

# Free Science

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**The Open Access and Open Science concepts are about publishing scientific materials in a way that ensures they will be as widely available as possible**

There are various approaches to the issue of regulating access to scientific results. The Open Science idea, currently gaining in popularity, assumes that full access should be provided at all stages of research and in science communication. The Internet is of course a natural tool facilitating such open access to research results and scientific publications. Its development has indeed driven down publication costs, although its main achievement has been to create new channels of science communication. However, the technological development provided by the Internet is just a starting point for changing scientists' awareness. The new tools have allowed researchers to once again focus on one of the fundamental principles of scientific process: a readiness to work together and to exchange information. In the introduction to the "Open Science Guide" prepared by the Interdisciplinary Center for Mathematical and Computer Modeling at the University of Warsaw, Edwin Bendyk notes that the Internet has become just as symptomatic of shifting discourses of information, power, and money as the printing press was at the dawn of the modern era.

**The need for openness**

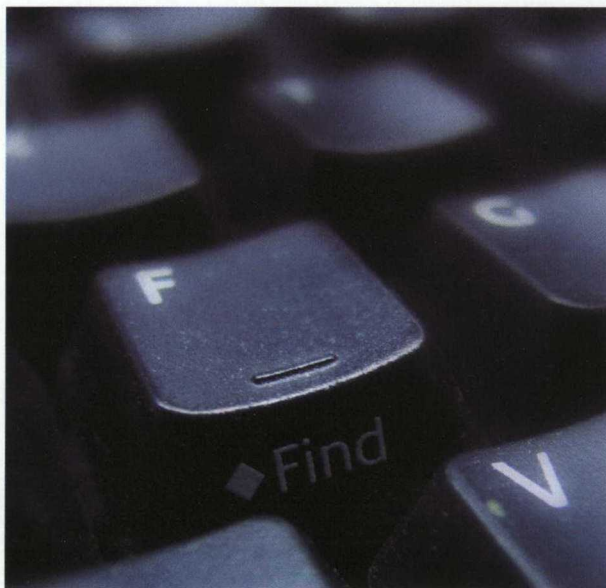
The roots of the Open Access movement date back to the 1960s, when the first centers of scientific information were being formed in the US. The rise of the Internet on the one hand, and changes to the scientific publication market on the other - resulting in growing subscription costs (on average by 8.5% per year since the 1980s) and forcing libraries to limit their number of journal subscriptions - have necessitated a shift in attitudes to access to scientific research. The arrival of electronic peer-reviewed journals in the early 1990s was a significant step in this process; they soon became an alternative to traditional journals while still complying with the highest standards. Open Access Weeks have been held in many countries, including Poland, for several years now, with active participation of scientific and library circles.

The Vice President of the Polish Academy of Sciences, Prof. Andrzej Górski, is heavily involved in promoting the Open Access concept. In 2009, he was responsible for organizing the "Transparency in Science, Open Access, and Scholarly Publishing" conference, with delegates including Dr. Virginia Barbour, editor of *PLoS Medicine* (a journal of the Public Library of Sciences in Cambridge, UK), and Prof. Jean-Francois Bach from the Academie des Sciences, Universite Rene Descartes in Paris. Polish scientists and speakers included Prof. Marek Niezgodka from the University of Warsaw, Prof. Włodzimierz Bolecki from the PAS Institute of Literary Studies, and Prof. Włodzimierz Klonowski from the PAS Institute of Biocybernetics and Biomedical Engineering. *Academia* also took part in the conference, taking the opportunity to interview Prof. Jean-Francois Bach, one of the propagators of the Open Access movement.

**For all researchers**

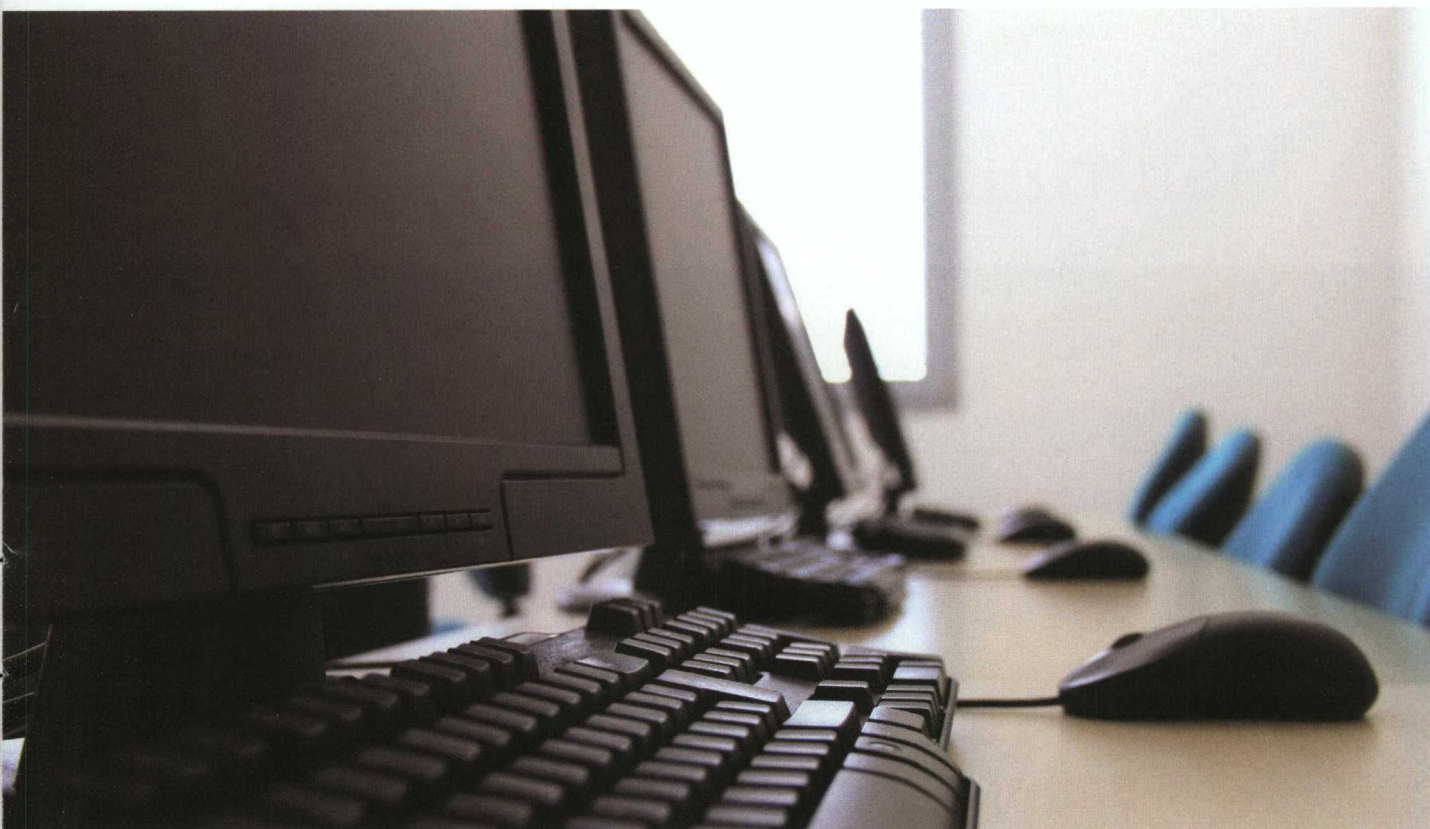
Prof. Bach notes that the Open Access concept was based on the need for equal access to scientific information for all researchers.

"The current problem is that many researchers and many universities around the globe cannot afford the costs of access to scientific information, since only some publications are fully accessible. Many researchers have no real access to all existing and theoretically available



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scientific data. This creates inequalities between research circles, depending on the scientists' or research institutes' location and funding situation. The original Open Access notion would ensure equal availability of knowledge to scientists from different regions, as well as the free exchange of information, which propels scientific development," he says.

#### Medical data

Another idea is the broader Open Science concept, providing access to scientific information to all users - in theory to all societies. Prof. Bach sees some potential problems in this.

"This concept can be dangerous, especially in the case of medical information. A problem arises if a patient or their family accessing such data do not fully understand the information or know how to use it. It's not that researchers have anything to hide," he stresses. "It's simply that the average reader will not understand scientific papers, since they are written using specialist jargon that can easily stir anxiety. Of course this is not the case with popular science articles," he continues.

On the other hand authors of the Myths section of the BioMed Central service (an institution that has done much to promote the Open Access movement) assert that the Internet already contains vast amounts of information concerning medical issues but it is largely out of date, making it of debatable value. Therefore they question why access to high-quality peer-reviewed scientific information should be limited to the broader public. Another important

point is that medical research is largely funded by taxpayers, and they should have the right to know how their money is being used.

#### Free repository?

Open Access journals publish peer-reviewed articles and strive to maintain high publishing standards. Another form of providing access is known as the "green route," which involves posting papers in an open repository. However, Prof. Bach warns against this route, since it may lead to a significant lowering of standards and a blurring of boundaries between peer-reviewed and non-reviewed articles as read by inexperienced audiences. For example, the current highest standard is set by top-notch journals such as *Nature*. With widespread access to non-reviewed information, their reputation could suffer, which in turn could lead to lower research standards.

Naturally the fact that Open Access information is available for free does not mean that its generation and publishing generates no costs. So who should pay these costs? Potential sources listed by Prof. Bach include scientific and academic institutions, businesses, and foundations. He is against the authors themselves directly bearing such costs, and supports reducing or eliminating fees charged for institutions from the poorest countries.

In an article from *Nature* (458/2009) quoted by Edward Bendyk, Henry Collins notes that the privileged status of science (due at least in part to rationality) does not bestow it with imperial status: science and knowledge must become more widespread. ■