Science for a Nobel Prize: An interview with Professor Jenn Prescher of the UCI Department of Chemistry

Professor Prescher recalls her time as a Ph.D. student in the lab of Nobel Prize winner Professor Carolyn Bertozzi.

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The lab of Professor Jenn Prescher at the UC Irvine Department of Chemistry works to image molecules, which sometimes involves harnessing the power of fireflies to study cancer.

Picture Credit:
Jenn Prescher

What is it like to do science that goes on to help win a Nobel Prize? More importantly, what is it like to work with a scientist who does Nobel-winning work while simultaneously helping other scientists blossom into better researchers than they ever thought they could be? Professor Jenn Prescher of the UCI Department of Chemistry has an answer to both questions, because back in the early 2000s she was a Ph.D. student doing research in the lab of Professor Carolyn Bertozzi, who just won the Nobel Prize in Chemistry for her role in founding a field of chemistry that allows for the noninvasive study of molecules in living things.

Prescher remembers Bertozzi as a mentor who was not only a master of her science, but who knew that lifting up her fellow scientists was a key part of making masterful science happen.

UCI Physical Sciences Communications caught up with Prescher to hear about the ways in which Bertozzi's mentorship shaped her own research into imaging molecules.

This interview has been edited for clarity.

LJ: So how did you first meet Bertozzi?

JP: I met her in 2001 on a grad student recruiting visit at UC Berkeley. She was a very exciting, new investigator, and she told me about her work trying to understand these interesting biomolecules on cell surfaces known as glycans. The project was very intriguing, but since I had not had any formal biology class I felt like I knew nothing about it. When we were corresponding after my visit I told her 'This is all fascinating, but, you know, I just have no idea about any of it, no background.' And I'll always remember her telling me: 'Well, what better place to learn than right here?' That advice has stuck with me throughout my career: What better place to learn how to do amazing science than right where you are?

LJ: Can you remember a specific moment in time that encapsulates her mentoring style?

JP: I think one of my favorite memories is how she always jumped at the opportunity to teach, and to tell people about what she was working on. My parents were visiting me, and Carolyn loved to have students bring family members by the lab so she could say hello. We stopped by her office, and she greeted my parents and asked all

about them, and then she was telling them about what the lab was working on and what I was working on. My parents are naturally curious people, and Carolyn ended up explaining to them the concept of NMR (nuclear magnetic resonance). She jumped up to the board to draw all this stuff, and pretty soon she's showing them the NMR instruments in the building. That's a very Carolyn thing: "Here let me tell you about it!" That sort of thing.

LJ: Where do you see Carolyn's science manifesting in your own work at UCI?

JP: One thing that has always stuck with me scientifically is her fearless attitude toward solving problems. Like I said, Carolyn's attitude was very much "What better place to learn than right here? Why not us?" I focus on doing what it takes to solve the problem, and try not to be constrained by conventional thinking. I remind myself that we are capable of doing more in my group than making molecules. I try to emulate this "Just go for it!" sort of attitude, and to not be afraid! I remember talking to Carolyn about taking the job at UCI, saying to her 'What if I don't get tenure?' And all the related insecurities. She said, 'Well, so what? What's gonna change? The most important things in your life are still there, and you will have had an amazing five or six years of doing something that you really enjoy.'

LJ: I read that Carolyn is a champion for inclusion in academia.

JP: Yes, and I'm a product of that. I'm the first one in my family to pursue a Ph.D., and I always felt that I didn't quite belong. I think every year I was in her office saying 'I need to quit, this isn't for me,' and she had this way about her that said 'Of course you belong here!' The thing about Carolyn is that she would constantly put you in challenging situations so that you could see yourself succeed. She would send me to a conference in her place or something like that because she had confidence that I would rise to the occasion. She had more confidence in us than we did in ourselves, and she was constantly challenging us to show ourselves what we were capable of. She provided opportunities, and that's often the key to success: just having opportunities to excel.

LJ: Do you think her abilities as a mentor played a role in her winning the Nobel?

JP: She deserves to be recognized on so many levels. For sure scientifically, but beyond that, I think that the Nobel committee is sending a powerful message in

recognizing her with this award because she is very well-known for her education skills, her mentorship skills and her advocacy for the field. I think that sends a powerful message.

LJ: What were your first thoughts when you heard the Nobel news?

JP: I was overjoyed! I had the great fortune of being in the lab at the time when a lot of those discoveries were made. It was very surreal to hear some of my work being discussed after the Nobel win, and knowing that I contributed to it. And it was incredibly emotional. I texted Carolyn immediately to send my congrats and to say how excited I was for her and all these things, and then I was in tears! It was very emotional, and it still is. When I talk to certain people I get to relive a lot of the experiments we did, and I had the good fortune of being there during a special time. It felt amazing. It still feels amazing – I'm absolutely thrilled for her.

LJ: Is there any research from your lab that you can either directly or indirectly link back to your time in her lab?

JP: Almost all of it can be linked back. In Carolyn's lab I got inspired about being able to image molecules, and I'm still interested in that general area of research. I chose to do postdoctoral studies in imaging because I was inspired by the problems I was working on with Carolyn. I was excited about being able to see stuff, and that largely started when I was in her lab trying to image cell-surface sugars. I'm now building microscopes and different tools to try to see different types of molecules – some molecules called immunometabolites, stuff in the brain and other targets.

LJ: Any last thoughts on Carolyn's impact on you?

JP: Carolyn is just an incredible and dynamic individual, and you can't help but be excited and motivated when you're around that type of personality. Not only was she thinking about chemistries and reactions, she was using them in ways I'd never even heard of or thought of, and it just seemed so exciting. She had this electric, dynamic personality. She totally changed my world. I had no idea I'd even be interested in or capable of doing such science. Meeting her on that grad school visit, that changed my life. Every time you would talk to Carolyn you felt like a million dollars. And that's an important feeling as a young scientist. A lot of the projects and experiments that we were doing were not easy, so you needed that kind of cheerleader – that champion – and that's what she was.

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