By **Eric Wengert**

Mentor as you'd want to be mentored

In my first undergraduate research position, I imagined I'd design creative experiments, collect interesting data, and engage in thought-provoking discussions about science. Then reality set in. I spent most of my summer washing glassware, making solutions, and completing basic protocols while my postdoc mentor caught up on email. On the rare occasions when I was instructed to do a real experiment, my brief "training" left me feeling woefully unprepared. But although I learned little science, I learned valuable lessons about mentoring.

During my college neuroscience classes, I had been captivated by the complexity of the brain and drawn to a field that addressed some of life's big questions: Who am I? What is consciousness? But my summer research experience left me with serious doubts about whether I was cut out for a career in science. One Saturday, I attempted an experiment my mentor had demonstrated a few days earlier—only to realize I had no idea what I was doing. I did the best I could. When I finished, I was mortified to discover I hadn't used one of the treatment tubes my mentor had prepared.

I worked in another lab later in college. The experience wasn't much better and my self-doubts persisted. However, to my surprise, my mentors—along with my teachers—encouraged me to apply to graduate school. I'm grateful, because I might not have had the confidence to carry on otherwise.

I'm also grateful because my former mentors, in demonstrating what *not* to do, showed me how to be a better mentor myself. When I became a graduate student, I made a point of treating the undergraduates I supervised the way I wish I'd been treated. Here are three keys to my approach:

MAKE IT INDIVIDUAL. My first mentor never asked me about my career goals—and because they never asked, I assumed they didn't care. I've since learned that in order to mentor effectively, it is critical to start with some simple questions: "Why do you want to do this research? What are you most interested in?" Only then can you form a mutually beneficial plan, forging a connection between the students' goals and your project. It's also helpful to pay attention to the conditions under which your students do their best work. For example, some may appreciate real-time support, but others may feel nervous if you're constantly looking over their shoulder.

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INVEST TIME. I know it's tempting to relegate tedious tasks to undergraduates and cut corners in training to save valuable time. But investing time up front to explain and demonstrate scientific techniques will benefit everyone: The students will learn more and you'll have more capable assistants. I spend time training my students at the outset. I also supervise them regularly when they first set out to perform experiments on their own, gradually giving them more independence as they grow in ability. This allows me to correct missteps in real time, helping them gain good habits before bad ones develop.

DON'T IGNORE THE BIG PICTURE. Colleagues who view undergraduates as "just a pair of hands" often give their students a series of tasks without explaining the big-picture goals of the research. I think that's a big mistake. Students will get much more out of a research experience if they have "aha!" moments—if they can see their tasks in the context of broad scientific concepts and questions. You also stand to benefit because knowledgeable students will be more invested in your work, and they will be better able to troubleshoot experiments if problems arise. For everyone's sake, treat your students as you'd like to be treated: as a valued scientific colleague, not a pair of hands.

I'm glad I persisted in science despite lackluster early research experiences. But I worry others won't be so lucky. A student's first taste of research can cement their enthusiasm for science or discourage them for good, so it's important to make it rewarding. ■

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