

2023

PhD research opportunities

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The successful candidates will receive:

- A \$35,000 p.a (tax-free) scholarship up to three and a half years
- Training in Australia's first integrated agricultural systems biology research centre, AgriBio
- Professional development programs
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The research projects is based at AgriBio, the Centre for AgriBiosciences, Melbourne Australia

Successful applicants must meet the La Trobe University entry requirements for a Doctor of Philosophy degree.

Check your eligibility here:
<https://www.latrobe.edu.au/study/apply/research/doctor>

For enquiries and to apply, please forward a covering letter, your curriculum vitae (please include evidence of research writing) and academic transcripts to:

Kendra Whiteman

Higher Education Manager

Agriculture Victoria Research
kendra.whiteman@agriculture.vic.gov.au

Closing date for applications:
until filled

Current Projects:

Investigating Haplotype Structures in *Eucalyptus globulus* Breeding Populations: Reconstruction of Founder Haplotypes, Genomic Breeding, and Early Domestication Impacts.

Meeting Australia's climate commitments and keeping up with demand for wood products, bioenergy, and ecosystem services requires new discovery and innovation. *Eucalyptus globulus* Labil. (Blue Gum) is the premiere temperate plantation species and a critical resource to enable transition from native forest supply. Genetic improvement of forest trees has proven one of the most reliable and effective means of increasing the productivity and quality of the forest estate. The application of new technologies, such as genomics, have huge potential to enhance the efficiency of tree breeding programs and substantially increase productivity and estate quality. To achieve this there is a pressing need to understand the underlying genetics in the breeding programs.

PhD Project Aims -

- Generate and analyse high-quality genotyping and sequencing data from diverse Blue Gum populations to construct comprehensive haplotype profiles.
- Develop methods to infer and reconstruct founder haplotypes of *Eucalyptus globulus* breeding populations, enabling insights into the historical genetic composition.
- Analyze the distribution of haplotypes, assess haplotype diversity, and investigate haplotype block structures within and among breeding populations.
- Examine the genetic consequences of domestication on genome diversity, haplotype patterns, and selective sweeps.
- Develop novel genomic breeding approaches that leverages haplotype information for more efficient and precise selection of desirable traits.

This PhD student will investigate the underlying genetics in the Australian national Blue Gum breeding populations to unravel the impacts of early domestication on genome diversity and structure, and find new ways to breed using this knowledge.