

FACULTY FOCUS - Dr. Marc Nishimura



What classes do you teach and what aspect of teaching do you most enjoy?

So far, I will be teaching BZ 310 (cell biology) and BC 404 (biochemistry lab) in fall 2019. My biggest enjoyment in teaching is conveying the real processes of science to future scientists. This can be through engagement with scientific literature (warts and all), experimental design or even hands on benchwork. When students do “real science” using current modeling, molecular biology, and biochemistry techniques, they learn how the lab works and get started thinking like a scientist.

What are your primary research interests?

I've always been fascinated by how organisms interact with each other. I'm especially interested in how plants interact with the diverse microbes in their environments. These microbes can be both beneficial and detrimental, and somehow plants must be able to detect and respond appropriately (and simultaneously!) to both. I'm interested in how these events occur at a molecular level, and I've focused on plant immune receptors and the microbial molecules that they detect. Interestingly, plant immune receptors have evolved to detect the very molecules that microbes rely on to become pathogens. This dynamic sets up an arms race between the host immune system and pathogen virulence mechanisms, which has driven an amazing array of natural variation. All these strategies are important for us to understand because they are potential tools to use to engineer plant disease resistance and biology in general.

How can students who are interested in your work get involved in your lab?

Students interested in my work can contact me by email (Marc.Nishimura@colostate.edu) or drop by the lab. There are a range of projects that students can get involved with. We have ongoing projects with a variety of plants and bacteria, lots of molecular biology and genetics. My lab is still relatively new but I already have three undergraduates working on engineering the genome of *Arabidopsis thaliana* using Crispr/CAS9-based tools. As a postdoc, I had undergraduates working on all sorts of projects: plant genetics, molecular biology, structural biology, biochemistry, etc. The best thing you can do if you are potentially interested in lab science is to get started early and see what you think!



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What was your undergraduate experience like?

I did my undergraduate at Vassar College in upstate New York. It was a great experience, with a lot of opportunities to interact with faculty and gain experience in the lab. This is when I became more interested in plants, studying interactions between plants and their pollinators. I was intrigued by questions revolving around ecology, evolution, and genetics.

What are some hobbies outside of academia?

A two-professor family with two young kids is enough to juggle for me. The kids seem to take over all aspects of your life, so my recent hobbies include princess culture, art, and Netflix Kids. Part of my work-life balance is figuring out how to get my kids to do work, so I've been introducing lab work to my 5 year old daughter-she's great at packaging up toothpicks to sterilize!



Ashby, starting early in the lab, packing up toothpicks.

Can you speak to the educational experiences that led you to your current role?

Almost all of these "educational experiences" are really people; the major influence has been who has been around to mentor me and support my career. There were a lot of chance events-at Vassar, I was reading 'Origin of Species' and didn't understand the part on cave fish and how disuse had to eye loss, so I just knocked on my evolution professor's door to ask. He is an evolutionary biologist who studies plants, so that's how I randomly ended up starting my own work on plants. After undergraduate, I ended up working as a tech in a plant molecular biology lab; this was also completely random, but critical to my career. I then found a job posting on a bulletin board in the lobby of the Stanford Biology Department, for part-time dishwashing in a lab. This quickly turned into a tech position in a lab at the Carnegie Institution and then graduate school at Stanford. Looking back, this was unbelievably lucky, as I had fallen into one of the best places to learn plant molecular biology in the world. I then met my future post-doc advisor and here I am now. Somehow, I always knew I would end up studying biology, but the specific path has been hugely influenced by chance encounters with scientists willing to be great mentors.

If you see Dr. Nishimura around the Biology Building be sure to say hello!