

JAMES RENNIE BEQUEST

REPORT ON EXPEDITION / PROJECT / CONFERENCE

**Expedition/Project/
Conference Title:** Investigating the origin and dispersal of Third Pole crops

Travel Dates: 27/06/2026 to 25/07/2026

Location: Kunming Institute of Botany, Yunnan, China

Group member(s): Tiye Salgado Swabey and Tobias (Toby) Cullen

Aims: To learn new practical skills in plant phylogeography to investigate the origin and dispersal of selected Third Pole crops

Photography consent form attached: ☐ Yes
(please refer to your award letter) ☒ No

OUTCOME (a minimum of 500 words):-

Toby and I spent almost a month in the Kunming Institute of Botany (KIB) in the province of Yunnan in south-western China. We joined Professor Liu Jie's group who work on plant phylogeography, taxonomy and biogeography.

The Kunming Institute of Botany and Professor Liu's group have had many long-standing collaborations with staff from the University of Edinburgh and the Royal Botanic Gardens, Edinburgh (RBGE) - there is even an RBGE office in KIB for visiting RBGE staff! I had never been to China before, let alone anywhere else in Asia, but Professor Liu's group, and Professor Wu's group with whom we worked closely, host many visiting researchers and international students and both groups made us feel immediately welcome

We both worked on our own individual projects following the same methods used in Liu et al., *Multi-scale evolutionary forces shape the phylogeography of an Old World disjunct plant genus Girardinia (Urticaceae)* (2026).

I looked the origin and dispersal of Tartary buckwheat and Toby looked at the origin and dispersal of Tibetan qingke barley. On the day-to-day we were co-supervised by Chumei Liu an MSc student working on Juglandaceae and Amos Kipkoech a PhD student working on Urticaceae.

First we downloaded whole genome sequence data deposited in NCBI from samples of each species (and their relevant outgroups) taken from different provinces across China and Nepal then extracted the plastid genome from the raw sequence data for the phylogeographic analyses. This took a surprisingly long time using university's high performance computer. Whilst we were waiting for our data to download, we went for lots of walks around KIB's botanic gardens (where COP15 was co-hosted in 2021) had delicious lunches in the university canteen and even visited the largest seedbank in Asia which was only a few floors down from our office!

After extracting and downloading our plastid genome sequences we quality controlled them using Bandage and annotated them using Geneious Prime. We then aligned our annotated sequences using MAFFT and used DnaSP to extract haplotype blocks from to perform phylogenetic, haplotype network and principal component analyses.

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Neither of us found any differences in the genetic diversity of individuals sampled from different parts of China and Nepal, likely because we were working with sample sizes < 100 and our samples were a mix of wild and cultivated individuals. However, now that we have been trained in how to perform phylogeographic analysis it would be very valuable to repeat the project(s) with more complete datasets.

In addition to the project itself, Professor Liu organised a field trip to north-western Yunnan to collect Urticaceae samples which gave us the opportunity to explore the ancient town of Dali and the surrounding countryside. July is peak wild mushroom season in Yunnan, known as the kingdom of mushrooms, so mushrooms featured heavily on most menus; we were even given some by a friend but were warned not to try and cook them ourselves as they can be highly toxic if not prepared properly!

Back at the university we attended a brilliant selection of guest lectures given by visiting academics ranging from spatial distribution modelling to collating the flora of Kazakhstan. I particularly enjoyed a lecture given by Professor Marco Leonti from the University of Caligari on how to write an ethnobotanical paper.

After work we would often go for dinner with friends or colleagues from our lab group; we tried a wide range of different foods from several different phyla! My favourite meal was our final meal with friends and colleagues from the lab - a lamb stew from a halal restaurant that serves food from Gansu province in northern China.

On Thursday evenings we played football with the university team at Kunming Institute of Zoology, the football team was very diverse, with staff and students from a dozen different countries all playing together. The floodlights of the football pitch attracted a number of interesting moths, perhaps the most spectacular of which was the Chinese Moon moth which meant Toby was often looking up rather than at the ball!

We are both very grateful to the James Rennie Bequest committee for supporting our projects in China. Our time in KIB was hugely fulfilling on many levels, the institute was an exciting and inspiring place to work in - the experience has given us lots to think about post-graduation!