

## Renato J. Aguilera

You can't go home again is supposedly one of the great axioms of modern life. But Renato Aguilera did go home again, and rather successfully. Home for Aguilera is the region around El Paso, TX, near the Mexican border. There he was born, grew up, and earned a bachelor's and a master's in microbiology at the University of Texas, El Paso (UTEP), before leaving for bright academic "lights" elsewhere. He earned a doctorate from the University of California, Berkeley, and a tenured faculty position at the University of California, Los Angeles (UCLA). Then after 20 years, Aguilera went home to UTEP in 2002.

Aguilera, who is now professor in the department of biological sciences at UTEP, has energized its graduate program. He has increased the number of PhD students from 10 to 50, half of whom are from ethnic minorities. And he has brought in major funding from National Institutes of Health programs that promote minority education and research in bioscience. These include a National Institute of General Medical Sciences (NIGMS) Research Initiatives for Scientific Enhancement (RISE) grant for undergraduate and graduate students and a Support of Competitive Research (SCORE) grant for faculty research at minority-serving institutions.

Meanwhile, the Aguilera lab is going strong. It is divided between a *Drosophila*-based group probing the role of DNase II enzymes in phagocytic DNA degradation and another developing tandem screening assays that can plow through chemical libraries looking for anti-cancer and anti-mycobacteria compounds. Aguilera is active in a new Border Biomedical Research Center as well as a biomedical research program for undergrads. The latter program led to, among other things, his first publication in epidemiology—a field survey that he supervised of HIV infection and risk behavior among Hispanic farm workers in the West Texas–Mexico border region.

Outside El Paso, Aguilera is known as an advisor on minority science programs and as a leader in organizations such as the Society for Advancement of Chicano and Native Americans in Science. Earlier this year, the American Society for Microbiology named him its William A. Hinton Research Training Awardee for fostering the research training of underrepresented minorities. And in January, Aguilera took over as Chair of ASCB's Minorities Affairs Committee (MAC).

Coming home has been sweet, he reports. His then-teenage daughters made a smooth transition from Los Angeles to West Texas. His eldest, Kristina, now 21, will soon graduate from UTEP in microbiology and has been accepted into several prestigious PhD programs. Her sister, Elizabeth, 18, has just declared herself a UTEP microbiology major. Aguilera also reports that since returning to El Paso, he has taken up golf.

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### Alma Mater Matters

Going home to shake up your alma mater has its risks, but longtime friend and MAC member MariaElena Zavala says that Aguilera's return to UTEP was a logical move for both sides. Zavala, who is at California State University, Northridge, says that if Aguilera has changed since he left El Paso in 1982, so has UTEP. Long the stepchild of the University of Texas system, UTEP in recent years has finally received a fairer share of state support, beefing up its facilities, its faculty, and its commitment to research-based, PhD-level graduate education.

Luring back successful scientific alumni like Aguilera was a sound strategy for UTEP, says Zavala. "UTEP is much more research-focused now. Graduate education has become a much higher priority. It's an up and coming 'Hispanic-serving'—God, how I hate that word—institution of merit. And Renato has been a big part of that, especially in building the grad program in biological sciences."



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Zavala describes Aguilera as a perfect illustration of why researchers from ethnic minority backgrounds can be so valuable to science. “We look at things in a little bit different way,” Zavala explains. “We bring in other things and ways of looking at science and then test them by the scientific method.” That’s especially true of Aguilera, she says. “He’s always on the edge, always combining things. He gets something that doesn’t quite fit the model and then he says that if that’s not right, what could it be?” The job at UTEP allowed him to rethink graduate education for minority students from that different perspective, she believes.

“Besides, Renato likes being a Texan,” Zavala says with a laugh. “Goodness knows why, but it’s clear that you can’t cure him of being a Texan. But in going to El Paso, you could see that as part of his giving back.”

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A “me” quite like Aguilera is hard to imagine outside the Tex-Mex culture of the western Rio Grande valley. Aguilera was born in El Paso, a third-generation American on his mother’s side but a Mexican citizen through his father, who was a small-town judge near Juárez. “How lucky I have been to be born and raised in this part of the world,” says Aguilera. “I’m American but I’ve also lived just across the border in Mexico, so I was fully immersed in two different cultures. Your culture is right here. You don’t feel out of place. This is where you were born and where your people are.”

### **Insults and Honors**

Aguilera spent his early years on the Mexican side of the river but went to high school in El Paso. Suddenly language became a source of humiliation. “I really didn’t speak English well until I was a teenager in high school,” he recalls. “One of my proudest accomplishments was getting senior honors in English. I worked so hard at it mainly because I was so upset with the English teacher who treated me so badly in his class. My brother had been in his class and he told me, ‘You’re probably as dumb as your

brother.’ ...[I]t made me become more of an ‘American’ than I had ever been.”

The push for higher education came “100%” from his mother, he recalls. “She said, ‘You’re going to college.’ It was expected and there was no arguing.” At UTEP, fate was waiting for him on a bulletin board in the old biology building. The notice board is still there, Aguilera reports, and whenever he walks past, he can

see his younger self, standing there, transfixed by a poster. It announced a summer research fellowship in the laboratory of Eppie Rael to be funded by a Minority Biomedical Research Support (MBRS) grant through NIGMS. “I can’t remember what it paid, maybe \$1,000, but it was way more than I could have made working in a fast food restaurant, which is what I was doing.”

The notice led him to Rael, a pioneer in promoting minority science education at UTEP, who became Aguilera’s mentor and life model. “He saw something in me and picked me as the student to work in

his lab. I took the job and fell in love with it. Dr. Rael considered himself an immunologist and the next thing you knew, I became an immunologist.”

The Rael lab analyzed the exotic, bioactive stew of proteins and enzymes in snake venom. The exacting bench work left Aguilera totally hooked on research. Later on, venom turned out to be a conversational icebreaker in interviews for fellowships or jobs. But his choice of graduate school was somewhat haphazard, he admits. Aguilera only considered schools in California and chose Berkeley because a minority grad student called him up to say how glad she was that he was coming there.

At Berkeley, Aguilera landed in the laboratory of Hitoshi Sakano, who was a new hire, fresh from his work on antibody diversity with Susumu Tonegawa in Basel. (Tonegawa would win the Nobel Prize in Medicine or Physiology five years later.) The Sakano placement was a near disaster for Aguilera. Sakano was preoccupied with getting his new lab off the ground, so the day-to-day operations fell to his Japanese postdocs. They set the tone. The lab ran 24 hours a day with Aguilera working a 12-hour day shift and then coming back at 11:00 pm to check on experiments. “If I hadn’t

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had the strong personality that I had by this time, I probably wouldn't have survived. It was intense," Aguilera remembers. "The Japanese postdocs were used to this workload. They didn't see it as unusual. It was as if I'd been transported to Japan, but it made me the scientist that I am today."

In 1987, Aguilera finished his doctorate on the characterization of factors involved in normal and abnormal antibody gene rearrangements. He left the Sakano lab as first author of papers in *Cell* and the *EMBO Journal* and as second author of a publication in *Science*. He was also exhausted. "I was crispy, tired, brain-dead," he says.

### Career Time

He soon rallied, moving to UCLA in 1989 to take up a faculty position in molecular, cellular, and developmental biology. He also set up a laboratory centered on a group of recombination activating genes that help tailor antibodies in the adaptive immune system. Aguilera quickly became a mentor in UCLA's MBRS program and later the director of its Minority Access to Research Careers (MARC) group. "I truly believe in this mission to expose minority students, especially undergraduates, to what molecular and cell biology can do for them as a career and as an adventure."

Aguilera's first mentee was Gustavo Miranda-Carboni, who is now an assistant professor in obstetrics/gynecology at the UCLA medical school. Aguilera took him into his lab when Miranda-Carboni was a UCLA sophomore. He kept him there as a lab technician after financial problems forced him to drop out. Aguilera pushed him back to school part-time and then into graduate school and a new spot in the Aguilera lab. Over 13 years, Aguilera gave him an education, a career, and a work ethic, says Miranda-Carboni. "Renato *drives*. It's a very old-school way of doing graduate school. I was always a hard driver but I worked very, very hard for him and I've never stopped since."

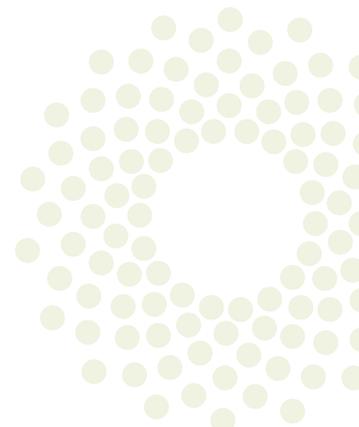
But Miranda-Carboni was not the least surprised when Aguilera told him that he was leaving UCLA for UTEP. It was always clear

to Miranda-Carboni that despite all his years in California, his mentor struggled with Los Angeles culture. "For one, if you can't get over the traffic, then you're not going to be happy in LA," says Miranda-Carboni. "So when the opportunity came, he jumped at it. He viewed it as a challenge to come back to his alma mater and to push UTEP to become much stronger and to change the culture."

His old mentor invited Miranda-Carboni to El Paso last year to give a research talk to undergrads in Aguilera's MARC group. Miranda-Carboni was happy to see Aguilera looking so at home in the less- hectic culture of El Paso. But he saw no change in his mentor's goals or his work habits. "We have to compete with the best of the best. That involves a whole change in philosophy. You can't do it at the pace of a burro. You have to go at the pace of a racehorse."

Whatever the pace, there has never been any secret about Aguilera's motivation, says Peter Lipke of Brooklyn College, where Aguilera is on the SCORE advisory panel. "Renato sees himself in the kids," says Lipke. "It's a calling. That's the only way I can describe it." ■

—John Fleischman



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