

## **Mentoring Philosophy Nemhauser Lab**

My objective as a mentor is to provide an environment that fosters high-level scientific achievement, while also emphasizing training in the breadth of skills needed for trainees to be highly competitive at the next career stage.

The competencies we work on together follow published guidelines for excellence in STEM training (Verderame *et al.*, 2018). These competencies include: (1) broad conceptual knowledge of plant development and synthetic biology; (2) deep knowledge on a specific research project within those domains; (3) critical thinking skills; (4) experimental skills; (5) computational skills; (6) collaboration and team science; (7) ethical and responsible conduct including working to topple structural inequities including systemic racism; (8) communication skills; (9) leadership skills; and (10) resilience and self-care.

I am committed to facilitating success for trainees while centering their own definitions of success. I use Individual Development Plans, in combination with formal annual meetings and informal check-ins, to help graduate students and postdoctoral scholars make concrete plans to meet their goals.

Some examples of supportive actions:

Critical Thinking; Computational Skills. In lab meetings and in individual bi-weekly meetings, I discuss experimental design, strategies for data analysis and interpretation, and model building with my trainees. Trainees prepare an agenda for our one-on-one meetings that prioritizes areas where they need support, reminding them of their own agency in their educational progress and professional development.

Communication. Trainees are encouraged to attend at least one professional meeting per year after their first year in the lab. They also actively participate in writing manuscripts and grants, as well as practicing effective communication through teaching and outreach opportunities.

Leadership/Management Skills. All trainees are encouraged to mentor at least one undergraduate intern during their time in the lab. As part of this mentorship, graduate students and postdoctoral scholars assist their intern in applying for scholarships and awards, and help them prepare a poster for the annual undergraduate symposium. By asking trainees to act as a mentor for an undergraduate, and then discussing this experience with them, I have found that the trainee gains new perspective on what they need as mentees, as well as how to more effectively ask for that support.

Equity There is incontrovertible evidence that inviting diverse voices into the laboratory leads to smarter, more creative, more productive science (e.g., AlShebli *et al.*, 2018). Beyond the practical benefits, pursuing equity is a moral imperative (Nemhauser and Haswell, 2019). During one-on-one meetings and in informal check-ins, I monitor the culture of the lab and try to identify any early warning signs of intolerance or bullying behavior. I seek out trainings for improving lab and institutional culture (and encourage trainees to do the same). We regularly have informal discussions as a group on best practices and actions to foster institutional change.

[AlShebli BK, Rahwan T, Woon WL. The preeminence of ethnic diversity in scientific collaboration. Nat Commun. 2018. 9\(1\):5163. doi: 10.1038/s41467-018-07634-8.](#)

[Nemhauser J and Haswell E, \*What if plant scientists were as diverse as the plants we study?\* ASPB Newsletter \(June 2019\)](#)

[Verderame MF, Freedman VH, Kozlowski LM, McCormack WT. Competency-based assessment for the training of PhD students and early-career scientists. Elife. 2018 doi: 10.7554/eLife.34801.](#)