

UROP: Undergraduate Research Opportunities Programme

A Personal Perspective by Lydia Acquah

Lydia had just completed the second year of an undergraduate degree in medicine, and embarked on an UROP research experience in the summer of 2015 under the supervision of Dr Richard Abel (Department of Surgery and Cancer).

Placement Title: Investigating the Mechanical and Material Properties of Femoral Heads and Their Relationship to Hip Implant Design

My motivations for doing UROP in general and this research experience in particular

There were several reasons why I chose to undertake a UROP placement. Firstly, I wanted to spend my summer working on a fulfilling and rewarding project in an area of research that interested me. This project allowed me to do that whilst combining my interests in surgery, biomechanical engineering and product design in a way that is unlike anything I have encountered before. This gave me a taste of each of the different disciplines and how they were brought together to improve surgical technology and practice.

How I secured my research experience

Having looked into various research groups at Imperial, I found a group whose focus really sparked my interest. I then secured the placement by emailing the research coordinator of the lab stating my interest and asking if there were any opportunities available for the summer.

Preparation I undertook before my research experience commenced

Before undertaking the research placement, I met with my supervisor to talk through potential projects. Once we selected a project I spoke about my current level of capabilities to find out if there were any areas that I would need to read into further in order to be able to get the most out of the experience. As a result, I did background reading on bone material properties and microindentation hardness testing.

Training and other orientation undertaken at the beginning of my research experience

I was trained in bone polishing and received teaching on basic biomechanical engineering concepts as well as how to conduct and write a literature review. Additionally, I observed scanning electron microscopy and microindentation hardness testing.

The skills and experiences gained or enhanced from undertaking my research experience

As a result of doing the literature review, I was able to enhance my ability to search for, read relevant sections of and summarise academic papers which is a skill that will be useful for the upcoming years of my medical degree. Through the placement I was able to practise applying scientific principles to solve problems I encountered during experiments and data analysis. I also learned the importance of correct data interpretation, as raw data from experiments not only needs to be analysed, but interpreted to give meaningful results.

Problems I experienced and how I resolved them

As some parts of my placement involved concepts from mechanical engineering, at times I found it difficult to understand the academic papers in this discipline. In order to solve this issue, I sought help from a PhD student who I worked closely with during the placement who explained the information clearly.

My integration into the research environment

I was very well integrated into the research environment. Being introduced to various members of the group by my supervisor and having a pre-placement orientation around the lab helped me to be integrated into the environment.

How the research experience might influence the remainder of my course and my future career plans

The experience has been an eye-opener into how research works and how much problem solving is involved in a seemingly straight-forward project! This ability to think creatively to solve problems is something I endeavour to carry throughout my course. Working with medics who were able to combine research with clinical practice certainly made a positive impression on me and is something I will consider pursuing in the future.

The best thing about my research experience was

Seeing how the project I worked on had real applications to medical and surgical practice. It helped me to stay focussed, and made the whole experience worthwhile and fulfilling!