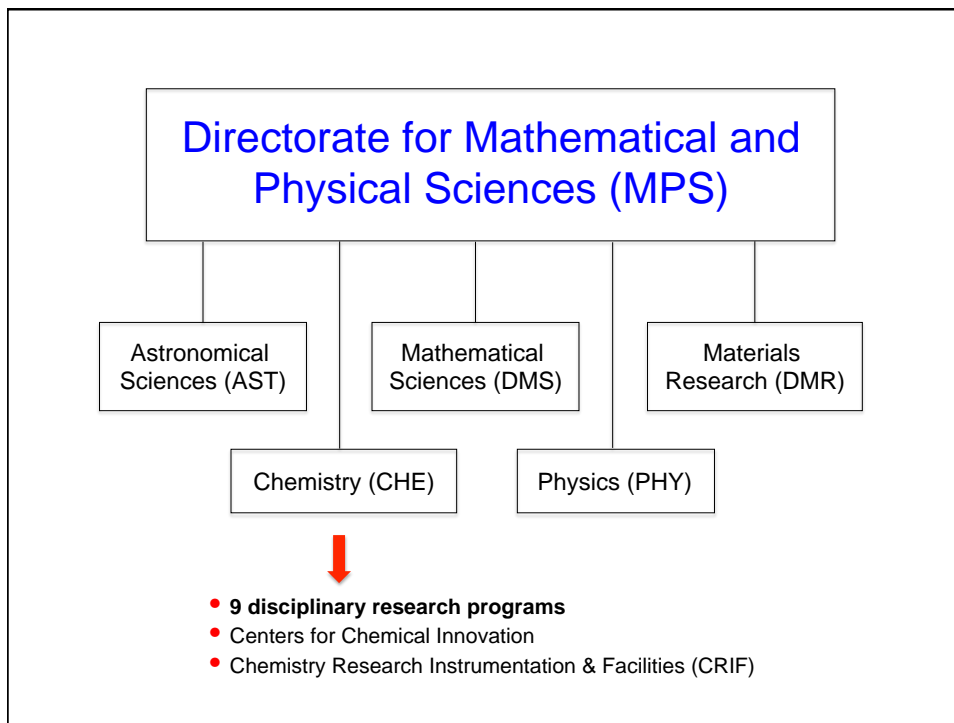


"Other" category includes the Office of International Science and Engineering and the Office of Integrative Activities

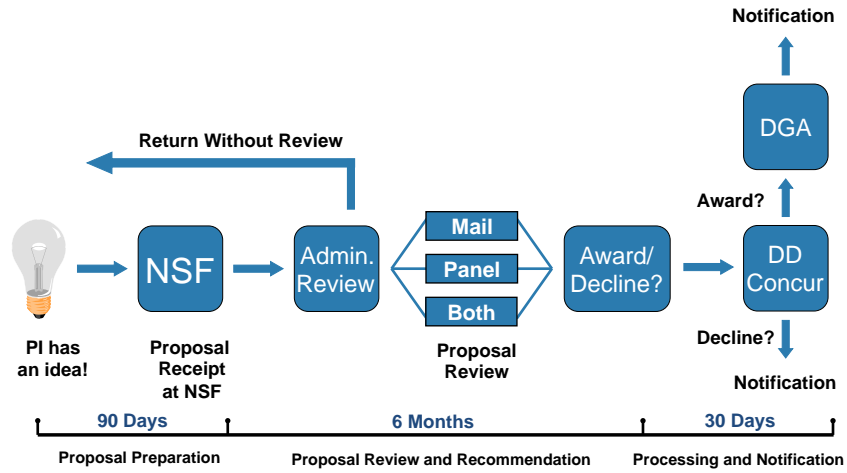
American Institute of Physics | aip.org/fyi

Directorate for Biological Sciences (BIO)





The Life Cycle of an NSF Proposal



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Government Performance and Results Act of 1993 (GPRA)

Target = process 70% of proposals within 6 months of receipt at NSF



NSF Funding Opportunities for Faculty

- *Selecting the right proposal type*
- *Finding the appropriate program*

Disciplinary Research Awards

- **Unsolicited or “regular” grants (IIAs)**
 - Each program has different submission windows
 - Guidelines in the Grant Proposal Guide (GPG)
- **Faculty Early Career Development (CAREER)**
 - NSF-wide program for untenured, assistant professors
 - Five years of support
 - July deadlines
 - May be submitted up to three times (*i.e.*, three tries)

Disciplinary Research Awards

- **Research in Undergraduate Institutions (RUI)**
 - Must be from RUI-eligible institution (*i.e.*, a PUI)
 - Proposal must include a RUI Impact Statement (max. 5 pages)

PUI Eligibility Criteria

- (1) Grants baccalaureate degrees in NSF-supported fields
- (2) Undergraduate enrollment exceeds graduate enrollment
- (3) Awards no more than an average of 10 Ph.D. degrees per year in all NSF-supported disciplines during the five years preceding submission

Opportunities for Faculty

GOALI **“Grant Opportunities for Academic Liaison with Industry”**

“Promotes university-industry partnerships by making project funds or fellowships/traineeships available to support an eclectic mix of industry-university linkages.”

Opportunities for Faculty

EAGER “EARly Concept Grants for Exploratory Research”

Support for **exploratory** research – high risk, potential high impact – “transformative”

- Brief proposal (5-8 pages)
- Up to \$300k for up to two years
- Internally reviewed (rare cases external review)

Opportunities for Faculty

RAPID “Rapid Response Research”

Support for **exploratory** research – high risk, potential high impact – “transformative”

- Brief proposal (5-8 pages)
- Up to \$300k for up to two years
- Internally reviewed (rare cases external review)

How to submit?



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

<http://www.nsf.gov>

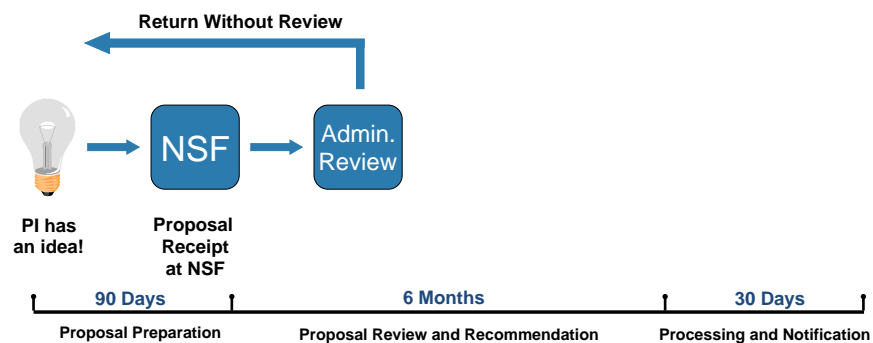
Administrative Review / Compliance



Administrative Review / Compliance

- Proposal is checked to verify that it complies with the rules and formatting parameters delineated in the Grant Proposal Guide (GPG)
- Common issues include:
 - Biographic sketch is too long, too many publications
 - Margins or font sizes are too small
 - References are not in the correct format
 - Improper supporting documents uploaded
- On certain issues that involve sections *other* than the Project Description or Project Summary, the PI may be asked to do a proposal file update (PFU) within 5 business days of notification

Administrative Review / Compliance



Return Without Review

The proposal:

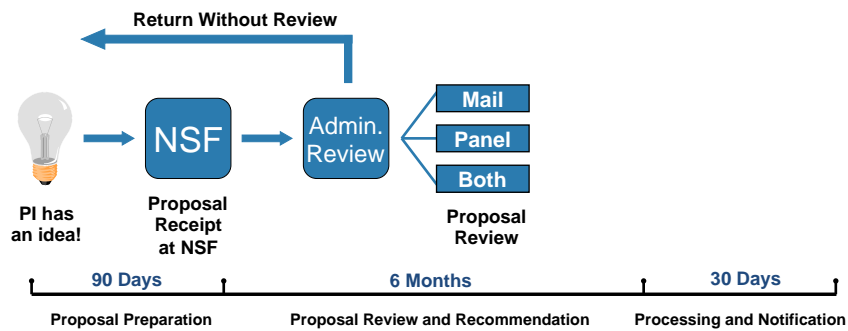
- Does not address Broader Impacts as a separate section within the Project Summary
- Has a budget line for a postdoctoral research associate but does not have a one page Postdoctoral Mentoring Plan uploaded in the supporting information section
- Does not meet an announced proposal deadline or close of window date (and time, where specified)

Return Without Review

The proposal:

- Is inappropriate for funding by the National Science Foundation (or a particular Division)
- Is a duplicate of, or substantially similar to, a proposal already under consideration by NSF from the same submitter
- Was previously reviewed and declined and has not been substantially revised.

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Proposal Review

- The proposal content sets the direction of the review
- PIs are invited to suggest names of individuals who are well-qualified to review the proposal
- PIs can also identify colleagues who should not review the proposal (COIs, competitors, etc.)
- Follow GPG Guidelines and include full contact information for potential reviewers

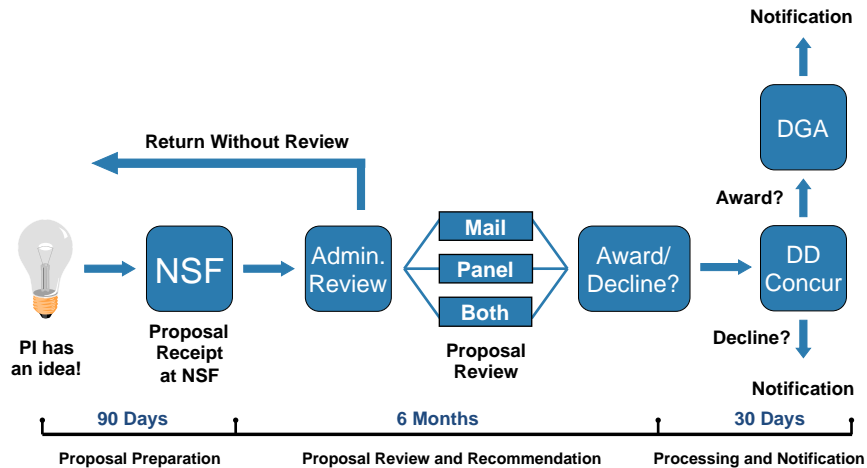
What is the **intellectual merit** of the proposed activity?

- How **important** is the proposed activity to advancing knowledge and understanding within its own field or across fields?
- To what extent does the proposal suggest and explore **creative, original** or **potentially transformative** concepts?
- What will be the significant **contribution** of the project to the research and knowledge base of the field?
- How **well conceived** and organized is the proposed activity?
- Is there **sufficient access** to resources (equipment, facilities, etc.)?
- How **well qualified** is the team (the Principal Investigator, co-PIs, sub-contracts, etc.) to conduct the proposed activity?

What are the **broader impacts** of the proposed activity?

- How well does the activity **advance discovery and understanding** while **promoting teaching**, training, and learning?
- How well does the proposed activity **broaden the participation** of underrepresented groups (*e.g.*, gender, ethnicity, disability, geography)?
- To what extent will it **enhance the infrastructure** for research and education, including facilities, instrumentation, networks, and new or ongoing partnerships?
- Will the **results** be **disseminated** broadly to enhance scientific and technological understanding?
- What may be the **benefits** of the proposed activity to **society**?

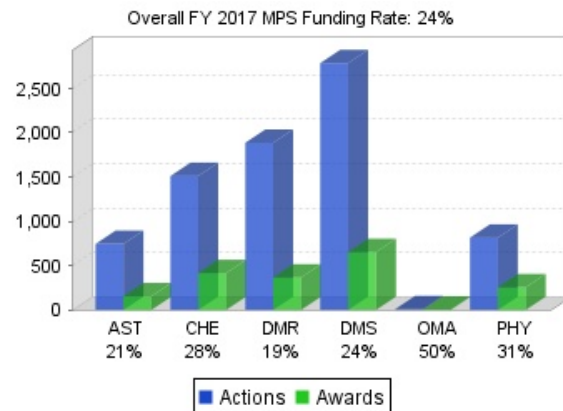
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Competitive Proposals

- A competitive proposal is a good idea, well expressed, with a clear indication of methods for pursuing the idea, evaluating the findings, and making them known to all who need to know.
- Decisions are based on the results of merit review and other considerations, such as program budget, diversity, etc.

Awards & Declinations



- *If all your proposals are being funded...*

Please keep in mind that...

- A declination is **not** a judgment of anyone's value as a scientist
- It is not a judgment about the PI's merit!
- It is only a judgment regarding one *particular* proposal in the context of:
 - the other proposals in the pool
 - available funding

What **not** to do...

- It is **not** a good idea to call up the program director right after receiving a declination
- It is difficult to have a productive discussion until the reviews are carefully read and perhaps discussed with colleagues
- It is a bad idea to enlist colleagues, deans, and others to lobby for the proposal

What **to** do...

- E-mail the PD and set up a time for a phone call to discuss the proposal and reviews. *Mention the proposal number!*
- During the conversation, try to *listen* with an objective mind, whether you agree or not
- Do not waste time during the conversation arguing with the program director
- Ask questions!!

Read the reviews objectively...

- Responses to reviews from many declined PI's fall into two categories:
- How could you decline me, the reviews were glowing!!
- Reviewers A, B, and C are obviously incompetent idiots
 - who clearly did not read my proposal
 - who are out to get me
 - who know nothing about the field

Read the reviews objectively...

- Enlist a colleague, someone who will “tell it like it is”
- Try to analyze the reviews as if they were reviews of someone else's proposal
- Make a list of “to do” items that emerge from the reviews
- If a reviewer misunderstood a portion of the proposal, figure out how to make the point more clearly

Typical reviewer comments...

- The **topic**: old stuff, crowded field, not important
- The **vision**: poorly motivated, not clear where project is going, not clear how pieces hang together, what questions are being asked?
- The **prospects** for success: not convinced it will work, needs preliminary results, not enough detail for evaluation, methods not up to the task, too ambitious, PI does not realize difficulties, no plan B

More typical reviewer comments...

- **Proposed work**: too risky, too mundane, simple continuation of previous work, incremental, not exciting, overlap with other awards or proposals
- **Proposal** itself: not clear, poorly written, bad grammar, typos, research plan not well articulated, lacks rigor, too much technical detail, figures do not support text, not persuasive
- **Context**: PI does not show awareness of other work in the field, does not place work in context

Even more reviewer comments...

- **PI:** poor publication record, PI does not have proper background, synergy of PI and co-PIs is not clear, co-PIs will not contribute
- **Broader impacts:** not developed, routine, unrealistic, ignored completely, what PI is already doing
- **Budget:** too high for proposed work, no money requested for X, PI already has too much money

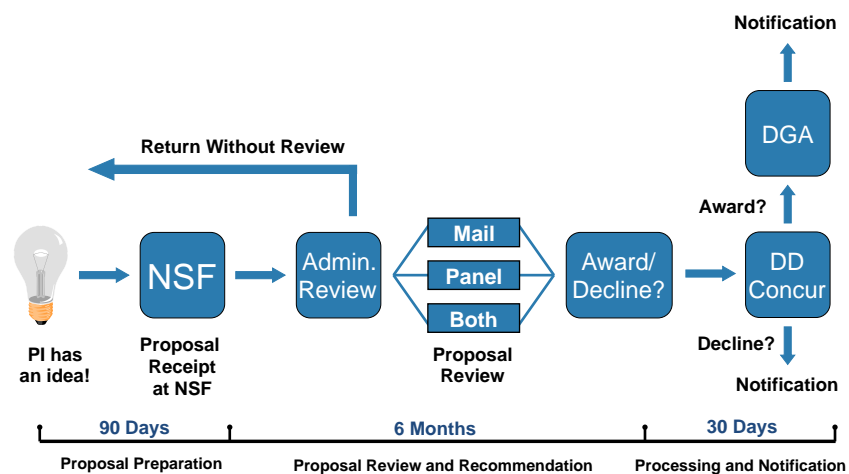
Before the proposal is revised...

- Establish if major changes are needed:
 - topic
 - method or approach
- Is a different program more appropriate?
- It is often a good idea to discuss these issues with the program director
- Until the proposal is submitted, these conversations are highly encouraged

Resubmission

- **Revise** the proposal in light of reviews
- Get comments on your revised proposal from colleagues, including non experts in the field (important for experienced PIs, not just novices)
- **Do not** simply submit the same proposal with cosmetic changes. This in no way increases its competitive edge.

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Concluding remarks...

- There are many ways to improve grantsmanship:
 - volunteer to be a reviewer
 - learn from yourself & colleagues
 - practice (write, write, write...)
 - attend proposal-writing workshops
- Make your proposal stand out:
 - intellectual merit
 - broader impacts
- The value of networking:
 - volunteer to host (or meet with) seminar speakers
 - attend meetings and conferences
- Never give up!



Questions?