Statement of Teaching Interests

My academic trajectory has largely been a consequence of having good teachers. I had a teacher who ignited my interest in biology, another teacher who sparked my explorations into plant science, and my PhD and postdoctoral mentors have taught me invaluable lessons about not just research methodology but also research ethics, team management and being a good scientific citizen. Thus, my teaching philosophy and interests have evolved not only from my own teaching experience but also from the examples set forth by my teachers.

I believe that teaching occurs differently in different educational settings, and hence, my teaching interests would adapt to the given setting.

1) In an undergraduate class setting: The purpose of undergraduate teaching, in my opinion, is to enable students to learn as broadly as possible and to help them find an area of their liking. From a societal standpoint, students well-versed in STEM areas are more likely to find better jobs and generally be responsible citizens of the world. Towards these goals, it is important for a teacher to pique students' interest in science through good presentations, encourage discussion in the classroom, bring in examples from different fields and increase the students' understanding of STEM concepts. I tried to inculcate these habits into my teaching when I was a lecturer back in India for an Introductory Molecular Biology course for one year. I have also been a TA for an Introductory Genetics course, where I helped the students learn various concepts through a problem-solving approach. This experience also convinced me about the importance of bringing research into the classroom.

2) In a graduate class setting: Graduate students have already committed themselves to research. It is important for graduate students to be able to (i) critique bad ideas, and (ii) synthesize new ideas. Hence, a graduate class must not only inform about its primary subject area, it must also prepare students to discuss and debate ideas. Graduate students must also be trained in quantitative reasoning and science communication to non-specialists, which are topics generally lacking in most curricula. Lectures need to be made interesting, interactive as well as engaging and need to utilize the power of technology and online collaborative platforms in the learning process. I have been a TA for an Introduction to Bioinformatics class, a TA at the Plant Science Course at Cold Spring Harbor Labs, as well as given three guest lectures on next-generation sequencing to graduate students. I have tried to incorporate the above philosophy in my lectures by asking questions and encouraging discussions. I also intend to complement in-class teaching with online tools such as Wikipedia, Galaxy and CyVerse.

3) In the lab: Intellectual development of lab members is crucial for the overall productivity of the lab, since ideas do not appear in a vacuum. I would foster this learning through journal clubs, unstructured discussion sessions and encouraging service outside the lab, such as by participation in REU and high-school mentor programs, and participation in college committees and societies. In my academic career, I have mentored/collaborated with two graduate students, seven undergraduate and two high-school students. The contributions of two undergraduates have resulted in two publications, and they proceeded to enter graduate school. I have also served on various college committees, including being the Genetics Program Student Council President. Sociological research has

also shown that workplace diversity is a strong predictor of a group's intellectual productivity. I would strive to maintain such cultural and intellectual diversity in my group.

4) Teaching interests going ahead: Based on a study of the BIOPL courses offered at Cornell, I am interested in developing a new course on "High throughput technologies in plant science", incorporating elements of genomics, genome-editing, transcriptomics, proteomics, metabolomics, bioinformatics and phenomics. Such a course, which would include hands-on sessions, would not only acquaint students of the intricacies of each methodology, but also get them to integrate these techniques into the realm of hypothesis-driven research. I would also be interested in developing seminar courses on "Plant Metabolism and Human Society", "Evolution of specialized metabolic pathways" and "Evolution and agriculture".