DeShea Chasko

An interview with 2022 CNF iREU participant, DeShea Chasko

DeShea, please tell us a bit about yourself.

My name is DeShea Chasko, and I recently graduated from Mississippi State University with a Bachelor of Science degree in Biomedical Engineering with a minor in Mathematics. I will continue my educational career at the University of Oregon Knight Campus where I will peruse my PhD in Bioengineering. At the Knight Campus, I will focus my research on bone marrow tissue engineering and regeneration. Outside of the classroom, I enjoy going on hikes with my dog, Willy, playing video games, watching movies/TV, and playing DnD with my friends.

Thanks. Can you tell us a bit about your iREU research experience?

My iREU experience was from late May to early August in Tsukuba, Japan. I had the privilege of working with Dr. Genki Yoshikawa, my PI, on observing receptor layer swelling on piezoresistive devices.

What did your research project entail?

The purpose of my research project was to observe polymer swelling on membrane surface stress sensors under direct gaseous conditions and how that swelling affects the sensitivity of the adjacent piezoelectric devices. These chemically sensitive MEMS devices are a new type of olfactory sensor. I worked with Yoshikawa-san on developing an experimental protocol to ascertain the best techniques for polymer deposition, data collection, and evaluation. We used an inkjet printer to control the polymer shape and deposition rate onto a sensor surface. From there, a digital holographic microscope (DHM) was used to observe real time swelling of the polymer layer as gas was injected into and purged from the system. Finally, the strain that each polymer experienced was calculated using the deformation recorded by the DHM and the initial surface characteristics gathered from a laser microscope. Different polymers and gasses will be introduced to each other in the future to determine how they interact with one another. Ideally, a library of the polymer-gas swelling relationships will be created to ensure the optimization of membrane surface stress sensors, creating a further step towards personalized medicine and agricultural techniques.

You lived in Tsukuba for 10 weeks. Can you tell us about the laboratory and your experience living in Tsukuba.

Working at the National Institute for Materials Science was a unique and inspirational experience. Each lab member went out of their way to ensure that I had the most successful and enjoyable summer in Japan. The living conditions at the Ninomiya House were convenient and clean and were ideal for experiencing a typical Japanese style apartment. Commuting to and from Tokyo was incredibly easy because of the Tsukuba Express Rapid train. This made experiencing the city and culture as easy as the tap of a Pasmo card. Although there was a language barrier in many cases, it was not hard to navigate these social interactions, especially with the help of Google Translate and the point of a finger.

The food in Japan was incredible, from large bowls of ramen to mountains of fresh baked breads to savory yakitori, there was never a shortage of meals that I enjoyed. I would personally like to thank 7-Eleven for the bountiful supply of pork tonkatsu meals that I

regularly consumed. In all seriousness, the food, culture, and people made my summer one for the books and I hope to experience them again one day.

Please tell us about your weekend travel experiences.

One of my favorite places that I visited in Japan was Osaka and Nara. I traveled by the bullet train (Shinkansen—literally "new train"), which is one the fastest and smoothest modes of transportation in the world. In Osaka, I went to Universal Studios Japan, which houses Super Nintendo World. There were so many ways to be interactive in the park using the Power Up Band, such as breaking blocks, meeting characters, or winning at Mario Kart. Additionally, there were so many delicious foods to try, incredible rollercoasters to ride, and just walking through the park is an experience within itself. Outside of Super Nintendo World, there is so much history, from temples, shrines, museums, and castles, to become enveloped in. The food was top tier, with my personal favorite restaurant being the menya reima ramen shop, featuring over the top decorations from JoJo's Bizarre Adventure and an overall fun and immersive experience. Additionally, there are so many shopping districts to explore and spend lots of money, such as Denden Town. Dotonbori was a unique food district that I enjoyed with tons of local vendors and food stalls to try, but the brightly lit billboards are the main draws to this area.

Nara was a nearby town featuring friendly deer that bow at you when they want to be fed. They are super polite until they see you buy the local deer crackers and then they come running at you from all directions to try and snag a bite. In addition to the deer, Nara is home to the largest bronze Buddha statue in Japan found within the Toda-ji temple, which I found to be incredibly impressive. The deer park at Nara is an area I spent all day walking around at and still could not explore all of it.

I also traveled to Kyoto, which is rich in traditional Japanese history, and Atami, that has a public beach and summer fireworks festivals. In Tokyo, my favorite experience was definitely the Tokyo Skytree, which at the time was renamed the JoJo tree in honor of JoJo's 10 year animation anniversary. I also enjoyed visiting a Shiba Inu Café and Owl Café, going to an arcade, walking around the Shinjuku National Garden, sitting in the Shibuya Starbucks, and shopping in Odaiba.

Can you share any overall impressions of your experience?

My experiences in Japan this summer were a unique, once in a lifetime opportunity. Even though it was intimidating to spend my summer in a completely different environment and culture, keeping an open mind helped me appreciate my new surroundings even more. I learned many practical skills in my laboratory environment, especially methods to help facilitate problem solving. I learned how to interact with people coming from many different backgrounds and grow as an individual from these interactions. Outside of the lab, I learned how adapt to new situations, seek out adventures, and feel more confident exploring new corners of our world. My impressions from this experience are exceedingly positive, and I aspire to continue learning from scientists all over the world as I enter this next phase in my life.