

Created in 1904 by the Iowa General Assembly, the University Hygienic Laboratory was thrown into the limelight by last fall's terrorist attacks.

Field Artillery

In the last century, with the development of antibiotics and vaccines, humanity won huge battles in the war against bacteria and viruses. Victories seemed so rapid and complete that in 1969 U.S. Surgeon General William H. Stewart called it "time to close the book on infectious disease." But the enemy, as at least one Iowa microbiologist knows, had been underestimated.

"Pathogens apparently adapt to any chemical researchers develop," says Mary Gilchrist, director of the University Hygienic Laboratory. Gilchrist earned a bachelor's degree in microbiology from The University of Iowa only two years before Stewart's declaration, and she went on to obtain a master's and a doctorate degree from the University of Illinois at Urbana-Champaign. Today, she belongs to an international cadre of researchers who have redoubled their scrutiny of a robust catalogue of pathogens (any microorganism or virus that causes disease).

Her domain is a 98-year-old former tuberculosis hospital on the University's Oakdale Research Campus. She works in direct collaboration with 25 or more professors from the College of Public Health and with around 180 scientists and technicians in the Hygienic Laboratory. In coordination with the Centers for Disease Control and the Environmental Protection Agency, this army of specialists pores over the evidence—both biological (viruses, bacteria, and metabolic disorders) and environmental (asbestos, metals, pesticides, and nuclear waste)—that might help many people, from the farmer to the physician.

An especially pertinent topic of concern for Midwesterners is the connection of terrorism to the farmland. Malicious use of plant or animal pathogens has scored considerable ink in academic, media, and government circles of late. Some studies argue that agricultural bioterrorism represents a new and dire threat to U.S. national security, a perception of heightened risk that stems from natural outbreaks of foot-and-mouth disease and the spread of the West Nile virus in the United States.

"One-sixth of the U.S. gross domestic product

and one-eighth of all jobs are connected to agriculture, either directly or indirectly," says Gregory Gray, professor of epidemiology at the UI College of Public Health. "The destruction of crops and livestock could have a direct financial impact on the grower or breeder, but it could also hurt shippers, stockyards, slaughterhouses, distributors, and so on."

Gray and Gilchrist concur that it's critical for the University's microbiologists and other medical scientists to develop stronger ties with the National Veterinary Services Laboratory on the Iowa State University campus in Ames.

"Whether the threat comes from an international terrorist organization, a disgruntled individual, or a single-issue dissident group, the well-being of humanity is linked to the welfare of our animal population," Gilchrist says. "Aside from the direct attack on agriculture and wildlife, an early diagnosis in an animal could tip off scientists to a human biological threat."

Not many appreciated the threat and consequences of bioterrorism aimed at agriculture and animals until last year, Gilchrist concedes, when attacks on the World Trade Center and the Pentagon thrust the Hygienic Laboratory into the media limelight.

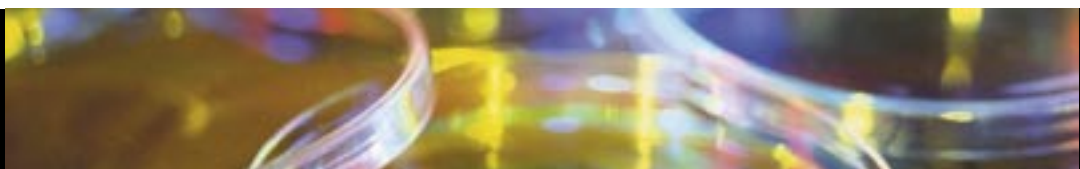
Gilchrist and her staff found themselves at the center of an emotional maelstrom of questions from politicians, pundits, and the public about all forms of possible terrorist attack.

"People would stop me in the airport and tell me that when they saw we weren't panicked, it helped them not panic," Gilchrist says.

By their manner, Gilchrist and her staff delivered common sense along with information. They managed to prevent panic on the business front, too, investigating and dispelling anthrax concerns connected to a shipload of Iowa beef headed for Japan and an overseas shipment from the Cedar Rapids Rockwell International site.

"At times like this, it's helpful to remember that knowledge is power," says Gilchrist, who has been director of the lab since 1995. "With that in mind,

One-sixth of the U.S. gross domestic product and one-eighth of all jobs are connected to agriculture.





The world always will have to contend with some invisible new enemy.



we did our everyday job of staying in touch with Iowa public health officials, policy makers, and the public.”

Gilchrist knows as well as any microbiologist that the world always will have to contend with some invisible new enemy. To prepare for the next challenge, she has placed a priority on securing money for a new facility.

“This place wasn’t designed for this kind of work,” Gilchrist says of the building that requires a brisk 10-minute walk from her office to the furthest laboratory cubicle. Along miles of corridor on four floors, tiny rooms—where once the sick were interned—are stuffed with scopes, computers, centrifuges, and glass and plastic beakers and bottles. “If a large number of people were hurt by a biological agent right now, we would have to work around a lot of obstacles to manage our response.”

Help is on the way. A \$1.4 million federal funding request would launch the construction of a \$24-million facility, and Gilchrist hopes to see the first spade dig into the new site before 2004. Not only would the funding enhance the lab’s ability to track disease, but the federal dollars also would establish

the laboratory as the logical choice for a central operating base in the Midwest during a major biological attack. Within five hours of Chicago, Kansas City, Milwaukee, St. Louis, and Minneapolis, Iowa City is an ideal spot for a hub of laboratories responding to a threat, with proximity to the veterinary services in Ames an added advantage. And, as a small city, Iowa City is a less likely direct target than the Midwest’s larger municipalities.

With the potential for disease and death seemingly everywhere, it might be easy to worry. Still, Gilchrist submits that life is far better than it used to be.

“My great-grandmother, who was born in 1803, was orphaned by disease at the age of 13,” Gilchrist says. “She married at 16 and lost three children to cholera, diphtheria, and whooping cough. We’ve won some battles—which is not to say we’ll ever make disease disappear altogether. But that doesn’t mean we need be victims of our fear. It means we need to stay in touch with our common sense and gather reliable information. Realizing the scope of the risks will help us deal with them.”

by Jean C. Florman



Since Sept. 11, 2001, the University Hygienic Laboratory’s federal funding related to bioterrorism has jumped from \$100,000 to \$1.5 million.

