

Case Study: Internship

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Which company did you undertake work experience with?

I did an 8-week summer internship with the John Innes Centre International Undergraduate Summer School (JIC IUSS) programme. For my internship I was working with the Matthew Moscou group of The Sainsbury Laboratory (TSL), which is a partner research institution with the John Innes Centre and focuses on plant disease.

How did you go about finding the internship?

I found the internship through an email from the Imperial Biology department.

What was the timescale for your application?

I received the email (opportunity) in October/November and began the application soon after. The deadline for applications was in mid-January, and I received notification of my acceptance a week after. No interview was required.

What was the application and interview process like?

The application process was straightforward. I had to complete a form online and write a statement entailing why I was interested in plant research and how I believed the internship could help my future career. Looking back, I believe the IUSS programme was looking for students who were interested, but not necessarily sure, that they would like to study a PhD and pursue a career in research, a topic on which I myself had been deliberating for a while.

How big was your team and where did it sit in the organisation?

Research teams in the Sainsbury laboratory can be quite big with up to fifteen members. However, the Matthew Moscou group is relatively small with six members, as it is one of three groups that resulted from the split of a bigger research team. I was a summer intern in the lab with my own project, as well as a summer intern on the JIC/TSL programme itself.

What was your role and what did it involve?

As a summer intern, I was allocated my own project investigating the resistance genes present in a resistant barley cultivar to fungal wheat stripe rust. The idea behind investigating this nonhost plant-pathogen interaction is that identified and cloned genes could be introduced into wheat, therefore making the host plant more resistant to wheat stripe rust. Prior to my internship, a cross between a resistant and susceptible barley cultivar was made, and an F2 population was derived from it. For my project, I used cleaved amplified polymorphic sequence (CAPS) markers to test the population for linkage to known resistance genes and phenotyped the population both micro and macroscopically. As part of the research team, I also attended



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monthly lab meetings and gave presentations on my progress. As part of the internship programme, I attended weekly workshops organized by the JIC/TSL PhD students on skills such as science communication and experimental design and analysis.

What was the most valuable thing about your work experience?

The research team was great. My project leader was supportive and gave me lots of advice and background on the research conducted, and I regularly practised molecular techniques such as PCR and gel electrophoresis. I even learned how to use programming languages such as Python and R. The most valuable thing I learned from my internship was the ability to think in different ways in order to solve a problem: whilst the group I was with used genetics to investigate crop resistance, other labs used methods in biochemistry and cellular biology. Solving a problem requires a fine mix of logic and creativity; however, not all methods will necessarily lead to the solution. Nevertheless, the uncertainty this entails gives a freedom to try different methods, and this aspect of research inspires me.

With regards to the IUSS programme on the whole, the most valuable aspect for me was being able to meet other people from starkly contrasting backgrounds and exchange cultures and ideas. As there were only fifteen of us we became a close-knit bunch and supported each other during the ups-and-downs of our 8-week projects.

Do you have any tips for future Imperial students looking to make the most of their summer?

My best advice would be to try anything that interests you, regardless of whether you think you want to pursue a career in that interest or not. It's surprisingly easy to be paralysed by choice – should I go into animal conservation, or would I rather take a totally different route into cellular biology? Until you try, there's no sure way of knowing whether the eventual choice you make is right or not. Furthermore, you will learn soft skills that aren't always taught in the classroom, such as critical thinking and presentation skills. For my part, I wanted to do a PhD, although I wasn't sure if I could handle years of non-stop research, but after my internship I believe I would enjoy doing research, and also that I am better equipped with the knowledge and skills needed to pursue a PhD. I thoroughly enjoyed my internship and strongly recommend the IUSS programme to any life scientist considering a PhD and career in scientific research. Finally I would like to thank the BSPP for sponsoring me, the Matthew Moscou group for supporting my project and the JIC/TSL IUSS for giving me this excellent opportunity.