

# CFP Science Project Internship – Elm Tree Project

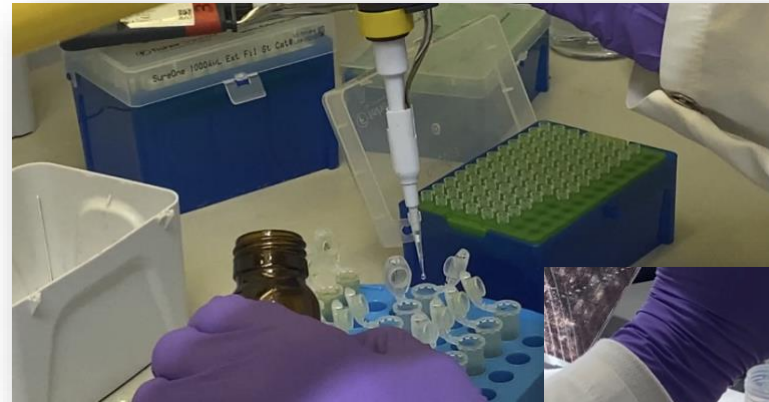
By Camila Quintero-Berns

## Working in the Molecular Lab and DNA extractions



My elm tree project involved carrying out DNA extractions from elm tree leaf samples

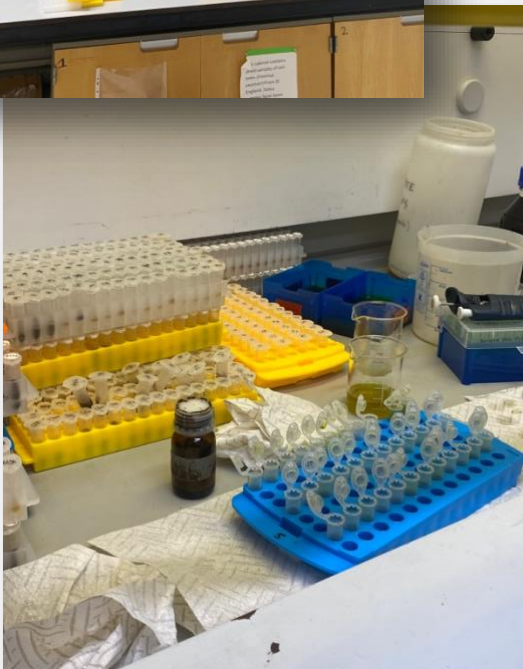
As part of my project, I had the opportunity to work in a molecular lab, and gain several practical skills and learned how to use specialised equipment



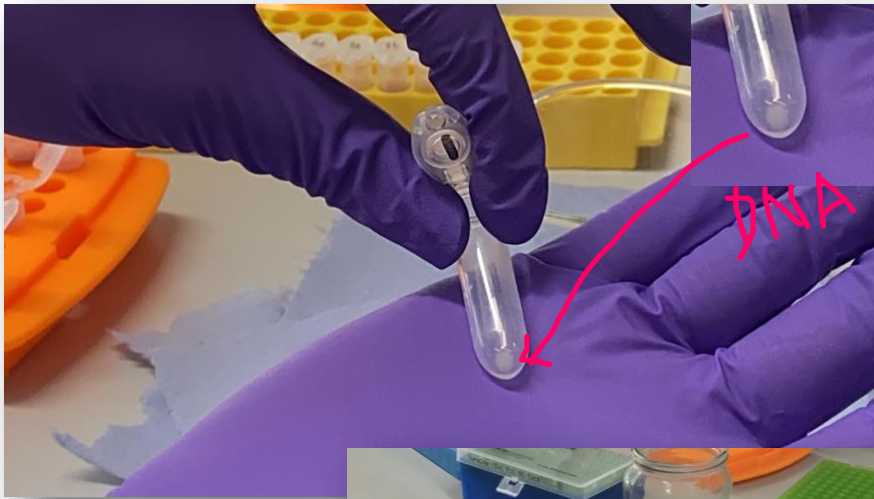
After breaking down the plant material, the DNA was separated from the unwanted cellular debris, and extracted by following a series of steps described in the protocol



To do so, I used equipment such as pipettes of different volumes, a grinder, vortex, water baths, centrifuge, and a vacuum



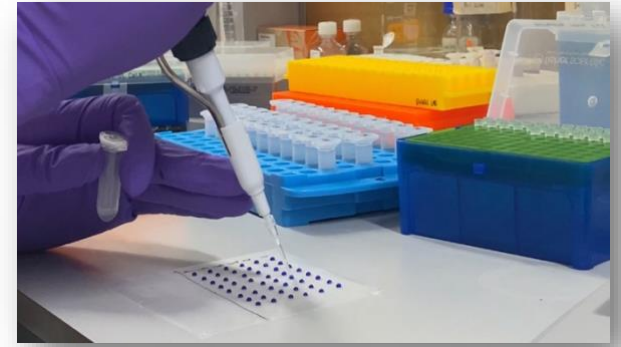




After extractions, the DNA needed to be quantified to determine its purity

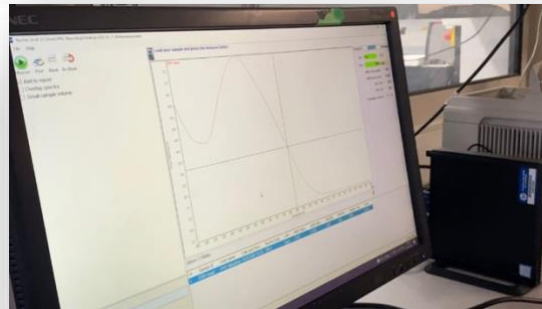
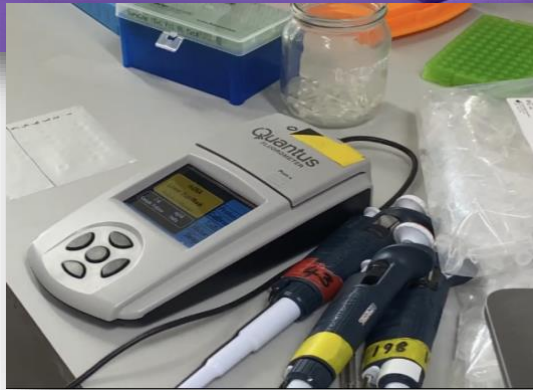
Various methods were used to quantify the DNA concentration from the samples

Each required a standard solution and a blank

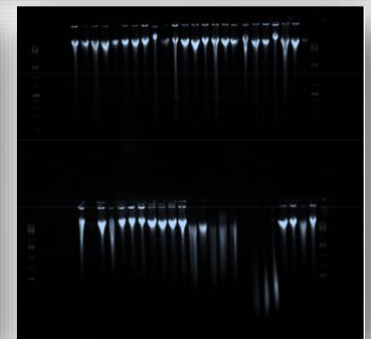
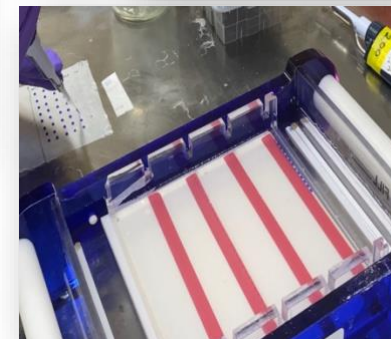


Fluorescent dye was added to the DNA samples and an Agarose Gel was made to later observe the DNA ladders under UV light

Dye was added to the samples and their DNA was measured using a Quantus Fluorometer

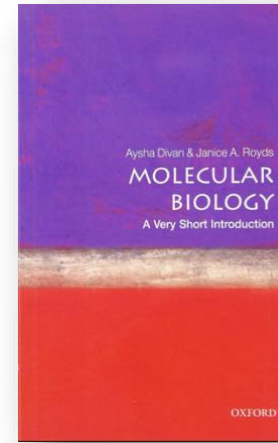
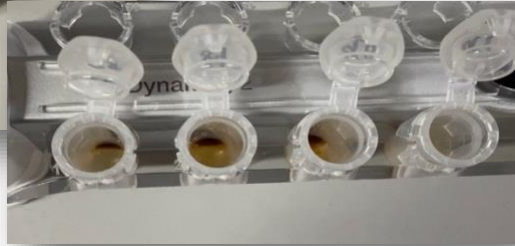


A Nano Drop was also used to determine the concentration of DNA in the sampled, as well as any other contaminants present





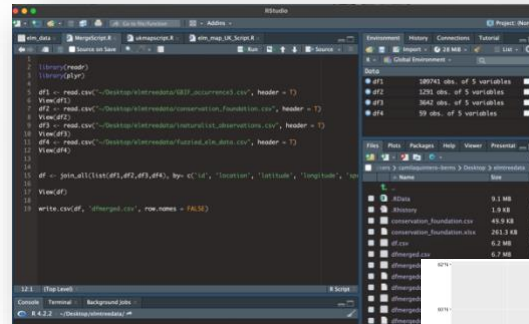
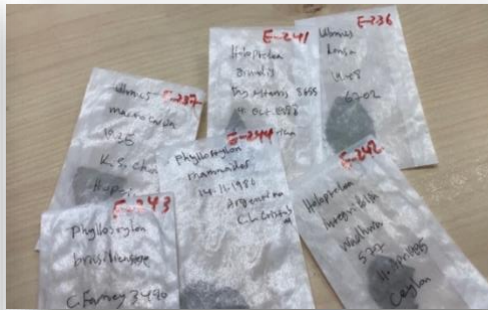
When the absorbance ratio indicated the presence of waste compounds in the samples, I learned about the use of magnetic beads to further “clean” and purify the DNA



As I didn't have a strong background in molecular biology and genomics prior to the internship, I would research and use resources, such as short introduction books, to further my understanding

I also read up on the underlying processes occurring during the different stages of the DNA extractions

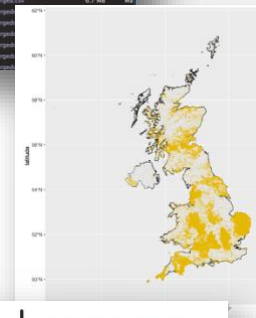
## Data and Bioinformatics



I also gathered, reviewed and compiled data from existing data and resources, detailing living and surviving elm trees across the UK

My project also involved handling and reviewing data

For example, I would input the data of the leaf samples collected from the Herbarium or from the field into Excel, such as their ID number, date of collection, species name, location, and name of collector



I merged and cleaned this database to create a map, by writing scripts, and using packages and functions on data analysis software such as Microsoft Excel and R Studio

Collector(s)	Collector Number	Date of Collection	Country
C. T. Cristofari	124	14-Nov-1986	Argentina
Sobrin C.A.	1305	21-Nov-1987	Brazil
R. B. Peacock	568	30-Aug-1981	Virgin
Wadhwa	577	11-Aug-1991	India
K.S. Chow	8653	04-Oct-1988	Central
Payson	3490	28-Jun-1991	Brazil
C. Farney	7580	+	+
	6702	+	+
P. Acevedo-Rodriguez	7339	13-Jun-1995	+



When cleaning the data, I learned to categorise the taxonomy of the elm trees, and identify their ‘Accepted Name’ using websites such as IPNI, and Plant of the World Online (Kew)



# Exploring Kew



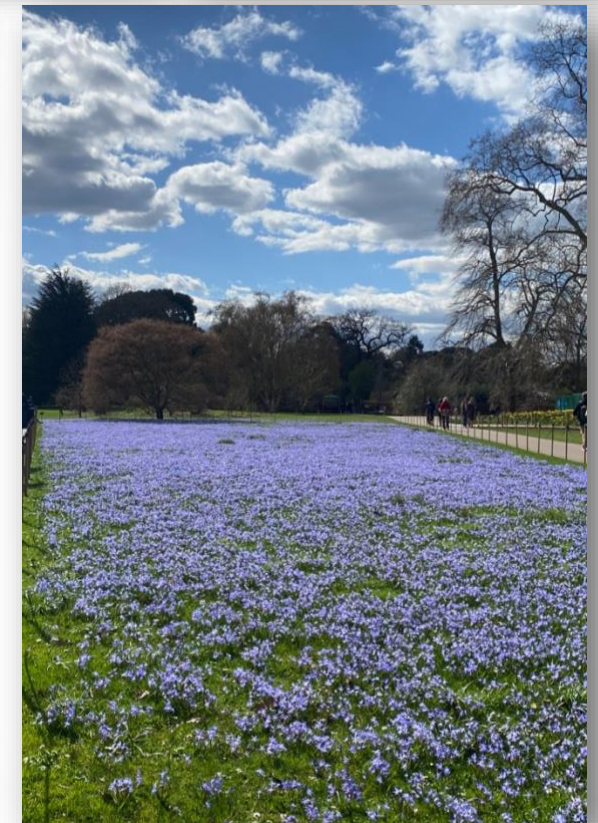
Besides working in the lab and office, I got to explore the gardens during my breaks



I visited the greenhouses and tropical nursery, saw amazing plants and trees, and had encounters with the local wildlife



And even watched how the gardens changed from winter to spring





## Trip to Forest Research – Alice Holt



The visit provided an opportunity to meet researchers and staff at the Centre of Forest Protection to discuss their work, and participate in science communication activities



We walked around the site and learned about the different staff roles and work carried out in the field

