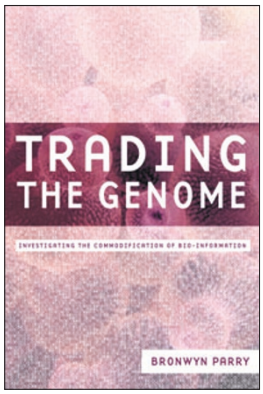
Should biological collections be exploited commercially?



Trading the Genome: Investigating the Commodification of Bio-information

By Bronwyn Parry

Columbia University Press, 2004
352 pp. hardcover, $39.50
ISBN 0231121741

Reviewed by David Smith

Bronwyn Parry's *Trading the Genome* is a study of how the collection and use of biological resources has changed in the life sciences industry. The book summarizes the findings of a survey of collections, how they are being used and by whom, tackling the key issues from a US perspective.

The first three chapters are an eclectic history of biological specimen collection, providing a mosaic of snapshots and quotations that depict collectors gathering unique and exotic materials and controlling the distribution and use of these materials. The author goes on to explain how major changes in scientific, technological and regulatory domains have fundamentally altered the way collected biological materials are used industrially. Although this historical account does link past collecting regimes with current trends in genetic resource use and access, I found these initial chapters repetitive and rather difficult to get through. It was interesting to read the historical examples chosen but surprising that very few of the examples were from the microbial world. For example, Fleming's discovery of penicillin was not covered, although development of antibiotic production in the US was mentioned. The author also ignored much of the vast array of biological resource collections and their *raison d'être* to concentrate on the collections in the public domain and those established by companies or organizations to provide lead compounds to the pharmaceutical industry. This discussion did pique my curiosity, however, and it became clear in the later chapters why the author concentrated on the particular examples provided.

Analogies to the music, information publishing and software businesses highlight the complexities of tracing the use of biological information and thus the exploitation of biological resources, which include whole organisms, parts of them, derivatives and information. The author explains how 'proxies' (cell lines, DNA, sequence data) facilitate the transfer, distribution and usage of biological specimens, negating the use of whole organisms in many instances and therefore making the link back to the source extremely difficult. The reuse of information through bioinformatics makes the whole business of identifying and the sharing of benefits more difficult. The author makes good use of quotations from experts in the field to make her argument that a simple solution is needed to provide a win-win situation for providers and users of genetic resources.

There is a good account of the development of 'letters of consent' and material transfer agreements leading to an attack on over-regulation and its detrimental effect on research and development. Intellectual property rights, patents, the Convention on Biological Diversity (CBD), General Agreement on Tariffs and Trade and Trade Related Intellectual Property Rights are brought into context. There are a few points I might argue with. For example, the author fails to put classification properly into context—it is merely an attempt to ensure that we all speak a common language, and as our understanding develops, our classification of biological entities will change, particularly in this molecular era. I would also disagree that scientific collections stand outside the CBD. The CBD gives countries sovereign rights over their indigenous biological diversity, and access and benefit-sharing issues arising from their use are being debated. Voluntary guidelines recommend prior informed consent from country authorities and mutually agreed terms for use and further distribution. Some countries have set this in law, and as a result, this has an effect on the use of collection holdings. It is true that materials isolated before 1993 are exempt from the guidance provided by the CBD, but living collection holders are reviewing how those materials isolated before then should be treated. A simple International Code of Conduct is being developed in a global project funded by the European Union in this respect. The author also believes that the CBD views whole organisms and their genetic content separately and thus allows them to be used differently regardless of the fact that they are of the same origin. Many will disagree. I threw my arms up in horror to find that fungi were still described as plants! Are cell lines and DNA artefacts? Surely not, and I don't believe people are routinely cryopreserving organisms at or below –360 °C. But these points do not really undermine the arguments being made in the context of the book.

The author argues that despite the introduction of increasingly complex procedures, remarkably little money has been returned to source countries from bioprospecting operations. Several examples are described in which, having provided up-front payments, training and technology transfer, the country of origin failed to receive any royalty payments when drugs reached the marketplace. The simple solution offered is a 3–5% levy to be paid by the companies or individuals marketing the product into a fund that could be used for development and conservation projects. A number of concerns are raised about such an approach, and the author doesn't offer a solution to the problem of dwindling funds to support scientific collections. Parry suggests the consensus is that such collections should not be exploited, emphasizing that public collections are now forced to exploit their content commercially to continue to function. I disagree, but of course such exploitation should be subject to established protocols and public scrutiny. Though not providing a solution, the author's thoughts do add to the continuing debate on access to genetic resources and subsequent benefit sharing.

David Smith is President of the World Federation for Culture Collections, CABI Bioscience, Egham, Surrey, UK. e-mail: d.smith@cabi.org