By **Carlos A. Aguilar-Trigueros**

The questions that opened doors

A couple years ago, I asked my Ph.D. adviser why he decided to give me a position in his lab. His answer was simple. "Because you were so focused on finding good questions," he told me. I found this answer amusing, because my early scientific training hadn't fostered this skill at all. In my undergraduate years at the University of El Salvador, the biological world had been presented as a series of known facts, and students were not trained to question them. There is little research tradition in El Salvador, and my professors didn't provide examples of what scientific inquiry is really about. I had entered university wanting to become a scientist, but my commitment was fading; my studies began to seem pointless. Then, late in my undergraduate studies, my path to a research career opened when I met a scientist who taught me about asking questions and showed me the human side of science.

I got her name from the German Embassy—one of many embassies some friends and I visited to inquire about scholarship opportunities for conducting research abroad. She had just finished her Ph.D. in Europe and moved to El Salvador with her husband, a physics professor at our university. I was excited to talk to someone who had done research abroad, so I visited her at her office.

After a few discussions, she came up with the idea of starting a journal club for students looking for topics for their bachelor's theses. The plan was to meet every Friday afternoon to discuss papers on plant-fungal interactions—her field of study, which I soon decided to pursue because her enthusiasm was so contagious. The journal club was a transformational experience. I had been trained to understand that what I read in a paper should be taken as truth, but now, for the first time during my academic career, my classmates and I were deconstructing papers and identifying their strengths and flaws. This was definitely not the approach to science that my professors had taught.

Reading papers that my new mentor had written during her graduate studies and those of people she knew also gave the science a human side. Before, scientific articles were just sheets of paper bearing cryptic messages, written in a foreign language by people I didn't know who worked at distant universities. Now, I could imagine the people behind them—and even imagine being one of those people myself. Her stories about her experiences as a graduate student were also enlightening. In El Salvador, there are no doctoral programs in the natural sciences or mathematics, so I was fascinated to learn that one could dedicate a lifetime to generating questions and collecting data to answer them.

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The journal club and my other discussions with this scientist made the possibility of becoming a researcher feel more tangible and helped give me the courage to continue with biology. Instead of abandoning my interest in the natural world and changing my major, I sent emails to professors and programs overseas, seeking a chance to pursue graduate studies. Those emails contained the "good enough" questions that helped me secure an amazing internship at the Smithsonian Tropical Research Institute in Panama, where I had more time and training to refine my questions. From there, I moved on to my challenging but rewarding doctoral studies at the Free University of Berlin.

Now, as a postdoctoral fellow, I am working to solidify my science career. It is too soon to know where it will take me, but I hope to somehow help improve the research and training environment in El Salvador. In the meantime, I'd like to offer some encouragement to potential scientists in countries like mine, and pass on thanks to the mentors who help our research dreams become reality. Everybody can do science, but in countries like ours it requires a little extra creativity, perseverance, and patience to find the proper environment to develop your skills. Keep questioning. ■

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