Editorial

Unfettered access to published results

Earlier this year, the editors of *Science* allowed the authors of a landmark paper on the draft sequence of the human genome to restrict access to the sequence (2001 *Science* **291,** 1304–1351). The authors did not release the sequence upon publication to GenBank, where it would be freely available. Instead, the authors retained the sequence on their web site with restrictions. For example, less than 0.1% of the sequence can be downloaded per person per week. *Science* made these accommodations to protect the commercial interests of Celera Genomics, the company that carried out the sequencing, yet allow timely publication of the paper.

The editors of *Science* acknowledged criticism that their accommodation was contrary to accepted community standards (2001 *Science* **291,** 789). The editors defended their actions on the grounds that these standards are unclear, and contended that they were not alone because other journals, including PNAS, had "guided the reader to Web sites offering critical data or methods without charge to academic scientists, but available to for-profit users only for a subscription fee." It is flatly against PNAS policy for any essential data or methods to reside exclusively on an author's web site, let alone require an access fee for this material. We have found only one instance in which this policy has been violated and the authors quickly corrected it.

At the April 2001 meeting, the PNAS Editorial Board discussed the issue of limiting access to published results to protect authors' interests. The Board voted 43 to 0 to reaffirm the requirement of unfettered availability of all essential data for a paper upon publication. The data can be in the printed article, on the PNAS web site as supplemental data, or in a freely accessible database such as GenBank or the Protein Data Bank.

Comments by Board members included the following:

> I am one of the few people here who represents the private sector at this point, and I would love to be able to publish in prestigious journals and withhold the data. But I think it is wrong.

> The way this normally works is . . . if you think you have a likely chance of being able to get a patent, you write a patent application, which creates a legal monopoly for you.

> Scientific journals should play no role in the protection of the private interests of authors, or in shielding data from the community. Protection is far afield of the mission of journals, and shielding is antithetical to it.

The unanimous vote by the PNAS Editorial Board in favor of unfettered access to research results is remarkable but consistent with the other practices of our journal. PNAS was one of the first journals to insist that high-resolution structural coordinates be available upon publication. To quote our Information for Authors:

> Authors of papers describing new structure determinations must submit to the Protein Data Bank . . . or its equivalent, all structural data required to validate the discussion. . . . Authors must agree to release the coordinates when the article is published.

Previously, a one-year delay was allowed. Some had argued that authors need the protection of a one-year delay and that companies might defer publication without such protection. However, the PNAS Editorial Board decided that overriding these concerns was the principle that once an article is published, everyone should have access to the essential data. If authors wish to restrict access, they should not publish. This view has proven persuasive, and nearly all leading journals, including *Science,* now require the release of structural coordinates upon publication.

The issues in establishing this policy on coordinate release are analogous to those concerning the Celera genome article in *Science*. Like the policy on coordinate release, PNAS has a long-standing practice on the release of nucleotide sequence data. Again, to quote our Information for Authors:

> Authors should submit manuscripts containing nucleotide sequences to: GenBank/EMBL/DNA Data Bank of Japan. . . . An accession number must be obtained before the manuscript is printed.

The PNAS policy of unfettered access to published data is part of long-standing scientific tradition. Sixteen years ago, I wrote a commentary for *Cell* on the obligation of authors to share critical methods and data (1985 *Cell* **40,** 475–476). In that article, I argued that once results have been published, they become part of the public domain and that authors should aid the reproduction and utilization of their results by other scientists. Proprietary rights should be protected by legal means such as patenting, not by trying to chip away at the significance of scientific publication.

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