



**Mark S. Hurwitz\***

**[mark.hurwitz@wmich.edu](mailto:mark.hurwitz@wmich.edu)**

**269.387.5372**

***“Writing Proposals for the National Science  
Foundation”***

**\*Western Michigan University (WMU) Professor of Political Science;  
WMU Director of Special Initiatives, Office of Research and Innovation;  
Former NSF Program Officer (2016-18; 2019-21)**



## ***Writing Proposals for the National Science Foundation***

Writing a competitive grant proposal involves understanding the funding agency's mission and review criteria, the program's goals, and submission requirements. This Workshop will cover the basics of writing a competitive proposal for NSF, with particular focus on the Project Summary. Dr. Mark Hurwitz, Professor of Political Science, Faculty Fellow in ORI, and former NSF Program Officer in the Office of Advanced Cyberinfrastructure and the Social, Behavioral, and Economic Sciences Directorate, will lead this workshop.



## National Science Foundation

### NSF Statutory Mission:

- Promote the progress of science;
- Advance the national health, prosperity and welfare; and
- Secure the national defense
  - *National Science Foundation Act of 1950, as amended (42 U.S.C. §1861, et seq.)*

### NSF Vision Statement:

- Advances in our capability to observe, model, comprehend, and predict the complexity of the world around us will provide us with a deeper understanding of the processes that underpin life, learning, and society
  - *From “Building the Future: Investing in Discovery and Innovation, NSF Strategic Plan for FYs 2018-22”*

### Vision of NSF Director Sethuraman Panchanathan (“Panch”):

- Advance research into the future; ensure inclusivity; and, continue global leadership in science and engineering
  - *From NSF News Release 20-007, June 23, 2020 (“New director takes helm at NSF”)*

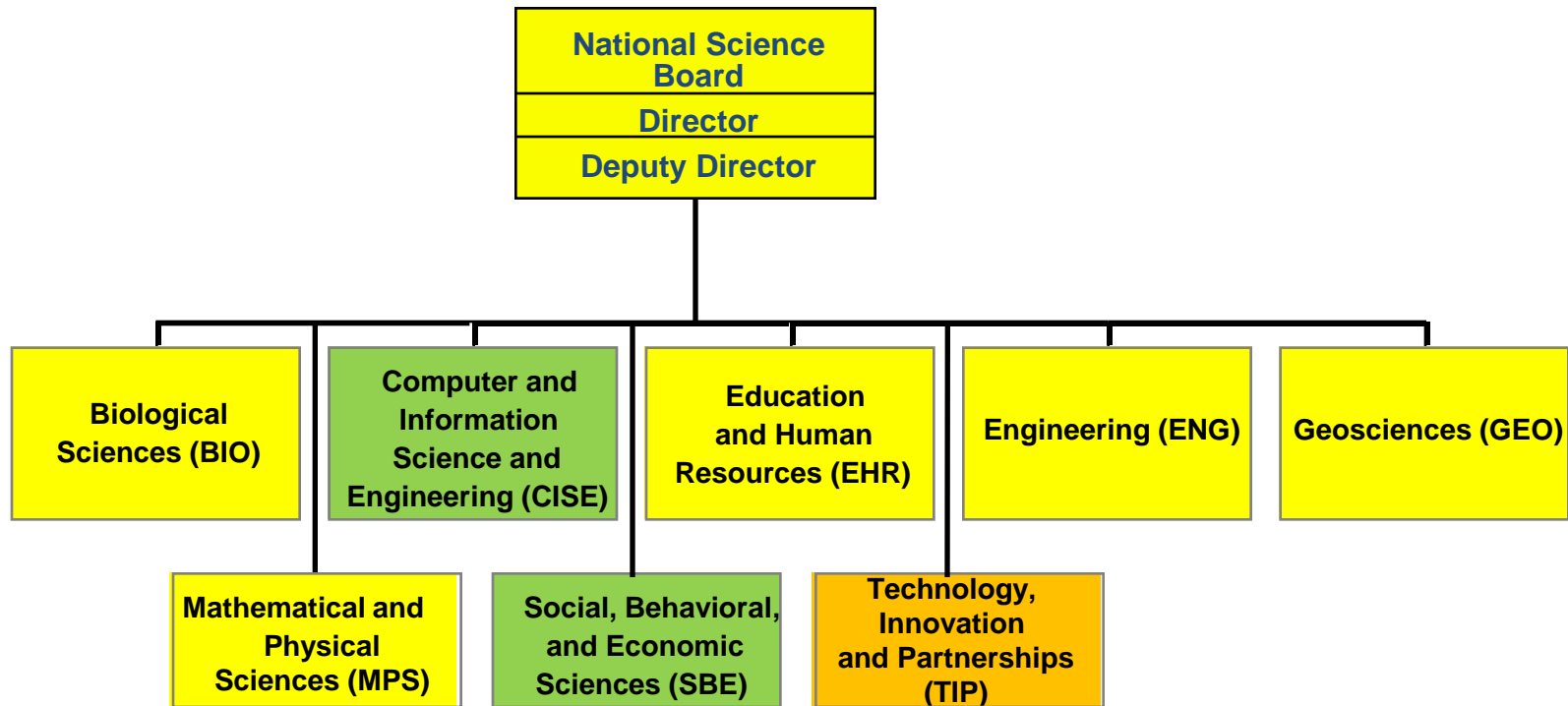


## National Science Foundation

- Independent federal agency that supports basic (not applied) scientific research
- Relies on grant mechanism
- Discipline-based structure, but . . .
- Incorporates interdisciplinary and convergent mechanisms and initiatives



## NSF is Divided into Directorates



Directorates are divided into Divisions/Offices, which are further divided into Programs



## Program Goals

### Law and Science

- Multi-disciplinary program funding research that ***advances scientific theory*** in social scientific studies of law and law-like systems of rules, as well as studies of how science and technology are applied in legal contexts
- Modes of Support:
  - Standard Research Grants and Grants for Collaborative Research
  - Conferences



## Program Goals

### CISE Research Initiation Initiative (CRII)

- Program supports research independence for early-career scholars who lack adequate resources (i.e., start-up costs, including graduate student support); CRII provides essential resources to enable PIs to launch research careers
- Program Specifics:
  - Only one PI per proposal
  - PI may not submit CRII and CAREER proposals in same calendar year



## Merit Review Criteria

- 1) **Intellectual Merit:** potential to advance scientific knowledge
  - Does the proposed activity advance knowledge and understanding within its own field or across fields?
  - How well-qualified is the PI (and team) to conduct the research?
  - Does the proposed activity explore creative, original, or potentially transformative concepts?
  - How well-conceived and organized is the proposed activity?





## Merit Review Criteria

- 2) **Broader Impacts:** potential to benefit society and contribute to the achievement of specific, desired societal outcomes
- Does the proposed activity promote teaching, training, and learning?
  - Does the proposed activity broaden participation of underrepresented groups (*e.g.*, gender, race/ethnicity, disability, geography, etc.)?
  - Will results be disseminated broadly?
  - Will proposed activity have benefits to society?



## Submission Requirements

- Follow the *PAPPG (NSF Proposal & Award Policies & Procedures Guide)*, especially PART I: PROPOSAL PREPARATION AND SUBMISSION GUIDELINES, Ch. I: Pre-Submission Information, and Ch. II: Proposal Preparation Instructions
- Follow specifics listed in Solicitation, DCL, RFP, or Program Description Page:
  - *e.g.*, some programs require submissions on Research.gov or Grants.gov but not FastLane; some programs have requirements in addition to those listed in the *PAPPG*



## Tips for Submitting Competitive Proposals

On NSF end:

- Get to know your NSF Program Officer
- Prepare a 1-2 page summary of your proposal that discusses your research question(s) and design, IM and BIs, and why you need NSF funding

On WMU end:

- Get to know the WMU Office of Research and Innovation and your Research PO
- Know the procedures for working with ORI: preparing forms, deadlines for submitting to ORI, etc.



## Common Reasons for Declinations

- “Trust me”
- Undeveloped theory
- Unclear connection between question to be investigated and research activities outlined in proposal
- Insufficient detail with research design
- Gaps in expertise
- Not feasible, insufficient funding, or overly ambitious
- Incremental contribution



## Utility of Submitting

Whether or not Funded:

- Forces careful thinking about your research

If Declined:

- Reviews and Panel Summaries provide useful information that strengthens your research
- Should inspire Revision and Resubmission:
  - PIs submit an average of **2.3** proposals for each award, so talk to NSF PO and keep trying!



## NSF Project Summary Writing Workshop

From the NSF *PAPPG* (II.C.2.b):

### **Project Summary**

Each proposal must contain a summary of the proposed project not more than one page in length. The Project Summary consists of an overview, a statement on the intellectual merit of the proposed activity, and a statement on the broader impacts of the proposed activity.



## NSF Project Summary Writing Workshop

From the NSF *PAPPG* (II.C.2.b):

### **Project Summary (cont.)**

The overview includes a description of the activity that would result if the proposal were funded and a statement of objectives and methods to be employed. The statement on intellectual merit should describe the potential of the proposed activity to advance knowledge. The statement on broader impacts should describe the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes.



## NSF Project Summary Writing Workshop

From the NSF *PAPPG* (II.C.2.b):

### **Project Summary (cont.)**

The Project Summary should be informative to other persons working in the same or related fields, and, insofar as possible, understandable to a broad audience within the scientific domain. It should not be an abstract of the proposal.





## NSF Project Summary Example

### ***“Build and Broaden: Indigenous Peoples Before United States Courts: A Systematic Examination”***

- Submitted to NSF B2 3.0 Program with colleagues from UTEP (PI Rebecca Reid, Co-PI Todd Curry, Co-PI Mark Hurwitz); \$593,356; currently under review
- B2 3.0 Goal: To enhance fundamental social, behavioral, and economic science (SBE) research at minority-serving institutions (MSIs)



## NSF Project Summary Example

### Overview:

- List of Participating MSI(s): The University of Texas at El Paso (UTEP)
- Description of the MSI(s) and MSI proportion of requested support: US Department of Education provides that UTEP has 88% minority enrollment, 75% of which is Hispanic Undergraduate FTE. Proportion of UTEP's requested direct support: 56%.
- Research discipline(s) advanced by the project: Law and Science; Political Science

The U.S. Constitution and early judicial precedent imply and recognize the sovereignty of Indigenous Peoples and Nations. Despite this longstanding federal acknowledgment of sovereignty as well as a multitude of treaties executed by the federal government and Indigenous Nations, over time judicial and legislative law increasingly delegated authority over indigenous policy to states, which benefit little from preserving and protecting indigenous rights. This modern devolution in federal authority leaves Indigenous Peoples at the mercy of potentially hostile, non-indigenous state venues and has resulted in the degradation of indigenous sovereignty and rights. Consequently, the sovereignty of Indigenous Nations is in constant flux, necessitating frequent and active litigation in American courts.



## NSF Project Summary Example

### Overview (cont.):

In this project, we examine the role of courts in adjudicating indigenous issues by asking these research questions: *To what extent do U.S. courts protect Indigenous Peoples' rights? How do political context and institutional variation determine Indigenous Peoples' likelihood of success before U.S. courts? Under what conditions do U.S. courts act as colonizing agents rather than protectors of indigenous rights?* To evaluate these questions, we examine all cases involving Indigenous Peoples in state courts of last resort, U.S. Courts of Appeals, and the U.S. Supreme Court, from 1953 through 2020. Our mixed-method design, in which quantitative data collection and analyses are combined with qualitative approaches including case studies and text analyses, allows for the systematic and holistic assessment of how U.S. courts are exposed to disparate political contexts and institutional constraints, which can influence their likelihood to support indigenous rights. The result will be the first large-N, longitudinal data analysis of indigenous cases beyond our own previous work (Reid and Curry 2021).



## NSF Project Summary Example

### Intellectual Merit:

Our project relies on judicial audience-based (Baum 2006) and representation theories (Hall 1992, 1995), which assume that judges are political actors who seek approval from any audience to which they make claims and seek to represent the constituents they serve. In line with these theories, we posit that judicial behavior in indigenous affairs is primarily driven by political context – not the presence of judicial ideology. Hence, we include several testable hypotheses that capture these theoretical features of judicial behavior. We also test other hypotheses based on institutional constraints facing courts across the judicial hierarchy. Our theoretical foundation necessarily diverges from other studies, since our issue of concern, indigenous sovereignty, does not apply to other underrepresented groups. Yet, this project has application beyond a study of Indigenous Peoples and the law, as it directly advances theory and knowledge in core SBE sciences and thus has potential to produce transformative research in several disciplines.



## NSF Project Summary Example

### Broader Impacts:

This project will enhance the career development, productivity, and trajectory of the PIs at UTEP, a *Hispanic-serving institution (HSI)*. As both PIs at UTEP are productive scholars in their early mid-career stage, the experience of managing a large grant, and the research products emanating from the project, will enable them to rise significantly in their careers. The project will aid PIs in adding an Indigenous Studies Minor and new Indigenous Politics courses to its curriculum. PIs at UTEP will hire an undergraduate and graduate student to take part in data-collection, research, and publication processes. To support this project WMU will fund two half-time graduate students to serve as research assistants. PIs at both institutions will prioritize hiring research assistants from traditionally under-represented groups. PIs will hold a Data Release and Education Conference to unveil the data, instruct interested parties, and build collaborative networks. Finally, as the project will produce significant, new, and transformative contributions for scholars, policymakers, advocates, and the public on the nature of indigenous judicial outcomes, our findings can have an impact on the health, well-being, and survival of Indigenous Peoples.



Thank you!  
Questions?

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