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The Recombinant DNA Debate

For the last 3 years scientists, laymen, and responsible government institutions have engaged in open, public analysis of the hazards that might result from recombinant DNA research, hazards that remain speculative. A set of safety guidelines* for the conduct of the experiments emerged from the discussions. In the absence of all the necessary facts, the guidelines were made extremely stringent in order to compensate for possible errors in judgment, and they apply to all studies funded by the federal government. There is now a concentrated effort to obtain federal legislation imposing the guidelines on all recombinant DNA experiments in the United States, regardless of the source of funds. Similar guidelines exist in many countries.

The foregoing summary reflects neither the current level of interest, emotion, or confusion on the subject in the United States, nor the attitudes reflected in graphics accompanying relevant newspaper and magazine articles and television shows—fanciful ugly bugs crawling out of test tubes, DNA double helices ending in monster heads, chimeric animals that insult the Greek imagination.

The nature of the current debate was evident at the public forum on recombinant DNA held at the National Academy of Sciences from 7 to 9 March. The forum successfully fostered an exchange of views among scientists and the public, although the atmosphere was often charged. The encounter illuminated the arguments of both biologists and laymen who refer to themselves as "opponents" of recombinant DNA research.

It was argued that all recombinant DNA research should be stopped and the nation should instead give priority to the distribution of existing methods of health care and sound nutrition to the citizens of the world. This argument is specious. Certainly there is a need to rectify inexcusable inequities in the distribution of food and health care. But recombinant DNA research is neither an alternative to such action nor a competitor for the necessary funds. Rather it provides for future opportunities to solve problems that are unsolved or that may yet arise.

Another argument was the denial of any positive value in the research. This country, through representative government, long ago committed itself to the importance and support of basic biological research. That investment has now yielded a powerful tool for investigating basic processes relevant to understanding serious and intractable diseases. There is no other way at hand or foreseeable to investigate the structure of the genome of complex organisms. Has the purpose of the investment been forgotten? Surely when a distinguished biologist couples denial of any positive value in the research with a denial that the bacterial chromosome can be characterized as a DNA molecule or with a denial that insulin is clinically useful, we must wonder just what the debate is all about.

It was argued that because recombinant DNA techniques may make genetic engineering (deliberate modification of the genes of complex organisms, including man) feasible, all such work should stop. The argument assumes a public consensus that genetic engineering is evil, although the arguers concede, with everyone else, that the subject needs intense, universal discussion. The argument also denies historical lessons that teach us to distinguish carefully between the acquisition of knowledge and its application.

It is difficult to take demands for bans on "all" recombinant DNA research seriously when they come from those who demand to be heard but do not stay to listen. Those now labeled "proponents" of the research worked long and hard for prohibiting certain experiments and matching containment requirements to estimated risks for others. The cautious analytical approach is a discouraging tactic against uninformed fear, mysticism, and political opportunism. But it must continue; nothing less than science itself is at stake.

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*"Guidelines for research involving recombinant DNA molecules," *Fed. Regist.* **41** (No. 131) (1976).