Systems Biology

The "4th generation of biotechnology" is concerned with understanding and manipulating cellular behaviour ata system level. Dedicated data science and bioinformatics services that offer data processing to enable the use of 'omics to understand complex links between genotype and phenotype.

Services offered

Our service facilitates a variety of metabolic engineering applications in model and non-model organisms through:

Modelling

- Modelling and analysis of small to large data sets
- Identification of metabolically optimal pathways for targeted products

Molecular phenomics

- Phenotype prediction through stoichiometric and kinetic modelling
- Leveraging 'omics data to predict rate limiting metabolic reactions
- Phenotypic characterization of high-performing mutant strains resulting from random mutagenesis or evolutionary approaches

Data Analysis

- Data processing workflows

We provide systems biology platforms that can be used to answer a range of biological questions. Examples include phenotypic changes in response to a stimulus on a molecular level to strain engineering and design for industrial biotechnology applications.

Integration of multiomics data using metabolic modelling.

Contact

+61 334 63186
aibn.uq.edu.au/bpa

Tim McCubbin
t.mccubbin@uq.edu.au

Robin Palfreyman
r.palfreyman@uq.edu.au

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Rational-strain design and systems biology

Data processing and analytics services

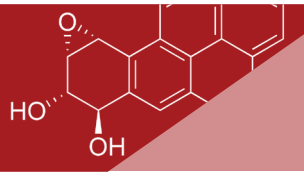
PHENOMICS

- Understanding phenotypes through multiomics integration and visualization
- Genome-scale metabolic reconstruction

FLUXOMICS

- Flux-balance analysis
- Metabolic-flux analysis
- ‘0mics guided flux estimation
- Genome-scale metabolic reconstruction

METABOLOMICS

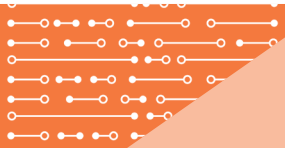


- Identification
- Quantification
- Differential abundance

PROTEOMICS

- Spectral library generation
- Label-free relative quantification
- DDA and/or DIA based quantification
- Differential abundance

TRANSCRIPTOMICS



- Alignment and abundance
- RNAseq *de novo* assembly
- Differential expression

GENOMICS

- Resequencing and variant detection
- de novo assembly and annotation
- Pan-genomics
- Metagenomics

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