Vaccine engineering

Violation of rules alleged

Washington

A FIELD test of a new vaccine that went relatively unnoticed when it occurred two years ago has recently been the subject of several investigations after doubts surfaced about the steps taken by the US Department of Agriculture (USDA) in approving the vaccine for sale. The latest report comes from the Baylor College of Medicine Recombinant DNA Subcommittee criticizing faculty member Saul Kit for participating in a test of his pseudorabies vaccine that "violated" National Institutes of Health (NIH) Recombinant DNA Guidelines and Baylor College of Medicine policies.

The Baylor report comes hard on the heels of a letter sent to the NIH Recombinant DNA Committee (RAC) by the Texas A & M University Institutional Biosafety Committee complaining that Kit's experiments constitute a violation of NIH guidelines. Former Texas A & M faculty member Stewart McConnell collaborated with Kit on the field experiments.

The test in question involved inoculating approximately 1,400 pigs on the Maddox farm in west-central Texas where an outbreak of pseudorabies occurred in June 1984. Pseudorabies is caused by a herpes virus, and can be fatal to young pigs.

Since 1981, Kit has regularly sought and received approval from Baylor's Recombinant DNA Subcommittee to develop a live virus vaccine lacking a portion of the viral genome coding for thymidine kinase, an enzyme that allows the pseudorabies virus to invade the nervous system of infected animals. But Baylor maintains that Kit never sought permission to test the vaccine in pigs either on or off the Baylor campus. Moreover, the subcommittee concluded that because recombinant DNA techniques were used in developing the vaccine, it must be regarded as a recombinant DNA virus, containing recombinant DNA molecules.

Responding to the subcommittee's findings, Kit argues that his virus does not violate NIH guidelines because it is not an organism "containing recombinant DNA". Kit acknowledges that recombinant DNA techniques were used to develop the vaccine, but since the alteration is a deletion rather than an insertion, the vaccine itself should not be considered a recombinant DNA virus. "If you look at a large enough number of thymidine kinase mutants, you'd find one with deletions", says Kit.

Kit and McConnell received permission to conduct the inoculations on the Maddox farm from the Texas Animal Health Commission. But Baylor president William Butler, in a statement accom-

panying the subcommittee report, noted that Baylor requires all faculty research to adhere strictly to NIH guidelines, regardless of the state or federal guidelines.

But Kit also rejects charges that the field test constituted an environmental release, since earlier experiments had shown that vaccinated animals were unlikely to shed the virus, transmitting it to other animals. Indeed, Kit maintains that no such transmission has occurred in any of the animals on the Maddox farm in the two years since the experimental vaccinations. Pseudorabies was eliminated on the Maddox farm following inoculations with Kit's vaccine.

For its part, NIH has established a nine-

member committee to investigate the 1984 incident. If the NIH committee finds a violation has occurred, it could recommend that all funds for recombinant DNA research be withdrawn from the two universities involved, although a lesser punishment seems more likely.

Kit's pseudorabies virus is currently being marketed by Biologics Corporation of Omaha, Nebraska, under the trade name Omnivac. Last month, in response to criticisms of its approval process, USDA requested that Biologics Corporation suspend sales of Omnivac while an environmental assessment was prepared. By the end of the month, USDA gave Biologics Corporation the green light to resume sales, but Jeremy Rifkin's Foundation on Economic Trends has brought suit to block the continued sale of the new vaccine.

Joseph Palca

Engineered plants

Another turn for ice-minus bugs

Washington

THE US Environment Protection Agency (EPA) was expected this week to make a decision about an Experimental Use Permit (EUP) application submitted by Stephen Lindow of the University of California (UC) at Berkeley to perform field tests of a genetically altered strain of *Pseudomonas syringae* designed to protect potato crops from frost damage. Approval seemed likely at the beginning of this week, but critics of genetic engineering were trying a series of last-minute manoeuvres to block the issue of the permit.

A Scientific Advisory Panel of independent researchers asked by EPA to evaluate Lindow's EUP had no quarrel with any of the proposed protocols or testing procedures. Panel member Robert Colwell, also of UC Berkeley, said the panel found Lindow's testing extremely thorough.

The strains of *P. syringae* developed by Lindow lack a portion of the genome coding for an ice-nucleating protein that acts as a focus for ice crystal formation, thereby causing frost damage to crops at warmer temperatures than if the protein were absent. The "ice-minus" bacteria that Lindow will be testing are conceptually similar to a strain of ice-minus *P. syringae* developed by Advanced Genetic Sciences (AGS) to protect strawberry plants. The AGS experiment is in abeyance while the company repeats pathogenicity tests.

Lindow has been seeking approval to test his bacteria since 1982. The National Institutes of Health (NIH) Recombinant DNA Advisory Committee (RAC) approved the field test in 1983, but a lawsuit brought by Jeremy Rifkin's Foundation on Economic Trends blocked the experiment. In 1984, with the lawsuit still pend-

ing, EPA assumed jurisdiction from NIH for approving such experiments.

A final settlement, reached just last month, absolves RAC of legal responsibility for approving Lindow's experiment, clearing the way for EPA to issue an EUP. Rifkin is still trying to block the Lindow experiment by asking EPA to issue a rule regarding liability insurance for those releasing genetically altered organisms into the environment. Rifkin claims UC's insurance is inadequate to cover the experiment.

The problems experienced by companies and researchers anxious to test genetically altered organisms has brought about a heightened awareness of the need for good public relations. Lindow plans to test his bacteria on a farm leased by UC in Tule Lake, California, a remote town near the Oregon border. As Tule Lake is subject to frost even in May, its agricultural interests should benefit if Lindow's field trials are successful.

Monsanto, also awaiting approval for an EUP for a genetically altered organism, has waged its own large public relations campaign. The company has sent thousands of brochures to residents of St Charles County in Missouri where the field test is to take place, and has held numerous meetings with area residents. Monsanto is hoping to test an altered *Pseudomonas fluorescens* containing a *Bacillus thuringiensis* endotoxin lethal to corn crop pests. An EPA decision on Monsanto's EUP was expected this week, but has been delayed for at least a week, according to EPA spokesman Al Heier.

Some light may be shed on the issues relating to experiments with genetically engineered organisms when the federal government publishes its expected policy statement on the subject.

Joseph Palca