

DNA rules eased, but kept mandatory

In a reversal of position, the major federal advisory committee on gene-splicing research voted to keep laboratory guidelines on recombinant DNA experiments mandatory for scientists receiving federal funds. Instead of accepting the proposal for a wholly voluntary system they approved in preliminary form in September (SN: 9/19/81, p. 180), the members of the National Institutes of Health Recombinant DNA Advisory Committee (RAC) adopted an alternative drafted by Susan Gottesman of the National Institutes of Health. The Gottesman proposal streamlines the gene-splicing rules and eases restrictions on several types of experiments, while retaining the local institutional biosafety committees (IBC's) as part of the oversight process and retaining sanctions against investigators who do not follow the guidelines. The competing proposals, published in the December Federal Register, provoked almost 100 written comments.

At last week's meeting, some members said the risk assessment studies to date are not sufficient to discount risks of the wide range of potential experiments. Others worried more about public response, especially the passage of varied local regulations if the federal rules appeared to have been revoked. "The time is not ripe," said James O. Mason, director of the Utah Department of Health. "The public is not yet ready."

Robert E. Mitchell, an attorney in Norwalk, Calif., said that "if you change the guidelines in any substantial way, you lose the opportunity to continue to move the technology along on a rational basis and you lose uniformity of regulations. Once that genie is out of the bottle, you'll never get it back."

David Baltimore of the Massachusetts Institute of Technology, who sponsored the proposal making the guidelines voluntary, argued that committee members had retreated from their reasoning of last September. He said recombinant DNA research is no more hazardous than the mainstream of biological research. Keeping the guidelines mandatory for political, rather than scientific reasons, is "a sham," he said. But the committee members only agreed to point out in a preamble to the Gottesman proposal that they did not believe gene-splicing to be more hazardous than other biological research.

The Gottesman proposal, which was approved 16 to 5, now awaits consideration by the director of the National Institute of Allergy and Infectious Diseases or by the new director of NIH, expected to be appointed within a month. The proposal reorganizes and simplifies the guidelines by putting all experiments in four categories. The proposal relaxes restrictions on several classes of experiments. Other ex-

periments will be speeded by not requiring prior approval or requiring approval from the IBC instead of RAC.

Under the proposal only three classes of experiment, all of which had previously been classified as "prohibited," are required to receive prior approval from RAC and the NIH. These experiments are those involving certain drug resistance traits, toxin genes and deliberate release of a product of recombinant DNA experimentation into the environment. These experiments would require the same approval as under the current guidelines.

"This is a moderate relaxation of the guidelines. It opens more systems to be used and simplifies procedures," Gottesman said. A subcommittee was instructed to recommend further modifications and simplifications for consideration at the next meeting.

—J.A. Miller

Arkansas won't appeal

The State of Arkansas will not appeal a recent federal ruling that found unconstitutional its "Balanced Treatment for Creation-Science and Evolution-Science Act" (SN: 1/9/82, p. 20). The law would have required schools teaching evolution to teach creationism as well.

In a press conference last week, the state's attorney general, Steve Clark, said that the Arkansas law, by contending that the universe and living creatures were created "from nothing," carries "a uniquely religious overtone"—one too difficult to defend on appeal. But he added, "I think a bill can be drafted that does meet constitutional standards." He predicted that Louisiana's, for example, would prove easier to defend. □

Sailing a mercury sea in a copper sub

Normally, a straight, short piece of copper wire will float on a liquid mercury surface. However, if electric current passes through mercury contained in a long, narrow trough, and the wire is pointed at one end, the wire submerges and moves along the trough. A surface bow wave and wake mark the wire's passage.

This was the surprising phenomenon that Peter Graneau, a part-time researcher at the Francis Bitter National Magnet Laboratory of the Massachusetts Institute of Technology in Cambridge, Mass., found and reports in the Jan. 28 NATURE. Graneau believes that this phenomenon is evidence that a longitudinal force exists in the direction of a current, something not predicted by the laws of electromagnetism formulated by Maxwell and Lorentz but contained in earlier work of Ampere and Neumann. He hypothesizes that this force could be used for propulsion and has implications for magnetohydrodynamic effects.

In his experiments, which gave repeatable results, Graneau used a copper submarine, 5 centimeters long, 3 millimeters in diameter, with a 1-centimeter-long taper. The mercury trough was 30 centimeters long and had a cross-section of 13 x 13 millimeters. When an electric current of 400 amperes was applied, the wire moved at 15 cm per second through the trough.

Most physicists do not believe that Ampere and Maxwell are at odds with each other. Peter Mongeau, a colleague of Graneau, says, "You just have to be careful how you analyze them, because you can sometimes misconstrue mathematical imperfection for real physics."

Mongeau and others say the effect observed by Graneau is still explainable within the Maxwell-Lorentz framework. An alternative explanation is that the phenomenon is the result of a complex interaction between the moving fluid and the magnetic field that arises from the current. An instability within the mercury can generate a small wave, and the wire rides on the crest of the wave. "When you are dealing with fluids, there are often boundary conditions and all kinds of peculiarities that you have to be careful about," says Mongeau.

Graneau concludes, "In view of the widespread acceptance of Ampere's force law during the nineteenth century and its implications with regard to solid-state physics and MHD technology, I urge others to repeat these simple experiments and comment on their observations."

Mongeau says, "Before you start building submarines, you really have to make sure that there's real physics there. If there really is, it's going to take some rewriting of the textbooks." —I. Peterson

A 5-cm piece of copper wire submerges and moves at 15 cm per second down a mercury-filled trough when a current of 400 amperes is applied.

