

## Perceptions on preprints, peer review and publication charges

Publications are one of the realities of a researcher's life. After spending taxpayer money, we are responsible for publicizing the study's findings for which we were funded. However, as most researchers are aware, the cost to publish their studies is often remarkably high. For example, if accepted, Nature Portfolio charges US\$ 11,390 to publish in *Nature Neuroscience* and US\$ 5890 in *Nature Communications*. Society journals tend to charge less, with *Genetics* charging approximately US\$ 100 per page or US\$ 4264 for all-inclusive open access. The Company of Biologists does not have publication charges but levies open access costs of up to £ 3300. Many journals, however, do give out need-based fee reductions or waivers, and some journals, like those by the Society for Neuroscience, have a range of publication charges for different countries depending on their income classification by the World Bank (<https://www.jneurosci.org/content/information-authors#fees>). Most of us are aware that open access is preferable with public funding. Many funders now mandate open access for work performed using their grants, making publication charges a burden for several researchers world-over, but more so in developing countries like India.

In order to facilitate open-access publications, Patrick Brown and Michael Eisen founded the Public Library of Science (PLOS), a non-profit, open-access science publisher (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1084138/>). Their first journal, *PLOS Biology*, was launched in 2003 and currently, they publish seven journals. The publication charges in these journals vary from US\$ 1805 to 5300.

The advent of soaring publication charges has allowed for a boom in authors making preprints of their work available on-line. Preprints are versions of manuscripts prior to publication. In terms of research articles, preprints become available before journals peer review and publish them. They are usually found on a site that hosts preprints. To the best of my knowledge, scientific preprints first started with the advent of arXiv, founded by Paul Ginsparg in 1991 (<https://physicsworld.com/a/the-global-village-pioneers/>). This site acts as an open-access repository of preprints posted after moderation, allowing plagiarism checks but not peer review. arXiv largely consists of manuscripts from branches of the physical sciences and mathematics. A similar preprint server for manuscripts in the broad area of biological sciences called bioRxiv was co-founded by John Inglis and Richard

Sever and launched in November 2013 by Cold Spring Harbor Laboratory, USA. The bioRxiv server has seen steady growth in manuscripts submitted since January 2017, with approximately 3000 articles deposited per month and the server getting more than 4,000,000 views by the end of 2019 (<https://www.biorxiv.org/content/10.1101/833400v1>). The popularity of bioRxiv was bolstered in 2017 when the biggest biomedical funding agency, the National Institutes of Health (NIH), USA, decided to acknowledge preprints as interim research products (<https://grants.nih.gov/grants/guide/notice-files/not-od-17-050.html>). These numbers likely significantly increased with many COVID-19-related manuscripts deposited during the recent pandemic. Currently, bioRxiv hosts over 173,600 manuscripts. Apart from bioRxiv, ChemRxiv for open-access preprints in chemistry and medRxiv for open-access preprints in medicine and clinical research were launched in 2017 and 2019 respectively.

The advent of bioRxiv has proved invaluable for researchers as manuscripts no longer languish for months to years without seeing the light of day. However, the question of peer review remains, as the preprints posted are largely not peer-reviewed. To allow for reviewing of preprints from bioRxiv, Review Commons was started as a partnership between EMBO and ASAPBio, to provide free, journal-independent peer review. Review Commons can then transfer the peer-reviewed manuscript with necessary changes and the entire peer review as a refereed preprint to bioRxiv and 17 affiliate journals, including EMBO Press and Company of Biologists, among others (<https://www.reviewcommons.org/about/>). This allows for a shorter turnaround time for manuscripts between posting on bioRxiv and publication in a journal.

Although there are now multiple venues for posting preprints and even peer-reviewed preprints, the gold standard is still publishing in a reputable journal after paying a lot for open-access publishing. Why is this still required if, in theory, most of this can be done for far less than what many journals charge? The obvious reason is the prestige that journals give; this translates to finding postdoctoral or faculty positions, receiving funding from government and non-government entities for research, and making the cut for awards and academy fellowships. However, even with prestige playing an important role in many of our publication choices, are scientists trying to move the needle towards

better publishing and peer review? The answer is yes, but it will likely take years to see how these changes affect the scientific community especially in terms of hiring decisions.

A journal that has not shied away from change is *eLife*. This is a non-profit, peer-reviewed, open-access journal for life sciences. It was established at the end of 2012 by Howard Hughes Medical Institute, USA; Max Planck Society, Germany and Wellcome Trust, UK. In an audacious move *eLife* has indicated that for manuscripts submitted from 31 January 2023, will no longer get an accept or reject call. If the editors send the article for peer review, then the reviews and the article are published, the authors will have the freedom to address the reviewer comments as they see fit, as indicated by a recent release stating, ‘The decision on what to do next will then entirely be in the hands of the author; whether that’s to revise and resubmit, or to declare it as the final Version of Record’ (<https://elifesciences.org/inside-elifesciences/54d63486/elifesciences-s-new-model-changing-the-way-you-share-your-research>). The publication charges have also been reduced from US\$ 3000 to US\$ 2000 (<https://elifesciences.org/for-the-press/b2329859/elifesciences-ends-accept-reject-decisions-following-peer-review>). This announcement has caused an uproar on the social media platform twitter.com, with both supporters and detractors arguing their case with multiple valid points. Whether one agrees or disagrees with this new way of reviewing articles, there is enthusiasm and hope. Unless different models are employed, especially by well-respected and popular scientific journals, there will never be a sea change in the current publishing landscape. Further, one would expect only non-profit publishers and scientist–editors to try to make changes to the present publishing model. We will soon see how this experiment pans out, and if successful, more journals may consider adopting this system.

One of the most valid points for not embracing peer-reviewed preprints published with minimal charges is that it will take a lot of effort to judge the work for jobs like faculty positions, where a single position may receive north of 100 applications. This is indeed a genuine concern and would increase the already high workload of faculty in most institu-

tions. Unless the scientific community is open to trying different scientific evaluation methods, everything will likely stay the same, and publishers will be the only ones laughing to the bank. Another reason that scientists fear using preprints is the worry of getting scooped. Although this could and does happen, a preprint with the date indicated can act as proof of first discovery, although this may not amount to much if the second discoverer publishes their work in a high-impact journal that gets all the citations.

Personally, we are now trying to preprint all the manuscripts from our laboratory onto bioRxiv before sending them for peer review and I hope to try out Review Commons very soon. However, just publishing the reviews, response to reviewer comments and a revised manuscript on a platform without worrying about the name of the journal is a pipe-dream. However much I may not want to go through months or reviews and rejections, I will still go through the same rigmarole at least for the foreseeable future.

Will there be a time when scientists just post peer-reviewed manuscripts along with the reviews instead of attaching their work with glamorous journal names? Will academic journals be replaced, as some scientists have argued for (<https://zenodo.org/record/5793611#.Y1lihexBxKM>)? I doubt this will happen soon, but over the next couple of decades, scientific publishing may undergo massive changes, making it very different from what we know it to be today. I end this editorial with a very real spoof that talks about scientific publications far better than I can (<https://www.youtube.com/watch?v=8F9gzQz1Pms>).

In the Indian scenario too, Madhan *et al.* (*Curr. Sci.*, 2017, **112**(4), 703–713) have made a well-researched case for Indian researchers using open-access repositories for their articles to avoid publication charges.

Kavita Babu

Centre for Neuroscience,  
Indian Institute of Science,  
Bengaluru 560 012, India  
e-mail: kavitababu@iisc.ac.in