Cornell University

2023
Responsible Conduct of Research (RCR) Symposium: Ethical Considerations in Mentoring

CASE STUDIES

Case 1: Communication and Sense of Belonging within Mentoring Relationships

(*Inspired by "Communication with Busy Mentors" in* Mentoring Up for Postdoctoral Trainees *(Beta Test Version) from* https://cimerproject.org *and by* Mentoring 101 for the STEM Disciplines*, Steve Lee, PhD, Graduate Diversity Officer for the STEM Disciplines, UC Davis, September 2016. Modified by Sara Xayarath Hernández and Colleen McLinn, Cornell University Graduate School, February 2023.*) Modified for RCR Symposium theme on mentorship by Maurine Linder, Volker Vogt and Susi Varvayanis.

Jo is an undergraduate student who identifies as non-binary and prefers to use they/them pronouns. Jo is a McNair Scholar[1] from a working-class neighborhood and is the first person in their family to go to college. Jo came to the university with a strong academic record, glowing recommendations, and a strong enthusiasm for engaging in research. By all accounts, Jo has the demonstrated potential to be a successful undergraduate researcher.

Currently, Jo is feeling overwhelmed with their graduate student research mentor, Julio, and isn't sure how to improve communication with him. Jo is happy to be part of this research group because the lab members are engaged in exciting work and publish regularly in high impact journals, and because the overall principal investigator (PI) for the group recently won a prestigious award for her teaching. Yet, Jo often feels overwhelmed during the individual meetings with their graduate research mentor, who gives Jo so many ideas, resources, and tasks to complete that Jo has trouble keeping track of it all. Jo's research mentor often uses acronyms or other unfamiliar terms. However, Jo is afraid to ask too many questions because Julio seems so busy with his own work, and Jo is concerned about being perceived as less knowledgeable than other undergraduate peers in the lab.

Jo has considered seeking advice from other members of the research group, but this team has been working together for a while, and Jo isn't certain yet how or where to fit in. Jo doesn't know who to trust enough to ask questions that might seem overly basic and feels like they don't belong.

Discussion Questions:

- Describe what Jo is experiencing.
- Consider how these experiences could impact Jo's ability to meaningfully engage in undergraduate research.
- Describe what Jo's graduate research mentor might be experiencing.
- Imagine that you are Jo's graduate research mentor... What could you do to help Jo feel less isolated and more supported?
- How would you approach collaboratively defining and communicating your expectations of each other?
- What could you have done when Jo was first assigned as your mentee to help them develop a sense of belonging?

[1] The McNair Scholars Program is a federal TRIO program funded at 151 institutions across the United States and Puerto Rico by the U.S. Department of Education. It is designed to prepare undergraduate students for doctoral studies through involvement in research and other scholarly activities (source: https://mcnairscholars.com/about/)

Case 2: Trust and Respect

(*Originally published as the case study "The Slob" in Handelsman, J., Pfund, C., Miller Lauffer, S., and Pribbenow, C.M. (2005).* Entering Mentoring: A Seminar to Train a New Generation of Scientists*. Madison, WI: University of Wisconsin Press. The* Entering Mentoring *curriculum is now available for download as part of the Center for the Improvement of Mentored Experiences in Research, https://cimerproject.org/entering-mentoring/)* Modified for RCR Symposium theme on mentorship by Volker Vogt.

Sally is a PhD student who has been assigned to mentor a summer undergraduate student working in the same laboratory. Sally was frustrated because her student was not running successful experiments. While the undergraduate had great enthusiasm for the project, each experiment failed because of what seemed like a 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. Compounding this, Sally didn't really have enough time that summer to keep a close eye on the undergrad.

After a month of discussions, and after careful attempts to teach the student habits that would compensate for his forgetfulness, Sally was ready to give up. She spoke with her faculty advisor and asked for advice on how to bring the undergrad to a level where he could generate useful data. Knowing how busy she was, the faculty advisor then offered to work directly with the undergraduate mentee.

When the undergraduate walked into his office, the faculty member said in a teasing manner, "I hear you're having trouble properly carrying out experiments in the lab. You really must learn to work more carefully if we're going to get any useful data from your experiments."

Seeing the crushed and humiliated look on the undergraduate's face, he quickly tried to recover by adding, "Don't feel bad; with proper attention you can learn to be successful. Look, although I'm in here pushing papers around and not in the lab, I know how hard it can be on you guys who are doing actual experiments."

Note: A video version of this case study, entitled *Three Wavelengths*, was created by Paul Szauter in 2012 and is available for reuse with Creative Commons license CC0 (no copyright reserved).

Discussion Questions:

- What types of issues or themes does this case study raise?
- How would you feel if you were each of the people involved? (Undergraduate researcher, faculty advisor, graduate student mentor)
- How could the graduate student mentor begin to repair the situation?
- What might the mentors do to help rebuild the student's confidence and trust in them, and the student's self-confidence in their own research skills?

Case 3: Authorship and Recognition

(*Adapted from "*Multidisciplinary Research Mentor Training Seminar*" (2010) by Sara Xayarath Hernández, Yael Levitte, and Colleen McLinn, Cornell University, February 2023. For additional information, resources and notes, see the Center for the Improvement of Mentored Experiences in Research at the University of Wisconsin, https://cimerproject.org/entering-mentoring/.*) Modified for RCR Symposium theme on mentorship by Mark Hurwitz and Volker Vogt.

Three graduate students in Professor Perez's lab work collaboratively on closely related projects. One of the students, Kai, writes a paper on one of the projects for a peer-reviewed publication. Some of the results mentioned in the paper were experiments conducted by other students in the lab. He shares a first draft of the manuscript with Professor Perez, which does not include the other students' names. When Professor Perez asks about this omission, Kai asserts that he feels strongly that they did not deserve authorship because they only did the technician work of conducting the experiments and that he had done all the writing and the hard intellectual work of developing the theory and identifying how those experiments were relevant to the paper.

Rather than push Kai on the issue, Professor Perez suggests that they circulate the draft to the rest of the research group for feedback. The next day, the other students on the larger project complain to Professor Perez that they felt they deserved authorship on the paper. Perez decides to ask Kai to add his peers' names.

When asked to add the students' names, Kai is upset and points out other instances in which he thought he should have been on their papers but wasn't included. After some back and forth, Professor Perez says, "I am the PI on this project, and as such I am responsible for making final authorship decisions. Based on the data and analysis presented in the paper, it is my judgment that all three of you should be on this paper." Kai storms out of Professor Perez's office and does not respond to Perez's emails for a week about other matters.

Discussion Questions:

- Who are the stakeholders in this case?
- What are the facts? What assumptions are you making about the situation?
- What courses of action are possible? Which ones are preferable and why?
- With regards to mentoring strategies, what could have been done to prevent the situation?

Case 4: "Confidence"

(*Originally published in Pfund, C., Branchaw, J. and Handelsman, J. (2015).* Entering Mentoring, 2nd Edition*. New York, NY: W.H. Freeman & Co.; Pfund C. and Handelsman J., eds.* Entering Mentoring Series*. The* Entering Mentoring *curriculum is now available for download as part of the Center for the Improvement of Mentored Experiences in Research, https://cimerproject.org/entering-mentoring/*) Modified for RCR Symposium theme on mentorship by Susi Varvayanis.

Professor Yang is the Principal Investigator (PI) and is mentoring a graduate student in her lab. Professor Yang's mentee has collected data for one of the experiments in her grant project. When the dataset is nearly complete, she sits down to analyze it and finds her predictions completely inconsistent. Dismayed, she calls her mentee into her office and asks him to describe, in great detail, what he did when collecting the data. Professor Yang wants to make sure that these anomalous results can't be more easily explained by mistakes in the lab. Their conversation lasts quite a while, but at the end she is still frustrated and puzzled by the data and needs to think about it some more.

Later, Professor Yang is eating lunch in the cafeteria when she overhears her graduate student talking to a friend of his. "I think Professor Yang is disappointed in me. I've never heard other grad students be questioned so much about their data. Maybe I'm not cut out for this work," he tells his friend, visibly upset, and describes their recent meeting. Professor Yang is surprised to realize that her mentee took her questioning very personally. When Professor Yang's graduate mentee finishes, his friend replies, "If she's so sure, you probably did make a mistake somewhere. After all, she's the expert. This field is really tough, maybe you should think about switching projects or fields."

Discussion Questions:

- How can a mentor's reaction to unexpected news motivate or influence a mentee's confidence in themselves and their findings?
- What could Professor Yang have done differently in talking about the data with her mentee?
- What can Professor Yang do now to address the situation? What can the graduate student do?
- How do new researchers gain confidence in their discipline? What is your role?