



Note: Answers were edited for clarity.

Q. How did you become interested in chemistry?

A. I started college thinking I would go to medical school. But the first time I took organic chemistry, something about the subject really spoke to me. It was a puzzle, and putting it together was really appealing.

Q. What was the biggest challenge you faced in your academic career, and how did you overcome it?

A. Learning to believe in myself. I don't know exactly how I overcame that other than through hard work.

I grew up in Bolivia, came to the United States at 18, and enrolled at Diablo Valley College. I spoke English, but had never taken a class in English. I needed to gain confidence to be competitive. When I transferred to Stanford, I had to prove again to myself that I was worthy of being there.

Going to graduate school was another leap. I was surrounded by even more accomplished peers and had to succeed in that environment.

Q. What kept you motivated to tackle these challenges?

A. I enjoyed running experiments and trying to get to the next step.

Now, with my work on paper diagnostics, it's so compelling to think about making tests that could improve people's access to health care, especially in places with no electricity. The potential impact there is so large.



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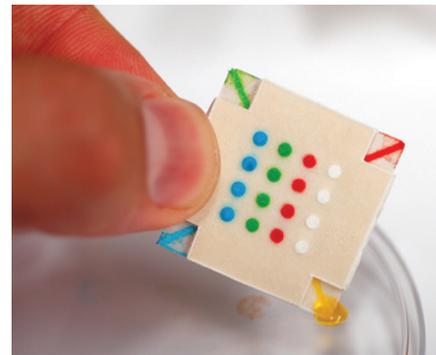


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Q. What's the benefit of paper diagnostics?

A. Paper is an interesting material because it wicks fluid by capillary action (due to intermolecular forces between a liquid and a solid surface). The power source is essentially built into your device, which is ideal for places with no electricity.

In the lab of George Whitesides at Harvard University, we invented the microPAD, which



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MicroPADs could one day diagnose diseases without the need for electricity.

stands for "microfluidic paper-based analytical device." We coined that term before the iPad came out!

Q. How many undergrads work with you in the lab?

A. A lot! Demand for research opportunities has grown among undergraduates. Typically I work with around nine or 10 undergraduates in any given quarter, and between three and six over the summer.

Q. What have you learned from having undergrads in the lab?

A. Once, I had a student prepare a solution using a reagent I ordered. But it ended up looking like a very dirty-looking mixture.

It turns out he had used the packing material to make the solution instead of the compound in a vial hidden deep inside the canister! It's a great reminder to me that you just don't know certain things until you experience them.

Q. What advice would you give to high school students interested in chemistry?

A. I never loved to write, and still have a lot to learn—but my advice is to work on your writing. The ability to write well is so important, and that is probably the weakest skill that I see in most of my students.

The other advice I would give in terms of chemistry is to stick with it. I don't feel like I really understood general chemistry until I started teaching it. Now, I think it's so fascinating. If you stick with it, I can almost guarantee that you will learn to enjoy it!

