

A UROP perspective by Khushleen Kaur

July – August 2024 (undertaken in the Department of Chemistry)

Khushleen was a Year 3 undergraduate at Imperial College London in 2023-2024: MSci Chemistry with a Year in Industry, Department of Chemistry.

UROP title: Design and development of novel antimicrobial agents using *in silico* methods

My enthusiasm for Drug Discovery and Development has driven me to actively seek out and embrace opportunities to deepen my understanding in the area. My UROP experience, which focused on the early stages of drug discovery, provided valuable insights into academic research and was profoundly rewarding. Having enjoyed using PyMol in my Medicinal Chemistry modules, I was eager to delve into the computational aspects of drug discovery. In a time where coding and data analytics are increasingly valuable, I saw molecular modelling as a crucial skill set to develop. While I was already familiar with PyMol, Python and MATLAB, exploring Molecular Operating Environment (MOE) Software, was a novel and deeply fascinating experience.

The UROP enabled me to refine crucial skills, including confidence, resilience, and a passion for Chemistry. The experience of writing a literature review, report, poster, and presentation has equipped me with transferable skills that will be invaluable for future projects and assignments. These activities not only enhanced my scientific communication skills but also prepared me for the rigorous demands of advanced academic research during my master's year and the PhD which I hope to undertake.

The most valuable lesson I learned was the importance of being independent, whether it meant establishing my own objectives, assessing my progress, or relying on my own judgment to complete tasks. My supervisor, Dr Ravi Singh, was a tremendous source of inspiration throughout the UROP. His passion and motivation in his work and his positive outlook on both his academic and professional experiences were incredibly encouraging. Two years ago, pursuing a PhD wasn't even on my mind, but the positivity and encouragement I received during those six weeks have made it something I am now considering for the future. Dr Singh's mentorship was invaluable, offering guidance and insights that have shaped my academic aspirations. One aspect I particularly enjoyed was the opportunity to apply and refine my organic chemistry knowledge through exam questions and ongoing discussions with my supervisor. These conversations were both enlightening and engaging, as they introduced me to new perspectives and explanations of concepts I had not previously considered.

I highly recommend that anyone considering a UROP should take the opportunity. It provided an excellent way to spend my summer immersed in Chemistry, exploring various areas of my degree that are not typically accessible during term time and fostering significant personal and professional development. The UROP has significantly influenced my academic and professional journey, motivating me to thrive and pursue excellence in my field. I am excited about the possibilities that lie ahead and am eager to contribute to innovative projects that can make a meaningful impact on global health.