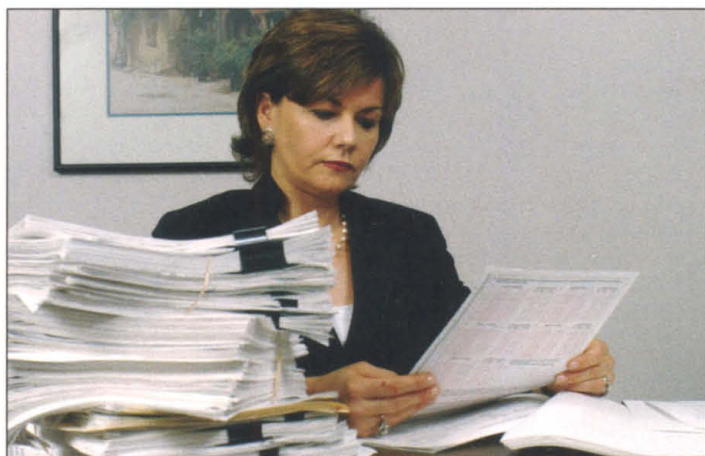


The first academic year since 11 September brings with it much greater oversight of research—along with huge opportunities for bioterrorism funding

One Year



Regulatory heft. Complying with new bioterror research rules is keeping Cheri Hildreth Watts of the University of Louisville busy this fall.

Tighter Security Reshapes Research

When the University of Louisville in Kentucky drew up floor plans for a \$48 million science building to house its chemistry, biology, and engineering departments, officials gave serious thought to placing faculty members' offices next to their labs. The layout promised greater convenience and efficiency over the traditional separation into administrative and research spaces. After 11 September, however, convenience and efficiency gave way to security: Offices and labs would be put in separate wings, so that students who might not have clearance to work in a lab could still meet with their professors.

Across the country, in hundreds of ways both large and small, U.S. academic researchers are feeling the effects of that catastrophic day on their ability to carry out science. The airplane hijackings, and subsequent anthrax mail attacks, have triggered sweeping changes in the regulatory environment on campus. Next week, for instance, universities and other research facilities must notify the federal government if their researchers possess any potential bioweapons—the first step in registering users of such so-called select agents (*Science*, 31 May, p. 1585).

In the meantime, the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, has already announced proposed changes to its list. In the weeks ahead, that will be joined by a similar compilation of potentially lethal agricultural materials to be issued by the U.S. Department of Agriculture. Then there are pending rules for securing the labs where these agents are kept and for restricting the pool of scientists allowed to work with them, for example, by excluding felons and researchers from so-called terrorist states.

Continued on page 1632

Hunt for NIH Funds Fosters Collaboration

Picking the right name was important when infectious-diseases researchers at the University of California (UC), Davis, decided to join forces in an ambitious new center earlier this year. After several false starts, one name stuck: The Western National Center for Biodefense and Emerging Diseases (WNCBED). It might be a mouthful, but Frederick Murphy, who masterminded the nascent center, says that it's perfect for the post-11 September funding environment. "Western" locates it on the U.S. map, he says, and "national" proclaims its coast-to-coast ambitions. "Biodefense" demonstrates concern for protecting the country, and "emerging diseases" conveys the message that most disease outbreaks still have natural causes.

Such attention to detail is essential when the stakes are so high. Congress is now debating President George W. Bush's request for \$1.75 billion for the National Institute of Allergy and Infectious Diseases (NIAID) to fight bioterrorism. The 2003 request, a 2000% increase from the institute's pre-11 September budget for bioterrorism, is a direct result of the terrorist attacks on New York City and Washington, D.C., and the subsequent anthrax mailings in several states. It's also an unprecedented commitment to increase understanding of organisms that can be fashioned into terrorist weapons. The budget dwarfs the \$133 million requested by the Defense Advanced Research Projects Agency for its biological warfare defense program; another key agency, the Centers for Disease Control and Prevention, wants \$1.6 billion next year primarily to beef up public health infrastructure and buy drugs and vaccines. That leaves NIAID as researchers' favorite funding agency, and getting a slice of the pie has become almost a full-time job for some.

With advice from several expert panels, NIAID has begun to



Grand plans. The University of California, Davis, hopes the new NIH program will help fund a \$190 million bioterrorism research center, including a biosafety level-4 lab.

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work out what it hopes to do with its vastly expanded war chest. Its wish list covers everything from basic research on potential bioterrorist weapons to vaccine and drug trials. There's a plan to fund one or two genome centers to sequence the DNA of microbes and the insects that transmit some of them. There will be bioinformatics centers to keep track of all the data and help identify drug and vaccine targets. There's also money to develop new small-animal and primate models of bioterrorist threats.

The most coveted prizes, and the cornerstone for the Administration's entire bioterrorism program, is a series of centers of excellence for research and training, one in each of 10 preselected regions. Some of the centers will be affiliated with one of half a dozen new biosafety level (BSL)-3 and -4 facilities, the so-called regional biocontainment laboratories, that are also part of the initiative. "There's a tremendous amount of buzz about this," says microbiologist Joel Baseman of the University of Texas Health Science Center at San Antonio. "We're all eager to participate."

The winners, it's safe to say, will have engaged in an unusual degree of coordination among traditional rivals. Colleagues say that WNCBED, a proposed collaboration between UC Davis, California's Department of Health Services, and Lawrence Livermore National Laboratory, is a very strong contender. But the competition will be stiff. Across the country, similar centers with similar-sounding names have sprung up "like mushrooms after the rain," says virologist C. J. Peters, who himself directs the new Center for Biodefense at the University of Texas Medical Branch (UTMB) in Galveston—and they all hope to cash in.

Exactly how much money will be available next year is still uncertain. A Senate panel has appropriated \$263 million less for NIAID than the president requested—a reduction that would cut into the proposed biodefense effort, NIAID Director Anthony Fauci said last week. The program could also change if, as Bush has proposed, control over the money shifts to the proposed new Department of Homeland Security. But Fauci says he has already worked closely with that department's progenitor, the Office of Homeland Security, and doesn't expect major course changes.

The initiative attracting the most attention is NIAID's plans for the regional centers of excellence and biocontainment labs. A day-long meeting last month to explain the proposal drew a packed house of 350 scientists and administrators, comprising a veritable who's who in U.S. infectious-diseases research. NIAID would like to spend \$190 million next year on the centers and labs and double that amount in 2004. Each center would get \$6 million to \$10 million a year for up to 5 years.

NIAID hopes that the competition will unify a field that traditionally has been shaped by a large number of small groups. The new centers will become part of a national network, subject to close oversight by the agency. NIAID officials would prefer just one application from each region, submitted not by an individual center but by a consortium of institutions with a common research theme and a long-term strategy. "We're not looking for [proposals from] a bunch of researchers who happen to be in the same place," says Rona Hirschberg, who coordinates the centers-of-excellence program.

The process has triggered "a frenetic dance" of conference calls, meetings, and one-on-ones, says Jacqueline Cattani, director of the University of South Florida's (USF's) Center for Biological Defense in Tampa, along with plenty of speculation about who's in and who's out. "It's natural selection at work," says John Baker, an associate dean at Michigan State University in East Lansing.

In most regions, researchers at the major universities are calling the shots, with lower ranked institutions pleading for a place at the table. In region 4, for instance, which includes eight southeastern states, universities such as Duke, Emory, and the University of North Carolina are expected to team up on an application. Cattani's center at USF is not a major player, she says, but its expertise in applied research areas such as biosensors and test protocols might win it a spot on the application.

In region 6, which includes Texas and four neighboring states, Galveston has taken the initiative. UTMB's David Walker will be the principal investigator for the center-of-excellence proposal. Last week he sponsored a meeting for 16 interested parties to discuss each team's role.

In the mid-Atlantic region, former Soviet biowarrior Kenneth Alibek says he's still undecided whether the Center for Biodefense he heads at George Mason University in Fairfax, Virginia, should join the band of heavyweights currently discussing an application. The group, which includes Johns Hopkins University and the University

of Maryland, talks about emphasizing vaccines, he says, whereas Alibek is more interested in host-pathogen interactions and developing new therapeutics against bioterrorist threats.

NIAID officials say all is not lost for those who don't make it into a center—or whose application is passed over next spring when a review panel will select the first handful of proposals. Although they're very important, the centers of excellence and biocontainment labs will account for less than 15% of the funds available next year, says Fauci: "People have to remember that the vast majority of the money will go into traditional grants." A second competition will take place in 2004, and perhaps a third round, until NIAID has chosen one center for each of the 10 regions.

But most bioweapons researchers assume that whoever gets funded next year will have a head start on the rest of the field, so it's important to make a smashing impression now. Murphy has already hired an architect to conceptualize a new \$190 million lab with a major BSL-4 facility, and he hopes that UC Davis's renowned medical entomology lab, a primate center, and ties to other labs will provide the type of "linkages" that NIAID has described. "We're listening closely to the words coming out of Washington," Murphy says.

—MARTIN ENSERINK



Building boom. The University of Texas Medical Branch in Galveston is already building a new biodefense lab but hopes for additional federal funds.