tions, about 6 years, but there's nothing here that wouldn't benefit from scrutiny."

As chair of a 1998 NAS study, Tilghman pushed a controversial recommendation that graduate programs in the life sciences cut back on enrollees to curb a perceived glut of biology Ph.D.s. According to Tilghman, the data showed that too many young scientists were ending up in a holding pattern, employed as cheap laboratory workers with little chance of becoming university teachers. She still feels that way. Others are uneasy with the proposal, which the NAS panel endorsed, because it raises issues that "no one wants to talk about"—proper pay for laboratory staff and how to allocate growth among competing institutions, according to one colleague. One of Tilghman's fellow NAS panel members, biologist William Brinkley of Baylor College of Medicine in Houston, Texas, has now backed away from the panel's conclusions. The economy has changed, he says, and graduates can now find good jobs in the private sector. But he admires Tilghman for her "tremendous leadership ... and the way that she hasn't wavered—I respect that."

Like many others, Brinkley also praises Tilghman as a teacher and interpreter of science: "Young people flock around her." When she gave a talk recently at Baylor, the students "bombarded her the moment she stepped off the stage. ... There wasn't that boundary that often exists between great scientists and students. They felt an identity with her."

As president of Princeton and its chief emissary to alumni and donors, Tilghman may have to learn to "speak in generalities," Brinkley says. But he's certain she'll do well.

–ELIOT MARSHALL

INFECTIOUS DISEASES

West Nile Researchers Get Ready for Round Three

West Nile virus, now entering its third summer in the U.S., is straining public health labs to their limits—and triggering a research renaissance

GUILDERLAND, NEW YORK—For all the misery the West Nile virus has caused since it arrived in the United States—from the cancellation of one of New York City's beloved concerts in Central Park to nine deaths—the virus has also been a source of opportunity. In this small town, 10 kilometers outside Albany in upstate New York, it has enabled virologist Laura Kramer to assemble a new research group. Although the team is still housed in a small, cramped brick building that once served as a horse stable, Kramer has been showered with money, equipment, and the possibility of hiring more people.

Kramer's group, 12 members strong and growing, is part of the Wadsworth Center, the laboratory of the New York State Department of Health. Its main—and rather tedious—task is to test thousands of bird and mosquito samples from all over the state for traces of the West Nile virus. (Just last week, neighboring New Jersey reported finding the first two dead crows infected with West Nile this summer, marking the beginning of the 2001 West Nile season.) But Kramer, who arrived here a year ago from the University of California, Davis, hopes to do her share of basic scientific research as well. "We're ambitious," she says. "I think we've gathered an exceptional group, and we'll be able to do some very nice studies." (The group plans to publish the harvest of the first year of research in several papers later this year.)

Kramer's lab is one of the most prominent examples of how federal and state agencies have rallied to the threat of West Nile. In New York, Governor George Pataki's administration is spending more than $20 million on surveillance, control, and research this year, while the U.S. Centers for Disease Control and Prevention (CDC) is giving the state another $3.9 million to deal with the outbreak. In a sense, the new effort marks a return to the past. In the 1960s and '70s, New York had a strong research program for mosquito-transmitted diseases, such as Eastern equine encephalitis and LaCrosse encephalitis. As those diseases waned in New York, skilled staff members retired, and more pressing public health concerns such as AIDS emerged, the program dwindled over the next 2 decades. By 1998, "the state had run the lab into the ground," says Kramer's predecessor, Jack Woodall, who retired that year. "In the end, I had one half-time animal helper and no technicians, nothing."

The 1999 outbreak has changed all that. "We're now seeing a renaissance, and I think that's terrific," says Thomas Monath, a former CDC virologist and vice president at Acambis, a vaccine company in Cambridge, Massachusetts. Kramer, who spent much of her life studying a West Nile cousin called St. Louis encephalitis, "is excellent for the job," adds Woodall, now a professor at the Federal University of Rio de Janeiro. "She knows viruses and birds, she recruited all these enthusiastic people—she's got this lab buzzing!"

CREDIT: WADSWORTH CENTER, PHOTOGRAPHY AND ILLUSTRATION GROUP

New team on the block. Kristen Bernard, Laura Kramer, Gregory Ebel, and Elizabeth Kauffman study the West Nile virus at New York state's health lab.

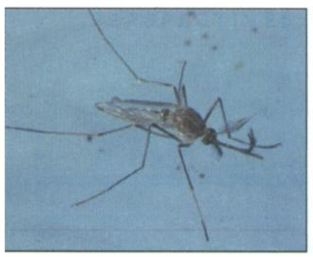
Counting dead crows

Two years ago, the West Nile virus caught researchers and public health authorities completely by surprise. Never before seen in the Western Hemisphere, the virus sickened 62 mostly older people in its first year and killed seven, all of them in and around New York City. Last summer, the virus made disconcerting geographic advances, killing birds—its primary hosts—as far north as New Hampshire and as far south as North Carolina. The good news, however, was that only 21 human cases were reported, with just two fatalities. Again, most of those infected lived in New York City, although the "hot zone" had shifted from the borough of Queens to Staten Island.

This year, experts think the virus will once more rage through bird populations along the East Coast. Expect crows, by far the most susceptible species, to die in droves, they say. They also expect the virus to keep spreading, perhaps into Canada, the Midwest, and the Deep South. But the most crucial question—how many humans will get sick—is also the most difficult. "It's anybody's guess, really," says Kramer.

Part of the problem is that viral presence in birds alone clearly doesn't signal an impending human outbreak. Researchers think that the transmission level in birds must be very high for the epidemic to spill into humans. Recently, New York State Department of Health epidemiologist Millicent Eidson found what may be a simple way to predict human risk: the "dead crow density" factor. Throughout the state, citi-

zens were asked to report dead birds last year. Examining data from the 2000 outbreak, Eidson discovered that the number of birds reported per square mile—whether they were subsequently tested or not—was as high as 5.9 in Staten Island, where most human cases occurred. In nearby counties and boroughs, some of which had human cases in 1999 and 2000, the density was between 0.1 and 1.5, and it was below 0.1 in all other counties where no human cases occurred. This summer, Eidson says, the state health department will keep counties informed about their dead crow density to give them a rough idea of the risk for humans. Where that risk is high, cautioning the public or implementing virus control measures, such as mosquito spraying, can be considered.



Bad news. *Culex* mosquitoes may cause more West Nile virus infections this year.

CREDITS: (TOP TO BOTTOM) E. R. DEGGINER/ANIMALS ANIMALS; BILL LOVING/UNIVERSITY OF OKLAHOMA

At the epidemic's epicenter

Whatever the virus's toll, the government's response is likely to be "less panicky" than in the previous 2 years, says John Roehrig, a West Nile researcher at the CDC in Fort Collins, Colorado. With help from CDC, the states with the highest level of viral activity, such as New York, New Jersey, Connecticut, and Pennsylvania, have all hired new people, spruced up their labs, and revitalized their research programs. "They're a lot more confident and a lot more capable to deal with the virus now," says Roehrig.

Kramer, for one, is hoping that her lab will have a less frantic summer than last, when the staff was "completely overwhelmed" by the thousands of bird and mosquito samples. Many evenings and weekends were sacrificed, she says, and one technician developed severe repetitive strain injury from the endless pipetting of reagents. From a surveillance viewpoint, there's no need to test each and every bird, says Kramer, so this year, counties will be allowed to submit only two or three birds per week. The lab now also boasts a gleaming new robot to prepare the samples for testing, which should save the team hundreds of hours of work.

But time-consuming as they are, the tests give Kramer's lab one great advantage over most others: unparalleled access to samples from across the epidemic's epicenter, which will help provide data for a broad array of studies. Researchers still don't know, for instance, how the virus survives the harsh Northeastern winters, exactly what roles different mosquito and bird species play in its transmission, why it kills crows en masse, or how it will evolve as it spends more time in North America. Kramer's group plans to study all those issues, in addition to looking for possible drugs that could battle the infection in humans. "They're gonna come up with a lot of interesting stuff," Woodall predicts.

Yet Kramer and others wonder how much longer the federal and state governments will be willing to spend big bucks on the virus. With just a few dozen cases a year, West Nile is still an exceedingly rare disease. To hedge her bets, Kramer plans to tap other sources of funding, such as grants from the National Institutes of Health. But even if West Nile virus never becomes a big public health threat, she says, the money was well spent: Revamping the crumbling public health infrastructure will eventually pay off, she predicts, as other exotic pathogens are sure to arrive. "Tremendous amounts of money have been spent on West Nile," she concedes. "It may look like a windfall, but it was sorely needed."

–MARTIN ENSERINK

MINORITY FACULTY

New Data in Chemistry Show 'Zero' Diversity

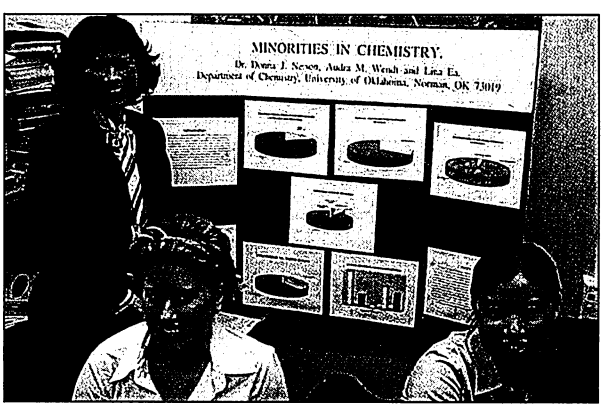
A recent survey of major U.S. chemistry departments reveals that there are even fewer minorities on the faculty than anyone suspected

The number of chemistry Ph.D.s awarded to blacks each year in the United States has more than doubled since Delroy Baugh received his degree in 1990. Yet the number of blacks hired as assistant professors at the nation's top 50 chemistry departments has held steady—at zero—since Baugh took an entry-level faculty post in 1991 at the University of California, Los Angeles (UCLA).

That finding shocked Donna Nelson, an associate professor of chemistry at the University of Oklahoma, Norman, who asked the 50 chemistry departments carrying out the most research for the ethnic and gender composition of their faculty members. She and her students found that African Americans/blacks or Hispanics constitute barely 1% of the 1637 tenured or tenure-track faculty members at the top 50 schools, and that 23 of the 50 departments have none (see graphic, next page). They also learned that 12 of the 18 blacks (13 are African Americans; the rest earned undergraduate degrees from other countries) are full professors at or near retirement age, and that none is an assistant professor. "I was stunned," says Baugh after learning that he was, at age 41, probably the youngest tenured black chemistry faculty member among the most research-intensive departments. "I knew the number [of assistant professors] was small. But I didn't realize it was zero."

A Native American who grew up in Oklahoma, Nelson began with the idea of surveying female minority faculty members in chemistry. "But I gave up on that pretty soon," she says. After counting herself, "it was months before I found another." The minuscule numbers—she eventually identified seven at the 50 institutions—led her to cast a wider net. But the totals in other categories were equally depressing. To Nelson, the numbers suggest that the continuing flow of reports about the importance of diversity in academia (*Science*, 21 July 2000, p. 378) hasn't reached the people who actually do the hiring.

With no data available on the actual number of hires in the past decade, the chairs of some top-ranked departments insist that the real problem is the tiny numbers of chemistry Ph.D.s awarded to underrepresented minorities: 56 blacks and 42 Hispanics in 1999. The numbers represent only 4% and 3%, respectively, of the 1400 chemistry Ph.D.s produced that year. "We are constantly on the lookout for such people," says Stephen Lippard, head of the chemistry de-



Tracking diversity. Oklahoma's Donna Nelson with students Audra Wendt, front left, and Lina Ea, who helped collect data on minority chemistry faculty members.