Teaching and Mentoring Philosophy

In research, each day presents a new opportunity to confront your own ignorance and to push through the fog towards discovery and understanding. As rewarding as discovery often is, the process can also be daunting, intimidating, and stressful without a healthy mindset and without adequate support. My teaching and mentoring philosophy centers on maintaining a growth mindset. I make it a point to remind students that hard work is the key to getting good at anything because no one is born knowing everything - or even knowing much at all. I aim to coach my students and mentees to discover and depend on their capacity for personal and professional growth.

An unconventional background in the dramatic and performing arts informs my teaching. To me, it is important to carefully prepare my materials and presentation. My preparation begins with considering how the audience will receive the information being imparted. What thoughts or emotions will it elicit? What impressions will it leave on them? Am I using the right props or visuals to get the message across? I have attended professional development workshops through the University of Washington (UW) to develop my teaching skills (Future Faculty workshop and BRAINS Fellows Symposium). These experiences have exposed me to the importance of active learning methods, so I strive to offer students a broad experience that integrates active learning that is supported and contextualized by effective and engaging lecturing.

Teaching Experience

During my graduate training, I gave a series of lectures on introductory neuroscience and popular science topics to a cohort of life-long learners as a BOLLI teaching fellow. I also worked as a teaching assistant in two conventional undergraduate-level courses: Neuropharmacology and a hands-on BioLab course. Prior to beginning graduate school, I taught a weekly laboratory section for Janna Levin's Electricity and Magnetism course at Barnard college. While at the UW, I have guest-lectured for several courses. I taught a class on the Hodgkin-Huxley model for the Neural Coding and Computation course led by Eric Shea-Brown (AMATH 342). I also gave lectures on conductance-based models using my graduate work as a vehicle for the Continuous Mathematical Modeling (AMATH 383) and Computational Modeling of Biological Systems (AMATH 422) courses led by my colleagues, Braden Brinkman and Kameron Decker-Harris. In the Continuous Mathematical Modeling class, many students completed an optional homework assignment after my lecture that required them to read my paper and to write about the modeling approach in it.

My interdisciplinary background has prepared me to teach a range of courses and topics. The experiences that I've outlined above have been in various departments: biology, applied mathematics, and physics. The courses I am most interested in teaching form the foundations of my research and are where my greatest expertise lies:

- computational neuroscience
- neurobiology
- cognitive neuroscience
- linear algebra
- dynamical systems
- information theory

Much of my teaching experience comes from my outreach work. As an Astrophysics educator at the Hayden Planetarium in New York, I taught educators in training, school-aged

children, and our own high school interns about Einstein's theory of relativity, the terrain on Mars, and the distinction between a quasar and a black hole. By interacting with such diverse learners, I learned how to adjust my explanations and anecdotes to accommodate the students' backgrounds, interests, needs, and goals. I continue to seek opportunities to engage a broader audience in the wonders of scientific research. In that endeavor, I have participated in a public panel on science in popular media at a local Comic Con, I gave a talk about the evolution of the brain at Darwin Day, and I gave a guest lecture at the YSP-REACH program at UW for high school students, to list a few. I have also volunteered as a guest speaker for the past three years for the Girls Who Code summer program where I introduce the topic of computational neuroscience to high school girls. These experiences have given me the chance to frame my own work for a general audience, and the opportunity to inspire and serve as a mentor to a new generation of future scientists and engineers.

Mentoring Experience

This year, I am mentoring an undergraduate student in the Rieke lab. As a mentor, I strive to be a resource, and not merely a source of information and answers. I hope that my mentee, Adree, sees me as someone she can learn with as well as learn from. In addition to working together on our developing research project, we go through a new paper almost weekly. As we puzzle through figures and equations, I share my methods and strategies for untangling dense scientific articles. I also share my tips for organizing my papers, for documenting my work, and for writing efficient code in the hopes that by imparting strategies for learning, Adree will develop the confidence and independence to apply herself to any scientific endeavor she chooses. This seems to be having an impact on her. Last year she felt unprepared to apply to graduate school despite having completed an impressive undergraduate research project. This year she has decided to apply with great enthusiasm.

Through my outreach experiences, I have developed mentoring relationships with the students who reach out to me. Each year I serve as a shadow host to about 3 students per year on average. For a couple of hours, I let the student come to the lab to shadow me so that they can gain a sense of what the work of a researcher is like. Being shadowed is especially challenging as a scientist whose work takes place mostly on the computer and can be very abstract for a young student. Nonetheless, I have managed to make these interactions fruitful for the student by giving them brief demonstrations of how I make a figure, or debug code in Matlab, write a section of a paper or conference abstract, do a literature search, or any of the other tasks that my everyday work involves. I have maintained a mentorship with two students who I first met through Girls Who Code. Angkana will start college this fall as a direct admit to the Computer Science program at UW and Gabriela is a rising sophomore interested in global health issues. Adree and I started organizing "science squad" in which we meet up with Gabriela and a growing group of young women in STEM at UW for brown bag lunches roughly every academic quarter. These meetings are a chance for the students in this group to engage in peer mentoring and to receive support and encouragement. After a spontaneous discussion about Imposter Syndrome during our first lunch, I received a lot of positive feedback from squad members about having a place to discuss these important issues. As I enter the next stage of my career, I hope to continue to grow as a role model and as a mentor to students and trainees.