Recombinant DNA: New York State Ponders Action to Control Research

"I told Sargent Shriver that recombinant DNA is the most overblown thing since his brother created the fall-out shelter debacle." So confided biologist James Watson to a hearing held last month by the New York State Attorney General, who is considering action to control research on recombinant DNA. A principal option is to require all researchers in the state to adhere to the NIH guidelines, which at present apply only to NIH grantees, but several scientists less sanguine than Sargent Shriver's one-time adviser urged the state to set even stricter rules than those of the NIH.

The issue of recombinant DNA, a far-reaching method of manipulating genetic material, was previously taken up by the University of Michigan and the Cambridge City Council. But New York is the first state to do so, and its decisions could have a significant impact on the way that research proceeds. Both sides of the recombinant DNA debate were forcefully represented at the hearing held on 21 October in New York and organized by Deborah Feinberg of the Attorney General's environmental health bureau.

Scientific vs. Public Interest

The main ground of the recombinant DNA debate is by now well traversed, but the argument is still worth listening to, even though there has been an escalation of rhetoric on both sides. The first speaker at last month's hearing, Leibe Cavalieri of the Sloan Kettering Institution, laid out the case for halting all research until the long-term implications of the research had been further discussed. "The risks of the research are worldwide and terrifying, the benefits are speculative," he stated. Cavalieri deemed it presumptuous of the scientific community to assume that its interests coincide with those of the public as a whole, especially as a headlong rush into the unexamined regions of genetic manipulation was, in his view, sure to result in catastrophe.

People who say we need more time to think about the problem, responded David Baltimore of MIT, "either have not read the available material or are simply delaying the march of progress for whatever reasons they have." Scientists are often portrayed as irresponsible prize-seeking individuals, probably because of Watson's *Double Helix*, Baltimore suggested, "But that is not true of any of the labs that I know. I think that the scientific community, by being as open as it is, and as self-critical, provides a better guarantee of safety than does any government regulation."

Baltimore's claim that the matter should be left to responsible scientists, rejoined Jonathan King, another MIT biologist, was like leaving it to the tobacco industry to assess the health hazards of cigarettes. King discussed the case of an organism made just slightly more pathogenic by the recombinant DNA technique; should such an organism ever escape from the laboratory it would never be detected because the epidemiological background is not well enough defined to pick up a slight increase in disease. "If you can't tell whether the bugs are getting out, you can't do the research," King argued in advocating that use of the technique be confined to a few isolated laboratories.

Confining the technique just to the Army's former biological warfare laboratories at Fort Detrick is the course proposed by Erwin Chargaff of Columbia University. After his letter to *Science* (4 June 1976) objecting to the use of the human gut bacterium *Escherichia coli* as a host for recombinant DNA molecules, Chargaff told the hearing, "Many people came to me and said that I was slowing down progress, that I was anti-science, because many people had spent all their lives experimenting with *E. coli*." He was still of the opinion that many suitable alternatives to *E. coli* could be found if looked for. Graduates nowadays are not trained like the bacteriologists of the old school. "It stands to reason that if you have labs of different quality, an accident is bound to occur. We are jumping into the middle and assuring everybody it is OK. I think it is not. I think we are very well able to do a lot of damage to ourselves and especially to following generations."

Watson, whose relations with Chargaff are an imperishable part of the literary record of both parties, was the next speaker. The following is the gist of his remarks:

"I never know what to say when I follow Professor Chargaff but I shall try to speak calmly.

"What started out as an attempt by the scientific community to appear responsible takes on increasingly the aspects of a black comedy.

"I was Kennedy's adviser on biological warfare. I knew all we had at Fort Detrick, and if I can reveal a secret about what we had, what we had was nothing. The marginal danger of this thing is a joke compared to [even what we had at Fort Detrick].

"All you can say is that we want to go on with what we are doing, and I don't think we are crazy."

Lab Infested with Hot Ants

George Wald, another of Harvard's Nobel laureate biologists, stepped next to the podium. He explained that the little red ants that infest the biological laboratories at Harvard had recently got to some radioactive medium left lying around by one of the proponents of doing recombinant DNA research in the building. Since the ants have the habit of feeding one another, the radioactivity was quickly spread. "I am assured that, if you go around with a Geiger counter, there is radioactivity all over the lab," said Wald. The moral of the tale: "Anyone who thinks that a group of professors is going to hound other professors [to adhere to safety regulations] just doesn't know what professors are like. A lot of the NIH guidelines are unenforceable." Wald too concluded that research on recombinant DNA "should be segregated in one or two national laboratories like Fort Detrick."

A criticism of a different kind was made by Francine Simring of Friends of the Earth. Simring has discovered that the original charter of the NIH committee which drew up the guidelines for recombinant DNA research called for guidelines to be drafted only after certain exploratory research had been conducted. The goal of the committee, according to the notice of its establishment signed by the then director of NIH (*Federal Register*, 6 Nov. 1974), was to recommend research programs to assess the public health and environmental hazards of recombinant DNA, and "to recommend guidelines on the basis of the research results." The NIH committee has not even drawn up a research program, let alone waited for the research results before formulating guidelines, Simring observed.

Burke K. Zimmerman, speaking for

the Environmental Defense Fund, suggested that any gene expressed out of its normal context has the potential for being harmful, and that the choice of *E. coli* as a permissible host is riskier than the NIH guidelines concede because of new information about the organism's pathogenicity in man. "Science must remain accountable to the public for its actions, and I do not see how it can possibly justify tinkering with the DNA of an organism known to be a human pathogen," Zimmerman opined.

Such were the highlights of the evidence presented to the New York State Attorney General. Most of the new contributions to the debate came from opponents of the research, since the proponents have already stated their case several times. After a review of the transcript, the Attorney General's office will decide which is the more persuasive, and what action to recommend to the state legislature.—NICHOLAS WADE

NAS-NRC: Three Committees Cut, Leaving the Reasons Unclear

The National Research Council (NRC) has terminated three long-standing committees that have done most of the NRC's work on narcotics and therapeutic drugs, in the process nettling the members of the panels by not really telling them the reasons why.

Committees come and go at the NRC—the operating arm of the National Academy of Sciences (NAS)—but the two major committees disbanded were unusually well established and influential and left gaps which their partisans are now trying to fill by establishing alternatives outside the walls of the Academy.

Historically, the NRC ended a long episode in the annals of narcotics research when it killed its Committee on Problems of Drug Dependence effective 1 July. Dating from the late 1920's, the committee played a central role in narcotics testing and addiction research, administering a grants program that in recent years topped $200,000 annually. For many years the committee served in a potent advisory capacity to the agencies that enforced narcotics laws.

Also eliminated was the Drug Research Board, created in 1963 to deal with proliferating issues posed by therapeutic drugs, and the Committee on Problems of Drug Safety, which was organized in 1968 as an offshoot of the Drug Research Board.

The action by the NRC's Assembly of Life Sciences constituted a clean sweep of the NRC's main drug committees. It now appears probable that the Committee on Problems of Drug Dependence will be transplanted to a new setting with the blessings of several scientific societies and continued funding from federal agencies. A move is also afoot to set up an independent, successor body to the Drug Research Board.

Eviction from the Academy of these committees has stirred up a fair amount of resentment in the research community affected, particularly, it seems, because the rationale for discontinuing the panels was never explained in detail.

Indirectly, at least, the decision to terminate the three committees seems to be a product of the process of reorganization and reform of the NRC which NAS president Philip Handler initiated in the early 1970's. As part of that process, major disciplinary groupings called "assemblies" were formed including an Assembly of Life Sciences, under which the three committees in question operated. Within the assemblies, large executive committees made up of outside scientists, the majority from academic institutions, were given an increased measure of authority over policy.

Handler has encouraged the NRC to take a hard look at all standing committees to make sure that they are still needed and are performing properly. The device generally used to evaluate these standing committees has been the small visiting committee, also made up of outsiders, usually university scientists.

This formula was applied to the three drug committees by the Assembly of Life Sciences, whose chairman is James D. Ebert, director of Woods Hole Marine Biology Laboratory. The visiting committee, chaired by John V. Taggart, chairman of the physiology department at Columbia University College of Physicians and Surgeons, reported to the assembly's executive committee, which early this year, meeting in executive session, decided on the terminations.

Ebert broke the news in a private meeting with the three chairmen of the committees: Leo E. Hollister, of the Veterans Administration Hospital in Palo Alto, chairman of the drug dependence committee; Frederick E. Shideman, of the University of Minnesota, chairman of the Drug Research Board; and Daniel L. Azarnoff, of the Kansas Medical Center, chairman of the drug safety panel. Hollister and Shideman say that neither then nor later did they see a copy of the visiting committee's report, and that at the meeting they were given a bare summary of the findings. Both indicated they were left without a clear idea of the reasons for the executive committee's decision.

Shideman did say that Ebert indicated that the executive committee seemed to think the effectiveness of the Drug Research Board had waned and also felt such a body within NRC should be a responsive group, rather than one that sought out problems as the Drug Research Board had done.

The assembly, in a report on its activities published this summer, did allude to the visiting committee's study and the executive committee's action. The visiting committee, it was noted, "evaluated the *modus operandi* of these committees, the merits of their contributions, the effectiveness of the mechanisms by which they select projects, the quality of the reports produced, and the overall contributions to American society. Finally, the committee assessed the propriety and wisdom of continuing these activities within the National Research Council." The report, however, did not specify on which if any of these counts the committees had been found wanting.

The report said the executive committee accepted the visiting committee's recommendations on winding up the affairs of the three committees but, rather than implement its suggestions on alternatives, "decided that no advisory committee on drugs would be established until a special panel had studied what direction the ALS-NRC should take in the drug field."

Ebert declined to comment, referring the matter back to Handler. The Academy president, for his part, noted through a spokesman that decisions on the fate of the committees had been made within the Assembly of the Life