Tough Times Ahead for the Genome Project

As the genome project comes under increasing scrutiny, Congress is asking how much and how fast it should grow

THE HONEYMOON IS OVER for the genome project. After 2 years of hefty budget increases and what seemed like nearly universal support, the project is facing mounting criticism from its peers and increased scrutiny from Congress. In fact, the huge budget increase—from $60 million to $108 million—slated for the genome project at the National Institutes of Health for 1991 is in serious trouble. In a closed session on 20 June, the House appropriations subcommittee voted against giving the project the full amount requested by the President, according to one congressional source, who would not say how far shy of the request the appropriation actually is.

The reasons for the project's predicament are several, but chief among them is a perception that the genome budget has grown too big and too fast when the rest of biomedicine is strapped for funds (*Science*, 24 November 1989, p. 988). In Congress, no one is talking about dismantling the project, say committee aides. Rather, the question is simply, "Should the genome project be expanding when we can't do other things we would like to do at NIH, like [raise the] number of grants?" as one key aide puts it.

There are other concerns as well. One is the project's budget, which the same aide says James Watson, director of the Center for Human Genome Research at NIH, "just backed into" without sufficient justification. In 1988 a National Academy of Sciences committee recommended that the genome project be funded at $200 million a year, after an initial scaling-up period. Since then, that number, plus inflation, has become firmly embedded in planning at NIH and the Department of Energy, which is requesting $48 million for next year.

There is also "nervousness, but not opposition" about concentrating research in large centers, as Watson has proposed. And Congressman David Obey (D–WI) has questioned the wisdom of expanding the project until some of the ethical questions surrounding the use of genetic knowledge are resolved.

Francis Collins of the University of Michigan, a codiscoverer of the cystic fibrosis gene who is actively involved in the genome project, puts it very simply: "We have a PR problem of major proportions." To Collins, while the majority of biologists are still behind the project, the "Camelot days" of intellectual debate are clearly over. "This is getting into turf," he says, referring to the two letter-writing campaigns now under way to stop the project (*Science*, 13 October 1989, p. 204). So far, the White House and NIH have received nearly 60 of these form letters from biologists around the country, and an untold number are circulating on Capitol Hill.

Now Watson and a number of leading scientists are frantically trying to repair the damage with a counteroffensive of their own. Watson has been going door to door on Capitol Hill, aggressively fighting for his budget—and threatening to quit if he doesn't get it. Last week, as the House appropriations subcommittee neared its crucial vote on the NIH budget, Collins, David Housman, a Massachusetts Institute of Technology researcher who studies the genes involved in cancer and other diseases, and Huntington's disease researcher Nancy Wexler of Columbia University all flew in to Washington to plead the project's case.

And since the genome center sounded the alarm a few weeks ago, letters of support have been pouring into congressional offices. Nobel laureates Paul Berg of Stanford and Renato Dulbecco, president of the Salk Institute, have written, for example. And these have not been mere form letters but eloquent pleas to maintain the President's budget request. "The genome project [is] an effort whose momentum, promise, and very lifeblood depend on plans previously set in motion to expand the project as quickly as possible to the $200-million-a-year level," wrote Collins.

At the White House Office of Science and Technology Policy, James Wyngaarden has been urging the genome project critics to quit sniping at their peers and instead band together to lobby for more research funds. Wexler, too, is troubled by the split among people who should be allies. "You don't bomb your own house," she says. But even the more moderate critics of the project, like microbiologist Bernard Davis of Harvard, say that such pleas are coming too late. "The dissatisfaction is too deep and the rift too broad," Davis says.

For all the critics, the biggest gripe is money. They are convinced that the genome project is diverting funds from traditional—and in their view, far worthier—"small" biology. The hardcore among them—like Martin Rechsteiner of the University of Utah and Michael Syvanen of the University of California at Davis, who organized the letter campaigns—argue strenuously against brute-force sequencing of the entire genome, apparently without realizing that the genome center has yet to endorse it either. They call the project mediocre, mind-numbing work unfit for training young scientists. And they are leery of concentrating the effort in a few big centers instead of spreading the wealth.

Davis, on the other hand, supports the current goals of the project—mapping the chromosomes, developing new technologies, studying model organisms, and sequencing the DNA in interesting regions of the human genome—calling them "virtuous." But, asks Davis, "Is it worth a crash program?" He doesn't think so, and says his view is shared by almost all members of Harvard's Department of Microbiology and Molecular Genetics.

These attacks drive genome project proponents to distraction. "What are we doing wrong in our approach to our colleagues? Why do they so completely misunderstand what we are about?" asked Norton Zinder of Rockefeller University at last week's meeting of the NIH genome advisory committee, where members spoke as if they were under siege. Says Stanford's Berg: "How

Hubble Trouble

As *Science* went to press on 26 June, managers for the $1.5-billion Hubble Space Telescope were reporting to NASA headquarters that the telescope suffers from a serious focusing problem, a condition known as spherical aberration, which causes the point-like images of stars to be surrounded by fuzzy haze. The aberration seems to result from a subtle warping in the telescope's mirrors as they adjust to the zero gravity of space, and cannot be eliminated simply by tweaking the telescope's focus. Ground controllers hope that they can correct the problem with a set of 24 pistons on the back of the 2.4-meter main mirror, using them to push and pull on that optically exquisite surface until the aberrations are eliminated by force. ■ M. MITCHELL WALDROP