BIOTERRORISM

Labs Tighten Security, Regardless of Need

Michael Walter does not keep anthrax in his laboratory. But since the nationwide anthrax scare began last month, the microbiologist at the University of Northern Iowa in Cedar Falls has installed new locks to safeguard strains of a harmless cousin, *Bacillus cereus*. "Everyone was giving me a hard time," he says. "So I locked up some related strains ... just to put people's minds at ease."

University researchers and administrators around the country say that the public's fear of bioterrorism has led them to increase security in labs that study anthrax—whether or not they keep bugs that could infect humans. The new precautions include police guards, security cameras, new locks, key-card identification systems, motion detectors, and remodeling that reduces the number of building entrances. Scientists say that although they don't think their labs were ever unsafe, more protection can't hurt, and the measures are good public relations.

The most extreme measures may have been taken by Iowa Governor Thomas Vilsack, who called out the National Guard in response to false reports of a direct link between the state and the anthrax strain that killed four people. (The anthrax used in the attacks has been identified as the Ames strain, which was first cultured decades ago at Iowa State University in Ames and is now widely disseminated among research labs in the United States.) After the troops arrived, Iowa State microbiologists decided that keeping anthrax spores as part of their general bacteriological collection was more trouble than it was worth. So on 12 October they autoclaved the entire anthrax collection. "We made sure nobody needed the cultures and that they weren't of value to anyone, and then we proceeded to destroy them," says Iowa State microbiologist Jim Roth.

Many researchers say that security at anthrax labs has always been excellent. Microbiologist Rodney Tweten of the Oklahoma University Health Sciences Center in Oklahoma City says that he hasn't taken any extra precautions at his lab, because the cloned anthrax DNA that he studies could not harm anyone and because existing security is high.

The costs of additional security can be sizable. Microbiologist Paul Keim of Northern Arizona University (NAU) in Flagstaff, who maintains live anthrax for his studies of the differences between strains, estimates that the university spent up to $50,000 last month on security upgrades. NAU vice provost Carl Fox says the lab is now monitored by security guards, new locks have been installed, and there's a wall where a door once stood.

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>
> —Paul Keim

CREDIT: GARY FOX/NAU

But the fallout from underestimating public fears also can be significant. Detroit television station WXYZ-TV this month aired a report questioning the security in the laboratory of pathologist James R. Baker, a so-called anthrax researcher at the University of Michigan, Ann Arbor, who has used the harmless *Bacillus cereus* in the past. When the TV crew members attempted to enter Baker's laboratory, they were rebuffed by a locked door and, later, challenged by lab personnel. But scenes of the reporter freely entering an adjacent laboratory, even though it is used to study hearing, left the impression that university labs were vulnerable. The video, which aired several times over 2 days, forced university public relations officials to work frantically to calm fears about campus security.

Researchers who question the value of additional security point out that anthrax is widespread in soils. They also note that a potential terrorist breaking into an anthrax lab might not know what to look for. "It would take me at least a couple of hours to find anything, and I'm the dean," says Michael Groves, who heads the Louisiana State University School of Veterinary Medicine in Baton Rouge, where police guard a building that houses anthrax cultures pending the installation of a new key-card identification system.

Still, researchers say precautions are worthwhile if they reassure a jittery public. "The business of allaying fears is very important," says Northern Iowa's Walter. And al-

ScienceScope

Call to Arms The Swiss Science and Technology Council (SSTC) has issued a "manifesto" calling on the government to take science more seriously. Signed by many leading Swiss scientists, last week's appeal follows a strongly worded September warning from council president Gottfried Schatz that a decade of stagnant spending has caused Swiss science to lag behind that of other nations. The SSTC advises the Swiss Federal Council, which is currently setting science policy for 2004–07.

Among the council's complaints: an "abominable" Swiss training and tenure system that it says shortchanges young scientists and favors hiring foreign professors. The manifesto demands a "minimum" science spending increase of nearly $1 billion per year, new training grants for young researchers, and a more transparent, U.S.-style tenure-track system. Researchers are aware of the problems but the public is not, Schatz told the Swiss newspaper *Der Bund*. He says researchers "need a lobby."

Scientist Sanctioned A Johns Hopkins University scientist charged with improperly testing an anticancer drug in India has been barred from leading future trials.

Hopkins came under fire last July after the Indian media reported problems in an oral cancer study involving Ru Chih C. Huang, a biologist in Hopkins's School of Arts and Sciences. This week, a Hopkins faculty committee found that the trial hadn't received required approvals from a university Institutional Review Board (IRB) and the Food and Drug Administration (FDA), involved insufficient animal tests, and used inadequate consent forms. The three panelists found no evidence that patients were harmed, nor financial conflicts, says a Hopkins spokesperson. In response, Hopkins's arts and sciences dean—who didn't identify Huang by name—said that any future human studies she participates in must be supervised by a Hopkins clinical researcher.

Huang has said Hopkins administrators led her to believe she needed approval only from an IRB in India (*Science*, 10 August, p. 1024). She told *Science* that she "totally agree[s]" that she should not oversee trials: An Indian doctor headed the trial in India, she says. Huang added that she is now requesting approval to conduct a second trial, which would be led by a physician from the Hopkins Singapore campus.

Contributors: Dennis Normile, Charles Seife, Gretchen Vogel, Pallava Bagla, Giselle Weiss, Jocelyn Kaiser

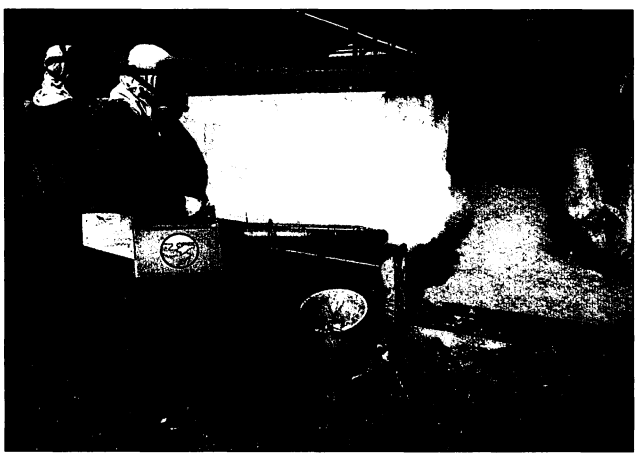
though some scientists say that the possibility of theft should not be discounted, most express confidence that their labs are secure. "Barring a SWAT team or someone with bazookas, I think we actually have a pretty safe situation for the cultures," says Keim.

–JOSHUA GEWOLB

BIOTERRORISM

Congress Weighs Select Agent Update

U.S. researchers may soon be haggling with the government over which viruses, bacteria, and biological toxins should be tightly regulated. Congress this week was expected to begin debating a proposal to impose new security requirements on laboratories working with these pathogens and to update the government's list of about 40 regulated "select agents." But experts say that it is unclear whether the core list—which the United States hopes other countries will adopt—should expand or shrink.



Deadly addition. The Nipah virus would be a candidate for a new list of regulated bioagents.

The legislation, to be introduced by Senators Edward Kennedy (D–MA) and Bill Frist (R–TN), is the latest congressional response to the anthrax mail attacks that have killed four people in the United States. It follows a newly imposed ban on the possession of such agents by scientists from so-called terrorist nations. The latest proposal—some version of which is expected to become law within weeks—is intended to boost government spending on vaccines and strengthen the nation's defenses against bioterrorism. But it would also increase federal oversight by requiring greater lab security and registration of select agent collections and certain types of research equipment.

The debate over which agents to include would be triggered by language ordering the Department of Health and Human Services (HHS) to revise its select agent list every 2 years. Although periodic review is a good idea, say experts, the exercise is likely to be dogged by technical disagreements. "Coming up with the first list wasn't easy," recalls Janet Shoemaker of the American Society for Microbiology, which in 1996 helped the Centers for Disease Control and Prevention (CDC) in Atlanta evaluate hundreds of candidates to comply with a law that requires registration for labs that ship or receive potential bioweapons. "No two people ever agree on what should be on these lists," says David Franz, a former commander of the U.S. Army Medical Research Institute of Infectious Diseases in Fort Detrick, Maryland.

Researchers involved in the evaluation say there was consensus on listing highly lethal organisms that are relatively easy to turn into weapons, such as smallpox, anthrax, plague, tularemia, and a number of viral hemorrhagic fevers. But other agents sparked debate. A draft list generated nearly 70 letters, and CDC responded by dropping agents such as Western equine encephalitis virus and a bacterium called *Chlamydia psittaci* and adding equine morbillivirus and a fungus called *Coccidioides immitis*. The current list contains 13 viruses or virus groups, nine bacteria, three rickettsiae species, a fungus, and 12 types of toxins (*Science*, 2 November, p. 971).

One challenge for the CDC will be squaring its list with similar compilations by other bioweapons experts. Western equine encephalitis, for instance, is still listed as a potential threat by another CDC analysis. A loose consortium of 34 countries that works to limit the export of biothreats, called the Australia group, includes food- and waterborne diseases, such as salmonella and cholera, that are absent from the CDC list. The North Atlantic Treaty Organization, meanwhile, has its own list that includes dengue and influenza. These agents are not usually fatal, but they can bring an army to its knees. There are also extensive lists of potential agricultural threats, but Congress appears content to leave their regulation in the hands of the U.S. Department of Agriculture.

Another problem is that the world doesn't stand still. "We learn new information all the time," says Robert Shope, a virologist at the University of Texas Medical Branch in Galveston. In 1999, for instance, the newly identified Nipah virus killed more than 100 people in Malaysia and decimated its pork industry (*Science*, 16 April 1999, p. 407).

Future listmakers must balance the benefits of being comprehensive against the costs of burdening law enforcement and research efforts, say bioterror experts. One option is to split the list into two classes, with the riskier agents—such as anthrax—subject to more stringent regulation. Administration officials have also floated the idea of setting up a new enforcement office within HHS to police microbe research, because CDC, a public health agency, has traditionally resisted that role. "We are not a regulatory agency and don't profess any expertise or much experience in that," CDC head Jeffrey Koplan told reporters last week.

The scope of the list will determine the number of researchers and laboratories affected. About 250 U.S. university, government, and private labs are registered to handle the agents on the current list. But CDC officials expect that number to grow because of a processing backlog and because many labs have been tardy in filing their paperwork. Scientists in other countries could be subject to similar systems if their governments follow the U.S. lead, and the United Kingdom has already introduced legislation to criminalize possession of certain bioagents. The Bush Administration supports that approach as a substitute for the proposed Biological and Toxin Weapons Convention protocol, now stalled.

–MARTIN ENSERINK AND DAVID MALAKOFF

GENES AND DISEASE

Immune Gene Linked To vCJD Susceptibility

Researchers have found that a common variation of an immune system gene may offer some protection against variant Creutzfeldt-Jakob disease (vCJD)—the fatal neurodegenerative disease linked to eating cattle infected with "mad cow disease." The new finding—the second genetic factor discovered so far that influences susceptibility to the disease—may help to identify high-risk individuals and provide some clues to the modus operandi of this mysterious, incurable malady.

Most researchers believe that vCJD and similar diseases in humans and animals are caused in whole or in part by aberrant proteins called prions, which are misfolded versions of a normal cellular protein called PrP. Infection with vCJD appears to be caused by ingesting prions in contaminated meat.

Researchers have long known that an individual's genetic makeup influences susceptibility to the disease. One genetic factor exerts a particularly powerful influence: So far, every one of the more than 100 people diagnosed with vCJD in the United Kingdom has both copies of the *PrP* gene producing the

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