

Statement of Teaching Experience & Philosophy

Ksenia V Krasileva

Department of Plant Sciences, University of California, Davis CA 95616

krasileva@ucdavis.edu

Teaching is one of key reasons for my pursuit of a scientific career at a university. My background makes me well suited to teach both undergraduate and graduate level courses in the areas of **Plant Cell Biology**, **Microbiology**, **Host-Microbe Interactions** and **Bioinformatics** as well as introductory general biology courses.

Teaching experience

In my graduate and postgraduate career, I gained a diverse set of teaching experiences. While providing material review and leading interactive discussions in a large introductory biology class at UC Berkeley, I helped students develop efficient study skills and enabled them to strive for academic excellence. As a graduate student instructor for an intense comparative virology class, I learned to clearly explain complex molecular concepts and expanded my own set of teaching techniques. As a guest lecturer for the “Agriculture and Society” class, I practiced engaging students not majoring in biology with central concepts in biology and plant science. Due in large part to the excellent student reviews; I was recognized with a campus wide “**Outstanding Graduate Student Instructor**” award.

I greatly enjoy hands-on training necessary to introduce students to emerging technologies such as next generation sequencing, genomics, and programming for bioinformatics. I assisted in teaching graduate students and post-doc during an “Introduction to Programming in Bioinformatics” workshop and a “Genome Lab” graduate class at Berkeley.

I will be very interested in teaching a general **Plant Biochemistry/Cell Biology** course or a general introductory biology course. For graduate students, I will be excited to develop and lead a hands-on **Genomics and Bioinformatics** course aimed at introducing students to the topics of genome/transcriptome assembly, annotation and analyses and providing them with skills to incorporate bioinformatic analyses in their research projects.

Teaching philosophy

My teaching philosophy centers on the idea of “engagement.” I always aim to draw students’ attention to the subject (as they would be drawn in by a good book) and show that even most detailed molecular material has a connection with their lives outside of the class. Regardless of the class size, I value engaging students in active discussion of class material. My overall teaching style is energetic; I often use the whiteboard in place of overhead projection. I help students stay focused with four major learning techniques: a) organizing material through tables and diagrams; b) solving plenty of practice problems; c) making it fun; d) teaching the material to classmates.

I believe that recognizing students’ needs is indispensable for maintaining student engagement. As a graduate student instructor responsible for nearly 80 students across multiple sections of a large undergraduate class, I had to find a method to determine the

lecture topics to focus discussion on. I thought of several possible solutions. First, I asked students to send e-mails with problems that they encountered during the week. I received little response. Then, I tried to put the possible discussion topics on the board and encouraged students to vote which ones we should discuss. This was partially successful, but it clearly overrepresented the most active students. Finally, I discovered a strategy that always worked. I began to pass out flash cards at the beginning of each section on which the students would put their names and one question or topic from the class material that they had trouble with. Then, I would quickly scan through the cards, sort them out by topic and address their questions in the discussion. Knowing exactly which material was difficult for students to understand, it was easy to plan a review session. During my mid-semester questionnaire, I asked students if they found the approach useful, and 95% responded that it was.

In my experience, students are most energized to learn and discuss subjects that they can connect with their life outside of the class. When helping to teach “Introduction to Comparative Virology,” a very intense molecular biology class, I brought in articles from news media that described emergence of H5N1 Avian flu. Linking the information about replication cycle and virion formation of influenza to the front-page news engaged students in the discussion of the material and motivated them to study every molecular detail about the virus.

In future, I will continue to engage students in discussion of the material by providing rich context and helping them see subject in their own lives. For the undergraduate classes, I will allocate specific time for the discussion and critical evaluation of the representation of key material in mass media and make myself available for discussion through extended office hours. For graduate student classes, I will aim to provide direct links between the lecture subjects and students’ research.

Mentorship & prioritizing undergraduate research

I strongly believe that collaboration spurs innovation and inspires creativity. In my lab, I want to bring together people with different backgrounds and expertise and encourage collaborations with scientists from different groups and departments.

I will prioritize involvement of undergraduate students in research. As someone who benefited tremendously from undergraduate research experience, I am committed to making it an important part of academic life. During my PhD studies, I recruited and mentored three undergraduate students, helping two of them to complete their Honors Senior Theses. I will encourage graduate students and post-doctorate scholars in my lab to work closely with undergraduate students and help them develop independent projects.

I am a strong advocate for women in Science, Technology, Engineering and Mathematics. I have been involved in promoting women in science on different levels: from giving lectures at the Sally Ride Science Camp for girls to mentoring undergraduate and graduate student researchers. In future, I will continue playing an active role in recruitment and retention of women in science.