

Scientific Platforms in local and partner organisations

Westmead Scientific Platforms

Hub Equipment Search: <http://www.westmead.org.au/facilities-and-services/hub-equipment-search>

WIMR Flow Cytometry | WIMR, L2

<https://sydneyuni.atlassian.net/wiki/spaces/WRHFLOW/overview>

- Flow cytometry analysers
- Cell sorters - fluorescence and magnetic based
- 3D printing
- High performance data analysis
- Advanced technologies

WIMR Cell Imaging | WIMR, L2

<http://www.westmead.org.au/facilities-and-services/core-facilities/cell-imaging>

- Laser scanning confocal microscope for 3D imaging, co-localisation, time course, fluorescence energy transfer (FRET), photo bleaching recovery experiments (FRAP) and live cell/tissue imaging
- High end wide field epifluorescence microscope featuring restorative deconvolution for small/thin and faint fluorescence samples, particularly living cells.
- Confocal laser scanning microscope designed for optical sectioning of cells and tissues to depths of 200um and resolution of 200-300nm
- Upright fluorescence microscope for characterising all the spectral components in a sample (fixed slides)
- Live cell imaging system
- Laser Capture Microdissection microscope for identification and isolation of cells and tissues for later DNA/RNA or proteomic analysis
- High pressure freezing to facilitate correlative light and electron microscopy

WIMR Proteomics Platform | WIMR, L2

<https://sydneyuni.atlassian.net/wiki/spaces/WPF/pages/523632944/Instruments>

- Seahorse XFe24 Analyser for interrogating key cellular functions in live cells
- SpectraMax plate reader for absorbance, fluorescence, luminescence, TRF, FP, and more
- AKTA pure Column Chromatography system for the purification of biomolecules
- Biacore 2000 system for monitoring molecular interactions in real time
- 2D-gel electrophoresis equipment
- Typhoon Trio fluorescent scanner that produces digital images of radioactive, fluorescent, or chemiluminescent samples
- Biorad Model 491 Prep Cell designed to purify proteins or nucleic acids from complex mixtures by continuous-elution electrophoresis
- Beckman DU520 UV/Vis spectrophotometer

WIMR Genomics | WIMR, L2

<http://www.westmead.org.au/facilities-and-services/core-facilities/genomics>

- Cell Identity and Authentication STR Testing Service
- Bioanalyzer/Tapestation tests to analyse or QC DNA and RNA samples
- Next Generation Sequencing library preparation
- Nanostring sample preparation and run
- Picogreen test for DNA quantification

WIMR Histology | WIMR, L1

<https://intranet.westmeadinstitute.org.au/scientificplatforms/histology/Pages/default.aspx>

- Tissue processing and embedding for formalin fixed paraffin-embedded (FFPE) blocks
- Paraffin-Microtomy Platform for paraffin tissue sections
- Frozen-Cryotomy Platform for frozen tissue sections
- Staining Platform for dehydration (dewaxing) and rehydration and coverslipping, as well variety of Histochemical stains (special stains)
- Ancillary equipment

CMRI Biomedical Proteomics | CMRI

<http://www.cmri.org.au/Research/Research-Facilities/Biomedical-Proteomics>

- 8 Mass Spectrometry (MS) systems for qualitative and quantitative protein identification and characterisation

Electron Microscopy | ICPMR, Westmead Hospital.

<http://www.westmead.org.au/facilities-and-services/core-facilities/electron-microscopy>

- Conventional resin processing
- Negative staining
- High pressure freezing/freeze substitution
- Immuno-labelling
- Tokuyasu cryo-sectioning
- Electron tomography
- Cryo-thin film

Westmead Biobank | WIMR

- Specimen receipt
- Blood processing
- Histology services
- DNA extraction and quantitation
- Storage of biospecimens in Biobank

The University of Sydney Core Facilities

Sydney Mass Spectrometry (SydneyMS) | Charles Perkins Centre, The University of Sydney

<http://sydney.edu.au/proteomics/index.shtml>

- Mass Spectrometry (MALDI –TOF or LC-MS/MS analysis)
 - Whole mass analysis
 - Peptide mass fingerprinting
 - Liquid Chromatography coupled to tandem mass spectrometry (LC-MS/MS)
 - Quantitative Shotgun Proteomics
 - Mass Spectrometry Imaging
- Gel Electrophoresis: One or two dimensional protein gel electrophoresis
- Targeted proteomics (SRM) projects, analysis of carbohydrates, phosphopeptides, metabolites and other biological samples

Sydney Imaging | Charles Perkins Centre, The University of Sydney

<https://sydney.edu.au/research/facilities/sydney-imaging.html>

- Preclinical imaging
 - 3T and 7T Magnetic Resonance Imaging (MRI)
 - Body Composition Analysis
 - PET/CT, PET/SPECT/CT
 - Dual-Energy X-Ray Absorptiometry (DXA)
 - High-frequency Ultrasound and Photoacoustics
 - Optical Imaging with Computed Tomography (CT)
 - 3D MicroCT
- Clinical imaging
 - 3T Magnetic Resonance Imaging (MRI)
 - PET/CT, SPECT/CT, X-RAY CT
- The Hybrid Theatre
 - Siemens Artis Pheno C-Arm (all-in-one solution for interventional radiology and surgery)
 - Ultrasound
 - Other equipment: Image intensifier, IT monitoring equipment, Anaesthesia machine, Heart-lung machine, Robotic surgical systems

Sydney Analytical | Camperdown Campus, The University of Sydney

<https://sydney.edu.au/research/facilities/sydney-analytical.html>

- Vibrational Spectroscopy
 - Infrared and Raman spectroscopy for 2D and 3D mapping, imaging, depth profiling
- X-ray and UV photoelectron spectroscopy
- Magnetic Resonance
 - Solid state Nuclear Magnetic Resonance (NMR) for 3D structure at atomic level
 - Electron Paramagnetic Resonance (EPR)
- Drug Discovery
 - Protein expression and purification services (bacterial, insect, mammalian)
 - Protein crystallography

- Fragment based drug design

Sydney Cytometry | Centenary Institute & Charles Perkins Centre, The University of Sydney

<https://sydneycytometry.org.au/>

- Flow Cytometry
 - Flow cytometry analysers
 - Cell sorters - fluorescence and magnetic based
 - High-dimensional fluorescence cytometry system (running panels of 26 colours)
- Mass Cytometry
 - Mass cytometer (CyTOF) – Helios
 - Imaging mass cytometer (Hyperion) allows imaging of tissue sections, by combining a laser ablation module with a Helios mass cytometry platform
- Image Cytometry
 - Amnis ImageStream X cytometer that takes an image of each individual cell
 - BD Pathway Bioimager with live cell imaging chamber
- Data Analysis and/or Computational Data Analysis

Sydney Microscopy & Microanalysis | Charles Perkins Centre, Sydney Nanoscience Hub, Brain & Mind Centre, Madsen Building, The University of Sydney

<http://sydney.edu.au/acmm/>

- Specimen Preparation (biological, cell culture, materials)
- Light and Laser Microscopy for identification of specific tissue types etc
- Transmission Electron Microscopy for the studies of the internal structures of biological systems, the shape and distribution of various particles or the crystallography of materials
- Local Electrode Atom Probe (Voltage Pulse and UV Laser Pulse Assisted)
- X-ray Microscopy to visualise the surface and internal structures of a specimen in three dimensions, without extensive or destructive specimen preparation.
- Image Visualisation and Data Analysis
- Scanning Electron Microscopy for high resolution imaging

Sydney Informatics Hub (SIH) | The University of Sydney

<https://informatics.sydney.edu.au/>

- Research data management and Research Computing
- Data analytics
- Statistical consulting
- Bioinformatics