



## GLYCOBIOANALYTICAL FACILITY

*The Institute for Glycomics is one of Australia's flagship biomedical research institutes.*

Established in February 2000, through investment from Griffith University and the Queensland State Government, the Institute for Glycomics strives to be a world leader in the discovery and development of next generation drugs, vaccines and diagnostics for diseases of global impact.

The Institute boasts state-of-the-art facilities combined with some of the world's most outstanding researchers with a focus on 'Glycomics', a constantly expanding field that explores the structural and functional properties of complex carbohydrates (sugars).

Glycomics research is conducted worldwide in projects that cut across multiple disciplines, applying new approaches to treatment and prevention of diseases.

The Institute's research primarily targets prevention and cures for infectious diseases and cancer, with a focus on translational research which will inevitably have a positive impact on human health globally.

This rich research environment provides exceptional postgraduate education programs for the world's future scientists.

The Institute also engages with industry, other premier research institutes, philanthropic organisations, and governments from across the globe to build human capital to provide healthcare solutions to address some of the world's most intractable diseases.

The Institute houses a large multidisciplinary pool of expert

researchers and highly trained technical and project management staff, which provides for engagement in complex contract and collaborative scientific programs.

The Institute's unique infrastructure ensures the delivery of timely, cost-effective and innovative projects without compromising on quality.

### Glycobioanalytical Facility

The Glycobioanalytical Facility, housed within the Institute for Glycomics, comprises of two main areas:

- Glycomics Array Facility
- Bioanalytical Suite

These areas work side-by-side for the high throughput screening and determination of glycan-binding profiles of proteins, whole eukaryotic and prokaryotic cells, parasites and viruses, through to characterisation of these binding interactions.

### Glycomics Array Facility

The Glycomics Array Facility was established in 2006 and comprises a microarray manufacturing suite.

The Array Facility has experience, expertise and instruments for the manufacture of contact printed microarray slides. Routinely printed slides include glycan, lectin (carbohydrate-binding protein), as well as custom arrays including amino acid, DNA, oligonucleotide, peptide and antibody arrays.

The Glycomics Array Facility incorporates established glycan and lectin array technologies, and a developing 'glycan-specific'

monoclonal antibody array technology.

The Glycomics Array Facility offers:

- carbohydrate and lectin screening of whole cells and organisms, bacteria, viruses, spores, proteins and other biological particles
- an extensive and comprehensive library of structurally defined and biologically relevant glycans
- expertise in screening for glycan binding proteins, whole cell and whole organisms
- a dedicated 'cleanroom-style' slide printing suite and a separate slide scanning and analysis suite
- multiple slide printers and three dedicated slide scanners with varying capabilities, providing flexibility and robustness for slide analysis
- an integrated barcode system to link critical data to each slide
- quality-controlled experiments
- assurance of data confidentiality and security of material
- in-house manufacturing of slides, with customisation available.

## Bioanalytical Suite

The Bioanalytical Suite has the instrumentation to enable researchers a one-stop-shop for identification of a binding profile and the further characterisation of these interactions through the implementation of surface plasmon resonance or isothermal titration calorimetry, and whole-cell-based assays through flow cytometry.

There are two main options available:

- Isothermal Titration Calorimetry (ITC)
- Surface Plasmon Resonance (SPR)

These methods are industry standard for the characterisation of binding strength (affinity), binding on/off rates (kinetics), and specificity.

## Experience

Within the Glycobioanalytical Facility, we have worked on a wide range of projects.

These include projects characterising new cancer markers, identifying new lectins, and testing of vaccine candidates. In particular, we have looked at blood group antigen association of Group A Streptococcus, investigating the initial carbohydrate binding of pre-bloodstage malaria sporozoites, and novel peptide inhibition/competition assays via SPR. We have also developed high throughput SPR methods for drug screening.

We continue to file patents based on results obtained via the Glycobioanalytical Facility. Additionally, the data regularly supports publication in high impact journals, including Nature Communications, Nature Microbiology, Nature Scientific Reports, mBIO, Infection and Immunity, and Biochemical and Biophysical research communications.

Recognised as global leaders in the area, we maintain strong domestic and international networks with both academia and

industry. We are regularly asked to present our research at conferences and workshops around the world.

## Key Equipment

- Arrayjet Marathon Argus with fitted Iris Optical QC system
- Arrayit Spotbot Extreme Microarray Spotter
- Innopsys InnoScan 1100AL microarray scanner
- Perkin Elmer ScanArray 5000XL microarray scanner
- Perkin Elmer ProScanArray HT microarray scanner
- Slide imaging
- GE Biacore T200
- GE Biacore S200
- TA Instruments NanoITC



## About us

The Institute for Glycomics is one of only six of its kind in the world and has a strategic focus on translating drug and vaccine discovery research into clinical outcomes.

We have a strong track record in commercialisation and industry engagement, and our research leaders and business personnel have extensive experience in developing technologies for the commercial market.

With over 200 multidisciplinary researchers and support staff, the Institute for Glycomics is well positioned to deliver tangible clinical solutions for cancer and infectious diseases.

## Contact us

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