

Above & Beyond

Focus on Graduate Students

Unexpected Passion for Science Fuels Genetics Graduate Student

When genetics graduate student **Elyse Munoz** started her college career, she was a political science major. But then she took an anatomy class.



“I took one class, loved it, and changed my major,” Munoz said.

Once she decided to pursue biology instead of political science and planned to attend graduate school in that field,

Penn State was an easy choice for Munoz.

“I was really drawn to Penn State, because the biggest thing that Penn State has to offer, in my opinion, is a highly collaborative atmosphere, and that's really missing from a lot of other universities that I looked at. I thought it was so cool that there are so many people you could work with and that everyone wants to work together.”

This highly collaborative environment allowed her to conduct research in two labs as a graduate student. She started in the lab of **Doug Cavener** studying beta cell biology as it is applied to diabetes and insulin resistance. But that experience taught her that she wanted



to conduct research with more direct application.

That was right about the time **Scott Lindner** arrived on campus. Lindner's research combines molecular parasitology and structural biology to study the parasite that causes malaria.

The statistics on malaria are astounding: more than 627,000 people died from this condition in 2014, with over 80 percent of those deaths being children under the age of five. With an estimated three to four billion people per year at risk for malaria, Lindner's research could have a very positive effect on a lot of lives, and Munoz connected with that.



“Because he’s a brand-new faculty member, his work is cutting edge, it’s very exciting. He’s really pushing the field in directions it hasn’t been able to go for technical reasons until now. I’m getting exposed to so many different techniques,” said Munoz.

As part of the Lindner lab, Munoz is now focusing her graduate work at Penn State on the RNA metabolism of the malaria parasite. “I work on two different RNA binding proteins that we believe are involved in translational repression.”

The malaria parasite is an interesting research subject, said Munoz, because of the multiple stages the parasite moves through: “It has a stage in humans, which is what we’re mostly familiar with, and there is also a stage in the mosquito. That jump from the human host or mammal host to the mosquito and back and forth is really critical. There are a lot of things physiologically happening there.”

Munoz hopes that the Lindner lab’s research could lead to novel drug targets or the development of a malaria vaccine, which is an aspect of this research that she is excited about. “I want-

ed to work on something with more application, where I could see the direct result of my work.”

Her passion for her work has helped her to win a variety of graduate-level awards, including the American Society for Microbiology Robert D. Watkins Graduate Research Fellowship, the Huck Institutes of the Life Sciences Dissertation Award, a Sloan Research Fellowship, and a Bunton Waller Graduate Award.

The Watkins and Sloan Fellowships and the Bunton Waller Graduate Award were available to Munoz as a result of efforts to recognize excellence achieved by underrepresented scientists. Munoz is proud to be a Hispanic female scientist.

“I’m a minority student. I am a woman in science. I want it to be clear that it doesn’t matter where you come from, it doesn’t matter what your race or your color is, you can be successful in science, and I’d like to think that I’m a pretty good example of that.”

While Munoz is gaining valuable experience in the Lindner lab, she’s also sharing her knowledge to help mentor an undergraduate researcher. Munoz mentors **Amanda Reese**, a junior majoring in biochemistry and molecular biology. Munoz also speaks to groups of underrepresented scientists like the Millennium Scholars and the McNair Scholars to encourage them to pursue their dreams in science.

It all goes back to the community for Munoz. The keys to success lie with people working together and helping each other. “I wouldn’t be as successful as I am today without amazing mentors, or the support of Penn State and my fellow Penn State genetics graduate students.” ■

—*Whittney Gould*