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UW steps up bio research safety

DAVID WAHLBERG | Wisconsin State Journal | dwahlberg@madison.com | 608-252-6125 | @DavidKWahlberg
Feb 21, 2012

CRAIG SCHREINER — State Journal

Kristen Bernard, an associate professor of pathobiological sciences at UW-Madison, handles flasks conta kidney cells used in West Nile virus research.

This story appeared first in the Sunday edition of the Wisconsin State Journal newspaper.

UW-Madison has strengthened its once lacking oversight of biological research, such as the bird flu study by Yoshihiro Kawaoka entangled in an international debate over biosafety and bioterrorism.

But the university could face more rules recommended nationally for experiments such as Kawaoka's that are deemed to have potential for good or bad.

Campus officials already are guarding information about biological research more closely.

The university this month refused to name the researchers working in the highest-level biosafety labs or with the most sensitive pathogens, citing a 2002 federal bioterrorism law. Officials also wouldn't identify the germs studied.

Four years ago, the university released the names of 14 scientists working in biosafety level 3 labs, or BSL3, the highest level on campus. Four of them and two others were studying "select agents," considered the greatest bioterrorism threats.

Officials this month would only say 17 researchers work in BSL3, including six with select agents. Another scientist studies a select agent in a BSL2 lab, which has fewer precautions.

"There is a much more heightened sense of awareness" today about the potential for harm and the need for security, said Bill Mellon, associate dean for research policy at UW-Madison's graduate school.

Kawaoka controversy

The heightened sensitivity stems in part from the controversy over Kawaoka's creation of a mutant H5N1 bird flu virus and similar research by a Dutch scientist, Mellon said.

Some scientists say the studies could help health officials prepare for a severe global outbreak of flu. But others say the research threatens public safety because the altered viruses could be accidentally released from the lab or replicated by terrorists.

Flu experts discussed the issue Thursday and Friday at a World Health Organization summit in Geneva.

The National Science Advisory Board for Biosecurity said in December the findings by Kawaoka and Ron Fouchier of the Netherlands shouldn't be published in full. But the WHO group said Friday they should be.

The scientists agreed Jan. 20 to stop their work for 60 days. The journals Nature and Science are holding off on publishing the findings while authorities address the concerns.

The biosecurity advisory board, formed in 2004, issued recommendations in 2007 for the "identification, review, conduct, and communication of dual use research" — studies that could be used for good or bad.

The recommendations now are getting more attention, which could lead to new rules for universities that do such work, Mellon said. Currently, campuses have no special requirements for dual use research other than the regular rules for biological research.

"There is the suggestion that the institution itself define ways in which dual use be handled," he said. "We're waiting to see how this will shake out."

Campus biosafety

UW-Madison beefed up its oversight of biological research following problems revealed three years ago.

Workers in the lab of Gary Splitter broke federal rules by creating an unauthorized, drug-resistant strain of brucella, a select agent.

Separately, two of Splitter's lab workers were infected by brucella, one with the cysts on the brain. Both recovered.

The university was fined $40,000 and banned Splitter from working in the lab for five years. Reports said campus oversight was lacking and the Office of Biological Safety was understaffed.

A new biosafety officer was hired, and the office's staff and budget more than doubled.

The labs of almost all the 630 researchers working with biological materials now are inspected annually, said biosafety officer Jim Turk. Scientists are required to take three training classes.

As before, scientists must submit research proposals to the biosafety office and to a 17-member Institutional Biosafety Committee. The committee approves the plans, which include lab safety measures.

Confusion sometimes arises over what level of lab is appropriate for some research.

Kawaoka was working with genetic components of the Ebola virus in a BSL3 lab in 2006, for example, when he asked campus officials if he could switch to BSL2. They asked the NIH, which said the work had to be done in BSL4, which the university doesn't have. Kawaoka had to stop the work.

In 2010, the NIH reversed its decision and said the research could be done in BSL2.

The university initially said Kawaoka could do other Ebola work, on an altered live virus, in BSL2. But in 2008, a federal select agent committee said the work should be done in an enhanced version of BSL3.

Kawaoka said he's following the latest stipulations for each project.

Developing strategies

Kristen Bernard studies West Nile virus in a BSL3 lab.

She can do some prep work in BSL2 but must change clothes, put on a special gown and wear dedicated shoes and booties in BSL3 space when handling samples of the virus.

West Nile stays in people's bodies longer than previously thought, Bernard said, which could have implications for blood donation, organ transplantation and drug and vaccine development.

"We need to know the basic disease process before we can develop new strategies to combat it," she said.

Eric Johnson is a BSL3 lab researcher who works with a select agent: botulinum neurotoxin. The potent toxin is used in pharmaceutical form to hide wrinkles, treat headaches, reduce spasms and offset lack of bladder control.

Johnson this month announced the development of a test, using stem cells instead of mice, that could improve production of the toxin.

Shelby O'Connor plans to soon start research in a BSL3 lab on samples from monkeys infected with tuberculosis. O'Connor also hopes to study monkeys infected with TB and SIV, the monkey version of HIV, the AIDS virus.

The work aims to explain why HIV causes many people with latent TB to develop active TB, which is highly contagious.

More than 2 billion people, a third of the global population, are infected with TB. “It’s a really important question to address,” O’Connor said.

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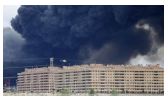

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