JAMES RENNIE BEQUEST

REPORT ON EXPEDITION / PROJECT / CONFERENCE

Expedition/Project/ Conference Title: Does Gene Duplication Drive Morphological Diversity?: Building Genomic & Molecular Toolkit in Begonia

Travel Dates: 08/04/2024 to 13/04/2024

Location: Heidelberg, Germany

Group member(s): Lucy Turnbull

Aims: To present PhD research, receive feedback, and meet potential collaborators

Photography consent form attached: *(please refer to your award letter)*

☒ Yes
☐ No

OUTCOME (a minimum of 500 words):-

The support from the James Rennie Bequest allowed me to attend my first international conference, "Diversity of Plants: From Genomes to Metabolism," at the European Molecular Biology Laboratory (EMBL). This inaugural conference featured research from all levels of academic positions, showcasing a true representation of plant diversity.

Through my PhD work, I aim to assess whether gene duplication drives morphological diversity in plants. In short, does having multiple copies of the same gene allow one copy to gain a new function, leading to greater phenotypic differences between species? To investigate my hypothesis, I am using Begonia as a model system due to its wide morphological diversity and the presence of a whole-genome duplication event at the base of the family. As few molecular studies have been conducted in this ornamental crop family, my work focuses on building a toolbox of molecular techniques previously established in food crops. The ‘Diversity of Plants’ conference was the first time I could focus on both my thesis question and my techniques of interest.

As I develop new plant biotechnological tools, discussing my work with other researchers is essential for development. Many attendees came from related fields, either working on non-model crops or developing gene editing tools, so I received vital feedback on my presentation. Questions about my tissue culture work provided insight into additional data I should include in my upcoming paper. The advice I received after the talk also helped me identify controls for future experiments and alternative routes if my planned experiments do not work.

In addition, I heard exciting work from multiple fields on plant diversity. The conference had a strong focus on metabolism, with new research on biotechnological tools to characterize gene functions and modify their expression for production use. I was able to hear a keynote talk from researcher Professor Anne Osborn, who discussed her work on production of natural plant products from discovery, elucidation to engineering, where all aspects are applicable to my research. Additionally, the final invited speaker, Dr Edwige Moyroud, also works on non-model ornamental species, investigating floral morphology. It was highly valuable being able to how she approached developing usful biotechnological tools in another non-model crops, also looking at diversity between species.

JAMES RENNIE BEQUEST

Attending the conference was also a great moral booster. I received advice on how to approach my final year of study and managing a future scientific career. I made connections with other early-career researchers whom I am still in contact with.

The conference was essential for building my communication skills as an early career researcher. I have had few opportunities to present my work outside my institution, meaning I have only presented to colleagues familiar with my research, with whom I am comfortable. Presenting at the conference, and being one of the few PhD students to do so, allowed me to grow my presentation skills outside my comfort zone. I focused on making my research accessible to plant scientists from various backgrounds and knowledge levels.The impact on my presentation skills is clear; I subsequently won the best plant science presentation at the University of Edinburgh's Biological Post-Graduate Research Symposium. This achievement would not have been possible without the James Rennie Bequest, which allowed me to attend my first international conference.