RCR8: Peer Review of Grants and Papers

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Housekeeping

Receiving credit for attendance:

To satisfy the NIH Requirement for Instruction in the Responsible Conduct of Research, the following are required in order to receive credit for attendance:

- Attend the full 90 minutes of the training. Attending any 8 out of the 9 RCR seminars we offer will satisfy the NIH requirement.

- Keep your video camera on throughout the session. NIH requirements for RCR training specify face-to-face discussion.

- Participate interactively throughout the session. Participate in discussions, respond to polls, and sign the attendance sheet (link will be distributed in the Chat).

Zoom Etiquette:

- Silence personal devices.
- Stay muted when not talking.
- Set up in a quiet location.
- Remain attentive. Avoid checking email/phone/web.
- Use the Chat function to ask questions or get technical help.
- Use your full name, not an alias.
Welcome Poll: Who is the audience?

1. Select your primary university position or affiliation:
   - PI/Faculty
   - PRA/Researcher
   - Study Coordinator
   - Regulatory/Admin Support
   - Student/Trainee/Post-doc
   - Other

2. Are you primarily working on campus or remotely/from home?
   - On campus
   - Remotely
Disclosures

• I no active relevant conflicts of interest to disclose.

• My research has been funded by the NIH, AHRQ, Greenwall Foundation, Elrha’s Research for Health in Humanitarian Crises (R2HC) program, and the American College of Physicians.
Objectives

By the end of this presentation, participants will be able to:

• Explain the fundamental ethical principles and concepts that underly peer review of papers and grants
• Apply these principles to case studies in peer review
## Agenda

<table>
<thead>
<tr>
<th>TIME</th>
<th>TOPIC</th>
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<tbody>
<tr>
<td>20 minutes</td>
<td>Ethical principles of peer review applied to publication</td>
</tr>
<tr>
<td>25 minutes</td>
<td>CASE 1</td>
</tr>
<tr>
<td>20 minutes</td>
<td>Ethical principles of peer review applied to grants</td>
</tr>
<tr>
<td>25 minutes</td>
<td>CASE 2</td>
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Ethical Principles of Peer Review

Applied to publication
Poll Question 1

In the past 12 months, how many times have you served as a peer reviewer for a manuscript?

a. 0
b. 1-5
c. 5-10
d. More than 10
Poll Question 2

Have you experienced an “ethics challenge” or “ethics dilemma” in reviewing a manuscript?

a. No, never.

b. Yes, once

c. Yes, on more than one occasion.
Peer Review in the News

Does Peer Review Still Matter in the Era of COVID-19?
— Milton Packer describes the impossible task of vetting medical research

by Milton Packer MD  May 13, 2020

Debunking Bad COVID-19 Research

MIT Press and the University of California, Berkeley, are leading an effort to rapidly review research related to the pandemic and stop the spread of misinformation.

by Lindsay McKenzie  // June 29, 2020

To understand and prevent the spread of the COVID-19 pandemic, researchers are working at a rapid clip.

As funders scale COVID-19 research grants and expedite application processes, publishers too are trying to move quickly to ensure that academics, policy makers and the public can access the latest research developments in a timely fashion.

This rush to disseminate information is exposing cracks in the scholarly research system. Academic journals have not been fast-moving historically, and traditional peer review can take months. To make research findings available quickly, many researchers are publishing versions of papers that have not yet been peer reviewed on preprint servers such as arXiv, bioRxiv and SSRN.


32% of papers preprints (3% in 2019)

https://www.medpagetoday.com/blogs/revolutionandrevelation/86465

https://asapbio.org/preprints-and-covid-19
Why Peer Review?

Ideally, peer review plays a critical role within the fundamental Mertonian norms of science.

- **Communism**: Scientific knowledge as a common good
- **Universalism**: All scientific claims are evaluated by the same standard
- **Disinterestedness**: Scientists are to be ‘disinterested’ in their findings
- **Organized Skepticism**: Critical scrutiny of scientific findings
Peer Review is a Privilege – and Responsibility

While definitions of a “profession” vary, it has a number of the following ingredients:

1. Specialized body of knowledge
2. Commitment to public interest
3. Stated ("Professed") values
4. Self-regulation

Here again, peer review can be seen as a critical part of the self-regulation of science as a profession – which means it is a privilege and a responsibility.
Foundational Ethical Principles of Peer Review

- Humility
- Impartiality
- Responsibility to Science
- Confidentiality
- Timeliness
Foundational Ethical Principles of Peer Review

**HUMILITY** means only accepting for review those manuscripts in which you have the expertise to do so.

Unfortunately, data indicate a limited pool of peer reviewers – with 20% of scientists performing up to 60-90% of reviews.

⇒ *In some surveys, editors think junior scientists perform better reviews.*

# Foundational Ethical Principles of Peer Review

**IMPARTIALITY** requires disclosure and management of conflicts of interest – real or perceived.

<table>
<thead>
<tr>
<th>TYPE OF CONFLICT</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial</td>
<td>Owning stock/financial interest in the product under consideration (or the sponsor)</td>
</tr>
<tr>
<td>Institutional</td>
<td>Reviewing research by someone else at your own institution</td>
</tr>
<tr>
<td>Relational</td>
<td>Reviewing research of a collaborator or mentee</td>
</tr>
<tr>
<td>Scientific</td>
<td>Reviewing research that is “too close” to your own</td>
</tr>
<tr>
<td>Personal belief</td>
<td>Reviewing research that you “just don’t believe” (i.e., taking skepticism too far)</td>
</tr>
</tbody>
</table>

*It is critical to discuss these openly with editors, and err on caution, at any point in the process.*
Foundational Ethical Principles of Peer Review

RESPONSIBILITY TO SCIENCE
Not the author

The reviewer’s responsibility is to science and the journal – not to be an advocate for the author.

Nevertheless, this does not justify rude, meanspirited, or nitpicking comments (which appear to be levied against certain people over others). Be constructive!

*Some advocate for sparing use of the “Confidential Comments to Editor” box.*

Silbiger NJ, Stubler AD (2019) Unprofessional peer reviews disproportionately harm underrepresented groups in STEM. PeerJ. 7:e8247

Beaumont L. Peer reviewers need a code of conduct too. https://www.nature.com/articles/d41586-019-02492-w
Foundational Ethical Principles of Peer Review

CONFIDENTIALITY means keeping the manuscript and its content confidential.

Practically, confidentiality comes with challenges:

• It is OK to have a junior scientist/mentee help IF you ask the journal’s permission first AND you acknowledge that contribution.

• It is not OK to use experimental findings for your own gain, though this can be a very gray area.

Co-reviewing and ghostwriting by early career researchers in the peer review of manuscripts

Gary S. McDowell, John Knutsen, June Graham, Sarah K. Oelker, Rebecca S. Lijek

doi: https://doi.org/10.1101/617373
Now published in eLife doi: 10.7554/eLife.48425
Foundational Ethical Principles of Peer Review

TIMELINESS

TIMELINESS means completing your review on time.

Timely reviews can be critical for junior and early career scientists, as they often rely on publications for early advancement, opportunities and so on.
Not Just Theoretical Concerns

Table 1
Journal peer review survey data

<table>
<thead>
<tr>
<th>Event</th>
<th>% Yes</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A reviewer was incompetent</td>
<td>61.8</td>
<td>3.3</td>
</tr>
<tr>
<td>A reviewer was biased</td>
<td>50.5</td>
<td>3.4</td>
</tr>
<tr>
<td>A reviewer required you to include unnecessary references to his/her</td>
<td>22.7</td>
<td>2.8</td>
</tr>
<tr>
<td>publication(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments from reviewers included personal attacks</td>
<td>17.7</td>
<td>2.6</td>
</tr>
<tr>
<td>A reviewer delayed the review so that he/she could publish an article</td>
<td>9.6</td>
<td>1.7</td>
</tr>
<tr>
<td>A reviewer breeched confidentiality</td>
<td>6.8</td>
<td>2.0</td>
</tr>
<tr>
<td>A reviewer used your ideas, data, or methods without your permission</td>
<td>4.5</td>
<td>1.7</td>
</tr>
</tbody>
</table>

The Future of Peer Review

There is a need to explore different models of peer review and cross-check them against these ethical principles.

For example, in one study, open review was not associated with quality of review but was associated with higher declination of requests and longer review time.

van Rooyen S, Delamothe T, Evans SJ. Effect on peer review of telling reviewers that their signed reviews might be posted on the web: randomised controlled trial. BMJ. 2010 Nov 16;341:c5729. doi: 10.1136/bmj.c5729.

Case 1

A complicated peer review
A Challenging Peer Review

Imagine you are asked to conduct peer review of a paper that is clearly in your field of expertise. When you receive the request, you notice that a former mentee is one of the authors of the paper.

(1) What factors should you consider in determining whether you have a conflict of interest in this case?

(2) How can you go about finding more information to help you make your decision?
A Challenging Peer Review (continued)

You have accepted the review. As you start reviewing the manuscript, you realize that the research is actually quite close to your own. In fact the authors conducted an experiment and its results could inform your own research to ‘take it to the next level.’

Oddly, though, you recall a recent conference where you saw that experiment conducted - with exactly the opposite outcome. This makes you start to question the validity of the findings.

(1) Now that you have read the paper, is this a new potential conflict of interest? If you think so, what should you do?

(2) One thought crosses your mind: Maybe you can reach out to your former mentee. Should you?

(3) You seem to question whether there is scientific misconduct at play. How should you respond?
A Challenging Peer Review (continued)

You decided to do the review anyway, and you send in your review, expressing to the editors and the authors concerns about the findings. And, you took the time to substantiate your claims with relevant citations. Now the editors write back, and ask two things. First, they want to edit your review before sending it to the authors. And second, they want to use some of your comments in an editor’s note that will accompany the paper.

(1) Is it ever permissible for journal editors to edit a review? (What if the content were rude, biased, or destructive?)

(2) Who “owns” the content of anonymous peer reviews?
Ethical Principles of Peer Review

Applied to grants
Poll Question 3

The grant review process at the NIH is fair and unbiased.

a. Strongly disagree
b. Disagree
c. Neither agree nor disagree
d. Agree
e. Strongly agree
Controversies in Grant Review

Open Mike

Case Study in Review Integrity: Abuse of Power

A series to raise awareness, encourage discussion, and open challenges in maintaining integrity in peer review.

What would you do, as the Dean of Research, if your postdocs and junior faculty reported that they felt under pressure to write critiques for a senior faculty member?

We were so impressed by the careful handling of this situation that we wanted to share this fictionalized name.

Dr. Lee, Dean of Research at a major research university, was recently informed of a complaint against Dr. Williams, a Distiguished Professor. According to the complaint, Dr. Williams was making demands on the researchers in his lab to write reviews of the work of other faculty members.

The complaint indicated that Dr. Williams was pressuring the researchers to write reviews of the work of other faculty members.

Dr. Williams had clearly violated the NIH's policy on grant review integrity. Before gaining access to grant applications, researchers must be granted access to the NIH Common Grant Application System. In this case, Dr. Williams had clearly violated these policies.

https://nexus.od.nih.gov/all/abuse-of-power
## A Brief Primer on NIH Scoring

**Categories:** Overall Impact; Significance; Innovation; Investigators; Approach; Environment

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

**Non-numeric score options:**
- NR = Not Recommended for Further Consideration
- DF = Deferred, AB = Abstention, CF = Conflict, NP = Not present, ND = Not Discussed

**Minor Weakness:** An easily addressable weakness that does not substantially lessen impact

**Moderate Weakness:** A weakness that lessens impact

**Major Weakness:** A weakness that severely limits impact

*Thanks to Paula Hoffman for this slide.*
Overall Impact:
The likelihood for a project to exert a **sustained, powerful influence** on research field(s) involved.

<table>
<thead>
<tr>
<th>Overall Impact</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
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<tbody>
<tr>
<td>Score</td>
<td>1 2 3</td>
<td>4 5 6</td>
<td>7 8 9</td>
</tr>
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</table>

**Evaluating Overall Impact:**
Consider the 5 criteria: significance, investigator, innovation, approach, environment (weighted based on reviewer’s judgment) and other score influences, e.g., human subjects, animal welfare, inclusion plans, and biohazards.

- **Example 1:** Applications are addressing a problem of **high importance/interest** in the field. May have some or no weaknesses.

- **Example 2:** Applications may be addressing a problem of **high importance** in the field, but weaknesses in the criteria bring down the overall impact to medium.

- **Example 3:** Applications may be addressing a problem of **moderate importance** in the field, with some or no weaknesses.

- **Example 4:** Applications may be addressing a problem of **low or no importance** in the field, with some or no weaknesses.

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5 is a good medium-impact application, and the entire scale (1-9) should always be considered.

*Thanks to Paula Hoffman for this slide.*
Ethical Principles Underlying Grant Review

Although most of the NIH policy focuses on confidentiality in peer review (https://grants.nih.gov/grants/peer/guidelines_general/Confidentiality_CertificationsPR.pdf), you can imagine that some of the ethics concepts apply:

- HUMILITY
- IMPARTIALITY
- RESPONSIBILITY TO SCIENCE
- CONFIDENTIALITY
- TIMELINESS

Of course, humility looks different in this case – as reviewers don’t get to ‘choose’ applications.
### NIH Conflict of Interest in Reviews

#### Situation: Grant Reviews

**Proposed reviewer may not be on the study section if:**
- The reviewer is named on the application in a major professional role
- The reviewer is a member of an NIH Advisory Council
- The reviewer (or close family member) would receive a direct financial benefit if the application is funded

**Proposed reviewer may be on the study section but may not review certain applications and must leave the room when:**
- The PI or others on the application with a major role are from the reviewer’s institution or institutional component (e.g., department)
- Within the past three years, the reviewer has been a collaborator or has had any other professional relationship (e.g., served as a mentor) with any person on the application who has a major role
- The application includes a letter of support or reference letter from the reviewer
- The reviewer serves as a member of the advisory board for the project under review
- The reviewer has an indirect financial interest from the applicant institution or P/D/PI of over $10,000 in honoraria, stocks, and fees during the course of the last year or during the project period

**Proposed reviewer may be on the study section and may review specific applications without a waiver if: (not considered COIs)**
- An application originates from an institution where the reviewer has collaborators, but the reviewer’s collaborators are not listed on the application
- The reviewer has an indirect financial interest of less than $10,000
- The reviewer freely donates reagents or other materials to the proposed project, and these reagents or materials would also be available to other researchers
- The reviewer, as well as a person with a major role on the proposed project, contributes data, reagents, specimens, etc., to the same repository or database
- The reviewer is a member of a research network that involves a person with a major role on the proposed project
- The reviewer is a co-author of a non-research publication (e.g., review, commentary) or a mega-multi-authored publication with a person with a major role on the proposed project

*Note: A Federal employee serving as an NIH peer reviewer is responsible for obtaining any clearance required by his employing institute, agency, or office.*
Case 2

An ethics dilemma in grant review
An Ethics Dilemma in Grant Review

You are serving on a study section, and you are assigned to review an application from TopNotch University. You’ve read carefully the COI guidelines from NIH. Problem is, you are currently negotiating with TopNotch University to take a position there. Although you do not currently work with the PI, you might in the future.

(1) Does this represent a conflict of interest in reviewing the application?
(2) What should you do?
An Ethics Dilemma in Grant Review (continued)

You are reviewing a different application in that same study section. This one is right in your area of scientific investigation, by a group that could be seen as a “competitor.” This group has long had a fundamentally different view about a particular mechanism, and your own research has consistently pushed against this view.

(1) Should you recuse yourself, citing “intellectual conflict”? State at least one advantage and one disadvantage to doing so (or not).

(2) Where can you draw the line between healthy scientific discourse and disagreement, and possible bias or misconduct?
Conclusions

• Even if it is imperfect, peer review of grants and manuscripts is a critical part of science, and a professional privilege and responsibility of researchers.

• Several ethics concepts should guide the conduct of peer review.

• More research is needed to test how well different methods of peer review relate to these concepts.
ADDITIONAL REFERENCES

Committee on Publication Ethics (COPE)

https://ori.hhs.gov/sites/default/files/prethics.pdf

NIH
https://oir.nih.gov/sourcebook/ethical-conduct/responsible-conduct-research-training/annual-review-ethics-case-studies/research-cases-use-nih-community#theme8