



Scientific conduct and misconduct: honesty is still the best policy

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Publication of scientific research is a cooperative system where manuscripts are received by journals in good faith that scientific integrity is maintained by authors while performing research and writing articles. This faith is also bi-directional as authors expect that the editorial and reviewing processes are confidential, that the ideas expressed by authors are not misused and that the judgment is fair. Since the dawn of scientific communications, both publishers and authors have abided by this unwritten agreement to further scientific progress. However, like any other cooperative system, even scientific publication is vulnerable to defection by either parties leading to scientific misconducts, which not only leads to controversies, but also shakes the foundation of this cooperative institution.

Scientific misconduct has become a serious concern in recent years with exposure of several high profile cases (for details see Montgomerie & Birkhead 2005; Triggler & Triggler 2007; Errami & Garner 2008; Redman & Merz 2008; Rathod 2010). As a result of these exposures and in the interest of maintaining scientific integrity many journals have now formalized their policies against scientific misconduct (for example see Aronson 2007; Mukunda & Joshi 2008; Handa 2008; Editorial 2011), while European Science Foundation and ALLEA (All European Academies) have published a code of conduct for research integrity (Anonymous 2011). With recent research on the nature of scientific misconduct, its social effects and the journal's stand against the same (Martinson et al. 2005; Errami et al.

2008; Fanelli 2009; Long et al. 2009; Resnik et al. 2009) it is now becoming clear that journal policies regarding scientific misconduct, which hitherto were only implied, should be put more explicitly in the form of a formal document.

In a recent issue of the *Journal of Threatened Taxa* (*JoTT*) (Vol. 4, No. 7) an article authored by Virendra Mathur, Yuvana Satya Priya, Harendra Kumar, Mukesh Kumar and Vadamalai Elangovan was found to be a case of duplication as a similar article was published by the authors elsewhere. The moment this case was brought to our attention, the article was withdrawn from *JoTT* online issue and appropriate disciplinary actions were taken. This incident made us realize that a formal statement and description of the protocol for defining *JoTT* policies against misconduct are essential. This editorial, therefore, tries to explain the concept of scientific misconduct and set the grounds for *JoTT* policies against scientific misconduct.

Understanding what is scientific misconduct

Before setting *JoTT* policies against scientific misconduct, it is essential to define the idea of scientific misconduct more objectively. Building upon the different types of scientific misconducts identified by The European Code of Conduct for Research Integrity (Anonymous 2011) and giving a special recognition to duplicate publishing, we identify four types of scientifically unethical behaviors: (i) fabrication (creating a false data), (ii) falsification (manipulation of data), (iii) plagiarism (copying ideas, statements, results, etc. from other author/s without acknowledging the author/s and/or the source), and (iv) self-plagiarism (multiple identical publications with major overlap in ideas, data, inferences, etc.).

Based on different forms of scientifically unethical behaviors, for all practical purposes, we will follow

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and build up on the definition of scientific misconduct provided by Resnik (2003) who defines scientific misconduct as follows:

(1) *Misconduct is a serious and intentional violation of accepted scientific practices, common sense ethical norms, or research regulations in proposing, designing, conducting, reviewing, or reporting research.*

(2) *Punishable misconduct includes fabrication of data or experiments, falsification of data, plagiarism, or interference with a misconduct investigation or inquiry.*

(3) *A person who commits a form of punishable misconduct may receive a sanction proportional to the seriousness of the misconduct.*

(4) *Misconduct does not include honest errors, differences of opinion, or ethically questionable research practices.*

JoTT policies against scientific misconduct

JoTT will not tolerate any form of scientific misconduct and all allegations of such nature will be evaluated objectively. JoTT will also not take the decision hastily and all allegations will be reviewed thoroughly before making the final verdict. In any kind of allegation JoTT will follow the protocol provided in Box 1.

Fabrication (false data) and falsification (manipulation of data) are severe crimes and JoTT's rigorous peer-review and editorial process will detect such a fraud. Even if some erroneous data may escape

the reviewing process and get published, we believe that future research will expose such faulty data and under such cases JoTT can request authors of the accused publication to provide raw data used for analysis, and will take appropriate disciplinary actions against the accused publication (Box 1). However, another major concern is plagiarism, which, fortunately, has become relatively easy to detect with the advent of internet and online databases. It is essential that authors understand the concept of plagiarism properly and understand its severity to avoid any allegations based on the same.

Plagiarism is copying of ideas, statements, results, data, figures, etc. from other author(s) without acknowledging the original source, either published or unpublished, which may at times include copyright infringement (Armstrong 1993). Plagiarism is ethically wrong because authors try to take credit of ideas stolen from other sources. Self-plagiarism is a form of plagiarism where authors express same ideas, data, representations, etc. in multiple publications without acknowledging the original publication. While, at a glance, self-plagiarism does not appear as unethical stealing of credits, it is still an inappropriate behavior as it leads to multiple duplicate publications and may also contribute to copyright infringement. Copyright infringement is a severe crime especially if the authors have transferred the copyright of their article to the publisher. This issue does not always arise, especially when the publication is licensed under "Creative Commons Attribution 3.0 Unported License", like

Box 1: JoTT policies against scientific misconduct

Any form of scientific misconduct is unacceptable and JoTT reserves the right to expose such work with appropriate level of penalty suitable for the situation.

A. In the case of suspected scientific misconduct, JoTT will follow the protocol given below:

1. The submitted manuscript will be investigated objectively by the chief editor, associate editors and subject editors of JoTT and JoTT will take appropriate actions suitable for the crime.
2. If scientific misconduct is detected during the reviewing or editing process, JoTT will (i) reject the manuscript, (ii) inform the respective heads of institutions of all the authors, and (iii) inform the funding agency(s) about the misconduct.
3. If in doubt of fabrication or falsification, JoTT can ask for raw data, analysis, photographs, genomic sequences, gel pictures, etc. used by the authors.

B. In case scientific misconduct is reported/detected in a published paper, JoTT will take appropriate actions in the following order:

1. The subject editor and/or reviewers of the paper will be asked to comment on any evidence of scientific misconduct.
2. If the investigation suspects misconduct a response will be asked from the authors along with raw data, analysis, photographs, genomic sequences, gel pictures, etc., if applicable.
3. If the response from authors is satisfactory revealing a mistake or misunderstanding, the matter will be resolved.
4. If not, JoTT will withdraw the paper from online version and appropriate announcements will be placed in upcoming issue of JoTT.
5. JoTT will also inform the respective head of the institutions of all the authors and the funding agency(s) about the misconduct.

in the case of *JoTT*, where authors can reproduce the publication or a part of the publication for non-profit purposes by crediting the original source.

Honorable scientific conduct is a two-way street

Editorial and reviewing policies of the journal are also as important as the process of research and communication for the advancement of science. Peer-review process is the back bone of editorial and reviewing processes. Despite its long and winding history (Spier 2002), the peer-review process has attracted much debate in the recent past with the exposure of high profile cases of scientific misconduct (Relman 1990; Kassirer & Campion 1994; Berkenkotter 1995; Benos et al. 2007). On the one hand even though it has been realized that the peer review process has its limitations, on the other it is also agreed that currently there are no effective replacements for the process (Relman 1990; Kassirer & Campion 1994; Berkenkotter 1995; Benos et al. 2007). Smith's (2006) complete negation of the process and accusations that peer-review process is completely flawed, however, is uncalled for. Peer-reviewing is still one of the most reliable processes as at times it does increase the credibility of papers, provide new ideas for authors, increase the quality of scientific communication and catch faulty data (Berkenkotter 1995; Alberts et al. 2008).

JoTT believes in fair review of articles and each article is sent to at least two reviewers and one subject editor from the field. The process of review and editing by the subject editor is double blind—neither the reviewers nor the subject editors are revealed the identity of authors, and the authors are unaware of the reviewers. While some are skeptical about the efficiency of blinding (van Rooyen et al. 1998), in accordance to the studies supporting the effectiveness of blinding (McNutt et al. 1990; Laband & Piette 1994) we believe that the review process and editing at *JoTT* is not biased by the name of the authors and their work place. All manuscripts are checked for their scientific rigor, research integrity and scientific content without bias of any kind.

While it is emphasized that the authors of different types of communications to *JoTT* must practice ethics in science, *JoTT* requests the reviewers and subject editors of the manuscript to keep the ideas and data of the authors confidential till it is formally published

and that they must not steal author's ideas, plagiarize author's work, or make a decision to reject because of conflict of interest. Authors have a right to make an appeal to the chief editor of *JoTT* if they have substantial grounds to believe that such malpractice has occurred regarding their manuscript. If such allegations are proved correct they will be treated seriously and appropriate disciplinary actions will be taken against the accused reviewers and subject editors.

What is not scientific misconduct

At this point it is essential to understand what can be classified under scientific misconduct and what cannot. The fourth component of Resnik's (2003) definition of scientific misconduct, which is also further emphasized in Resnik & Stewart (2012) actually clarifies this issue. More generally, scientific misconduct does not include honest errors, errors in judgment, difference of opinion, ethically questionable research practices or misconduct unrelated to the publication being criticized. Usually such issues can stir a debate, but through the process of response on the article and reply from the authors such issues can be either resolved or lead to healthy scientific discussions that help in furthering scientific thoughts. We at *JoTT* have always nurtured such scientific debates as they keep the dynamic process of scientific progress rolling. Even though the response and replies section of *JoTT* has existed since the beginning a more formal introduction to this section is provided in Box 2. It is also possible that sometimes authors miss out on a key reference or key findings while preparing the manuscript. If these omissions are unintentional, authors are not accused of any scientific misconduct. If such issues are raised after publication authors are encouraged to send an addendum in *JoTT*.

Box 2: Response and Replies section of *JoTT*

JoTT provides a forum to express critical comments on recently published articles, which, after peer review, are published under the section 'Response and Reply' along with a reply from the authors of the criticized article. Response to the published article should challenge the main conclusions, results or methodology of the article and should not be concerned with trivial issues which do not contribute to a healthy scientific discussion. *JoTT* will not consider responses written in aggressive, unprofessional and unscientific language. Neither responses nor replies should be personal attacks. *JoTT* will send the response to the concerned authors and ask them for their clarifications and reply. Reply must be sent only by the authors of the article being criticized, and no one else, within 10 days after receiving the response.

Addendums will be peer reviewed before publication. It should be noted that addendums must not challenge the major findings of the main paper.

A shared responsibility

Our fight against scientific misconduct is a shared responsibility (Aronson 2007; Cross 2007; Titus et al. 2008; Rathod 2010). While *JoTT* requests the authors to follow the norms of scientific conduct faithfully and honestly, *JoTT* also assures the authors that the reviewing and editing process will be fair. *JoTT* requests the reviewers, subject editors as well as the readers to be vigilant against any form of scientific misconduct. *JoTT* also assures that none of the decisions will be taken hastily and all accusations will be evaluated objectively before taking any disciplinary actions.

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