# **BRINGING TRANSPARENCY TO PEER REVIEW**

PEERE Lisbon, 27 January 2015

**Rebecca Lawrence** Managing Director, F1000 Research Ltd

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### AGENDA

- Problems with traditional peer review
- New peer review models
- F1000Research's peer review model
- Challenges and benefits
- Future challenges and opportunities
- Summary

### HISTORY OF PEER REVIEW

- First scientific journals were not peer reviewed.
- Peer review was introduced later, and developed as a method to select what is fit to print in limited available space.
- Journals as gatekeepers.
- Current popular system of peer review dates from midtwentieth century.

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### EDITORIAL PROCESS LARGELY UNCHANGED

# Editorial and peer review process remained



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http://pmretract.heroku.com

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### PROBLEMS WITH TRADITIONAL PEER REVIEW

- Extensive delays in publication
- Repeat refereeing of work for different journals
- Time and money wasted by authors restructuring manuscripts for different journals
- Anonymous pre-publication peer review conceals referee bias
  - Direct/partial competitor
  - Has a different view
  - o Geographical bias
  - o Research lab bias
  - No-one but the Editor sees them behaving badly
- A single Editor makes a decision on behalf of the whole scientific community (with own biases)

### TYPES OF PEER REVIEW

### Time of review:

- Before publication
- Cascading review
- Third-party review
   Rubriq
   Peerage of Science
- Post-publication peer review F1000Research

# **Transparency of review:**

- Single-blind
- Double-blind geoscience
- Open peer review



**PLOS** 

nature

Bio Med Central The Open Access Publisher

Downloaded from http://	bmjopen.bmj.com/ on November 7, 2014 - Published by group.bmj.com						
BMJ Open publishes all reviews complete a checklist review form are provided with free text boxes reproduced below.	undertaken for accepted manuscripts. Reviewers are asked to ( <u>http://bmjopen.bmj.com/site/about/resources/checklist.pdf</u> ) and s to elaborate on their assessment. These free text comments are						
ARTICLE DETAILS							
TITLE (PROVISIONAL)	Antibiotic prescribing in Long Term Care Facilities; a qualitative,						
	multidisciplinary investigation.						
AUTHORS	Fleming, Aoife; Bradley, Colin; Cullinan, Shane; Byrne, Stephen						
VERSION 1 - REVIEW							
REVIEWER	Nick Daneman						
	Sunnybrook Health Sciences Centre, University of Toronto, Canada						
REVIEW RETURNED	04-Sep-2014						
GENERAL COMMENTS	I do not have expertise in qualitative methodology, so would suggest that BMJ Open also send to other peer reviewer(s) with this expertise. Antimicrobial stewardship in long term care facilities is an important but understudied field. The existence of a problem has been well demonstrated by quantitative methods, but qualitative studies are much needed to shed light on the root causes of antimicrobial misuse, and to identify interventions. The study describes a qualitative interview-based analysis of antibiotic prescribing in Irish long term care facilities. Interviews were conducted with 37 multi-disciplinary healthcare workers, until a saturation of concepts was achieved. The results were analyzed using the Theoretical Domains						

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# Antik quali

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Aone Fie		
+ Autho	GENERAL COMMENTS	I do not have expertise in qualitative methodology, so would sug that BMJ Open also send to other peer reviewer(s) with this
Correspo		expertise.
Aoife Flei		Antimicrobial stewardship in long term care facilities is an import but understudied field.
Received		The existence of a problem has been well demonstrated by quantitative methods, but qualitative studies are much needed to
Revised		shed light on the root causes of antimicrobial misuse, and to ide
Accepted		The study describes a qualitative interview-based analysis of
Publishe		antibiotic prescribing in Irish long term care facilities. Interviews conducted with 37 multi-disciplinary healthcare workers, until a saturation of concepts was achieved.
Abstr		The results were analyzed using the Theoretical Domains Framework, and Capability, Opportunity, Motivation - Behaviour
Objectiv		moaei.
E = 11141 = -		

I don't have a lot of experience with these approaches, but I found

#### I-I Decision letter

Detlef Weigel, Reviewing editor, Max Planck Institute for Developmental Biology, Germany

eLife posts the editorial decision letter and author response on a selection of the published articles (subject to the approval of the authors). An edited version of the letter sent to the authors after peer review is shown, indicating the substantive concerns or comments; minor concerns are not usually shown. Reviewers have the opportunity to discuss the decision before the letter is sent (see review process). Similarly, the author response typically shows only responses to the major concerns raised by the reviewers.

Thank you for sending your work entitled "Extreme adaptations for aquatic ectoparasitism in a Jurassic fly larva" for consideration at *eLife*. Your article has been favorably evaluated by Detlef Weigel (Senior editor) and 2 peer reviewers: André Nel and Enrique Peñalver.

The Senior editor and the reviewers discussed their comments before we reached this decision, and the Senior editor has assembled the following comments to help you prepare a revised submission:

This report of the earliest known aquatic ectoparasitic insect, from the Jurassic, is of great significance. The morphology and adaptations of these Jurassic larvae are fascinating. The specimens studied are impressive in their fine preservation, not leaving any doubt about their bizarre features. The paper is well written, the arguments are solid; the illustrations are nice and convincing. The detailed descriptions and their interpretations are completely convincing, despite all that seems very strange at first glance. It is a superb contribution to the knowledge of the paleobiology and evolution of the insects.

#### Minor comments:

 Please indicate the family of these larvae. According to the main text "Our new fossils are the earliest record of athericid flies..." It appears that the adscription to this family is completely clear.

 Maybe there is a more suitable word (currently teeth) to name the 6 strongly sclerotized structures on the ventral sucker...

3) The presence of a dense vestiture of small spines is in contradiction with a good functionality of a sucker due to difficulty to avoid the entrance of water (therefore, internal pressure loss), thus maybe for this reason the structure contains six "teeth" to improve the adherence.

4) Spiracles mentioned in the Discussion section are absent in the Description section.

5) The figure of the ecological restoration correctly reflects the authors' most plausible interpretation. One should to note that most probably these larvae could be located on salamander body zones that are not very exposed, since other salamanders could otherwise prey on them.

DOI: http://dx.doi.org/10.7554/eLife.02844.008



### WHERF DOFS F1000 COMF FROM?



#### The Seer of Science Publishing

Vitek Tracz was ahead of the pack on open access. Now he wants to rewrite the rules of peer review

LONDON-"Nobody reads journals," says science publisher Vitek Tracz, who has made a fortune from journals. "People read papers." Tracz sees a grim future for what has been the mainstay of scientific communication, the peer-reviewed print journal. Within the next 10 years, he says, it will cease to exist.

This prophecy ought to carry weight. Over the past 3 decades, Tracz, chairman of a conglomerate called the Science Navigation Group, has helped transform the world of science publishing. His most notable creation to date may be BioMed Central, the first for-

Tracz "always has many irons on the fire; he likes to experiment. That's unlike the rest of science publishers who are quite conservative and work on standardizing, consolidating, and reducing costs," says Matthew Cockerill, managing director of BioMed Central, which Tracz sold in 2008. By contrast, he says, "Vitek doesn't believe in business plans, but in ideas."

Now, the revolutionary, who calls himself "shy" and "un-neat," is stirring up what could become one of the biggest controversies yet in scientific publishing. Tracz is setting out to shake the very foundations of contemporary science by abolishing



profit open-access publisher. The pioneering site, founded in 2000 net in the 1990s could in London, has grown into an empire with more than 250 biology he launched BioMe and medicine journals in its stable.

BioMed Central earned Tracz a reputation as a visionary. "He's one of the most important publishers of the last decade," says Michael Eisen, a biologist at the University of California, Berkeley, and co-founder of the Public Library of Science (PLOS), a nonprofit open-access publisher that launched its first journal in 2003.

that included a libra HMS Beagle, name to South America. biologists, and doct Two years later, at th the site for an undis closed the site in 20

4 OCTOBER 2013 VOL 342 SCIENCE www.scie Published by AAAS

Michelin Guide of science Tracz was born in 1940 in a Polish village then occupied by the Soviet Union, and soon afterward his family joined relatives in Siberia, where his father worked in a mine. After the war they made it back to Poland, where Tracz, as an undergraduate at the University of Warsaw, tried his hand at architecture for a year and then switched to mathematics. Before he completed his degree, Tracz's family emigrated to Israel, where he continued his math studies. A year later, he moved to London and studied cinematography at the Slade School of Art. He put down roots and launched Medi-Cine, a company that made educational films "



### The Seer of Science Publishing

Science 4 October 2013: Vol. 342 no. 6154 pp. 66-67 DOI: 10.1126/science.342.6154.66 http://www.sciencemag.org/content/34 2/6154/66.full.pdf







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### F1000RESEARCH POST-PUBLICATION TRANSPARENT REVIEW



- Launched 2012
- Publishes across the life sciences
- Advisory Board of >1500 world-leading scientists, including 3 Nobel Laureates

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### **REFEREE SCORES**



- Approved with reservations
- 🔀 Not approved

Articles with sufficient positive reviews are indexed in PubMed, Scopus, and Embase.



Minimal requirements for indexing

Articles that haven't yet reached this threshold can always be revised and re-reviewed.

### F1000RESEARCH ARTICLE

SD, n = 10) with 50 µM veratridine.

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Tissue-resident Sca1+ PDGFR@+ mesenchymal progenitors are the cellular source of fibrofatty infiltration in arrhythmogenic cardiomyopathy [v1; ref status: indexed, http://f1000r.es/17s]

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values. Using fluctuation analysis, we observed that ranolazine 30 µM decreased mean open probability p from 0.6 to

0.38 without modifying the number of active channels n, while veratridine 1 µM increased n 2.5-fold without changing p.

In human iPSC-derived cardiomyocytes, veratridine 1 µM reversibly increased APD90 2.12 ± 0.41-fold (mean ± SEM, n =

6). This effect is attributable to inactivation removal in Nav1.5 channels, since significant inhibitory effects on hERG current were detected at higher concentrations in hERG-expressing HEK293 cells, with a 28.9 ± 6.0% inhibition (mean ±

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#### F1000Research » Articles

RESEARCH ARTICLE

#### Late cardiac sodium current can be assessed using automated patch-clamp [v1; ref status: indexed, http://f1000r.es/4kj]

Morgan Chevalier<sup>1\*</sup>, Bogdan Amuzescu<sup>2\*</sup>, Vaibhavkumar Gawali<sup>3</sup>, Hannes Todt<sup>3</sup>, Thomas Knott<sup>2</sup>, Olaf Scheel<sup>2</sup>, Hugues Abriel<sup>1,4</sup>

+ Author affiliations

\* Equal contributors

Grant information

#### Abstract

The cardiac late Na<sup>+</sup> current is generated by a small fraction of voltage-dependent Na<sup>+</sup> channels that undergo a conformational change to a burst-gating mode, with repeated openings and closures during the action potential (AP) plateau. Its magnitude can be augmented by inactivation-defective mutations, myocardial ischemia, or prolonged exposure to chemical compounds leading

to drug-induced (di)-long QT syndrome, and results in an increased susceptibility to cardiac arrhythmias. Using CytoPatch<sup>TM</sup> 2 automated patch-clamp equipment, we performed whole-cell recordings in HEK293 cells stably expressing human Nav1.5, and measured the late Na<sup>+</sup> component as average current over the last 100 ms of 300 ms depolarizing pulses to -10 mV from a holding potential of -100 mV, with a repetition frequency of 0.33 Hz. Averaged values in different steady-state experimental conditions were further corrected by the subtraction of current average during the application of tetrodotoxin (TTX) 30 µM. We show that ranolazine at 10 and 30 µM in 3 min applications reduced the late Na<sup>+</sup> current to 75.0 ± 2.7% (mean ± SEM, *n* = 17) and 58.4 ± 3.5% (*n* = 18) of initial levels, respectively, while a 5 min application of vertaridine 1 µM resulted in a reversible current increase to 269.1 ± 16.1% (*n* = 28) of initial values. Using fluctuation analysis, we observed that ranolazine 30 µM decreased mean open probability *p* from 0.6 to 0.38 without modifying the number of active channels *n*, while veratridine 1 µM increased *n* 2.5-fold without changing *p*. In human iPSC-derived cardiomyocytes, veratridine 1 µM reversibly increased APD90 2.12 ± 0.41-fold (mean ± SEM, *n* = 6). This effect is attributable to inactivation removal in Nav1.5 channels, since significant inhibitory effects on hERG current were detected at higher concentrations in hERG-expressing HEK293 cells, with a 28.9 ± 6.0% inhibition (mean ± SD, *n* = 10) with 50 µM veratridine.

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#### Open Peer Review Referee Status: 🗹 🗹 Invited Referees 2 1 version 1 published report report 16 Oct 2014 1 Eva Delpon, Universidad Complutense de Madrid. Spain Ricardo Caballero, Universidad Complutense de Madrid, Spain 2 Céline Fiset, Université de Montréal, Canada Read the reports (2) Discuss this article

Comments (0)

Add a Comment

#### Articles that may interest you

#### RESEARCH ARTICLE

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UPDATED Electrophysiological properties of mouse and epitope-tagged human cardiac sodium channel Nav1.5 expressed in HEK293 cells [v2; ref status: indexed, http://f1000r.es/10d]

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### F1000RESEARCH REFEREE REPORT

### Referee names are visible.

Referee Report 09 Mpg 2014

Christine Mummery Department of Anatomy and Embryology, Leiden University Medical Center, Leiden, Netherlands

#### Approved

The authors describe their attempt to reproduce a study in which it was claimed that mild acid treatment was sufficient to reprogramme postnatal splenocytes from a mouse expressing GFP in the oct4 I pluripotent stem cells. The authors followed ... Continue reading

#### Author Response 12 May 2014

Kenneth Lee, School of Biomedical Sciences, Chinese University of Hong Kong, Hong Kong Professor Mummery has provided some excellent suggestions for changes to improve the paper. We w best and accommodate her requests 1-3 by doing some new additional experiments.

Request 4 ... Continue reading

#### Respond or Comment

Referee reports and author comments are visible to anyone.

# View count shows how many people read the referee report



#### How to cite this report:

Mummery C. Referee Report For: Transient acid treatment cannot induce neonatal somatic cells to become pluripotent stem cells [v1; ref status: indexed, http://f1000r.es/3dq] *F1000Research* 2014, **3**:102 (doi: 10.5256/f1000research.4382.r4727)

NOTE: it is important to ensure the information in square brackets after the title is included in all citations of this report.

Copy Citation Details

Close

Referee reports are citable with a DOI.

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### OTHER POST-PUBLICATION REVIEW JOURNALS

### **Copernicus journals – launched 2001**

- Invited reviewers
- Articles discussed by reviewers and others in discussion forum (formally published)
- Articles that pass review are published in journal

### ScienceOpen Research – launched 2014

- Can invite own reviewers
- Reviewers must have 5 publications in ORCID
- In talks with indexing services

### The Winnower – launched 2014

- Can invite own reviewers
- Anyone can review (with account)
- Not indexed

### Copernicus Publications The Innovative Open Access Publisher





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### POTENTIAL CHALLENGES OF TRANSPARENT PEER REVIEW

- Post-publication peer review often gets confused with postpublication *commenting* (e.g. PubMed Commons, Publons, Libre, PubPeer)
- Referees need checking more stringently

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

- The Editor can't just do it themselves
- Exposes when referee does poor job or just provides one line
- Exposes if no-one wants to referee the article or takes a long time
  - When do you stop?
  - Should the number of referees invited be listed?
  - Should a note be added after a time to say all agree not to continue?
  - What if manage to get one referee but can't get anyone else to do it?

### CONCERNS PEOPLE SOMETIMES HAVE

Will referees be publicly critical? 

 $\rightarrow$  Yes, looks bad on referee if overly positive, but makes them more constructive

 $\rightarrow$  Openness may make them more careful not to miss issues

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Will authors be willing to publish where their work might be openly criticised

 $\rightarrow$  Seems so! Authors often publish with us when especially worried will be treated fairly

 $\rightarrow$  Improves quality of what is submitted

Will junior researchers criticise more senior ones openly?



involved with one of the alignment software reviewed in Oliver's paper. I note that Pertea and Salzberg chose not to declare conflict of interest in a similar position.

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### CONCERNS PEOPLE SOMETIMES HAVE - II

 Will referees only confirm what previous referees for that article have said



- For authors, will require lots of time in ongoing dialogue with referees
  - → Discussion of your research is a good thing for science
  - $\rightarrow$  It rarely turns into a long ongoing process
- The peer review process will go on for ever and never finish
  - In reality, most papers have 1 revision round; max so far is 3 revisions

### **BENEFITS OF TRANSPARENCY**



### DATA SHARING AND REPRODUCIBILILITY

- Two infamous STAP papers published in Nature in Jan 2014
- No data included; little protocol information
- Labs tried to replicate but couldn't
- Original research team posted several iterations of increasingly detailed protocols
- Prof Kenneth Lee (CUHK) and colleagues live-blogged their attempts on ResearchGate
- Lee et al published final outcome of replication attempts on F1000Research, together with detailed protocol information and full data

F1000Research » Articles				Q	CrossM	ark odates	Open P	eer Revie	w	8
Transient acid treatment ca	nnot i	induce neon	atal soma	tic cel	s to		Invited D	oforeo Doci	nonces	
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become pluripotent stem c	ells [V	1; ref status:	indexed,					1	2	
http://f1000r.es/3dq]								_/		
Mei Kuen Tang <sup>1</sup> , Lok Man Lo <sup>1</sup> , Wen Ting Shi <sup>1</sup> ,	Yao Yao <sup>1</sup> , I	Henry Siu Sum Lee <sup>2</sup>	, Kenneth Ka Ho	Lee <sup>1</sup>			published	report	report	
+ Author affiliations							08 May 201	4 .		
Grant information										
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	qPCR data were generated using Viia7 real-time PCR system software. Ct: Threshold cycle number where florescence signal of each sample reached threshold level as defined by the software. Undetermined: Florescence signal of the samples did not reach the threshold level before maximum (40) PCR cycles of each run. SD: Standard deviation of Ct of technical triplicate of each biological sample.									
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**Open Peer Review** 

Referee Status: 🛛 🗹 🕐

version 1

published

UK

Australia

Spain

19 Dec 2012

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report

1 Nicola Maffulli, Queen Mary, University of London,

2 Xander Van Rijen, Joondalup Health Campus,

3 Isabel Andia, Unidad de Cirugía Astroscópica.

Read the reports (3), Responses (3)

Michele Abate, University of G. d'Annunzio, Italy

Invited Referees

2

report

з

report

### OTHER BENEFITS OF TRANSPARENT PEER REVIEW

 Discussion between referees and authors puts article in context, including differing views (useful for public too)

- Referees can't hide behind anonymity
- Referees can take credit for their hard work, including junior researchers who often do the work (co-referees)
- Referees are more thoughtful about what they write

### **BENEFITS OF TRANSPARENT PEER REVIEW - II**

- Studies suggest open refereeing improves quality of review (e.g. BMJ 2010 Nov 16; 341; c5729-c5729)
- Authors can demonstrate that their paper was reviewed by top people in their field
- Referees rarely ask for unreasonable additional experiments, and if do, doesn't hold up your paper being published
- Educational aspect of open peer review

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### PEER REVIEW EDUCATION

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**Peer Reviewing Tips** 

#### How to write a good peer review report

In scientific publishing, researchers are both authors and referees, but while many graduate students will be taught how to write an article, not all PhD students and postdocs will be taught how to write a peer review report. Since all peer review reports on *F1000Research* articles are public, they form a collective resource of peer review examples. Below, experienced peer review reports from papers published in *F1000Research* that can be used as examples.

#### 1. Stay In Scope

- GG Keep comments within the scope of the paper.
  - Sheila McCormick, University of California, Berkeley

#### 2. Be Constructive

- 66 Be constructive, view your reviewer role as an opportunity to help improve the paper you are reviewing.
  - Bruce Maclver, Stanford University

#### A helpful review with advice for improvement

#### John Banks says:

This article addresses the links between habitat condition and an endangered bird species in an important forest reserve (ASF) in eastern Kenya. It addresses an important topic, especially given ongoing anthropogenic pressures on this and similar types of forest reserves in eastern Kenya and throughout the tropics. Despite the rather small temporal and spatial extent of the study, it should make an important contribution to bird and forest conservation.

READ FULL REPORT -

#### 3. Manage Your Time

- 66 Don't underestimate the time it takes to carefully analyze a manuscript and write a constructive review.
  - Hugues Abriel, University of Bern



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#### Peer Review Examples

Detailed feedback about statistics in a critical review

#### >> Constructive feedback on an opinion article

- Response to authors who did not make sufficient changes to article
- Suggestions for further improvement of an approved article

#### -----

#### VIEW EXAMPLES >

#### Other Resources

#### Peer Review: The Nuts And Bolts

Published by Sense About Science

READ ARTICLE >

#### A Guide to Peer Review in Ecology and Evolution

Published by the British Ecological Society

READ ARTICLE >

#### Are We Training Pit Bulls To Review Our Manuscripts?

By Virginia Walbot (Stanford University)

READ ARTICLE >

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### TYPES OF OUTPUTS FOR PEER REVIEW

• Increasing range of scientific outputs for peer review:

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- Datasets and data papers
- Software papers

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Small findings / posters

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### **IN-ARTICLE DATA MANIPULATION**



Key MMSE0 score BPRS-P0 score 2.5 5 10 DRUG (mg) (X) Data Table | Define the x axis by clicking the arrows above eligible columns. Select multiple REFRESH FULL GRAPH columns or individual cells (using the CTRL + key) and click REFRESH to update the chart above Subject ID DRUG (mg) ADJUST Age Sex MMSE0 score **BPRS-T0 score** BPRS-P0 score PDQ0 score 23 37 102 0 77 f 7 66 n 105 0 77 25 47 f n 106 0 76 30 19 n m 25 6 110 0 60 m 30 39 9 100 V 113 0 72 f 27 35 64 n 8 4

Data Plotter: Characteristics of Parkinson patients with psychosis before administration of varying

olanzapine doses or placebo

RESEARCH ARTICLE

A fixed-dose randomized controlled trial of olanzapine for psychosis in

Parkinson disease [v1; ref status: indexed, http://f1000r.es/1au]

Michelle J Nichols<sup>1,2</sup>, Johanna M Hartlein<sup>1,3</sup>, Meredith GA Eicken<sup>4,5</sup>, Brad A Racette<sup>3</sup>, Kevin J Black<sup>1,3,6,7</sup>

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### FUTURE PEER REVIEW CHALLENGES AND OPPORTUNITIES

• Decoupling of publishing and peer review/curation

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• Journal-level metrics not appropriate for individual assessment



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# **DO WE NEED JOURNALS AND PUBLISHERS?**

## FUTURE OF PUBLISHING

# Still need:

- Some form of publication of research output
  - o to inform
  - o to show progress, for evaluation
- Some form of review by peers

# Move away from:

- Journals
- The impact factor

# We will likely see more of:

- Publishing platforms
- Linking research objects
- Dynamically updated publications
- New forms of credit for research
- Curated collections of research output in lieu of thematic journals

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### SUMMARY

- Peer review is an important part of scientific dissemination
- The problems with the traditional process are well known
- Many new models being developed to tackle the issues
- Several publishers now working towards a post-publication open peer review system
- Still challenges, but most scientists agree this is ultimately the right way to share science
- What role should publishers play in this?

Move away from trying to own the content and process Become service providers that enable the sharing, debate and discussion of science.

# Thank you!

rebecca.lawrence@f1000.com @f1000research | @rnl\_s

