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Graduate student follows research opportunities from Puerto Rico to the Baker Institute

As a first-generation college student, when Robert López-Astacio first heard [Dr. Colin Parrish](#) give a talk at University of Puerto Rico-Ponce about his work on viral evolution, he had no idea that just a few years later he would be one of Dr. Parrish's graduate students, studying the deadly disease of dogs caused by canine parvovirus. Parrish had visited UPR-Ponce through the Research Training Initiative for Student Enhancement (RISE), an NIH-funded program to diversify the students entering biomedical research.

"Robert brings a lot of enthusiasm to the lab," said Parrish, the John M. Olin Professor of Virology. "He had a very strong background in molecular virology and he hit the ground running."

López-Astacio's first taste of research was a middle school science fair project, which led to NIH-funded internships in high school and college, and then to a post-baccalaureate research experience at the University of Rochester. After being accepted to multiple Ph.D. programs to study immunology and microbiology, ultimately he chose Cornell University and the Parrish laboratory. He likes that the group is highly collaborative and that they place virology discoveries into a larger context of animal disease outbreaks.

In his research, López-Astacio is investigating different parvovirus mutants that have arisen since the first canine parvovirus pandemic in 1978 to see how successful they are in animal cell cultures. He is also looking at parvovirus "escape mutants." These viruses have mutations that alter the protein shell, which enables them to evade interactions with antibodies, which are produced by the immune system, and can render vaccines ineffective. He wants to know how escape mutations arise and spread, and how they might play an important role in viral infection and evolution.

The year before López-Astacio joined Baker in the fall of 2018, Hurricane María hit the island of Puerto Rico, causing unprecedented devastation. It was difficult to focus on his classes and his lab rotations, knowing that his family and friends were suffering. His parents, Mari and Roberto both have chronic health problems and so they moved to Ithaca with his brother, Alex, to access more reliable healthcare. López-Astacio visited Ponce in the summer of 2018. Though it was good to see friends, he said it was clear that the people and the island have not yet recovered from the hurricane's damage.

Parrish and López-Astacio hope to return to UPR-Ponce to give talks on their research and promote diversity in STEM careers. Ultimately, López-Astacio plans to return to his island to teach at the university level and to work with high school students to help them find new opportunities, both locally and outside Puerto Rico.

"I'm grateful to all the people who have helped me throughout these years – my parents, my family, all of my friends and all my professors back in Ponce," said López-Astacio, "It's because of them that I'm here at Cornell."

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