

RISE Germany 2018 – Final Report

Name of Intern: Shaochen You

Home University: University of Texas at Austin

Subject: Chemistry

Guest University: Phillips-Universität Marburg

Name of Supervisor: Dzung Nguyen

For three months this summer, I had the unique opportunity to travel to Germany to work in the lab of Prof. Dr. Gerhard Klebe at the Phillips-Universität Marburg. My project was funded by both the DAAD RISE (Research Internships in Science and Engineering) Germany program and the German Chemical Industry Association. This funding covered housing, food, and travel costs. This internship not only allowed me to explore a new area of science, but also exposed me to new cultures, ideas, and people.

Tropical diseases still affect millions of people in underdeveloped countries every year. As a result, new drugs must constantly be developed to combat growing resistance against traditional medicines. One of these diseases is shigellosis, caused by shigella bacteria. This is one of the bacteria that cause dysentery. My project involved working on finding novel inhibitors of tRNA guanine transglycosylase, a critical enzyme in the pathway that produces virulence factors that spread infection. My research involved protein expression and purification, x-ray crystallography, and other techniques such as EPR and ITC. I had never done any structural biology work before, so growing protein crystals and refining crystal structures were completely new techniques I learned on the job. My mentor was well-prepared when teaching me and by the end of the internship I was a pro.

Overall, the research environment in Germany can only be described as meticulous, organized, and precise. From templates that must be filled out for every expression and purification, to scales and incubators that are cleaned after every use, to a Google calendar that showed the reservations of all of the incubators, FPLC machines, and centrifuges by all lab members, my lab experience was one of no complaints. The graduate students all spoke English and I had no problems communicating with any of them. Our weekly seminar presentations would (almost) always be in English as well.

A typical day begins with a 15 minute walk to the lab building, arriving at 9am. I would check my overnight cultures and then incubate eight liters of LB for protein expression. While the cultures grew, I would work on refining one of my crystal structures. By noon, the lab would head out for lunch. Whether it was the butcher shop, the local doner stand, or just to Tegut, I enjoyed every meal with my colleagues. After lunch, I would harvest my cells and freeze the pellet for tomorrow. In the afternoon, I would check my crystal plates and log any crystal developments in my notebook. If I had just finished a purification, I might also set up a few new crystal plates. By 6pm, I would be headed back home, passing by the beautiful Elizabethkirche each time.

During my time, I fell in love with Germany. I was initially apprehensive, but I was immediately welcomed with the hospitality of the German people, and I would not hesitate to return for another summer. Particularly, I loved the convenience of the German (and European) rail network, the beautiful timbered houses of Hesse, and of course, currywurst and doner. I had

no problems finding an apartment (found with the help of my supervisor) before I arrived in Germany, and would highly recommend using N26 as your German bank.

From learning how to pronounce “bruschetta” from an Italian colleague, learning the difference between “kirche” and “kirsche”, to seeing Neuschwanstein castle and watching Germany defeat Sweden in the World Cup, my time in Germany has been an exciting and educational one. I would like to thank again the DAAD and the German Chemical Industry Association for funding my project, and my mentor Dzung and the rest of the Klebe lab for hosting me this summer and showing me everything Germany has to offer. I would highly recommend a RISE internship to any aspiring scientist as they continue to grow personally and professionally. It is an experience I will never forget.

“I agree that my report and accompanying pictures may be used by the DAAD in printed materials, presentations, and on websites in order to inform funding organizations, sponsors, and students about the RISE program.”