Tools for Preventing or Identifying Misconduct

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Agenda

• Degrees of misconduct in scholarly publishing
• Impact on perception of peer review
• ‘Principle’ of peer review
• Peer review in practice
• Practical tools to reduce threat to research and journal brands
• Organized efforts to improve peer review
• The case for transparency
• Getting involved
Falsification of Data

- Fabrication
- Selective reporting and omission
- Suppression
- Distortion

Plagiarism

- Including figures, charts, and tables
- Self-plagiarism

Recommendations on Publication Ethics Policies for Medical Journals. World Association of Medical Editors (WAME). Taken from: http://www.wame.org/about/recommendations-on-publication-ethics-policies
Misconduct in scholarly publishing

Improprieties of authorship

- Dual publication
- Fraudulent claims of contribution
- Misrepresentation by Corresponding Author
- Identity fraud
- Peer review rings

Misappropriation of the ideas of others

- Reviewer misconduct too!
  - Misrepresentation of qualifications
  - Breach of impartiality
  - Breach of confidentiality
  - Bias (explicit and implicit)

Recommendations on Publication Ethics Policies for Medical Journals. World Association of Medical Editors (WAME).
Taken from: http://www.wame.org/about/recommendations-on-publication-ethics-policies
Misconduct in scholarly publishing

Violation of generally accepted research practices

• “P-hacking”
• Reporting bias
• "HARKing"
• Publication bias

Material failure to comply with legislative and regulatory requirements affecting research

• Willfull and/or repeated violations of law or regulations

Recommendations on Publication Ethics Policies for Medical Journals. World Association of Medical Editors (WAME). Taken from: http://www.wame.org/about/recommendations-on-publication-ethics-policies
Inappropriate behavior in relation to misconduct

- Failure to report
- False accusations
- Withholding knowledge of
- Withholding or destroying info related to claim
- Retaliation

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The peer review drugs don’t work
A process at the heart of science is based on faith rather than evidence, so vested interests keep it in place

May 28, 2015

By Richard Smith

Fake Paper Exposes Failed Peer Review
The widespread acceptance of an atrocious manuscript, fabricated by an investigative journalist, reveals the near absence of quality at some journals.

By Kerry Grens | October 6, 2013

Is the Peer Review Process for Scientific Papers Broken?

Melinda Baldwin | April 29, 2014

Peer review is broken
Peer review is meant to weed out junk science before it reaches publication. Yet over and over again in our survey, respondents told us this process fails. It was one of the parts of the scientific machinery to elicit the most rage among the researchers we heard from.

Normally, peer review works like this: A researcher submits an article for publication in a journal. If the journal accepts the article for review, it’s sent off to peers in the same field...
Most studies show overwhelming support for the principle of peer review

“Peer review remains clearly the central pillar of trust.”


“The large majority (85%) agreed with the proposition that scientific communication is greatly helped by peer review.”


“82% agreed with the statement “without peer review there is no control in scientific communication”, unchanged from the 83% response in 2007 and 2009.”

Peer review: still king in the digital age

Introduction
This paper provides a window into a recently completed international project on trust in the scholarly digital environment, conducted for the Alfred P. Sloan Foundation,\textsuperscript{1} that investigated the views and practices of around 4,000 academic researchers. The formative stages of the project were reported previously in Learned Publishing,\textsuperscript{2} and here we focus on probably its biggest finding: that peer review is not only alive and kicking, but apparently increasing its influence, despite the many potential (or invented) threats posed by a rapidly unfolding and enveloping digital environment: threats such as social media, new information behaviours, and the growing number of proxy trust metrics (e.g. impact factors, usage, and altmetrics). When publishers heard about our findings, their typical response was, ‘We could

Practice of peer review leaves a lot to be desired

“While satisfaction levels with peer review are generally high, only a third (32%) think that the current system is the best that can be achieved.”


Raising questions about roles/responsibilities

“The principal function of the journal is to organize and mediate quality signaling within the author-reader market. The role of the editor is simply to make this happen.”


Recent research indicates:

- Variability of practice
- Inadequate reviewer training
- Susceptible to fraud
- At risk of hacking
- Implicit and explicit bias
Peer review in practice

Pre-publication closed:

- Single, double, and triple-blinded

Pre-publication open:

- Mandatory
- Optional

Pre-publication open and published:

- Mandatory
- Optional

Pre-print servers and post-publication review:

- Open
- Hybrid
Recent research indicates:

- Variability of practice
- Inadequate reviewer training
- Susceptible to fraud
- At risk of hacking
- Implicit and explicit bias
Peer review in practice

Do reviewers want training?

77%

Would like more training
The most common types of reviewer training received to date are in the form of guidelines (journal instructions for reviewers or COPE ethical guidelines) or informal advice from supervisors/colleagues. But...

Support is needed throughout the reviewer career arc

89% Early Career Researchers
65% Established Career Researchers

Specific training areas that are in most demand

- Constructing Report
- Providing Feedback
- Handling Plagiarism
- Intro to Reviewing
“there are no easily identifiable types of formal training or experience that predict reviewer performance. Skill in scientific peer review may be as ill defined and hard to impart as is "common sense.“”

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Forensic Tools

These Forensic tools illustrate several principles in examining questioned text and images in biomedical science.

ORI's Forensic Image Analysis Tools may be available in two forms (depending in some cases on the specific task):

**Forensic Droplets:**
A "Droplet" is a small desktop application in Adobe Photoshop® (v.7 and later) that automatically processes image files that are dragged onto its icon. A Droplet can be a nearly "seamless" interface for quickly examining certain features of a scientific image in Photoshop while reading the publication in the FULL TEXT (html) form or in some forms in an Internet Browser. Droplets can be invoked repeatedly, the latest image being added to the preceding ones and dynamics.
Practical tools

Image manipulation screening

Online Learning Tool for Research Integrity and Image Processing

This site explains what is appropriate in image processing in science and what is not. It also shows how best practices in handling images intersect with other best practices.

The site provides:

- the twelve guidelines for best practices in image processing, with Photoshop videos illustrating each guideline.
- a list of mistakes people commonly make and a quiz to teach how to avoid them through understanding the reasons for the guidelines.
- a case study section including an interactive video case study that shows how, when best practices in image processing, mentoring, and authorship are used, the entire research group benefits, and a handout for live group discussion.
- some examples of unethical research behavior and consequences of not conforming to best or even marginally good practices.
- a section on the relationship between best practices and compliance, including a videotaped interview with a journal editor.

The site is intended for students and faculty members to help use and encourage best practices for promoting research integrity in their research groups. The site is also intended for researchers and administrators at all levels to help to teach best practices for research integrity among students and colleagues alike.
Practical tools

Image manipulation screening

Image Data Integrity

Consulting services about image data manipulation in biomedical research

LEARN MORE
Practical tools

Plagiarism screening

- iThenticate®
- turnitin®
- Viper
- safe assign®
- Crossref

Similarity Check
Powered by iThenticate
Practical tools

Disambiguation and fraud prevention

- ORCID
- Open Science Framework
- Open Data
- Open Materials
- Preregistered
Practical tools

Post-publication peer review

PubPeer
The online journal club

Independent peer review

Rubriq
independent peer review system
Organized efforts

The Equator Network provides reporting guidelines for main study types. The table below lists the guidelines for various study types:

<table>
<thead>
<tr>
<th>Study Type</th>
<th>Guideline</th>
<th>Extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomised trials</td>
<td>CONSORT</td>
<td>Extensions</td>
</tr>
<tr>
<td>Observational studies</td>
<td>STROBE</td>
<td>Extensions</td>
</tr>
<tr>
<td>Systematic reviews</td>
<td>PRISMA</td>
<td>Extensions</td>
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<tr>
<td>Case reports</td>
<td>CARE</td>
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<tr>
<td>Qualitative research</td>
<td>SRQR</td>
<td>COREQ</td>
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<tr>
<td>Diagnostic / prognostic studies</td>
<td>STARD</td>
<td>TRIPOD</td>
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<tr>
<td>Quality improvement studies</td>
<td>SQUIRE</td>
<td></td>
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<tr>
<td>Economic evaluations</td>
<td>CHEERS</td>
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<td>Animal pre-clinical studies</td>
<td>ARRIVE</td>
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<tr>
<td>Study protocols</td>
<td>SPIRIT</td>
<td>PRISMA-P</td>
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Organized efforts
Organized efforts

“aims to improve efficiency, transparency and accountability of peer review through a trans-disciplinary, cross-sectorial collaboration.”
Organized efforts

Transparency and Openness Promotion (TOP) Guidelines
Watchdogs
New efforts

IT ALL STARTS WITH TRANSPARENCY!

- 14-item tool to rate transparency of the peer-review process
- Authors’ ratings of the transparency were positively associated with quality of the peer-review process
- Journals with higher transparency ratings were less likely to accept the flawed paper
PRE and plans for future

PRE was created to:

- Introduce greater transparency into the journal peer review process
- Promote best practices and standards

PRE collects data related to the peer review process and makes it available at the article-level via the PRE badge.
Emergence of healing in the Antarctic ozone layer

Susan Solomon, Diane J. Ivy, Doug Kinnison, Michael J. Mills, Ryan R. Neely III, Anja Schmidt

Science 15 Jul 2016; Vol 353, Issue 6296, pp. 269-274
DOI: 10.1126/science.aac0061

PRE and plans for future
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Research
- Facilitate data sharing/collection
- Sponsor/author studies
- Test accepted practices

Resources
- Research/white papers
- Webinars & panel discussions
- News & developments

Standards
- Adopt/endorse best practices
- Propose new standards/best practices

Certification & Support
- Establish comprehensive curriculum
- Partner with publishers
Get involved!

#PeerRevWk16
#RecognizeReview
www.PeerReviewWeek.org
Get involved!

INTERNATIONAL CONGRESS ON
Peer Review and Biomedical Publication

September 10-12, 2017
Chicago
www.PeerReviewCongress.org

#PeerRevWk16
#RecognizeReview
www.PeerReviewWeek.org
Get involved!

Watch for PRE/AAAS peer review survey!

@PeerReviewEval
#peerreview
www.pre-val.org
Thank you!
Questions?

Eric Hall

[Email]

[Twitter]