Finding Funding: Spotlight on the National Science Foundation

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Session Overview

- Foundation and mission
- Structure and organization
- Find funding & search awards
- Special programs
- Preparing proposals
- Review process and decisions
- Upcoming WiSys events
- Questions and Answers
Founding of NSF

- Created by Congress in 1950
- Supports all fields of fundamental science and engineering
- FY 2021 budget of $8.5 billion
- Funds 25% of all federally supported basic research
- FY 2020 funding success rate of 28%

Mission of the NSF:
- To promote the progress of science
- To advance the national health, prosperity, and welfare
- To secure the national defense
NSF by the numbers

- Total funding is approximately $8 Billion
- 93% of the budget directly supports funding
- Receive 50,000 proposals a year
- Award 12,000 proposals
- Support 2000 institutions
- Support 350,000 researchers
- Fund research in all Science and Engineering disciplines
- Support STEM and education workforce
- Over 200 Nobel Prize winners
NSF organization

7 directorates and each directorate is divided into divisions and core programs

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

- Search for funding on NSF website https://beta.nsf.gov/funding/opportunities:
  - Filter by Directorate
  - Filter by Division
  - Filter for Undergraduate Research
- You can also use grants.gov to find NSF funding opps as well as other federal agencies
Search awards

- https://www.nsf.gov/awardsearch/advancedSearch.jsp
- You can type in keywords and find awards and the program that funded them
- Find a match with a program
- Plan your budget
Special Programs

- Facilitating Research at Primarily Undergraduate Institutions (RUI) and Research Opportunity Awards (ROA)
- Research Experiences for Undergraduates (REU)
- Major Research Instrumentation Program (MRI)
RUI and ROA

- Subject to individual program deadlines
- Individual or collaborative research project
- Involve faculty and students at own or other institutions
- May be a request involving shared research instrumentation
- Impact statement up to 5 pages
- Sites and supplements
- Supplements typically provide support for 1-2 undergraduate students on a new or ongoing NSF-funded project
- Sites – a significant fraction of the students should come from outside the host institution
MRI

- Deadline in January
- Acquisition or Development
- $100K - $4M but PUI’s can request under $100K
- No cost-share required for PUI
- Limit on proposals per institution
- Additional required documents
Contact Program Officers

- It is part of the PO job to talk to you throughout the proposal creation, submission and review process
- Be polite, prepared and patient
- Initiate contact by email
- Make a specific request
  - Reply by email
  - Chat by phone
  - In-person meeting
- Nudge again by email if you haven’t heard back in about a week or so
Proposal Preparation

- Fastlane is being phased out
- Use Research.gov
- Avoid grants.gov
- Collaborative proposals
NSF Proposal Components

- Project Description
- Summary
- References
- Biographical Sketch
- Current & Pending
- Collaborators & Other Affiliations
- Data Management Plan
- Facilities, Equipment & Other Resources
- Budget
- Budget Justification
- Letters of collaboration, if applicable
Project Description & References

- Usually 15 pages
- May be special requirements in the RFP
- Must include a section on Broader Impacts
- References are a separate attachment
<table>
<thead>
<tr>
<th>Broader Impacts</th>
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<tbody>
<tr>
<td>Teaching, training, and learning (undergrads + grad students)</td>
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<tr>
<td>Broaden participation of underrepresented groups</td>
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<tr>
<td>Build or enhance partnerships (internationally, or with other agencies)</td>
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<tr>
<td>Broad dissemination to enhance scientific + technological understanding</td>
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<tr>
<td>Enhance infrastructure (labs, equipment, + work in developing countries)</td>
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<tr>
<td>Local impacts (policies @ state + local level)</td>
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Summary

- Maximum of one page in length
- Follow specific directions in the RFP
- **Overview** – description of activity and objectives and methods to be used
- **Intellectual Merit** – describe the potential of the activity to advance knowledge
- **Broader Impacts** – describe the potential of the activity to benefit society and contribute to the achievement of societal outcomes
Senior Personnel Documents

PI, CoPIs and all Senior Personnel:

- **Biosketch**
  - Limited to 3 pages
  - Professional preparation, appointments, products, and synergistic activities

- **Current and Pending**
  - To assess the capacity of the individual to carry out the research
  - To assess potential overlap/duplication

- **Collaborators & Other Affiliations**
  - To manage reviewer selection
  - Use provided Excel template

- **SciENcv: Science Experts Network Curriculum Vitae @**
Budget/Budget Justification

- The budget must fit the project
- Only request allowable expenses
  - Vary with solicitations
- Research equipment prices
- Consult with ORSP
  - Fringe benefit rates
  - Indirect cost rates
- Clearly justify each expense
- Research “typical” budgets for this division at https://www.nsf.gov/awardsearch/advancedSearch.jsp
Data Management Plan

- Link to requirements at various divisions:
- [Dissemination and Sharing of Research Results | NSF - National Science Foundation](#)
- Plans for data management and sharing of products of research
- Limited to 2 pages
Facilities

- To assess the adequacy of the resources available to perform the effort proposed.
- Describe only those resources that are directly applicable.
- Physical and personnel resources.
- Describe resources in narrative form and do not include quantifiable information.
Letters of Collaboration

- No letters of support
- Letter of collaboration template
- Reach out early for letters
Review Criteria

Intellectual Merit:
- Potential for advancing knowledge in/ across fields
- Qualifications of the investigators
- Creativity and originality
- Organization of the ideas/ experiments
- Access to resources
- Potentially transformative research?

Broader Impacts:
- Promoting teaching, training, and education
- Enhancement of infrastructure for research and education
- Community resources and outreach
- Participation of underrepresented groups
- Benefits to society
What makes a proposal competitive?

- Potential for high impact
- New, original ideas
- Focused, feasible project plan
- Articulated knowledge of subject area, published relevant work
- Experience in essential methods or approaches, and/or collaborator expertise
- Sound scientific rationale
- Realistic amount of work; sufficient detail; critical approach
Best Practices

- Start with a compelling introduction
- Convey the significance of your project
- Do your samples/data come from a place in the world? Include a map! Use figures wisely.
- Lay out a clear work plan and timeline
- Explain the role(s) for each participant
- Come up with a realistic budget
Common Mistakes

- Work is too close to what has been done before - i.e., an incremental advance
- Techniques and methodology are not cutting edge and/or not explained in sufficient detail
- Project has too large a scope or is too narrowly focused to be exciting or relevant
- Research plan will not actually achieve the stated goals of the project
Funding decisions

- Plan on a start date of at least 6 months after submission
- Deadline vs. no deadline
What to do if you’re declined?

- It happens to everyone, except those who don’t submit
- Stay calm, and don’t get discouraged. Breathe deeply and read the reviews more than once
- Identify common themes across different reviews (weaknesses AND strengths)
- Don’t fixate on minutia and cranky comments
- Ask a friend/colleague to read the reviews objectively
What if you’re awarded?

- Celebrate!
- Read the reviews and/or panel summary: they still likely had useful criticisms and advice
- Credit the award and NSF when you publish or present
- Read NSF’s guide for awardees and write your annual reports on time
- Develop good rapport with your Program Director and keep them updated
- Be a good mentor to the students and colleagues you support
Campus ORSP

- ORSP submits the proposal on behalf of the university
- Experts in getting proposal out the door
- Services
  - RFP translation
  - Budgets and budget justifications
  - Proposal component templates
  - Compliance review
Be an NSF Reviewer

- Gain firsthand knowledge of the peer review process
- Learn common proposal problems and discover strategies to write strong proposals
- Meet colleagues and program officers in your field
NSF Resource Center

- nsfpolicyoutreach.com/resource-center/
- Recordings of NSF presentations from previous grant conferences
WiSys Webinar Topics Spring 2022

- Collaborative Grantseeking: 10 March 2022
- Funding for New and Early-Stage Investigators: 14 April 2022
- Finding Funding for Your Scholarship and Creative Endeavors: 6 April 2022
- Lunch & Learn – NSF topics: 20 April 2022

Visit https://www.wisys.org/grants/webinars to register
WiSys Webinar Topics Available On-Demand

- Budget Building Fundamentals
- Improving your Odds for Success BEFORE the Writing Begins
- Planning for Grants Success
- Getting Started! An Introduction to PIVOT/Grants Resource Center
- Accelerate and Diversify Your Funding Search Results with Pivot-RP
- Exploring Administrator Tools for Maximizing Benefits from Pivot-RP Functionality
- Finding Funding: Spotlight on the NIH Academic Research Enhancement Award
- Finding Funding: Spotlight on the National Science Foundation Major Research Instrumentation Program
- Finding Funding: Spotlight on the U.S. Department of Agriculture, National Institute of Food and Agriculture

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Questions?