Intellectual property and scientific publishing

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There have been a series of controversies within the life sciences over data sharing by authors in major scientific journals. In response, there have been concerns about the impact of intellectual property upon the sharing of information and data amongst researchers and scientists.

In February 2001, *Science* published a paper by Craig Venter and Celera Genomics reporting the sequence of the human genome. Instead of depositing the sequence in the public database for genetic sequences, GenBank, the company posted its data on its own private database which only subscribers could access.

In April 2002, *Science* published two papers reporting the draft genome sequence for two subspecies of rice, japonica. Syngenta International initially placed limitations on data access — similar to those required by Celera Genomics in respect of the human genome project. However, the company later relented, and agreed to share its data with the public consortium working on the rice genome.

The editor in chief of *Science*, Dr Donald Kennedy, defended his decision: 'From my perspective, the question is whether the public benefit inherent in placing these valuable data into the public domain — rather than in trade-secret status — is greater than the cost associated with having the sequence data accessible through a private site rather than the publicly supported GenBank. We thought that was clearly true for the human genome sequence. For rice, the most important agricultural commodity in the developing world, the case is surely even stronger'.

In response, a letter of protest from twenty eminent scientists was sent to the advisers to *Science*, stressing that the withholding of publication-related data was a 'serious threat to genomics research'. One of the authors, Michael Ashburner, the Cambridge geneticist, complained: 'My gripe is that the companies are wanting to have their cake and eat it. They are wanting to publish what is by all appearance a regular scientific paper in what is after all a very respectable magazine, and yet they don't want to adhere to the norms of their community with respect to data release.'

Indeed, the genomics companies sought to protect the scientific databases under copyright law, contract law, and material transfer agreements. A member of the Syngenta rice genome project, Steve Briggs, said: 'Our data is publicly available... It's just not in the public domain. Think of it like a book or movie. It's available to you, you can get the book, you can watch the movie; but it isn't in the public domain, you've got to go pay for it. Somebody owns it, and provides access to it.' Furthermore, the firms have also applied for patents in respect of particular uses of selected genes that have arisen from the large-scale genetic projects.

A number of reforms have been discussed in relation to this issue — most revolving around intellectual property and scientific publishing. Members of the United States Department of Energy maintain that policies on the release of biological data should be relaxed to reflect the realities of private research and commerce. Ari Patrinos and Dan Drell argue that scientific data in journals should be released on a timer: 'The 'timer' mechanism would allow a company to publish valuable data that would otherwise remain private, while offering some protection for a limited duration for it to use the data exclusively'. However, this proposal has been rejected by peak scientific organisations.

The United States National Academies of Science established a committee to undertake a study of the issues related to sharing publication-related data and materials. The chairman of the committee, Nobel Prize-winner Thomas Cech, re-affirmed the general principle that authors should be obliged to release data and materials to enable others to replicate published findings: 'It keeps science honest and it fosters the progress of science. Both are worth nurturing and protecting.'

Even more radically, the Public Library of Science has called for a boycott of commercial scientific publishers, and the development of open source databases: 'We believe that the permanent, archival record of scientific research and ideas should neither be owned nor controlled by publishers, but should belong to the public, and should be freely available through an international online public library'. The group found, though, that the boycott failed to break the hegemony of commercial scientific journals such as *Science*. As a result, it instead plans to establish two new rival on-line journals dealing with biology and medicine.

At an international level, the respected ethics committee of the Human Genome Organisation has recently developed a statement on genomic databases. It adopted the principle that genomic databases should be considered to be global public goods, and made freely accessible in perpetuity. A committee member, Abdallah Daar, said: 'The impetus should be to give people knowledge, rather than gaining money'. The committee recommended that there should be a change in intellectual property laws to allow greater access to scientific information. ▪

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