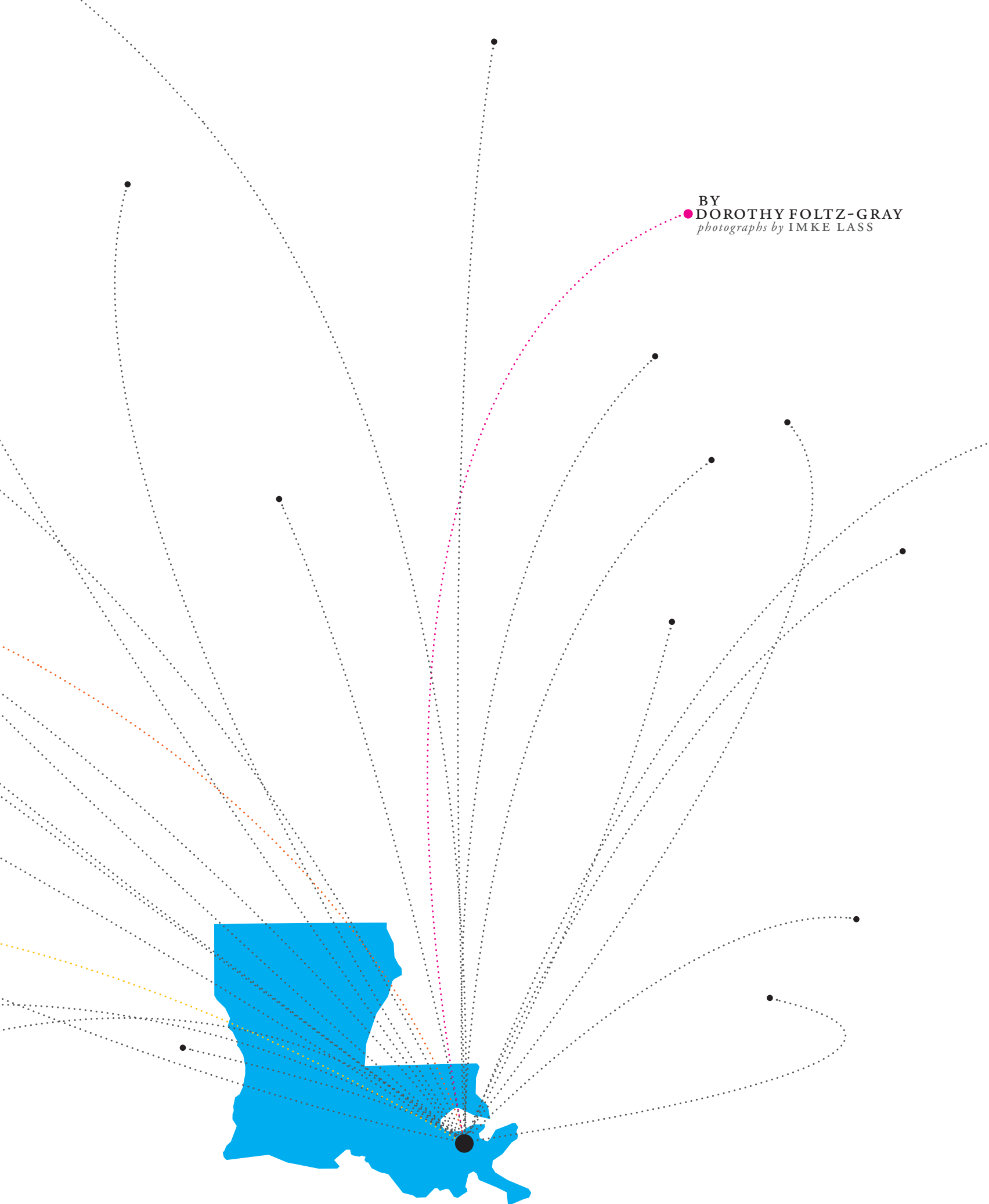


The background features several thin, dotted lines in various colors (grey, orange, yellow) that curve and intersect across the page. Small solid dots in these colors are placed at various points along the lines. The text is positioned in the lower-left and lower-right areas.

A Way Station After Katrina

HHMI
responds to help
Xavier University
retain its displaced
faculty, support
their professional
growth, and
ultimately
benefit students.

BY
DOROTHY FOLTZ-GRAY
photographs by IMKE LASS



THE MORNING BEFORE HURRICANE Katrina bacteriologist Tanya McKinney and her 2-year-old daughter drove from the city to Mound Bayou, Mississippi, 5 hours away, where her mother lives. McKinney's husband, First Lieutenant Steve L. McKinney of the Louisiana Air National Guard, stayed behind on duty. "I sat in front of my mother's TV, watching Katrina devastate New Orleans," says McKinney, an assistant professor of biology at Xavier University for the past 6 years. "And of course I was terrified for my husband. It was nerve-wracking."

Within a few days, McKinney had word from her husband that both her home and workplace—Xavier is located in the heart of Orleans Parish in New Orleans—were flooded, and that 5 years of scientific research had been destroyed.

McKinney was creating mutant bacterial strains of *Staphylococcus aureus*, a bacterium that is the most common cause of food poisoning. "Although high salt concentrations kill most bacteria, *S. aureus* survives. If we could understand how, then we might be able to better control it."

She was investigating which staphylococcal genes are regulated in various salt concentrations. It was a time-consuming process, but by last summer's end, she finally had identified certain genes and constructed the necessary mutant strains to begin exploring the role of specific proteins. "I was very excited," she says, "but now I have to start over."

Many of McKinney's colleagues at Xavier—one of HHMI's longtime undergraduate science-education grantees—have reported similar losses. Every research scientist with frozen or refrigerated specimens lost all they had, says Elizabeth Barron, the university's vice president for academic affairs, and a lot of scientific equipment was damaged. Most heavily affected were faculty in the departments of biology and chemistry and the College of Pharmacy, says Tuajuanda Jordan, former associate vice president for academic affairs. "They will have to start over, though if their computers were not submerged, they should be able to save their data." Throughout the campus, however, floodwaters rose up to 6 feet, submerging the first floors of 39 buildings and destroying any computers situated there. The school also lost its central power plant.

Yet, Xavier stood to lose its most precious resource of all—its faculty. Without salaries or homes, most would be forced to find employment elsewhere. People at HHMI quickly grasped that problem, and within days of the storm, Hanna H. Gray, chairman of the Board of Trustees, conferred with Institute staff to see what they could do to help.



TANYA MCKINNEY // ASSISTANT PROFESSOR OF BIOLOGY, XAVIER UNIVERSITY // **UNIVERSITY OF ALABAMA, BIRMINGHAM**

McKinney was back at Xavier with the rest of the returning faculty on January 12. Phone service has been in and out, but she's home.

Providing Safe Harbor

IT IS NO SURPRISE THAT HHMI ZEROED IN ON XAVIER, a historically black university that has received \$7.6 million in HHMI grants since 1988. HHMI selects grantee institutions based on their success in sending students to medical school or graduate science programs—an area in which Xavier excels, says Peter J. Bruns, HHMI vice president for grants and special programs. "Xavier puts more African American undergraduates into medical school than any other college or university of any size in the country," he says. "And it ranks in the top 50 of all U.S. universities for graduating chemistry and physics majors."

By September 16—fewer than 3 weeks after the storm—HHMI President Thomas R. Cech had sent a letter to HHMI investigators across the country, asking them to consider including Xavier science faculty on their research teams. Just

as rapidly, HHMI's undergraduate grants staff—Director Stephen Barkanic and his colleagues, Program Officer Patricia Soochan and Program Assistant Mary Bonds—set up a structure for matching Xavier faculty with their scientific hosts. The Institute would fund the sabbaticals, for 9 months at \$5,600 per month, of any Xavier science faculty who participated. It also extended offers to members of the staff and students who accompanied them, offering \$3,600 and \$2,000 per month, respectively, and would pay for expenses such as relocating computers or purchasing special supplies.

Within a week, 200 HHMI investigators had offered places for as many as 360 faculty and 80 students in their labs and institutions. Xavier administrators were scattered around the country—President Norman C. Francis set up an office in his sister's home in Grand Coteau, Louisiana, Vice President Barron was in Gatlinburg, Tennessee, and Jordan worked from HHMI headquarters in Maryland. Yet getting word to the now far-flung faculty, staff, and students was relatively easy because of an online faculty registry that Xavier already had in place for hurricane emergencies. HHMI posted investigators' offerings on the Xavier Web site, updating it as opportunities opened or closed. The first faculty member signed up on September 22, and by October 10, Jordan and the HHMI team had been in touch with 75 Xavier science faculty who asked for support. Ultimately, 62 faculty, one staff member, and two students were placed.

HHMI also was flexible about placements—approving some, for example, outside the HHMI investigators' offerings. Such was the case for McKinney. When her former graduate school adviser Janet Yother, professor of microbiology at the University of Alabama, invited McKinney to work in her Birmingham lab, McKinney loved the idea. But sorting out the finances would take time. That's when she learned about the HHMI program. "Other people had offered me opportunities that weren't in my field, where I could make a contribution," says McKinney. "But HHMI was flexible enough to say, 'If you have someone in mind to work with, just send us your work plan.'"

Deep Loyalties

ALTHOUGH MCKINNEY COULDN'T RESUME HER research on staphylococci at the Alabama lab, she has nonetheless found the work there stimulating and has been productive.



ASHLEY FORNERETTE

SENIOR, BIOLOGY-EDUCATION, XAVIER UNIVERSITY
TEXAS TECH UNIVERSITY, LUBBOCK

Fornerette is back in class. The sidewalks near Xavier are piled high with debris from houses that have been cleared of their ruined contents. It's a daily reminder, she says, of how hard it was to see her childhood memories thrown onto the sidewalk in a mountain of unidentifiable junk. "Sure it's garbage now, but before Katrina it wasn't."



Since early October, she has been attempting to isolate and identify an enzyme from *Bacillus circulans*, which degrades the capsule around *Streptococcus pneumoniae*, a bacterium that causes pneumonia. Her collaboration with Yother has also introduced McKinney to new and effective procedures. For instance, a graduate student is showing her how to use a phage display system, an easier and less expensive way to screen protein interactions than any she has used before. "I'm going back to Xavier a better teacher and researcher," she says.



RAY LANG // ASSOCIATE PROFESSOR AND CHAIR OF COMPUTER SCIENCES AND ENGINEERING, XAVIER UNIVERSITY // **WASHINGTON UNIVERSITY, ST. LOUIS**

Lang finally returned to his house when utilities were restored—on New Year's Day. He started work at Xavier on January 12, where he'll continue the research he began in Sean Eddy's lab in St. Louis.

In fact, McKinney never considered not returning. Since college, where she had few black science professors, she has wanted to be a role model for minority students. “At Xavier I can mentor and encourage science students, and also do my research there with funding and equipment. It’s too valuable an asset to be lost or diminished. I want to help rebuild it.”

Vladimir Kolesnichenko, an assistant professor of chemistry, and his wife, Galina Goloverda, an associate professor of chemistry, have similar feelings about Xavier. The couple left New Orleans the day before Katrina’s arrival with their 15-year-old son, Igor, and with friends who didn’t have a car, driving to Lafayette, Louisiana. A close friend in Iowa City, Iowa, Ronita Lebeau-Meyerdirk, who knew they were camping near Lafayette, called campground after campground until she found them, whereupon she invited the family to her home. Kolesnichenko and Goloverda were eager to return to Iowa City, where they had lived from 1996 to 1998. They knew professors at the University of Iowa—both of them had worked there—and

their son had local friends and could easily slip into school.

“Lou Messerle [an associate professor of chemistry], whose interests are very close to ours, said we were welcome in his lab,” says Goloverda, an organic chemist. “As soon as I learned about HHMI’s program, I wrote to Dr. Jordan, explaining Messerle’s offer. So she made it happen.”

Darrell Eyman, an associate professor of chemistry at Iowa, convinced the university’s administration to allow Kolesnichenko, a materials chemist, to develop and teach a new graduate-level class in nanochemistry. Jordan again intervened constructively, by ensuring that Kolesnichenko received the difference between the Iowa salary and the higher HHMI stipend.

Assured of income, the two scientists could get back to work. They were collaborators at Xavier, Kolesnichenko developing nanocrystals and Goloverda wrapping them into the shells of organic compounds that make the particles soluble and stable in water. “We target magnetic nanoparticles that can respond to an external magnet passed over the body, carrying drugs to a specific site,” she says. “The idea was not ours, but we are trying to improve the drug delivery.”

They say their work and their colleagues at Iowa have been a gift during a very difficult time. “We dig through publications and do experimental work in the labs,” says Kolesnichenko, who divides his time between teaching and lab research. “Our work here gives us the opportunity to get new ideas that might be applied to our research at Xavier.”

Like McKinney, these two scientists have no doubts about returning to New Orleans.

“We have never felt like it was just a job,” says Goloverda. “It was always a mission, where you have something to offer and the students are happy to accept it. Some of them never before had a good opportunity to learn, and they are ready. That makes our efforts very rewarding.”



A Good Place During Personal Loss

RAY LANG, ASSOCIATE PROFESSOR AND CHAIR OF computer sciences and engineering, never considered quitting Xavier either. “I felt very lucky to get a job there,” he says, “and after 12 years I’m very invested.”

The Gulf Coast’s perennial hurricanes were almost ho-hum for Lang, a New Orleans native. Despite dozens of tree-snapping storms, he’d never felt the need to evacuate. But the night before Katrina hit, he and his partner Alex Sanabria realized that the hurricane was going to be a monster—and that it was too late to leave. Six days after the storm, the couple was evacuated by

boat. After 16 hours with tense and sometimes unruly mobs at the New Orleans airport, and a ride in a cargo plane to Austin, Texas, they finally flew with their cairn terrier Caesar to the home of a friend in St. Louis, Missouri.

When Lang heard about the HHMI program, he combed the offerings for a spot and found HHMI investigator Sean R. Eddy, an associate professor of genetics at Washington University in St. Louis, who praises both the HHMI program and his guest researcher. “Ray has research experience in an area of computational linguistics that we use extensively in DNA- and protein-sequence analysis, so it was a really great fit,” says Eddy.

Lang’s feelings are mutual. The placement and new colleagues have provided him with both expanded opportunities and a distraction from personal grief: Sanabria, ill with liver disease before the storm, became weakened by the stress of Katrina and the move and died 6 weeks after the pair arrived in St. Louis. Says Lang: “We’d been together 26 years.”

Lang was in a good place, however, at that difficult time. “Everyone at Washington rolled out the red carpet for me. I began by giving a presentation about my work. Since then, I’ve been writing a compiler [a program that translates code for a computer] to describe the secondary structures of RNA, an area somewhat connected to what I was doing at Xavier. And working here has been a fabulous opportunity to make the transition into computational biology, which uses techniques from mathematics, statistics, and computer science to solve biology problems like the alignment of gene sequences.”

Confidence in Xavier’s Future

THESE XAVIER FACULTY ARE ACQUIRING new methods and directions and continuing to do research in the face of huge losses—exactly what HHMI and Xavier administrators hoped the program would offer. “We are a tuition-dependent university, so right now we have no income,” explains Vice President Barron. “Being able to pay the salaries of the faculty allows us to keep more of our teachers. But most significant is that HHMI found opportunities that allow faculty to grow, which will enrich our students’ research experiences as well.”

Xavier senior Ashley Fornerette, 21, a biology-education major, is certainly realizing that benefit. After the hurricane, Xavier biology professor Ray “Trey” Brown asked Fornerette to join him in his lab at Texas Tech University in Lubbock, and she was delighted to do so. Although Brown is not returning to Xavier, Fornerette—who plans to go to graduate school in environmental toxicology—wants her Xavier degree. “At

Xavier, you can get to know your professors,” she says. “You’re not just a name in a grade book. Xavier has molded me.”

Among its 4,121 full-time students pre-Katrina, 3,118 said they planned to return when the campus reopened on January 17. Two-thirds of the faculty said they would return; 50 of them are living temporarily in mobile homes or trailers on campus. About one-third had to be laid off, though Xavier administrators hope to rehire many of them next September. HHMI will continue to fund about 56 faculty at Xavier until September 2006.

Of course, challenges remain. Reconstruction alone will cost between \$30 million and \$40 million, says Xavier President Francis, but he is confident of Xavier’s survival. “We have a dedicated faculty overall. The science faculty teaches as a team, and they know what the students have been taught the semester before. It’s a very managed process, and it works. That’s why we have the record we do. We teach students what academic life is about, and we graduate people who are ready to excel.” ■



The Storm Brought Her Home

Tuajuanda Jordan grew up in Forestville, Maryland. So after she and her 15-year-old twins were evacuated to Dallas after Hurricane Katrina flooded New Orleans, the three decided to head back to Maryland, to her parents’ home, about 20 miles from HHMI headquarters. • *Learning that Jordan, Xavier University’s associate vice president for academic affairs, was in Maryland, Stephen Barkanic, director of HHMI’s undergraduate grants program, offered her office space and use of Institute facilities to do her work for Xavier. Meanwhile, her kids, Jordan and Patrice Starck, quickly became ensconced at the Bullis School in Potomac. Not wanting to disrupt their education any further this year, Jordan planned to return to her job at Xavier and commute to Maryland on weekends to be with them. However, she realized this arrangement just wouldn’t work.* • *When word got out that Jordan intended to stay in Maryland, Peter Bruns, HHMI vice president for grants and special programs, offered her a position as HHMI’s senior program officer in charge of science education. “I was taken aback,” she says, “and happy that they had enough faith in my ability to make me an offer like that on the spot.”* • *The decision to leave Xavier after 11 years wasn’t easy, though. “I don’t know anyone who’s worked long-term at Xavier who isn’t absolutely committed to the institution,” Jordan says. “Writing my letter of resignation was one of the hardest things I’ve had to do in my adult life.” On the other hand, her relationship with the school may continue on a different level. “There’s lots of science education going on at Xavier,” she says, “so I expect to work with the university again.”*