SCIENCE

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LETTERS

Gene Ownership

There has been recent media interest in commercial access to family material for genetic studies (Peter Aldhous, News & Comment, 18 Mar., p. 1552). This interest has arisen because of controversy surrounding an American biotechnology company's proposed exploitation of pedigrees and DNA from certain French diabetic families. The genetic information and material in question are currently held in France by scientists at the Centre d'Étude Polymorphisme Humain. The situation raises inevitable issues over who owns the rights to use specific families for genetic studies and who owns the rights to the genetic information arising from such studies.

It is easy and morally satisfying to dismiss these questions by saying that all the information arising from human genetic studies should be placed immediately in the public domain. This is not practical for several reasons, however, given the considerable investment in the Human Genome Project and commercial reality. Society urgently needs new medicines that address the pathology of diseases, rather than symptoms alone. Identification of genes involved in disease will lead to the validation of important therapeutic targets and more efficient drug discovery. New diagnostics, designed to identify individuals at risk for serious diseases, will enable patients to enter into frequent monitoring and early treatment programs. Preventive medicine, proved to be one of the most effective methods for reducing the devastating effects of serious disease, will become the treatment of choice in the future. The discovery of genes predisposing individuals to complex disorders will affect each of these areas enormously.

Making human genetic information freely available to all would not encourage biotechnology and pharmaceutical companies to use that information commercially. Unless a company can protect information and develop a proprietary position for its projects, it is difficult to justify the major financial commitment needed to turn discoveries into products.

Companies can protect information in several ways. The two most common ways are by patent protection or by trade secret. A third way used by both academic groups and by industry is that of lead time: whoever makes the discovery has time to capitalize on the information before anyone else learns of its existence. All these protection mechanisms are open to groups that do genetic research. There is considerable misunderstanding about the patenting of genes or gene fragments, and the situation remains largely unresolved. It seems likely that the opportunity to patent complete genes (as complementary DNAs) for direct use (for example, in a diagnostic kit or as a gene therapeutic) will remain. On the other hand, patent examiners have indicated that it is unlikely that random expressed sequence tags (or incomplete sequences) will be patentable until their utility has been defined. The situation regarding patent claims to genes (for example, coding for receptors) as a means for discovering small molecule mediators is similarly unclear.

There is no need to "own" families or DNA. There is, however, a clear need to protect the data derived from studies of those families—if necessary, by patents—to ensure proper and expeditious commercialization. The measure of the companies involved in disease gene hunting will be the speed and accuracy with which they uncover relevant genes rather than the ability to secure exclusive access to families and DNA.

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Antibiotic Resistance

For one who spends his time in the constant struggle to develop effective new chemotherapeutic agents, it was gratifying to see the attention that antibiotic resistance recently received in *Science* (15 Apr., pp. 360–393). However, I wish that the views of industrial researchers had been more fully represented, as a significant contribution to this field comes, either directly or indirectly, from the pharmaceutical industry.

In particular, the News Report by John Travis (15 Apr., p. 360) quotes remarks by James Knox that imply that full use is not being made of structural information that could be a basis for "rational drug design." This is not the case. Preclinical research groups at Roche use the latest techniques as well as the tried and tested methods of chemical variation around lead structures and microbial broth screening.

In 1990, a Roche research team at Basel published the three-dimensional structure