Evolving peer review to improve its integrity, robustness, transparency and inclusivity

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#UKRIOwebinar
Ethical and robust conduct in peer review - by authors, reviewers, funders and journals - is essential for maintaining the integrity of research reporting and the scholarly record.

Because it acts as a form of quality control - it underpins the unbiased and rigorous assessment of research findings, and shapes what is published and funded. It thus has broader impacts on policy and society.
Peer review largely depends on trust and requires that all parties — reviewers, editors, authors, research institutions, funders and publishers — behave with integrity and fulfil their respective responsibilities.
But trust in peer review has reduced in recent years because of doubts about:
- the integrity and transparency of the peer review process
- the honesty of authors and reviewers
- the impartiality of reviewers
- the reliability of published findings
- the equal inclusion of all with the expertise to review
What are the consequences of a lack of transparency in peer review for its integrity and trustworthiness?
Peer review traditionally consists of decisions made behind closed doors based on confidential advice from reviewers.

Researchers commonly receive anonymised reviewer comments (single blind peer review).
This lack of transparency has consequences

- Reviewers can use their anonymity to behave **unethically**, for example, by misusing their access to confidential, privileged information to benefit their own work.
- They can hinder the funding or publication of **work** that challenges the status quo, their favoured theory, or that seeks to correct the scholarly record.
• Reviewers can fail to disclose personal and/or professional biases or competing interests, which can influence their assessment of another researcher’s work.
• And they can use their anonymity to make unconstructive, sometimes hostile, comments to authors.
• And can fail to give credit to their co-reviewers.
Authors behave unethically too

Some authors have tried to systematically scam the peer review process by
• suggesting fake reviewers for their articles
• providing positive, fake reviewer reports on their own papers
• leading to the retraction of hundreds of papers, undermining trust in the integrity of peer review
Publishing: The peer-review scam

When a handful of authors were caught reviewing their own papers, it exposed weaknesses in modern publishing systems. Editors are trying to plug the holes.

Cat Ferguson, Adam Marcus & Ivan Oransky

26 November 2014

Journals have responded by

• Improving the security of their editorial systems
• More closely checking identities of author-suggested reviewers
• Requiring use of ORCID ids
• Trialling programmes that aim to detect unusual submission and peer review activity on their editorial system
Authors also suffer from a lack of transparency and integrity in peer review

• Many experience unreasonable or inappropriate delays and barriers to the publication and funding of their work, slowing their career progression and research progress in their field.

• Not all researchers experience a level playing field – some will be treated more favourably by ‘gatekeepers’ (reviewers, editors, editorial board members, grant committee members) than others.
When reviewers, authors and editors do not uphold their ethical responsibilities for peer review, it erodes the quality and reliability of published research results and impacts funding decisions.

So how are these issues being addressed?
PEER REVIEW NOW TAKES MANY FORMS

- Single blind peer review (traditional)
- Double blind peer review
- Transparent peer review
- Consultative peer review / cross review
- Post publication open peer review (named reviewer reports posted online for all to see)
- Preprint peer review (on preprint archives)
An example of the double blind peer review of grants

In 2014, the Irish Research Council introduced the anonymised assessment of grant applications

In 2013, 43% of grant applications to IRC were from female researchers. 35% of them were awarded a grant.

In 2014, anonymised grant assessment was introduced. 44% of female applicants were awarded a grant.

In 2017, with anonymised assessment still underway, 57% of female applicants were awarded a grant.

An analysis of the uptake of double blind peer review at Nature journals

Study authors investigated DBPR uptake in relation to:

- Gender
- Country and
- Institutional prestige of the corresponding author
- Editorial outcomes

Analysed 128,454 manuscripts submitted March 2015 - February 2017
Higher DBPR uptake by authors from lower prestige institutions as well

McGillivray and De Ranieri Research Integrity and Peer Review (2018) 3:5
https://doi.org/10.1186/s41073-018-0049-z
Concluded that
‘authors who feel more vulnerable to implicit bias against the prestige of their institutional affiliation or country tend to choose DBPR to prevent such bias playing a role in the editorial decision.’
Double blind peer review does not improve transparency but can help to prevent implicit bias from influencing decisions of reviewers, funders and editors, providing a fairer process.
Polarized sorting of Patched enables cytoneme-mediated Hedgehog reception in the Drosophila wing disc

Laura González-Méndez, Ana-Citlali Gradilla, David Sánchez-Hernández, Esperanza González, Adrián Aguirre-Tamaral, Carlos Jiménez-Jiménez, Milagros Guerra, Gustavo Aguilar, Germán Andrés, Juan M. Falcon-Pérez, Isabel Guerrero

Author Information

Review timeline:
Submission date: Editorial Decision: Revision received: Editorial Decision: Revision received: Accepted

Editor: Ieva Gailite

Transaction Report:
(Note: With the exception of the correction of typographical or spelling errors that letters and reports are not edited. The original formatting of letters and reports is maintained.)

1st Editorial Decision

Thank you for submitting your manuscript for consideration by the EMBO Journal. We have received two referee reports on your manuscript, which are included below.

REFEE REPORTS:

Referee #1:
This work continues the important and illuminating studies of Hh signaling from the Guerrero lab. As is typical of their work, the detail, breadth, and depth of analysis are impressive (even if...

Referee #2:
General Summary:
The importance of cytoneme-mediated transport of morphogens such as Hedgehog (Hh) in developmental patterning and diseases is becoming increasingly evident. However, our knowledge about trafficking of Hh components is still in its infancy. Recently, it has been shown that Hh signal...

1st Revision - authors' response
10th Jan 2023

Referee #1:
A snapshot of the ongoing clinical research on COVID-19 [version 1; peer review: 2 approved]

Daniele Piwonki, Claudia Pansier, Laurent Peyrin-Biroulet, Silvio Danese, and Stefanos Bonovas.

*Equal contributors*

Author details

This article is included in the Disease Outbreaks gateway.

This article is included in the Coronavirus collection.

Reviewer Reports

Invited Reviewers

1. Demetris Lamiosos, Department of Health Sciences, School of Sciences, European University Cyprus, Nicosia, Cyprus

2. Ioannis Mamalis, National and Kapodistrian University of Athens, Athens, Greece

Version 1

18 May 2020

1. Read

2. Read

APPROVED

This brief report is a survey of the current COVID-19 clinical research landscape. The number of clinical studies on COVID-19 is rapidly growing and it is important to investigate whether these studies are incorporating features that are desirable for generating high-quality evidence. This survey performed this investigation and found that too many of the ongoing interventional studies have a small expected sample size. This might lead to delayed recognition of effective therapies and a waste of time and resources. This important evidence should guide the design of any future clinical study on COVID-19 and the decision of any funding body as well as the approval of any bioethics committee. For this reason, I consider this brief report important for the scientific community.

There are a few minor suggestions for the authors:
Collaborative peer review (aka cross review)

• **Editors share reviewer reports among all reviewers** before the final editorial decision is made so that they can respond to each other’s comments

• **Formalize co-review** Some journals now require primary reviewers to disclose if they have co-reviewers and who they are
Preprint peer review

• **Community based**, journal agnostic and open peer review of research prior to its submission for publication.
• Reviewers advise authors directly on how to improve their work, rather than a journal editor on whether to publish it or not
• **Many of the same ethical responsibilities of peer review apply**
Preprints have become an important tool for the rapid sharing of research results during the covid19 pandemic. Although these findings are not peer reviewed, some have influenced public health policy.
And some high profile covid19 /Sars-Cov2 papers have already been retracted
It is hard not to ask how these papers made it through peer review given the consequences for public health.
- Curtail requests for additional experiments during revision
- Suspend two-month limit on revisions
- Make preprint posting on bioRxiv or medRxiv default for all eLife submissions
- Extend 'scoop protection' policy to cover competing work published on preprint servers prior to submission
- Mobilize early career researchers
PREreview's mission is to bring more diversity to scholarly peer review by supporting and empowering community of researchers, particularly ECRs, to review preprints.

https://content.prereview.org/about/

Outbreak Science Rapid PREreview

PREreview partnered with the non-profit organization Outbreak Science to develop open infrastructure to help researchers read, provide, and request rapid feedback on outbreak-related preprints.
Recent reports show that not all researchers are asked to participate in peer review

And this isn’t due to their lack of expertise
**Gender Medicine**

*Volume 8, Issue 6, December 2011, Pages 378-387*

Original research

**Women Underrepresented on Editorial Boards of 60 Major Medical Journals**

Karin Amrein MD 1, A. F., Andrea Langmann MD 2, A,, Astrid Fahrleitner-Pammer Zullner-Schwez MD 3

Show more ➲

https://doi.org/10.1016/j.jgamm.2011.10.007

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**New Results**

**Author-Reviewer Homophily in Peer Review**

Dakota Murray, Kyle Siler, Vincent Larivièere, Wei Mun Chan, Andrew M. Collings, Jennifer Raymond, Cassidy R. Sugimoto
doi: https://doi.org/10.1101/400515

This article is a preprint and has not been certified by peer review [what does this mean?].

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**EDITORIAL • 20 JUNE 2018**

**Nature’s under-representation of women**

Women continue to form too small a proportion of this journal’s authors and referees.

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**NATURE | COMMENT**

**Journals invite too few women to referee**

Jory Lerback & Brooks Hanson

25 January 2017 | Corrected: 06 February 2017
HELMER ET AL STUDY

• Used public information about identities of 9000 editors and 43000 reviewers from the Frontiers journals

• Looked at the reviewing of 41K published articles in 142 journals across major disciplines (science, engineering, health, social sciences and humanities)

https://elifesciences.org/articles/21718
Found women are underrepresented as reviewers and editors in all academic disciplines surveyed, particularly severe in maths-intensive disciplines.

https://elifesciences.org/articles/21718
Why are qualified female researchers not invited to review?
Helmer et al conclude that this is because

Editors of both genders operate with same-gender preference (a trait called homophily). However, this trait is more widespread and generally stronger among male than female editors.

Homophily amplifies pre-existing gender imbalances in fields through homophilic networks of interactions
Analysed peer review outcomes of ~30,000 submissions submitted to eLife

Support findings by Helmer et al

https://www.biorxiv.org/content/10.1101/400515v3
• Women and authors from nations outside of North America and Europe were underrepresented both as gatekeepers (editors and peer reviewers) and authors.

• Evidence of higher acceptance rates where gatekeepers shared gender and country homophily with authors (7% higher acceptance rates for manuscripts with male last authors)

• Mixed reviewing teams seem to result in more equal outcomes for authors
Might homophily explain the over and under representation of researchers from certain countries in peer review?

https://ioppublishing.org/about-us/diversity-inclusion-peer-review-iop-publishing/
These and other reports indicate that unconscious bias influences who is invited to review and editorial and funding decisions as well.
Other factors that influence who is invited to review

Lack of information on institutional websites about
• Researchers’ academic backgrounds
• Institution’s governance and research integrity policies and research integrity contact

And also
• Lack of peer review training (both real and perceived)
• Language skills of non-native English speaking reviewers
How can journals and funders improve the transparency and diversity of peer review
Improve awareness & practice

For authors, Reviewers, Editors, EBMs Staff

Different peer review models
Introduce policies

• All funding assessment panels must be mixed gender
• All EPSRC staff must complete unconscious bias training tailored to their role
• Publish peer review guidance and policies to support consistent, transparent and fair decision making

What can institutions do?
Build trust

By including on institutional websites:

• governance and research integrity policies and processes, including on unethical conduct in peer review

• a named individual for journals and funders to contact about suspected researcher and reviewer misconduct

• information about academic/research staff
Build skills

Provide training on peer review to
• early career researchers
• new faculty
• technical staff
Build systems that are inclusive and fair

• Ensure individuals recruited to gatekeeper roles represent the gender, ethnic and national diversity in a field/research community
• Regularly review who occupies gatekeeper roles
• Share findings openly with a plan to address if research community members are found to be under-represented in these roles
We can all contribute to building a fairer, more robust, more trustworthy peer review system. By supporting the cultural changes that address the underlying drivers of research misconduct and unethical conduct in peer review. By behaving responsibly and with awareness of the issues.
Thank you and any questions?