

TO: Nakatani Foundation

Nakatani RIES GE 2019 Report

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Your University: Karlsruhe Institute of Technology

Host Lab in Japan: Tamanoi lab, iCeMS, Kyoto University

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

For me the internship in Japan was a unique, unforgettable experience. I learned a lot about intercultural communication and about myself. I met a lot of great people and hope to continue our acquaintance.

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...
 - visiting all the cultural sights around Kyoto.
- Before I left for Japan, I wish I had...
 - done a little more research about what to visit in and around Kyoto.
- While I was in Japan, I wish I had...
 - taken more time to learn Japanese language and customs.

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?

Tamanoi-sensei and the researchers in his lab are interested in how nanoparticles can be used for cancer therapy. Luckily I was able to gain insight into various different parts of their research. During my internship I synthesized different kinds of nanoparticles: mesoporous silica nanoparticles (MSN), biodegradable periodic organosilicas (BPMOs) and periodic mesoporous organosilicas (PMOs). Those nanoparticles can be used for cancer therapy, as anti-cancer-drugs can be encapsulated into the pores and the nanoparticles can be injected into the patient body. The group's research suggests that the nanoparticles preferentially accumulate in the tumors, which leads to a more specific distribution of the drug and should be less damaging for the rest of the body, as anti-cancer-drugs are often bad for the patient's overall health. I was especially interested in the model they use for the testing of the nanoparticle biodistribution, which is the chicken chorioallantoic membrane (CAM) model. For this approach tumor cells are cultivated

on the chicken chorioallantoic membrane, which provides the tumor with all necessary nutrients and creates a niche for the tumor to grow. As patient-derived tumor cells can be used, this is an important step towards personalized medicine. As the tumor is connected to the chicken blood stream via its vasculature, it is possible to inject anti-cancer-drugs and nanoparticles into the blood stream and observe the effects on the tumor and the biodistribution. This was especially interesting to me because my studies focus on developmental biology and my research for my bachelor's thesis focused on chicken neurodevelopment. I am also considering going deeper into cancer research during my master's program, so this topic was perfect for me. The experience of working in an international environment was quite new for me but it was a very interesting experience. Luckily for me, my research group in particular was even more international than usual, because in addition to the Japanese group members there was also a French postdoctoral research fellow and a Thai PhD student. The internship has helped me with my intercultural communication skills and I am now considering doing a PhD abroad.

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?

Everyone at the lab was very welcoming towards me. I felt as part of the group from the first day forward. It was very important to Tamanoi-sensei that I get an overview over all the projects in the group and that I learn as many new things as possible. My supervisor, Ms Birault, was always ready to answer my questions, as was everyone else in the group. I felt like there is a very strong group dynamic in the lab and teamwork is very important. People help each other out and are very friendly towards each other. There are regular group meetings, where everyone is included and everyone can share ideas. Whenever possible the group goes to lunch together and sometimes they share evening activities, e.g. going out to dinner together on my supervisor's birthday.

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 the week I spent a lot of time at the lab. I got up in the morning and walked from my apartment to the research building, where I did most of my work. For lunch the whole group usually went to the Kyoto university cafeteria together. Sometimes I would bring my own lunch (leftovers from the day before's dinner), but I always joined my group at the cafeteria. I would usually leave the lab at around 5pm/6pm and then walk back to my apartment. Then I would cook dinner or go grocery shopping at Life supermarket together with my friends who were also part of the program. I usually cooked dinner myself, even though I later realized this was probably more expensive than just going out to eat, which is quite different to Germany. In the

evening I did some research work or read a book. On the weekends my German internship fellows and I would plan some sightseeing or day trips. Together we went for example to Nara, Uji, and Biwa lake and we explored Kyoto city together. The most challenging thing for me was the language barrier. I can neither read, nor speak or understand Japanese so I had to blindly buy stuff just based on the pictures on the packaging or I had to ask people and hope that they spoke English or hope that it was written in English somewhere. Every time I asked someone, they were very kind and tried their best to help me, even if they didn't speak English.

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 thing that really stood out to me was the importance of politeness and kindness in Japanese culture. Whenever I had a problem, I could always ask someone in the lab for help, even if it wasn't work-related. For example, when I wanted to buy a card for my phone to get internet access, I asked Tamanoi-sensei's secretary for recommendations and she was not only happy to help, she even walked to the store with me to talk to the clerk for me because it was hard for me to communicate. I also observed the daily interactions of the people in the lab environment and it was very significant how polite everyone was. Sometimes it was hard for me, because I was always wondering if I might be doing or saying something that is considered impolite at the moment, because I didn't want to offend anyone. Another thing that was strange to me was that it is considered impolite to eat or drink on the street and that it is uncommon to invite friends to one's house to cook and eat together. This is very different from German culture.