

TO: Nakatani Foundation

Nakatani RIES 2025 Final Report

Your Name: **Sneha Vashistha**

Your university: Georgia Tech, University of Tokyo

Host Lab in Japan: Takai Lab

Meaning of Nakatani RIES Fellowship: How would you describe the meaning/impact of the Nakatani RIES Fellowship

The Nakatani RIES Fellowship gave me the opportunity to immersively experience Japanese life and culture, both in and outside of the lab, while conducting research on a topic related to my interests and passions. I had the opportunity to make lifelong friends, develop communication skills, and experience new opportunities and challenges related to living in a new culture. Since my time with the Fellowship, I have gained an immense appreciation for Japanese culture and would love to continue learning Japanese and visit again. I am also more interested in doing research and higher education in foreign countries to gain similar experiences and skills. I am happy to be a part of the Nakatani RIES Fellows community and look forward to making more meaningful experiences and memories with this group.

Complete the following sentences with the intended audience for these responses being potential applicants to the Nakatani RIES Fellowship.

- My favorite experience in Japan was...
 - My favorite experience in Japan was meeting the Japanese fellows and making lasting friendships and memories with them. This included weekend trips, casual meet-ups in Shibuya to go shopping, dinners after a day in the lab, and fun events such as escape rooms and karaoke.
- Before I left for Japan, I wish I had...
 - Before I left for Japan, I wish I had spent more time learning simple Japanese phrases to communicate better with my lab and students on campus. I also wish I had spent more time learning to read Hiragana and Katakana. After a few weeks in Japan, I finally learned how to read both and recognize a few important Kanji characters. This made it much easier to complete basic tasks both in the lab and while travelling/shopping.
- While I was in Japan, I wish I had...
 - While I was in Japan, I wish I had made a more meaningful connection with my lab group. I do believe that if I had worked harder on my Japanese speaking skills earlier in the Summer, I could have broken the ice with my lab group and members quicker and learned more from them.

Research Internship Overview: Provide a description of your research project and experience during your research internship. How did your project relate to your current or future academic interests? What was the experience of working in an international research setting like? What will you take away from your research experience this summer and what impact do you think this has had or will have on your future academic career or research interests?

My research project is titled: Exploring Heat-Resistant Protein-Polymer Hybrids to Maintain Enzyme Activity. Polymers can be used to protect enzymes from degradation and heat denaturation. Specifically, polymers with zwitterionic properties have allowed for heat protection of enzymes through covalent immobilization. This project aims to synthesize zwitterionic copolymers with ionic charges that can allow for spontaneous protein-polymer complex formation/dissociation, thus providing heat protection for proteins or drugs and allowing for spontaneous dissociation under specific environments. The final goal of this project is to prepare an optimized copolymer which can help with the controlled release of drugs in biological environments. I am especially interested in research relating to drug delivery systems, so this experience has provided me with a unique foundation in this topic. Previously, I have only had experience with protein synthesis and analysis for drug delivery, so I had the opportunity to learn many new skills and analysis methods relating to polymers.

My experience working in an international research setting was quite unique and different from the lab atmospheres I have previously worked in. The research lab was organized in a very different way and had very different expectations from undergraduate students, as compared to the labs I have been a part of. Because of this, I had the chance to tell my lab mentor and members about my home labs and research culture in America, while they explained to me the lab culture in Japan. It was complicated to converse through the language barrier, but this provided me the opportunity to learn communication skills and to persevere through challenges. As I look towards a future working in medical research, I am aware that I will be tasked with communication and working with researchers across the world. Thus, this experience was invaluable because it gave me insight into the various research environments in different cultures and made me aware of such nuances.

Lab Environment Overview: Provide an overview of what the personal environment of the lab was like. Describe the personality and working style of your research group? What was it like working with your research mentor/s and the overall group dynamic in the lab?

The lab environment of my research group was very hard working and individual. I noticed that most students would enter the lab in the morning and would not leave until 6-7pm. Students were very individual and quiet, as our lab room was usually silent but always full of people working. Most students did not speak English, which made it difficult for me to communicate with them. Personally, I felt slightly isolated since I only spoke to my mentor during my time at this lab, and my mentor also avoided speaking English with me outside of providing lab instructions. Because of this, I was not able to develop a personal tie with any members in the lab and did not have the chance to learn much about them or their experiences.

Daily Life in Japan: Provide an overview of what your daily life was like in Japan. This could include the people you interacted with outside the lab on a day-to-day basis, food, your housing/living experience, your travels around Japan and the challenges you faced and the rewarding experiences you encountered over the course of the summer.

During my time in Japan, I lived in an apartment near Tokyo, 45 minutes away from campus. I would take the train to campus each day. While on campus, I did not interact with anyone except for my mentor and PI. After completing my day in the lab, I frequently met with other JP and US fellows in Tokyo to go shopping, eat dinner, visit festivals etc. Most weekends, I travelled around Japan, including Osaka, Okinawa, Sendai, Kamakura, Mount Fuji, and Yokohama. I loved the feasibility of travel by using public transportation! My main challenge this Summer was finding food to eat, since I am vegetarian and do not eat any meat or fish. I

learned simple phrases to let restaurants know about my dietary needs and was able to find a few options, but many restaurants would turn me away due to the lack of vegetarian food in their menus. Because of this, I cooked for myself in my apartment frequently. My most rewarding experience was climbing Mount Fuji. I hiked Mount Fuji during my last weekend in Japan. This hike challenged me in many ways but provided me with the opportunity of a lifetime. During my hike, I communicated with many other hikers in Japanese and was able to learn about their lives while also sharing about myself. By the end of the Summer, I felt confident in my rudimentary Japanese speaking skills and was happy to try conversing with Japanese people during my hike and during my time in Kyoto. I found that individuals outside of Tokyo are often much more inclined to come up to me in public and try to speak to me, which was a great experience for me and allowed me to practice Japanese.

Experiences with Japanese Culture: Provide an overview of your most meaningful experiences with Japanese culture. This could be program activities or interactions you had with your lab or within your daily life in Japan that you think best exemplify aspects of Japanese culture or values. What did the experience/s teach you about Japan? What did they teach you about yourself?

My most meaningful experience with Japanese culture was during my climb up Mount Fuji. While the climb itself was remarkable, it was the small experiences throughout my trip that made a big difference. At Gotemba station, I unfortunately left my wallet on the bus, right before I planned to leave for the 5th station of the mountain. Although I only left my wallet in the bus for ~1 minute, when I went to retrieve it, it was gone. I tried speaking with many bus drivers to identify where it could have gone. Interestingly, the bus drivers were much more eager to help me when I spoke to them in broken Japanese instead of English, which is something I noted throughout the Summer. My wallet had been found by another passenger, who took it to the information center at a mall to be kept in the lost-and-found. I was able to take the bus to the mall and retrieve my wallet with all money and cards safely inside. This experience really highlighted Japanese social culture that my wallet was not stolen. Instead, a passenger found it very quickly and went through a lot of effort to make sure it was stored safely. Unfortunately, because of the time spent looking for my wallet, I missed the last bus to the 5th station. The receptionists at the Gotemba mall helped me and called a taxi for me to ensure I would not be stuck there overnight, further exemplifying Japanese kindness. Even the Taxi driver gave me a large discount for my travels once I told him about the situation and that I am a student. While climbing up Mount Fuji, I met many elderly hikers. They were all excited when I spoke to them in Japanese and told me about their hobbies, work, and life. I was amazed by their resilience to hike Mount Fuji at an older age. I believe that my time in Japan taught me independence and resilience like the culture and people I was around. I learned that I too had the abilities to work through communication and life problems while living alone. I learned to have an open mind and not be shy of making mistakes. I had some of my favorite conversations with local Japanese people when I was not afraid to make mistakes and was more eager to learn from them.