

# Open access publishing in the electronic age

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## ARTICLE INFO

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## ABSTRACT

The principle of open-access (OA) publishing is more and more prevalent also on the field of laboratory medicine. Open-access journals (OAJs) are available online to the reader usually without financial, legal, or technical barriers. Some are subsidized, and some require payment on behalf of the author. OAJs are one of the two general methods for providing OA. The other one is self-archiving in a repository. The electronic journal of the IFCC (eJIFCC) is a platinum OAJ—i.e. there is no charge to read, or to submit to this journal. Traditionally, the author was required to transfer the copyright to the journal publisher. Publishers claimed this was necessary in order to protect author's rights. However, many authors found this unsatisfactory, and have used their influence to affect a gradual move towards a license to publish instead. Under such a system, the publisher has permission to edit, print, and distribute the article commercially, but the author(s) retain the other rights themselves. An OA mandate is a policy adopted by a research institution, research funder, or government which requires researchers to make their published, peer-reviewed journal articles and conference papers OA by self-archiving their peer-reviewed drafts in a repository ("green OA") or by publishing them in an OAJ ("gold OA"). Creative Commons (CC) is a nonprofit organization that enables the sharing and use of creativity and knowledge through free legal tools. The free, easy-to-use copyright licenses provide a simple, standardized way to give

the public permission to share and use creative work. CC licenses let you easily change your copyright terms from the default of “all rights reserved” to “some rights reserved.” OA publishing also raises a number of new ethical problems (e.g. predatory publishers, fake papers). Laboratory scientists are encouraged to publish their scientific results OA (especially in eJIFCC). They should, however, be aware of their rights, institutional mandate, the procedures of publishing and post-printing, and the potential risks of OAP. Recent research shows that OA articles are wider seen, and are just starting to be better cited than equivalent papers published in traditional subscription journals.

## 1. INTRODUCTION

Open access (OA) is a model for publishing scholarly peer reviewed journals, made possible by the internet. The full text of OA journals and articles can be freely read, as the publishing is funded through means other than subscriptions. OA publishing actually presents a new opportunity to bring us closer to our authors and we are committed to providing more choices for them to publish and promote their research. Through OA, researchers and students from around the world gain increased access to knowledge, publications receive greater visibility and readership, and the potential impact of research is heightened. Increased access to, and sharing of knowledge leads to opportunities for equitable economic and social development, intercultural dialogue, and has the potential to spark innovation (Swan 2012, Boumil and Salem 2014, Pierce 2014). OA is the provision of free access to peer-reviewed, scholarly and research information to all. It requires that the rights holder grants worldwide irrevocable right of access to copy, use, distribute, transmit, and make derivative works in any format for any lawful activities with proper attribution to the original author.

OA uses information and communication technology to increase and enhance the dissemination of scholarship. OA is about freedom, flexibility and fairness (Swan 2012).

## 2. THE GROWTH OF OA PUBLISHING

A study on the development of publishing of OA journals suggests that, measured both by the number of journals as well as by the increases in total article output, OA journal publishing has seen rapid growth particularly between the years 2000 and 2009. It was estimated that there were around 19,500 articles published OA in 2000, while the number has grown to 191,850 articles in 2009. The journal count for the year 2000 is estimated to have been 740, and 4769 for 2009; numbers which show considerable growth, albeit at a more moderate pace than the article-level growth. These findings support the notion that OA journals have increased both in numbers and in average annual output over time. The Registry of Open Access Repositories (ROAR: <http://roar.eprints.org/>) indexes the creation, location and growth of OA institutional repositories and their contents. As of May 2014, over 3,000 institutional and cross-institutional repositories have been registered in ROAR.

## 3. GREEN, GOLD, PLATINUM OA

### 3.1. OA repositories - the green route to OA

Authors who publish in scientific journals can share their research by posting a free draft copy of their article to a repository or website (Wiwaniitkin and Qu 2014). This is referred to as green OA. This approach to OA involves additional effort from the author, as they will need to save the correct version of the article and post this to a repository, which will also need to add links and metadata to the hosted version of the article. No OA fee for authors because publication costs are paid for by library subscriptions.

Access is granted after an embargo period has expired rather than immediately, because libraries understandably will not subscribe if the content is available for free immediately. Policies should specify the maximum embargo length permitted and in science this should be 6 months at most: policies should require deposit at the time of publication with the full-text of the item remaining in the repository, but closed, until the end of the embargo period.

OA repositories house collections of scientific papers and other research outputs and make them available to all on the Web. They are all indexed by Google, Google Scholar and other search engines, so discovering what is in this distributed database is a simple matter of searching by keyword using one of these tools. Another successful subject-specific example is PubMed Central (PMC), the repository that houses the OA outputs of the National Institutes of Health amongst other things.

### 3.2. OA journals - the gold route to OA

OA journals are scholarly journals that are available online to the reader “without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Some are subsidized, and some require payment on behalf of the author. In the case of gold OA, the final version of record of an article is made free to read and re-use. Usually, there is a full reference linking, peer review process (though standards can vary). Typically, an article publication charge is paid to cover publishing costs. Copyrights are usually regulated by Creative Commons license.

### 3.3. Platinum OA

Platinum OA is a model of scholarly publishing that does not charge author fees. The costs associated with scholarly publication are covered by the benevolence of others, such as through volunteer work, donations, subsidies, grants,

etc. The term has been used for many years in numerous open-access publications, including books and blog entries, and on websites.

The Directory of OA Journals (DOAJ) is a website that lists OA journals and is maintained by Infrastructure Services for OA (IS4OA). The project defines OA journals as scientific and scholarly journals that meet high quality standards by exercising peer review or editorial quality control and “use a funding model that does not charge readers or their institutions for access. The Budapest OA Initiative’s definition of OA is used to define required rights given to users, for the journal to be included in the DOAJ, as the rights to read, download, copy, distribute, print, search, or link to the full texts of these articles. As of 2014, the database contains 9794 journals, with an average of four to five journals being added each day. The aim of DOAJ is to “increase the visibility and ease of use of OA scientific and scholarly journals thereby promoting their increased usage and impact.

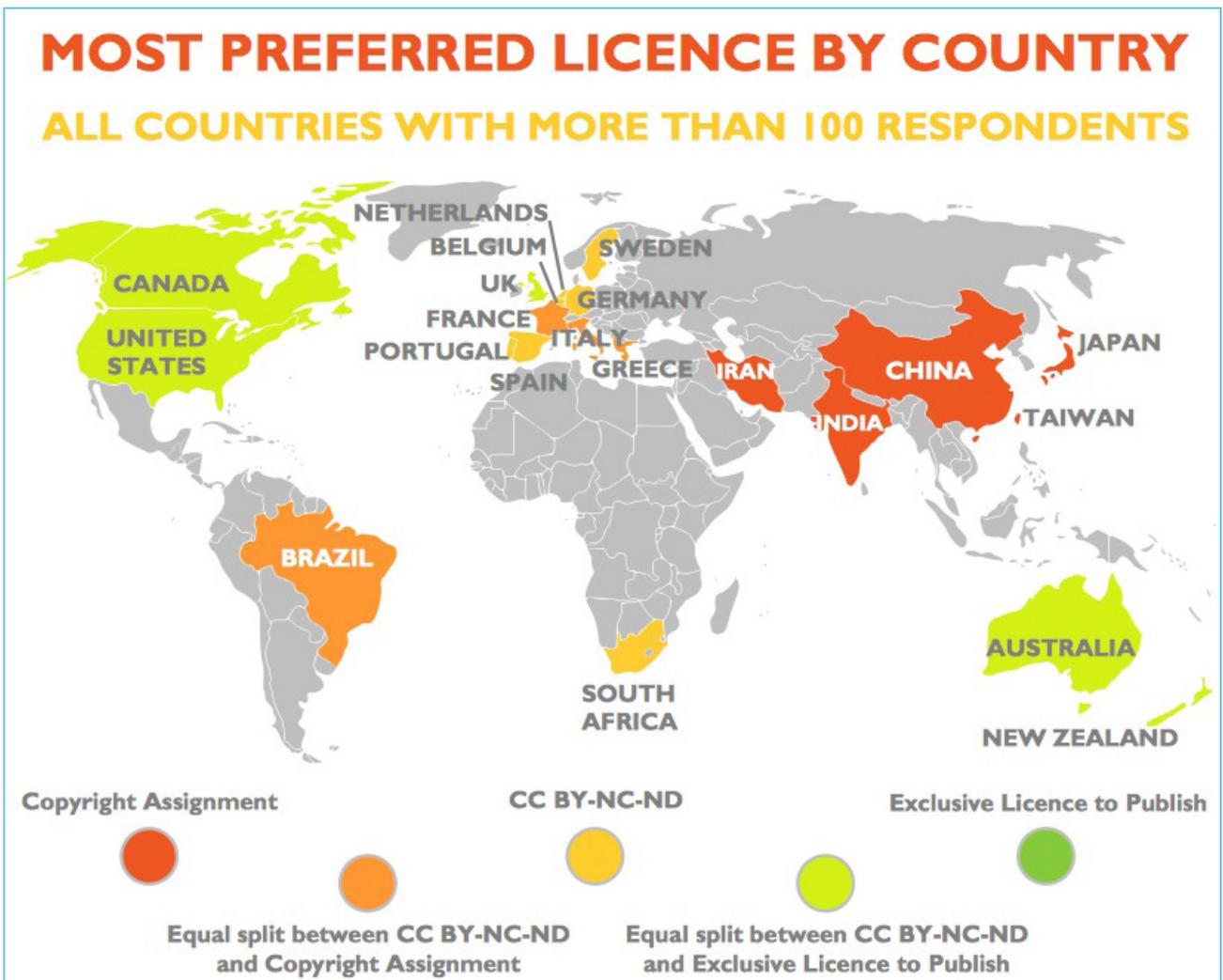
## 4. COPYRIGHT LICENCES WITH LIBRE OA - THE CREATIVE COMMONS

In order to reflect actual practice in providing two different degrees of OA, the distinction between gratis OA and libre OA was added. Gratis OA refers to free online access, and libre OA refers to free online access plus some additional re-use rights. The Budapest, Bethesda, and Berlin definitions had corresponded only to libre OA. The re-use rights of libre OA are often specified by various specific Creative Commons licenses (Creative Commons Attribution 4.0 International Public License, 2013) these almost all require attribution of authorship to the original authors. The Creative Commons copyright licenses and tools forge a balance inside the traditional “all rights reserved” setting that copyright law creates. Every license helps creators retain copyright while allowing others to copy,

distribute, and make some uses of their work—at least non-commercially. Every Creative Commons license also ensures licensors get the credit for their work they deserve. The CC BY license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered. Recommended for maximum dissemination and use of licensed materials. The CC BY-SA license lets others remix, tweak, and build upon your work even for commercial purposes,

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Figure 1 Most preferred Creative Commons license by country



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acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms. The CC BY-NC-ND license is the most restrictive of our six main licenses, only allowing others to download your works and share them with others as long as they credit you, but they can't change them in any way or use them commercially. The CC BY-NC-SA license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms. This license allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to you.

Most preferred Creative Commons licenses may vary from country-to-country, as revealed by a recent survey of the Taylor and Francis Group (2014).

## 5. BUSINESS MODELS

OA journals are published under a variety of business models (swan 2012). Costs need to be covered and there are various ways of doing this. Of course, the lower the cost base, the easier it is to develop a way of doing business that is sustainable. The main types of business model that allow a publisher to deliver OA content online are as follows (there are also examples of OA journal publishing that use combinations of these or variations on them).

### 5.1. Community publishing

This model is common for journals in small, niche areas of research. Journals are produced entirely within the academy and published online for free, and sometimes in print for a small subscription charge to cover the printing and distribution costs. The costs are kept at the lowest possible level by the use of volunteer labour for peer review, editing and production.

### 5.2. Advertising or sponsorship supported journals

The most likely area for attracting advertising is medicine and it is possible to find pharmaceutical companies that will sponsor a special issue of a journal or place regular advertising in a title. As well, the biggest names in academic journals outside medicine, *Science* and *Nature*, both attract large amounts of advertising from employers, conference organisers, other publishers.

### 5.3. Institutional subsidy

Institutions formally subsidise journal publishing wherever they are supporting a university press or a publishing operation by the library.

### 5.4. Hard copy sales

Many OA journals are published using this model, and thus have no need to levy an article-processing charge (APC) at the front end of the publishing process. All the contents are freely accessible online, and libraries around the world subscribe to the hard copy version.

### 5.5. Article-processing charges

It is commonly held that OA journals all levy a charge at the front end of the publishing process which has to be paid by authors, their institutions or research funders. This is not true. 53% of OA journals have no article-processing charges.

### 5.6. Institutional membership schemes

Some OA publishers have also introduced an institutional membership scheme.

### 5.7 Collaborative purchasing models

There is one example of such a model in the planning at the moment, the SCOAP3 (Sponsoring Consortium for OA Publishing in Particle Physics) venture in high energy physics.

## 6. PREDATORY PUBLISHING

In academic publishing, some publishers and journals have attempted to exploit the business model of open-access publishing by charging large fees to authors without providing the editorial and publishing services associated with more established and legitimate journals (“Beall’s List”, a regularly-updated report by Jeffrey Beall: <http://scholarlyoa.com/publishers/>), sets forth criteria for categorizing predatory publications and lists publishers and independent journals that meet those criteria. Complaints that are associated with predatory open-access publishing include:

- Accepting articles quickly with little or no peer review or quality control,[4] including hoax and nonsensical papers.
- Notifying academics of article fees only after papers are accepted.
- Aggressively campaigning for academics to submit articles or serve on editorial boards.
- Listing academics as members of editorial boards without their permission, and not allowing academics to resign from editorial boards.
- Appointing fake academics to editorial boards.
- Mimicking the name or web site style of more established journals.

## 7. OA PUBLISHING IN THE FIELD OF LABORATORY MEDICINE

OA publishing becomes increasingly popular also in the field of laboratory medicine. The number of OA journals is rapidly increasing. The Journal of The International Federation of Clinical Chemistry (eJIFCC) is a platinum OA journal with frequent updates on its home page. eJIFCC is an online journal, published four times a year, on the web site of the IFCC. The

peer-reviewed original articles, posters, case studies and reviews, are focused on the needs of clinical laboratorians worldwide. In addition to the peer-reviewed content, there are also occasional editorials with pointers to quality resources on the Web. Also the journal publishes some IFCC news, letters, reviews of books, debates and educational material to assist the development of the field of clinical chemistry and laboratory medicine worldwide. The Editor welcomes suggestions of topics for review papers, and encourages submission of suitable original articles.

## 8. CONCLUSIONS

The Web offers new opportunities to build an optimal system for communicating science – a fully linked, fully interoperable, fully exploitable scientific research database available to all. Scientists are using these opportunities both to develop OA routes for the formal literature and for informal types of communication. For the growing body of OA information, preservation in the long-term is a key issue. Essential for the acceptance and use of the OA literature are new services that provide for the needs of scientists and research managers. OA is compatible with copyright, peer review, revenue (even profit), print, preservation, prestige, quality, career-advancement, indexing, and other features and supportive services associated with conventional scholarly literature. There are good, workable, definitions of OA and there is also a distinction made between two types of OA – gratis and libre – and this distinction also has policy implications. Two practical routes to OA (green and gold) have been formally endorsed by the research community.

Most authors, learned societies and editors agree that openness and public access to content are strongly to be desired. Although OA to research is a strong core value among many

academic and scientific communities, there are concerns, especially around economic and financial impacts, quality and peer review standards and licensing and reusability (variance between subjects). Through OA, researchers and students from around the world gain increased access to knowledge, publications receive greater visibility and readership, and the potential impact of research is heightened (Swan 2012).

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