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Case Study: Asilomar Conference on Laboratory Precautions When Conducting Recombinant DNA Research

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Appendix B: Views on the Asilomar Process

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As you read the statements below, you should reflect on whether an Asilomar Conference approach would be as effective today.

Roger Dworkin, remarks at the Asilomar Conference quoted in Michael Rogers, *Biohazard* (New York: Alfred A. Knopf, 1977), p. 81

This body probably doesn't know its power. The law has a tradition of listening to and respecting expert groups that regulate themselves. On the other hand, there is precedent for ruining groups that don't – physicians for example. Malpractice law has always been skewed in the direction of the physician, physicians have refused to testify against each other, and as a result they are now being massacred in court.

Paul Berg, "Reflections on Asilomar 2 at Asilomar 3: Twenty-Five Years Later," *Perspectives in Biology and Medicine* 44.2 (2001) 183-185, on p. 185

In my view the Asilomar model would not succeed today to the extent it did 25 years ago for the following reasons. First, we should recall that the emergence of the recombinant DNA technology was sudden and unanticipated at the public level; the possibility that it carried potential dangers to public health removed it from the realm of just another interesting scientific advance. Furthermore, the news of this development came from the scientists conducting that research, not from some investigative reporter or disaffected scientist; that was most unusual, even historic. There seemed to be a need for consensus on how to proceed and a plausible plan for how to deal with this issue, both of which were provided by the scientific community. Action was prompt and seen by the public to have been achieved by transparent deliberations and with considerable impediments and cost to the scientists' own scientific interests. The issue and its resolution were complete before an entrenched, intransigent, and chronic opposition developed. Attempts to prohibit the research or reverse the actions recommended by the conference were threatened, but such actions never generated sufficient reaction to succeed.

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The issues that challenge us today are qualitatively different: they are often entwined with economic self-interest and increasingly beset by nearly irreconcilable ethical, religious, and legal conflicts, as well as by challenges to deeply held social values. An Asilomar-type conference trying to contend with such contentious views is, I believe, doomed to acrimony and policy stagnation, neither of which advances the cause of finding a solution. There are many forums for airing opposing views, but emerging with an agreed-upon solution from such exercises is elusive and discouraging.

Alexander M. Capron and Renie Schapiro, "Remember Asilomar? Reexamining Science's Ethical and Social Responsibility," *Perspectives in Biology and Medicine* 44.2 (2001). p. 168.

Yet today, with commercial interests so deeply embedded in the field, generating actual or perceived conflicts of interests for scientists, the public is no longer so willing to trust their motivations. It is difficult to imagine how an unbiased group of scientists could be convened today to consider genetic technologies or be counted on to speak out in the public interest if they have allegiances to commercial interests as well. Even if they ended by urging strong restraints on the use of a new development in biotechnology, their cautions would be suspected--if not by the public, then by other scientists--of arising from the scientists' being devoted to other forms of technology, in competition with those that they disfavored.

Maxine Singer, "What Did the Asilomar Exercise Accomplish, What Did It Leave Undone?" *Perspectives in Biology and Medicine* 44.2 (2001) 186-191, on page 190 [citations omitted].

... the nature of public discourse has been fundamentally altered by the introduction of what is called the "precautionary principle." Although substantially different definitions of it are assumed by various groups and people, this phrase has taken on enormous power particularly in international deliberations. In Montreal, in January 2000, it was incorporated into the Biosafety Protocol, a treaty governing international trade in [genetically modified organisms].

At Asilomar we accepted that we were discussing probabilities of hazardous outcomes as well as their assumed severity. On that basis, we concluded that some experiments were associated with such a low probability for harm that they were essentially without problems. For other experiments, strict containment or even at least temporary prohibition seemed most appropriate. Thus, precaution was a fundamental element in the Asilomar approach. However, some definitions of the precautionary principle turn such an approach on its head. They imply that the test for approval of a new technology is virtual certainty that the undertaking is without hazard, that is, it is safe in some absolute sense. That, of course, is a scientifically impossible goal, so that even if the proposed concern is some imaginary construct with little or no scientific foundation, a technology can be rejected. Eventually, when the new biotechnologies are seen as useful and productive within given nations or communities, public demand will put aside such prohibitive versions of the precautionary principle. However, as each new technology is introduced, it is increasingly likely that some version of the precautionary principle will be the basis for international decisions.

Alexis Madrigal, "Climate Hackers Want to Write Their Own Rules". *Wired Science*, March 23, 2010, accessed October 21, 2010. <http://www.wired.com/wiredscience/2010/03/geoengineering-asilomar/>.

"Susan Wright, a historian of science at the University of Michigan, has called the bargain supposedly struck at Asilomar — some research restrictions in exchange for scientific self-governance — a myth on both sides of the deal.

'It is a myth that most scientists working under competitive pressures can address the implications of their own work with dispassion and establish appropriately stringent controls — any more than an unregulated Bill Gates can give competing browsers equal access to the world wide web,' she wrote. 'Sure enough, some five years later, the controls proposed at Asilomar and developed by the National Institutes of Health were dismantled without anything like adequate knowledge of the hazards.'

Further, she says, 'it is equally a myth that scientists in this field are self-governing.' Instead, their research agendas are shaped by utilitarian interests of government or corporate sponsors. Even at that early stage, before the biotech boom of later years, molecular biologists were never doing pure science."

Paul Berg, David Baltimore, Sydney Brenners, Richard O. Roblin, and Maxine F. Singer. "Summary Statement of the Asilomar Conference on Recombinant DNA." *Proc. Nat. Ad. Sci.*, June 1975. Accessed October 27, 2010. http://profiles.nlm.nih.gov/CD/B/B/K/L/_/cdbbkl.oc

"Of particular concern to the participants at the meeting was the issue of whether the pause in certain aspects of research in this area, called for by the Committee on Recombinant DNA Molecules of the National Academy of Sciences, U.S.A. in the letter published in July, 1974** should end; and, if so, how the scientific work could be undertaken with minimal risks to workers in laboratories, to the public at large, and to the animal and plant species sharing our ecosystems.

The new techniques, which permit combination of genetic information from very different organisms, place us in an area of biology with many unknowns. Even in the present, more limited conduct of research in this field, the evaluation of potential biohazards has proved to be extremely difficult. It is this ignorance that has compelled us to conclude that it would be wise to exercise considerable caution in performing this research. Nevertheless, the participants at the Conference agreed that most of the work on construction of recombinant DNA molecules should proceed provided that appropriate safeguards, principally biological and physical barriers adequate to contain the newly created organisms, are employed. Moreover, the standards of protection should be greater at the beginning and modified as improvements in the methodology occur and assessments of the risks change. Furthermore, it was agreed that there are certain experiments in which the potential risks are of such a serious nature that they ought not to be done with presently available containment facilities. In the longer term, serious problems may arise in the large scale application of this methodology in industry, medicine, and agriculture. But it was also recognized that future research and experience may show that many of the potential biohazards are less serious and/or less probable than we now suspect."

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