



School of Plant Science



6 PhD Scholarships in eucalypt genetics (2 full, 4 top-up)

Eucalypts are the dominant native forest trees of Australia but cultivated world wide. There is great national and international interest in their genetic characteristics, as such information will provide invaluable insights into their evolution, conservation requirements and industrial breeding potential. The USA Department of Energy together with the Eucalypt Genome Network is currently producing a full genome sequence of a eucalypt which will be released in 2010, making this group the second tree genome to be sequenced. We are actively involved in the International Eucalypt Genome Network and are at the threshold of major advances in our understanding of this genome, the genetic control of traits of adaptive and economic significance, and the impact which genetic variation in these foundation trees have on dependent native communities and ecosystems. **We are seeking highly motivated PhD students to join our multi-disciplinary team of researchers, focussing on the integration of both quantitative and molecular genetic approaches to address key issues in eucalypt genomics, breeding and evolution.**

Genetic architecture of species divergence and hybridisation

A University of Tasmania Scholarship (APAI rate) is available to back a recently awarded 4-year ARC Discovery grant. The project will use state-of-the-art high-throughput genomic technology in a model system of closely related species of *Eucalyptus* to assess: 1) evolutionary relationships, 2) identify regions of the genome associated with species divergence, 3) extent and nature of the genetic exchange between species in natural forests, and 4) phenotypic and fitness consequences of such gene exchange.

Genetics of survival and growth in a changing environment

As part of an ARC Linkage grant, an Australian Postgraduate Award Industry (APAI) Scholarship is available to study the genetic control of survival and growth of Australia's major plantation eucalypt, *Eucalyptus globulus*, in traditional and water-limited environments. With southern Australia facing drier conditions through climate change and the increasing requirements of land for reforestation and carbon capture, there is an urgent need to understand the potential for adaptation in forest trees and the genetic opportunities that exist to maximize productivity in diverse environments. The student will work with Australia's national tree breeding cooperative (STBA) and industry, as well as international collaborators from countries such as Portugal and Spain.

Genomics of eucalypt wood properties

A [CRC for Forestry](#) top-up scholarship is available for an exciting PhD research project involving the development of genomic technology that benefits tree improvement. The project involves a large population of *Eucalyptus globulus* trees that will be used to investigate the association of wood properties and sequence variation in candidate genes. The PhD project will involve developing genomic tools to help choose better candidate genes, conduct association genetics, validate associations, and integrate molecular and quantitative information into breeding programs.

Genetic diversity in eucalypts

A [CRC for Forestry](#) top-up scholarship is available to examine genetic differentiation between *Eucalyptus obliqua* populations across the species' native range to improve seed transfer guidelines and provide base-line data on genetic diversity to compare managed and unmanaged native forests.

Gene flow from eucalypt plantations

With the rapid expansion of eucalypt plantations in Australia over the last decade, there is an urgent need for strategies to assess and manage the risk of exotic gene flow into native eucalypt populations. A [CRC for Forestry](#) top-up scholarship is available for a project assessing the risk from either *Eucalyptus nitens* on the island of Tasmania or *E. globulus* plantations across southern Australia.

Eucalypts as foundation species: community and ecosystem genetics

Community and ecosystem genetics bridges the fields of genetics and ecology and studies the flow-on effects that genetic variation in foundation species such as trees has on dependent communities and ecosystem processes. A top-up scholarship is available for an APA scholarship holder to back an ARC Discovery grant studying the link between genes, phenotypes and dependent communities in our well-studied eucalypt systems.

The APAI scholarships are \$26,140 tax-free per year and the top-up scholarships are \$6,133 tax-free per year (2008 rates). All applicants should apply for an [APA scholarship](#) or other [relevant scholarship](#) offered by the University of Tasmania, as well as the Scholarships indicated. An application form, supporting documentation including a CV and the referees report forms must be received at the University of Tasmania by Friday 31 October 2008

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