

Advances in Disseminating Science and The Impact of Open Access

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The publishing of scientific research is not free. Historically, the burden of production costs has largely been placed on the shoulders of university libraries or persons paying tolls for access to individual articles. The price is high and has increased more dramatically than the Consumer Price Index. The average 2011 subscription rate to individual titles for Chemistry was \$4044 and for Biology was \$2167 [1]. The price of individual articles per download varies. For "Frontiers in Bioscience" it is \$40 whereas for "Expert Opinion on Pharmacotherapy" it is \$86.

Years ago, in addition to staggering subscription costs borne by the university, scientists and laypeople trudged to the library with copy cards or coins to painstakingly copy articles relevant to them. Alternatively, corresponding authors were mailed postcards requesting reprints. These cumbersome practices are not consistent with today's fast-paced research and were rendered obsolete by the Internet. Even before the advent of the Internet, these dissemination methods were seriously questioned. University libraries could not afford ever-rising subscriptions to all the journals that its researchers might need to read. This was dubbed the "serials crisis" and helped foster the current debate over free access to scientific publications.

Arguments in favor of open access to scholarly work included the taxpayer funding of a large proportion of biomedical research. The US Federal Research Public Access Act of 2006 states that "the Internet makes it possible for information to be promptly available to every scientist, physician, educator, and citizen at home, in school, or in a library," and argued that taxpayer-funded research ought to be freely accessible. Subsequently, the National Institutes of Health public access policy of 2008 stipulated that all new research articles arising from their funds be submitted for open access one year after initial publication. However, this delay means that the most current information on taxpayer-funded research is still not necessarily free.

Three factors are fueling the worldwide open access movement: the expectation that taxpayer funded research is freely available, new and inexpensive means of electronic dissemination, and high journal subscription rates. Spurred by an evolving consensus, an increasing number of institutions are adopting self-archiving mandates, whereby faculty deposit their articles into an institutional repository for free online access by the public.

Consistent with these developments, recent years have also witnessed an explosion in the number of open access journals. Some of these journals charge the authors a fee for publication, some do not. All such journals then provide free downloads of their research articles in PDF or HTML format to anyone with Internet access. This includes laypeople that may benefit from viewing the original data, such as patients, health care professionals, politicians, and businesspeople. With this model, access to research data by scientists is also far more immediate than interlibrary loans, not to mention the outdated methods of copying library journals or requesting reprints from corresponding authors.

The potential benefit to the authors as well as the journal itself

is argued to be the faster and wider dissemination of published work, both of which are thought to quickly spiral towards increased citations and impact factors. As argued by Stevan Harnad and Tim Brody, "access is not a sufficient condition for citation, but it is a necessary one" [2]. The open access advantage has already been the subject of scientific scrutiny and is still debated [3]. For example, when access status was randomly altered in experimental trials, open access raised the number of article downloads by a wider audience (measured by unique IP addresses) but did not have a lasting effect on article citations [4,5]. The authors conclude that open access reaches more lay readers but that this does not raise citations because those who actually cite articles already have access to the necessary journals. This suggests that increased readership occurs outside the scientific community. However, the focus of these studies was on "core" journals, which are more likely to be subscribed to by any given institution, and the impact of open access in peripheral journals may have been missed. In addition, other studies do reveal an open access advantage for citations [6-8]. On the whole, further studies are required to measure the impact of open access on citations in more fields and over longer time periods, but open access certainly widens the circle of readers [7,9]. Although examinations of whether open access actually influences consumer behavior are also warranted, free downloads of primary scientific literature and review articles may improve patients' knowledge of their medical conditions. Open access may also be particularly critical for developing countries [7], and many large publishers do provide such countries free or heavily subsidized access.

OMICS Publishing Group has now joined the fray with its peer-reviewed, open access journals. Special features include a paper-saving digital book, an audio option for listening to research, translation of published papers to more than 50 languages, social networking, a 21-day review process, and publication within 7 days of acceptance. Such features promise to boost the number of author submissions as well as the online visibility of the publications. This inaugural issue of Clinical Pharmacology and Biopharmaceutics now joins more than 200 OMICS journals with the hope of publishing high-quality research of enduring impact. Open access to this journal may translate to an increased rate at which novel findings are disproven, replicated, or improved upon, something all patients and their families can benefit from.

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