Driven to Make a Difference

Recent grad Emily Reinoso Jacome is determined to help others as a researcher and, eventually, a doctor

The daughter of two electrical engineers who immigrated to the US from Ecuador, **Emily Reinoso Jacome** *(B.S. 2021)* believes she was destined for a career involving science, technology, engineering, and math (STEM). "Science fairs were a huge event in my house," she says with a laugh. "Everyone got involved. STEM was a way for me to connect with my parents and share discoveries."

When Reinoso was still in elementary school, her younger sister contracted a virus and was hospitalized for a week with pneumonia. "My family is everything to me, and I was so scared. I remember just feeling helpless," recalls Reinoso. "As I watched the doctors working in the hospital, I realized they had the power to help people. They were making a difference. I decided being a doctor was the greatest thing I could do."

A Healthy Work Ethic

At Carnegie Mellon, Reinoso balanced a double major in MSE and Biomedical Engineering (BME) with the University's pre-health track — designed for students intending to pursue medical careers — which includes advanced coursework in chemistry and other subjects.

Reinoso was also an undergrad researcher in the laboratory of Professor Xi Ren of BME. A former instructor in surgery at Harvard Medical School, Ren focuses on developing functional vasculature, or blood vessels, for engineered tissue.

"Professor Ren visited my Introduction to Biomedical Engineering class and talked about the problem of supplying engineered tissue with blood and oxygen," explains Reinoso. "While it's easier to regenerate skin or cartilage, because they're relatively thin, it's harder to deliver oxygen deep into an engineered organ like a heart or liver. Lacking oxygen, larger organ scaffolds typically die instead of regenerating."

"Every day, 17 people in the United States die while waiting for an organ transplant," she adds. "I realized that, by working on vascular systems for complex tissue and organ scaffolds, I could contribute to saving lives."

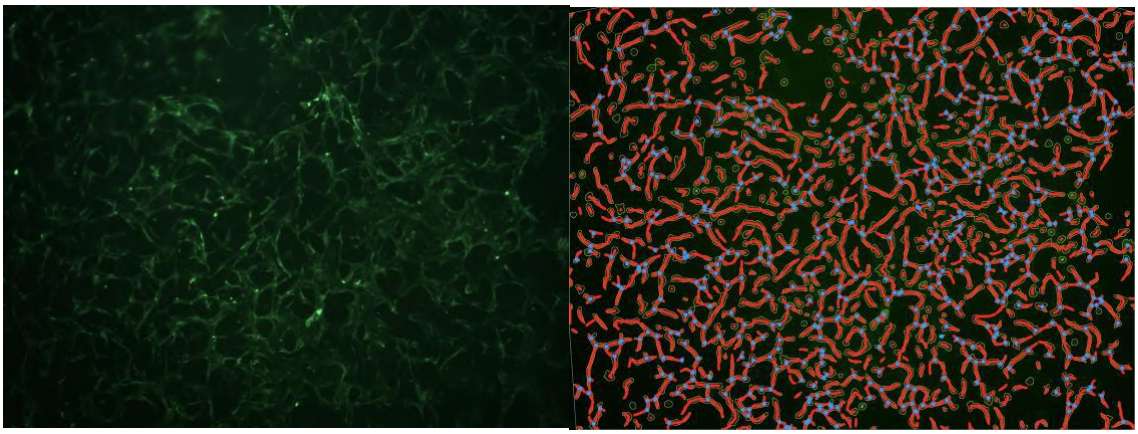
Reinoso's work in the Ren Laboratory focused on delivering pro-angiogenic peptides, which support oxygenation, to engineered tissue samples via a fibrin gel application. Her efforts were supported by a CMU Summer Undergraduate Research Fellowship (SURF), and she presented her preliminary findings at the University's Meeting of the Minds student summit in May. Reinoso is a co-author of two published papers related to tissue engineering and regeneration.

Incredibly, Reinoso was also a four-year member of Carnegie Mellon's varsity swim and dive team, serving as Senior Captain during her final year. This commitment meant attending practices six days a week, for hours at a time, sometimes twice a day. "Being a student athlete has definitely given me time management skills," Reinoso notes. "I've learned to carefully budget all my activities, while also enjoying any downtime to the fullest. I'm someone who really enjoys structure and organization."

Blending Science with Compassion

Reinoso's dedication and work ethic will certainly come in handy when she attends medical school. But first, she'll spend two years at the National Institutes of Health (NIH) in Washington, DC, as a post-bachelors research fellow. She'll work in the laboratory of Dr. Roxane Tussiwand, an investigator from the University of Basel in Switzerland who focuses on immunology and inflammation.

While Reinoso's assignment at the NIH doesn't begin until fall, she won't be relaxing this summer. Instead, she's preparing to take the Medical College Admission Test (MCAT) in August, while working as a volunteer in West Penn Hospital's Elder Life program. "I visit 70+ year old patients, talking to them, playing games, and checking on their well-being," Reinoso says. "It's so great when you can see you've made a difference in a patient's day, just by being there."



Reinoso's research in the Ren Laboratory demonstrates that delivering pro-angiogenic peptides to engineered cells can dramatically increase the development of vasculature that supports their growth. The image on the right shows the newly formed vasculature in red and blue.