Gene Splicing: Congress Starts Framing Law for Research

The probable shape of legislation on recombinant DNA research became clear at hearings held recently by the House Subcommittee on Health and the Environment, the first of three congressional committees which plan to examine the issue. There was no sign of support from other members of the committee for a proposal by Richard Ottinger (D–N.Y.) to halt all research until a law is written. The outlook is for some solution that makes the NIH guidelines on gene splicing universally applicable.

The Administration will propose legislation within a month, NIH director Donald Fredrickson told the House subcommittee. It will be based on the report released recently of an interagency group which recommended that the legislation should contain the following elements:

- ▶ The Secretary of Health, Education, and Welfare should promulgate the NIH guidelines as initial standards for gene-splicing research, and should be authorized to modify or revoke them;
- ▶ All facilities at which the research is conducted should be licensed by the secretary, with the facilities accepting responsibility for their own people and projects;
- ▶ All recombinant DNA activities should be registered with HEW and open to public scrutiny, except that the secretary shall exempt information the disclosure of which would cause loss of proprietary rights;
- ▶ State and local laws on gene splicing should be preempted by the federal legislation.

A majority of the House subcommittee has sponsored a discussion-purpose bill introduced by chairman Paul Rogers (D–Fla.) which is generally compatible with the interagency group's proposals, except that it licenses persons and projects rather than facilities.

Fredrickson told the House subcommittee that the interagency group had reached "complete consensus." Asked by Rogers what was the nature of the Department of Defense's request for a waiver on certain kinds of recombinant DNA research during periods of national emergency, Fredrickson replied that the group felt it had no mandate to answer the request. He also said he had no knowledge as to whether gene-splicing research was or was not being conducted by the CIA or the National Security Agency. (Both the United States and the Soviet Union regard recombinant DNA technology as covered by the Biological Weapons Convention which prohibits the development, production, or stockpiling of biological weapons. The convention does not specifically ban research, but the prohibition on development would presumably raise strong institutional impediments to the initiation of a research program.)

Fredrickson also told the House subcommittee that the NIH is studying the biohazards posed by other research techniques, such as cell fusion, mutagenesis, and recombination by methods other than the gene-splicing technique, and is looking into the possibility of recommending safety guidelines in these areas.

As for the international scene, Fredrickson said that the guidelines developed in England are very similar to those of the NIH, and that the Soviet Union is considering amalgamating the two versions for its own guidelines. East-West coordination will be arranged through ICSU, the International Council of Scientific Unions, to which the eastern European nations belong.

The rationale of the NIH guidelines was concisely expounded to the House subcommittee by NIH scientists Maxine Singer and Wallace Rowe and by Daniel Nathans of the Johns Hopkins School of Medicine. The kinds of experiments which worried those who first called attention to the possible dangers, such as endowing bacteria with new toxins or antibiotic resistance, are expressly prohibited by the guidelines. Other experiments, Rowe explained, fall into a "large gray zone of hypothetical risk," which is that the accidental insertion of new genes into *Escherichia coli* might in some way increase its ability to cause disease. This kind of risk, which is both "highly unlikely" to occur and would be "not major" if it did, is the focus of the guidelines and is addressed by a double system of physical and biological containment. The physical containment requirements are those that have successfully been used for handling known pathogens, while biological containment requires the use of the K12 strain of *E. coli* which, unlike other strains, is not a normal inhabitant of the human gut. K12 was chosen, Singer told the committee, because it provides a measure of biological containment in itself and because it can be made the basis of a yet safer strain.

Considerable skepticism was poured on the much discussed notion that a genetically altered *E. coli* could escape and touch off a severe epidemic. The ability to cause epidemic disease is almost always dependent on not one but a set of genes, so that it would be "very difficult, perhaps impossible," to turn K12 into some kind of plague organism, Nathans said. Even if a pathogenic *E. coli* were to arise, the history of laboratory infections records only a handful of cases in which the laboratory worker spread the infection to others. Many of the laboratory and secondary infections, Bernard Davis of the Harvard Medical School told the subcommittee, are caused through droplets created in coughing or sneezing, and *E. coli* cannot be spread by these mechanisms. If, nevertheless, an epidemic should get under way, the public health measures that have eliminated other enteric diseases such as typhoid and cholera from developed countries would certainly control an altered *E. coli*. It was the opinion of the many infectious disease specialists he had consulted about an *E. coli*–caused epidemic, Rowe said, that "this is one area where we do know enough to say that this is out of the question."

As to practical advantages, the "immediately apparent applications" of the gene-splicing technique include the preparation of research and diagnostic reagents, the production of purified materials for vaccines against flu and hepatitis, and production of interferon, Rowe declared, adding that "a marvelous gift has been put into our hands." A sharply contrasting view was given by Ethan Signer of MIT, who told the subcommittee that the technique was "nothing more than a big genetic sewing machine with all the options." But the Signer sewing machine did not get a hard sell. "It's real use is mainly just as a time saver . . . its virtues are largely oversold . . . it's simply not the tool we need," Signer said. He argued that the promised benefits could be obtained by other means and would in any case fail to reach the public effectively because of deficiencies in the existing health care system. On the other hand, the technique was open to misuse by the military, industry, and those who would take advantage of its possibilities for human genetic engineering. Whose genes will be permuted?—"Those who are powerful in society will do the shuffling; their own genes will get shuffled in one direction, while the genes of the rest of us will get shuffled in another," Signer warned.

Nobody took lightly the specters Signer raised, but several witnesses, ranging from Fredrickson to Alan McGowan of the Scientists' Institute for Public Information, said that the recombinant DNA technique and genetic engineering were separate subjects which should not be confused. The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research should be asked to take up the question of human genetic engineering, several witnesses suggested.

As to whether the capability was one that society is ready to handle, Davis said it was "tragic that the proposal of gene therapy in man is viewed as a threat more than a promise." Nathans, in reply to a related question, said he did not believe that "if you do the research you must inherit all the possible evils that could come from it." Rowe declared himself "strongly opposed" to the use of recombinant DNA or any other technology to change heredity. As for the technique's contribution to the public's future shock, it will be another accelerating force, Rowe said, but "I do not think it will be acceptable to society to moderate the pace of change by refusing to take advantage of the immense opportunities for the control of disease."

Parallel hearings are to be held in April by the Senate health subcommittee, which shares legislative authority over the research with the Rogers subcommittee,and oversight hearings starting in March will be held by the House Subcommittee on Science, Research and Technology, but there are no signs yet of any major sentiment in Congress to derail the general thrust of making the NIH guidelines on recombinant DNA research apply to all.

—NICHOLAS WADE

Lobbying Rules for Nonprofits: New Option Sets Specific Limits

Recent changes in tax law which permit certain nonprofit organizations greater latitude in lobbying activities have not resulted in an all-out assault on Capitol Hill by new legions of lobbyists. The typical reaction among eligible organizations seems to be a cautious review of options; many have decided to stand pat.

The Tax Reform Act of 1976 allows some tax-exempt organizations to elect to operate under new provisions which prescribe dollar limits on lobbying—up to $1 million a year for organizations with big budgets—and define much more clearly than the law has in the past what is and what is not lobbying. The organizations affected, mainly those devoted to charitable, scientific, literary, or educational purposes, may also decide to continue to be governed by earlier regulations set forth in section 501(c)(3) of the tax code by which they are covered.

The new law went into effect only on 1 January so it is rather early to identify trends, but at this point major scientific nonprofit organizations such as the AAAS, American Institute of Physics (AIP), American Chemical Society (ACS), and Federation of American Societies for Experimental Biology (FASEB) are not altering their position on lobbying, at least for the time being. The option seems to be more attractive to nonprofit public interest groups such as the Environmental Defense Fund and Natural Resources Defense Council.

For the past several years tax-exempt organizations have sought changes in the lobbying provisions of the law under which they operate. The existing law required that "no substantial part of the activities (of a 501(c)(3) organization) is carrying on propaganda or is otherwise attempting to influence legislation." Such organizations were not forbidden to lobby but stood to lose their tax-exempt status if they were found in violation of the "substantial part" provision. Generally, loss of tax-exempt status meant not only that the organization itself would be subject to federal income taxes, but, more important, that contributors would no longer be able to deduct their gifts as charitable contributions. The main difficulty of the lobbying provision was that neither court decisions nor Treasury regulations were clear enough to enable organizations to know how much and what kind of lobbying activity was permitted.

It is worth noting that the law concentrates on attempts to influence legislation. The term lobbying was coined to describe the activities of agents lurking in the lobbies of Congress and seeking to influence legislators. Today, the term is generally construed more broadly, to include, for example, attempts to influence administrative decisions, the writing of regulations, and the actions of regulatory agencies in the executive at all levels of government. Consequently, a wide range of activities commonly regarded as lobbying are not covered by the lobby laws.

The new provisions define two main types of lobbying—direct and grass-roots.* Direct lobbying is described as "any attempt to influence legislation through communication with any member or employee of a legislative body, or with any other official or employee who may participate in the formulation of legislation." Grass-roots lobbying refers to efforts of various kinds of organizations to encourage the public at large, as distinct from their own members, to support particular legislative aims.

One feature of the new law that nonprofits are likely to find attractive is that it insulates electing organizations against the abrupt loss of their tax-exempt status for overspending in a single year. In the best remembered recent case, the Sierra Club had its exemption lifted in 1966, with grass-roots lobbying apparently playing a major part in the decision. Under the new law, loss of tax-exempt status is decreed if average spending over 4 years exceeds permissible amounts.

The provisions have no effect on longstanding prohibitions against nonprofit organizations participating in election campaigns or any other sort of partisan activity. The new option is not open to private foundations, churches, or church-related organizations. Private foundations came under attack beginning in the late 1960's for funding political activity, particularly for grants to activist community action groups. One question about the new law that has caused some anxiety to private foundations is raised by grants by them to nonprofit organizations which elect to be governed by the new law. The

*Organizations that elect to operate under the amendments are permitted to spend 20 percent of the first $500,000 of annual expenditures on direct lobbying activities and a declining percentage of further expenditures up to a maximum of $1 million in nontaxable spending on lobbying. An organization may spend up to a quarter of the amount for which it is eligible on grass-roots lobbying. An organization may spend up to 50 percent of its nontaxable spending maximum on lobbying if it is willing to pay a 25 percent excise tax on the added sum.