The Peer Review Process at NIH

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Federal Research Funding By Performer, 1953-2012
Obligations in millions of constant FY 2015 dollars

obligations in billions of constant FY 2016 dollars

"Other" includes research not classified (includes basic research and applied research; excludes development and R&D facilities). Life sciences are split into NIH support for biomedical research and all other agencies' support for life sciences.

Source: National Science Foundation, Federal Funds for Research and Development series. FY 2015 and 2016 data are preliminary. Constant-dollar conversions based on OMB's GDP deflators. © 2016 AAAS
Why Focus on NIH?


The Basic Structure of NIH Review

- Proposal gets assigned to an Institute and a Scientific Review Group (study section). Cover letter, optional. (Feb/Mar)
- Study section meets and assigns a score based on scientific merit. (June/July)
- Summary Statements (“pink sheets”) are transmitted to PI.
- Advisory Council meets and makes recommendations to Institutes (Aug/Oct)
- Institute Director makes funding decision
- If funded, award letter is sent to PI’s institution (SJSURF) (Sept/Dec).
Study Sections – Who Participates?

• Scientific Review Officer (SRO)
  – Ph.D.-level scientist
  – Presiding NIH official at study section meetings
  – Identifies and recruits reviewers
  – Assigns proposals to reviewers
  – PI’s contact on the study section

• Chair – appointed from amongst reviewers – runs meeting

• Reviewers – 10-20 academic, industrial, or government scientists with broad expertise in general field of study section

• Grants Management Specialist – clerical assistance

• Various “guests” – Program Officials

• Note that study section rosters are public
Study Sections – Before the Meeting

• Each proposal is assigned to 3 reviewers: R1, R2, D. Based on expertise. Conflicts of interest are carefully avoided. Study section roster is public but identity of specific reviewers is strictly confidential.

• Each reviewer is assigned 8-12 proposals.

• Prior to the meeting, reviewers read proposals and assign a “preliminary score” from 1-9. Scores are about scientific merit, not funding.

• R1 and R2 must write a critique. D may write one.

• Critiques and scores are loaded onto a secure “Internet Assisted Review” (IAR) web site.

• Reviewers may view other reviewers’ scores and critiques only after posting their own.
Study Sections – Priority Scores

- Reviewers assign a priority score by assessing overall impact: “Likelihood for the project to exert a sustained, powerful influence on the research field(s) involved”
- Reviewers also assess and score (at least) five review criteria: Significance, Investigator(s), Innovation, Approach, and Environment
- Impact/priority score is not just the average of the criteria scores
- Additional Review Criteria (Human Subjects, Inclusion of women, minorities, children, vertebrate animals, biohazards, resubmission, renewal, revision) are not scored separately but do affect impact score
- Additional Review Considerations (resource sharing plan, budget, etc.) are evaluated but do not affect impact score.
Study Section – at the Meeting

• After introductory housekeeping items, the SRO gives all reviewers a list of all proposals with the preliminary priority/impact scores.

• The bottom half (highest scores) are suggested for “triage”, i.e. to be not discussed by the panel. Any reviewer may request that any proposal be discussed without need to justify.

• The best proposals (lowest scores) are then discussed. Discussion order varies, but may be based on Institute, on preliminary score, or on grant number.
Study Section – Proposal Discussion

• First, all three primary reviewers announce their preliminary scores.
• Next R1 (usually) presents the proposal to the entire panel, including her/his commentary.
• R2 and D present their analysis.
• Open debate ensues, including all reviewers.
• When all discussion is done (chair may end it), R1, R2, and D provide final scores.
• All reviewers then (confidentially) score the application. However, they must announce if they are voting “out of range” and explain.

Note: typical application discussed for ~15 minutes (3-4 min per reviewer)
Study Sections – Priority Scores

- Reviewers give scores from 1 (best) to 9 (worst)
- If the application is discussed, scores of all reviewers are averaged, then multiplied by ten: final scores range from 10-90. Otherwise application is “unscored”.
- Often scores are ranked by percentile to normalize between study sections
# Pay Lines

Pay Lines vary from institute to institute – Dec. 2016:

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http://writedit.wordpress.com/nih-paylines-resources/
Advisory Council

- NIH staff, including temporary staff appointed from pool of extramural scientists and public
- Make recommendations for funding based on research priorities
- Proposals under the pay line usually recommended for funding
- Program Officials present proposals near, but above the pay line for discussion
Advice: What Reviewers Like

- Significance and impact
- Creativity and Innovation
- A good story
- Clarity of writing
- Realistically doable work plan
- Back-up plans for unexpected results
Advice: What Reviewers Don’t Like

• Same old thing, again
• Overly ambitious
• Scientific flaws
• Lack of knowledge about and references to relevant published work
• Poor writing
• Typos, spelling errors, etc.
Advice

• Do submit, early and often
• Get [good] people to critique your proposal
• Listen to reviewers’ comments, resubmit
• Do NOT get frustrated or take things personally
• After getting the reviews (and calming down) call the program official
Final Thought

In my experience, the process is fair, thorough, honest, and rigorous. Participation in study sections made me better appreciate reviews I receive, even if negative.

Peer Review Revealed: http://www.youtube.com/watch?v=fBDxI6I4dOA&feature=youtu.be

Early Career Reviewer Program: https://www.youtube.com/watch?v=dtKwYgiuh7M

Tips for Applicants: https://www.youtube.com/watch?v=lAOGtr0pM6Q