

TO: Nakatani Foundation

Nakatani RIES 2025 Final Report

Your Name: **Margaret Wade**

Your university: **Kyoto University**

Host Lab in Japan: **Yokokawa Lab**

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

The Nakatani RIES fellowship is impactful culturally and scientifically as it gives students an opportunity to do groundbreaking research in a completely new and different place and culture. Personally, this fellowship has given me a once in a lifetime experience that will forever impact how I see the world. It has also given me a new perspective on research and even the scientific community that will impact how I proceed and dedicate myself to my future career. I hope that the personal growth I experienced through the fellowship will carry over to others by allowing me to make a more positive impact on the world. More generally, this experience gives people in America and Japan a chance to get to know more about each other's cultures, and more importantly, become friends with people from across the world. The more that different people from different places can interact and collaborate, the more progress can be made scientifically and societally. This fellowship provides a perfect way to start progress early on with undergraduate students.

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 going on a 3 day solo hike in the Minami alps where I met many interesting and kind Japanese people and got to see incredible mountains. I stayed two nights at mountain huts, where I was able to eat incredible traditional Japanese food for dinner and breakfast. I slept on tatami mats and woke up each day around 3-4 am to watch the sunrise. The hiking was difficult, but the mountains were some of the most beautiful I've ever seen in my life and the experience itself was once in a lifetime.
- Before I left for Japan, I wish I had... packed hot sauce (probably Cholula). I absolutely love Japanese food, but they really do not like spicy things. Tabasco was prominent (though not everywhere), but the wide selection of hot sauce that we experience in America is not available in Japan. It was recommended that I visit Korea to get spicy food but bringing some sauce from home would be easier.
- While I was in Japan, I wish I had... visited more places! There are infinite cool places in Japan, and though I traveled many of the weekends, I was only able to see a small portion of them. Obviously it is not possible to see everything, and I am so grateful for the things that I did get to see, but I wish I had gotten to Hokkaido and the Izu peninsula.

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?

In my time at the Yokokawa lab, I worked on a pancreatic ductal adenocarcinoma (PDAC) tumor-on-a-chip model to study pancreatic stellate cells' (PSC) effects on angiogenesis. PDAC is the 3rd leading cause of cancer-related death because it is an extremely aggressive tumor often discovered after it has metastasized. This aggressiveness is largely due to the complex tumor microenvironment which includes the extracellular matrix and pro and anti tumor stromal and immune cells. PSCs make up 90% of PDAC stromal cells and are responsible for regulating angiogenesis. I used a model developed by the lab to further investigate the role of PSCs in angiogenesis, which has been contradicted in several *in vivo* studies thus far. This is very closely related to the research I conduct at Georgia Tech because both are focused on stromal cells (and general tumor microenvironment) of cancer cells. At Tech I focus on creating a model for Neuroblastoma (another solid tumor) that includes cancer-associated fibroblasts (which PSCs turn into after exposure to PDAC) and modulates stiffness of the ECM (also which is very important for PDAC). Having this experience with the Nakatani program has strengthened me as a researcher significantly because I was able to devote all my time to the project (as opposed to also having to focus on classes) and learn a completely new approach to studying similar topics. I have left Japan with a renewed love for research and dedication to my previous project with this exposure to a new one.

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 was one of my favorite parts of my experience in Japan. My lab was collaborative at a level I had never experienced. We had more lab meetings than I do at Tech, and in them, we were able to have detailed discussions about our research, problems we were having, and ideas on new experiments and approaches. Everyone, not just my mentor, was extremely willing to help me with anything I was struggling with. I also loved working with my mentor who was very knowledgeable but also very personable. I did experience some problems with a language barrier because when you are working with highly specific and academic language, translation becomes more difficult. Overall, though, I felt immensely welcomed and appreciated by my lab, and I feel so lucky to have met and gotten to work with everyone in it.

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.

In a typical day, I would wake up around 5 and it would already be completely bright out (this took some getting used to). I would run to the Katsura river where there was a lovely running and biking trail, and sometimes I would get some words of encouragement or even high fives from other runners. I would grab some soft-boiled eggs and a coffee at the kombini next to my train station and head into lab. I would do some lab work then grab lunch at the university cafeteria with some of my lab-mates. After lab, I would head back into town and either meet up with the US and JP fellows in Kyoto, or go climb at this extremely intense traditional Japanese bouldering gym. I loved both evening experiences because I got to interact with such awesome people. One of the best parts of this program is the interactions with the US fellows (who I did not know before the program, but are now some of my favorite people) and the JP fellows, who

are so incredible friendly and provide a insight into Japanese life. The climbing gym is a random thing I did, but also gave me the ability to interact closely with Japanese people in a casual setting.

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?

One of my most meaningful experiences with Japanese culture was the reception after the closing presentation. It was so incredible to be together with all the JP fellows, many of whom came from quite far to attend, the US fellows, and all of the people from our labs. Having all of them there highlighted how kind and reliable Japanese people are because they all went through lengths to be at the event. I also absolutely loved my sunrise hike up Mt. Fuji. At 3 am (when it was below freezing), there were long lines of people toting headlamps climbing up the mountain, showing the dedication and grit of Japanese people. Finally, I loved going to karaoke with the JP fellows, which was so fun. We all sang together without any words on how horrible we were singing, which displays both the deep respect of Japanese people and their ability to have a good time. All these experiences taught me that I have some of these characteristics as well, and I hope to exemplify them more in my everyday life.