COMMENTARY

GENOME ACQUISITION SYNDROME A PARABLE

Genome acquisition syndrome (GAS) is distinguished by a complex of behavioral changes, the most marked of which is the frequent insistence that the human genome should be mapped and sequenced. Other symptoms include changes in socialization (a tendency to convene workshops on the management of computer data), distrust of foreigners (a rolling of the eyes accompanied by warnings about advancing Japanese technologies for laboratory automation), and altered speech patterns (the virtually unpronounceable word "RFLP" is a common feature of the conversation of those affected).

The first confirmed cases of genome acquisition syndrome occurred in early 1986, though anecdotal reports date back at least to 1985. A number of Department of Energy (DoE) policy planners and a handful of prominent biologists were among the earliest believed to have the syndrome.

At first, public health research specialists at the Centers for Research and Development Control (CR&DC) in Atlanta thought GAS was confined to individuals who joined computer users' groups and engaged frequently in electronic DNA-sequence analysis. When a new wave of cases appeared among molecular biologists supported by the National Institutes of Health (NIH), other causal agents were suspected. Recurrent use of gel electrophoresis—especially pulsed fields—for DNA sequencing seemed highly correlated with the syndrome. So was manipulation of high-capacity cloning vectors. A few stubborn analysts denied that these factors played a primary causative role; instead, they said, genome acquisition syndrome was the inevitable consequence of the first virus fully sequenced.

Through much of 1986, GAS continued to spread. It affected new corners of the biological research community and officials who plan national research policies in Washington, D.C. A few cases were tentatively diagnosed among intellectual members of Congress; the victims showed no discernable pattern of political affiliation, which further complicated the epidemiology.

Prompted by the growing numbers of cases, as well as by rumors of infections among scattered staff members on Capitol Hill, the Office of Technology Assessment of the Congress and the National Academy of Sciences launched separate studies. NIH also became increasingly involved in such analysis, as did the private Howard Hughes Medical Institute.

Despite reports that many biologists were immune to the new syndrome, early cost projections—based on proposals from those already affected—seemed staggering, raising concerns that the outbreak could jeopardize the whole biomedical research system. The human genome contains approximately 3 billion base pairs of DNA, and initial estimates put the cost of sequencing all of it at $1 per base pair. That figure does not include efforts to store, catalog, and analyze the voluminous data that would be produced.

Nonetheless, some federal officials have insisted that, in any case, early efforts to analyze the human genome will not be "a raid on the treasury." Thus, virtually as soon as the syndrome was described and the likely etiologic agent tentatively identified, methods for safeguarding both private and federal sources of research funds were being discussed and implemented.

Notwithstanding the infectiousness of GAS, health research specialists now feel some renewed confidence. The federal research-fund supply will be subject to powerful screening procedures that will help prevent the syndrome from spreading too rapidly. Still, the experts caution, neither a preventive program nor a treatment protocol is likely anytime soon. More cases are expected.

This leaves the experts in the difficult position of recommending a prudent middle course. Certainly, genetics is still safe, but all researchers are urged to observe long-accepted-but-often-ignored precautions, particularly when handling any eukaryotic chromosomes. GAS is not thought to be transmitted by a casual reading of the genetics literature, or even by the occasional contacts that can occur during the review of unpublished manuscripts or draft copies of weighty reports.

—Jeffrey L. Fox

These opinions are the author's own and are probably not those of *Bio/Technology*.