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Adventures in Deutschland: Laboratory Learning

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Adventures in Deutschland.

Laboratory Learning Elise Ottenfeld

One December day after working at a Chemistry Open House, my research mentor, Dr. David Graves of the chemistry department, caught me in the stairwell and tossed “Want to go to Germany?” my way. Five months later, I was working overseas with a doctoral student on his research project. Better yet, I was being paid.

From May until August 2009, I participated in the DAAD-RISE program. Funded by the German Academic Exchange Service, the Research Internships in Science and Engineering program

allows North American and United Kingdom undergraduates to apply to work on specific projects based upon their areas of study. Students apply to a total of three projects offered by different German Ph.D. students, and then the RISE committee pairs students with projects based upon their preferences. As a chemistry major, I applied to work on a biochemistry project that aimed to characterize the structure of the DNA fragmentation factor or DFF protein. DFF, as I learned from the description written by my PhD student Daniel Kutscher, was the major nuclease responsible for degrading the genome during apoptosis or cell



fragmentation factor), also called ICAD (Inhibitor of caspase activated DNase), for the mouse protein and then use them in enzymatic assays in order to determine the sites important in its chaperon function, leading to proper folding of the nuclease subunit, DFF40, of DFF. It sounded so simple!

What I learned in the following weeks was that making protein variants was anything but simple. Even though making protein variants was problematic from the beginning, during my three month stay I successfully learned techniques such as DNA mutagenesis, protein expression and purification, and DNA cleavage experiments. Additionally, I learned how to make and run several types of electrophoresis gels and to whip up a new batch of buffers in a heartbeat. Even though our experiments would not always work, I carried them out independently - trying, failing, and learning on my own - with Daniel nearby to consult on my results and to offer helpful wisdom for next time. However, laboratory techniques were not the only thing I learned during my stay; twice a week the entire lab group of around 30 people met to either discuss and review a paper or learn how the projects were going from various lab members. Though I did not accomplish any lab work during the seminars, I found them helpful for learning how to critique a journal article properly, something that I with my love of English literature had always abhorred. Group seminars also helped me get to know the people I was working with, and to learn that shuffling into morning seminar clutching a cup of coffee is a universal bonding experience.

Overall, my summer experience helped me develop my analytical skills with regard to both practice and theory, which I have brought home to my lab work at UAB. While working in a lab at home was always the most intriguing part of my studies, work-

death. For some time I had been learning about apoptosis and its relationship to DNA from the work I performed in Dr. Graves's lab in conjunction with Dr. Katri Selander at the Comprehensive Cancer Center; so I was more than interested in the opportunity to learn the full process of cell death.

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My journey began in Berlin where I spent two weeks with a group of fellow RISE students traipsing through the basics of the German language as well as the historical city. Seemingly no time passed before I was onto Giessen, my home for the next three months and the site of my research group. After one day of rest, Daniel began immersing me into workings of the Justus-Liebig University-Giessen's Biochemistry department. The first day he explained the basics of my project: I was to use polymerase chain reaction (PCR) techniques to systematically change the amino acid sequence of the DFF45 subunit of the DFF protein (DNA

ing in a lab at Justus-Liebig allowed me the opportunity to truly absorb what it means to be a researcher. Everyone I encountered was more than helpful in pointing me the right way and, with no language barrier for everyone spoke English, in laughing with me while I fumbled with my German. I strongly encourage all science students, no matter what your goals may be at this point, to seek out the opportunity to work in a research lab, not necessarily for the elaborate techniques you'll learn but for the value of patience and teamwork you'll experience.