

I found my internship in Durham by looking for any labs and projects around the world according to my research interests by myself. I came across my supervisor's personal web and found his research interests very similar to mine, and then I emailed him with a brief introduction of myself and my wish to do a six-month research internship in his lab. Afterwards we had online meetings to discuss possible projects that we both wanted to work on, and also figured out other things like visa application. The most important factor that helped me with getting this opportunity is looking for as much as possible online information and contacting people actively. In this way I was finally able to do a project that suit me best.

At the beginning of my internship in Durham, the first thing I expected is research training in various aspects, from creative thinking, making plans, logic and good habits of daily experiments and data collection to independent problem-solving skills. Another important thing I looked forwards to is the English-speaking environments in the UK. In the end I'm very glad that all these expectations were fulfilled.

The preparation for my internship in Durham was done in the end of a semester in LMU, which is highly stressed and busy. I started the application for a short-term study UK visa two months before leaving. Besides visa, accommodation is also one thing needed to be organized in advance. Luckily, although Durham is a small city with nearly one third of the population being university students, accommodation there is not very expensive nor hard to be found. In particular, accommodations in the close suburb of the city, like the area Bowburn, are much cheaper than in downtown, and public transportations are very convenient and economical (45 GBP / term for unlimited access). I found my accommodation of ideal price through a local website called "Spareroom" without much efforts. One advantage of this website is you can have sufficient information about the roommates and their preference whining searching around. I was very grateful that I met two kind and interesting roommate who are both PhD students in Durham University of geography, and I had a great time living with them. The only downside of Durham for me personally is the short winter day, the freezing wind and rain, but on the other side, summer and autumn would be extremely pleasant and beautiful there.

For preparation of the internship itself, I read a lot of literature about the project in Durham and wrote a research proposal which included my research background, research questions, hypothesis, methods and a timetable in detail. This is also required by my program in LMU before actual start of my internship, and I found it really helpful and necessary for getting well-prepared and organized for the entire process of my internship. I looked back to my proposal from time to time during the internship, in which way I got myself reminded of the core questions and aims, the overall structure and the well-planned timeline of my research.

At Durham University, my six-month-long master thesis project was co-supervised by Guillaume C. and Susanne R. from the University of Munich (LMU). The research goal is to decipher the evolution of obligate dependence in an epiphytic ant/plant mutualism. I used transcriptomics to identify differentially expressed genes which have potential mutualistic functions in the ant-plant genus *Squamellaria*, and then I looked for key genomic changes of these genes related to the transitions from facultative to obligate mutualisms. In only 4 months, I figured out a thorough workflow of transcriptomic analysis and mastered over ten advanced computer programmes mostly by myself. This experience has converted me from a student who could raise questions from observation, to a researcher who can quickly grasp new concepts and novel methods to solve problems. My transcriptomic analyses revealed a number of significant functional changes underlying the biology of this unique symbiosis, and constituted the core of a first-author paper under review presently. Moreover, during my time at Durham, I also wrote a first-author review article with my supervisor Dr. Guillaume C. entitled 'Using genomics to unravel the evolution of mutualistic symbioses: challenges and prospects' which will be submitted to *Frontiers in Ecology and Evolution* this month. Although I didn't have much background in phytology especially plant physiology, I found the lecture course about genomics I had in LMU before my internship really helpful for my later transcriptomic analysis in my project. It helped in the way that, although most of the analysis programs I needed for my project are new to me, I was able to quickly understand the main purpose and inner logic of these tools. Moreover, solving some practical problems I met when performing those analyses by myself also gave me deeper understanding of the theoretical knowledge that I learned in the genomic lectures.

The most challenging part in my internship, besides learning the novel analysis programs, is evaluating and summarizing the functions of all the genes I found specially expressed in the

plant *Squamellaria*. Without enough background and knowledge of plant physiology, it was not easy and straight-forward for me to know by intuition and experience which genes were related to key functions and were interesting in terms of the mutualistic interaction that we are concentrated in. Therefore I worked very hard to gain knowledge in this area quickly in the meantime when performing my analysis, and I planned to learn plant physiology thoroughly in the vacation before I start my further research career in plant science, as I found a good reserve of such basic knowledge very important and affective for any research project.

Besides working on my own project, I also joined the weekly seminar in the department which invited many biologists with brilliant research works in various aspects of the subject to share their work and thoughts. I also met many other PhD and master students in biology, chatting with them about their work and student life was also very interesting and inspiring for me. Out of my major, I also got the chance to meet other students of Durham University by joining the university orchestra (Palatinate Orchestra) and rehearsing every Saturday in the college. Many of them are also international students, and it was great fun to make music together with them and share cultures from all over the world in the terms of music. Musical and artistic life in Durham is especially rich if one has such interests, as Durham University is also famous for its music education in various aspects. In the end of the semester, my orchestra performed a whole concert in the ancient Durham cathedral and city hall, which is absolutely one of the highlight moments in my time in Durham.

It was a pity though, as I lived off campus in a self-rented apartment and was quite busy with my internship during my stay, I didn't get many chances to join the college life in Durham University, which is a special culture of the university. The college system in Durham University is ancient and unique in England. I would sincerely recommend for potential future students going to Durham to experience this aspect of life in Durham if possible, in which one can easily join any activity you can imagine in the city, from sports, music to historical trips around Durham. One important starting point is the first week in October every year when all orientational events are organized, and all new students from the world get quickly familiar to all aspects of their university and college. Therefore I think it would be best not missing this week in Durham.

In all, during my stay in Durham, I developed various aspects of my personal abilities, gained my first research experience in plant science which I wish to further work on, got the opportunity to live and work in a complete English-speaking environment and had some really charming time communicate with other international students through music, daily life and work. I would highly recommend the city, the university, and surely the research group of Guillaume C. to any other students who are interested in experience the life in Durham.