

A UROP perspective by Varshini Packiyathan

Summer 2023 (undertaken in the Department of Bioengineering)

Varshini was a year 2 undergraduate at Imperial College London in 2022-2023: MEng Biomedical Engineering, Department of Bioengineering.

UROP title: Delivery of a novel metallodrug into the brain for Alzheimer's using therapeutic ultrasound

I was initially introduced to the concept of engaging in an undergraduate research opportunity (a UROP) when a fellow student in our study groups mentioned it to me. At that time, I was still uncertain about whether research was the right path for me. My decision to pursue a UROP stemmed from this uncertainty.

My journey began by exploring the Bioengineering department's website, specifically the section dedicated to Academic and Research staff. It was there that I discovered Dr. Sophie V Morse's profile, and her research piqued my interest, especially due to its relevance to the Neuroscience module I had taken in Year 2.

I chose this particular research project because it delved into a relatively uncharted territory, particularly concerning the utilization of therapeutic ultrasound. Alzheimer's Disease, being the most prevalent form of dementia without a cure, presented a pressing need for innovative treatment approaches. Focused ultrasound and microbubbles emerged as the sole non-invasive, targeted, and reversible method for opening the blood-brain barrier.

During this UROP, my tasks involved working with brain slices, wherein a novel cobalt-based drug, referred to as the metallodrug, was administered to mice with Alzheimer's disease. This experience enabled me to develop proficiency in techniques such as immunohistochemical staining, fluorescence microscopy, and image quantification using ImageJ.

My UROP experience proved invaluable in providing me with a glimpse of what a career in research entails. I thoroughly enjoyed participating in the weekly lab group meetings and learning from my peers. Excitingly, the work I contributed to will be featured in a forthcoming research paper in a Neuroscience journal by the end of the year.

I wholeheartedly recommend a UROP to anyone who harbours doubts about pursuing a career in research. I assure you that it will be a decision you won't regret!