AUTHORSHIP



Mariolina Salio and Andrew McMichael

THE EVOLUTION OF ACADEMIA



The Vancouver criteria for authorship

(established by the International Committee of Medical Journal Editors in 1988)

Authors must do all of four things to qualify:

- 1. play a part in designing or conducting experiments or processing results;
- 2. help to write or revise the manuscript;
- 3. approve the published version;
- 4. and take responsibility for the article's contents.

The International Committee of Medical Journal Editors does not count supervision, mentoring or obtaining funding as sufficient for authorship.

Who goes first, who goes last?



Who goes first, who goes last?



The first author Senior grad student on the project. Made the figures.

The third author

First year student who actually did the experiments, performed the analysis and wrote the whole paper. Thinks being third author is "fair".

The second-to-last author

Ambitious assistant professor or post-doc who instigated the paper.

Michaels, C., Lee, E. F., Sap, P. S., Nichols, S. T., Oliveira, L., Smith, B. S.

The second author Grad student in the lab that has nothing to do with this project, but was included because he/she hung around the group meetings (usually for the food).

The middle authors Author names nobody really reads. Reserved for undergrads and technical staff.

The last author

The head honcho. Hasn't even read the paper but, hey, he/she got the funding, and their famous name will get the paper accepted.

WWW.PHDCOMICS.COM

Immunology. 1972 Feb;22(2):277-89.

The effects of ALG on the murine immune response to sheep erythrocytes.

Anderson HR, Dresser DW, Iverson GM, Lance EM, Wortis HH, Zebra J.

<u>J Exp Med.</u> 1978 Jul 1;148(1):84-92.

In a fully H-2 incompatible chimera, T cells of donor origin can respond to minor histocompatibility antigens in association with either donor or host H-2 type.

Matzinger P, Mirkwood G.

The "prized" places are first and last:

First, the person who does most of the actual experiments and writes the first draft (or whole paper);

last for the senior author who guides (and funds) the project;

Co-first authorship solves many problems and is now recognised by reviewers as genuine. If the experiments represent a more or less equal collaboration between two labs it is usual for one group to take first and one to take last authorship.

In any collaboration, it helps to be clear right from the start about authorship requirements for any research output. In an equal partnership one lab often takes first authorship and the other last authorship

Potential last authors should be mature enough not to get into disputes!

Middle authors contribute in important ways and know in detail what has been involved. Being a middle author recognises the contribution, which is not trivial. However it is not always simple.

Who to include as middle authors can be contentious; they must have made a significant contribution eg gifts of reagents – but depends on terms etc gifts of ideas - tricky -> courtesy authorship must be discouraged

In studies involving clinical samples, the clinician should be considered as a co-author

Consider that most Cell/Nature/Science (and other) papers involve many years of person-work and fields are highly competitive, so not surprising that papers often have more than 10 authors. This is OK!

However, honorary authorship remains common but must be discouraged

Guest authors: those who do not meet the criteria but are listed because of superiority, reputation, influence

Gift authors: those who do not meet the criteria but are listed as a personal favour or in return for payment

Ghost authors: those who meet the criteria but are not listed – they may complain later.

WORLD VIEW · 25 SEPTEMBER 2018

No more first authors, no more last authors



If we really want transdisciplinary research, we must ditch the ordered listing of authors that stalls collaborative science, says Gretchen L. Kiser.

The assessment of publications during promotion and tenure decisions is a big part of the problem...The gravitas associated with 'first' and 'senior' authorship is entrenched.

Many journals have statements that explain contributors' roles in their publications.

Team science and contributorship are the future. (*Nature* **561**, 464 (2018) *doi:* 10.1038/d41586-018-06815-1

Remember, quality not quantity!

Thousands of scientists publish a paper every five days *Nature* **561**, 167-169 (2018)





One big article or many smaller? Sustained CV Not too many review

Assessing publications

Read them!

Metrics:

Impact Factor of Journal: *calculated by dividing the number of current year citations to source items published in that journal during the previous 2 years.*

PLOS One: 2.8-4.7 PNAS: 9.6 Cell: 36.2 Science: 41.1 Nature: 43.1 Nature: 43.1

Number of Citations:

0 bad; 20 good; 50 very good; 100 excellent; 1000 outstanding

H index: n publications cited \geq n times

WORLD UNIVERSITY RANKINGS	P	ROFESSIONAL	JOBS EVE	NTS RAN	KINGS STU
Rank 🌲	Name Country/Region	No. of FTE Students	No. of students p	Internatio Students	Female:M. Ratio
1	University of Oxford Vinited Kingdom	20,298	3 11.0	40%	46 : 54
2	University of Cambridge Vinited Kingdom	18,749	9 10.9	37%	46 : 54
3	Stanford University Vunited States Explore	15,878	3 7.4	23%	43 : 57
4	Massachusetts Institute of Technology Vinited States	11,231	8.7	34%	38 : 62
5	California Institute of Techn United States	ology 2,255	6.5	29%	33 : 67
6	Harvard University Vunited States	20,595	5 9.1	26%	48 : 52
7	Princeton University Vinited States	7,996	8.2	24%	45 : 55
8	Yale University Vunited States	12,318	3 5.2	20%	50 : 50
9	Imperial College London V United Kingdom	16,425	5 11.7	56%	38 : 62
10	University of Chicago Vunited States	13,562	2 6.1	25%	44 : 56

Research integrity at the University of Oxford

Research integrity-Research integrity and ethics
policyConflict of interest+Annual research integrity reportsPublication and authorshipCollaborative research
Research misconduct
Research integrity checklistResearch ethics (including
CUREC)Clinical Trials & Research
governanceHuman tissue governance

Research integrity

The University of Oxford regards research integrity as a core value and has a longstanding commitment to ensuring that it is embedded in its research culture and activity. The University's <u>Academic Integrity in Research: Code of Practice and</u> <u>Procedure</u> states that all its researchers, be they staff, students or visitors, are expected to maintain the highest standards of rigour and integrity in all aspects of their research.

The University's <u>policies</u>, guidelines and procedures relating to research integrity and ethics have been designed to ensure that these standards are maintained.



https://researchsupport.admin.ox.ac.uk/governance/integrity

The higher the impact factor, the higher the scrutiny! Retracted Science and the Retraction Index



Fang and Casadevall, Infection and Immunity, 2011, 79: 3855

What do you think are the reasons for this correlation?

What do you think are the reasons for this correlation?

Sample sizePressure to publish papers,Weak statisticsSecure grants;Bad reagentsCriteria for career advancemenExperimental errorDeficiencies in trainingBase broad claims on narrow evidem ciegorous reviews and journFraudpractices

Again, and Again, and Again ...

Barbara R. Jasny, Gilbert Chin, Lisa Chong, Sacha Vignieri

Science 02 Dec 2011: Vol. 334, Issue 6060, pp. 1225 DOI: 10.1126/science.334.6060.1225

Data Replication & Reproducibility

CHALLENGES IN IRREPRODUCIBLE RESEARCH

Science moves forward by corroboration – when researchers verify others' results. Science advances faster when people waste less time pursuing false leads. No research paper can ever be considered to be the final word, but there are too many that do not stand up to further study.

There is growing alarm about results that cannot be reproduced. Explanations include increased levels of scrutiny, complexity of experiments and statistics, and pressures on researchers. Journals, scientists, institutions and funders all have a part in tackling reproducibility. *Nature* has taken substantive steps to improve the transparency and robustness in what we publish, and to promote awareness within the scientific community. We hope that the articles contained in this collection will help.

Nature 8 October 2015



REPLICATION

Biotech giant posts negative results

Amgen papers seed channel for discussing reproducibility.

Nature doi:10.1038/nature.2016.19269 they had failed to replicate 47 of 53 landmark cancer papers.

F1000 CHANNEL REPRODUCIBILITY

COMMITTEE ON PUBLICATION ETHICS

C O P E

Definitions of Research/Publication Misconduct



From Sabine Kleinert, Oxford, 22



PERSPECTIVE

The Economics of Reproducibility in Preclinical Research

Leonard P. Freedman¹*, Iain M. Cockburn², Timothy S. Simcoe^{2,3}

1 Global Biological Standards Institute, Washington, D.C., United States of America, 2 Boston University School of Management, Boston, Massachusetts, United States of America, 3 Council of Economic Advisers, Washington, D.C., United States of America

* Ifreedman@gbsi.org

OPEN ACCESS

Citation: Freedman LP, Cockburn IM, Simcoe TS (2015) The Economics of Reproducibility in Preclinical Research. PLoS Biol 13(6): e1002165. doi:10.1371/journal.pbio.1002165



stimated US Annual Preclinic Research Spend

OPEN ACCESS

Citation: Freedman LP, Cockburn IM, Simcoe TS (2015) The Economics of Reproducibility in Preclinical Research. PLoS Biol 13(6): e1202165. doi:10.1371/journal.pbio.1002165

How is fraud detected?



How is fraud detected?

From Dr Harvey Marcovitch

- Colleagues (usually junior)
- Other whistleblowers
- Reviewers
- Readers
- Regulatory bodies
- Editors (plagiarism software/photoshop)
- Statisticians
- Sponsors
- Publishers

Why do researchers not detect fraud?

From Dr Harvey Marcovitch²⁶Oxfor

Why do researchers not detect fraud?

- Junior researchers fearful for their job
- Overwhelmed by charisma
- Bullying and threats
- Not trusting their own suspicion
- Lack of support from institution
- Turning a blind eye

From Dr Harvey Marcovitch²⁷Oxfor

Malpractice

We hope this never happens but

What do you do if you become aware of malpractice in the lab

Nobody likes being a whistleblower

Who should you tell – lab-mates, supervisor, head of department, your college advisor?

Consequences of being part of a false publication are bad

Retraction can ameliorate damage



➡ HOME MAGAZINE INNOVATION

CURATED BY Roger Davis et al.

Reproducibility Project: Cancer Biology

Investigating reproducibility in preclinical cancer research.

f 🔰 🖂 🥳

COLLECTION Dec 10, 2014

VIEWS 22,050

https://elifesciences.org/collections/9b1e83d1/reproducibility-projectcancer-biology

http://retractionwatch.com

- A blog devoted to the examination of retracted articles "as a window to the scientific process"
- By journalists Ivan Oransky and Adam Marcus

Retraction Watch

Science retracts paper after Nobel laureate's lab can't replicate results

without comments

Science is retracting a 2014 paper from the lab of a Nobel winner after replication attempts failed to conclusively support the original results.

In January, <u>Bruce Beutler</u>, an immunologist at University of Texas Southwestern Medical Center and winner of the 2011 Nobel Prize in Physiology or Medicine, emailed <u>Science</u> editor-in-chief <u>Jeremy Berg</u> to report that attempts to replicate the findings in "<u>MAVS, cGAS, and endogenous retroviruses in T-independent B cell</u> <u>responses</u>" had weakened his confidence in original results. The paper had found that virus-like elements in the human genome play an important role in the immune system's response to pathogens.



Although Beutler and several co-authors requested retraction right off the bat, the journal discovered that two co-authors disagreed, which Berg told us drew out the retraction process. In an attempt to resolve the situation, the journal waited for Beutler's lab to perform another replication attempt. Those findings were inconclusive and the dissenting authors continued to push back against retraction.

October 26 2017

$\begin{array}{c} \textbf{SCIENTIFIC} \\ \textbf{AMERICAN}_{\text{\tiny 0}} \end{array}$



We're Incentivizing Bad Science

Current research trends resemble the early 21st century's financial bubble

By James Zimring on October 29, 2019

CANCER BIOLOGY

Reproducibility project yields muddy results

An ambitious effort to replicate cancer studies is provoking controversy.

Nature, January 19 2017

launched in 2013, an ambitious effort to scrutinize key findings in 50 (2 published in *Nature*, *Science*, *Cell* and other high-impact journals.

First eport in eLife, January 19 on 5 papers:

- 1 failed to replicate
- 2 substantially reproduced, although not all experiments reached3statistic
- 2 uninterpretable results

Role play – case studies

Informed consent for use of stored specimen

Authorship

Roger's data

Animal research

