

POST PUBLICATION OPEN, INVITED PEER REVIEW: WHAT, HOW AND WHY

May 2018

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OVERVIEW

- Code of conduct and publication ethics
- Choosing reputable open access journals
- Types of peer review
- Opening up the publishing and peer review process
- Data sharing and reducing research waste
- Versioning of articles
- How funders and institutions are getting involved

Publication ethics?

*“A set of **common rules** among authors, editors, reviewers and publishers to **protect integrity** of the scientific record”*

Charlotte Haug, previous Vice Chair COPE

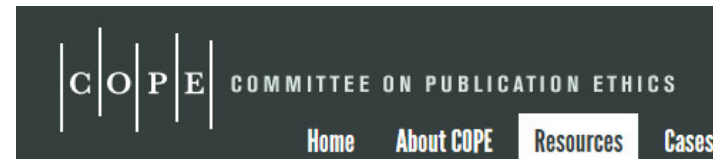
- Based on **consensus** about standards and best practice
- Ensures the **integrity** of the scientific record
- Ensures that readers can **trust** what they read



Who guides publication ethics?



The **ICMJE recommendations** are followed by most journals. These are a set of guidelines produced by the ICMJE for standardizing the ethics, preparation and formatting of manuscripts.



COPE is a forum for editors and publishers of peer reviewed journals to discuss all aspects of publication ethics. It also advises editors on how to handle cases of research and publication misconduct.

Choosing an open access journal

<http://thinkchecksubmit.org/>



Are you submitting your research to a trusted journal?
Is it the right journal for your work?



Use our [check list](#) to assess the journal



Only if you can answer 'yes' to the questions on our [check list](#)

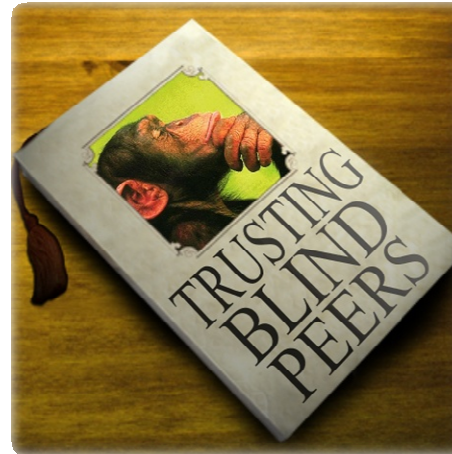


Peer review is the evaluation of scientific research findings for **validity**, **significance** and **originality**, by qualified experts who research and submit work for publication in the same field (peers)



IS PEER REVIEW FIT FOR PURPOSE?

- Slow
- Inconsistent
- Unclear
- Transparency?
- Block innovative ideas?



Flickr: Gideon Burton



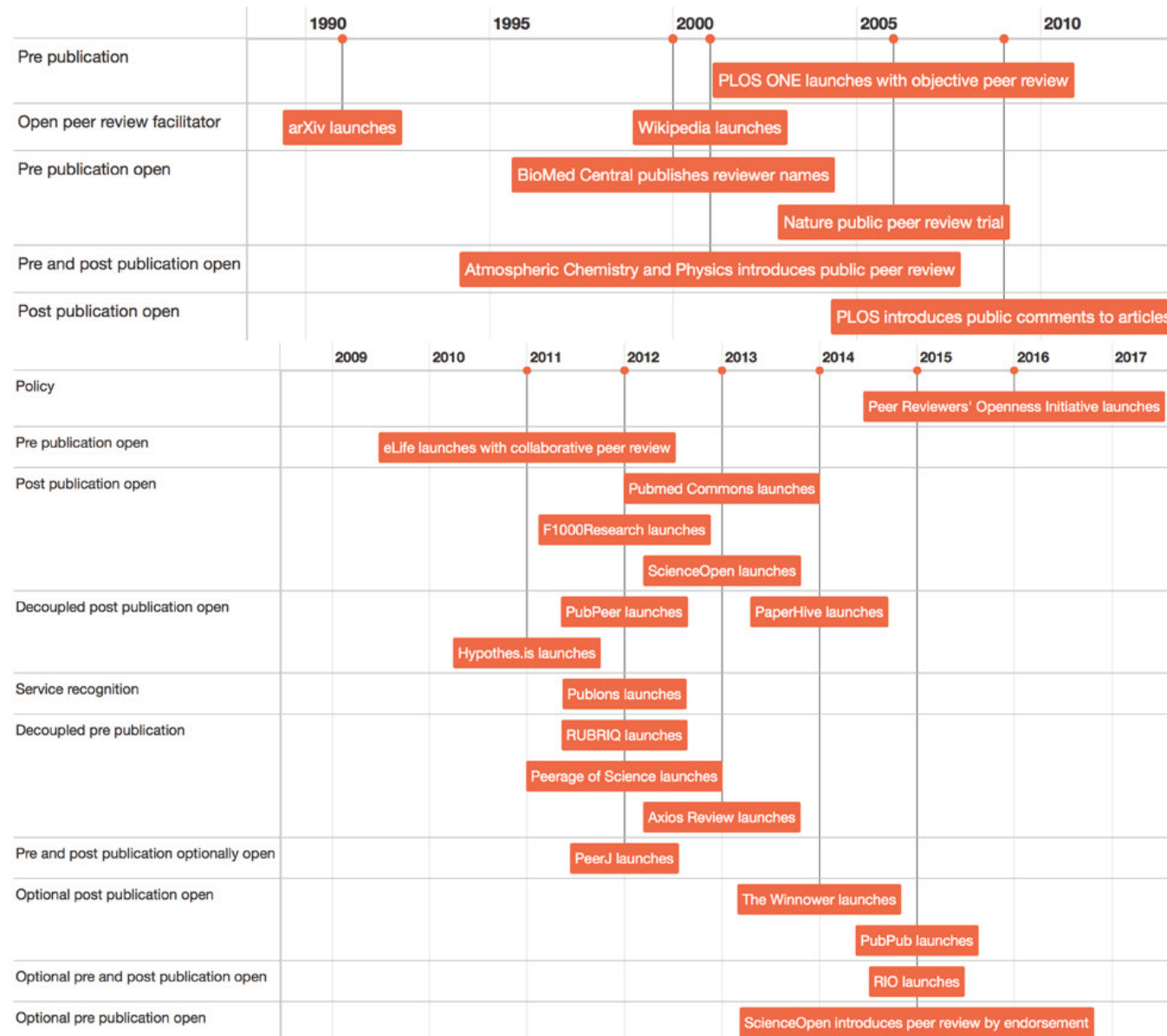
A brief timeline of the evolution of peer review: The primordial times.



Tennant JP, Dugan JM, Graziotin D et al. A multi-disciplinary perspective on emergent and future innovations in peer review [version 2]. F1000Research 2017, 6:1151 (doi: 10.12688/f1000research.12037.2)

F1000Research

A brief timeline of the evolution of peer review: The revolution.



IS PEER REVIEW NEEDED?

VIEWPOINT

Stealth Research Is Biomedical Innovation Happening Outside the Peer-Reviewed Literature?

John P. A. Ioannidis,
MD, DSc
Stanford Prevention
Research Center
(SPRC) and Meta-
Research Innovation
Center at Stanford
(METRICS), Stanford,
California.

Information about Theranos, a privately held biotechnology company that has developed novel approaches for laboratory diagnostic testing, has appeared in *The Wall Street Journal*, *Business Insider*, *San Francisco Business Times*, *Fortune*, *Forbes*, *Medscape*, and *Silicon Valley Business Journal*—but not in the peer-reviewed biomedical literature. As of January 5, 2015, a search in PubMed using *Theranos* as a

of venipuncture.⁵ Several patents have been filed and approved. A search in the JUSTIA patent database using *Theranos* as a search term yielded 71 items retrieved as of January 5, 2015.⁶ However, it is practically impossible to judge the validity of the science based only on patents with titles such as “Methods and Systems for Assessing Clinical Outcomes.”

Theranos is just one example among many for which

“... even for successful, influential ideas, it is impossible to discern eventually whether the success of those ideas resulted from better science or simply better financial or advertising model”

John Ioannidis; JAMA February 17, 2015, Vol 313, No. 7

TYPES OF PEER REVIEW

- Single blind
- Double blind
- Consultative
- Results free review
- Open peer review
- Post-publication



DOUBLE BLIND

Peer review survey in 2009 : international and cross-disciplinary survey of more than 4,000 researchers — **76%** of respondents indicated that double blind was an effective and preferred peer-review system.

Mulligan, et al.; J. Am. Soc. Inf. Sci. Technol. 64, 132-161;2013

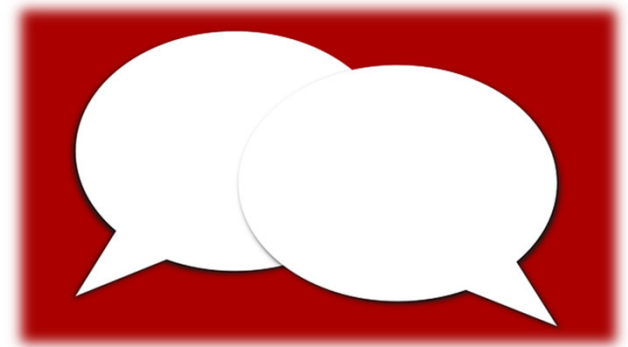
Other recent surveys have drawn similar conclusions.

Nature, Nature Communications, and others offer authors to opt-in to double-blind peer review.



CONSULTATIVE

eLife and Frontiers journals enable reviewers to discuss the manuscript among themselves before communicating a unified decision to the authors.



RESULTS FREE REVIEW

Implemented in BMC Psychology in 2016 (opt-in)

Stage 1: Review of manuscript, excluding results or any discussion of results

Stage 2: If accepted at Stage 1, reviewers are asked to assess if results and conclusions are in line with the research question and methodology



OPEN PEER REVIEW

- Ensures transparency
- Accountability
- Reviewer receives credit
- Some journals offer reviewers to opt-in



"When peer review is cloaked in secrecy, there are limited incentives for performing high-quality reviews," That allows bias, carelessness, conflict of interest, and other deficiencies to persist without a way to penalize those who generate inadequate reviews"

Jeffrey S Flier; It's time to overhaul the secretive peer review process. STAT Dec 2016 (accessed Nov 2017).

BENEFITS OF OPEN PEER REVIEW

- Asking reviewers to consent to the author being informed of their identity had no effect on quality of review or reviewers' recommendation (**van Rooyen et al. BMJ 1999; 318:23-7**)
- Telling reviewers their signed report may be available online did not affect review quality (**van Rooyen et al. BMJ 2010; 314:c5729**)
- A study comparing two similar journals, one operating single blind peer review (BMC Microbiology), and the other operating open peer review (BMC Infectious Diseases), found that the quality of reports was higher in the open peer review journal (**Kowalczyk et al. BMJ Open 2015;5:e008707. doi:10.1136/bmjopen-2015-008707**)

TYPES OF OPEN PEER REVIEW

- Where reviewer identity and reports are revealed to authors during the review process, **but this information is not made public.**
- Where reviewer identity and reports are revealed to authors during the review process, **and the reviewer report is published without the identity.**
- Where reviewer identity and reports are revealed to authors during the review process, **and the reviewer identity is revealed, but not the report.**
- Where reviewer identity and reports are revealed to authors during the review process, **and this information is all made available to the public** (in some cases this also includes the prepublication history).



POST PUBLICATION

Informal: Usually in addition to usual peer review process, after publication

- Comments
- Social media

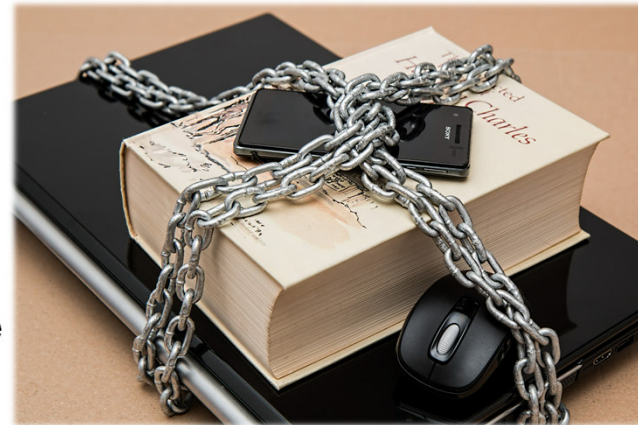
Formal: F1000 Research (2013), Wellcome Open Research (2016), Gates Open Research (2017), HRB Ireland (2018), African Academy of Sciences (2018)

- Only conducts post-publication **invited** open peer review
- Article status summary highlights progress
- Article is indexed once it passes peer review

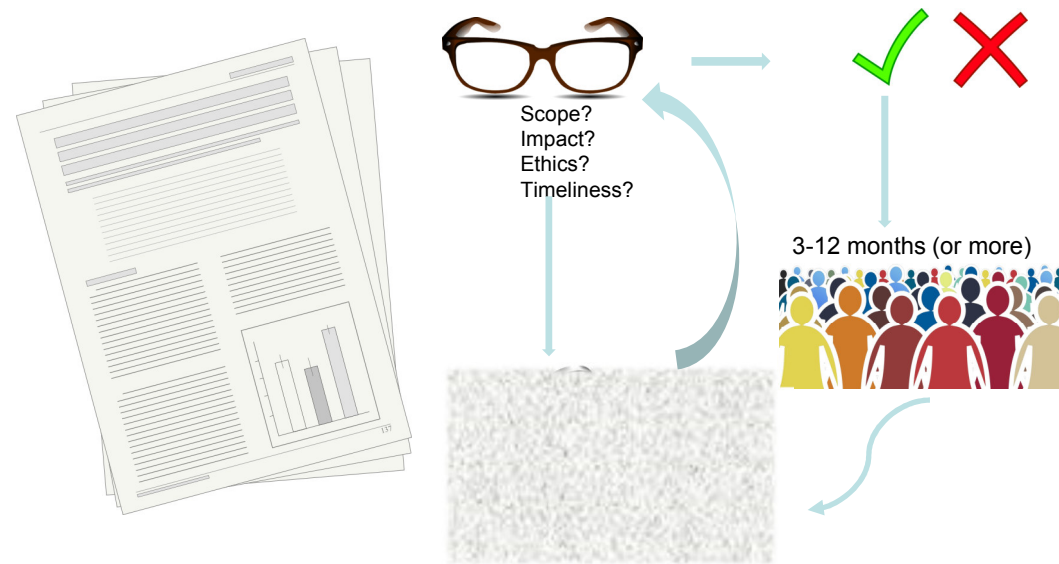
PROBLEMS WITH CURRENT SCIENTIFIC COMMUNICATION

Many problems remain with the traditional publishing process:

- introduces delays
- limited access to data
- introduces bias
 - lack of transparency in publication decisions
 - bias in our understanding of science
- causes research waste
- lack of credit for key contributors: reviewers



THE TRADITIONAL SCIENTIFIC PUBLISHING PROCESS



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Andrew Wakefield

Lancet retracts 'utterly false' MMR paper

Sarah
health

Tuesday
16.29 G



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188

Inappropriate manipulation of peer review

Retraction Watch

Follow our coverage

Elizal

In No inappropriate our o

The a peer alerts COPE issue

This one de

SAGE Publications busts "peer review and citation ring,"

[Please see

Here's the

“Lancet
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Retraction Watch

Diederik Stapel retraction count hits 50

with 7 comments

2 July 2014 Last updated at 12:45



It's Diederik Stapel's goal

The lucky notice appears

“The following a
& Stapel, D. (2006)
goals on group
1864-9335.39.

This retraction
Magnificus of the
Diederik Stapel
Committee (Un
concluded that

In the case of the
following (see

“- Data collected
the first author

Japanese stem-cell 'breakthrough' findings retracted

By James Gallagher
Health editor, BBC News website



How common is misconduct?

- *Fanelli D: How many scientists fabricate and falsify research? A systematic review and meta-analysis of survey data. PLOS ONE. 29 May 2009*
- Just **2%** admitted to fabrication, falsification or manipulation of results
- But **14%** reported witnessing this behaviour in a colleague
- **34%** admitted other questionable research practices
- **72%** reported witnessing these in a colleague

OPEN RESEARCH PUBLISHING PLATFORMS

- Author focused
- Immediate publication
- Transparent refereeing
- Recognition for reviewers (including citable reports)
- No editorial bias
- Transparent reporting and data sharing
- Articles can be 'living'
- Indexed in PubMed, Scopus, etc
- Gold Open Access (Article charges \$150–\$1000)

“Journal”

vs

“Platform”

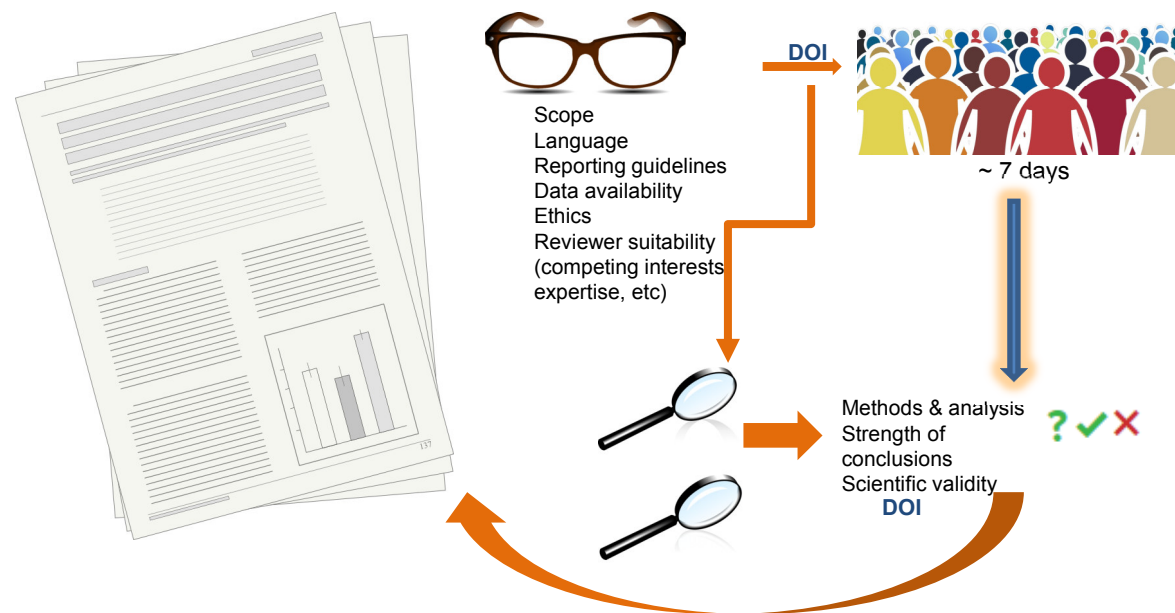
- Editorial checks
- Peer reviewed
- Published
- Indexed

- Editorial checks
- Published (version 1)
- Peer reviewed
- Revised or updated (versions)
- Peer reviewed (if needed)
- Indexed if it passes peer review

ROLE OF THE EDITORIAL TEAM

- All staff editors are trained to check for adherence to publication and research ethics, data sharing policies and reporting guidelines (eg. CONSORT, CARE, PRISMA and STROBE)
- Editorial team checks every submission, and takes into account reporting guidelines for particular study designs
- Handling editor liaises with authors until the manuscript can be published (especially important as we publish before peer review)
- Handling editor checks referee suggestions and oversees the peer review process

THE F1000RESEARCH PUBLISHING AND PEER REVIEW PROCESS



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POST-PUBLICATION INVITED OPEN PEER REVIEW

- Author suggests reviewers
- F1000Research team checks suitability
 - not close collaborators
 - competing interests
 - suitable subject expertise
- F1000Research team invites reviewers on behalf of authors
- Article published online and peer review takes place in full view of authors and readers
- Reviewers (and readers) have access to source data (unless there are ethical/legal restrictions)
- Article status summary highlights progress

TRANSPARENT REFEREEING AND REVIEW STATUS


SHORT RESEARCH ARTICLE

EDIT VERSION

Check for updates

REVISER

Reprogramming diminishes retention of *Mycobacterium leprae* in Schwann cells and elevates bacterial transfer property to fibroblasts [version 3; referees: 3 approved]

Toshihiro Masaki^{1,2,4}, Aidan McGlinchey¹, Simon R. Tomlinson¹, Jinrong Qu¹,  Anura Rambukkana^{1,4}

[Author details](#)

[Grant information](#)

Abstract

Background: Bacterial pathogens can manipulate or subvert host tissue cells to their advantage at different stages during infection, from initial colonization in primary host niches to dissemination. Recently, we have shown that *Mycobacterium leprae* (ML), the causative agent of human leprosy, reprogrammed its preferred host niche de-differentiated adult Schwann cells to progenitor/stem cell-like cells (pSLC) which appear to facilitate bacterial spread. Here, we studied how this cell fate change influences bacterial retention and transfer properties of Schwann cells before and after reprogramming.

Results: Using primary fibroblasts as bacterial recipient cells, we showed that non-reprogrammed Schwann cells, which preserve all Schwann cell lineage and differentiation markers, possess high bacterial retention capacity when co-cultured with skin fibroblasts; Schwann cells failed to transfer bacteria to fibroblasts at higher numbers even after co-culture for 5 days. In contrast, pSLCs, which are derived from the same Schwann cells but have lost Schwann cell lineage markers due to reprogramming, efficiently transferred bacteria to fibroblasts within 24 hours.

Conclusions: ML-induced reprogramming converts lineage-committed Schwann cells with high bacterial retention capacity to a cell type with pSLC stage with effective bacterial transfer properties. We propose that such changes in cellular properties may be associated with the initial intracellular colonization, which requires long-term bacterial retention within Schwann cells, in order to spread the infection to other tissues, which entails efficient bacterial transfer capacity to cells like fibroblasts which are abundant in many tissues, thereby potentially maximizing bacterial dissemination. These data also suggest how pathogens could take advantage of multiple facets of host cell reprogramming according to their needs during infection.

<http://f1000research.com/articles/2-198>

METRICS

1922

VIEWS

708

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








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Open Peer Review

Referee Status:   

Invited Referees

Version(s)	1	2	3
<div>REVISER</div> Version 3 published 14 Nov 2013	 read report	 read report	 read report
<div>REVISER</div> Version 2 published 01 Nov 2013	 read report	 read report	 read report
Version 1 published 25 Sep 2013	 read report	 read report	 read report

1 Maximiliano Gutierrez, MRC National Institute for Medical Research, UK

2 Yoshiko Takahashi, Kyoto University, Japan

3 Tom Gillis, Louisiana State University School of Medicine, USA

All reports (6), Responses and comments (1)

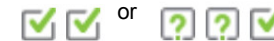
Comments on this article

All comments (0)

Add a Comment

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Indexed once it passes peer review:



TRANSPARENT REFEREEING AND DISCUSSION

Referee Report 26 May 2015

Rafael Irizarry, Department of Biostatistics, Harvard School of Public Health, Boston, USA

? Approved with Reservations

In this PNAS paper is found that the first three principal components obtained from mouse and human gene expression tissues appear more similar than expected.

Gilad and Mizrahi-Man (in their F1000Research article) seem sound and they are not.

An important discovery in different instruments. The model (ComBat) to account for tissue (see Figure 3). They conclude that since we accounted for the batch effect by using ComBat, the comparative gene expression data are comparable across different instruments and datasets. This is not true.

The direct URL for this report is:
<https://f1000research.com/articles/4-121/v1#referee-response-8732>

Author Response 26 May 2015
Yoav Gilad, Human Genetics, University of Chicago, USA
Dr. Irizarry,

Thank you for spending the time to provide a review of our work. We agree with you that given the study design used by the mouse ENCODE consortium, applying a batch correction is futile. Indeed, we explicitly explain that in our discussion (you referred to that section of the text in your review).

We further agree that it would be intellectually interesting to research the extent of the batch effect further – for example, by following your suggestion on how to test for the effect of instrument and lane.

However, we feel that this additional effort was not warranted. The papers did not discuss (or account for) the details that allowed us to reconstruct the unusual biological result reported by the mouse ENCODE consortium. We believe it is the result of technical possibility.

Reader Comment 21 May 2015
Shin Lin, Department of Biology, University of California, San Diego, USA

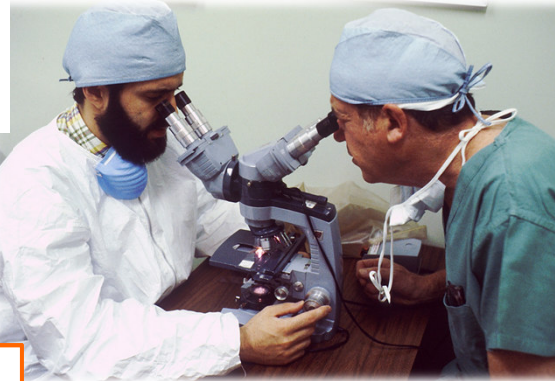
We continue our comparison of the two datasets. We have re-generated the multiplexing scheme design, lane/flow cell separated from species-specific clustering (Figure 1: <https://www.scripps.edu/~shinlin/multiplexing/figure1.png>), as previously reported.¹ Thus, we emphatically disagree with the conclusion from Gilad and Mizrahi-Man that our conclusions are "not warranted," but rather we argue that objective normalization procedures allow the discovery of the clustering of transcriptomes by species.

Gilad and Mizrahi-Man's work focused on one particular dataset in Lin et al.¹ However, that paper contains a principal component analysis (PCA) on data from multiple sources: Stanford (human, mouse), Salk (human), HBM (human), LICR (mouse), and CSHL (mouse). There are undoubtedly many technical differences between

Views
1386

Cite

HOW TO CITE THIS REPORT:
Irizarry R. Referee Report For: A reanalysis of mouse ENCODE comparative gene expression data [version 1; referees: 3 approved, 1 approved with reservations]. *F1000Research* 2015, 4:121 (doi: [10.5256/f1000research.7019.r8732](https://doi.org/10.5256/f1000research.7019.r8732))



- Referees:
- Get credit for contributing to discussion
 - Focus on helping authors improve their work
 - Their reports provide new form of expert article-based assessment

METHODS AVAILABILITY – COMMUNITY REVIEW

- Others can try to replicate the study (referees often don't have time)
- Can then invite specific referees for those issues; the entire history is available to all

F1000Research
Open for Science

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METHOD ARTICLE

RETRACTED **RETRACTED: How blockchain-timestamped protocols could improve the trustworthiness of medical science [version 3; referees: 3 approved, 1 not approved]**

Version 3

Referee Report 22 May 2017

William J. Knottenbelt, Department of Computing, Imperial College London, London, UK

Not Approved

The article proposes the use of a blockchain as a timestamping service to assure the integrity of clinical trial protocols. This appears to be a specific application of the more general idea of using the blockchain to provide time-stamped "proof-of-existence" of various kinds of documents. As one of many examples, one may refer to the web service <http://proofofexistence.com> and associated publicity (e.g. <https://www.youtube.com/watch?v=6YHuZeWYtE>, which dates from December 2013) to see that this idea has been around for some time before the publication of the present article.

The core of the methodology is described in the article as follows:

Following a method similar to that described by Carlisle the document's SHA256 digest for the text was then calculated by entering text from the trial protocol into an SHA256 calculator (Xorbin®). This was then converted into a bitcoin private key and corresponding public key using a bitcoin wallet. To do this a new account was created in Strongcoin®, and the SHA256 digest used as the account password to generate a private key. From this Strongcoin® automatically generated a corresponding Advanced Encryption Standard 256 bit public key. An arbitrary amount of bitcoin was then sent to a corresponding bitcoin address.

I struggle to follow some of the steps described here. Creating a SHA256 digest from a file is OK and straightforward (although this should be done using the file and not the text of the document). However, this is then converted into a bitcoin private key and corresponding public key. This involves an untrusted third party like Strongcoin. Strongcoin does ask for "A password to encrypt" and not to determine the private/public key pair using the same account password (which was the private key of each account. They are (as one might expect) generated from the account password). The account password "protects" an arbitrary public/private key pair generated by Strongcoin. The public/private key pair do not themselves seem to be related to the SHA256 hash used as the account password. And so the act of sending an arbitrary amount of bitcoin to the bitcoin address determined by the public key does not seem to fulfill the role of notating the existence of the document in a satisfactory manner. Nor is there anything in the script/metadata associated with the transaction to link it to the document. Proofofexistence.com for example uses the OP_RETURN field in the script to store the hash of the document in question (see <https://proofofexistence.com/about>), which does provide the necessary link. I also do not think that changing the account password would affect the public/private key pair in any way, other than changing the encoding used to encrypt them.

Retraction

At the request of the authors Greg Irving and John Holden, the article titled "How blockchain-timestamped protocols could improve the trustworthiness of medical science" has been retracted from F1000Research. The authors have taken this decision after considering the methodological concerns raised by a peer reviewer during the publication open peer review process. As the methodology has been deemed unreliable, the article is now retracted. This applies to all three versions of the article: Greg Irving and John Holden J. How blockchain-timestamped protocols could improve the trustworthiness of medical science [version 1; referees: 2 approved, 1 not approved]. F1000Research 2016, 5:222 (doi: 10.12688/f1000research.8114.1) Irving G and Holden J. How blockchain-timestamped protocols could improve the trustworthiness of medical science [version 2; referees: 3 approved, 1 not approved]. F1000Research 2016, 5:222 (doi: 10.12688/f1000research.8114.2) Irving G and Holden J. How blockchain-timestamped protocols could improve the trustworthiness of medical science [version 3; referees: 3 approved, 1 not approved]. F1000Research 2017, 5:222 (doi: 10.12688/f1000research.8114.3)

Competing Interests: No competing interests were disclosed.

Referee Expertise: Cryptocurrency and Blockchain Research

Views
130
Cite

OPEN REVIEW, DATA ACCESS, AND NULL/CONFIRMATORY RESULTS

The collage features several overlapping screenshots from scientific journals and preprint servers:

- Nature | ARTICLE**: A screenshot of a Nature article titled "Stimulus-triggered fate conversion of somatic cells into pluripotency" by Haruko Obokata, Teruhiko Wakayama, Hitoshi Niwa, Masayuki Yamato & Chikara Miyazawa. The article is dated September 11, 2014.
- F1000Research**: Two screenshots of the F1000Research platform. One shows a research article titled "Transient acid treatment can convert somatic cells to become pluripotent stem cells" with 2 approved referees. The other shows a dataset titled "Dataset 1 and 2. qPCR results of CD45+ splenocytes/ lung fibroblasts" with 459 views, 0 shares, and 23 downloads.
- bioRxiv**: A screenshot of the bioRxiv preprint server showing a preprint titled "Results of an attempt to reproduce the STAP phenomenon [version 2; referees: 2 approved]" by Shinichi Aizawa.
- Open Peer Review**: A screenshot of the Open Peer Review section for the bioRxiv preprint, showing a referee status of "Referee Status: ✓✓" and a list of invited referees.
- Abstract**: A screenshot of the abstract for the Nature article, which discusses the STAP technique and the controversy surrounding it.

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VERSIONING OF ARTICLES

SYSTEMATIC REVIEW

EDIT VERSION

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REVISED

What is open peer review? A systematic review [version 2; referees: 4 approved]

Tony Ross-Hellauer

Author details

Grant information

This article is included in the The Future of Scholarly Publishing collection.

Abstract

Background: "Open peer review" (OPR), despite being a major pillar of Open Science, has neither a standardized definition nor an agreed schema of its features and implementations. The literature reflects this, with numerous overlapping and contradictory definitions. It refers to peer review where the identities of both author and reviewer are published along with the review, and for yet others it describes systems where reviewer reports are published along with the review, and for yet others it describes systems where reviewer reports are published along with the review, and for yet others it describes systems where reviewer reports are published along with the review.

Methods: Recognising the absence of a consensus view on what open peer review is, we systematically analysed 122 definitions of "open peer review" or "open review", to create a corpus of 122 definitions. These definitions are systematically analysed to build a coherent typology of the various innovations in peer review signified by the term, and hence provide the precise technical definition currently lacking.

Results: This quantifiable data yields rich information on the range and broad subject area. Quantifying definitions in this way allows us to account for the fact that "open peer review" has been used thus far, for the literature offers 22 different meanings that there are 22 different definitions of OPR in the literature.

Conclusions: I propose a pragmatic definition of open peer review as a peer review model that can be adapted in line with the aims of Open Science, publishing review reports and enabling greater participation in the peer review process.

Open Peer Review

Referee Status: ✓✓✓✓

Invited Referees

Version(s)	1	2	3	4
REVISED Version 2 published 31 Aug 2017	✓ read report	✓ read report	✓ read report	✓ read report
Version 1 published 27 Apr 2017	✓ read report	? read report	? read report	? read report

1 Richard Walker

Swiss Federal Institute of Technology in Lausanne, Switzerland

2 Theodora Bloom

The BMJ, UK

3 Bahar Mehmani

RELX Group, Netherlands

How to cite: Ross-Hellauer T. What is open peer review? A systematic review [version 1; referees: 1 approved, 3 approved with reservations]. *F1000Research* 2017, 6:588 (doi: 10.12688/f1000research.11369.1)

How to cite: Ross-Hellauer T. What is open peer review? A systematic review [version 2; referees: 4 approved]. *F1000Research* 2017, 6:588 (doi: 10.12688/f1000research.11369.2)

First published: 27 Apr 2017, 6:588 (doi: 10.12688/f1000research.11369.1)

Latest published: 31 Aug 2017, 6:588 (doi: 10.12688/f1000research.11369.2)

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LIVING ARTICLES – REVISING AND REVIEWING ARTICLES AFTER INDEXING

Version 1. [F1000Res.](#) 2017 Oct 20;6:1863. doi: 10.12688/f1000research.12817.1. eCollection 2017.

Evaluation of predicted Medfly (*Ceratitis capitata*) quarantine length in the United States utilizing degree-day and agent-based models.

[Collier T¹](#), [Manoukis N¹](#).

[+ Author information](#)

Abstract

Invasions by pest insects pose a significant threat to agriculture worldwide. In the case of *Ceratitis capitata* incursions on the US mainland, where it is not officially established, repeated detections are followed by quarantines and treatments to eliminate the invading population. However, it is difficult to accurately set quarantine duration because non-detection may not mean the pest is eliminated. Most programs extend quarantine lengths past the last fly detection by calculating the amount of time required for 3 generations to elapse under a thermal unit accumulation development model ("degree day"). A newer approach is to use an Agent-Based Simulation (ABS) to explicitly simulate population demographics and elimination. Here, predicted quarantine lengths for 11 sites in the continental United States are evaluated using both approaches. Results indicate a strong seasonality in quarantine length, with longer predictions in the second half of the year compared with the first; this pattern is more extreme in degree day predictions compared with ABS. Geographically, quarantine lengths increased with latitude, though this was less pronounced under the ABS. Variation in quarantine lengths for particular times and places was dramatically larger for degree day than ABS, generally spiking in the middle of the year for degree day and peaking in second half of the year for ABS. Analysis of 34 *C. capitata* quarantines from 1975 to 2017 in California shows that, for all but two, quarantines were started in the second half of the year, when degree day quarantine lengths are longest and have the highest uncertainty. For a set of hypothetical outbreaks based on these historical quarantines, the ABS produced significantly shorter quarantines than degree day calculations. Overall, ABS quarantine lengths were more consistent than degree day predictions, avoided unrealistically long values, and captured effects of rare events such as cold snaps.

KEYWORDS: Mediterranean fruit fly;

PMID: 29399322 PMCID: [PMC577392](#)

Version 2. [F1000Res.](#) 2017 Oct 20 [revised 2018 Mar 6];6:1863. doi: 10.12688/f1000research.12817.2. eCollection 2017.

Evaluation of predicted Medfly (*Ceratitis capitata*) quarantine length in the United States utilizing degree-day and agent-based models.

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[+ Author information](#)

Abstract


Invasions by pest insects pose a significant threat to agriculture worldwide. In the case of *Ceratitis capitata* incursions on the US mainland, where it is not officially established, repeated detections are followed by quarantines and treatments to eliminate the invading population. However, it is difficult to accurately set quarantine duration because non-detection may not mean the pest is eliminated. Most programs extend quarantine lengths past the last fly detection by calculating the amount of time required for 3 generations to elapse under a thermal unit accumulation development model ("degree day"). A newer approach is to use an Agent-Based Simulation (ABS) to explicitly simulate population demographics and elimination. Here, predicted quarantine lengths for 11 sites in the continental United States are evaluated using both approaches. Results indicate a strong seasonality in quarantine length, with longer predictions in the second half of the year compared with the first; this pattern is more extreme in degree day predictions compared with ABS. Geographically, quarantine lengths increased with latitude, though this was less pronounced under the ABS. Variation in quarantine lengths for particular times and places was dramatically larger for degree day than ABS, generally spiking in the middle of the year for degree day and peaking in second half of the year for ABS. Analysis of 34 *C. capitata* quarantines from 1975 to 2017 in California shows that, for all but two, quarantines were started in the second half of the year, when degree day quarantine lengths are longest and have the highest uncertainty. For a set of hypothetical outbreaks based on these historical quarantines, the ABS produced significantly shorter quarantines than degree day calculations. Overall, ABS quarantine lengths were more consistent than degree day predictions, avoided unrealistically long values, and captured effects of rare events such as cold snaps.

KEYWORDS: Mediterranean fruit fly; agriculture; biosecurity; eradication; invasive pest

PMID: 29399322 PMCID: [PMC5773928.2](#) DOI: [10.12688/f1000research.12817.2](#)

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Open Peer Review

Referee Status: 

Invited Referees

LIVING SYSTEMATIC REVIEWS

SYSTEMATIC REVIEW
EDIT VERSION

Check for updates

Zika virus infection as a cause of congenital brain abnormalities and Guillain-Barré syndrome: From systematic review to living systematic review version 1; referees: 1 approved with reservations

✉ Michel Jacques Counotte ¹, Dianne Egli-Gany ¹, Maurane Riesen¹, Million Abraha ¹, Teegwendé Valérie Porgo ², Jingying Wang¹, ✉ Nicola Low ¹

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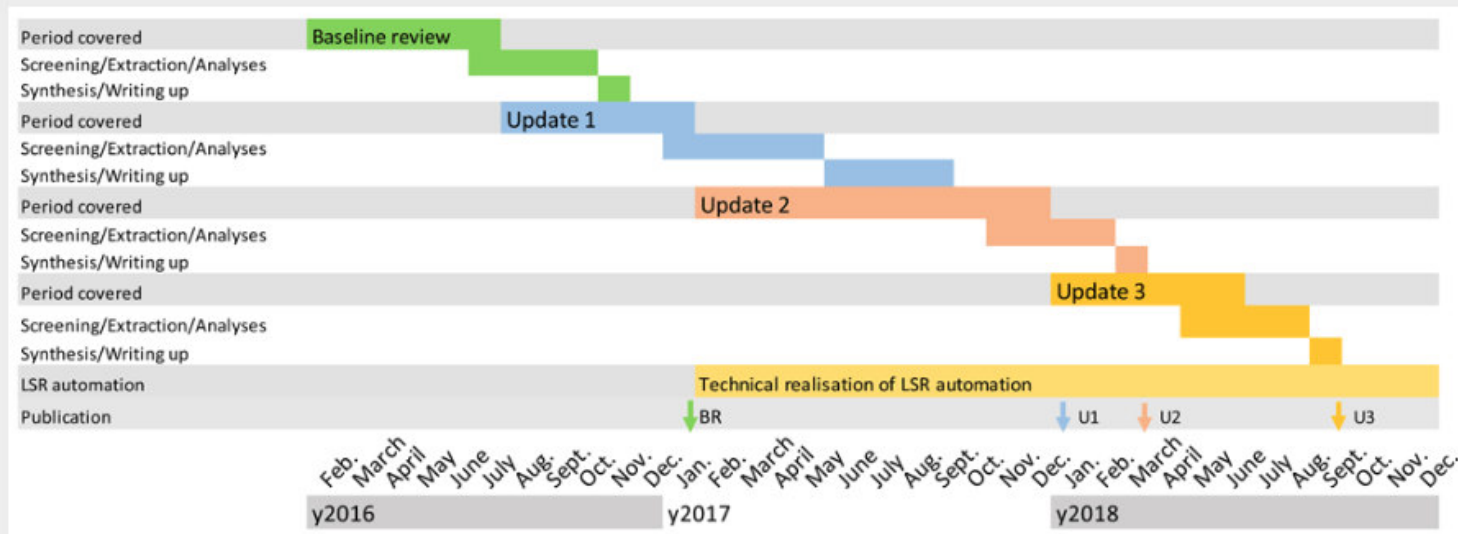




Figure 2. Timeline of review conduct, publication and transition to a living systematic review.

The baseline review (BR,⁷) and Update 1 (U1) this version classic, manual systematic review. During 2017 automation of the workflow was conducted resulting in a projected Update 2 (U2) and 3 (U3) with more rapid throughput. LSR, living systematic review.

Open Peer Review

Referee Status:   

Version(s)

REVISED

Version 4
published
15 Feb 2018

UPDATE

Version 3
published
02 Jan 2018

UPDATE

Version 2
published
26 Sep 2017

Version 1
published
03 Jul 2017

REVISED Amendments from Version 3


Based on the reviewer's comment for our paper, we have been requested to update figures 1-3 according to the changes that were made in our previous version 3. Figures 1-3 have been updated to reflect the customized output formatting.

GAC: Gene Associations with Clinical, a web based application

[Xinyan Zhang](#), Software, Writing – Original Draft Preparation, Writing – Review & Editing,¹ [Manali Rupji](#), Software, Writing – Original Draft Preparation, Writing – Review & Editing,¹ and [Jeanne Kowalski](#), Conceptualization, Resources, Supervision, Writing – Review & Editing^{a,1,2}

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Version Changes

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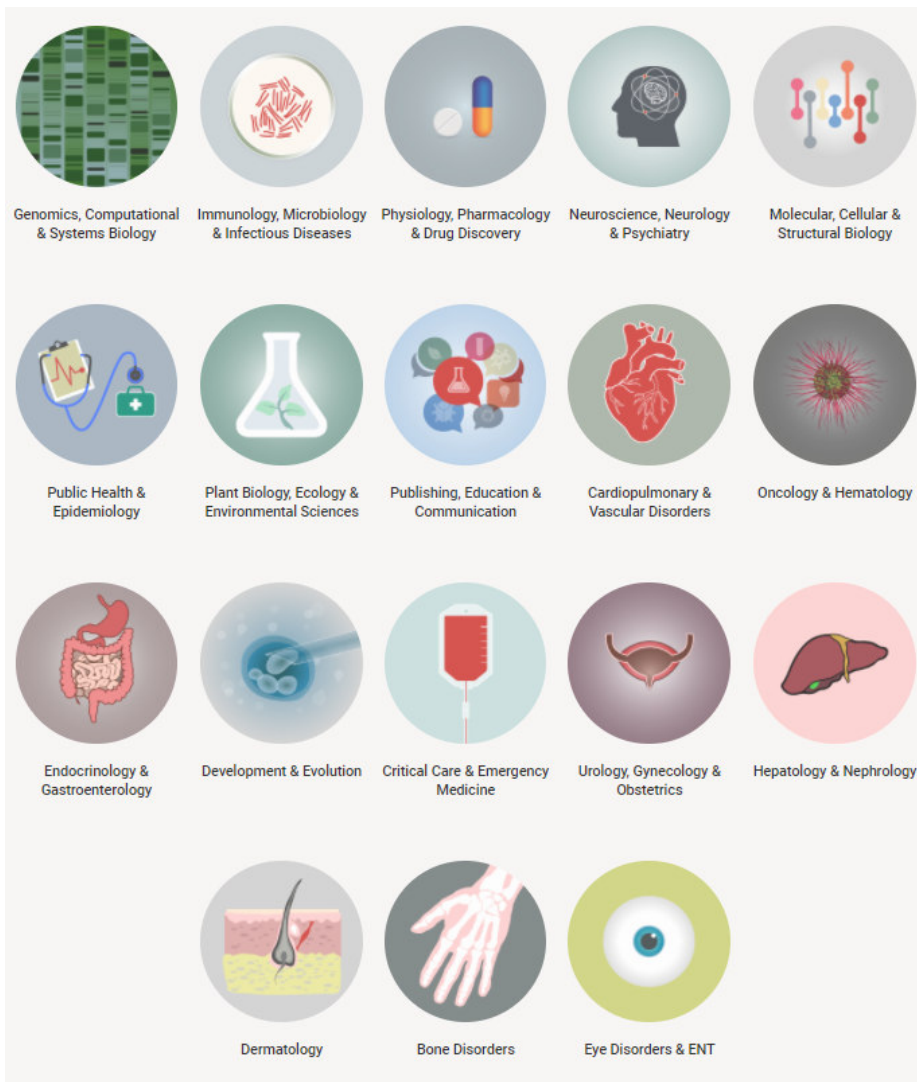
Revised. Amendments from Version 3

- Based on the reviewer's comment for our paper, we have been requested to update figures 1-3 according to the changes that were made in our previous version 3. Figures 1-3 have been updated to reflect the customized output formatting.

Peer Review Summary

Go to: 

Review date	Reviewer name(s)	Version reviewed	Review status
2018 Jan 8	Matthew N. McCall	Version 3	Approved
2017 Oct 26	Cedric Simillion	Version 2	Approved with Reservations
2017 Oct 23	Matthew N. McCall	Version 2	Approved with Reservations
2017 Sep 27	Shengjie Yang	Version 2	Approved
2017 Sep 18	Shengjie Yang	Version 1	Approved with Reservations

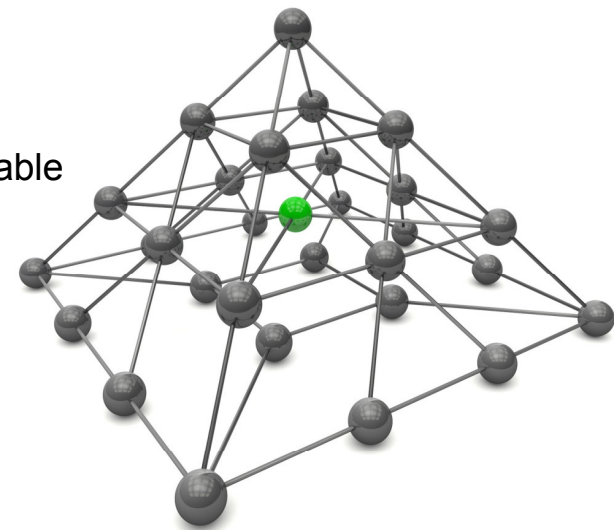


Types of articles:

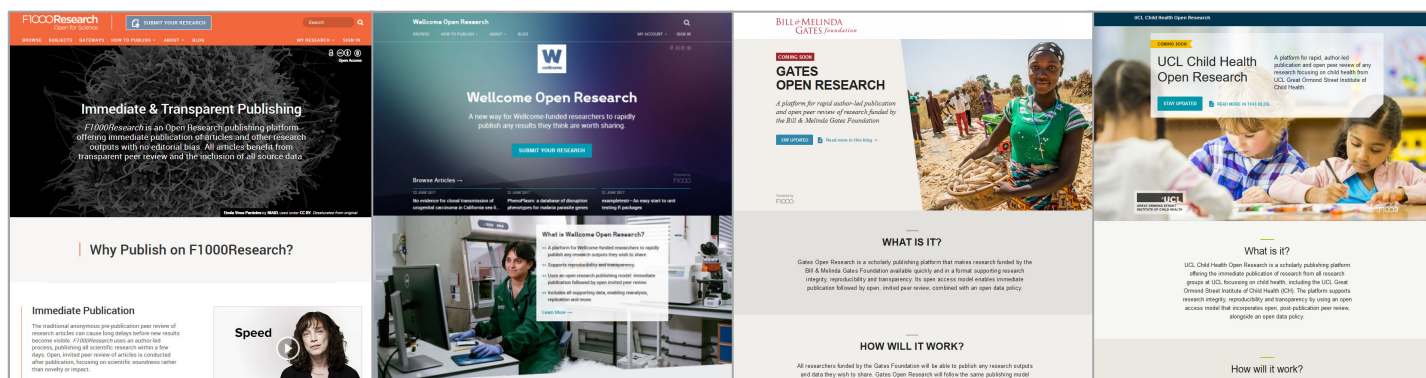
- Research
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- Systematic Review
- Review
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- Study Protocol
- Case Study
- Clinical Practice Article
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- Transfer control from publisher to researchers
- Give reviewers credit for their work, and make reports citable
- Reduce bias in published scientific literature
- Facilitate data sharing and reproducibility of research
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- Speed up how scientific findings can be communicated



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