

**Case Study 1:** I mentored an undergraduate student who came from another university for the summer. I explained the project to him and taught him how to make media and grow bacteria. Because my professor and I did not think he had sufficient genetics background for a molecular project, we gave him a microbiology project. He was very quiet for the first ten days of the project and then he went to my adviser and complained about the project. He said he wanted a project “like Mark’s.” Mark was a student with a strong genetics background and his project was to clone and sequence a gene. My adviser insisted that my mentee keep the project I had designed for him, but the student became sulky. As the summer went on and he didn’t get any of his experiments to work, I began to wonder if he understood what we were doing or even cared about it.

**Case Study 2:** An experienced undergraduate researcher was constantly seeking input from the mentor on minor details regarding his project. Though he had regular meetings scheduled with the mentor, he would bombard her with several e-mails daily or seek her out anytime she was around, even if it meant interrupting her work or a meeting that was in progress. It was often the case that he was revisiting topics that had already been discussed. This was becoming increasingly frustrating for the mentor, since she knew the student was capable of independent work (having demonstrated this during times she was less available). The mentor vented her frustration to at least one other lab member and wondered what to do.

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**Case Study 3:** As a graduate student, I supervised an undergraduate in a summer research program. At the end of the summer, my adviser said we should publish a paper that included some of the work done by the undergraduate. I got nervous because I thought I could trust the undergraduate, but I wasn't totally sure. He seemed very eager to get a particular answer and I worried that he might have somehow biased his collection of data. I didn't think he was dishonest, just overeager. My question is: should I repeat all of the student's experiments before we publish? Ultimately, where do we draw the line between being trusting and not knowing what goes into papers with our names on them?

**Case Study 4:** I am a graduate student in a large lab. A week ago, an undergraduate student joined me to do an independent summer research project. He really wanted to come to our lab and aggressively sought us out, which I assumed was because of our field of research. He had seen presentations about our lab's research and had read some of our major papers, so he knew what we worked on. This young man was clearly intelligent, and he knew what he wanted out of a research experience. He was exactly the type of student I would love to see go to graduate school. Moreover, he was a first-generation college student.

My adviser and I came up with two aspects of my research compatible with the undergraduate's interests that would be feasible for him to work on in the short, eight-week summer session. When he arrived, I presented the two ideas to him, gave him several papers to read, and told him to let me know by the end of the week which project he preferred. He seemed lukewarm about both projects and, when he returned the next day, he enthusiastically presented his idea for a different project. It was related to what we do, but branched into a field that my adviser was not funded for and about which I knew little. I didn't want to squash his enthusiasm, and wanted to reinforce his creativity and independence, but I felt overwhelmed by the prospect of learning an entirely new field in order to advise him well. Moreover, my adviser was concerned that the agency that funds our work would likely not be supportive of this new area from another lab. With only seven weeks of the summer research program remaining before his poster presentation, I was stumped.

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## Additional case studies:

### Case Study 5: Trust

A graduate student mentor was frustrated because her student was not running successful experiments. While the undergraduate had great enthusiasm for the project, each experiment failed because of some sloppy error—forgetting to pH the gel buffer, forgetting to add a reagent to a reaction, or forgetting to turn down the voltage on a gel box. After a month of discussions, and careful attempts to teach the student habits that would compensate for his forgetfulness, the graduate student was ready to give up. She spoke with her adviser and asked for advice, hoping that she could fix the problem and start getting useful data from her undergraduate. The adviser offered to work with the undergraduate mentee. When the undergraduate walked into his office, the faculty member said, “I hear you’re a slob in the lab. You gotta clean up your act if we’re going to get any data out of you.” Seeing the crushed and humiliated look on the undergraduate’s face, he quickly added, “I’m a slob too—that’s why I’m in here pushing papers around and not in the lab doing the hard stuff like you guys!”

### Case Study 6: Trust and Respect

My adviser accepted a student for an undergraduate research experience without asking any of the graduate students if we had time for her. She was assigned to the most senior graduate student for mentoring, but he was in the process of writing his dissertation and had no time to help her with a project. He asked me if I would take her on and have her help me with my research project. I agreed, assuming that I was now her mentor and not understanding that she was expected to produce a paper and give a presentation on her research at the end of the summer.

We worked together well initially as I explained what I was doing and gave her tasks that taught her the techniques. She didn’t ask many questions, nodded when I asked if she understood, and gave fairly astute answers when asked to explain the reason for a particular method.

I became frustrated as the summer progressed, though. Instead of asking me questions, she went to the senior graduate student for help on my project. He did not know exactly what I was doing, but didn’t let me know when he and she were meeting. He even took her in to our adviser to discuss the project, but didn’t ask me to be involved. As more of this occurred, the student became quieter around me, didn’t want to share what she had done while I was out of the lab, and acted as though there was a competition with me for obtaining the sequence, rather than it being a collaborative effort. I didn’t think too much about this and didn’t recognize the conflict. She obviously didn’t like sharing the project with me, which was even more evident when she wrote the paper about our research without including my name. She didn’t want to give me a copy of the draft to review and I only obtained a copy by cornering the senior graduate student after I overheard them discussing the methods section and asked for a copy. I wasn’t provided a final version of the paper nor was I informed of when or where she was presenting the research until two days before her presentation when I happened to see her practicing it with the senior student.

I felt very used throughout the process and disappointed that I didn’t see what was occurring and address it sooner. In fact, I am not sure if addressing it would have solved the problems I had—being stuck in between a student and the person she saw as her mentor. The difficult thing, for me at least, is identifying that there is a problem before it is too late to bow out or to bring all parties to the table to discuss a different approach to the mentoring. Do you have any suggestions for me? I don’t ever want to encounter this again and would like to head it off as soon as I can recognize that it is occurring.

### Case Study 7: Ethics

Your mentee, James, is a high school student who has grand aspirations of one day becoming a doctor. He has participated in science fair opportunities since the seventh grade. He has taken the advice of educational professionals to gain lab experience in order to make his college entrance application look distinguished. He worked with you this past

summer and recently has asked if he can do a science fair project in your lab. You are asked to sign the abstract of the project. Because of divergent school and project deadlines, the abstract is due before the experiment is completed.

One month prior to the fair, you notice that he has not really been in the lab doing the work. When you question him, he is vague about what he is doing. It is unclear that he is doing anything at all. On the day of the fair, you are surprised to see him there. His project's results win him a first-place award, giving him the opportunity to go to the state competition. You have the uncomfortable feeling that he has not done the work.

A few days later, you ask to meet with James and his teacher (explaining to the teacher your reservations, but still making no accusations). At that interview, James is very uncomfortable, but rather vaguely answers all of your questions. He brings his overheads from the presentation to that meeting for review, but he does not bring his notebook (which is technically property of the lab). You leave that meeting with stronger suspicions, but no proof. You request that he return his notebook to the lab. He signs a statement that the results of the project were his work and reported accurately.

Through James' teacher, you request the notebook and results again in order to "confirm" his results before they are presented at the statewide competition. Two days later, James comes into your office, and nervously asks to talk to you about the project. He says there was a lot of pressure on him, and he ran out of time, and he is ashamed, but he "twisted" the data. He apologizes, says his teacher is withdrawing his first-place award, and he wants to redeem himself in some way; he knows what he did is wrong.