

## How to better achieve integrity in science publishing

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**Abstract** There are clear cases of editor and reviewer bias in the biomedical sciences, which may indicate that not all is well within biomedical science publishing. Consequently, serious reflection and reform is required. Such cases are probably not systemic, and represent the exception rather than the norm. In addition, scientific fraud among scientists is increasing, or perhaps the ability to detect fraud has improved. At the other extreme of the spectrum, there are serious cases of gross negligence of the academic editorial and peer review process by several new and even established open access and traditional print journals. In biomedical journals where there already exist a fair peer review and respect for publishing ethics, three possible ways to achieve positive reform and to reduce possible editor and peer bias, are through: 1) anonymous or blind peer review, 2) open pre-publication peer review, or 3) post-publication peer review (PPPR). PPPR is an excellent way to publically expose weaknesses or gaps in the peer review process by an author, editor or publisher. Greater accountability and transparency, which is lacking in some of the key players in biomedical science publishing, is also required.

**Keywords** Accountability; bias; open access; post-publication peer review

The world of biomedical science has taken quite a revolutionary turn in the past decade. With the strengthening of the open access (OA) movement, the number of OA articles and journals has been consistently increasing.<sup>1</sup> This paper focuses on the biomedical sciences and why there is an urgent need to address some key issues to ensure scientific integrity in publishing and publishing integrity in science. The pre-publication editorial and peer review system, in which the authors generally suggest peer reviewers for their manuscript, or in which one or more members of the editorial board seek suitable peer reviewers from among the global peer pool, is based on three premises: a) there is no bias in the choice of peer reviewer; b) the peer reviewers are competent and will examine the scientific quality of a manuscript with rigour; c) the journal (= editor, board and publisher) will conduct a fair and balanced assessment of all peer reviewers' comments to then either recommend acceptance, revision or rejection. Issues such as plagiarism or misconduct would serve as additional factors that would lead to a rejection. Bias in the scientific methodology, in the peer review and editorial process, journal selection or the thematic focus is not uncommon.<sup>2</sup> Cognizance of these problems would then spur the evolution of new journals with refreshing editorial boards. Doing the right thing and punishing – by firing – incompetent or fraudulent editors still remains rare and is a form of justice and adoption of scientific integrity that can usually only be achieved and implemented by the publisher.<sup>3</sup>

Publishing an academic paper is the end result of efforts in the research laboratory for most biomedical scientists. In that process, the authors, peer reviewers, editors and publishers all share a responsibility to ensure the fidelity of the peer review process and the integrity of the academic record.<sup>4,5</sup> Despite the existence of author ethical guidelines, an explosion in the number of retractions in the biomedical sciences<sup>6</sup> indicates that not all is well with the peer review and the publishing process. Moreover, numbers reported in such papers are probably a gross underestimate of the real fraud and problems that exist in biomedical publishing. Statistical data in the Fang *et al* paper<sup>6</sup> point towards most retractions being a result of research misconduct (fraud, suspected fraud, duplicate publication, and plagiarism). However, in many cases, errors in the scientific content, plagiarism or other verifiable errors – had the peer review process been sufficiently rigorous – escaped the eye of reviewers or editors. This points to an even more sinister and serious problem: the lack of adequate quality control by editors, journals and/or publishers. Compounded by multiple cases of a complete lack of respect for publishing ethics and the rule of basic publishing principles at the other extreme of the publishing spectrum, for example as displayed by Nigerian-based academic journals or Indian-based IDOSI,<sup>7</sup> both OA publishers that have purely cosmetic publishing ethics pages, the biomedical community is left in a complex situation. Predatory publishing has the potential to destroy the scientific integrity of the OA movement since it promulgates false, manipulated or fraudulent science. Furthermore, when unscholarly papers from such predatory journals are included in the reference lists of both valid – that is, where true peer review has taken place – and invalid academic journals, the need for a quantitative system to clarify the level of predation being practiced by a publisher is required.<sup>8</sup>

Since the sources of the problems are so diverse, multinational and multicultural, the solutions are even more complex. However, one basic premise for a peer reviewed journal that is well referenced and has thus obtained an impact factor (IF), is that the peer review process is sound. Yet, the IF is used by publishers to attract more scientists who, in several countries, then use the IF to obtain research funds that are calculated on the basis of the IF score, for example in India, China and Iran.<sup>9</sup> One cycle of manipulation begins here. Journals that are not practicing peer review, or that are fomenting scientific fraud by publishing papers with fake data, plagiarism or other unscholarly practices, but who have clearly obtained their IF unfairly, need to be carefully scrutinized, and where unscholarly behaviour has been proved, need to be punished. Even though this case for the need for greater transparency and justice was made to Thomson Reuters, the parent company of the IF, requests fell on deaf ears. Is then Thomson Reuters also not partially

responsible for problems in biomedical science publishing by avoiding critique, evading queries, and demonstrating a lack of transparency?<sup>10</sup> Similarly, the ISSN, which provides a form of validity to predatory journals and publishers when national libraries issue ISSN codes to such journals, should be held partly accountable.<sup>11</sup> To avoid misuse of the IF by scientists and editors, a more balanced approach to using the IF should be made, for example the Global Science Score<sup>12</sup>, since the IF is in fact only a measure of how often a paper is referenced, and not necessarily a measure of the quality of a journal or publisher.

There are three possible routes to achieve positive reform and to eliminate editor and peer bias, through: 1) anonymous or blind peer review, 2) open pre-publication peer review, or 3) post-publication peer review.<sup>13</sup> PPPR is one way of enforcing quality by exposing weaknesses, manipulation or fraud committed by authors, pseudo-peer reviewers, editors and/or publishers, forcing accountability by these entities. With PPPR, integrity might return, but only when a critical, public, OA form of the evidence is made available.<sup>14</sup>

### Competing interests

The author declares no conflicts of interest, financial or other. The author was the Editor-in-Chief of all Global Science Books (GSB) journals from 2007 until June, 2013, including that of the journal where opinion pieces in the reference list were published (ie, *The Asian and Australasian Journal of Plant Science and Biotechnology*) and was also GSB's founder. The position held at GSB was purely voluntary, without financial remuneration or any other tangible benefits. The author was also at the Faculty of Agriculture, Kagawa University under various positions between 1997 and 2013, where he retired at the end of March, 2013. The author currently holds no teaching or editorial position, and is not affiliated with any publisher, journal or academic institute and is now an independent, free-lance science writer and consultant.


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