Alyssa Chiang

IDEA's Spotlight on UCSD's Future Engineerings

Quick Facts

Grade: MS Candidate

Major: Bioengineering

Outside Interests: Mental Health/Wellness, Burlesque dancing, Exercising, Cooking, Sustainability, Traveling, Music

Questions about the NSF Graduate Research Fellowship:

Congratulations on receiving the prestigious NSF Graduate Research Fellowship Program award! Tell us about the program and what it means to you to receive this award.

Thank you for your kind words! The NSF Graduate Research Fellowship opens many doors, as it covers three years of my Ph.D. and allows me the flexibility to pursue research that interests me. It also offers unique opportunities such as international research and professional development experiences. I am incredibly grateful to have been selected, as this award is not only representative of hard work and grit, but more importantly, it is representative of the amazing people I am honored to be surrounded by, who push me and motivate me to do my best--my friends, family, mentors, and peers. I look forward to being able to make the most out of it to do research that will be impactful to the world around me.

What type of research do you plan to pursue with your NSF Fellowship?

Although I had started off with my interests in bioengineering in the medical realm, my course has since altered, and I am now highly interested in bioengineering applications in the environment, particularly with respect to synthetic biology. This interest grew out of my time in Dr. Jeff Hasty's lab, which is working on exciting applications of synthetic biology. I have been working on a project to develop a real-time biosensor for anaerobic digesters by combining synthetic biology and microfluidics, but will be looking for new ways to approach environmental problems through the lens of synthetic biology.

Questions about your experience:

When did you know you wanted to be an engineer?

Growing up, I actually wanted to become a physician. I thought being able to see the immediate fruits of your labor in each individual patient would be rewarding. Now, I still have utmost respect for what physicians do (particularly during this time--a huge shoutout to those serving on the frontlines!). However, during high school, I began to cultivate a new interest in engineering when I joined the robotics team. I loved being able to generate new ideas and build; it was such a messy process: a lot of screwing up, taking a few steps back before taking one forward, rebuilding, testing, evaluating...the frustrations were always worth the end product. This led me to the field of bioengineering, which I felt combined my interests--benefiting the health of others using the innovative spirit of engineering.

Why did you want to get into research and what aspects do you enjoy?

I got into research during a time when I was kind of at a loss for what I wanted to do. Two years into pursuing a degree in bioengineering, I began to feel like the available paths I could take only seemed to widen rather than narrow. Finding a lab and doing research seemed like a reasonable step to take, especially with so many productive labs working on cutting-edge research around me. I wanted to take advantage of the opportunities available. Dr. Adam Engler generously took me on, in my third year, and my experience here was what first made me decide to continue to pursue research. In the same way I enjoyed robotics in high school, I love the messy process of research--having a direction in mind only to find that the path there isn't as straightforward, thus catalyzing the hunt for new ways to solve unanticipated problems. There is so much to learn along the way. The rewards are definitely more so in the journey than in the destination.

Could you share with us your experience as a Jacobs Scholar?

I am grateful for the opportunities that came with being Jacobs Scholar. First, it allowed me the time to focus on my studies as well as on professional exploration and development, because I was fortunate to not have to worry about the financial burden of putting myself through school. It also allowed for me to develop personal hobbies that I otherwise would not have been able to, encouraging a balanced lifestyle. In fact, one of the cornerstones of the program includes an annual cultural event, hand-picked by the Jacobs, serving as a constant reminder to live a well-rounded and balanced life. I was also able to make friends with other highly motivated students who came from a variety of backgrounds and interests,

many of whom I am still in touch with. Perhaps most importantly, it helped pave the way to many future opportunities, and I will always appreciate that.

What are your future plans after graduation?

After graduation, I will likely enter industry. I am extremely excited to see how synthetic biology will grow into areas such as agriculture, energy, food, medicine, etc. in the coming years. So many cool ideas out there! Something that currently interests me is the production of alternative meat (side note: if you haven't tried the Impossible Burger yet, you're missing out!); it seems like an up-and-coming way to merge increasingly relevant health and environmental concerns.