TO: Nakatani Foundation

Nakatani RIES 2025 Final Report

Your Name: Adarsh Nallapa

Your university: Kyoto University

Host Lab in Japan: Jun Suzuki Lab

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

The Nakatani RIES Fellowship gives students the opportunity to explore and understand a different country while completing meaningful research. Students can work with host labs at Georgia Tech and universities across Japan on unique projects with highly qualified mentors. They are also given many opportunities to travel, try a vast array of food, and meet local students. Fellows don't just learn valuable skills in their labs; they gain a deeper cultural appreciation.

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 biking along the Shimanami Kaido, a 70 km cycling route that connects 6 islands in the Seto Inland Sea. There were many beautiful beaches, bridges, and temples along the way.
- Before I left for Japan, I wish I had picked more places to explore. Having day trips planned for the weekend in advance can make it easier to pick activities and travel choices.
- While I was in Japan, I wish I had used more afternoons to explore Kyoto. I ended up rushing to visit some popular sites in the last couple weeks of the program.

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 was to determine the viability of a shortened version of the crunch (connector for removal of unwanted cell habitat) protein developed by the Suzuki Lab. The crunch protein uses a nanobody to connect a cell of interest to a phage cell for phagocytic removal. The linker region of the protein consists of an EGF-like (epidermal growth factor) domain with four duplicated sections. In the experiment, 6 proteins with decreasing numbers of these sections were produced, purified, and tested. In preliminary phosphorylation assays, it was determined that removing up to two of these sections did not affect crunch's binding ability. This project allowed me to further explore my academic and career interests in molecular biology and protein engineering. I utilized previously learned lab techniques for cell culturing and protein purification, and I learned new skills for cell sorting, western blots, and binding assays. The international research setting within iCeMS (Institute for Integrated Cell-

Material Sciences) at Kyoto University gave me unique challenges and opportunities. There were many grad students from all over with different backgrounds, and I learned something from every conversation. Although there were many individual projects, everyone helped each other out, especially with new protocols and instruments. After my research this summer, I want to explore protein engineering more, specifically computational structure prediction. I'm also considering applying to foreign post-grad programs.

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?

Because the lab was primarily composed of master's and PhD students, everyone was primarily focused on their thesis projects, leading to an emphasis on independent work. Still, team members were supportive and many official and unofficial mentor-mentee relationships could be observed. Group progress reports with active participation gave members fresh perspective on the challenges they were facing. Training by qualified students on lab instruments was vital for continued progress. Personally, my research mentor provided valuable guidance and instruction on the experimental design and laboratory techniques for my project. When she was not available, I always felt comfortable asking other members of the Suzuki Lab to look at my results or help troubleshoot my protocols. Group social activities were also a great way to connect with other members beyond the work environment.

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.

If we did not have morning meetings, I would typically reach the lab by 10 in the morning and greet my mentor or other members I saw. I would typically work until the late afternoon before getting lunch at the Kyoto University cafeteria. I would return to work until the evening, and then I would usually get dinner on the way back at a convenience store or local eatery. I was constantly surprised by the high quality of inexpensive food. I really enjoyed a Takoyaki spot named Tako to Kentaro near my apartment, as they were also open late at night. On some days, I would meet with my fellow students in Kyoto for dinner or exploration, as well as meeting with Japanese program alumni. They would take us to their favorite restaurants or karaoke. We really enjoyed spending time near the Kamo river. Still, I did face some challenges making social connections within my laboratory as many students were busy with scholarship applications and thesis reviews. Whenever I had a chance to have a longer conversation, however, I learned a lot about what it's really like to live, study, and work in Japan. The most rewarding experiences were group travel sessions, such as exploring Osaka's nightlife, biking along the Shimanami Kaido, or renting yukatas to wear on a short cruise in Kobe.

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 experiences with Japanese culture were with the Japanese fellows and program alumni. They were always incredibly welcoming, taking time out of their busy schedules

to show us around the city or have dinner with us. Everyone I met was polite and courteous, even if there were small language barriers. I also observed how hardworking everyone is, from school children studying as they walked by our apartment to elderly shopkeepers staying open till late in the night. I was able to work harder in the lab than I expected and I'm happy I got to try so many different unique food items and drinks. I've really seen that everyone is excited to share their culture when it is appreciated and respected by visitors.