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# THE FIRST WORD

## BIOTECH'S ELM BLIGHT

*We interrupt our regularly scheduled diatribe to bring you the following special denunciation:*

At press time, word broke about unauthorized experiments carried out by Gary Strobel, a plant pathologist at Montana State University who did an end-run around the maze of federal regulations. Without permission from the U.S. Environmental Protection Agency, the National Institutes of Health's Recombinant DNA Advisory Committee, or his own institution's biosafety committee, Strobel inoculated a small stand of 18-year-old elm trees with a strain of *Pseudomonas syringae* engineered to overproduce an antibiotic that attacks the fungus responsible for Dutch elm blight.

Strobel apparently began his experiments in ignorance of the regulations. Eventually, however, the work took on the form of a protest—ill-advised, we think. His actions have undoubtedly jeopardized his career, his institution, and responsible biotechnology in general.

Yes, this is a battle of substance and shadow—substantial, successful field experience with plant pathology against the shadow of public opinion. Yet, no matter how much we sympathize with Strobel's frustration, his actions were destructive—a willful, self-righteous act of vandalism on par with the anonymous midnight uprootings of Advanced Genetic Sciences' strawberries and Steven Lindow's potatoes.

The day after this news broke, the *New York Times* again carried page-one headlines about biotechnology: the National Academy of Sciences' blue-ribbon panel had concluded that recombinant organisms present no special hazard to the environment. This conclusion is a two-edged sword; some of its implications are awkward. The syllogism goes something like this:

What matters is the organism's effect on the environment. There is no necessary difference between wild-type and engineered organisms. It is politically impossible to leave recombinant organisms unregulated. *Ergo*, all organisms released into the environment must be regulated according to the same criteria.

Neither the resources of the federal regulatory system nor (obviously) the patience of legions of plant pathologists would be equal to that strain.

But we may be driven to that. The public is being told, almost in a single breath, that recombinant organisms are okay, but a stand of elm trees may have to be uprooted and burned to keep an unauthorized experiment from running amok.

If anybody out there is planning a "protest" like Strobel's—for heaven's sake, don't.

*We now rejoin our regularly scheduled screed, already in progress.*

### Sequence the Human Genome (Part II)

... The true cost of sequencing the human genome is not the billions usually bandied about. It is the difference in cost between the piecemeal sequencing already being done and the pricetag of the whole job—complete with information storage and retrieval. (The information management is crucial; right now too much published sequence data remains essentially unavailable.) The final bill is bound to be lower than we expect.

Perhaps we might make a modest beginning at getting the most from current efforts. Rather than having each researcher do short, high-cost sequences individually, a centralized resource might prepare sequences under contract—using the best equipment to decipher a long sequence containing the target region. If the technology truly does make a difference, this "sequencing utility" should be able to produce more information faster, at a lower cost to the researcher.

The job is worth doing. As Lloyd Smith and Leroy Hood conclude in this month's Review:

The sequence of the human genome, containing the instructions for building human organisms, is a resource that would continue to increase in value as man continues to decipher more of the mysteries of human growth and development. It is now up to the scientific community to grasp this opportunity.

—Douglas McCormick