

**Teaching Philosophy**

I am passionate about education. I want to help students see with open minds and experience the joy of curiosity so they can actively participate in and improve the world around them. I strive to accomplish this by relating material to everyday concepts, by challenging students to apply the information they are learning to new problems and real applications, and by teaching with enthusiasm, exuberance, and passion. The driving force for why and how I teach is to empower students to *want* to learn, and it is my primary teaching objective to provide them with the skill sets that are essential for continuing their education far beyond my classroom.

Science classes often have the reputation for being predominantly facts that must be memorized, and students enter classes with a range of experiences. To make the material accessible to students of all backgrounds and interests, I integrate real-world examples into the content of the class. I used this technique when I taught Genetics at both Dartmouth College and the University of Pennsylvania. I find that when I highlight how the subject relates to students' lives, they are more able to grasp the material, remain engaged, and master the foundational concepts of the course. I also incorporate hands-on activities to cultivate fun, immediate illustrations of the information in action. For example, to demonstrate natural selection, I give students different "feeding tools" to compete for limited food sources (gumdrops and chocolate sprinkles). Students quickly see how a single trait can be selected *against* by one force (chopsticks are bad for getting sprinkles), but selected *for* by another force (but they are good for fending off your neighbor). To equip students to acquire, utilize, and convey the knowledge that they gain, I also emphasize concrete practice in communication and analysis through assignments such as oral presentations, poster presentations, literature reviews, research projects, and formal writing.

These methods have been effective, and in their evaluations my students have written that I am "extremely accessible and helpful", "very good at facilitating thought about hard/complex questions", "very clear in her explanations so that she makes everything seem so simple", and that my "enthusiasm was contagious. She's an excellent teacher and helped me grasp the material very well". Through courses on teaching at Dartmouth College and the University of California, Davis, I have refined my teaching skills. I look forward to continuing to challenge myself to improve as an educator by soliciting feedback from both students and colleagues and by working to continuously strengthen my teaching.

**Research as Education**

While the classroom can serve as a powerful center of learning, I believe that active involvement in research is an essential component of a student's education. I have extensive experience working with undergraduates in the laboratory setting, both in organized class labs and in research labs, and I strongly believe in the importance of this context-based learning. Students better understand concepts when they are directly involved in experiments, whether at the bench, at the computer, or in the field. To this end, I design projects that are small enough to be completed in a meaningful time scale for students and yet are part of a bigger research question. I continually challenge my students to create sound hypotheses, perform rigorous experiments, and communicate what they have found. During my time at Dartmouth College, I trained 5 undergraduates, all of whom presented their work to the scientific community and 3 of whom completed honors theses under my guidance. As a postdoctoral researcher at UC Davis,

I am currently mentoring an undergraduate with an interest in genetic counseling and we have crafted a customized project using plant genetics to teach the concepts and skills she will need for her future career. Through hands-on experience in planning, execution, and analysis, I watch my students solidify concepts learned in the classroom, develop strong communication and analysis skills, and get caught up in the joy of discovery that doing science can bring.

### **Commitment to Diversity**

Sharing the joy and understanding of biology has been my lifetime career goal, and I am committed to reaching individuals from all backgrounds. At Dartmouth College, I worked with 3 undergraduate women from underrepresented minority groups and participated in the Women In Science Program, which pairs freshman women with researchers to increase female retention in science. I also co-taught a post-baccalaureate Genetics course through the University of Pennsylvania that served a diverse student body of non-traditional backgrounds. As a postdoctoral researcher at the University of California, Davis, I recently designed and led a course on Protein Techniques to local community college students that do not have access to research laboratories. With students ranging from Philosophy to Nursing majors, these students did not have the same language to talk about science, which challenged me to adjust my terminology and to incorporate extensive analogies, everyday examples, and visual representations. The students responded very positively, engaging in lively discussion, and they were surprised at how well they could understand science, despite have very little background in it. In fact, because of their diversity, each student brought a unique perspective that enriched the learning experience for not only the other students, but for myself as the instructor as well.

### **Education and Outreach**

In addition to the classroom and the laboratory, I believe in extending education beyond the college setting. I have been a part of a range of outreach efforts, from designing educational greenhouse tours and simple laboratories for local middle schools to serving as a research mentor for local high school biology students. I also greatly encourage my students to be involved in these activities to help them to utilize the knowledge they have acquired, to develop communication skills, and to experience the importance of contributing to the community. One of my most treasured moments in teaching was when I had a particularly challenging student act as the instructor for a small student group. He was transformed from apathetic to engaged, simply by this change in roles, which led to a lasting effect on his mastery of the material. In this way, students can also bring the diversity of their experiences to enrich learning for others.