

# Changes to the NIH Grant Application and Review Process

Edward McAuley

Department of Kinesiology and  
Community Health

# What Drove the Changes to the NIH Peer Review and Grant Application Process?

- The process was too slow
- There were not enough senior/experienced reviewers
- The process favored predictable research instead of significant, innovative, or transformative research
- The time and effort required to write and review were a heavy burden on applicants and reviewers

## Enhancing Peer Review

- Elias Zerhouni (Former Director of the NIH)

*“Fund the best science, by the best scientists,  
with the least administrative burden...”*

# Enhancing Peer Review: Three Topics of Interest to This Group

1. Early Stage Career Investigators
2. Fund the best research earlier and reduce the burden for applicants and reviewers
3. Improve quality and transparency of peer review

# Early Stage Career Investigators

## Definition of New Investigator:

- Not previously competed successfully as PD/PI for a significant NIH independent research award.

## Definition of Early Stage Investigator:

- Within 10 years of completing terminal research degree or within 10 years of completing medical residency (or the equivalent).
- *Applies only to R01 applications*
- *New Investigators/Early Stage Investigators are clustered together for review - THIS IS VERY ADVANTAGEOUS!*

# Early Stage Career Investigators

- Funding for New Investigators and ESI
- The NIH corporate policy now funds R01s of New Investigators and ESIs at different pay lines
- Advice for ESI (and to New PI)
  - Apply NOW!!!
  - Apply for R01!!!!!!
- Goal is to get funding levels to 40-50% for early career investigators

# Funding the Best Research Earlier and Reducing the Burden on Applicants, Reviewers, and Institutions

- Only two shots at funding (no A2 applications )
- Third submissions often have no change to the science and applicants are “waiting in line”
- Fund excellent applications earlier

# Improve Quality and Transparency of the Peer Review Process: Three Strategies

- Shorten applications, aligning with review criteria
- Shorten summary statements, follow template for each criteria
- Change the scoring system

# Recruit and Retain the Best Reviewers

- Flexibility to serve: decrease the commitment to twice yearly by serving 6 years
- No submission deadlines
- Tangible rewards for reviewer service (yet to be put into practice)

# Critical Changes in Peer Review Process

1. Enhanced Review Criteria
2. Template-Based Critiques
3. Scoring Scale (9 point scale)
  - Criterion Scoring
  - Impact Score
4. Clustering and Order of Discussion

## May-June 2009

- Assigned reviewers score each criteria (1-9)
- Shorter summary statement, with boxes for each criteria
- Discussion of new investigators first
- Scores of individual criteria given to all applicants
- Discussed applications will receive additional overall impact score
  
- Changes occurring in 2010:
  
- Shorter application (12 pages for R01) designed to match scoring criteria

# 1.Enhanced Review Criteria

- Overall Impact:
  - Assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s)
- New Core Criteria Order:
  - Significance
  - Investigator(s)
  - Innovation
  - Approach
  - Environment

## 2. Template-Based Critiques

To improve the quality of the critiques and to focus reviewer attention on the review criteria:

- Electronic template for critiques that prompt for strengths and weaknesses for each criterion.
- Summary statement is shorter and more focused.
- Discussed applications only also have a summary of the panel's discussion at the meeting.
- ALL applications are scored.
- Not discussed applications receive criterion scores only from the assigned reviewers (no impact score)

## 2. Template-Based Critiques

- Critique template contains a total of 18 boxes
  - Reviewers provide text for only those criteria that are applicable.

<b>1. Significance</b>	6. Resubmission	<b>13. Overall Impact</b>
<b>2. Investigator(s)</b>	7. Renewal	<i>14. Budget and Period of Support</i>
<b>3. Innovation</b>	8. Revision	<i>15. Select Agents</i>
<b>4. Approach</b>	9. Protection of Human Subjects	<i>16. Applications from Foreign Organization</i>
<b>5. Environment</b>	10. Inclusion of Women, Minorities, and Children	<i>17. Resource Sharing Plan</i>
	11. Vertebrate Animals	<b>18. Additional Comments to Applicant</b>
	12. Biohazards	

## 2. Template-Based Critiques

- The objective is to provide evaluative statements and to avoid summarizing the application
- Comments in the form of bullet points or if necessary short narratives
- The entire template is uploaded to become part of the summary statement.

1. Significance	Please limit text to ¼ page
<p><b>Strengths</b></p> <ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li></ul> <p><b>Weaknesses</b></p> <ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li></ul>	

### 3. Scoring

<b>Impact</b>	<b>Score</b>	<b>Descriptor</b>
High Impact	1	Exceptional
	2	Outstanding
	3	Excellent
Moderate Impact	4	Very Good
	5	Good
	6	Satisfactory
Low Impact	7	Fair
	8	Marginal
	9	Poor

# 3. The Essence of Scoring

- Before the Meeting
- Every assigned reviewer posts criteria scores AND overall impact scores.
- **The impact scores are used to determine the order of discussion.**
  
- During the Meeting
- For the discussed applications:  
The overall impact score is stated by the assigned reviewers. Criteria scores are not mentioned during the discussion.
  
- After the Meeting
- The applicant with a discussed application sees 3 or more criteria scores AND the overall impact score (the one that will be percentiled)
- The applicants with a non discussed application sees ONLY the criteria scores (3 or more for each criterion)

## 4. New Order of Review

- Meetings begin by discussing the best scored application (of any activity code)
- Use to calibrate subsequent reviews dynamically
- NI/ESI R01s clustered at the beginning
- Followed by all other R01s then R03/21/15/Ks

## 4. Applications that are Not Discussed

- Goal is to discuss ~ 50% of applications
- Option always open to discuss any other applications that panel wishes
- The remaining applications are not discussed (applications receive criterion scores only)

## 5. Scoring Out of Range

- Assigned reviewers state final scores, defining the score range
- Any score outside the range of assigned reviewers must be declared
- Reviewers intending to score outside the range must give reason for doing so
- Generally scoring outside the range is driven by determination of the overall impact of the application

# More Change – New Application Formats

- Applies to all applications submitted after January 25, 2010
- Restructuring research plan to align with review criteria (Significance, Innovation, and Research Approach)
- New Biosketch (personal statement to show strengths and align with application)
- Shorter applications

# Why Shorter Applications?

- Reduce administrative burden
- Potential for more reviewers to read proposal
- Allows applicant and reviewer to better focus on the essential science of the application

# Shorter Applications

- R03/21/F ... Six (6) pages
- R01/K..... Twelve (12) pages For the Research Strategy
- Additional page for Specific Aims
- Resubmissions/revisions ... one (1) page for introduction

# How Will Reviewers Judge the Merit of the Shorter Applications?

- Using the criteria of the new scoring system
- Answer two questions:
  - Will this move the science forward?
  - If so, are these the people to successfully do it?

# Advice

- As With Chicago Voting -- Submit early and often!
- Good Luck!