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LETTERS

Patenting Complementary DNA

I have been following with much interest the debate in the columns of *Science* about the patenting of partial complementary DNA (cDNA) sequences. I have also had a number of discussions with those involved with research in the United Kingdom on this complex and important issue.

Our research workers and public bodies funding research are caught between two distinct obligations. On the one hand they want to play their part in an international collaboration which has great potential both for the advancement of the understanding of human biology and for the delivery of medical advances. On the other hand they have an obligation to consider how best to safeguard any possible return to the U.K. economy if the partial cDNA sequences prove to have commercial value.

In considering what position the U.K. government should adopt I was anxious to ensure that we should not take any action in the short term which would place obstacles in the way of scientists getting on with their research. Looking to the long term, it seemed clear that the current international collaboration would be in serious danger of breaking down if different countries adopted different policies on patenting, and that our aim should therefore be to promote an international consensus on this issue.

After much discussion the U.K. government has decided that it should pursue an international agreement to the effect that no country will seek patents on genome sequences of unknown utility identified as a result of publicly funded research.

In the meantime and in the absence of such an agreement, we support the pragmatic approach adopted by the Medical Research Council (MRC) in deciding that it should file patent applications on certain sequences. This step will also enable the MRC to release sequence information quickly to the scientific community, so meeting our short-term objective of not placing any obstacles in the way of current research efforts. The MRC has made clear that if and when an international agreement not to patent is reached, it will waive its actual or potential rights in this area.

I shall have a number of opportunities over the next few weeks to have discussions with decision-makers in other countries about how best to progress such an international agreement, taking into account both ethical and scientific concerns.

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We feel urgently impelled to express our concern about the decision of the U.S. National Institutes of Health to apply for patents covering partial sequences of complementary DNA (cDNA) segments.

We are particularly worried that the claims may extend to include also the genes from which the cDNA sequences are derived and the proteins they encode; from a purely scientific point of view, such claims are misleading because it is clearly not the case that the partial sequences can lead directly to the identification of the genes' functions.

From a programmatic point of view, the granting of patents of this sort is almost certain to undermine the entire Human Genome Project, and it could easily lead to the disappearance of cooperation between nations on human genome research and its replacement with unbridled international competition aimed simply at the securing of patents. If it is hard to see how such a development might be to anyone's advantage, it is obvious why it would be a terrible blow for many research groups, especially in economically less advantaged countries.

Furthermore, and perhaps most important, the patenting of sequences of randomly isolated portions of genes that encode proteins whose function has yet to be determined would also imply, it appears, a radical impoverishment in the standards required of scientific discoveries before they can become reasonably susceptible to proprietary claims. The proposed definitions of novelty and utility applied to such sequencing endeavors appear far from clear and convincing.

We concur with the recent declaration of the Comitato Nazionale Bioetica and believe that all information resulting from efforts made within the framework of the Human Genome Project should be always freely available to the entire scientific community.

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