

# The Art of Grant Reviewing: A Guide to Conducting NIH-Style Grant Reviews

## Introduction

The review of grant proposals is at the heart of the NIH grants process. The review process ensures that the most promising research is funded by having reviewers evaluate the scientific merit of applications in a fair, independent, expert, and unbiased manner. The goal of the Grant Reviewing Workshop and Mock Proposal Review Session at the NIDUS Delirium Boot Camp is to train NIDUS mentees on what to expect in the NIH grant review process. Each Boot Camp participant will have their proposal reviewed by two peers (fellow participants) as well as by a Boot Camp Faculty member and Boot Camp alumni.

## NIDUS Delirium Boot Camp: Mock Proposal Review Session

- Before the Boot Camp, faculty and mentees will write critiques of the NIDUS Pilot Grant proposals.
- The Mock Proposal Review Session will be modeled after an NIH Scientific Review Group meeting.
- During the meeting, each proposal be discussed in the following timeframe:
  - 5 minutes for primary reviewer to present the proposal
  - 3 minutes each for secondary reviewer, alumni reviewer, and faculty reviewer
  - 4 minutes for general discussion
- Each participant will be a “Fly on the Wall” observer while their proposal is discussed, and will have opportunities to discuss questions or feedback in more detail with faculty throughout the Boot Camp.
- All participants will receive copies of the written reviews for their proposal after the study section and will have opportunities to discuss their questions with faculty and/or alumni throughout the Boot Camp.
- Remember: This is a *learning* exercise for all – please be thoughtful, constructive and honest in your review. The goal is to provide constructive feedback on proposals and gain a better understanding of the NIH review process.

## Grant Review Procedure

### *Initial Approach*

1. Read through the first time for gestalt and overview: Get a sense of the aims and approach
2. Read through again for a more detailed reading, write marginal notes and keep track of major and minor problems identified
3. Organize your thoughts, develop an outline to address the NIH review criteria

### *Suggested Approach for Writing your Review*

1. Evaluate appropriateness of the approach (study design and sample, data collection, outcomes, statistical analysis, sample size, feasibility)
2. Look at Annals article grant checklist

3. Assess each of the review criteria
  - a. Write up strengths and weaknesses of each
  - b. Give a separate score for each
4. Provide an overall impact score
5. Keep the tone honest and constructive

**Videos of NIH Grant Review Sessions:** The site below contains video links demonstrating how the NIH Review process works.

<http://public.csr.nih.gov/aboutcsr/contactcsr/pages/contactervisitcsrpages/nih-grant-review-process-youtube-videos.aspx>

### **NIH Scoring System**

(Ref: [http://grants.nih.gov/grants/peer/guidelines\\_general/scoring\\_system\\_and\\_procedure.pdf](http://grants.nih.gov/grants/peer/guidelines_general/scoring_system_and_procedure.pdf))

- The NIH grant application scoring system uses a 9-point scale for both overall impact scores and individual review criteria.
  - For both types of scores, ratings are in whole numbers only
  - NIH expects that scores of 1 or 9 be used less frequently than the other scores
  - 5 is an average score
  - The entire scale (1-9) should always be considered

Impact	Score	Descriptor	Additional guidance on strengths/weaknesses
High	1	Exceptional	Exceptionally strong with essentially no weaknesses
	2	Outstanding	Extremely strong with negligible weaknesses
	3	Excellent	Very strong with only some minor weaknesses
Medium	4	Very Good	Strong but with numerous minor weaknesses
	5	Good	Strong but with at least one moderate weakness
	6	Satisfactory	Some strengths but also some moderate weaknesses
Low	7	Fair	Some strengths but with at least one major weakness
	8	Marginal	A few strengths and a few major weaknesses
	9	Poor	Very few strengths and numerous major weaknesses

#### *Criterion Scoring*

- Reviewers should consider the strengths and weaknesses within each criterion. For example, a major strength may outweigh many minor and correctable weaknesses.
- Criterion scores are intended to convey how each assigned reviewer weighed the strengths and weaknesses of each section
- Providing scores without providing comments in the review critique is discouraged
- The impact score for an application is not intended to be an average of criterion scores

#### *Overall Impact Score*

- Overall impact is the project's likelihood to have a sustained, powerful influence on the research field(s) involved
- The impact score should reflect the reviewer's overall evaluation. No formula is used to derive the overall impact score from the individual criterion scores – reviewers should weigh the different criteria as they see fit to derive the overall impact score.

- An application does not need to be strong in all categories to be judged likely to have major impact. For example, a project that by its nature is not innovative may be essential to advance a field.
- A score of 5 is a good, medium-impact application

## NIH Scored Review Criteria for Research Proposals

- Significance
- Investigators
- Innovation
- Approach
  - Feasibility is always a consideration
- Environment
- Overall impact on field

### *Significance – Will the work advance the field?*

- Does the project address an important problem or 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, or clinical interventions in the field?

### *Investigators*

- Focus on the qualifications and expertise of the members of the research team for the work proposed
  - Do they have the expertise to do the proposed work?
- If the applicant is junior level, do they have appropriate experience and training?
  - Have they lined up the appropriate team to help?
- If established, do they have a track record in the area? NIH funding?
- If the project is collaborative or multi PD/PI, do the investigators have complementary and integrated expertise?

### *Innovation*

- Is the application novel or does it improve previous work?
- Does the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel concepts, approaches, or methodologies?

### *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 justified in terms of the scientific goals and research strategy proposed?

#### *Feasibility*

- Is the project overly ambitious?
- Can the aims be achieved?
  - Within the timeline stated?
  - Within the budget given?
- Is there convincing evidence that the work can be done (e.g., pilot testing)?

#### *Environment*

- Will the scientific environment contribute to the probability of success?
- Are the institutional support, equipment, and other resources adequate for the project?
- Will the project benefit from unique features of the scientific environment, subject populations, or collaborative arrangements?

#### *Overall impact on field*

- Likelihood for the project to exert a sustained, powerful influence on the research field involved
- Assessment of the strengths and weaknesses outlined for each of the five scored criteria
- An application does not need to be strong in all categories to be judged likely to have major scientific impact

**Note:** Fellowship (F30, 31, 32, 33) and Career Development (K01, K23, K24, etc.) awards use a different set of scored review criteria focused on the applicant's career development and mentorship plans. *For this Mock Review exercise, we will use the standard research proposal criteria described above.* Links to information on fellowship and career development scoring criteria are included below:

- [https://grants.nih.gov/grants/peer/guidelines\\_general/scoring\\_guidance\\_training.pdf](https://grants.nih.gov/grants/peer/guidelines_general/scoring_guidance_training.pdf)
- K Awards: <https://researchtraining.nih.gov/programs/career-development>
- F awards: <https://researchtraining.nih.gov/programs/fellowships>