



## Southwestern's Chamber of Secrets

Devon Lucero '19 and Chantal Gonzalez '19 engage with experts at an international neuroscience conference and coauthor publications in animal behavior.

**By Meilee D. Bridges**  
**August 9, 2018**

### **Collaborators and friends**

On the first floor of the Olin Building, just beyond a colorful mural depicting orcas, seals, and a rather self-assertive cuttlefish, lies what SU senior Chantal Gonzalez calls the Chamber of Secrets. It's not quite the subterranean lair of Hogwarts, nor does it house any mythical creatures. But inside the Southwestern Animal Behavior Lab, you *will* find beneath the red-tinted lights some rather sizable rats by the names of Tofu, Miso, and Ramen.

The rodents are the subjects of Gonzalez's and fellow senior Devon Lucero's research in the lab, which is led by Professor of Psychology Fay Guarraci, an expert in behavioral neuroscience. Gonzalez and Lucero have collaborated on experiments since their first year at Southwestern, and in November 2017, they presented their work in Washington, D.C., at the Society for Neuroscience's 48th annual meeting—the world's largest conference for scientists and physicians who specialize in the brain and nervous system. Their lab partnership has also led them to coauthor two articles in peer-reviewed journals: "A Recreational Dose of Methylphenidate, but Not Methamphetamine, Decreases Anxiety-Like Behavior in Female Rats" in the June 2018 issue of *Neuroscience Letters* and "The Effects of Ketamine on

Sexual Behavior, Anxiety, and Locomotion in Female Rats” in the December 2017 issue of *Pharmacology, Biochemistry, and Behavior*. Presenting posters and publishing not just one but two peer-reviewed manuscripts as undergraduates is “quite a remarkable experience,” says Guarraci—or Dr. G, as Gonzalez and Lucero fondly refer to her.

What’s not so surprising about these lab partners when compared with other SU students is that these colleagues are also friends and roommates—a testament to the relationships that often emerge through shared undergraduate research experiences at the University. They’re the kind of friends who finish each other’s sentences and sometimes look to one another when answering questions about themselves. It’s clear that working and living together has enriched their studies and their experiences these past three years.



### **Contributing to the scholarly literature in animal behavior**

Having decided early in life that she wanted to become a veterinarian, Lucero is majoring in animal behavior at Southwestern. Gonzalez, meanwhile, is majoring in psychology and minoring in animal studies. Her love of animals initially led her to search for a school that would allow her to study zoology, and when she encountered the animal behavior research program at Southwestern, she knew she had found her niche.

Lucero and Gonzalez first learned about the Animal Behavior Lab while taking a course with Guarraci. In only their second semester on campus, while enrolled in a Research Methods class, they had their first opportunity to start working in the Chamber of Secrets. This was also the class where, seated only two tables apart, Gonzalez and Lucero first began talking; they had seen each other before, but now they were becoming fast friends. Soon, they were intentionally taking other classes together, including one of their favorites: Behavioral Neuroscience. In that course, Gonzalez says, “it was great to learn what hormones do to us, and it helped us understand our research even after we’d started research in the lab.”

Initially working under Guarraci’s supervision and later becoming more independent in the lab, these two researchers specialize in the effects of drugs such as ketamine and methamphetamine on the motivations and other behaviors of rats, including movement, anxiety, and sexual dysfunction. The work comprises multiple simultaneous projects, and during their first project on ketamine, they made the breakthrough discovery that ketamine actually improves rather than decreases sexual motivation in female rats. “We thought we were going to be rich!” Gonzalez remembers laughingly, but she and Lucero quickly realized that the monetary rewards of research are often negligible. Still, the two

can find consolation that the surprising results of their experiments have already helped advance neuroscientific research: Experts in the field were excited to learn about their findings at the neuroscience convention, and Guarraci is already assigning the two published articles in the courses she teaches.

### **The challenges and rewards of undergraduate research**

For Gonzalez, attending the international conference “has probably been my best experience at SU,” and Lucero quickly adds, “that and being in the lab.” Their pride is well earned: Professors and graduate students at Neuroscience 2017 expressed surprise that undergraduates weren’t just presenting research but also holding their own in dialogue with those more advanced scholars.

---

*Professors and graduate students at Neuroscience 2017 expressed surprise that undergraduates weren’t just presenting research but also holding their own in dialogue with those more advanced scholars.*

But being able to understand and articulate the details of experimental methods and results at a professional level requires commitment. Undergraduate research is not for the unmotivated, as Lucero cautions. She and Gonzalez spend most of their time outside of class in the lab. “You’re on all day. Even between classes, at night, on weekends, you’re literally always there. You have to prepare everything, plan for accidents, plan ahead for mistakes, and make time. It’s like being a college student with three part-time jobs.” The dynamic duo also mention that students hoping to work in the lab need to be “quick, incredibly independent learners” who have strong organizational and communication skills in addition to a background in basic science because you “hit the ground running.” After all, Guarraci is often teaching or conducting her own experiments, so she trusts the students in her lab to take ownership of their research.



Regardless of the challenges, the rewards are phenomenal, and there’s an undeniable twinkle of delight in their eyes when they talk about their research. Gonzalez’s favorite part of lab work? “Discovering the unknown. We didn’t know this before, but now we know it,” she says enthusiastically. Beyond the wonder of unveiling new knowledge, Gonzalez loves “teaching other people at conferences [and] talking to other scientists.” For her, collaborating, networking, and thinking about ideas with other scientists are a highlight. Perhaps even more importantly, she adds, “it’s cool to be an undergrad getting to do all that.”

Lucero similarly sees their hands-on engagement in the Animal Behavior Lab as unique: “The most beneficial part is that we’re actually able to do this. Getting to work in the lab—that’s nowhere else.” She emphasizes that students at Southwestern aren’t just running random samples or doing research for the sake of doing research; rather, they’re conducting significant experiments and contributing original ideas to the field. They both encourage other Southwestern students to take advantage of the unique opportunity the University provides them as undergraduates because having one or more publications in your name before graduating from college is both rare and exciting.

## Reflecting on the past, looking forward to the future

What's next for the two lab partners? Gonzalez and Lucero's faces fall a little as they consider leaving what's become their home for the past three years. Their genuine love of Southwestern is irrefutable: "We want to stay here forever!" For Gonzalez, the irony in her teary-eyed exclamation is that she never expected to attend a small university. Having graduated from a high school in a class of 800, she didn't originally think a small, private college would be the right fit. But both Gonzalez and Lucero credit SU's intimate class sizes and warm, collaborative community for the opportunities they've enjoyed here. In contrast, Lucero even recalls visiting a friend at a large state campus. She snuck into a biology course while there, but with more than 300 bodies in the lecture hall, the professor never even noticed that she wasn't a registered student. "I didn't want to become a number in a classroom," she says. Whereas students in introductory courses at larger universities are sometimes known only by an ID number, Lucero wouldn't be surprised if her Southwestern professors could identify her work just from her handwriting. Gonzalez adds that she loves walking down Olin because the professors all greet her by name.



Although they look back affectionately on their time at SU, they'll certainly be making the most of their senior year. They're in the process of drafting a third manuscript, and their goal is to have a fourth accepted by the time they graduate in May; resting on their laurels is clearly not on the agenda. They're also returning to the neuroscience conference, joining more than 30,000 participants in San Diego in November. Lucero plans to apply for veterinary school and focus on large-animal medicine, perhaps specializing in equine care. She will also apply for PhD programs and hopes that her extensive research experience will set her apart from other applicants. Gonzalez is still exploring her options. When she first landed at Southwestern, she considered being a game warden, and she later developed a fascination for animal neuropathology. The future may find her managing laboratories, going to grad school in neuro, or working in a zoological conservation program.

Whatever courses they chart, both Lucero and Gonzalez will certainly be bringing their dedication and enthusiasm—not to mention their enduring love for animals. Southwestern's Chamber of Secrets certainly won't be the same without them.