

Congress Queries Hallowed Principles

If this year's gloomy budget outlook were their only problem, U.S. researchers would have cause enough to be concerned. But it isn't. Researchers are now beginning to worry about another development with long-term implications: Federal policy makers are questioning the assumptions that form the basis for federal support of research. Both the National Science Foundation and the National Institutes of Health are involved in strategic planning exercises that could fundamentally alter the way those agencies conduct their business. Now comes the House Committee on Science, Space, and Technology with a report that indicates Congress, too, is anxious to reexamine the role research plays in achieving national policy goals.

Sounding a theme from the 1960s, Representative George Brown (D-CA), who chairs the science committee, says his panel is "looking for ways to make science more relevant." Though he insists he is not arguing for more "directed" research, Brown suggests that both the scientific community and the federal government must do more to take the results of research and, where appropriate, apply them to national goals. That may not sound too worrisome, but the report suggests it is time to

evaluate empirically some hallowed principles. Up for review: the notion that individual investigator research is the best way to produce new ideas; that basic research should be carried out primarily at universities; and that basic research is the source of fundamental knowledge that eventually leads to innovation, technological development, and economic growth.

Some believe such a reevaluation is long overdue. "If you believe the dogma" that science leads to technology that inevitably leads to prosperity, says materials scientist Rustum Roy of Pennsylvania State University in University Park, "I'll sell you some bridges." Roland Schmitt, president of Rensselaer Polytechnic Institute in Troy, New York, acknowledges that "[a] lot of academics get nervous" when some of these principles are challenged. But he argues that there is a "healthy ferment" that will ultimately improve the health of the U.S. research enterprise.

The report says the committee intends to explore several ways to strengthen the link between research and national goals. One would be to enhance the role of the White House Office of Science and Technology

Policy to improve existing mechanisms for coordinating science policy. Another suggestion is to seek greater involvement from the users of research in setting priorities. There should also be assessment mechanisms for federally funded projects, so that there will objective criteria for determining which are successes and which should be canceled. And supplementing peer review of grant proposals with alternatives such as block grants based on past performance, start-up grants for young researchers, and funding decisions by "smart managers" are deemed worthy of evaluation.

Brown, who will present his own views on these issues in a forthcoming issue of *Science*, says he is aware that some will use the report to buttress arguments that this country can no longer afford "pie-in-the-sky" research that does not have obvious economic or social benefit. "I'm going to fight those [arguments] to the last breath," says Brown, who insists that fundamental research is an enterprise that deserves support in its own right.

Beginning next week, the subcommittee on science chaired by Rick Boucher (D-VA) will hold a series of hearings to debate the issues raised in the report. "[I]t is clear that neither policy makers nor scientists are satisfied with the implementation of science policy today," the report states. Boucher's committee should get an earful.

—Joseph Palca

GENOME DATA

Two Strikes Against cDNA Patents

Since biochemist Craig Venter left the National Institutes of Health (NIH) in July to head up the new, privately funded Institute of Genomic Research, researchers have been anxious to know whether the institute will seek patents on the gene fragments Venter is sequencing. They have good reason for concern: Venter, along with NIH technology transfer director Reid Adler, touched off an international furor last year when they filed for patents on thousands of gene fragments that Venter's NIH group had sequenced (*Science*, 21 February, p. 912). Plenty of genes had been patented before, but these were mere snippets, just 200 to 300 bases long, whose function was unknown. Apprehensions escalated when Venter got \$70 million to continue his work on an even larger scale at the institute. With a vow to identify a whopping 1000 genes a day, Venter's new venture might be in a position to patent most of the human genome.

Now the genome community can apparently breathe two sighs of relief. First, a well-placed source told *Science* last week that the patent office, in an initial ruling, has rejected NIH's application for patents on some 2000 gene fragments on the grounds that their discovery is "obvious." That's far from the

last word, however: NIH now has a chance to respond in what could be the first of several rounds of negotiations. But even if NIH does eventually persuade the office that gene fragments are patentable, neither Venter's institute nor the company it is affiliated with will go that route. "There will be no filing on gene fragments whose utility is not known. There are no caveats," says Wallace Steinberg, chairman and founder of the venture capital fund that backs both the institute and the new company, Human Genome Sciences Inc., that was created to turn Venter's discoveries into products.

Steinberg says his company has no need to patent gene fragments. It can play by the "old rules"—"when you know the utility and can deposit the full gene with the Patent Office"—and still turn Venter's data into profits. After all, he points out, those are the same rules that allowed Amgen to patent the blockbuster drug erythropoietin (EPO).

As for speculation that Venter and Steinberg are trying to lock up the genome, Steinberg, who was head of research and development at Johnson & Johnson before leaving to set up the HealthCare Investment Corp., insists that the company is going for quality rather than quantity. Steinberg sus-

pects that of the 100,000 or so human genes, only perhaps 200 or 300 express therapeutically useful proteins such as EPO. "If we find five of them, I would consider that extremely successful." Similarly, he suspects there may be another 20,000 genes that could provide leads for drug development—finding a few of those could be "very valuable."

Steinberg and Venter also dismiss rumors that they will hold data secret for proprietary reasons. All data from the institute and company will be published "as early as practical," says Steinberg, who believes that the 6 months or so that will elapse between Venter's identification of a potentially interesting gene and publication should give the company an adequate lead—"if we have chosen wisely."

News of the company's no-patent policy—not yet formally announced—was greeted with relief by several scientists and lawyers *Science* spoke with, including James Watson, who resigned as head of the NIH genome project largely over the patent issue, and David Galas, head of the Department of Energy genome effort. But several people said they would reserve final judgment until they see the policy in writing, reflecting the wariness that remains about Venter's new operation. Clearly, the company faces public relations challenges at least as formidable as the technical ones.

—Leslie Roberts