Peer Review : What it is, why it's done and how to do it

Outline

- Introduction – What is peer review and why it's done
- Reviewing (the Fundamentals) – what every reviewer should know
- How you can become a reviewer
- An editor's advice to reviewers

What is Peer Review?

"Peer review is a system used by scientists to decide which research results should be published in a scientific journal. The peer review process subjects scientific research papers to independent scrutiny by other qualified scientific experts (peers) before they are made public."

http://www.senseaboutscience.org/pages/peer-review.html

The importance of peer review

•Despite being open to new publishing methods, Early Career Researchers (ECRs) hold favorable views towards traditional publishing such as peer-reviewed journals.

•"*It's part of our job - someone has to do it, someone knowledgeable, and if I want my papers reviewed by others then I should do the same for them." Early career researcher (ECR)*.

•More than 85% of ECRs agree that a history of publishing in peer-reviewed journals is critical to their career.

•Less than one in 10 would cite an article in their own research that had not been peer-reviewed.

•Almost 89% agree that reviewing articles is an essential part of being a researcher.

Elsevier's Researcher Insight Index
http://www.elsevier.com/wps/find/reviewershome.reviewers/ru_most

The purpose of peer review

Peer review is a critical element of scholarly publication and one of the major cornerstones of the academic process:

- Acts as a filter, ensuring research is properly verified before being published
- Improves the quality of the research – rigorous review by other experts helps to refine key points and correct inadvertent errors

Introduction

- Review by peers has been a formal part of scientific communication since the first scientific journals appeared over 300 years ago

- The ***Philosophical Transactions of the Royal Society*** is widely accredited as being the first journal to formalize the peer review process back in 1665

Introduction

- The reviewer is at the heart of scientific publishing and is "…… ***the lynchpin about which the whole business of Science is pivoted***."*

- It is a testament to the power of peer review that a scientific hypothesis or statement, presented to the world is largely ignored by the scholarly community unless it is **first published in a peer-reviewed journal****

*Ziman JM. Public knowledge: an essay concerning the social dimension of science. Cambridge: Cambridge University Press; 1968. p. 111.

**Adrian Mulligan , Elsevier Research and Academic Relations Department

Introduction

- Reviewers, who are usually both authors and readers **make the editorial process** work by examining and commenting on manuscripts, often several times to improve them prior to publication

- **Reviewers constitute the backbone of this process** because both the quality and timelines of published papers depend directly on the thoroughness and promptness of the individual reviewer

Types of peer review

- **Single Blind Review**
  The names of the reviewers are hidden from the author.

- **Double Blind Review**
  Both the reviewer and the author remain anonymous.

- **Open Review**
  Reviewer and author are known to each other.

Introduction

Why do reviewers review?

- Academic ‘duty’
- General interest in the area
- Keep up-to-date with the latest developments
- Helps with their own research and/or stimulate new ideas
- Builds association with prestigious journals and editors
- Aware of new research before their peers
- Career development

Introduction

Questions reviewers should ask themselves before agreeing to review

- Does the article you are being asked to review match your expertise?
- Do you have time to review the paper?
- Are there any potential conflicts of interest?

Reviewing – the basic concepts

(or what a reviewer should be looking for in a paper)

Reviewing – basic concepts

- In all submissions to the journal, authors must address the question of how their proposed methodology compares with previously reported methods
- Authors must explain why the manuscript is of interest for the readers of the journal, and indicate the new information
- Studies reported should be supported by a demonstration of the application of the method to actual samples

Reviewing – basic concepts

- Figures should only be used to improve the quality of the manuscript
- ‘All relevant references’ should be incorporated in the manuscript and be up-to-date
- “Personal Notes/Communications” and “Manuscripts Submitted” should not be incorporated in the reference list

Reviewing – basic concepts

- The reviewers' reports provide **advice** for editors to assist them in reaching a decision on a submitted paper
- The final decision concerning a manuscript lies with the **editor**
- Reviewing needs to be conducted **confidentially**, the article you have been asked to review should not be disclosed to a third party.
- The **anonymity** of the reviewer is strictly preserved

Reviewing – basic concepts

- Reviewers should **not communicate directly** with authors
- All manuscripts and supplementary material are treated as **confidential** by the editors and only disclosed to the reviewer
- The aim is to have a **response to the author within a specified time** after initial receipt of the manuscript
- Meeting these **schedule objectives requires** extra effort on the part of the editorial staff, editor and reviewer
- **If reviewers treat others the way they would like to be treated as authors, working together we can achieve these objectives**

Reviewing – what to look for in each section

Clear relation with Guide to Authors

- Reviewers need to review the manuscript with this in mind

Focus on Building Blocks of manuscript

- Abstract
- Introduction
- Experimental
- Results and Discussion
- Conclusion
- References, Tables, Figures

The Abstract

- Provides short description of perspective and purpose of the paper. Does not overemphasize perspective by providing a literature review
- Gives key results (recall that abstract is what is readily seen in electronic searching) but minimizes experimental details.
- Offers a short description of the interpretation/conclusion
- Brief--<250 words
- Accurately reflects the content of the article

The Abstract

Role of Reviewer:

- Prior to commenting on Abstract, if necessary, add a short (few sentence) summary of article, indicating a general comprehension of article, its importance, your enthusiasm.
- Avoid personal remarks and excessive or pointlessly clever and sarcastic remarks. Remember that reviewer comments can be hurtful. If you must express strong emotions, add such remarks to “comments to editor.”

The Introduction

- The introduction should be concise and to-the-point
- Provides proper perspective consistent with nature of journal
- Cites original and important work plus recent reviews for mature areas to provide context
- States purpose of paper and research strategy adopted to answer the question but does not give results and/or discussion or a summary of the paper (abstract should do this)

The Introduction

Role of Reviewer:

- To comment on effectiveness, clarity, organization
- To suggest changes in organization
- To document major grammar, style problems
- To point authors to appropriate cites [Don't only say "authors have done a poor job of citing relevant research." At least point out that the "early work of Smith et al. has been (again) omitted"]

Experimental/Methods

- the author accurately explains how the data was collected
- the design is suitable for answering the question posed
- There is sufficient information to allow the research to be replicated
- the article accurately identifies the procedures followed, and these are ordered in a meaningful way
- If the methods are new, they are explained in detail
- the sampling is appropriate
- the equipment and materials have been adequately described
- the article makes it clear what type of data was recorded; and the author has been precise in describing measurements?

Role of Reviewer:

- see whether the above has been applied

Results and Discussion

- Include first a design of research. Continue with description of experimental results. Include “ongoing conclusions” if appropriate
- Use figures to illustrate typical results, S/N, peak shapes. Minimize the use of figures
- Avoid excessively enthusiastic interpretations (Don’t use words such as “novel” “first time” “first ever” “paradigm-changing” etc. Allow others to draw such conclusions)
- Ensure interpretations and interim conclusions are justified
- Comment on suitability of data, tables, figures, etc for inclusion as supplementary material

Results and Discussion (cont'd)

Role of Reviewer:

- Suggest organization changes, improvements in presentation and style
- Comment on logic and justification of conclusions and interpretations
- Detail concisely and carefully required changes (recall that author must respond or rebut your requirements!). Minimize the number, if possible. Avoid "thinking out loud
- Consolidate as one item suggested changes in style, grammar, and other small changes
- Comment on number of figures, tables, schemes, their need and their quality
- Require or suggest other experiments. Make clear the need for such. Defer to editor if you are unsure whether new experiments are essential or would be more appropriate for future studies
- When suggesting further work, be aware of the nature of submission—is it a communication, note, full article?

Conclusions

- Present global and specific conclusions
- Indicate uses and extensions if appropriate
- Suggest future experiments and indicate those that are underway
- Do not summarize paper (abstract is for that purpose)
- Avoid judgments about impact

Role of reviewer:

- Comment on validity and generality of conclusions. Request “toning down” claims to generality that are not justified
- Request removal of redundancies and summaries

References, Tables, Figures

Role of Reviewer:

- Check, if possible, accuracy of cites
- Comment on number of cites, if necessary, or if any obvious cites are missing
- Point out redundancies, incomplete cites (missing volume nos, page numbers, author spellings)
- Comment on need for figures, their quality, legibility (recall figs are often published in one column) presentation and relevance
- Comment on need for color in figures (recall color is allowed in electronic versions but expensive in print version)
- Comment on Table footnotes and request additional ones

Ethical Issues

- **Plagiarism.** If you suspect that an article is a substantial copy of another work, let the editor know, citing the previous work in as much detail as possible
- **Fraud.** It is very difficult to detect the determined fraudster, but if you suspect the results in an article to be untrue, discuss it with the editor
- **Other ethical concerns.** If the research is medical in nature, has confidentiality been maintained? If there has been violation of accepted norms of ethical treatment of animal or human subjects these should also be identified

Communicating Your Report to the Editor

- provide a quick summary of the article at the beginning of your report
- the report should contain the key elements of your review. Commentary should be courteous and constructive
- Explain and support your judgment so that both editors and authors are able to fully understand the reasoning behind your comments.
- When you make a recommendation regarding an article, consider the categories the editor most likely uses for classifying the article.
- a) Reject (explain reason in report)
- b) Accept without revision
- c) Revise (either major or minor)
- Last, clearly identify what revision is required, and indicate to the editor whether or not you would be happy to review the revised article.

An Editor's Advice to Reviewers

From Paul Haddad, Editor in Chief of the *Journal of Chromatography A*

1. **Be critical.** It is easier for an editor to overturn very critical comments than to overturn favorable comments.
2. **Justify all criticisms** by specific references to the text of the paper or to published literature. Vague criticisms are unhelpful.
3. **Don't repeat information from the paper**, such as the title and authors names, since this already appears elsewhere in the review form.
4. **Check the Aims and Scope** of the journal to ensure that your comments are in accordance with journal policy.
5. **Give a clear recommendation**. Don't put "I will leave the decision to the editor" unless you are genuinely unsure of your recommendation.
6. **Number your comments** so that the authors can easily refer to them.
7. **Be specific** - refer to line numbers in the paper or to exact regions where you wish changes to occur.
8. **Be careful not to identify yourself** by your comments or by the file name of your report if you submit it as a Word file.

How to become a reviewer

We are aware that there are many qualified, capable and enthusiastic people willing to review papers, so why is it so difficult to 'break into' the reviewer community and become an active reviewer?

The main reason is because it is always up to the editor to select the reviewers they wish to handle a paper.

Editors usually select reviewers based on a few criteria:

- qualification of reviewer (Masters/PhD – depending on subject area)
- whether they have reviewed before
- the number of papers they have published in their given area of expertise
- how well those papers have been cited
- recommendations from other researchers/reviewers they know or have worked with

What can you do?

- Talk to your supervisor/head of department and let them know that you are interested in reviewing.
- Find journals that are related to your area of expertise and identify articles that you feel confident you would be qualified to review.
- At the next conference you are attending, you could identify any editors present (again in your area of research) and approach them directly
- If you have a paper accepted in a journal, offer to review for that journal

And a final thought…

"It is a professional honor to be invited to review a scientific manuscript as part of the peer review process. Please take this job seriously. The journal's reputation depends in part on this peer review process."

Joseph Alpert, Editor in Chief of *The American Journal of Medicine*