Yeutter Backs Plan to Map Crop Genes

A plan to produce genetic maps of important agricultural crops will be developed in the next fiscal year by the U.S. Department of Agriculture (USDA). Clayton Yeutter, President Bush's new secretary of agriculture, has endorsed the initiative, stating that it is "essential for the U.S. to strengthen and maintain a global position in agricultural efficiency and profitability."

In his 17 February announcement of the initiative, Yeutter said the focus of the program "would be to identify the genes present in important food and forest crops, what the genes do, and how they function." USDA officials say a broad, federally coordinated effort that includes university researchers and industry is necessary to enable plant breeders to design new crop varieties more quickly. Orville Bentley, USDA's outgoing assistant secretary for science and education, notes that changing climate and tighter restrictions on pesticide use will require the development of crops with increased resistance to insects, disease, and drought.

Although Yeutter is backing the concept, the scope and size of the gene mapping and DNA sequencing effort still must be defined. USDA officials already are describing the undertaking as a "long-term" project and they have not provided Yeutter with an estimate of what it might cost. The mapping of the human genome is expected to cost on the order of $1 billion to $3 billion. Whether Yeutter and the White House will support such a level of investment is not known.

Lining up congressional support for the project could be difficult, depending on the expense. While the National Institutes of Health is focusing just on the human species, USDA must look at many species. The department will likely have to go forward with mapping programs for several crops at once to get the backing of competing commodity groups. That could be costly, depending on the scope of the work.

The push to map crop genes originated with Bentley, who told *Science* that he brought the idea to Yeutter after reviewing a report of a USDA conference on the matter that was held in mid-December. The *Plant Genome Research Conference Report*, which is to be published shortly by the department, concludes that in order to maintain U.S. competitiveness in world agricultural markets, the government must accelerate the mapping of genes and sequencing of DNA for crop plants. The report notes that Japan plans to spend $200 million a year for research on rice genetics. European governments also are supporting gene mapping on grains and vegetables.

In the United States, partial maps of crops such as corn, barley, wheat, and tomatoes have been developed in recent years by researchers in industry and at universities. These fragmented efforts must be coordinated with federal research projects and centralized data management systems must be established to enhance research productivity, according to the report.

Robert Faust, head of the Agricultural Research Service's crop protection branch, says the department will also have to increase its basic research budget to support any substantial effort to accelerate the mapping of crop plants. The task would be performed in conjunction with industry and university researchers through research contracts and grants administered by the Cooperative States Research Service. Faust says he expects that some of this research also would be performed by federal research scientists at ARS and elsewhere.

Before USDA can proceed with its initiative, the department will have to decide on which plants should be studied first. Crops that are most important to the domestic economy are likely to land at the top of the agenda. The details of how USDA will address such issues are to be worked out during 1990. The Administration, it is hoped, will then submit a funding request for the program when President Bush presents his 1991 budget proposal to Congress next January. ■ **MARK CRAWFORD**

NIH Offers AZT to Exposed Workers

The National Institutes of Health last week announced that it would offer the AIDS drug AZT to any employee exposed to the human immunodeficiency virus through accidents on the job. The new policy has been generated without knowing whether or not AZT can prevent infection in a healthy person or what the long-term side effects of the drug might be. Says Samuel Broder, director of the National Cancer Institute: "This is an experiment."

The announcement makes formal a practice that has become increasingly common not only at NIH, but at hospitals and research centers around the country. Following accidental exposure to HIV by surgical cuts or needle pricks, AIDS researchers and health care workers take AZT (also called azidothymidine or zidovudine) for a short time as a prophylaxis. By taking AZT, an exposed worker hopes that the AIDS virus will fail to actively infect immune system cells, since the drug works by inhibiting the process by which HIV transcribes its viral RNA into viral DNA.

Advocates for AIDS patients say that the new policy shows that NIH uses the same criteria patients use when seeking an experimental treatment. "They're just doing what makes sense here, and that's all we've been asking for these last years. Given the alternative, why not take a chance with an experimental treatment?" says Martin Delaney of Project Inform, an AIDS information and advocacy group based in San Francisco. NIH officials respond that exposed workers will not be self-experimenting, but will be taking an approved drug in a clinical setting.

No one knows if AZT can keep a healthy person from being infected by HIV following exposure. Laboratory studies have shown that AZT may be able to protect mice and cats from being infected by related retroviruses. But, says David Henderson, associate director of the Clinical Center at NIH, "there are no data yet on what happens in humans."

Such data may be a long time in coming. It will be difficult to gauge the efficacy of AZT because so few workers exposed to HIV actually become infected, says Henderson. In studies involving health care workers, some 1408 exposures have resulted in 6 infections, meaning the risk of becoming infected following job-related accidents is less than 1%. With such a low rate of infection following exposure, a huge number of patients would be required to do a controlled study to test the efficacy of AZT as a prophylaxis.

Instead of testing AZT's effectiveness in stopping infection, NIH plans to monitor the toxicity of the drug in healthy people. About 20 NIH employees are exposed on the job to the AIDS virus each year. A worker exposed to HIV would be given the option of getting AZT within hours. The treatment would last for 6 weeks.

Broder cautions that it is too soon to know what the effects of even a few weeks of AZT will be for individuals years later.

The first patients began taking AZT in July 1985. It was approved for use in AIDS patients by the Food and Drug Administration in 1987. But AZT must often be discontinued because the drug is toxic to the bone marrow. ■ **WILLIAM BOOTH**