

NORDP Research Development Conference 2015
April 30, 2015

How Do I Review Thee? Let me Count the Ways



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INTRODUCTION

Brief Bio

- **Publishing/Research Information (2+ yrs)**

- Vice President, Global Academic & Research Relations, Elsevier

- **Academia (20+ yrs)**

- Adjunct Lecturer, School of Professional Studies, Philanthropy & Nonprofit Program, Northwestern University
- Senior Lecturer and Research Assistant Professor, Northwestern University
 - Assistant Chair, Molecular Biosciences; Associate Director, IBiS Graduate Program (Arts & Sci), Northwestern University and Administrative Director for multiple NIH T32's
 - Director, Office of Research Development (Central Admin)
 - Director, Research Training Program, Children's Memorial Research Center
 - Director, Research Team Support & Development, NUCATS Institute, Northwestern University (Med Sch)
 - Director/Co-director
 - BioOpportunities, BioSurvival Skills, Pathway to the Professoriate
 - Navigating the Professoriate, Chicago Collaboration for Women in STEM

- Undergrad, PhD, Postdoc training

- **Pharma (2.5 yrs)**

- Anti-infective research, Abbott Laboratories

- **Other Nonprofit Experience (7+ yrs)**

- Founding President, National Organization of Research Development Professionals (NORDP)
- Editor-in-Chief, AWIS Magazine
- Vice President for Development, Temple Chai Reform Congregation

Grant Experience

- NIH S10 (SIG & HEI)
- NIH T32s
- NIH T90/R90 TG
- NIH Co6
- NIH P50s
- NIH UL1s
- NIH P20s
- NIH U10s
- NIH U54s
- NIH Strxl Genomics (No1)
- NIH R13
- NIH U01
- NIH P01s
- NIH G20
- NIH F31 NRSA
- ARRA NIH RC1
- ARRA NIH RC2
- ARRA NIH P30s
- HHS Bricks & Mortar
- Joint NIH SIG/NSF MUE
- NASA Astrobiology Institute
- DOE EFRC
- DOE ARRA Cogen
- DOE BRC
- DOE ELSI
- DOE ARRA infrastructure
- DOE ICEP
- NSF MRIs
- NSF MUE
- NSF ADVANCE
- NSF PFC
- NSF Math-Biol
- NSF STCs
- NSF BIO RCN
- NSF NCLT
- NSF PIRE
- NSF CEIN
- NSF IGERTs
- NSF ERCs
- Early Career Faculty Fdn
- Faith-based organization Fdns
- Limited Submissions

REVIEW PROCESS

Who Reviews

- Each funding agency has its own review process
- Federal agencies generally have formalized review panels of experts—*peer review*
- State agencies generally use staff as reviewers
- Foundations generally rely on staff and boards for review and funding decisions

Review Criteria

- **Mandatory** criteria reviewers consider
- Recent NSF criteria emphasizes *transformative* and *interdisciplinary* research
- Recent NIH criteria emphasize *clinical*, *interdisciplinary*, and *translational* research
- Reviewers are provided a proposal scoring/rating form and instructed to review proposals based on how well the mandatory review criteria are met

NIH

NIH Proposal Review

- Review Criteria
- Compare/contrast with other federal agencies
- The most transparent and detailed process of all agencies

NIH Core Review Criteria

- Significance
- Approach
- Innovation
- Investigator
- Environment

Significance

- Does the project address an important problem or a critical barrier to progress in the field? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Approach

- Are the overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project? Are potential problems, alternative strategies, and benchmarks for success presented? If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed? If the project involves clinical research, are the plans for 1) protection of human subjects from research risks, and 2) inclusion of minorities and members of both sexes/genders, as well as the inclusion of children, justified in terms of the scientific goals and research strategy proposed?

Innovation

- Does the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions? Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense? Is a refinement, improvement, or new application of theoretical concepts, approaches or methodologies, instrumentation, or interventions proposed?

Investigator

- Are the PD/PIs, collaborators, and other researchers well suited to the project? If Early Stage Investigators or New Investigators, do they have appropriate experience and training? If established, have they demonstrated an ongoing record of accomplishments that have advanced their field(s)? If the project is collaborative or multi-PD/PI, do the investigators have complementary and integrated expertise; are their leadership approach, governance and organizational structure appropriate for the project?

Environment

- Will the scientific environment in which the work will be done contribute to the probability of success? Are the institutional support, equipment and other physical resources available to the investigators adequate for the project proposed? Will the project benefit from unique features of the scientific environment, subject populations, or collaborative arrangements?

Overall Impact

- Overall Impact: A score provided by reviewers to reflect their assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved, in consideration of the five core review criteria, and additional review criteria

NSF

NSF Proposal Review

- Three guiding review principles
- Two review criteria
- Five review elements

Merit Review Criteria Guiding Principles

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects.

NSF Merit Review Criteria

- When evaluating NSF proposals, reviewers should consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits would accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers are asked to evaluate all proposals against two criteria:
- **Intellectual Merit:** The intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes

NSF Review Elements

Elements considered in the review for *both* criteria:

- What is the potential for the proposed activity to
 - Advance knowledge and understanding within its own field or across different fields (Intellectual Merit);
 - Benefit society or advance desired societal outcomes (Broader Impacts)?
- To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
- Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
- How well qualified is the individual, team, or institution to conduct the proposed activities?
- Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?

All the Same Review

NIH Core Review Criteria

Significance : ...project address an important problem or a critical barrier to progress in the field

Approach: ...overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project

Innovation: ...challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions

Investigators: ...PD/PIs, collaborators, and other researchers well suited to the project

Environment: ...scientific environment in which the work will be done contribute to the probability of success

NSF Review Elements – Intellectual Merit

Potential of the activity to advance knowledge and understanding, and benefit society

Well-reasoned, well-organized plan for proposed activities and mechanism to assess success

Originality, creativity and transformative nature of proposed activities

Qualifications of individual(s), team, or institution

Adequate resources to carry out proposed activities

All the Same Review

NIH Overall Impact

Likelihood for the project to exert a sustained, powerful influence on the research field(s) involved

NSF Review Elements – Broader Impact

The potential to benefit society and contribute to the achievement of specific, desired societal outcomes

Other Agencies

NEH Application Review Criteria

- Some variability between NEH grant programs
- Intellectual Significance
- Quality of Work; Feasibility of Work Plan
- Innovation
- Project Staff Qualifications
- Overall Value to Humanities Scholarship

NEH Application Review Criteria

- The intellectual significance of the project for the humanities, including its potential to enhance research, teaching and learning in the humanities
- The quality of innovation in terms of the idea, approach, method, or digital technology (and the appropriateness of the technology) employed in the project
- The qualifications, expertise, and levels of commitment of the project director and key project staff or contributors
- The quality of the conception, definition, organization, and description of the project and the applicant's clarity of expression / The feasibility of the plan of work
- The likelihood that the project will stimulate or facilitate new research of value to scholars and general audiences in the humanities, or use new digital technologies to communicate humanities scholarship to broad audiences

Still All the Same Review

NSF Merit Review Elements

Potential of the activity to advance knowledge and understanding, and benefit society

Well-reasoned, well-organized plan for proposed activities and mechanism to assess success

Originality, creativity and transformative nature of proposed activities

Qualifications of individual(s), team, or institution

Broader Impact

NEH Application Review Criteria

Intellectual Significance

Quality of Project; Feasibility of Work Plan

Quality of Innovation

Project Staff Qualifications

Overall Value to Humanities Scholarship

VA Criteria for Review and Scoring

- Significance of the research
- Scientific approach, including preliminary data and appropriateness of experimental design
- Innovation
- Feasibility of the proposed studies, including the expertise of the PI and collaborators and the environment available for conducting the studies
- Relevance to the healthcare of veterans

Examine Multiple Agencies

- NIH Core Review Criteria
- NSF Merit Review Criteria
- VA Criteria for Review & Scoring
- ED NIDRR Selection Criteria
- DoD Review Criteria
- NASA Merit Score Criteria
- DOE Office of Science Evaluation Criteria
- USDA NIFA AFRI Evaluation Criteria
- NEH Application Review Criteria
- NEA Review Criteria

Always All the Same Review

- Why does it matter?
 - Importance/Significance/Relevance
- How are you going to do it?
 - Approach/Plan/Methodology/Objectives/Aims
- How will you know you've been successful?
 - Evaluation/Assessment
- What's new?
 - Novelty/Innovation/Creativity
- What's special about the human capital involved?
 - Organization/People/Investigators/Partners/Collaborators/Staff
- What's the context?
 - Resources/Environment/Populations
- What's the return on investment?
 - Impact/Value
- How effectively will you manage the financial resources?
 - Budget

Are All Criteria Equal?

NIH Study

- Preliminary 2010/11 NIGMS study examined correlation between Core Review Criteria scoring and Overall Impact score
 - Approach > Significance > Innovation > Investigator > Environment
 - Conclusion: **The quality of ideas matter more than reputation** (good for new investigators!)

Points Assignment

Standard Selection Criteria:

- Design of Research Activities (50 pts)
- Importance of the problem (15 pts)
- Project Staff (15 pts)
- Plan of Evaluation (10 pts)
- Adequacy and Accessibility of Resources (10 pts)

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THE END

Thank you!