

The Jean Shanks Pathology Studentship has not only given me first-hand experience in pathology research but has also given me new skills, both applicable to science and beyond, as well as a new outlook towards science in general.

My project, in the research group of Dr Manuel Rodriguez-Justo in the UCL Department of Pathology, UCL Cancer Institute, was to investigate the presence of macrophages, both M1 and M2 sub-types, in colorectal tumours and their effect on patient outcomes. To do this, I was required to immunohistochemically stain colorectal tumour sections from patients for M1 and M2 markers CD80 and CD68, respectively, and then investigate the clinical data associated with each sample, discovering how varying degrees of macrophage presence may affect patient outcomes.

The main laboratory techniques I was able to learn about and experience were immunohistochemistry, slide mounting, microscopic examination and slide scanning, all techniques I was not at all familiar with prior to the studentship. After my supervisor, Mr Dominic Patel, explained the concept and steps involved in the process of immunohistochemistry and the subsequent processing of slides, he then demonstrated it in person for me to observe. I was then able to carry out the procedure myself under supervision using test samples before being able to immunohistochemically stain and process the real samples without supervision. My supervisor was an excellent teacher in that he was able to incrementally increase my independence in carrying out the work, giving me the confidence required to comfortably navigate the laboratory environment and carry out work by myself. Additionally, he answered any questions I had, no matter how trivial they seemed. Consequently, I can say with confidence that I now know how to immunohistochemically stain sections, mount and scan slides and use a microscope.

In addition to these hard skills, I was able to develop my ability to problem solve – when staining for CD80 was unsuccessful in the first attempt, the staining protocol had to be reoptimised. I tried four different protocols before one of them resulted in clear and distinct staining. This required an understanding of the factors involved that could affect the staining process, so that they could be appropriately adjusted in a targeted way to give the desired result. This experience taught me that scientific research is not a straightforward process – there are often obstacles that need to be addressed and overcome when experiments do not follow the intended plan.

Prior to the studentship, I had underestimated the hard work and patience required in science. Learning the required techniques and honing my ability to perform them to just prepare my slides for computational analysis taught me that scientific research is a process of slowly working at a problem and waiting before results are seen and questions are answered. Having enjoyed the studentship summer and determined to obtain results for the project, I am hoping to resume work on my project and extend the insightful experience I had this summer so that I may continue to learn, both about my project and myself.