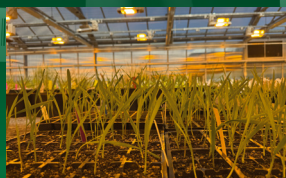




# PLANT SYNBIO AUSTRALIA

TRANSFORMING  
AGRICULTURE AND  
BIOMANUFACTURING  
THROUGH PLANT  
SYNTHETIC BIOLOGY



## Plant SynBio at La Trobe University

[plantsynbio.au](http://plantsynbio.au)

The Plant SynBio Australia Node at La Trobe University is located in the Agribio Building at the Bundoora campus and is part of the La Trobe Institute for Sustainable Agriculture and Food (LISAF).

The Node specialises in using synthetic biology and bioengineering to advance agricultural, horticultural and medicinal plant species. We provide infrastructure and expertise for research, translation and industry applications, including vector design and assembly, plant tissue culture & transformation, genome editing, molecular, analytical and phenotypic analyses.

Plant SynBio Australia is funded through Bioplatforms Australia under the National Collaborative Research Infrastructure Strategy (NCRIS) and institutional partners



# Synthetic biology and bioengineering infrastructure and expertise

Plant SynBio Australia (PSBA) at LISAF (La Trobe University) offers synthetic biology infrastructure and expertise for research providers, government and industry institutions as a “fee-for-service” as well as providing incubation space for the start-up community and opportunities for collaboration.

Our capabilities span the full synthetic biology cycle including design and assembly of molecular componentry, genome editing, biomanufacturing and plant transformation, and the molecular, analytical and phenotypic evaluation of bioengineered plants in controlled environments or in the field.

We have the capacity to undertake and scale transformation and genome editing in a range of agricultural, horticultural and medicinal plants and our team has know-how in transformation protocol development and optimisation. Our team integrates technical expertise in plant cell and molecular biology, spatial omics and bioinformatics.

## Infrastructure

With fully equipped PC2 accredited laboratories and plant houses, our Node can accommodate end-to-end workflows and activities for creating and analysing bioengineered plants.

## Services and expertise

Plant transformation and genome-editing of crop plants for crop development and biomanufacturing:

- Flexible project design and delivery to accommodate academic and industry research objectives.
- Knowledge and capacity to design and assemble gene constructs optimised for plant transformation and gene

editing in angiosperms (monocots and dicots).

- Gene delivery protocols based on *Agrobacterium* spp. and direct delivery systems (e.g. particle bombardment) for transient and stable transformation.
- Plant transformation and recovery of transgenic and genome-edited plants.
- Propagation of transgenic and genome-edited plants in controlled and contained environments.

Characterisation of transgenic and genome-edited plants:

- Verification of transformation events using molecular tools such as PCR and DNA sequencing.
- Microscopy and histology suite for ultra high-resolution imaging of plant tissue.
- Portable phenomics equipment to enable rapid, non-invasive characterisation of plants.
- Spatial transcriptomics to enable more precise gene expression analysis.

All services and workflows are underpinned by stewardship and traceability systems for quality assurance.

## Ancillary services

Comprehensive molecular, analytical and phenotypic analyses of transgenic and genome-edited plants using affiliated NCRIS facilities (BPA and APPN) and in-house capabilities.

## Infrastructure

- PC2-compliant and fully equipped laboratory for plant transformation.
- Biorad PDS-1000 He Biolistic Particle Delivery System.
- Controlled environment rooms (CERs) and equipment to optimally grow donor plants and *in vitro*-cultured plant material, including:
  - Reach-in growth chambers that can be optimised to suit needs.

- Walk-in CERs for larger-scale plant cultivation and tissue culture, with:
  - flexible shelving to accommodate a range of species.
  - multi-spectral LED lighting.
  - temperature (-20 to 50 °C) and humidity control.
- Environment-controlled PC2-certified growth spaces to propagate transgenic plants.



## Node Director

Professor Monika Doblin

E M.Doblin@latrobe.edu.au

## Contact us

P +61 403 568 873

E PlantSynBio@latrobe.edu.au

Plant SynBio Australia –  
La Trobe University Node  
AgriBio, 5 Ring Road, Bundoora  
Victoria, Australia 3086