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## Free access?

The internet has raised our expectations of what we should be able to get for free and how quickly we should be able to get it. In the biomedical research community, this side-effect of the internet's success is clearly being felt — and is causing many to rethink certain standard practices and policies.

### Free access to publications?

Harold Varmus (former head of the National Institutes of Health in the USA (NIH), and now president of the Memorial Sloan-Kettering Cancer Center) recently — and very publicly — suggested that the current system for publishing biomedical research should be re-evaluated, given the possibility for free exchange of information offered by the internet. This idea echoed the opinions of other well known scientists, such as Pat Brown (Stanford University) and David Lipman (National Center for Biotechnology Information) and has also rung true with many others, who have taken up this torch to promote increased access to the literature. However, there is a great deal of debate about whether a new system of information distribution is really necessary — and this debate is rather polarized. Some propose that scientists themselves, rather than publishers, should set up online portals for the peer review and distribution of biomedical science, perhaps charging authors to post their work (instead of readers for subscriptions), which would finance the maintenance and quality control of the material on the sites. Others believe that the current system of publication in a wide variety of primarily print based (and now increasingly online) journals has served science well for over 50 years. They believe that many journals should thus be valued and considered an important filtration service for readers that is worth paying for, and that a move to a system of completely open access would severely damage the quality of distributed material. Nevertheless, at least one new venture has already been launched to try out the idea of open access without subscriptions — BioMed Central<sup>1</sup>. Many believe that it would be ideal if all such web sites (and possibly the sites of commercial publishers as well) would link their material to PubMed Central<sup>2</sup>, which could then serve as the main 'public library' for all biomedical science.

A conference<sup>3</sup>, entitled "Freedom of information: the impact of open access on biomedical science" was held in July in New York City to discuss the possibility of developing these online portals, either with — or in lieu of — existing publishers. The attendees consisted of individuals in the publishing industry as well as research scientists and librarians, and many diverse ideas and opinions were heard. Major topics of discussion were: the impact of free access on commercial publishers, libraries, and scientific societies (which often derive a lot of revenue from journal publication); the public's need for open access to biomedical information and for quality control of that information; and the practicalities of financing and peer review, and of ranking of the material on the site according to general interest and likely impact. No clear consensus on the best way forward was expected to emerge from this conference (and none did), but the frank presentations and discussions highlighted the need for all interested parties to keep talking, and to keep the advancement of science at the forefront. If the free-access online sites do take off, and if they gain widespread respect in the scientific community, many pointed out that a large number of the current journals might not survive the process

of natural selection that would ensue. It was often stated that in such a case, only those journals that add significant value to the material they publish — either through rigorous peer review, the inclusion of ‘front-half’ review and commentary material, or both — would continue.

### Free access to reagents and structural coordinates?

The idea that one should have some degree of free access to the work of one’s scientific peers is not completely new. On the contrary, for a long time, the only acceptable mode of behavior in biomedical science has been to make one’s published reagents freely available (and in a timely manner) to any scientists — both collaborators and competitors — who request them after reading about them in a published paper. Recently, as discussed above, this philosophy has started to be extended to include free and timely access not only to the reagents, but also to the publications, and therefore, by extension, to the large electronic data sets (such as structural coordinate files) that emerge from the work. However, the idea that structural coordinate files should be freely available over the internet at the time of publication has, in the past, led to a great deal of debate. It is now time to revisit this issue.

Most funding agencies and journals make the free and timely distribution of the reagents used in experiments a condition of publication. Indeed, this is the policy of *Nature Structural Biology* and of all of the titles in the *Nature* family of journals. Unfortunately, not every author or grant recipient willingly adheres to this philosophy, and admittedly, it can be difficult to enforce. For example, when a scientist refuses to distribute a reagent (such as a plasmid), the only clear recourse of the ‘gatekeepers’ are to ban the offender from future publication or receipt of funding and to make the offense publicly known. It is not practical or even really possible to demand that the reagent be placed into some third party’s hands for safekeeping and unbiased distribution, which would avoid this problem of noncompliance.

This is not the case with structural coordinates. A well-respected and efficiently run third party electronic database for distribution of these files does exist — the Protein Data Bank (PDB). Many journals (including *Nature Structural Biology*) insist that the PDB accession code be included in every paper that reports a structure determination. This is a relatively easy rule to enforce (a paper can be held for later publication if necessary) and ensures that the coordinates will be publicly available — at some point. However, a file is not always immediately released upon publication, because of the accepted practice in the structural biology community of allowing up to a one-year hold on these files, a practice that is endorsed by the International Union of Crystallography (IUCr). Reasons for and against this hold policy have been presented previously, in several editorials in *Nature Structural Biology*<sup>4–7</sup> in 1998.

At that time, many scientists, both within and outside the structural biology community, began to openly question the practice of allowing a hold and to push for community consensus on abandoning a hold policy. However, no clear consensus emerged. One of the benefits of the hold policy, often stated by many industrial scientists as well as those in academia who collaborate with industry, is that it allows them to publish in a timely manner. Without a hold, they argue that their employers or the companies with which they collaborate would prevent them from publishing and depositing the coordinates at all. But many others strongly believe that any hold is simply antithetical to acceptable practice and hinders the progress of science.

One outcome of this debate was a new NIH policy — endorsed by Varmus and other prominent staff members of the NIH — that took effect in early 1999, stating that no hold would be allowed on structures determined using NIH funding<sup>8</sup>. Another outcome was that several journals also stopped allowing any hold. At *Nature Structural Biology*, which serves primarily the structural community, we decided to adopt a policy that is more progressive than both the stance of the IUCr (which still supports a one-year hold policy) and the policies of some of our immediate competitors, but also recognizes the concerns of our industrial constituents. Only a six-month hold is allowed on structures published in our journal<sup>9</sup>. Nevertheless we strongly encourage immediate release of coordinates, and in fact we find that most authors do choose to release their coordinates upon publication. It is now time, especially given the current discussions regarding increased access to all scientific information, to re-examine our policy, to see if it makes sense to dispense with the hold altogether — and we will be looking at this issue over the next few months.

1. BioMed Central web site. <http://www.biomedcentral.com>
2. PubMed Central web site. <http://www.pubmedcentral.nih.gov>
3. Conference on “Freedom of information: the impact of open access on biomedical science”. <http://www.biomedcentral.com/info/conference.asp>
4. Editorial. *Nature Struct. Biol.* **5**, 83–84 (1998).
5. Editorial. *Nature Struct. Biol.* **5**, 165–166 (1998).
6. Editorial. *Nature Struct. Biol.* **5**, 245–246 (1998).
7. Editorial. *Nature Struct. Biol.* **5**, 407–408 (1998).
8. NIH policy relating to deposition of atomic coordinates into structural databases. (January 29, 1999). <http://grants.nih.gov/grants/guide/notice-files/not99-010.html>
9. Editorial. *Nature Struct. Biol.* **5**, 837–838 (1998).