Understanding Calcium Signaling Pathways

Priscilla Yeung, Medical Scientist Training Program

Priscilla Yeung, a sixth-year student in the Medical Scientist Training Program (MSTP) studies calcium signaling in the laboratory of Murali Prakriya, PhD, professor of Pharmacology.

Q&A

Where is your hometown?
This is a tough question! My family moved around a lot throughout my childhood. I have lived in Ann Arbor, San Francisco, Hong Kong, Taipei and Shanghai before attending college in Philadelphia. Nowadays, I call Chicago home, since the six years that I've been here is the longest that I've ever lived in a city.

What are your research interests?
Broadly speaking, I'm interested in understanding the structural and molecular basis of human disease. In my undergrad, I studied how amyloid-beta proteins misfold to cause Alzheimer's disease.

For my PhD work, I am currently working with Murali Prakriya on an ion channel called the CRAC channel, which constitutes an important calcium-signaling pathway in a variety of cell types. Developing a better understanding of their gating mechanism–how these channels open and close–could be useful for developing drugs to help patients with diseases arising from dysfunctional CRAC channels.

What exciting projects are you working on?
My main focus in the Prakriya lab is to better understand the activation mechanism of CRAC channels. Typical CRAC channels are made up of two proteins: Orai1, which forms the calcium-selective channel pore in the plasma membrane, and STIM1, a protein in the endoplasmic reticulum membrane that activates Orai1.

When I first joined the lab, I helped out on a project looking at the conformational changes that occur in the Orai1 channel pore following STIM1 binding. Now, I am examining how the various other parts of the Orai1 protein work together to contribute to pore opening.

Based on the discovery of numerous mutations in Orai1 that cause either gain-of-function channels that are open in the absence of STIM1 or loss-of-function channels that cannot be gated by STIM1, we have identified a crucial interface between the pore and the rest of the channel that regulates Orai1 activation.

What attracted you to the MD/PhD program?
I was drawn by the strong MSTP community at Northwestern, and I was particularly impressed by the MSTP Grand Rounds course that engages students between different years to collaborate on interesting clinical cases.

What has been your best experience at Feinberg?
I have enjoyed participating in PRISM, which is an after school program organized by Northwestern MSTP students to teach science and medicine to high school students.

We get to put our creative minds together for the curriculum design and the students are always fun to work with. Some memorable activities include burning various food items to estimate their caloric value, using sunscreen to protect bacteria from UV damage and visiting the Feinberg anatomy lab.

How would you describe the faculty at Feinberg?
While the faculty here often challenge students beyond their comfort zones, most are willing to invest time in students to help them succeed.

The research environment at Feinberg is very collaborative. It is not only common, but also feels very natural, to collaborate with scientists from other labs and even other departments.

What do you do in your free time?
In the past year, I've started volunteering at Habitat for Humanity to build safe and affordable homes in the southern part of Chicago. Apart from helping out the community, it's a great workout and always an interesting learning experience.

I also spend a significant amount of my free time following Chicago sports teams–Go Bulls!

What are your plans for after graduation?
I plan to continue my clinical residency and research post-doctoral training and hopefully pursue a career as a physician-scientist.