Learning to be a mentor

My early experiences mentoring undergraduate students didn’t go well. My first attempt came during the second year of my Ph.D. I was still trying to learn some lab techniques myself, and I wasn’t sure whether I would be able to invest the time needed to train a student. But I was interested in developing my mentoring skills, and my adviser encouraged me to give it a try. The student required hand-holding and close monitoring, and it quickly became evident that the collaboration wasn’t working. After similar false starts with a few more students, I ended up being reluctant to work with undergraduate researchers at all—until a new student helped me realize what is required to mentor undergraduates, and the rewards it can bring.

I met Karina when she was a sophomore, and I ended up working with her until she defended her senior thesis. She was smart and eager to learn, asking all the right questions, and I felt she might finally be the right fit. Moreover, the timing was right. My experiences with previous undergraduates had prepared me to set appropriate expectations and gradually build on them. As a third-year student, I was also ready to delegate and give her room to grow.

Here are the lessons that working with Karina taught me.

**SHOW THE BIG PICTURE.** Most undergraduates are completely new to research, so it is crucial to explain the broader context for the work and justify its importance. This will provide an overall goal, which will help get students interested and keep them focused as they learn the ropes. In my first meeting with Karina, I talked through a highly simplified slide deck about the project, explaining its goals and getting her excited about working on it. Describing my research in this simplified manner also helped me develop my own communication and storytelling skills. During my job interview at my current company, I used a similar approach.

**INTRODUCE THE LITERATURE.** Keeping up with the scientific literature is crucial for any researcher. But undergraduate students may not know this. Even if they do, they may feel overwhelmed by the volume and technical language. To help Karina start building her literature knowledge and confidence, I sent her relevant papers and followed up with discussions. These conversations also helped me deepen my understanding of my research and think about it in new ways.

**OFFER OWNERSHIP.** Once they feel ready, having students own and drive a small part of a research project creates accountability. When the time was right, I split my project into two distinct components and gave one to Karina. She made some mistakes, as we all do, and at times I felt the research would progress more efficiently if I just did it myself. But because I gave her room to explore and make mistakes, Karina ultimately became more independent and moved her project faster than she would have if I had continued holding her hand.

**GIVE THEM THE STAGE.** Encourage students to speak independently about their work, for example at group meetings and conferences, and urge them to apply for fellowships. In our lab’s monthly group meetings, Karina always presented the progress we had made together. She practiced her presentation skills and ability to answer questions, and in return I got a chance to see our work from a fresh perspective and to identify areas that needed more attention.

Working with Karina also brought valuable personal rewards. She offered crucial companionship during my doctoral project, which could often feel like a solitary endeavor. When I experienced setbacks, Karina’s small successes and her excitement about them helped keep me motivated. It has been a joy to watch Karina mature as an able scientist.

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