

Open Access Journals in Modern Science

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I am often asked to explain how Open Access journals work and what is the difference with the classical publishing model? There is a popular misconception that the main difference is that Open Access journals (OAJ) are digital only in comparison with traditional, paper-printed magazines. However, nowadays, all journals provide online access and the ability to download papers. The second difference is that OAJ charge a production fee, while publications in classical paper-based journals are free. Quite often, it is forgotten that academic and research institutions pay large subscription fees to journal publishers. For non-subscribers, only abstracts are free, while each download is subject to approximately a \$30 fee. There is a third question I have been asked, but less often: what is the current trend and future of scientific paper publishing? I believe that is the main question. Establishing the OAJ system has provided a solution to the unresolved problems of the classical peer-review system and the increasing importance of knowledge exchange while maintaining intellectual ownership. Lets try to understand the situation better!

In retrospect, the classical publishing model for scientific papers required no submission/production fees. For many years, to be a scientist meant dedication and enthusiasm. Academic institutions paid for teaching and administrative work, while conducting research was not well financially rewarded. With a tight budget for laboratory operations and relatively low income in the basic research field, only a classical model was possible. In the past, for paper-based journals with a physically limited number of publications per magazine, the role of the Editor was critical. The Editor was responsible for sorting submissions and selecting accepted papers according to their scientific content for future journal issues. This approach quickly changed in the 1990s when computer-based search of keywords and abstracts became simple and routine, whereas before we were physically browsing paper journals in the institutional library. I would like to emphasize that the ability of computer-based searches has allowed readers to easily select and locate publications of their own interest, without reading an entire journal issue. It diminished the ACTIVE role of the journal editor, since the journal content become self-selectable for the readers. My current duties as the Editor-In-Chief are mostly formal: communicate with the authors, reviewers and the journal office, invite new authors and reviewers. I control the quality of submissions and the reviews of manuscripts. However, there is no need any more to select papers per journal issue. There are no journal space or paper size restrictions anymore. In addition, simplification of the online search process may lead to the fusion of similar journals into bigger ones in the future.

The second completely overlooked aspect is the manuscript review process. The classical system of scientific publishing is a profitable business. With the submission of a manuscript to a non-OA journal, the author transfers copyright ownership of his/her paper to the journal. Then, the publisher sells subscriptions to scientific institution libraries, and to individuals, to offset the costs of publishing. In the OAJ approach, the author is primarily responsible for publishing costs. Fee-based manuscript processing has a huge positive impact in terms of quality. Let me explain.

According to my personal communications with other Journals Editors, only about 1/3 of the papers, submitted to high-impact

journals becomes accepted with revisions and are then published. The rejected manuscripts do not disappear; they typically are resubmitted several more times to other journals until they are accepted. For each submitted manuscript there are at least two assigned reviewers. Typically, reviewers are experts in the field, they are busy professionals voluntarily supporting their area of Science. For each ONE poor quality paper, if rejected twice, wastefully take away the time and attention of FOUR experts. Over the past few decades, strong support for scientific research in developed countries has led to a large increase in students and post-doctoral fellows in research laboratories and has made more modern equipment available. The increase in scientific data generated has been reflected in the number of journal submissions for publication. Unfortunately, scientific data quantity and publication quality, are not clearly linked. The the uncontrolled submission of poorly written manuscripts (which often neglect journal guidelines), causes a shortage of quality reviewers and thus quality reviews.

The Open Access approach provides better ruggedness, since the vast majority of poorly written manuscripts are typically sent to "free" journals. One future scenario aimed at increasing author discipline in following journal guidelines and his/her personal responsibility for ensuring manuscript quality, would be for free journals to establish a reviewing fee. This fee could potentially be waived/reimbursed if the manuscript is accepted. I see increasing popularity for OA journals among institutional subscribers. Similar to library paid subscriptions for having access to "classical" journals, research and academic organizations will purchase membership from OAJ, which will allow authors from these institutions non-fee based manuscript submission. The increasing popularity of Institutional subscriptions will lead to greater success and popularity of the Open Access publishing approach.

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Received April 29, 2013; Accepted May 02, 2013; Published May 04, 2013

Citation: Rogatsky E (2013) Open Access Journals in Modern Science. J Chromat Separation Techniq 4: e116. doi:10.4172/2157-7064.1000e116

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