NSF Proposal Writing Strategies

November 4, 2021

Huixia Judy Wang
Program Officer
Division of Mathematical Sciences
National Science Foundation
Statistics Program Officers

Nandini Kannan (On Leave)
Yulia Gel (rotator)
Edsel Pena (rotator)
Gabor Szekely (permanent)
Huixia Judy Wang (rotator)
Statistics Program

- Support research in statistical theory & methods, including research for applications to any domain of science and engineering

- **Regular Statistics Program:** December 1–15, 2021

- **Faculty Early Career Development Program** (CAREER, July)

- Conferences and Workshops in the Mathematical Sciences: anytime with sufficient lead time (>6 months)
Grant Proposal Writing Resources in the Web

- Writing NSF Proposals
  https://www.cs.cmu.edu/~sfinger/advice/advice.html

- Grant Proposals (or Give me the money!) – from a UNC website
  https://writingcenter.unc.edu/tips-and-tools/grant-proposals-or-give-me-the-money/

- CAREER writing workshops:
  https://nsfworkshop.ccny.cuny.edu/
  https://cisecareerworkshop.web.unc.edu/
Preparing an NSF Proposal

Endorsed by Program Officers:

"Grant writing is like playing the stock market; there is seldom a guarantee that your efforts will be rewarded, but the more you know about the process and the more you use this knowledge, the greater the probability for success."

Another Analogy: Writing grant proposals is similar to competing in the Olympics!
Panel Review – (DMS runs ~70 panels per year)

- At least 3 reviews for each proposal
- Panel discussion and ranking
- Panel summary
- A panel typically runs 2–3 days and reviews between 40–60 proposals

- Program Officers make funding decisions taking into account panel recommendations and addressing budget constraints and portfolio balance
Criteria for Review of Proposals

- Intellectual Merit (IM):
  - The intellectual Merit criterion encompasses the potential to advance knowledge.

- Broader Impacts (BI):
  - The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.
Proposal Preparation Tips

1. Decide if your proposal **fits** the program
2. Check for **compliance** (Read the Grant Proposal Guide, Special Program Requirements)
3. Keep in mind the audience of reviewers and POs (a mix of experts and non-expert laypeople)
4. Make sure the project goals are **clearly defined**
5. Make it **readable** (not too technical, check for errors, avoid abbreviations, use recommended font size, the title is important)
6. Seek **advice** from more senior colleagues
Few Proposal Preparation Tips

1. Narrative:
   - Provide a logical, easy to follow, compelling and coherent narrative
   - Draw **clear distinctions** between prior work and proposed research
   - Address clearly the **novelty** of the project
   - Quickly generate reviewers’ enthusiasm for the idea
   - Avoid excessive jargon

2. First impressions are important (check for errors, avoid abbreviations, use recommended font size)

3. Effective Title and Project Summary

   National Science Foundation
How to NOT get funded

“I’ve done great work; send money”
“Here are some fascinating problems.” End.

Using a small font size
How to NOT get funded

- Not describing the importance of the work to the field
- Not describing how the proposed work differs from:
  - other approaches
  - work you have already done
- Missing relevant and important literature
- Giving no indication of potential difficulties or of plans to circumvent them
- Paying no attention to broader impacts
How to **NOT** get funded

--- Ineffective Strategies

- “Shop a proposal around” from Program to Program
  - It can waste time (not only yours)
  - Program Directors talk to each other
  - We may transfer a proposal to another program
- Resubmit the same proposal next year
- Re-brand, combine, stretch or shoehorn
- Submit multiple proposals without consulting with the Program Director(s)
Read the Program Solicitation

- Note the **goals** of the program
- Note the types of activities eligible for funding
- Note the **required elements** of a proposal
- Note the **review criteria**
- “should” = “must”
- Boilerplate versus the “meat”

Make a checklist!
Final Remarks

- Getting help: previous awardees, mentors and colleagues
- Check the published abstracts on the NSF website: http://www.nsf.gov/awardsearch
- Volunteer as a reviewer! Email the PD or fill out the form at https://www.nsf.gov/additional-resources.jsp?org=DMS
- Subscribe to DMS listserv: https://www.nsf.gov/mps/dms/about.jsp
- Talk to Program Officers
  - JSM: DMS Meet & Greet; Speed Coaching
  - DMS virtual office hours: https://www.nsf.gov/events/index.jsp?org=DMS,
    Coming up: November 18, 2021 (Register Now!)
Other Resources

- Slides from past DMS VOH: https://www.nsf.gov/mps/dms/presentations.jsp
- ASA Committee on Funded Research https://www.amstat.org/ASA/Your-Career/External-Funding-Sources.aspx
ACKNOWLEDGMENTS

MANY SLIDES IN THIS PRESENTATION HAVE BEEN PRESENTED TO THE PUBLIC BY NSF COLLEAGUES OR IN WEBSITES. ALL ARE GRATEFULLY ACKNOWLEDGED.
QUESTIONS?

Huixia Judy Wang
Email: huiwang@nsf.gov
Tel: (703) 292 2279