

Investigating the link between circadian rhythms and ploidy level in cultivated and wild wheat species

A Hall Group

A circadian clock is an internal oscillator entrained by external temporal cues. Clock function has been implicated in plant resilience, resource-use efficiency, competitive growth and yield. Understanding how the clock functions in crops such as *Triticum aestivum* (bread wheat) therefore has great agricultural potential.

T. aestivum (AABBDD) is a hexaploid species, formed through the hybridisation of *T. turgidum* (AABB) with the wild wheat species *Aegilops tauschii* (DD). The partitioning of circadian control between the three genomes in wheat is not yet understood. Is the pace of the clock determined by control from a dominant genome or is a compromise achieved by the balance of gene expression shared between two or more genomes?

Preliminary data from our group (unpublished) suggests that there may be differences in the circadian periods of *T. aestivum* cultivars and their wild and domesticated relatives. Within this project we hope to build on this data to investigate the link between circadian rhythms and ploidy level in wheat species.

This project should equip the student with a suite of imaging and molecular lab techniques valuable to a future career in research. The student will also develop skills in experimental design, data analysis, project planning and effective communication.