

OPEN ACCESS IS THE FUTURE OF SCIENCE

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There is a crisis in academic publishing. There are over 25000 journals, with 2.5 million articles published per year. No university can afford them all, and individuals can barely afford any. Many go unread, with consequent loss of research impact, and impaired dissemination of knowledge. Although abstracts are free, about 90% of the 'Bibliome,' the complete set of biomedical journal articles and associated information, is hidden behind toll barriers.

The most promising potential solution for this problem is Open Access Publication. Open Access Publication meets the following two conditions:

"Authors and copyright holders grant to all users a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship, as well as the right to make small numbers of printed copies for their personal use. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in a suitable standard electronic format is deposited immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving." Currently, for the biomedical sciences, PubMed Central is the most prominent repository (<http://www.earlham.edu/~peters/fos/bethesda.htm>).

The importance of Open Access is underlined by the incredibly tough challenges facing medicine, and world society in general, and the need for new ideas that are derived from the best possible information, available as quickly and as widely as possible. Most research is paid for with public funds. Even industry research relies on the ability to make money from selling drugs, increasingly to public authorities using tax-supported funds, or to publically subsidized insurance companies.

Ideally, powerful search engines could be used to let scientists mine the Bibliome. This process should work as well as Internet does today, with indexing, sorting, annotating, tagging, and links between databases. The "power of crowds" could be employed to discern relationships among a wide range of research data, avoid needless repetition, and devise complex new research strategies.

Unfortunately, Restricted access prevents this from happening. Under the current system, public access is delayed at least 6-12 months. Electronic subscription system forces Libraries to buy journals they don't want and cannot afford. Back issues, formerly free in print once bought, now must be paid for continually. This system imposes intolerable overhead and inappropriate profits. Moreover, it leads to proliferation of unneeded journals; ironically, less-selective journals have higher profit margins.

Aside from a few large journals with high advertising revenue, or belong to scientific societies, most are supported by subscriptions. They profit from publically supported research, and the free labor of authors and reviewers. One estimate suggests that UK higher education institutions spend £110 -£165m worth of staff time a year on peer review (BMJ. 2011 May 25;342:d3307. doi: 10.1136/bmj.d3307.). While library budgets fell dramatically during the recent recession, academic publishers did very well. For example, Reed-Elsevier made £724 million on revenues of £2 billion in 2009, an operating margin of 36%, far higher than companies such as Exxon-Mobil (14%), IBM (19%), or Apple (20.4%). (Economist 28 May 2011).

According to Robert Darnton, Director of the Harvard University Library, Open Access will: gain scholarly control over how work is used and disseminated; promote openness and free communication of knowledge; make scholarship available to the world and share intellectual wealth; resist a publishing model that is leading to spiraling journal prices; change a system that is siphoning resources from library purchases of scholarly monographs, realign publishing in a way that favors learning, and create "a republic of letters in which citizenship extends to everyone." (<http://www.thecrimson.com/article/2008/2/12/the-case-for-open-access-the/>).

Open Access is economically feasible. The cost for the Public Library of Science (PLOS) journals is at most \$1500 per article, reasonable for most grant-supported investigators, and certainly any industry-sponsored research. Support for the developing world could be obtained at that price. Oxford University Press open access charges for Brain already include a sliding scale depending on the developmental stage of the authors' region. PubMed Central does processing free. Already embraced by major universities, governments, and non-profit research support organizations. Open Access publishing has been growing at a rate far faster than academic publishing in general (Laakso et al 2011). Citations are higher for Open Access articles (Eysenbach 2006).

Open Access follows the spirit of the model that has been adopted by Wikipedia. "Imagine a world in which every single person on the planet is given free access to the sum of all human knowledge. That's what we're doing."—Jimmy Wales.

References:

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Laakso et al PLOS One. June 2011 | Volume 6 | Issue 6 | e20961