

# BioGENEius Awards: In Jeremy Hsu's Words

*Fascinated with science from the time he was conducting experiments on tumor growth in high school, Jeremy Hsu studied biology in college and went on to ultimately earn a Ph.D. in the field. Then, he recalls, his story shifted. Though he found research fulfilling, he realized his true passion was in instructing, mentoring and inspiring others to pursue science. In addition to teaching at Chapman University in California, Hsu now leads workshops in K-12 classrooms, volunteers at science fairs and mentors underrepresented minority students. In the essay that follows, Hsu shares what he hopes to have inspired in all his students.*

I still vividly remember my first research experiences as a high school student. I was initially overwhelmed by the seemingly daunting project as I conducted experiments on how oxygen conditions affect tumor growth. However, as I progressed with the help of a caring mentor, I gained confidence as my excitement surged. This spark endures and still motivates me today as I teach and inspire future scientists as an instructional assistant professor at Chapman University.

Those first research projects in high school cemented my interest and love of science and form the backbone of the first chapter of my own story in science. I had always been interested in asking questions, and the thrill of being able to use experiments to generate novel answers and biological explanations affirmed my passion for the field. I was also fortunate enough to be recognized at several competitions, including as a state winner of the 2007 BioGENEius High School Science Competition. These experiences provided much-needed validation; getting feedback from judges that my work was interesting and exciting was extremely impactful and increased my excitement and confidence.

This excitement led me to not only study biology at college but to ultimately earn a Ph.D. in the field. Through a broad range of classes, I learned about the fascinating world of biology from genetics, evolution, and beyond. During this time, I continued to conduct research, where I was able to explore different questions about how the genes of different organisms differ due to changes in the environment and other evolutionary pressures. This process was immensely fulfilling, yet I soon realized that I had a second passion of teaching about science.

My story thus shifts from one of scientific research to one of teaching and sharing my passion for biology to others. I am humbled to be in a position where I can reach, mentor, and inspire hundreds of students each year at Chapman, where I teach various courses on molecular genetics and biotechnology, evolution, and more. I weave stories of scientific success and failure into my classes, challenging

students to design their own experiments or to interpret data. These activities vary but are all driven to excite and teach students about biology and the importance of science in society. For example, students in my molecular genetics class explore a case study on muscular dystrophy, learn about the molecular mechanisms of cancer, and conduct their own cloning project. The students are eager to learn about how the cell regulates gene expression, and how such knowledge may help them discover new cures for diseases in the future. In my evolution class, students apply fundamentals of evolutionary principles to test competing hypotheses about the spread of cancer as well as the rise of antibiotic resistance.

Similarly, in my general education class for non-science majors, students explore how and why science is important in informing public policy and discuss how to critically analyze and think about information in a scientific manner. In addition to reaching students in the classroom, I strive to inspire and encourage students to pursue their passion in science outside the classroom as well. I have led outreach workshops, spoken with different K-12 classrooms about what it means to be a scientist, and served as a scientific mentor for underrepresented minority students. In addition, I have also volunteered as a judge with several science fairs, recalling how significant my participation in these competitions were for my scientific development. Through these interactions I encourage the students to pursue their passions in science, telling them that they will be able to use their skills to continue bettering society and the world. The students, in turn, continuously inspire me with their enthusiasm, talent, and passion for science.

As my own story continues to be written, I am proud to play a role in shaping the stories of the future generation of scientists. Yet my story is only one of many; we need to celebrate all these stories of science – the world needs to see and hear about the amazingly diverse group of students, researchers, public servants, teachers, and more who work tirelessly every day to bring science to the forefront in society. Science plays a critical role in society, from providing technological innovations and solutions to new cures for diseases, and it is our responsibility as scientists to continue sharing these stories and our excitement and knowledge with the public. My own journey has been motivated and shaped by these stories, and I hope that I too have similarly inspired my students in their own scientific stories.

*The content and views presented here are those of the individual Challenge participant.*