SCIENCESCOPE

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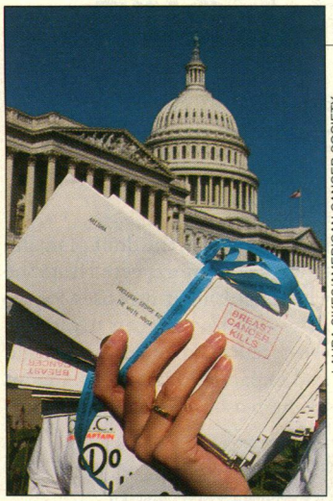

LAURA SIKES/AMERICAN CANCER SOCIETY

Fan mail. Activists are pressing for a big Army breast cancer program.

Army Breast Cancer Program in Limbo

The Army's breast cancer research program, begun in 1993 as a 2-year effort, will get a new lease on life. But Congress has yet to decide how robust that extension will be.

When Congress gave the Defense Department $210 million to launch its research program, some scientists argued that the Army had little expertise for planning such studies. But many have revised their opinions after seeing the program in action. The Army did "a good job under tremendous pressure," says Helene Smith, director of the Geraldine Brush Cancer Research Institute in San Francisco and chair of a panel that is overseeing distribution of the 1993–94 funds. Smith, who says she was initially "suspicious" of the Army's ability to run the program, says she is now impressed by its efficiency in pulling together 40 study sections to review 2500 proposals.

The House apparently agreed, voting to continue the program to the tune of $150 million in 1995. Not so in the Senate, which wants to keep the program alive for another year with an additional $60 million. According to a staffer, some Senators are skeptical that the Army can spend the funds effectively considering that it must rush to finish making this year's awards by 30 September.

The next step is up to a House-Senate conference committee that will meet next month to reconcile differences in the defense spending bill. Supporters of the Army's effort, including several panel members and the National Breast Cancer Coalition, are urging Congress to fund the program at the higher level.

New Technique to Safeguard Plutonium

Germany's recent seizure of 350 grams of plutonium believed to have originated in the former Soviet Union has led to calls for better safeguards of global stocks of this ingredient in nuclear weapons. This fall, Argonne (Illinois) National Laboratory scientists will field test a computer program that should improve security by telling inspectors whether a country has diverted plutonium from its nuclear power plants for use in weapons.

Half of the 1100 metric tons of plutonium generated since the element was first created in 1940 exists in blocks of spent fuel from nuclear power plants. Plutonium has a characteristic isotopic signature that varies according to how long it has been in a reactor and whether it was removed and purified for use in a bomb. It is that signature that experts with the International Atomic Energy Agency can look for to see if a country is complying with nonproliferation treaties.

The Argonne program will allow inspectors "to predetermine what they should find when they visit a reactor site," says Argonne nuclear engineer Arne Olson. After plugging in the amount of fuel estimated to have been loaded in a given nuclear reactor, inspectors can use the program to predict the isotopic composition of the fuel after it has been irradiated in the reactor. The isotopic mix would differ if plutonium were removed for fashioning into a weapon. Olson has developed the technique for Soviet-made reactors that have a distinctive fingerprint.

NAS Takes Fresh Look At DNA Fingerprinting

Even as the vitriolic debate over the validity of DNA fingerprinting evidence is showcased in the O. J. Simpson murder trial, the National Academy of Sciences (NAS) has appointed a committee to re-evaluate a controversial recommendation of its 1992 report, *DNA Technology in Forensic Science*. The new panel will focus on how to calculate the odds that a match between two DNA fingerprints can happen by chance.

"The committee will certainly be considering issues that will come up in the [Simpson] trial," says population geneticist James Crow of the University of Wisconsin at Madison, chair of the new committee. The "main emphasis will be statistical analysis," he says, "and certainly we have to get into the question of error rates" in forensic labs. But, says an NAS official, the new panel does not intend to cast doubt on the validity of using DNA fingerprinting in criminal cases.

The 1992 academy report attempted to clarify whether the statistical analysis of forensic DNA data was generally accepted by the scientific community and, thus, admissible in court. The report recommended a new technique called the "ceiling principle," which attempts to calculate conservative odds for the likelihood of two DNA patterns matching. Population geneticists and statisticians, however, argue that the ceiling principle is seriously flawed.

Nonetheless, prosecutors have used the NAS report to successfully argue in court that experts do concur on the technique's statistical validity. The Simpson defense team, which includes Peter Neufeld and Barry Scheck, two New York lawyers who specialize in defending suspects in cases involving DNA fingerprinting evidence, may use the creation of the new NAS committee to argue that no such consensus exists.

The committee plans to issue its report early next summer.

Japan Seeks Bigger Role in Scientific Exchange Programs

Order is important in Japanese culture. And order is what Japanese officials want to impose on overlapping efforts by dozens of U.S. universities, government labs, and private companies to give their scientists and engineers firsthand experience learning the manufacturing techniques that have made Japan an economic superpower.

"The Japanese don't like chaos," says Mindy Cotler of the Washington, D.C.–based, nonprofit Japan Information Access Project. "And they want to know who's going in and out of their country." Japanese officials from the Ministry of International Trade and Industry (MITI) would also like a better handle on requests to Japanese companies for placement of U.S. scientists on shop floors and in industrial labs. As a first step, MITI has agreed to help U.S. institutions place candidates and may expand its role in such exchanges.

Part of the problem is that U.S. efforts are a mix of old-line exchange programs that the Japanese know well, such as those at UC-Berkeley and MIT, and newcomers like the University of New Mexico (UNM), whose efforts began 2 years ago. The confusion is heightened by overlapping federal programs. For example, in 1990 Congress ordered the Defense Department to start a U.S.-Japanese manufacturing training program, which funds centers at a dozen universities and supports a consortium of 13 engineering schools; 2 years later the White House created a program with similar goals in the Commerce Department.

Japanese officials want to see these programs merged eventually as part of a broader effort to provide greater access to Japanese labs. In the meantime, MITI officials have responded to a request from UNM to become more active in the Pentagon program, agreeing to advertise it among small businesses, help with matches, and ease visa problems. And they're weighing a request to sponsor additional fellows, using matching funds from Japanese industry.