

Junior scientists are sceptical of sceptics of open access: a reply to Agrawal

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Anurag A. Agrawal [1] recently published a letter in *TIPS* in which he suggested four points that researchers should consider when choosing to publish open access (OA). Although a critical evaluation of the pros and cons of publishing OA are warranted and important, three other points should also be considered when discussing OA.

First, it is important not to confuse OA with OA publishing. To the best of our knowledge, funding agencies do not require that supported work be published OA, but that it be made freely available to read. This could be achieved via 'green OA', where the final version of a manuscript before copy editing is archived in a publicly available repository, or 'gold OA', where the author(s) pay(s) a fee to the publisher to make the final copy-edited version freely available. Publishing articles as either green or gold OA reflects the motivation of researchers to make their work freely accessible to all who could benefit from, and build upon, it, not just those who can afford to pay for subscription-based journals (including institutions). This motivation for publishing OA is particularly important when considering Agrawal's [1] third point that OA papers are not more frequently cited. Not all studies of citation rates of OA articles reflect this finding [2], but in any case, increased citations are not the goal. Rather, the intention of OA is to promote greater dissemination of information and reusability of published material to audiences both within and outside academia. Its success is reflected by higher download figures for OA versus non-OA publications [3]. New initiatives such as Conservation Evidence (<http://www.conservationevidence.com>), highlight the broad interest in scientific results contained in published articles, and in that regard, publishing OA is working [3].

Second, subscription journals require many of the same warnings that Agrawal gives for OA journals [1]. Researchers should remember that: (i) the business model of most subscription-based publishers is for-profit; and (ii) OA journals should not be conflated with particular (for-profit) business models. Editorial policies of subscription journals may often reflect the same conflict of interest denounced by

Agrawal [1] for OA journals. Such journals can not only attempt to be highly selective to generate higher impact factors through higher citations, but also generate higher citations by publishing work that is controversial, or focuses on a topic that is 'sexy' (<http://www.theguardian.com/commentisfree/2013/dec/09/how-journals-nature-science-cell-damage-science>). Most importantly, we should not associate OA journals with simply aiming to be 'not scientifically flawed'. There are several OA journals, (e.g., *eLife* and *PLOS Biology*) that are succeeding in being as selective as the 'luxury' journals of Schekman's boycott (www.theguardian.com/commentisfree/2013/dec/09/how-journals-nature-science-cell-damage-science), and are, notably, nonprofit. Despite this, we do not believe that aiming to publish work that is scientifically sound and allowing the wider community to assess its novelty and impact should be seen as negative.

Third, as junior scientists facing the prospect of 'ambiguous' publication records if we favour OA journals over subscription journals, Agrawal's [1] fourth criticism is particularly vexing. An evaluator of a researcher's work should read the work to make a fair and valid assessment of it. Failing a direct assessment of a researcher's work, a hiring committee could use other tools that can track the impact of research, for example, ImpactStory (<http://impactstory.org>). Thus, it is no longer necessary to rely on the impact factor of a journal to judge the potential impact of particular individual articles, which, as mentioned above, primarily reflects the overall reach of a journal within the pay-walled ivory towers of academia. Furthermore, there is more on an academic CV than publications alone, and we should not forget this when discussing junior researchers' CVs. A researcher should be judged on their contribution to the academic community through many means, such as reviewing and editing for journals, and conference participation, among others (see ImpactStory for other examples of academic contributions).

Although we may not have arrived at an alternative publishing model that suits the primary goal of scientists, it is becoming increasingly accepted that a publication model that restricts access to scientific findings and drains research funds towards for-profit publishers is deeply flawed. We should move away from this model as soon as possible (e.g., see Open Access policy of UK funding

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bodies <http://www.hefce.ac.uk/whatwedo/rsrch/rinfrast-struct/oa/policy>). We junior scientists can change the publishing landscape through our decisions of where to publish and by increasing the outreach of our work. Senior scientists can support these decisions by taking the necessary time to consider our work fairly. Most importantly, when judging junior scientists' publication records, senior scientists should avoid considering it as 'ambiguous' if they see an article in any OA journal, regardless of the selectivity of that journal. Junior and senior scientists alike should be raising awareness about the motivations for OA when

discussing alternative publishing models so that we do not lose sight of why we need the change. We should certainly not punish those junior scientists who decide to effect change by publishing in OA journals.

References

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Open access is worth considering: a reply to Agrawal

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In a recent letter to *Trends in Plant Science*, Anurag A. Agrawal [1] outlines his opinions on open access (OA) publishing. In it, he incorrectly conflates OA journals with nonselective journals. Specifically, Agrawal [1] states that 'a publication in an open access journal only imparts [the information that it is] "not scientifically flawed"', and later that OA journals provide "no stamp of rigor or potential impact". Unfortunately this is a common misconception, and we would like to set the record straight: many OA journals are highly selective and high impact.

We compiled data on the publication policies and impact factors of 31 popular and reputable OA journals in biology (summarized in Table 1, full version with complete publication policy text available at [2]). This list is far from exhaustive; it includes neither all of the popular and reputable OA journals, nor any of the many unpopular and/or irreputable ones (<http://scholarlyoa.com/2014/01/02/list-of-predatory-publishers-2014/>). Rather, the list comprises a small selection of journals that serves to demonstrate that many OA journals are both selective and high impact.

Our list reveals a diversity of publication policies, ranging from journals that aim to publish valid science regardless of novelty or likely impact (e.g., *PLOS ONE* or *The PeerJ*), to those that are at least as selective as the most competitive closed access journals (e.g., *PLOS Biology*, *BMC Biology*, and *eLife*). In total, 22 of the 31 journals in our list apply some kind of selection based on novelty and/or likely impact. Many OA journals also lead their fields based on metrics such as impact factors. For example, the first- and fifth-ranked journals in the Institute for Scientific Information's (ISI) 'Biology' category are both OA (*PLOS Biology* and *BMC Biology*, with impact factors of 12.7 and 6.5, respectively), as is the second-ranked journal

Table 1. Publication policies of 31 open-access publishers in the biological sciences^a

Journal	Selection for novelty and/or impact	Impact factor ^b
<i>PLOS Medicine</i>	Yes	15.25
<i>PLOS Biology</i>	Yes	12.69
<i>PLOS Genetics</i>	Yes	8.52
<i>PLOS Pathogens</i>	Yes	8.14
<i>BMC Biology</i>	Yes	6.53
<i>PLOS Computational Biology</i>	Yes	4.87
<i>Genome Biology and Evolution</i>	Yes	4.76
<i>PLOS Neglected Tropical Diseases</i>	Yes	4.57
<i>BMC Genomics</i>	Minor	4.40
<i>BMC Plant Biology</i>	Minor	4.35
<i>Evolutionary applications</i>	Yes	4.15
<i>EvoDevo</i>	Yes	3.91
<i>Frontiers in Zoology</i>	Minor	3.87
<i>PLOS ONE</i>	No	3.73
<i>BMC Evolutionary Biology</i>	Minor	3.29
<i>BMC Bioinformatics</i>	Minor	3.02
<i>Scientific Reports</i>	No	2.93
<i>BMC Genetics</i>	Minor	2.81
<i>BMC Developmental Biology</i>	Minor	2.73
<i>Biology Direct</i>	No	2.72
<i>Evolutionary bioinformatics</i>	No	1.23
<i>Ecology and Evolution</i>	No	1.18
<i>Applications in Plant Sciences</i>	Minor	NA
<i>BMC Ecology</i>	Minor	NA
<i>Ecosphere</i>	No	NA
<i>eLife</i>	Yes	NA
<i>Evolution, Medicine, and Public Health</i>	Yes	NA
<i>Frontiers in Genetics</i>	Yes	NA
<i>PeerJ</i>	No	NA
<i>PLOS Currents</i>	No	NA
<i>F1000 Research</i>	No	NA

^aPublication policies with respect to whether journals select articles based on novelty and perceived impact. Journals are ranked by impact factor, and those without impact factors are marked 'NA'.

^bSource: 2012 Journal Citation Reports®, published by Thomson Reuters.

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