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

UKRIO Publication Ethics webinar, 10 June 2020 Dr Jane Alfred, Director, Catalyst Editorial Ltd

#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

#### NATURE | NEWS FEATURE

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 authorsuggested reviewers
- Requiring use of ORCID ids
- Trialling programmes that aim to detect unusual submission and peer review activity on their editorial system



retracted 107 papers from Tumor Biology in April. EMILY PETERSEI

Journal that holds record for retracted papers also has a problem with editorial board members

By Hinnerk Feldwisch-Drentrup | May, 18, 2017, 2:45 PM





# 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





http://research.ie/assets/uploads/2018/08/04108-IRC-Gender-flyerproof03-single.pdf



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** 



http://research.ie/assets/uploads/2018/08/04108-IRC-Gender-flyerproof03-single.pdf



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

McGillivray and De Ranieri Research Integrity and Peer Review (2018) 3:5 https://doi.org/10.1186/s41073-018-0049-z

Research Integrity and Peer Review

**Open Access** 

( CrossMark

#### RESEARCH

Uptake and outcome of manuscripts in Nature journals by review model and author characteristics

Barbara McGillivray<sup>1,2\*</sup> and Elisa De Ranieri<sup>3</sup>

Analysed 128,454 manuscripts submitted March 2015- February 2017

McGillivray and De Ranieri Research Integrity and Peer Review (2018) 3:5 https://doi.org/10.1186/s41073-018-0049-z



Country	DBPR	SBPR
Australia	274 (10%)	2366 (90%)
Canada	259 (9%)	2581 (91%)
China	3626 (22%)	13,148 (78%)
France	278 (8%)	3334 (92%)
Germany	350 (5%)	6079 (95%)
India	(711 (32%))	1483 (68%)
Japan	933 (15%)	5248 (85%)
South Korea	643 (12%)	3089 (88%)
UK	509 (7%)	6656 (93%)
USA	2298 (7%)	30,184 (93%)
Others	2750 (12%)	19,574 (88%)

Outcome	DBPR		SBPR	
Rejected ( outright	13,493 (92%)	(	87,734 (77%)	
	Nature	2634	Nature	13,499
	Nature Communications	3328	Nature Communications	27,728
	Sister journals	7531	Sister journals	46,507
Out to review	1242 (8%)		25,985 (23%)	
	Nature	148	Nature	4125
	Nature Communications	572	Nature Communications	11,186
	Sister journals	522	Sister journals	10,674

#### 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.'

McGillivray and De Ranieri Research Integrity and Peer Review (2018) 3:5 https://doi.org/10.1186/s41073-018-0049-z



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 cytonememediated 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 Falcón-Pérez, Isabel Guerrero 💿 🎽

#### Author Information



#### THE EMBO JOURNAL

CATALYSI

EDITORIAL

#### 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. Falcón-Pérez and Isabel Guerrero

Review timeline:	Submission date: Editorial Decision:	REFEREE REPORTS:	
	Revision received: Editorial Decision: Revision received:	Referee #1:	
	Accepted:	This work continues the important and illuminating studies of Hh As is typical of their work, the detail, breadth, and depth of analys	signaling from the Guerrero lab. is are impressive (even if
Editor: Ieva Gailite			
Transaction Report:		Referee #2:	
(Note: With the exception of the correction of typographical or spelling errors tha letters and reports are not edited. The original formatting of letters and referee re compilation.)		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	
1st Editorial Decision		about trafficking of Hh components is still in its infancy. Recently	y, it has been shown that Hh signal
Thank you for submitting your manuscript for consideration by the EM		DO Tournel We have now	
received two referee reports on your m	anuscript, which are included be	1st Revision - authors' response	10th Jan 202
		Referee ♯1:	

# Transparent peer review

# Post publication open peer review

Open for Science

BRIEF REPORT A snapshot of the ongoing clinical research on COVID-19 [version 1; peer review: 2 approved]	ALL METRICS	Reviewer Status 🗸 🗸 🥡	Reviewer Report 9 Views C 26 May 2020   for Version 1 Demetris Lamniosos (b), Department of Health Sciences, School of Sciences, European University Cyprus, Nicosia, Cyprus
Daniele Piovani <sup>1,2*</sup> , Claudia Pansieri <sup>1,2*</sup> , Laurent Peyrin-Biroulet <sup>3</sup> , Silvio Danese <sup>1,2</sup> , 🔀 Stefanos Bonovas 🝺 <sup>1,2</sup>	• VIEWS	Invited Reviewers	<b>77</b> Cite this report
* Equal contributors	30	1 2	E Responses (0)
Author details	DOWNLOADS	Version 1 18 May 20	✓ APPROVED (i)
This article is included in the Disease Outbreaks gateway.	Get PDF Get XML Get Cite	1. Demetris Lamniosos (ib), European University Cyprus, Nicosia, Cyprus	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 the investigation of whether these studies are incorporating features that are desirable for generating high-quality evidence.
This article is included in the Coronavirus collection.	Export	2. Ioannis Mamais (i), National and Kapodistria University of Athens, Athens, Greece	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
-1000Research			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 mirror ug, jor s for T

EDITORIAL

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





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bioRxiv is receiving many new papers on coronavirus SARS-CoV-2. A reminder: these are preliminary reports that have not been peer-reviewed. They should not be regarded as conclusive, guide clinical practice/health-related behavior, or be reported in news media as established information

#### COVID-19 SARS-CoV-2 preprints from medRxiv and bioRxiv

#### 4690 Articles (3786 medRxiv, 904 bioRxiv)

#### Most recent first

G Previous | Page 462: Articles 4611-4620 | Next O

#### Clinical characteristics of 2019 novel coronavirus infection in China

Guan, W.-j., Ni, Z.-y., Hu, Y., Liang, W.-h., Ou, C.-g., He, J.-x., Liu, L., Shan, H., Lei, C.-l., Hui, D. S., Du, B., Li, L.-j., Zeng, G., Yuen, K.-Y., Chen, R.-c., Tang, C.-l., Wang, T., Chen, P.-y., Xiang, J., Li, S.y., Wang, J.-I., Liang, Z.-j., Peng, Y.-x., Wei, L., Liu, Y., Hu, Y.-h., Peng, P., Wang, J.-m., Liu, J.-y., Chen, Z., Li, G., Zheng, Z.-j., Qiu, S.-q., Luo, J., Ye, C.-j., Zhu, S.-y., Zhong, N.-s. 10.1101/2020.02.06.20020974 - Posted: 2020-02-09

O Discussion: Onsite

#### Analysis of the epidemic growth of the early 2019-nCoV outbreak using internationally confirmed cases

Zhao, Q., Chen, Y., Small, D. S. 10.1101/2020.02.06.20020941 - Posted: 2020-02-09

Incorporating Human Movement Data to Improve Epidemiological Estimates for 2019nCoV

Cao, Z., Zhang, Q., Lu, X., Pfeiffer, D., Wang, L., Song, H., Pei, T., Jia, Z., Zeng, D. D. 10.1101/2020.02.07.20021071 - Posted: 2020-02-09

Protein structure and sequence re-analysis of 2019-nCoV genome does not indicate snakes as its intermediate host or the unique similarity between its spike protein insertions and HIV-1

Zhang, C., Zheng, W., Huang, X., Bell, E. W., Zhou, X., Zhang, Y. 10.1101/2020.02.04.933135 - Posted: 2020-02-08

O Discussion: Onsite

Subject Areas All Articles Animal Behavior and Cognition Biochemistry Bioengineering Bioinformatics Biophysics Cancer Biology Clinical Trials\*

Developmental Biology Ecology Epidemiology\* Evolutionary Biology Genetics Genomics Immunology Microbiology

Molecular Biology Neuroscience Paleontology

Pathology

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

#### THE LANCET

**@** ()

Retraction—Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis

After publication of our Lancet Article,<sup>1</sup> several concerns were raised with respect to the veracity of the data in good faith and at a time of great need during and its founder and our co-author, Sapan Desai, in you, the editors, and the journal readership for any our publication. We launched an independent thirdparty peer review of Surgisphere with the consent of caused. Sapan Desai to evaluate the origination of the database elements, to confirm the completeness of the database. and to replicate the analyses presented in the paper.

Our independent peer reviewers informed us that Surgisphere would not transfer the full dataset, client contracts, and the full ISO audit report to their servers for analysis as such transfer would violate client agreements and confidentiality requirements. As such, our reviewers were not able to conduct an independent and private peer review and therefore notified us of their withdrawal from the peer-review process.

We always aspire to perform our research in accordance with the highest ethical and professional guidelines. We can never forget the responsibility we have as researchers to scrupulously ensure that we rely on data sources that adhere to our high standards. Based on this development, we can no longer vouch for the veracity of the primary data sources. Due to this unfortunate development, the authors request that the paper be retracted.

We all entered this collaboration to contribute Published Online June 4, 2020 https://doi.org/10.1016/ and analyses conducted by Surgisphere Corporation the COVID-19 pandemic. We deeply apologise to s0140-6736(20)31324-6 embarrassment or inconvenience that this may have

> MRM reports personal fees from Abbott, Medtronic, Janssen, Roivant, Triple Gene, Mesoblast, Baim Institute for Clinical Research, Portola, Bayer, NupulseCV, FineHeart, and Leviticus. FR has been paid for time spent as a committee member for clinical trials, advisory boards, other forms of consulting, and lectures or presentations; these payments were made directly to the University of Zurich and no personal payments were received in relation to these trials or other activities since 2018. Before 2018 FR reports grants and personal fees from SJM/Abbott, grants and personal fees from Servier, personal fees from Zoll, personal fees from Astra Zeneca, personal fees from Sanofi, grants and personal fees from Novartis, personal fees from Amgen, personal fees from BMS, personal fees from Pfizer, personal fees from Fresenius, personal fees from Vifor, personal fees from Roche, grants and personal fees from Bayer, personal fees from Cardiorentis, personal fees from Boehringer Ingelheim, other from Heartware, and grants from Mars. ANP declares no competing interests.

#### \*Mandeep R Mehra, Frank Ruschitzka, Amit N Patel mmehra@bwh.harvard.edu

Brigham and Women's Hospital Heart and Vascular Center and Harvard Medical School, Boston, MA 02115, USA (MRM); University Heart Center, University Hospital Zurich, Zurich, Switzerland (FR); Department of Biomedical Engineering, University of Utah, Salt Lake City, UT, USA (ANP); and HCA Research Institute, Nashville, TN, USA (ANP)

Mehra MR, Desai SS, Ruschitzka F, Patel AN. Hydroxychloroguine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis. Lancet 2020; published online May 22. https://doi.org/10.1016/S0140-6736(20)31180-6.

#### Retraction: Cardiovascular Disease, Drug Therapy, and Mortality in Covid-19. N Engl | Med. DOI: 10.1056/NEJMoa2007621.

TO THE EDITOR: Because all the authors were not SreyRam Kuy, M.D., M.H.S. granted access to the raw data and the raw data could not be made available to a third-party auditor, we are unable to validate the primary data sources underlying our article, "Cardiovascular Disease, Drug Therapy, and Mortality in Covid-19."1 We therefore request that the article be retracted. We apologize to the editors and to readers of the Journal for the difficulties that this has caused.

Mandeep R. Mehra, M.D.

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The NEW ENGLAND

JOURNAL of MEDICINE

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Disclosure forms provided by the authors are available with the full text of this letter at NEIM.org.

This letter was published on June 4, 2020, at NEJM.org.

1. Mehra MR, Desai SS, Kuy S, Henry TD, Patel AN. Cardiovascular disease, drug therapy, and mortality in Covid-19. N Engl J Med. DOI: 10.1056/NEJMoa2007621.

DOI: 10.1056/NEIMc2021225 Correspondence Copyright @ 2020 Massachusetts Medical Society.



### It is hard not to ask how these papers made it through peer review given the consequences for public health

THE LANCET-

(M)

Retraction—Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis

After publication of our *Lancet* Article,<sup>1</sup> several concerns were raised with respect to the veracity of the data and analyses conducted by Surgisphere Corporation and its founder and our co-author, Sapan Desai, in our publication. We launched an independent thirdparty peer review of Surgisphere with the consent of Sapan Desai to evaluate the origination of the database elements, to confirm the completeness of the database, and to replicate the analyses presented in the paper. We a in goo the CC you, the embarr caused. MRM repo Triple Gem NupulseC.

Our independent peer reviewers informed us that Surgisphere would not transfer the full dataset, client contracts, and the full ISO audit report to their servers for analysis as such transfer would violate client agreements and confidentiality requirements. As such, our reviewers were not able to conduct an independent and private peer review and therefore notified us of their withdrawal from the peer-review process.

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We all entered this collaboration to contribute Published Online June 4, 2020 https://doi.org/10.1016/ the COVID-19 pandemic. We deeply apologise to you, the editors, and the journal readership for any embarrassment or inconvenience that this may have caused

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Mehra MR, Desai SS, Ruschitzka F, Patel AN. Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis. Lancet 2020; published online May 22. https://doi.org/10.1016/S0140-6736(20)31180-6.

# Covid-19: Lancet retracts paper that halted hydroxychloroquine trials

Retraction made after Guardian investigation found inconsistencies in data

How doubt snowballed over Covid-19 drug research

Two elite medical journals retract coronavirus papers over data integrity questions

By Charles Piller, Kelly Servick Jun. 4, 2020 , 5:30 PM

### Science

**C Δ Τ Δ Ι Υ S Τ** 

EDITORIAL

# Highlights need for open data/ open methods/ greater transparency



- 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 <u>Outbreak Science</u> 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





### **HELMER ET AL STUDY**

RESEARCH Gender bias in scholarly peer review

- 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)





Found women are underrepresented as reviewers and editors in all academic disciplines surveyed, particularly severe in maths-intensive disciplines.





# 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

**eLife** https://elifesciences.org/articles/21718



Analysed peer review outcomes of ~30,000 submissions submitted to eLife

Support findings by Helmer et al







- 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

https://www.biorxiv.org/content/10.1101/400515v3



# Might homophily explain the over and under representation of researchers from certain countries in peer review?





EDITORIAL

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

**IOP** Publishing



**C Δ Τ Δ Ι Υ S Τ** 

EDITORIAL



# 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 underrepresented 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?



