

Bioline International and the *Journal of Postgraduate Medicine:* A Collaborative Model of Open-Access Publishing

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Journal of Postgraduate Medicine, India, and Bioline International, Canada

INTRODUCTION TO BIOLINE INTERNATIONAL

Bioline International¹ is based at the University of Toronto and has partners from all parts of the world. The goal of Bioline International, which started in 1993, is to improve the visibility, accessibility, and availability of research material from developing countries. Much of this research material is of high quality and is especially important to people in developing regions as well as to people in the North. Our goal is to make some of this science visible and become part of the global knowledge base. We also try to create low-cost models of collaboration for scholarly publishing and have been working with like-minded partners for the last 10 years.

We have been documenting the processes that work and those that do not work to share with those who are interested in replicating similar types of projects. Ultimately we want a process that is portable, meaning that anyone who wants to pick up where we started could easily adopt the same process and software infrastructures and do the projects on their own. One of the goals of this project is ultimately to eliminate ourselves so the journal partners can become self-sufficient and not dependent on Bioline. At the same time we are constantly thinking about technology transfer issues and human resource development.

Many initiatives that focus on providing information, such as the Health InterNetwork Access to Research Initiative (HINARI), are concerned with information flows from the North to the South. While that is very important, we must remember that much of the information created in the South is also important to the North as well as to the South, particularly in areas such as biodiversity and tropical and infectious diseases.

Bioline International has several partners in the project. Bioline's main partner is the Centro de Referência em Informação Ambiental (CRIA), or the Reference Center for Environmental Information. The Bioline server is located at CRIA in Campinas, Brazil. This is an example that any place with a good Internet connection can be the center from which information is disseminated to the rest of the world. The software is entirely open source and is based on Linux and Apache. The Bioline International Web site has online journals from different parts of the world. Bioline primarily helps journals that have only print publication with small circulations in their parts of the world. Bioline digitizes these journals and posts them online in a database. The University of Toronto Library, another partner of Bioline, provides technology support.

¹See <http://www.bioline.org.br>.

There are many journals available on the Web site. Some of these journals have entirely free access. Others are not open access, meaning that their publishers wish to recruit subscriptions for access. Bioline has been experimenting with various models for providing access to the information, in accordance with our partner publishers' desires. Bioline is trying to educate publishers about the importance of open access; one of the good examples of this work is the *Journal of Postgraduate Medicine*.

THE JOURNAL OF POSTGRADUATE MEDICINE

The *Journal of Postgraduate Medicine* (JPM)² is a quarterly publication started in 1955. It is a publication of the Staff Society of the Seth G. S. Medical College and K. E. M. Hospital in India and covers specialties from basic and clinical sciences.

As we all know, journals from developing countries are poorly represented in international bibliographic databases. This, along with low print circulation, adds to the poor visibility of research published in journals from developing countries. This in turn leads to lower citations for the published articles, so that journals with a low impact factor continue to remain less subscribed and poorly visible.

One of the most important problems with journals from developing countries is the poor visibility of the published articles. Electronic publishing offers a solution for increasing the visibility. However, the financial and technical issues of electronic publishing make it difficult for journals of developing countries, which are usually not supported by commercial publishers, to go online. Even if a journal succeeds in doing so, a single journal site fails to attract visitors, because it alone can provide only a few hundred articles. There is a lack of interactivity and hyperlinking, which makes it less attractive and less useful for visitors.

A collaboration with Bioline, or any other established portal, offers shared resources and technology that is already tested. Bioline acts for journals from developing countries as PubMed Central does for countries of the North by eliminating the technical difficulties. The crosslinking and hyperlinking associated with Bioline make full use of the publishing potential. Journals get the advantage of established reputation and greater visibility by linking to the Bioline site.

Apart from providing the full-text content to Bioline, the JPM has also helped to promote collaboration with the Bioline site. It provides linking from PubMed, the U.S. National Library of Medicine's largest database in the form of a LinkOut. JPM may also help in technology transfer to Bioline by providing tools that we developed, such as automated reference linking. JPM also encourages other journals from developing countries to join Bioline and provide open access. There is a symbiotic relationship between the journal and Bioline.

What has been achieved with JPM's collaboration and Bioline's provision of open access to the journal? The most important achievement was the archiving of JPM's full text. This, along with the JPM Web site, has helped to increase the visibility and readership of the journal, which has had a direct impact on the number of citations of the published articles and on article submission from around the world. The journal has also gained an international reputation and now is included in a large number of bibliographic databases. Since providing open access two years ago, the number of submissions per month has increased threefold. Currently more than 40 percent of submissions are from other countries.

This means that the journal is becoming a popular publishing medium for scientists from other developing countries. How is this possible? The circle of accessibility (see Figure 14.1) has played an important role in increasing the popularity and visibility of the journal. The journal's content is available in full text and is linked to a large number of resources to increase its visibility.

JPM encountered some problems in developing its partnership with Bioline. Initially JPM had difficulty transferring huge amounts of data from its site to Bioline's technical team, but with use of file transfer protocol this has been solved. In addition, JPM is not able to update on a regular basis because the site is maintained by Bioline's technical team. If such collaboration breaks, a journal that is associated with Bioline should be able to continue independently.

²See <http://www.jpgmonline.com>.

LESSONS LEARNED

Bioline's collaboration with JPM is a concrete illustration of the direct impact of open access. This is a successful lesson that Bioline is teaching to other journal publishers in developing countries. The main problem in journal publishing in such countries is not poor circulation but poor submission. Poor submission fuels a vicious cycle. Authors are afraid to submit to journals that have poor circulation because they want their article to be read. If authors do not submit, journals do not come out regularly. If publication is irregular, people do not want to subscribe. The *Journal of Postgraduate Medicine* is able to publish six issues a year because of the high submission rate. This is a very good means of attracting authors, increasing the readership, and possibly increasing the readership rate for the journal.

Many publishers are concerned that providing open access will hurt the publication; however, these models often improve the journal in many aspects, as the JPM example illustrates.

Someone must pay for the production of the journal. The question is, who pays? Many developing country journals are funded by international funding agencies of various levels. We should analyze how these agencies are funding these journals rather than put too much constraint on the publishers who have to charge a paid subscription to cover the costs. There has to be a way for publishers to recover the investment of the funding agencies, not just from the subscription costs but from other means as well.

We should consider new sustainability models. In addition to learning more about the open-access models, other plans for Bioline include expanding to include other journals, such as the *East and Central African Journal of Surgery*. We recently signed an agreement with the *African Journal of Reproductive Health*, which provides important scientific information on material related to reproductive issues and health issues for women in Africa.

We hope to promote Bioline more to library consortia. The more these consortia are linked up to the Bioline database, the more visibility and hits our publishers will get. Hopefully this will feed back to that circle of accessibility illustrated in Figure 14.1.

Bioline is moving in the direction of open access for all the journals on its system. Providing closed access is very expensive. Most of Bioline's time in terms of administrative costs is providing lock-up for the journals that want to charge for access. For example, single payment for an article is \$8, and we figure that it actually costs Bioline more to collect the \$8 than it is worth.

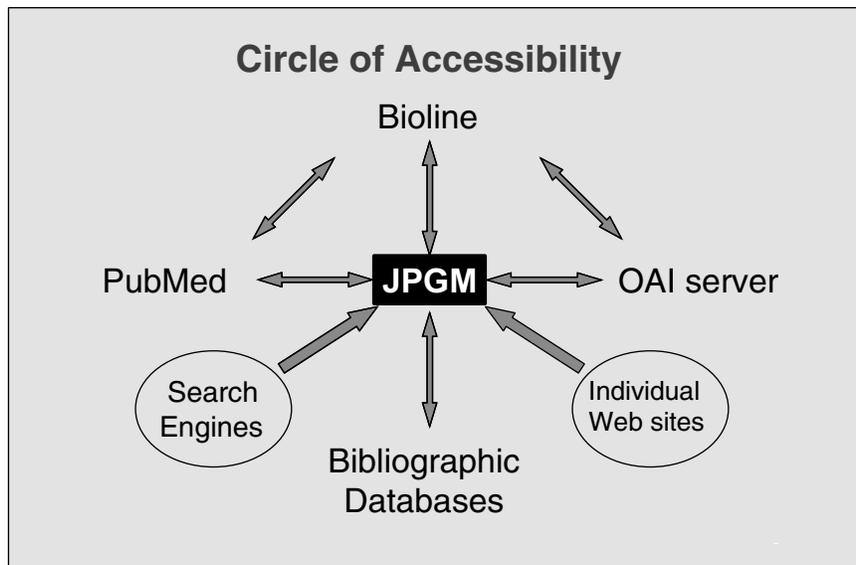


FIGURE 14.1 Circle of accessibility.

We are in the process of implementing extensible markup language for full text for the articles, which would allow much more sophisticated citation linking and metadata retrieval. Currently Bioline's abstracts are Open Archives Initiative (OAI) compliant. We are also archiving the open-access journals on a Bioline Eprints server.³ The OAI and Eprints servers initiatives are trying to improve the interoperability of databases that are scattered across the Internet. This again is a tool to increase the visibility and long-term availability of scientific information.

We are hoping to become multilingual to accommodate the different languages in which the journals from Africa are published.

We can always improve the user interface, but more importantly Bioline wants to track how users actually use the information. We may have many hits and downloads on the Web site, but what are the users doing with the information they have downloaded? The Ptolemy Project gives us a window on that particular aspect of user behavior.⁴ Bioline must set up multiple mirror sites so that there will be a site for the local journals as more partners are created in Africa and India. This site will provide even faster access and eventually allow them to take up the operation on their own.

In conclusion, we are heading in the direction of self-sustainability for these journals, however we should find new models for sustaining them. UNESCO, ICSU, CODATA, and the Open Society Institute should be thinking about open access as part of their overall strategies for funding journals from developing regions of the world.

³See <http://bioline.uts.utoronto.ca>.

⁴See Chapter 12 of these *Proceedings*, "The Ptolemy Project: Delivering Electronic Health Information in East Africa," by Massey Beveridge.