

TURNING POINT

Hosea Nelson

A former construction worker, Hosea Nelson is still building things — but now, as a chemist, he constructs biologically active molecules instead of houses. In July, he launched his own laboratory at the University of California, Los Angeles (UCLA).

PENNY JENNINGS



Can you describe your path into science?

I did construction and odd jobs for years, but over time, I decided I wanted to go to school. The problem was that I had no idea what to do. I took biology courses at a community college and liked them, and eventually, I got a job doing research in a microbial-genomics lab at San Francisco State University in California. I fell in love with research and the pursuit of intellectual ideas. Making a genetic construct gave me the same feeling as building things. But I wanted to understand the glue — the chemical bonds that hold everything together — and got more interested in chemistry and building molecules. I spent four years at a community college, then transferred to the University of California (UC), Berkeley, and knocked out a bachelor of science degree in chemistry in two years.

How did you decide where to go for your graduate degree?

I didn't go right away. I got a job in industry at the Panasonic Energy Solutions Lab in California's Silicon Valley. One of my UC Berkeley instructors stayed in touch, and convinced me that I was talented and could get my costs covered for graduate school. I had never heard of the California Institute of Technology in Pasadena, but I applied there and worked with chemist Brian Stoltz, who is known for making compounds relevant to human health.

Do you feel you charged ahead in Stoltz's lab?

Yes. He and I are similarly intense, but he is

much more regimented, whereas I grew up in San Francisco with hippie parents who did not have a lot of structure. I was worried that we would clash, but we share a common interest in constructing molecules. In his lab, I decided to do a total synthesis of molecules derived from a plant called *Thapsia garganica*, which has a rich medicinal history that even Hippocrates wrote about.

To what do you attribute your success?

I take a lot of initiative and have a fearless approach, which I learned from the industrial lab. The biggest roadblock to productivity is indecision. If you have an idea, no matter how crazy you might think it is, you have to go with it to get anything done. With the *T. garganica* project, I spent 3 months trying to find a way to make a compound using a conventional route, which would have been a 20-step process. I challenged myself to do it in six or seven steps, and my short route ended up working.

Did you ever feel out of place in academia?

Absolutely. I still do at times. Culturally, socio-economically and educationally, I came from a different place from most high-level academics, who often follow a similar path from a similar socio-economic background. I was a high-school dropout and poor. I have a high level of appreciation for being able to put food on the table and for the fact that I love my job, but I'm not sure that appreciation is universal.

Has everything clicked into place easily for you?

No. Soon after I started a postdoc to work on catalysis at UC Berkeley with a funded proposal in hand, my idea got scooped. I spent three months trying every wild idea that could be related to my proposal so that I wouldn't lose my funding, and one worked well. A couple of others looked promising. It was validation. It taught me that I'm good at coming up with project ideas. I ended up forming my own research group within my adviser's group, and convinced the team to work on how to use ion pairing — oppositely charged ions that behave as a single particle — to speed up chemical reactions. I published a lot, and spent time working with undergraduates and graduate students.

Was your adviser OK with that?

Most successful researchers do not argue with

good results. I convinced him to let me do this after I gave him results that he deemed worthy of investigating.

Did you learn about lab management?

Yes. I am more intense than the average postdoc. I think about chemistry in the shower. One thing I found out quickly is that not every researcher is that obsessed. I realized I needed to temper my enthusiasm, so that I would not come off as a tyrant.

How was the job search?

Gruelling. I am not used to travelling to three different universities in one week and giving six lectures. It is especially hard at places such as the Massachusetts Institute of Technology in Cambridge, where you are presenting ideas in front of the best people in the field. I did that for two months and ended up with three offers. It was a complicated decision, but I went with my gut and chose the position at UCLA.

Is there anything you learned as a construction worker that you use in your career now?

One thing that governs how I do organic synthesis is 'measure twice, cut once' to avoid wasting wood. I try to measure twice in a chemical sense before we do anything that is not fixable.

What has been the hardest part of getting your own lab off the ground?

The amount of time it takes to provide adequate supervision for my high level of safety expectations. I have seven people so far — four graduate students, two undergraduates and a postdoc. People make mistakes. Providing the heavy levels of training up front on how to do things safely is worth it, but it takes a lot of time.

What are your goals?

On the teaching side, I'm excited to work with a colleague who is an award-winning organic chemist, Neil Garg, who instructs one of the most highly sought-after classes at UCLA. He is a real innovator, but the class's weak spot is the organic-chemistry lab section, so we are going to teach that together. Once I have established myself and secured tenure, I want to spend time making our field more inclusive. For research, we are starting with five unrelated projects. We're taking the pasta-cooking approach — whatever sticks is what we eat. ■

INTERVIEW BY VIRGINIA GEWIN

This interview has been edited for length and clarity.

CORRECTION

The Careers Feature 'Plight of the postdoc' (*Nature* **525**, 279–281; 2015) gave the wrong credit for the photo of Anna Kalashnikova. Credit should have gone to Katherine Labbe.