

Athens research lab ready to fulfill bird flu mission

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ATHENS — Sometime in the near future — no one can say exactly when — a courier may bring a small, securely wrapped package to an anonymous hilltop complex south of the University of Georgia.

The package will hold a tiny tube of hardened glass. In the tube, there will be a drop of liquid. In the liquid, there will be a virus.

The scientists who work at the complex will take the package into a laboratory with operating rules so strict that they must shower, change and wear respirators to move freely inside it. They will emerge with a report: The exact identity and source, down to the individual letters of genetic sequence, of the first Asian bird flu to be found in the United States.

Much will hinge on that analysis: It is the last piece of information the government will require before announcing the Asian strain's long-feared arrival in this country.

Avian flu H5N1, the Asian strain named for two proteins on the surface of the virus, is one of the most highly pathogenic viruses the world has seen, but it remains a pandemic in birds, not humans, responsible so far for the death or preventive slaughter of more than 200 million poultry. The virus has sickened at least 224 people in 10 countries, killing 127 of them — mostly victims who had contact with infected poultry.

Discovery of the disease within U.S. borders would trigger a storm of activity and emotion. But the scientists of the Southeast Poultry Research Laboratory feel ready for the spotlight.

"We have spent my career, and this lab's career, preparing for this," said Dr. David Swayne, the lab's tall, affable director. "Though I do expect we will work late that night."

Behind the scenes

The Southeast Poultry Research Laboratory is world-famous — if you happen to live in the world of veterinary pathologists, influenza virologists, and people who are very interested in chickens.

To anyone else, it is a drab cluster of low-profile buildings perched above College Station Road, sheathed in 1960s stucco and wrapped in layers of locked chain-link fence.

Entry is intriguingly difficult. Visitors get temporary IDs that transform within hours from all-access white to no-go magenta stripes. Staff, to be hired, must swear never to have private-life contact with birds: no racing pigeons, no parrots, no poultry in the backyard.

The roadblocks protect what amounts to a secret weapon in the war on bird flu. SEPRL houses the avian equivalent of the "hot zone" labs at the Centers for Disease Control

and Prevention in Atlanta, high-security research suites where its scientists tease apart virulent viruses while wearing high-tech protective gear.

The Athens lab was performing those tasks decades before the Asian strain of avian flu became a potentially devastating human threat. SEPRL is a unit of the U.S. Department of Agriculture, and its chief mission is protecting the U.S. poultry industry against strains of avian influenza that have become "highly pathogenic" — a rare mutation that transforms an innocuous infection into the chicken equivalent of Ebola.

Because they work with lethal viruses, the 55 SEPRL staff members rarely leave the lab for field work. When they do, it is rarely glamorous: In birds, influenza is a gut disease.

"I went up to Alaska a year ago to where the brant geese congregate," said Swayne, a veterinary pathologist whose soft-spoken demeanor belies an international scientific reputation. "We walked along the shore with spoons, scooping up poop."

From beaks to beakers

SEPRL is as unremarkable inside as outside. The floors are linoleum. The windows are swathed in UV-blocking purple film that gives the office walls an aquarium glow. Dress-up is Dockers and sport clogs; dress-down is scrubs.

But a hum of concentration pervades the cinder-block hallways. SEPRL was busy enough before H5N1 flu began moving across the globe 30 months ago: One set of its scientists developed a poultry vaccine against H5 that has since sold millions of doses around the world, and another group developed a test that can identify highly pathogenic flu viruses in minutes.

Its staff has looked for avian flu in more than 12,000 samples collected from migratory wild birds over seven years by researchers at University of Alaska, Ohio State University and University of Georgia.

"If [Asian avian flu] comes to the United States, their historical information will be extremely valuable," said Dr. Leslie Dierauf, director of the National Wildlife Health Center in Madison, Wis., the first-look federal diagnostic lab for a new program testing 100,000 birds.

And it has been pursuing the Asian H5N1 strain for almost a decade. When the virus first attacked humans in 1997, SEPRL helped identify it. And it contributed to the reassembly of the long-lost 1918 flu virus, killer of possibly 50 million people worldwide.

"They're little-known . . . but they're incredibly important," said Dr. David Stallknecht, a UGA associate professor of wildlife infectious diseases who has been sending them wild-bird samples since 1998.

However pressed things were before, the pace has picked up now. A whiteboard in the office of Dr. Erica Spackman, a microbiologist who developed the rapid test with the lab's Dr. David Suarez, lists some of the meetings she will attend or send papers to this year: Washington, Des Moines, St. Simon's, Minneapolis, Portland, England, Quebec.

The stress on the scientists has grown with their workload — and with the public's increasing disquiet over avian flu.

"There's a lot of confusion between bird flu as an animal-health issue and pandemic flu as a human-health issue," said Spackman, who practices martial arts to stay calm. "When they hear 'avian influenza,' people start to panic ... though most of the time the virus is innocuous to humans."

'See a problem ... solve it'

The still center of the swirl that envelopes SEPRL these days is Swayne's corner office, a narrow paneled space that he shares with a dozen birds: a pecking-hens toy from Russia, cranes from Japan, tiny silver fighting cocks from Peru, and a gleaming blue and purple glass rooster that wife Anita bought for him in Venice.

The birds are souvenirs from places that bird flu research has taken the 47-year-old scientist — but they also suggest how far he has come from Yellville, Ark., where he grew up the son of an auto mechanic, raising animals after school.

"On a farm, you see a problem, you solve it — you take the tractor apart, you put it back together," he said. "That was what I saw in veterinary medicine. Eventually I figured out I wanted to do the science of veterinary medicine. I wanted to solve big problems."

In H5N1, Swayne and his lab confront what could be one of the biggest health problems in history: an epidemic that, even if it never kills another human, has already done vast damage to ecosystems and economies worldwide.

They are prepared to be for birds what the CDC is to humans: the final authority for proving that avian flu has come home to roost. But despite their long acquaintance with the virus, they are not convinced they will see the Asian strain of H5N1 in the United States soon.

Migratory birds might bring it, Swayne said in a chat in his office under a lithograph of Barred Rock chickens — but the rate of infection in healthy birds is low, and so therefore is the possibility that one hemisphere's bird might pass the disease to another. Or an infected human might bring it — but most victims so far have been developing-world villagers with little means to purchase an airline ticket.

The biggest risk, he said, may be the least predictable: smuggled poultry, like the illegally sold chicks that brought the virus into Nigeria this spring, or smuggled exotic birds, like the infected eagles found two years ago in hand luggage in Brussels.

"We have natural and artificial barriers that protect us," he said. "To get past those, the virus is going to have to change. And that is the thing none of us can predict."