

UROP perspective by Nuoxi Yu

Summer 2025 (undertaken in the School of Public Health, Imperial College London)

Nuoxi was a 2nd year undergraduate at Imperial College London in 2024-25: Biological Sciences

UROP title: Identification of Core Metagenomic for London Wastewater

At the end of my second year, after completing many modules, I realised that my strongest interests lay in epidemiology, virology, and global health. Motivated by this, I began reaching out to academics within Imperial's Faculty of Medicine and specifically the School of Public Health. After sending several emails, I contacted Professor Nicolas Grassly from the Vaccine Epidemiology Research Group. Professor Grassly kindly forwarded my enquiry to Dr Alex Shaw, who later became my supervisor. We met online a few times to discuss potential projects, and I was offered the opportunity to join the group and work on a study comparing Turbo and No Turbo treatments in wastewater metagenomics, looking at how different protocols influence microbial diversity, community composition, and sequencing outcomes.

During my two month UROP, I learned many advanced laboratory techniques. One of the most fascinating experiences was using Oxford Nanopore's MinION sequencing platform. I had only encountered this technology in lectures where it felt distant and abstract, yet through hands-on practice I was able to master the workflow and appreciate its precision. This gave me confidence in applying cutting edge tools and made me see how theory and practice connect.

Beyond the technical training, what I valued most was the chance to interact with people at different stages of their careers. My co supervisor Dr. Ben Bellekom was especially supportive, teaching me laboratory skills while also encouraging me to think critically and more independently about research. Conversations with postdocs and researchers in the group gave me valuable insights into their academic journeys, the challenges they faced, and how they made career choices. For me, as an undergraduate at a crossroads, these discussions were both inspiring and thought provoking. They helped me reflect on my own future and made me realise that I want to continue exploring research and pursue further study.

Weekly group meetings were also a very good part of my UROP. Listening to different projects broadened my perspective and showed me that a research group is not an ivory tower but a place filled with opportunities and challenges where progress is made step by step. Experiments often had very little tolerance for error, yet the process also showed me that both science and life allow space for resilience and second chances. Through these experiences, I not only developed practical skills in molecular biology and data analysis but also gained a clearer sense of purpose and motivation for the path ahead.