

Intern Diary

Science in the gardens



Figure 1: Day trip to the MSB



Figure 2: Sunshine in the waterlily house

I came to this internship to bring the quantitative and genomic skills I developed during my master's into a real research environment and to learn directly from scientists working to protect plants and ecosystems. The opportunity to do this at the Royal Botanic Gardens, Kew was especially exciting, given its global role in plant science, conservation, and plant health.

During the internship, my project focused on resistance to ash dieback in ash trees. I developed simulation frameworks to explore how different selection strategies in a breeding program could influence the long-term improvement of resistance in ash populations. Specifically, I compared genomic selection, phenotypic selection, natural selection, and random selection approaches. To do this, I incorporated both SNP effect sizes estimated from previous empirical data and effect distributions based on heritability estimates of the trait, allowing me to explore how different underlying genetic architectures might influence breeding outcomes. These simulations helped illustrate the potential benefits and limitations of different strategies for accelerating resistance breeding while maintaining genetic diversity ([GitHub](#)).

Alongside the simulation work, I also gained hands-on experience working with genomic data. I analysed genomic data from ash roots, carried out SNP calling and phasing, and became more comfortable handling large genomic datasets and integrating them with phenotypic information. I also spent time in the lab, which helped me better understand how the data I was analysing are generated in practice and how experimental design influences downstream analysis.

Overall, the internship strengthened my ability to work across computational and biological aspects of plant science. I gained confidence using genomic tools and analytical pipelines, improved my ability to translate



Figure 3: The pagoda above the trees

biological questions into quantitative models, and developed a better understanding of how modelling approaches can support practical decisions in plant health and resistance breeding. Just as importantly, working alongside researchers and plant health specialists helped me see how genomic and quantitative methods can be applied in real-world efforts to safeguard tree populations and forest ecosystems.



Figure 4: Lunch walks



Figure 6: An ash tree

One of the highlights of the internship was the people I met and learned from. Everyone I worked with was generous with their time and knowledge, and being around researchers and plant health specialists who care so deeply about their work made the experience both welcoming and inspiring.

I also loved how each week connected different parts of plant



Figure 5: Treetop walk

science. Spending time in the gardens and glasshouses at the Royal Botanic Gardens, Kew and then returning to analyse genomic data made it feel like everything was part of the same story. Seeing how living plant collections, lab work, and genomics come together to understand and protect plants made the experience especially meaningful.

This internship confirmed that I want to continue building a career in the life sciences. It

also helped clarify the skills I want to develop next, particularly in machine learning and model development, so that I can build stronger tools for analysing biological data and understanding complex traits.

Thank you to everyone for making it such an enjoyable experience