would be negotiating detailed cost schedules and contracts with the participating countries. The Soviets alone are said to be considering a contribution of $15 million to Ting's project. Further, as Lederman puts it, "if the other groups found they couldn't pay their part, DOE would be faced with a crisis, having put up $20 million when the detector might need another $10 [million]." Lederman chuckles and calls these possibilities "delectable."

Some proponents of collaboration stress that work overseas is beneficial for U.S. programs, and not just in terms of scientific discovery. "It can take U.S. physicists out of the country and therefore lessen the pressure to build new machines," says Stanley G. Wojcicki, a physicist at Stanford who worked on a proposal for a LEP detector that was tentatively rejected by CERN. "Thus there will be more money left over to do experiments, to exploit American facilities that are already operating." It is also a truism that Nobel Prizes and other awards are won by individuals, rather than countries that take on the task of building huge machines.

So too, the risks and benefits of collaboration will eventually be shared as the pendulum starts to swing back to the United States. In the not too distant future, Fermilab will complete its next-generation machine, the Tevatron, and thereafter Stanford will build Richter's linear collider. Brookhaven also may eventually complete Isabelle or another machine based on a similar design. At Fermilab, Lederman says he already has proposals from about 200 Europeans for work on the Tevatron, which might start as early as 1985. In the past, he says, Europeans sometimes put in 20 percent of the work at Fermilab but for the Tevatron it will be closer to 25 percent. "It's becoming impossible for countries to build and run duplicate machines," says Lederman. "The ultimate solution might be a world laboratory."

The task before HEPAP and the Department of Energy is to decide whether the Ting proposal is scientifically sound and, if so, to debate the advisability of making a $20-million investment in Europe. Congress too might choose to enter the process. The record of successful minor collaborations over the past decade bodes well for a large-scale project. In the case of Ting's proposal, the migration of money and know-how would be sizable. Yet the scientific allure is considerable, and the project might mark a new era of cooperation at a time when such unquantifiable notions are seldom given a chance.—WILLIAM J. BROAD

## Breeder Wins Exemption from Licensing Procedures

Persistence pays, the Administration has learned in its campaign to get an exemption from regular licensing procedures for work on the sodium-cooled fast breeder reactor to be built on the Clinch River in Tennessee. The plant is intended to be a low power (350 MWe) facility demonstrating the feasibility of a system that uses and produces the extremely long-lived radioactive fuel, plutonium. The Nuclear Regulatory Commission (NRC) had twice turned down the Department of Energy (DOE) when it asked for an exemption in March and June 1982. On the third try, on 5 August, the DOE got its way, winning permission to start construction before the plant has been licensed for safety.

The reversal came about because the newest Reagan appointee to the NRC, James Asselstine, changed his vote from nay to aye, allowing for a vote of 3 to 1 in favor of the Administration's request. Others voting in favor were Chairman Nunzio Palladino and Thomas Roberts, both Reagan appointees. Commissioner John Ahearne voted against the DOE request. Commissioner Victor Gilinsky, who has voted against it in the past, was absent because he missed a plane connection.

The victory for DOE and the backers of the breeder, important though it may be, is more symbolic than substantial. The Administration values it as a token of its new clout within the NRC and as an indication that the NRC may not balk at licensing the reactor when the technical hearings on its safety have been completed. Congress will vote later this year on appropriations for this project, whose cost is estimated to be over $3.5 billion, up from an original estimate in the early 1970's of around $700 million. Had the NRC denied the exemption for construction work, it would have given wavering congressmen a convenient reason for cutting the breeder from the budget. The skeptics might have argued that the Administration's own licensing authority, the NRC, could not be persuaded to endorse work on the breeder, so why should Congress go along? Now it will be impossible to find shelter in that procedural thicket, and congressmen will have to confront the issue more directly.

The exemption itself is narrow, allowing for preliminary work such as clearing the site and laying roadways and pipes. At the insistence of Asselstine, joined by Roberts, the NRC ruled out any early work on safety equipment, such as piping for emergency cooling water. The NRC decided that these would have to await consideration in licensing hearings.

The NRC staff and commissioners recognized the extraordinary nature of the exemption, and several commissioners said the technical justifications for granting it were slim. The decision was particularly awkward for the NRC in view of its desire to create an exemplary record in licensing the first breeder. Nevertheless, those who voted for it were swayed by the government's broad argument that the national interest was at stake. Palladino, in particular, suggested that it was not fitting for the NRC to stand in the way if the President has declared this a matter of national urgency and Congress has authorized funding.

Eldon Greenberg, attorney for the Natural Resources Defense Council and the Sierra Club, who tried to block the exemption, held a press conference after the vote to say the decision was "wrong on the law and wrong on the facts." He expects to file for an injunction to stop construction within a week.—***Eliot Marshall***

## Stanford Patent Delayed

The United States Patent and Trademark Office has tentatively rejected claims for a genetic engineering patent sought by Stanford University. If the patent application is ultimately turned down, the worth of an earlier gene-splicing patent granted to Stanford and the University of California could be weakened. That patent has already yielded $1.4 million in licensing fees.

The first patent, issued in 1980, covers the method to replicate or express foreign genes in microorganisms. The second would place a claim on virtually all recombinant DNA plasmids which contain foreign genes.

On 2 August, the patent office gave notice that it challenged some of the claims made in the Stanford applica-


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tion. It cited inaccurate detail in the instructions that should enable others to duplicate the genetic product developed by Stanley Cohen of Stanford and Herbert Boyer of the University of California. It notes that after the scientists filed the application, they revised their description of the technique.

The patent office also asked whether Robert Helling should be considered a co-inventor with Cohen and Boyer. The three scientists were authors of a seminal paper on genetic engineering which appeared in the *Proceedings of the National Academy of Sciences*. Subsequently, an article appeared in *Nature* in which Helling "is indicated as refusing to sign a disclaimer that he was not an inventor of the processes . . . ," according to the patent office. The office wants this "apparent dispute" resolved.

On a separate point, the document dispels rumors that a 1973 article in the *New Scientist*, which roughly described Cohen's and Boyer's genetic engineering methods, constituted prior disclosure that would invalidate the Stanford application.

The university, which has 3 months to respond to the patent office, sought to downplay predictions that approval of its application was in serious jeopardy. "None of the problems are insurmountable," said Niels Reimers, Stanford's director of technology licensing. "This is part of the routine back and forth. Our patent position will be strengthened because these issues will be aired."

There are indications, however, that some of the 73 companies which have purchased a license to the original patent may later dispute its validity because questions have arisen about its counterpart.—***Marjorie Sun***

## Mathematical Magic

The Reagan Administration has apparently engaged in mathematical magic to calculate the enormous savings it expects to incur by dismantling the Department of Energy (DOE). The General Accounting Office (GAO) said in a report this month that it was unable to figure out how the Administration came up with its projected savings of millions of dollars.

The report was immediately seized upon by Representative Richard Ottinger (D–N.Y.) and others as confirmation that the Administration does not know what it is doing in energy policy. Ottinger, chairman of the House subcommittee on energy conservation and power, said, "The President's plan to dismantle the Department . . . ignores evidence of the nation's real energy needs."

The Administration has come up with three different estimates of reorganization savings but, the GAO was unconvinced about the validity of any of them. At first the Administration predicted that it could save $1.3 billion in 1 year by eliminating DOE and transferring some of its functions primarily to the Commerce Department. Then it estimated $1 billion could be saved over a 3-year period. In its latest projection, it ventured that perhaps a more modest $250 million could be salvaged. The GAO could not even substantiate the last figure. ". . . [T]he estimate is not adequately documented and does not reflect a full assessment of potential reorganization expenses," the report said.

The agency found that the Administration would achieve most of the estimated savings by the elimination of major programs (such as the synthetic fuels program) and the concomitant cutbacks in personnel. These savings, however, could be accrued without reorganization. "Consequently, we were unable to link the budget proposal directly with the reorganization plan," the report said.

When the Administration did venture an estimate based solely on reorganization, GAO still was critical. For example, the Commerce Department said it could achieve the biggest savings—$200 million—by the integration of computer systems with DOE. The GAO said, "Commerce officials had no specific explanation in support of the estimate."

Commerce authorities also said they could save $50 million by intensifying the auditing of DOE contractors. But, the report said, "Commerce officials agreed this estimate is speculative." The Commerce Department's suggestion seemed to ruffle energy officials who told GAO that their contractors were adequately monitored. They said they were concerned that "such a highly speculative estimate . . . could give the incorrect impression that there is a significant amount of serious fraud, waste and abuse" in the department.—***Marjorie Sun***

## Genex to Go Public

Genex Corporation, one of the largest biotechnology companies in the United States, is about to go public at a time when biotechnology stocks are out of favor on Wall Street. The company, based in Rockville, Maryland, apparently needs an injection of capital to finance a major expansion of its manufacturing capacity.

According to a registration statement filed with the Securities and Exchange Commission on 28 July, the company is considering the sale of 2.75 million shares at $12 apiece, an offering that would bring in $33 million. A company spokesperson said that the offering would be made "after Labor Day," but declined further comment.

Genex was launched in 1977 and has received about $15.5 million in capital contributions from Koppers Company and subsidiaries of Monsanto and Emerson Electric. It currently employs about 200 people and is engaged in a variety of research projects under contract from pharmaceutical and manufacturing companies. Last year it reported an income of $5.6 million, mostly from research contracts, but still ended up with a small loss. During the first 5 months of 1982, the company reported a loss of about $2 million, largely as a result of an expansion of its research and development facilities; hence the need for capital.

This is, however, not a good time for biotechnology companies to go public. Ever since Genentech of South San Francisco tested the stock market in October 1979 and saw the price of its shares soar to $89 within a few minutes of opening, several other companies have tried to cash in on the boom but with less success. Wall Street has been taking an increasingly skeptical interest in biotechnology stocks lately and several companies have raised much less money from stock offerings than they originally anticipated.

Genex at least has the advantage of having several products in development, connections with major corporations, and a clutch of lucrative research contracts. Its stock offering will provide a clear indication of how far the biotechnology hoopla has subsided.—***Colin Norman***