Research integrity in an increasingly competitive and complex world: issues, problems, solutions

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STM Seminar, London, 3 December 2015
Integrity:

The quality of being honest and having strong moral principles

(Oxforddictionaries.com)
Singapore Statement on Research Integrity (2010)

Honesty

Accountability

Professional courtesy & fairness

Good stewardship

European Code of Conduct for Research Integrity (2011)

Honesty

Reliability

Objectivity

Impartiality & independence

Openness & accessibility

Duty of care

Fairness

Responsibility for researchers of the future
Responsible conduct of research (RCR)

- Can be a challenge to understand and put into practice
- No universal way to carry out research, norms and practices can vary, from field to field, country to country
- Basic principles not always known by researchers
- Build a ‘culture of research integrity’
What is ‘research misconduct’?
Research misconduct means *fabrication*, *falsification*, or *plagiarism* in proposing, performing, or reviewing research, or in reporting research results.

Research misconduct does not include honest error or differences of opinion.

(Office of Research Integrity, US: [http://ori.hhs.gov/](http://ori.hhs.gov/))

- Research integrity/ethics problems and potential misconduct often only come to light after submission/publication
- Range - ‘*questionable research practices*’ to serious fraud
Incidence?

Fanelli (2009), *PLOS ONE*, 4(5), e5738

- Looked at fabrication, falsification, and ‘cooking’ of data (behaviours that ‘distort knowledge’)
- Around 2% admitted to having done this at least once
- Up to a third admitted to other questionable research practices
- 14% knew of colleagues who had engaged in falsification, up to 72% for other questionable research practices

“Considering that these surveys ask sensitive questions … it appears likely that this is a conservative estimate of the true prevalence of scientific misconduct”
Increasing pressures on researchers?

“… and underlying these worries was yet another: that scientific articles have been hijacked away from their primary role of communicating scientific discovery to one of demonstrating academic activity.”

Science researchers in the UK

- Tempted or under pressure to compromise on research integrity and standards: 26%

- Aware of others feeling like this: 58%

- “A higher proportion of respondents aged under 35 years (33 per cent) stated they had felt tempted or under pressure in comparison with those aged above 35 years (21 per cent).”
“there should be no such thing as a ‘good result’ only a good scientific question that is worth knowing the answer to”

Chris Chambers
theguardian.com, 29 October 2015
US$50,000
Why we should be concerned about research misconduct

- Fabricated/falsified work goes on being cited
- Research is wrongly informed
- Waste of resources, human and financial
- Breaches in research integrity are damaging, to individuals, institutions, *and public trust*
‘Rogue scientist faked AIDS research funded with $19M in taxpayer money by spiking rabbit blood’

*Daily Mail*, 26 December 2013

‘Scientist falsified data for cancer research once described as ‘holy grail,’ feds say’

*Washington Post*, 9 November 2015

‘False positives: fraud and misconduct are threatening scientific research’

*The Guardian*, 13 September 2012

‘Cancer study patients ‘made up’”

*BBC News online*, 16 January 2006
Retraction Watch

The Retraction Watch Leaderboard

with 14 comments

Who has the most retraction? Here's our unofficial list (see notes on methodology), which we'll update as more information comes to light:

1. Yoshitaka Fujii (total retraction: 183) Sources: Final report of investigating committee, our reporting
2. Joachim Boldt (94) Sources: Editors in chief statement, additional coverage
3. Peter Chen (60) Source: SAGE
4. Diedrich Stapel (57) Source: Our cataloging
5. Adrian Maxim (48) Source: IEEE database
6. Hua Zhong (41) Source: Journal
7. Shigeaki Kato (36) Source: Our cataloging
9. Hyung-In Moon (35) Source: Our cataloging
10. James Hunton (32.5, counting partial retraction as half) Source: Our cataloging
11. Naoki Mor (32) Source: PubMed, our cataloging
12. Tao Liu (29) Source: Journal
13. Gideon Goldstein (26)
14. Scott Reuben (25)
15. Gilson Khang (22) Sources: WebCitation.org, WebCitation.org, Journal
16. Friedhelm Herrmann (21)
The personal tragedies

‘Stem cell scientist Haruko Obokata found guilty of misconduct’
_The Guardian_, 1 April 2014

‘Stem-cell scientists mourn loss of brain engineer: A famous name in regenerative medicine, Yoshiki Sasai was found dead on 5 August’
_Nature News_, 5 August 2014
What sorts of problems are we seeing?
All the cases COPE has discussed since its inception in 1997 have been entered into a searchable database. This database now contains over 400 cases together with the advice given by COPE. For more recent cases, the database also includes follow-up information about outcome. We hope this

- COPE: http://publicationethics.org/

- Cases database, analysis

Classifications and Keywords indicate the topics discussed, not that a particular form of misconduct had occurred

Irene Hames, STM, December 2015
COPE cases, 1997-2012, number per Classification (http://publicationethics.org/cope-case-taxonomy)
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Irene Hames, STM, December 2015
Authorship

- Increasing numbers of authors

Who did what? Accountability?

- Increasing interdisciplinary collaborations
Authorship

Authorship for sale

“uncovered a flourishing academic black market involving shady agencies, corrupt scientists, and compromised editors”

(‘China’s publication Bazaar’, *Science*, Nov 2013, **342**, 1035-39)

… and papers (catalogue), and data (real or faked)
Plagiarism

- CrossCheck – when, how, by whom?
- Differences in what thought to be acceptable
- Confusion about: ‘self-plagiarism’ (recycling); what is considered ‘prior publication’
- Editor/journal actions

- New types of plagiarism and detection avoidance

Irene Hames, STM, December 2015
Data

- **Image manipulation**
  - Digital image processing software available and widely used
  - Ignorance of permitted manipulation
  - Intentional inappropriate manipulation
  - Basic rules:
    - Any digital effect must be applied to the whole image, selective enhancement, movement, removal or introduction not allowed
    - Brightness and contrast adjustment shouldn’t obscure, remove or misrepresent information in the original
    - Must be clear when data come from different sources
  - Image checking

Irene Hames, STM, December 2015
‘What’s in a picture? The temptation of image manipulation’
Rossner M, and Yamada K M *J Cell Biol* 2004;166:11-15
Unauthorised use

- Who owns the data? Any conditions imposed by funders, institutions, data sources? Publication rights?

- Obligations associated with data collection?

Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations

Preamble: Research collaborations that cross national, institutional, disciplinary and sector boundaries are important to the advancement of knowledge worldwide. Such collaborations present special challenges for the responsible conduct of research, because they may involve substantial differences in regulatory and legal systems, organizational and funding structures, research

16. Data, Intellectual Property and Research Records. Collaborating partners should come to agreement, at the outset and later as needed, on the use, management, sharing and ownership of data, intellectual property, and research records.

- ‘Personal communications’
Peer review

‘Fake reviewer’ cases

Retraction Watch

Retraction count grows to 35 for scientist who faked emails to do his own peer review

with 9 comments

Hyung-In Moon, the South Korean plant compound researcher who made up email addresses so he could do his own peer review, is now up to 35 retractions.

The four new retractions are of the papers in the Journal of Enzyme Inhibition and Medicinal Chemistry that initially led to suspicions when all the reviews came back within 24 hours. Here’s the notice, which includes the same language as Moon’s 24 other retractions of studies published in Informa Healthcare journals:

“The corresponding author and publisher hereby retract the following articles from publication in Journal of Enzyme Inhibition and Medicinal Chemistry:

Effect of betaine on the hepatic damage from orotic acid-induced fatty liver development in rats
Jae-Young Cha, Hyeong-Soo Kim, Hyung-In Moon, and Young-Su Cho


‘For his part, Moon acknowledged suggesting his friends and colleagues as reviewers, telling Retraction Watch that the results “can be mistaken for fake reviews.” But he said it wasn’t only his mistake: The editors, Moon said, invited those reviews without confirming the identity of the reviewers.’
COPE Ethical Guidelines for Peer Reviewers

Irene Hames on behalf of COPE Council
March 2013, v.1

Peer review in all its form plays an important role in ensuring the integrity of the scholarly record. The process depends to a large extent on trust, and requires that everyone involved behaves responsibly and ethically. Peer reviewers play a central and critical part in the peer-review process, but too often come to the role without any guidance and may be unaware of their ethical obligations. The COPE Ethical Guidelines for Peer Reviewers set out the basic principles and standards to which all peer reviewers should adhere during the peer-review process. It is hoped they will provide helpful guidance to researchers, be a reference for journals and editors in guiding their reviewers, and act as an educational resource for institutions in training their students and researchers.

Basic principles to which peer reviewers should adhere

Peer reviewers should:

* only agree to review manuscripts for which they have the subject expertise required to carry out a proper assessment and which they can assess in a timely manner

Open Researcher and Contributor iD
(http://about.orcid.org/about)

- a permanent identifier for researchers and scholars
- links research activities and outputs to identifiers
- automates linkages to ‘research objects’
Since 2012 …

- More cases of authors submitting fake reviewer emails

- Editors creating fake reviewer accounts (to submit favourable reports)

- Third-party services suggesting fake reviewers

- October 2015, ~260 retractions because of fake peer review (see Retraction Watch ‘faked emails’ category)
4th WORLD CONFERENCE ON RESEARCH INTEGRITY

Research Rewards and Integrity: Improving Systems to Promote Responsible Research

See news on the Opening Ceremony by the Brazilian Society for the Advancement of Science (SBPC) and by others, available at IN THE NEWS!

Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations

Preamble. Research collaborations that cross national, institutional, disciplinary and sector boundaries are important to the advancement of knowledge worldwide. Such collaborations present special challenges for the responsible conduct of research, because they may involve substantial differences in regulatory and legal systems, organizational and funding structures, research cultures, and approaches to training. It is critically important, therefore, that researchers be aware of and able to address such differences, as well as issues related to integrity that might arise in cross-boundary research collaborations. Researchers should adhere to the professional responsibilities set forth in the Singapore Statement on Research Integrity. In addition, the following responsibilities are particularly relevant to collaborating partners at the individual and institutional levels and fundamental to the integrity of collaborative research.

Responsibilities of Individual and Institutional Partners in Cross-Boundary Research Collaborations

Irene Hames, STM, December 2015
“I think the most important thing is the lack of education. Many times students don’t even realize that they did something unethical or illegitimate ... For instance, I had such a student in my lab. He used the same graphs and text from a submitted article in another article. He didn’t know that this is not allowed”  PI, age 45-54, Beijing

Recommendation: ethics training needs to be improved and the importance of scientific ethics needs to be emphasized.
The UK: *Concordat to Support Research Integrity*

- Published July 2012
- References the European Code of Conduct for Research Integrity (2011) - a “clear and useful framework”

**Signatories**

- Scottish Funding Council
- Research Councils UK
- Wellcome Trust
- National Institute for Health Research
- NHS
- Employment and Learning
- Universities UK
- Higher Education Council for Wales

Irene Hames, STM, December 2015
Research integrity video project

The concordat to support research integrity

“SEeks to provide a comprehensive national framework for good research conduct and its governance”

9 core instructional areas central to RCR
- Protection of human subjects
- Welfare of laboratory animals
- Conflicts of interest
- Data management practices
- Mentor and trainee responsibilities
- Collaborative research
- Authorship and publication
- Peer review
- Research misconduct

Find out more at www.dundee.ac.uk
Scientific ethics discussions in research groups

A good example of how one group leader approached this – Dynamic Ecology blog, 1 April 2014

- “… there was such a palpable hunger for talking about the subject that it made me very happy we had taken the time and I plan to repeat this”

- “So even if you think your lab has no problems – no especially if you think your lab has no problems – just do it. Go ahead and schedule a discussion of scientific ethics in your lab. You’ll be glad you did. I certainly was!”

http://dynamicecology.wordpress.com/2014/04/01/scientific-ethics-discussions-in-labs/

Irene Hames, STM, December 2015
Reducing the problems at publication stage – what can journals & publishers do?

- Guidance – clear and concise information/instructions
- Policies – general and discipline-specific
- Keeping up-to-date – on new issues, on evolving areas
- Filtering information, top-down and bottom-up, translating into policies and actions
- Don’t assume even the most basic knowledge about research integrity and ethics issues
- Reporting guidelines – effective implementation
What can be done with peer reviews?

Who “owns” peer reviews?

Two trends have recently come together within scholarly publication: open review, and the desire to give credit to reviewers (see also [1]). At the convergence are organizations like PLoS and Academic Karma who wish to openly acknowledge the work of peer-reviewers by recording, not only the amount, but also, in some circumstances, the content of individuals’ peer-review activity.

Academics may view services like this as a way to regain control over their reviews and so may be keen to sign-up and provide the other hand, often conduct confidential review processes and wish to restrict the sharing of comments exchanged during peer-review. Emergence of these services therefore prompts a number of concerns and questions as to how best ensure author, editor, reviewer, are protected.

Questions
- Does it violate confidentiality of peer review to reveal reviewer comments even after publication?
- What can journals do to make sure reviewer comments remain confidential?
- How can reviewers ensure they are able to share and get credit for their work?
Thank you

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