OPEN PEER REVIEW OR HOW TO ENHANCE TRUST IN PEER REVIEW

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Peer review definitions

„Peer review is a quality control process used by publications to help ensure that only high quality, methodologically sound information is presented in the publication. In the peer review process, material submitted for publication is sent to individuals who are experts on the topic.” Kanzas State Unversity Library

„Peer review has been defined as a process of subjecting an author’s scholarly work, research or ideas to the scrutiny of others who are experts in the same field.” Jacalyn K, Sadeghieh T, and Adeli K. "Peer review in scientific publications: benefits, critiques, & a survival guide." EJIFCC 25.3 (2014): 227.

„Peer review is defined as a critical evaluation, conducted by one or more experts in the relevant field, of either a scientific document—such as a research article submitted for publication, a grant proposal, or a study protocol—or a research program.” Principles and Practice of Clinical Research (Fourth Edition), 2018

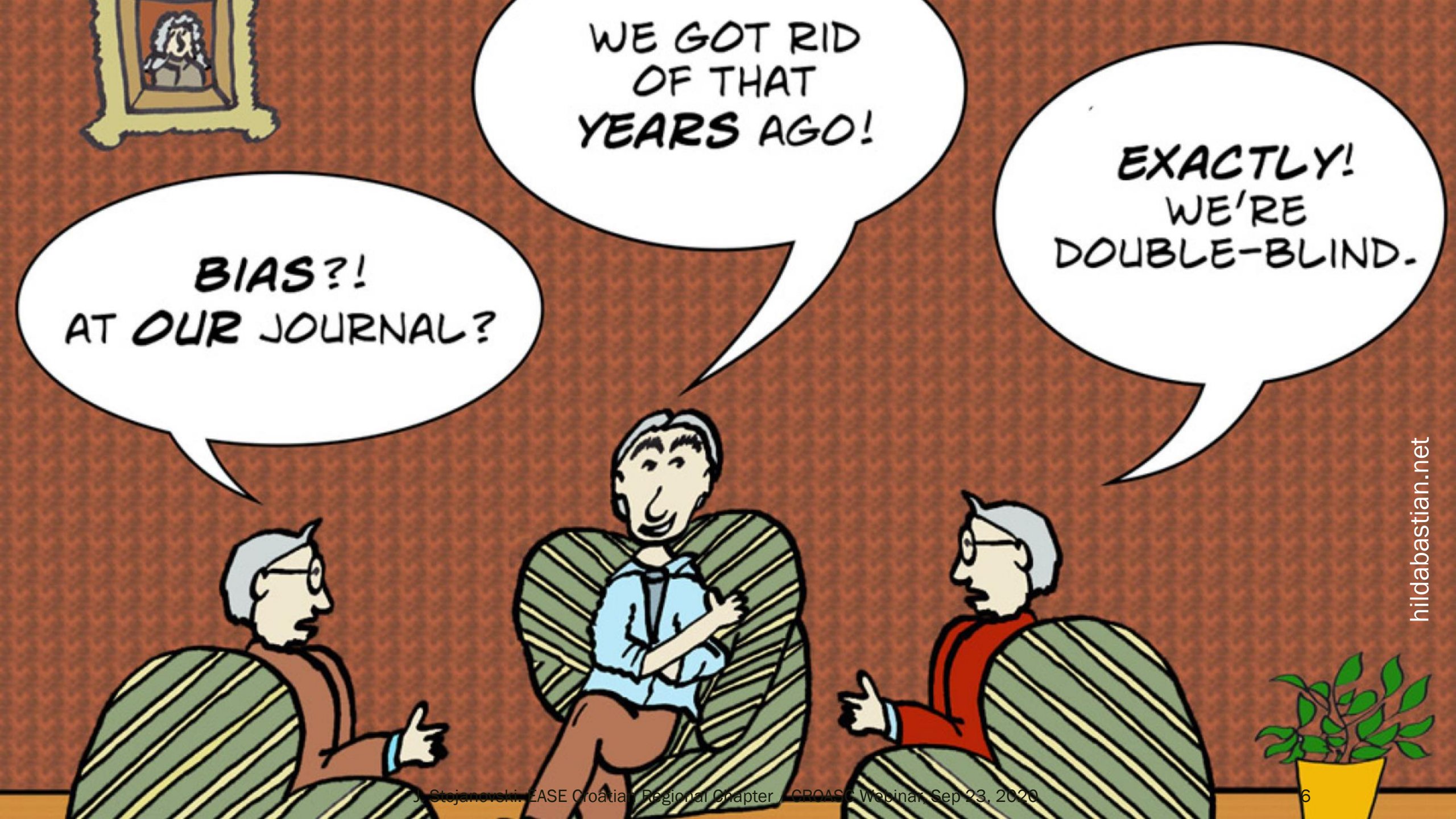

Peer review is generally seen as **vital** for the roles of forming an archive of knowledge and distributing rewards.
DJ Solomon, 2007
Peer review is central to the publishing process and has a **fundamental** role to play in maintaining the integrity of the published literature and advancing discovery. BMC
PEER REVIEW QUOTES
Scholarly peer review is a **central pillar** of academic self-governance.
Ross-Hellauer, T. & Derrick, G.E., 2019
Peer review is one of the **gold standards** of science.
Andre Spicer & Thomas Roulet, 2014

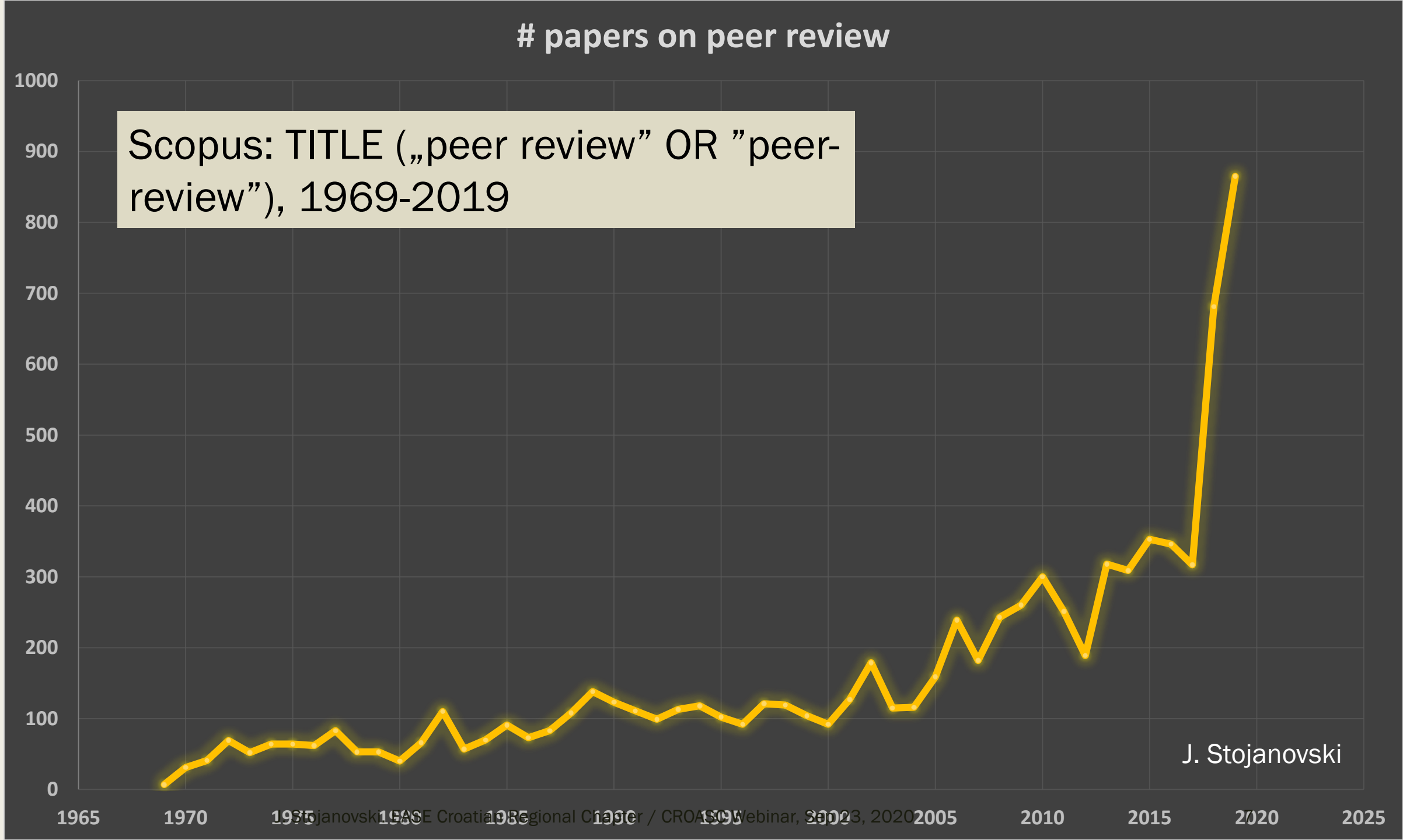
Widely held to be

High expectations of peer review

- ***Selection and accreditation of 'good' science*** *- the peer review system acts as a gatekeeper, a research article receiving the stamp 'peer reviewed', and is generally assumed to be a piece of high-quality science*
- ***Improvement of the quality and accuracy of submitted research*** *- through their constructive feedback, reviewers can genuinely contribute to the work under review and improve the quality of submitted manuscripts*
- ***Providing fair and equal opportunities to all actors*** *- since the course of careers often depends on the publication of peer reviewed articles, many expect the peer review process to be fair, and to offer equal opportunities to all actors.*
- ***Active filtering of problematic research*** *– there are some expectations from peer review to filter fraudulent data, plagiarized content, manipulated images etc.*

Horbach and Halffman (2018)


BIAS?!
AT OUR JOURNAL?
WE GOT RID OF THAT YEARS AGO!
EXACTLY! WE'RE DOUBLE-BLIND.
hildabastian.net

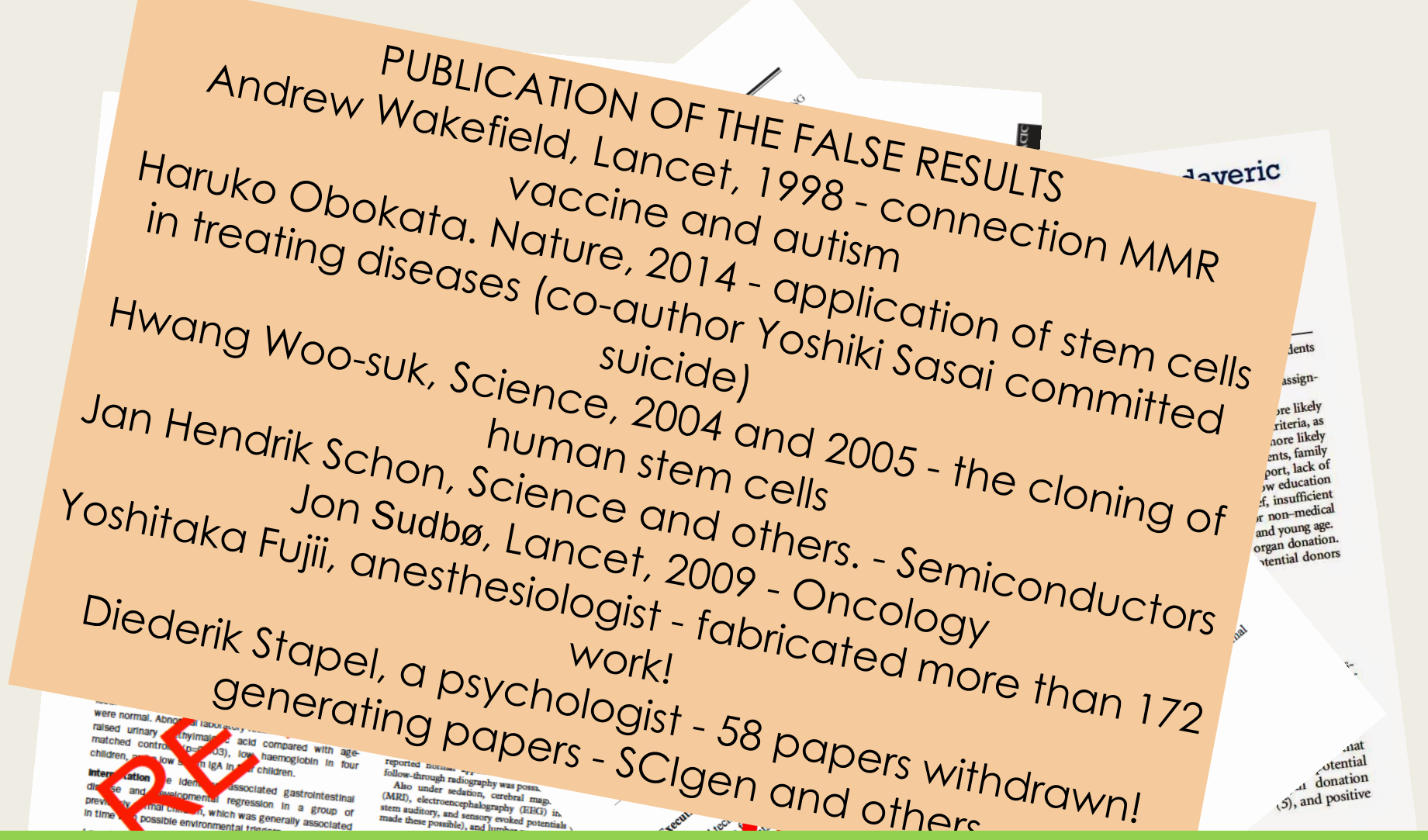

papers on peer review
Scopus: TITLE („peer review” OR ”peer-review”), 1969-2019
1000
900
800
700
600
500
400
300
200
100
0
1965
1970
2005
2010
2015
2020
2025
J. Stojanovski

New Frontiers of Peer Review (PEERE)

- Trans-Domain COST Action TD1306
- 12/5/2014-11/5/2018
- Chair: Prof Flaminio SQUAZZONI
- http://www.peere.org/
- „to improve efficiency, transparency and accountability of peer review through a trans-disciplinary, cross-sectorial collaboration”

Research shows:

- Peer **reviewers don't agree** much (1899 articles, Bornmann & Daniel Angew Chem 2008;47:7173-8)
- Reviewers **don't reliably select** highly cited articles (Bornmann & Daniel *Angew Chem,* 2008)
- Peer review is **not effective at detecting errors/fraud** (sent paper with 8 errors, Godlee et al., 1998); rigorous peer-review has not prevented the publication of **fraudulent science**, even in the most prestigious journals (retractionwatch.com)
- **Expensive, biased, unreliable, open to abuse** (Haffar, Bazerbachi, & Murad, 2019; Wager & Jefferson, 2001)
- **Slow,** delays in completion of the review process (Björk & Solomon, 2013)
- the reviewer can **only advocate for his/her view** of the research problem and/or may reject the manuscript on a topic that he/she personally deals with



"Even the big journals are susceptible to publishing erroneous research. It is in their interests to publish the breakthroughs, and if on occasion a breakthrough is dramatic, big journals like *Nature* or *Science* will rush to publish it."

Prof Luke O'Neill of the Trinity school of biochemistry and immunology and editorial board member for the journal Science

Retraction Watch

- *„Today, three of the authors of the paper, "Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis", have retracted their study. They were unable to complete an independent audit of the data underpinning their analysis…"*

40 papers on Covid-19 retracted!

Ethical issues surrounding closed science increases

- data fabrication and falsification
- conflict of interest
- authorship (ghost, guest, gift)
- research data not available
- plagiarism (including self-plagiarism)
- multiple, redundant or concurrent publication
- duplicate submissions
- citation manipulation (including self-citations – journal, author, group…)

Diederick Stapel, author of 58 retracted papers based on fabricated data

Bias

- Institution - Reviewers prefer papers coming from reputable institutions (a study from Behavioral and Brain Sciences, 1982 showed that previously accepted papers from prestigious institutions were often rejected when presented as coming from non-prestigious institutions).
- Co-workers - Reviewers favor the work of colleagues they collaborate with (identity falsification to review their own work or the work of friends, Nature, 2014)
- Gender
- Ethnicity
- Race
- Language

Source: https://www.editage.com/insights/7-common-types-of-academic-peer-review#.Wb8ag6Uf074.twitter

OPEN PEER REVIEW

As a major pillar of Open Science

“Peer review is changed from being an arbitrary decision made in a closed box to an open scientific discourse.” (Richard Smith, editor BMJ)


Open Data
Open Source
Open Notebooks
Open Access
Citizen Science
Open Peer Review
Scientific social networks
Open educational resources

FOSTER

Open Peer Review

- author - actively participates
- reviewer - publishes his review publicly
- public - comments
- the editor decides

- peer review before publication
- peer review after publication
- Examples: Research Integrity and Peer Review, F1000 Research, BMC Cancer (pre-publication history), *Biology Direct*, *BMJ Open*, *the European Molecular Biology Organization – EMBO*, *Atmospheric Chemistry and Physics*, *GigaScience*

Open Peer Review

- ***universal assessment*** *- two to three experts do a review, but then everyone can participate with their comments, critiques or suggestions.*
- ***publication and then peer review***
- ***life after first publication***
- ***without anonymity*** *- open review - revealing the identity of the reviewer and / or publishing the review*

- e.g. *F1000.com*

Check for updates

REVIEW

REVISED A multi-disciplinary perspective on emergent and future innovations in peer review [version 3; peer review: 2 approved]

Jonathan P. Tennant [1,2], Jonathan M. Dugan [3], Daniel Graziotin[4], Damien C. Jacques [5], François Waldner [5], Daniel Mietchen [6], Yehia Elkhatib [7], Lauren B. Collister [8], Christina K. Pikas [9], Tom Crick [10], Paola Masuzzo [11,12], Anthony Caravaggi [13], Devin R. Berg [14], Kyle E. Niemeyer [15], Tony Ross-Hellauer [16], Sara Mannheimer [17], Lillian Rigling [18], Daniel S. Katz [19-22], Bastian Greshake Tzovaras [23], Josmel Pacheco-Mendoza [24], Nazeefa Fatima [25], Marta Poblet [26], Marios Isaakidis [27], Dasapta Erwin Irawan [28], Sébastien Renaut [29], Christopher R. Madan [30], Lisa Matthias [31], Jesper Nørgaard Kjær [32], Daniel Paul O'Donnell [33], Cameron Neylon [34], Sarah Kearns [35], Manojkumar Selvaraju [36,37], Julien Colomb [38]

Author details

This article is included in the Science Policy Research gateway.

Abstract

Peer review of research articles is a core part of our scholarly communication system. In spite of its importance, the status and purpose of peer review is often contested. What is its role in our modern digital research and communications infrastructure? Does it perform to the high standards with which it is generally regarded? Studies of peer review have shown that it is prone to bias and abuse in numerous dimensions, frequently unreliable, and can fail to detect even fraudulent research. With the advent of web technologies, we are now witnessing a phase of innovation and experimentation in our approaches to peer review. These developments prompted us to examine emerging models of peer review from a range of disciplines and venues, and to ask how they might address some of the issues with our current systems of peer review. We examine the functionality of a range of social Web platforms, and compare these with the traits underlying a viable peer review system: quality control, quantified performance metrics as engagement incentives,

Open Peer Review

Reviewer Status ✓ ✓

Reviewer Reports

	Invited Reviewers	
	1	2
Version 3 (revision) 29 Nov 17		
Version 2 (revision) 01 Nov 17	✓ read	✓ read
Version 1 20 Jul 17	? read	? read

1. **David Moher**, Ottawa Hospital Research Institute, Ottawa, Canada
2. **Virginia Barbour**, Queensland University of Technology (QUT), Brisbane, Australia

Comments on this article

All Comments (12)

Add a comment

Benefits of Open Peer Review (1)

- reviewer comments put paper in the context which is useful additional information for readers
- reduces bias among reviewers
- more constructive reviews
- published report can serve as peer review examples for young researchers
- shows the reviewer's informed opinion on the work
- demonstrates experience of the reviewer
- can take credit for the work involved in conducting the review
- author can see who reviewed their work

Squazzone, 2016

Benefits of Open Peer Review (2)

- less subjectivity
- more reliable selection
- more effective detection of errors
- less fraudulent science
- open review can positively affect the reviewer's reputation
- more motivation (Nature Astronomy example, 40% willing to disclose identity, according to Peer review under review. Nat Astron 4, 633 (2020). https://doi.org/10.1038/s41550-020-1163-7)

7 traits of Open Peer Review

- **Open identities:** Authors and reviewers are aware of each other's identity.
- **Open reports:** Review reports are published alongside the relevant article.
- **Open participation:** The wider community to able to contribute to the review process.
- **Open interaction:** Direct reciprocal discussion between author(s) and reviewers, and/or between reviewers, is allowed and encouraged.
- **Open pre-review manuscripts:** Manuscripts are made immediately available (e.g., via pre-print servers like arXiv) in advance of any formal peer review procedures.
- **Open final-version commenting:** Review or commenting on final "version of record" publications.
- **Open platforms:** Review is de-coupled from publishing in that it is facilitated by a different organizational entity than the venue of publication.

Anthony Ross-Hellauer, 2017

My proposal: Layers of openness in peer review (1)

1. **Who opens identity?** Author, reviewer, editor, member of the community

2. **What is open?** Comments, reviews, author's responses, submitted (accepted and/or rejected) manuscript, different versions of the manuscript, final version of the accepted paper, research data

3. **Who is reviewing and who is commenting?** Community, designated (formal) reviewers, public

4. **What is commented?** Manuscript, review, author responses, final version of the publication, research data, everything

Layers of openness in peer review (2)

5. **When the peer review takes place?** immediately after submission, during peer-review process, after the final version has been published

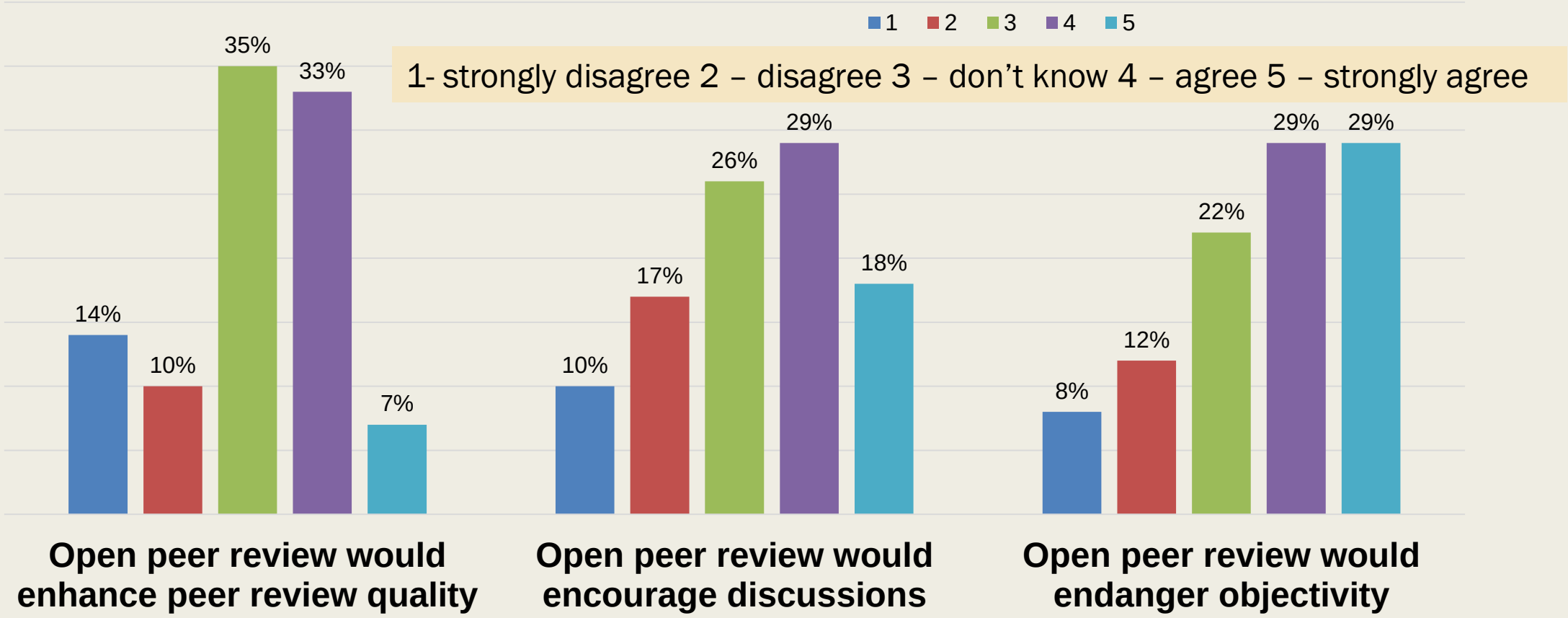
6. **When is the manuscript/paper available?** Immediately after submission, when the paper is accepted, after the paper was rejected

7. **How is the communication process organized?** discussions between reviewers, authors and reviewers, public and reviewers, reviewers and editors, authors and editors, moderated discussions?

8. **Where the process of peer review takes place?** journal, separate platform dedicated for peer review

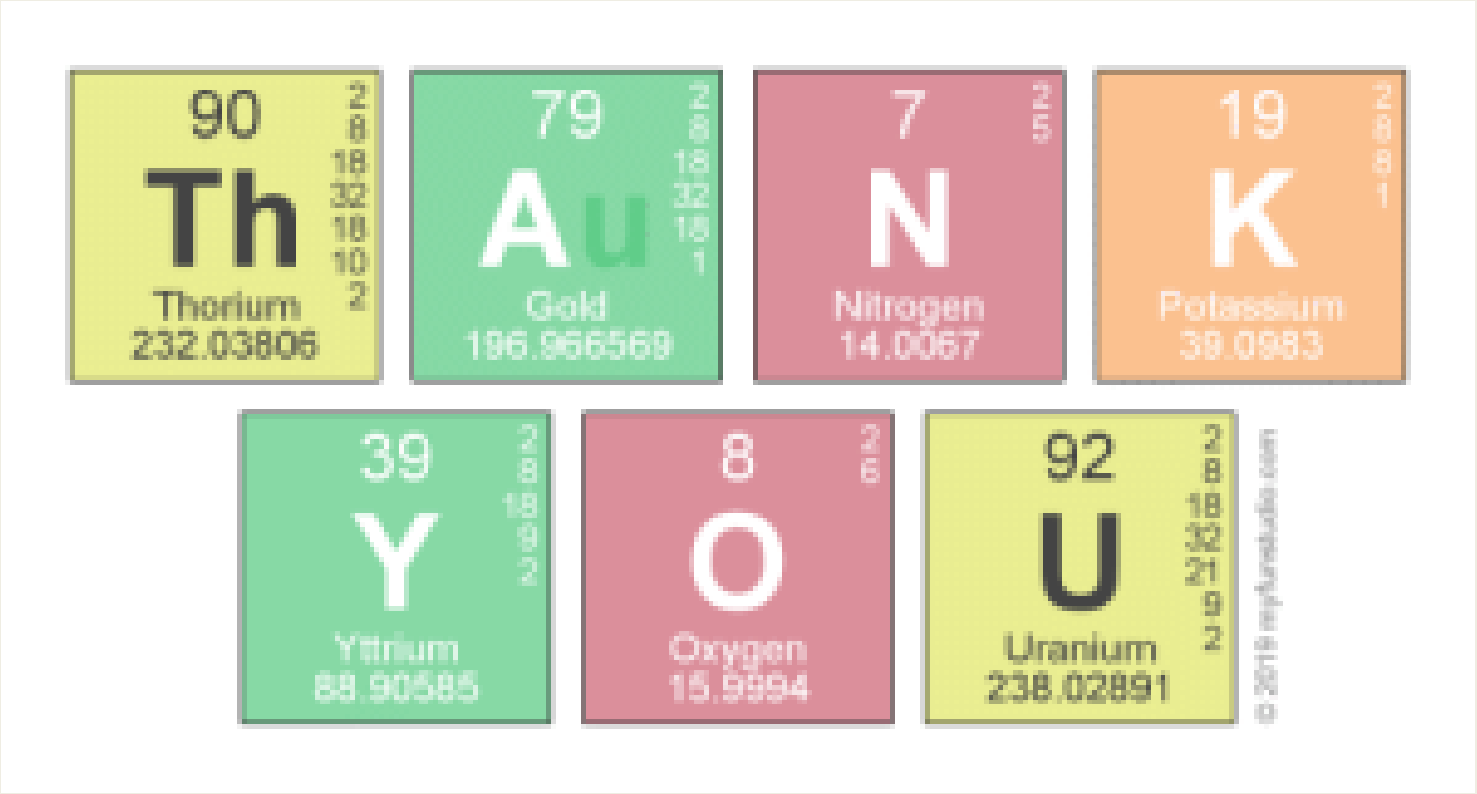
Threats?

Only 7% of Croatian editors strongly agree that open peer review would enhance the peer review quality (Stojanovski & Hebrang Grgić, 2018)



What journal editors can do to improve peer review process?

- instructions for peer reviewers
- transparency of peer review process, including ethical issues (CoI, confidentiality, etc.)
- plagiarism detection - before peer review
- manipulated images detection software (biomedical journals!)
- structured or semistructured forms for reports (?)
- experiment with open peer review (some levels), you can always return to closed one
- give recognition to reviewers
- allow preprints and post-publication self-archiving
- experiment with post-peer review
- database of the reviewers



Questions, comment, suggestions to be sent at jadranka.stojanovski@irb.hr