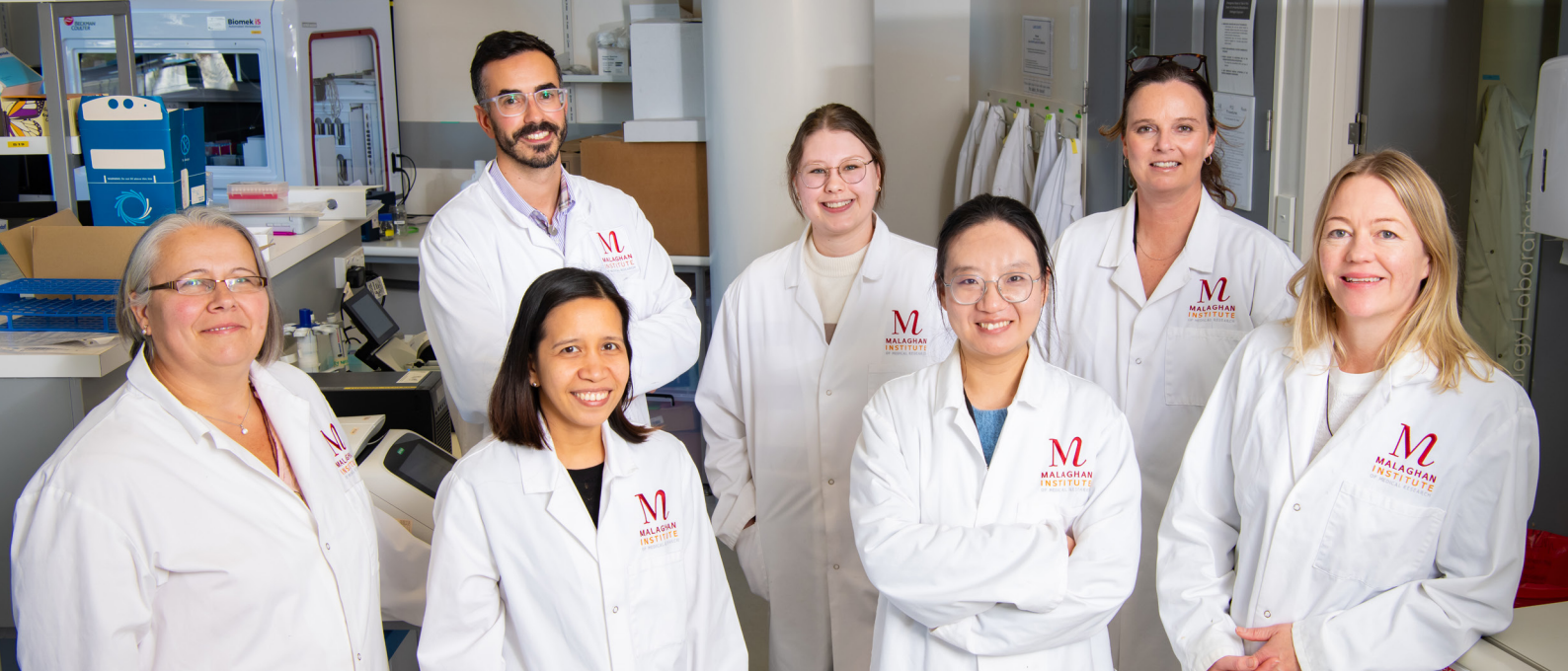


Hugh Green
**Technology
Centre**
at the Malaghan Institute

Advancing research through state-of-the-art **technology**

Core capabilities





The Hugh Green Technology Centre

The Hugh Green Technology Centre is a collaborative research and innovation hub within the Malaghan Institute of Medical Research, based in Wellington, New Zealand.

We are home to a team of technical specialists dedicated to bridging advanced biomedical technologies with the researchers, clinicians, commercial partners, and diagnostic providers who need them.

Our mission is to accelerate impact across research, clinical, and commercial domains by delivering high-quality, reproducible data through integrated technology platforms. While our bioanalytical services platform is IANZ-accredited to ISO/IEC 17025, all other services are provided for research use only.

We welcome inquiries from sponsors, clinical trial providers, diagnostic laboratories, academic researchers, clinicians, biotech companies, and other industry stakeholders. Whether you require access to specific technology or expertise, or seek a trusted partner to support your scientific, clinical, or commercial goals, the Hugh Green Technology Centre is here to collaborate with you.

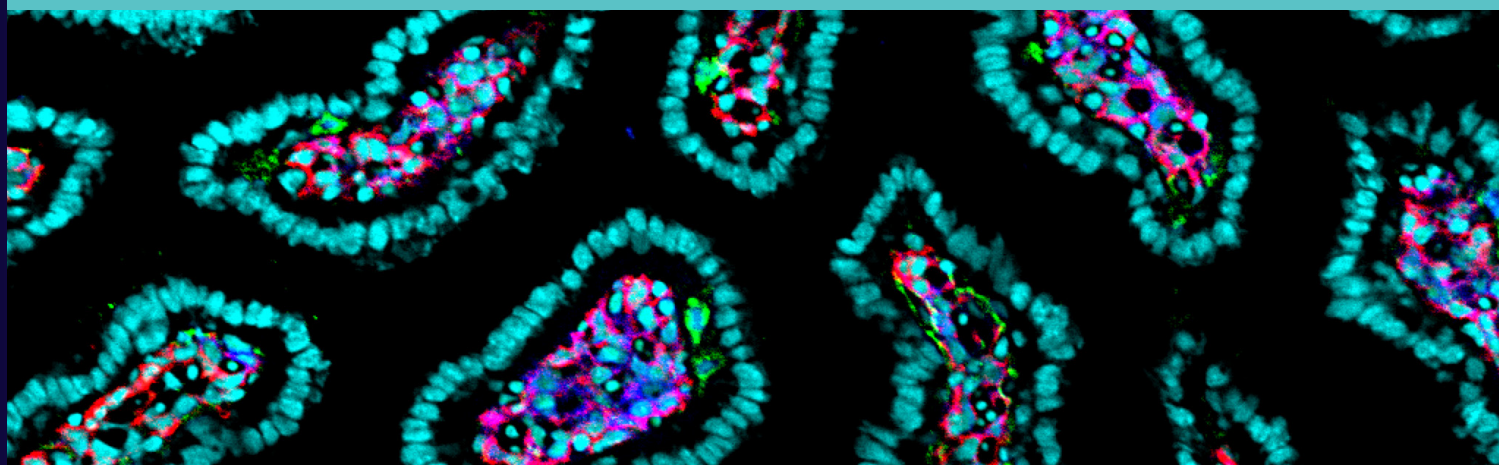


Kylie Price - Chief Technology Officer
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Bioimaging & histology

Cutting-edge imaging capabilities from molecular to whole-organism analysis.



Bioimaging

- Live-cell and whole-body imaging: Dynamic analysis of live cell interactions in co-culture and in vivo bioluminescence imaging using IVIS.
- Whole slide imaging: Brightfield and fluorescence imaging of entire histological section.
- Three-dimensional imaging: Multi-color imaging in three dimensions and digital rendering.
- Subcellular imaging: High-resolution mitochondrial and nuclear staining.
- Specialist applications: Fluorescent in-situ hybridisation (FISH) including mapping in rare and endangered species (e.g. kākāpo). We have expertise in highly multiplexing techniques, expansion microscopy and tissue photoconversion.

Sample processing and embedding

- Formalin fixed paraffin embedding (FFPE), cryo-sectioning and fresh agarose embedding.

Sectioning and staining

- Microtomy technique covering a range of sections from 5–500 μm including sectioning for FFPE, wcryo-samples and fresh samples.
- Standard stains: H&E, PAS, Sirius Red, and Masson's Trichrome.
- Advanced techniques: Direct-conjugated multicolour immunofluorescence, FISH and IBEX.

Imaging and data output

- Tailored image capture and immunophenotyping, morphometric and spatial image analysis pipelines, suitable for publication-ready results and translational research. We provide pipeline development and advice with information required to ensure high replicability standards.

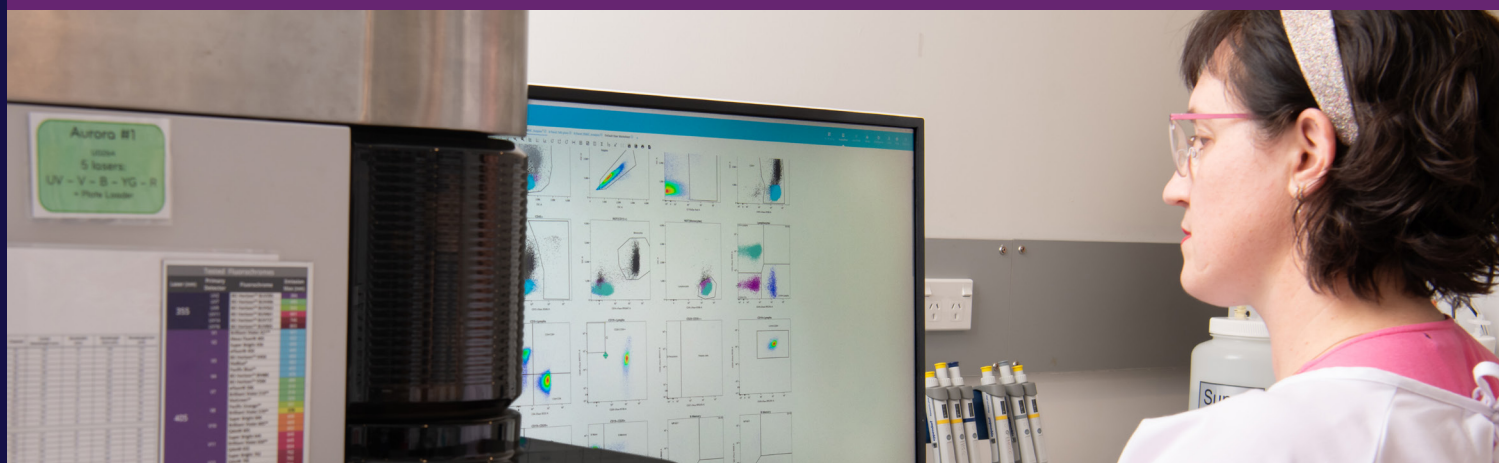
Contact

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Flow cytometry

A Cytex Centre of Research Excellence, internationally recognised for leadership in spectral flow cytometry and best-practice implementation.



Full spectrum flow cytometry

- **Advanced instrumentation:** Five Cytex Aurora full spectrum flow cytometers and one Aurora Cell Sorter (CS), each with five lasers and 64+ detectors enabling high-parameter analysis. This includes two Aurora Evos, offering enhanced sample throughput and harmonisation. All systems support sample acquisition rates exceeding 10,000 events per second, automated sample loading, and small particle detection, making them ideal for high-throughput and complex multiparameter studies.
- **Panel Design & Optimisation:** Support for >40-colour immunophenotyping panels, including guidance on fluorophore selection, titration, protocol optimisation, and spectral unmixing.
- **Applications:** Immunophenotyping, intracellular cytokine staining, cell cycle, DNA/RNA quantification, apoptosis/viability, rare event detection, fluorescent proteins, mitochondrial potential, FRET, proliferation tracking, CBAs, microbial analysis, and cell sorting (0.1–60 μm particles).

Instrument QC, user support and data analysis

- Daily performance checks and rigorous QC ensure data reproducibility.
- Expert support across experimental design, sample prep, troubleshooting, and spectral unmixing.
- Data analysis support using Machine Learning Tools: UMAP, tSNE, FlowSOM, clustering, and batch correction to uncover biological insights.

Immunoassays (Luminex 200)

- Multiplexed quantification of up to 80 analytes per well using bead-based sandwich immunoassays.
- Minimal sample volume (10–20 μL) and 45-minute plate readout.

Contact

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Genomics

A range of cutting-edge tools providing comprehensive genomic insights from **long-read sequencing** to **spatial transcriptomics**.



Single-cell multi-omics

- Well-based (BD Rhapsody) and droplet-based single cell capture (10x Chromium X) for gene expression, genome sequencing, protein activity, chromatin accessibility and DNA methylation analysis.
- Libraries can be prepared for next-generation (Illumina) sequencing, or third-generation (Oxford Nanopore) sequencing.

Digital Droplet PCR

- BioRad QX200 ddPCR system for absolute quantification of target DNA/RNA molecules using TaqMan hydrolysis probes or EvaGreen assays.

Spatial gene expression

- Map single cell transcriptomes with morphological context with the 10x Visium HD with CytAssist, using 10x Visium HD capture slides.
- Slide configuration is currently 2 capture areas per slide, with 2µm x 2µm barcoded areas covering a total capture area of 6.5mm x 6.5mm.
- Human or mouse probes (near whole transcriptome coverage), or 3' capture for species agnostic transcriptome sequencing.
- Can be used on fresh frozen, FFPE, or fixed-frozen samples, and combined with immunohistochemistry or H&E staining for

Oxford Nanopore sequencing

- Scalable sequencing, with both MinION and PromethION devices capable of real-time base calling and adaptive sampling.
- Nanopore sequencing produces ultra-long reads, for splice isoform analysis, genome rearrangements, structural variants and de-novo genome assembly.
- PCR-free library protocols enable native RNA sequencing, and adaptive sampling permits targeted sequencing without prior-amplicon generation.

Custom workflow development

Supporting project planning, DNA/RNA quality assessment, tailored protocols ranging from sample QC to library prep and data interpretation.

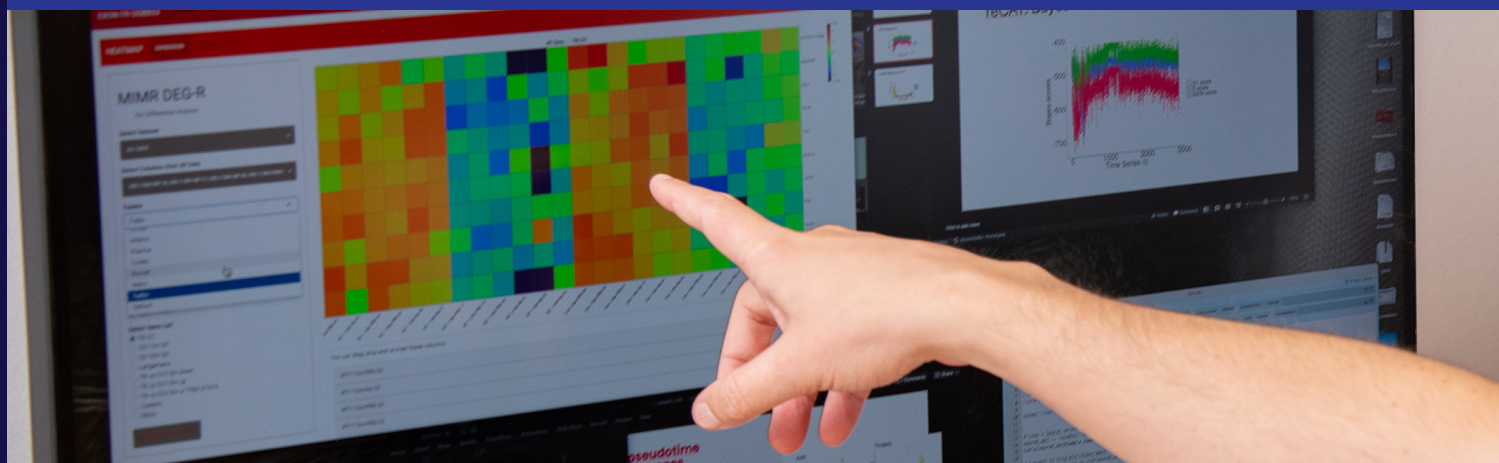
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Data science

Robust data handling, analysis, and visualisation providing reliable, reproducible, and publication-ready results.



Data science and integration

The Data Science Core provides downstream analysis and support exclusively for data generated through HGTC's technology platforms. It is not available as a standalone service.

Advanced data analytics

- Python training specifically for scientists.
- Provide a Jupyter server for large self-serve operations.
- Fill gaps for researchers in software development and statistical analysis.
- Support covers experimental design, multi-omics integration, custom pipelines for fast and reproducible research, and data visualisation, all using current tools and platforms.

Data management and reproducibility

- Data management, novel analysis techniques, pipelines for research automation.

Networked infrastructure

- As a REANNZ member, the data science core offers fast, secure data transfer and remote access for national and international collaborators.
- Flexible data storage and archiving options for short- and long-term research programs.
- This core manages the Malaghan Institute's high-performance computing facilities to support breakthrough science.

Contact

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Bioanalytical services

Reliable, accredited bioanalytical services to the New Zealand clinical trials market.



Accredited sample processing

Our bioanalytical platform supports clinical trials and translational research:

- IANZ Accreditation: Certified to ISO/IEC 17025 for processing of whole blood to PBMCs and gDNA, ensuring traceability, sample recovery, viability and integrity.
- Core Services: Sample receipt, PBMC isolation, cryopreservation, gDNA extraction, QC and sample storage.

Quality assurance

- Participation in global QA schemes including the Immunovirology Research Network (IVRN) and the Royal College of Pathologist of Australasia (RCPA) QAP.
- With dedicated QA oversight, we maintain consistent performance through validated methods and regular proficiency testing.

Customer workflow support

- Tailored service agreements, rapid turnaround times, and digital reporting aligned with sponsor formats.
- Integration with downstream platforms (e.g., cytometry, sequencing) for seamless analytics.

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Technology platforms



Bioimaging and histology

MICROSCOPY

Olympus Confocal Microscope (FV3000)
Olympus Slide Scanner (VS200)
Sartorius Incucyte SX5
Olympus Stereo Microscope
Olympus Inverted Microscope IX51
Olympus Upright Microscope BX51
IVIS Spectrum

HISTOLOGY

Cryostat
Tissue Processor
Embedding Table
Microtome
Compresstome (VF-700-0Z)



Flow cytometry

Cytek Aurora CS Full Spectrum Cell Sorter
Cytek Aurora 5L x2
Cytek Evo 5L x2
Luminex 200
Beckman Coulter BioMek i5



Genomics

Bio-Rad digital droplet PCR & droplet generator
Bio-Rad PCR cyclor - deep well module
Plate Sealer for ddPCC
Bio-Rad PCR cyclor
MinION & computer
P2 Promethion
BD Rhapsody Express for single cell capture (scRNAseq)
BD Rhapsody Scanner
10x Visium CytAssist
10x Chromium



Bioanalytical services

Logos Bioscience Luna FX-7 cell counter
NanoDrop One Spectrophotometer
Cytek Aurora 5L

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