A UROP perspective by Moyu Honjo
Summer 2025 (undertaken in the Department of Bioengineering, Imperial College London)

Moyu was a 3rd year undergraduate at Imperial College London in 2024-25: MEng Molecular Bioengineering, Department of Bioengineering

UROP title: Exploring Pigmentation Pathways in Bacterial Cellulose

My UROP journey began after attending a guest talk on plant synthetic biology hosted by Dr Naomi Nakayama. The talk was fascinating, and I hoped to work in her lab over the summer. As she was in the process of leaving Imperial and couldn't take any students, she connected me to several other PIs doing similar synthetic biology work. Among them, Professor Tom Ellis's project on self-pigmented bacterial cellulose immediately caught my attention.

Through UROP, I wanted to get hands-on research experience and see what day-to-day life in a lab is actually like. Synthetic biology really appeals to me because of its ability to create new functions with real-world applications. Bacterial cellulose, especially with pigmentation and potential functionalisation, felt like a perfect project that combined creativity with technical depth.

I emailed Prof. Ellis, and he generously offered to interview me. As a molecular bioengineering student who has taken his *Foundations of Synthetic Biology* module, I would have some background knowledge by the summer, so it gave a bit of an advantage. During the interview, I shared what aspects of his research excited me and what I hoped to explore in a UROP project. He was enthusiastic and said, "Nice, we can try that." And that's how I got my UROP!

Before actually starting, I met with my day-to-day supervisor, who introduced her current work and suggested a few aspects which I could contribute to. After reading several relevant papers and discussing ideas, we agreed on a main project and several backups.

Over the 8 weeks, I learned a huge range of practical lab skills, from Golden Gate assembly and bacterial transformations to reading protocols and using equipment I had never touched before. One of the most important lessons I learned was to ask questions. As an undergraduate, no one expects you to know everything, and people are happy to help. It's far better to "sound silly" for a moment and get it right, than to stay quiet and make mistakes.

UROP also taught me more general useful skills in a lab, including writing my own protocols, planning experiments for limited timeframes, documenting experiments in every detail, and presenting updates on a regular basis. These skills will be invaluable for my upcoming final year project. More broadly, the experience has given me insight into research culture, which will help me decide on future career path, either towards academia or industry R&D.

Lastly, I would like to thank everyone in the Tom Ellis Lab for their kind support throughout my UROP time, and especially my day-to-day supervisor, Anupama, for her patience and guidance. She taught me not only all the technical skills I needed but also guided me through problems I faced and helped to solve them together. Overall, my UROP has been an incredibly fun and rewarding experience! If you enjoy practical lab work or want to know what it is like to be in a research environment, I would definitely recommend applying for a UROP.