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SCIENTIFIC COMMUNITY

DOE Lab Exchanges Targeted in Wake of Espionage Claims

The political sparks from allegations that China has stolen U.S. nuclear secrets now threaten to singe international scientific exchanges. Last week Republican lawmakers called for a moratorium on exchange programs that bring thousands of foreign researchers from "sensitive" nations to Department of Energy (DOE) laboratories. DOE officials say such a policy would disrupt efforts to improve nuclear safety in Russia and do little for security. But some researchers fear the flap could smother international cooperation and undermine the labs' efforts to recruit the best foreign-born scientists.

The jousting over DOE's exchange program is part of a wide-ranging and often highly partisan congressional inquiry into China's efforts to acquire U.S. technology. Last June, a special nine-member House of Representatives panel led by Christopher Cox (R–CA) began investigating charges that the Clinton Administration allowed U.S. companies to sell advanced computer and satellite technologies to Chinese firms in exchange for illegal campaign contributions from Chinese sources. In a still-secret report, the panel also focused on allegations that, in the late 1980s, a Taiwanese-American computer scientist at the Los Alamos National Laboratory in New Mexico helped China obtain information on a new, small nuclear warhead.

On 8 March, days after *The New York Times* highlighted the allegations, Los Alamos officials fired Wen Ho Lee, a longtime employee, for failing to cooperate with investigators. Lee, whose attendance at two scientific meetings in China in the late 1980s has apparently raised questions about his possible involvement in espionage, has not been charged with a crime. But his ouster drew renewed attention to security at DOE's 20 labs, especially the three heavily involved in weapons research: Los Alamos, Sandia National Laboratory in Albuquerque, New Mexico, and Lawrence Livermore National Laboratory in California.

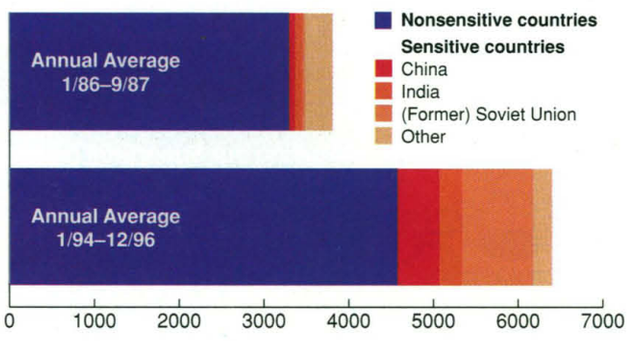
On 15 March, charging that "our labs are not as secure as they should be," Senator Richard Shelby (R–AL), chair of the Senate Select Committee on Intelligence, asked DOE to suspend parts of an exchange program involving more than 20,000 foreign scientists annually. In particular, he called for a time-out on visits by researchers from 25 nations that DOE classifies as "sensitive," including China, India, Pakistan, and all 12 former Soviet states. More than 4000 scientists from the sensitive nations now visit DOE labs each year—more than twice the annual influx during the 1980s—of which almost half spend time at the three weapons labs. Although most of the visitors are barred from entering classified areas, some participate in projects with military applications, including efforts to build and monitor safer nuclear weapons. Although Shelby presented no evidence that any visitor has stolen classified information, he suggested shutting down the program for up to 2 years.

Traveler's aid. Ex-Senator Warren Rudman, center, and SLAC's Sidney Drell, right, will probe security at DOE weapons labs, which Senator Richard Shelby has criticized.

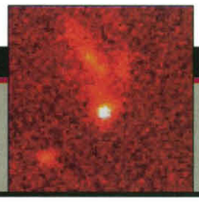
Shelby is not the first lawmaker to fault the visitors' program. Over the last decade, both Democrats and Republicans have taken the agency to task for security lapses detailed in a series of reports. In 1988 the General Accounting Office (GAO), Congress's investigative arm, concluded that DOE was ignoring many of its own security rules, including requirements for background checks of some foreign visitors. Last year GAO found that "essentially the same problems" still exist, although it could not confirm that the lapses had led to the loss of any sensitive information. Still, Shelby said the reports justified a moratorium.

DOE officials defend the exchanges, however, and say critics are barking up the wrong tree. "The visitors program was not the problem here," Energy Secretary Bill Richardson protested after a 16 March hearing. "The cases we're examining involve American citizens." The next day, after vowing to protect the program, Richardson also warned congressional critics not to "get hysterical and overreach" in demanding new security regulations.

Amid protestations, however, DOE has also responded to its critics as part of a feverish week of activities. First, Richardson announced a suite of new security measures, including tighter controls on lab e-mail and greater scrutiny of visitors. Then, on 18 March, President Bill Clinton appointed former Republican Senator Warren Rudman to



Growing interest. Foreign scientists from "sensitive" countries make up a small but rising share of visitors to U.S. weapons labs.



lead a review of lab security and recommend improvements. The next day, Richardson quietly shelved a planned review of the exchange program by former CIA head John Deutch because, according to one source, "there were getting to be too many reviews." Sidney Drell, deputy director of the Stanford Linear Accelerator Center (SLAC) in Palo Alto, California, and a member of the Rudman panel, says that "we need a good analysis of what helps security that recognizes the importance of the exchange of information."

Laboratory officials hope the moves will deflate Shelby's moratorium proposal. "It's a nutty idea," says John Shaner, head of Los Alamos's Center for International Security Affairs. Since 1994 the United States, Japan, and Europe have spent more than $350 million to keep former Soviet weapons scientists working on civilian projects, and an even greater sum on decommissioning Russian weapons and upgrading stockpile monitoring systems. An integral part of these programs have been scientific exchanges between the Russian and U.S. weapons labs.

Although Shaner says the exchanges—already swaddled in security regulations that require extensive advance notice and background checks—could "live with" new restrictions, an outright moratorium would weaken the trust between scientists. "Stopping the progress in collaboration between our countries will be a great mistake," warns theoretical physicist Boris Vodolaga, deputy director for international collaboration and conversion at the All-Russia Scientific Research Institute for Theoretical Physics, an elite nuclear weapons design center in Snezhinsk, Russia.

Chinese diplomats are also concerned about any moratorium. New restrictions shouldn't "go too far so that normal scientific exchanges are affected," warned He Yafei, a minister-counsel at the Chinese Embassy in Washington, at an 18 March press conference. He said some Chinese officials have questioned continued involvement in a nascent U.S.–China nonproliferation program modeled on the Russian exchange.

Such pullouts could cause the scientific community at DOE labs to become isolated and "wither," Los Alamos director John Browne told a congressional committee last October. "It is vital that the lab interacts with the best scientists in the world," he says. Whether it remains able to do so, however, is now up to Congress. **–DAVID MALAKOFF**

With reporting by Richard Stone.

PLANT SCIENCE

Data in Key Papers Cannot Be Reproduced

New findings, published last week, appear to confirm suspicions that several key papers in a hot area of plant development were fatally compromised by scientific fraud. The results, published in the March issue of *Plant Journal*, stem from an investigation at the Max Planck Institute for Plant Breeding Research in Cologne, Germany, which concluded last year that a laboratory technician falsified experiments forming the basis of 10 publications going back to 1992. The technician, Inge Czaja, and the leader of the group in which she worked, Richard Walden, resigned in early 1998 in the wake of the scandal, although Walden has never been accused of participating in the fraud.

In the *Plant Journal* article, a team of researchers at the Cologne institute, along with colleagues from other European labs, report on their attempts to repeat key experiments in eight papers published in *Science*, *EMBO Journal*, the *Proceedings of the National Academy of Sciences* (*PNAS*), *Trends in Plant Science*, and *Plant Journal*. The authors could not reproduce the most central findings. Two other papers from the institute, which had originally appeared in *Nature* and *PNAS* in 1997, were retracted last year by most of their authors after their findings also could not be reproduced.

"I can no longer believe any parts of the data in any parts of the papers," says plant biologist Alan Jones of the University of North Carolina, Chapel Hill, who adds that the new findings will have "a negative effect on the field," because "major conclusions were drawn" from the papers. The lead author of the *Plant Journal* report, plant researcher Jeff Schell—who is head of the department in which the Walden group worked and a co-author on the disputed papers—agrees that all the major findings were "subject to falsification." Nevertheless, Jones, Schell, and other researchers stress that the basic techniques used in the research—which were pioneered by Walden and other colleagues—remain valid and are being enthusiastically used by other researchers. "This technology has been very influential," says plant molecular geneticist George Coupland of the John Innes Centre in Norwich, United Kingdom.

The affair dates from the early 1990s, when Walden and his co-workers pioneered a new way to study the actions of plant genes. The technique, called activation T-DNA tagging, creates mutations by inserting DNA from the soil bacterium *Agrobacterium tumefaciens*, which induces plant tumors, into the genome of plants they wish to study. They found that genes flanking this inserted foreign DNA were "overexpressed"; that is, they produced much higher levels of proteins than normal, allowing

COLOGNE INSTITUTE'S DISPUTED PAPERS

Irreproducible in the *Plant Journal* study:

Hayashi *et al.*, Activation of a plant gene by T-DNA tagging: Auxin-independent growth in vitro, *Science* **258**, 1350 (1992).

Walden *et al.*, Auxin inducibility and developmental expression of *axl1*: A gene directing auxin-independent growth in tobacco protoplasts, *EMBO Journal* **13**, 4729 (1994).

Röhrig *et al.*, Growth of tobacco protoplasts stimulated by synthetic lipo-chitooligosaccharides, *Science* **269**, 841 (1995).

Miklashevichs *et al.*, Do peptides control plant growth and development?, *Trends in Plant Science* **1**, 411 (1996).

Van de Sande *et al.*, Modification of phytohormone response by a peptide encoded by *ENOD40* of legumes and a nonlegume, *Science* **273**, 370 (1996).

Röhrig *et al.*, Convergent pathways for lipochitooligosaccharide and auxin signaling in tobacco cells, *Proceedings of the National Academy of Sciences* **93**, 13389 (1996).

Harling *et al.*, A plant cation-chloride co-transporter promoting cytokinin- and auxin-independent protoplast division, *EMBO Journal* **16**, 5855 (1997).

Miklashevichs *et al.*, T-DNA tagging reveals a novel cDNA triggering cytokinin- and auxin-independent protoplast division, *Plant Journal* **12**, 489 (1997).

Retracted last year:

Ichikawa *et al.*, Identification and role of adenylylcyclase in auxin signaling in higher plants, *Nature* **390**, 698 (1997). [retracted: Ichikawa *et al.*, *Nature* **396**, 390 (1998).]

John *et al.*, Lipochitooligosaccharide-induced tobacco cells release a peptide as mediator of the glycolipid signal, *Proceedings of the National Academy of Sciences* **94**, 10178 (1997). [retracted: John *et al.*, *PNAS* **95** (17), 10344a (1998).]