Reviewing for Scientific Journals
A Primer

Integrating the Life Sciences from Molecule to Organism
Why Participate in Peer Review?

“Playing a part in the academic process and improving papers are the most important motivations for reviewers.”

Author Submits MS

1 day**

Evaluated by APS Publications Department (Quality Control)

1 day**

Evaluated by Editor-In-Chief

2 days**

Assigned to Associate Editor
Invites 3-10 potential reviewers

14 days**

Assigned to 2-3 Reviewers (3-10 invited, first 2-3 get assignment)

1-2 days**

Critiques Received

Associate Editor Makes Decision and Rates the Reviewers’ Performance

Consultation with AEs if Triage is considered (~10%)*

* Note, not all journals triage papers.  ** Times are approximate and are goals.
Accepted

Revisions Needed (major or minor). R1 sent back to original reviewers

Rejected

Accepted
Other Possible Associate Editor Decisions

- Rejection with option to resubmit as a new manuscript
- Rejection with referral to *Physiological Reports*
- Rejection without the option to resubmit
Who gets invited to review?

- Recognized experts in the field
- Junior reviewers under the supervision of a mentor
- Editorial board members (provide ~30% of reviews)
- Potential reviewers recommended by the authors (up to 4 max recommended per manuscript but AE usually chooses only 1)

Reviewers are asked to decline if:
- there is a real or perceived conflict of interest
- they cannot review in a timely manner (2 weeks)
- the content is out of their area of expertise
How to be selected to review:

• Become prominent in your field(s) of research

• Publish in APS journals and present at APS conferences

• Ask current reviewers for APS journals to recommend you when they decline their invitation to review

• Tell Editorial Board members and other experts of your willingness to review (NETWORK!)

• Share your interest to review with the Editor

• Do a good job when you review
  - Be on time, thorough, polite, constructive and unbiased
  - Maintain a high reviewer rating in the APS system (reviewers are evaluated by the Associate Editor)
Approaching a Paper -
Primary Questions to Ask

- Is the paper within the scope of the journal? (generally assessed by EIC at submission)

- Does the paper address an interesting, important, and novel question?

- Are there surprising/novel findings that could lead the field in new directions or are the findings incremental?

- Are new/novel methodologies (broadly inclusive) used?
Approaching a Paper - Primary Questions to Ask

- Is the manuscript readable?
- Is the scientific approach appropriate for answering this question?
- Are there obvious omissions?
- Are the conclusions supported by the data?
- Are the statistics appropriate?

If the paper is rejected, it is particularly important to address these questions.

Negative findings may be important and should not be dismissed out of hand.
Initial Evaluation
(suggested tactics)

- Read the abstract - frames the larger view

- Skip to the figures, figure legends, and tables. You can quickly get a sense of what sort of study this is – i.e. the level of detail, mechanistic or descriptive, quality of the data being presented, etc.

- Read conclusions at end of discussion
In Depth Evaluation

• Read the entire paper

• Pay attention to the details

• Moving through the results and figures/tables, ask:
  Is the question as stated in the Introduction actually being addressed by the methods and protocols being used?

• Do the data support the conclusion?
  ➢ Is the quality of the data sufficient to enable conclusions to be drawn from it?
  ➢ Is the experimental design appropriate?
  ➢ Are non-relevant data presented?
  ➢ Do tables and figures duplicate the findings – which is the better format?
  ➢ Consider the possibility of type II (false negative) errors from underpowered studies.
Synthesizing Comments for the Editors

- Remember – the Editor probably did not read it as carefully as you.
- Editors need **the major questions answered** – is this novel, exciting, correct, incremental, boring, useful or not?
- Provide a sound, logical, and data-driven basis for your recommendations.
- Do not just copy and paste your comments to the Editors to the authors: EDITORS HATE THAT.
- Do not tell the Editors one thing, and then provide comments to the authors which send a different message.

**Be sure your overall evaluation is consistent with your review.**
What makes a “Good” or “Bad” Review?
(for the authors)
Things That Make a Bad Review.....

• Extreme brevity...even good papers need a review stating why it is good!

• Rude, arrogant, or personal comments (would you say that to someone’s face?)

• Scientific errors (or misquoted literature) by the reviewer (it happens!)

• Mention of “acceptance” or “rejection” in the review (not the reviewer’s decision)

• Sloppy writing with spelling errors and not good grammar (please proof your reviews)

• Recommendations based on opinion rather than the facts
So What Makes a Good Review?
Things That Make a Good Review
- Critique the Science:

• List the major strengths and weaknesses of the science

• Recommend changes to improve the science of the study and use references to support suggestions

Recommendation for additional experiments includes (and suggests):
- No additional studies (accept or minor revision)
- Minor additional studies (major revision)
- Major additional studies (reject)
Things That Make a Good Review
- Critique the Presentation:

• Briefly critique the writing style

• Suggest changes to improve the presentation of the data
  - Too much? Too little? Fig/table overlap?
  - Propose clearer formats, if necessary.

• Suggest changes to clarify, expand, or reduce sections
  - introduction, methods, results, discussion, conclusions,
  - figures, tables, references

Major reorganization of the presentation or reanalysis of the data (implies major revision)
Additional Evaluation Points
(What reviewer’s submit to editors)

**Ratings:**

**Overall Manuscript Rating:**
- TOP 10%
- TOP 25%
- TOP 50%
- LOWER 50%

**Significance of Research Findings:**
- TOP 10%
- TOP 25%
- TOP 50%
- LOWER 50%

**Novelty of Findings:**
- TOP 10%
- TOP 25%
- TOP 50%
- LOWER 50%

**Experimental Design and Quality of Data:**
- TOP 10%
- TOP 25%
- TOP 50%
- LOWER 50%

**Recommendation:**
- Accept
- Minor Revision
- Major Revision
- Reject
Additional Evaluation Points
(What reviewer’s submit to editors)

**Review Questions:**

Has the author stated that they have IACUC, IRB, or equivalent approval, if the study involves animals or humans?
- Yes
- No
- N/A

Is there any question of violation of APS's Guiding Principles in the Care and Use of Animals?
- Yes
- No
- N/A

Is the manuscript the right length?
- Yes
- No
Additional Evaluation Points
(What reviewer’s submit to editors)

Are all of the figures / tables necessary?
○ Yes
○ No
○ N/A

Is the use of figure color scientifically necessary?
○ Yes
○ No
○ N/A

Review Comments:

Confidential Comments to the Review Editor:
Please elaborate on your evaluation of the strengths and weaknesses of the manuscript and physiological significance to 1) represent a breakthrough in understanding; 2) be of major importance; or 3) be of minor importance, advancing the quality/impact of this manuscript in the top 25% of manuscripts you have reviewed in the field.

Remember, your review, including confidential comments, may be passed to the editors of Physiological Reports.

Comments to the Author:
Include in your critique your judgment of the physiological significance of the findings, the clarity of the rationale and hypothesis, data presentation, length and quality of Discussion, and inclusion of appropriate references. Submit general comments first to the Author; those should go in the Comments to the Editor. Do not reveal your decision recommendation to the author, to the Editor.
Reviewing Supplementary Data

• Are the supplementary data appropriate as a supplement or should they be moved to the paper?

• Refer to the author guidelines pertaining to supplemental material [http://www.the-aps.org/mm/Publications/Info-For-Authors/Data-Supplements](http://www.the-aps.org/mm/Publications/Info-For-Authors/Data-Supplements)
The Reviewer as a Consultant:

Goal = improve the paper at hand, not make it into a different study

• Point out missing controls or studies needed to interpret data

• Evaluate clarity of presentation style and order

• If you suggest further studies:
  • Are they really necessary before conclusions can be made?
  • Do they fit within the scope of the work?
  • Can they be done within the 90 day revision window?
Summary of a good review:

• Indicate the major strengths and weaknesses of the study

• Include references to support your comments

• Suggest changes to improve the science of the study

• Comment on the grammar or syntax, if certain phrases should be revised

• Comment on the statistics. Are they appropriate?

• Provide helpful comments to the Editor, telling what you really think and why!
Reviewing a Revised Manuscript:

• Were the authors responsive to your suggestions?

• Are the revisions acceptable?

• Did the authors explain why a suggestion was not acted upon?
  • If you asked for something you felt was important, make sure it was addressed.

• Be careful not to review the other reviewers’ comments.
  • Don’t argue with the other reviewers in your comments to the authors.
Reviewing a Revised Manuscript (continued):

Four important things to remember:

• Your opinions are just that. Allow the authors their approach if it is reasonable and the results significant.

• The Associate Editor has to balance your comments with those of the other reviewers. Make it clear in your comments to the Editor why you recommended acceptance, revision, referral, or rejection.

• Don’t be upset if the Associate Editor makes a decision that does not agree with your recommendations.

• Don’t delay your review of the revised manuscript.
Final thoughts:

• Contributing to the peer review process is an important part of a successful career.

• Experience gained as a peer reviewer will help you in writing and revising your own manuscripts.

• Good reviewers are hard to find, Editors appreciate carefully considered and concise reviews.

• Recognize that the Editors grade your performance as a reviewer. If you are repeatedly asked to review for an APS journal, you must be doing a good job.
References

  http://www.tandf.co.uk/libsite/

• Revising Your Manuscript: Responding to Critiques. S Duckles 
  http://www.the-aps.org/careers/careers1/mentor/workshop/01wrkshp.htm

• Manuscript peer review: a helpful checklist for students and novice referees. DR Seals and H Tanaka 
  http://advan.physiology.org/cgi/reprint/23/1/S52

• Peer Review and Publication in APS Journals. DJ Benos and M Reich 
  http://www.the-aps.org/careers/careers1/GradProf/peerreview.htm

• Statistics, authors, and reviewers: the heart of the matter. D Curran-Everett and DJ Benos 
  http://advan.physiology.org/content/33/1/80

• Demystifying the publishing process: a primer for early career investigators. IH Zucker 
  http://ajpheart.physiology.org/content/309/4/H529
References

• Reproducibility in Science: Improving the Standard for Basic and Preclinical Research. CG Begley and JPA Ioannidis
  http://circres.ahajournals.org/content/116/1/116.short

• Beyond Bar and Line Graphs: Time for a New Data Presentation Paradigm. TL Weissgerberg, NM Milic, SJ Winham, VD Garovic.
  http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1002128

• Civil, sensible, and constructive peer review in APS Journals. H Raff and D Brown
  http://ajpheart.physiology.org/content/305/3/H265.short