When I first heard about this internship through a canvas announcement for my biostatistics course, I knew that I wanted it. I spent the next few days conversing with my TA, who had sent that notification, about what exactly this internship entailed and the different types of research being conducted at this facility. I was ecstatic once I had received that email saying I was accepted into this internship.

Hi! My name is Hana Koyama and after the summer ends, I will be a junior at San Diego State University. This internship allowed me to work with my partner who attended the community college the internship is associated with, along with my mentor Jessie Patzalf. My mentor who was working towards her master's degree, focused on the behaviors of red abalone, in the hopes of understanding the behavior and linking it to the endangered species of black abalone.

Before I began my internship with her, I went on vacation which caused me to miss the first two weeks of the internship, where some of the research was conducted. Her research focused on the predatory behaviors of octopuses and crabs concerning abalone. The abalone was tethered to a string and then left in an enclosure with a predatory animal. After a few days, we could analyze the abalone, and see the behaviors of the predators.


(picture of an abalone tethered to a string)

My species research focused on the behavior of the abalone and how they interacted with the shelter provided, when in a tank with a predator, an octopus. We spent a few days tagging all of the abalone and dividing them into two different size categories, small and large. As well as constructing the enclosures, ensuring the safety of both us and the animals.

We conducted 9 trials over two weeks. Each trial had twelve tanks, and my partner and I each monitored six tanks. We would first randomize the placement of the tank, the size of the abalone if it had a predator, and which octopus would it be, as well as the

orientation of the tank (up or down). Afterward, we would place the octopus in the designated tank, allowing them to accumulate for at least ten minutes before introducing the abalone. We would then, one by one, place the abalone inside the shelter in the encolure, noting the time. Once the abalone was in the shelter, we would monitor their movement, listing every time they left the shelter, returned to the shelter, and if their antennae, podium, or epipodium were very visible.

(An example of the setup with a large abalone)

Conducting this research allowed me to learn many new skills that I would otherwise not have. For example, working with marine life is very difficult since they have their own sets of needs to thrive in a laboratory setting. To care for these animals I learned the different types of food they need to eat, and how often they need to eat as well as the proper tank management. Every time I went into the lab I conducted water checks and recorded the temperature, pH, ammonia, nitrate, and nitrite levels.


(A picture of the octopus in the enclosure)

I also learned the process of conducting research. To start a research you first need a hypothesis that can be based on the other research that was conducted, or even a theory that you want to prove. You then need to find a way to conduct the research, if that involves building a new setup and finding a way to record data. Once you collect your data, you can find correlations in the data and either prove your hypothesis or even lead you to a new theory.

The last thing I learned from this internship is the different ways people have started their journey to graduate school. Working with people who are at different levels in their graduate program allowed me to see every step of the process of something I am interested in achieving someday. Specifically, I learned that going directly from obtaining your undergrad degree to a graduate program takes time and you don't need to directly go into one to strive.