

UNIVERSITY-WIDE  
CORE RESEARCH  
FACILITIES

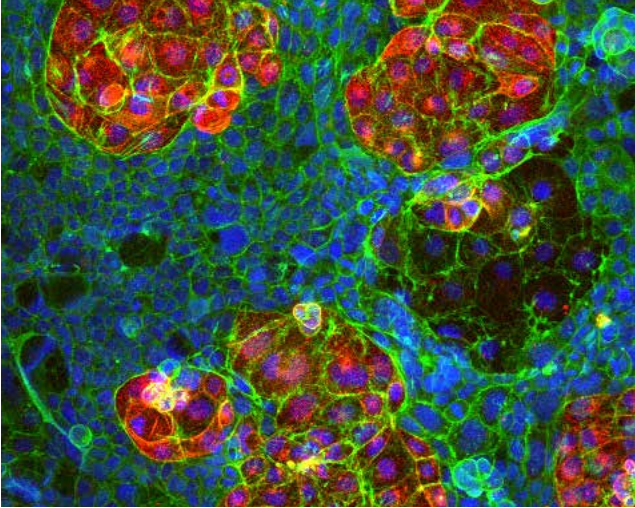


THE UNIVERSITY OF  
SYDNEY

CORE FACILITIES  
ENABLING ADVANCED RESEARCH

## CORE FACILITIES

### ENABLING ADVANCED RESEARCH



Confocal image of cultured colon cancer cells



Colour-enhanced scanning electron micrograph of an osteoblast growing on a synthetic bone scaffold material

The University of Sydney is one of the world's top research universities. We unite the expertise of the brightest minds across many disciplines to make a real difference through our understanding of our world. Our core strengths lie in the excellence and breadth of our research, the quality of our students and staff, our global outlook and extensive domestic and international networks.

#### OUR CORE RESEARCH FACILITIES

The University of Sydney Research Portfolio enables our research strategies by delivering a range of University-wide core research facilities, which provide access to high-end research infrastructure and services, to both internal and external clients.

These platforms for collaboration have dedicated, expert staff funded through a combination of user fees and contributions from user faculties. Each facility has a core set of high-end research infrastructure and a user base that spans a diverse range of disciplines.

This initiative is the first step in the University's broader strategy to establish, manage and govern high-end research infrastructure as whole-of-university core research facilities, representing an exciting new phase in the University's approach to enabling advanced research.

Core facilities currently available:

- Mass Spectrometry Core Facility (MSCF)
- Sydney Microscopy and Microanalysis (SMM)
- Advanced Cytometry Facility (ACF)
- Vibrational Spectroscopy Core Facility (VSCF).

Core facilities coming soon:

- Informatics Core Facility (ICF)
- Preclinical (Small Animal) Imaging Core Facility (PICF).

#### CONTACT DETAILS

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# MASS SPECTROMETRY CORE FACILITY (MSCF)

Established in 2003, the Mass Spectrometry Core Facility (MSCF) is an essential component of the University's infrastructure for multidisciplinary research in the life sciences, clinical and medical research, drug discovery and molecular bioscience.

Our mission is to facilitate the application of world-class analytical methods to important biological questions. We have a portfolio of mass spectrometers, gel electrophoresis equipment and data analysis packages. We offer training, access to instruments and contract-based research services to a broad base of researchers from universities, hospitals, government and industry.

## OUR SERVICES

- consultation
- contract research, such as protein identification/quantitation or deuteration analysis
- training in 2D gel electrophoresis and mass spectrometry
- access to LC-MS systems for proteomic and metabolomics analysis
- access to data processing and analysis software.

## OUR KEY TECHNOLOGIES

### Mass spectrometry

- MALDI-TOF for the analysis of peptides and proteins
- LC-MS systems for the analysis of complex mixtures of peptides, phosphopeptides and glycopeptides
- LC-MS systems for targeted proteomics analysis by selective reaction monitoring (SRM)
- LC-MS systems for discovery and targeted metabolomics.

### Electrophoresis

- capillary electrophoresis
- off-gel electrophoresis
- 1 and 2D gel electrophoresis
- DIGE.

### Bioinformatics

- 1 and 2D gel analysis, for example ImageQuant TL and Progenesis SameSpot
- protein identification using our in-house MASCOT server
- targeted proteomics analysis, such as MultiQuant or Skyline
- discovery proteomics, such as MASCOT Distiller, ProteinPilot and Scaffold.

## ACCESS DETAILS

Researchers can access MSCF services by submitting samples for analysis or attending training courses, and then coming to the lab to perform their own analysis. Sample submission and research training is coordinated via our resource management system, Platform-Pilot Management Software (PPMS): <https://au.ppms.info/sydney/start>

You can find a user guide at [sydney.edu.au/proteomics](http://sydney.edu.au/proteomics)

## PRICING

For University of Sydney users	
CATEGORY	COST
<b>Training</b>	
– 2D gel electrophoresis	\$300
– Mass spectrometer	\$500
<b>Bench fees</b>	
– IEF cells and large gel tanks	\$1 per hour
– LC-MS systems	\$10 per hour
– MALDI-TOF systems	\$75 per hour
<b>Consumables</b>	
– Zip tips	\$190 per box
– 96 lobind plates	\$25 each
<b>Contract research</b>	
– Sample clean up	\$20 per sample
– Peptide mass fingerprinting	\$60 per sample
– Deuteration analysis	\$60 per sample
– Intact protein mass	\$60 per sample
– 1D LCMS	\$100 per sample

Prices exclude GST and are correct at July 2014. Visit our website for current pricing.

Please contact us for a quote for 2D gel analysis, iTRAQ and other services, or for external rates (if you are not affiliated with the University of Sydney).

## LOCATION

The main MSCF laboratory and data analysis suite is located on Level 4 of the Charles Perkins Centre research and education hub (Building D17) on the Camperdown Campus.

The MALDI-TOF laboratory is located on Level 2 of the Molecular Bioscience Building (G08), Camperdown Campus.

## CONTACT DETAILS

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For more information, visit [sydney.edu.au/proteomics](http://sydney.edu.au/proteomics)

# SYDNEY MICROSCOPY AND MICROANALYSIS (SMM)

Sydney Microscopy and Microanalysis (SMM) is a University-wide core facility that provides specialist microscopy and microanalysis equipment and services within the multidisciplinary Australian Centre for Microscopy and Microanalysis (ACMM).

SMM is one of the largest and most comprehensive facilities of its kind in the world. SMM provides access to world-class instruments, specialist staff, services and training to enable research into physical and biological structures at micro, nano and atomic scales. SMM is available to researchers from research institutions, government and industry.

## OUR SERVICES

- access to and assistance with light and electron microscopy
- access to and assistance with scanning probe, atom probe instruments, x-ray and spectroscopy equipment
- image analysis, 3D visualisation and data visualisation software
- biological and materials specimen preparation and cell culture facilities with specialist support
- training and workshops
- consultation services (experiment design, data collection, data analysis, data visualisation).

## OUR KEY TECHNOLOGIES

### Atom Probe

- Imago Local Electrode and Wide Field-of-View Laser (LEAP3000).

### Light and Optical Microscopy

- Leica Ground State Depletion (GSD), SP5 II confocal and multiphoton, SP8 STED, multiphoton
- Olympus FluoView FV1000 confocal, CellR Live-Cell
- Nikon TIRF, Live-Cell, spinning disk, AIR Confocal with Lifetime, C1 Confocal, Deconvolution
- Zeiss shuttle and find
- wide field microscopes for biological or materials studies with mounting stages.

### Scanning Electron Microscopy (SEM)

- Zeiss Auriga, Evo, Ultra
- FEI Quanta 200 3D, XL30
- Hitachi S4500.

### Scanning Probe Microscopy (SPM)

- PicoSPM.

### Specimen preparation techniques

- biological specimen preparation
- materials specimen preparation.

### Transmission Electron Microscopes (TEM)

- JEOL 3000F, 2200FS, 2100, and 1400
- FEI CM120, CM12.

### X-Ray Microscopy

- Xradia MicroXCT-400, NanoXCT-100
- Skyscan 1172 MicroCT
- Siemens D5000 X-Ray diffractometer
- Shimadzu S6000 X-Ray diffractometer.

## ACCESS DETAILS

New users need to register their project(s) to access SMM. Registration is followed by a new user meeting before training on the instrument(s), and the completion of safety assessments and training.

## PRICING

The facility charges fees depending on the type of user and the level of support and training required. Registration and training costs \$270 per new user.

For University of Sydney users		
CATEGORY	COST	HOURS PER ANNUM
Level 1	\$3890 per annum	60
Level 2	\$9720 per annum	200
Level 3	\$18,900 per annum	500
Level 4	\$27,000 per annum	1000
Level 5	\$54,000 per annum	3000
Pay-as-you-go (peak: 9am–5pm)	\$70 per hour	Unlimited
Pay-as-you-go (off-peak: 5pm–9am)*	\$47 per hour	Unlimited

Prices exclude GST and are correct at January 2015. Visit our website for current pricing.

\*Off-peak rates apply to experienced users only (Category 3). Off-peak rates may also apply for some overnight/longer experiments that do not require continuous operator support. Note that technical support staff are not available off-peak.

For Level 1–5, a time bonus of 50 percent applies: 1.5 hours for the price of one hour, three hours for the price of two hours, and so on.

For external users		
CATEGORY	COST INSTRUMENTS	COST TECHNICAL STAFF
Publicly funded research organisations	\$130* per hour	\$195 per hour
Commercial	\$345 per hour	\$195 per hour

Prices exclude GST and are correct at January 2015. Visit our website for current pricing.

\*\$40 for Atom Probe instruments (AMMRF Flagships)

## LOCATION

Sydney Microscopy and Microanalysis (SMM) is located within the Australian Centre for Microscopy and Microanalysis (ACMM) on Level 6 of the Charles Perkins Centre research and education hub (Building D17), from August 2014.

## CONTACT DETAILS

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For more information, visit [sydney.edu.au/acmm](http://sydney.edu.au/acmm)

# ADVANCED CYTOMETRY FACILITY (ACF)

The Advanced Cytometry Facility (ACF) provides access to and training in cytometry and cell sorting techniques for researchers, scientists and clinicians from the University community, government research institutes and the health and medical industry.

The Advanced Cytometry Facility (ACF) was established in 2006 as a collaborative research facility for the Centenary Institute and the University of Sydney. The collaboration has resulted in the acquisition of several sophisticated instruments, which were either world firsts or firsts for Australasia-Oceania and the Southern Hemisphere. The latest acquisition is Australia's first CyTOF Mass Cytometer due to be installed in the CPC in July 2014.

The ACF is committed to the development and transfer of cytometry expertise and techniques to answer questions in cell biology and biomedical research, applied clinical research and trials, and the clinical diagnosis of cancer and other health disorders.

## OUR SERVICES

- access to and training in cytometry instrumentation including analysers and cell sorters
- consultation services (experimental design, data acquisition, data analysis and interpretation)
- development of cytometry techniques and instrumentation.

## OUR KEY TECHNOLOGIES

### Flow cytometry analysers

- FACS Canto – 2 lasers, 8 parameters
- FACS Verse, FACS Canto II – 3 lasers, 10 parameters, (with high throughput sampler)
- LSR II - 5 lasers and 18 parameters (with high throughput sampler)
- LSR II SORP – 10 lasers with 18 parameters (with high throughput sampler)
- LSR Fortessa – 5 lasers and 18 parameters.

### Cytometers

- Pathway Bioimager (Image Cytometer)
- AMNIS Image Stream 100 (Image Cytometer)
- CyTOF2 (Mass Cytometer).

### Cell sorters

- BD FACS Aria (2 laser) and FACS Aria IIu (3 laser) cell sorters
- BD FACS Jazz (2 laser) cell sorter
- BD Influx 10 laser custom cell sorter
- BD Influx 3 laser cell sorter (within PC3 Facility).

## ACCESS DETAILS

New users need to register via the Platform-Pilot Management Software (PPMS) system, and complete biosafety documentation. A user meeting will be arranged to discuss the project and agree upon the research collaboration and appropriate training. Experiments can begin as soon as biosafety approval has been granted.

## PRICING

The facility charges user fees, depending on the type of user and the level of support and training required.

### For University of Sydney/Centenary Institute users and affiliates

EQUIPMENT	COST NON-ASSISTED	COST OPERATOR ASSISTED
Cell sorters	\$46 per hour (FACS Aria)	\$82 per hour
Cytometers (basic) (Canto, Canto II)	\$28 per hour	\$70 per hour
Cytometers (advanced)	\$42 per hour	\$82 per hour
FACS Verse (introductory rate)	\$14 per hour	\$56 per hour
Pathway	\$29 per hour	\$70 per hour
CyTOF2 (introductory rate)	\$21 per hour	\$63 per hour
Additional operator assistance	-	\$42 per hour
Training	-	\$23 per hour

Prices exclude GST and are correct at July 2014. Visit our website for current pricing.

Please contact us for external rates (if you are not affiliated with the University of Sydney or the Centenary Institute).

## LOCATION

The Advanced Cytometry Facility has two locations

- Level 1, Centenary Institute (Building 93), Royal Prince Alfred (RPA) Hospital on Missenden Road, Camperdown.
- Level 5 of the Charles Perkins Centre research and education hub (Building D17).

## CONTACT DETAILS

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# VIBRATIONAL SPECTROSCOPY CORE FACILITY (VSCF)

The Vibrational Spectroscopy Core Facility (VSCF) provides state-of-the-art instruments and services to enable researchers to identify and or characterise the molecular structure of materials and fluids, and their distribution in biological and non-biological samples. The facility supports researchers from a diverse range of disciplines. Applications of the technology include materials science, nanotechnology, art and archaeology, polymer science, pharmaceuticals, environmental science, forensic science, soil science, agricultural science, mineralogy, gemmology, medical diagnostics, disease mechanisms and treatments, dentistry and other life sciences.

The facility houses the largest suite of Raman and FT-IR spectrometers in Australia. These instruments are available to researchers in the University community, government, not-for-profit organisations, industry, and private companies.

## OUR SERVICES

- Consultation services (experimental design, data collection, data analysis, report writing)
- Access to and assistance with VSCF spectroscopic equipment
- Assistance with finding and using external equipment, including the Australian Synchrotron
- Vibrational Spectroscopy training and workshops.

## OUR KEY TECHNOLOGIES

- Bruker Tensor 27 FTIR with High-throughput extension (HTS/XT) module
- Bruker Tensor 27 FTIR Spectrometer with Hyperion 3000 FPA microscope
- Bruker Vertex 80v FTIR Spectrometer (NIR to FIR capability)
- Renishaw Raman System 2000
- Renishaw Raman inVia Reflex with Streamline (Rapid mapping), Streamline High Resolution (HR) and 3D volume mapping
- Jobin Yvon U1000 Raman Spectrometer
- Bruker MultiRAM FT-Raman Spectrometer with microscope and high-throughput module
- Enwave EZRaman Portable Raman Spectrometer
- Expertise in synchrotron-based FTIR spectroscopy.

## ACCESS DETAILS

New users need to register via the Platform-Pilot Management Software (PPMS) system, by filling in an account creation request. The request is followed by a user meeting, training on the instrument(s) required for the project, and the completion of safety assessments.

## LOCATION

Rooms 256 to 260, Level 2, Madsen Building (F09), Camperdown.

## PRICING

The facility charges user fees, depending on the type of user and the level of support and training required.

Users from the University of Sydney, or from external universities and research institutes, can also access the facility via an annual subscription.

The University will issue a tax invoice to enable commercial users to claim back GST.

For University of Sydney users		
CATEGORY	AMOUNT	HOURS PER ANNUM
Pay-as-you-go	\$45 per hour	Unlimited
Standard user	\$1500 per annum	50
Type C	\$3800 per annum	150
Type B	\$7500 per annum	350
Type A	\$15,000 per annum	1000

For not-for-profit organisations (eg other universities)		
CATEGORY	AMOUNT	HOURS PER ANNUM
Pay-as-you-go	\$120 per hour	Unlimited
Standard user	\$4000 per annum	50
Type C	\$10,000 per annum	150
Type B	\$20,100 per annum	350
Type A	\$40,300 per annum	1000

For commercial users	
CATEGORY	COST
Experienced users	\$200 per hour
Users requiring assistance	\$300 per hour

For external users (other than not-for-profit organisations)	
CATEGORY	COST
Experienced users	\$220 per hour
Users requiring assistance	\$330 per hour

Prices exclude GST and are correct at January 2015. Visit our website for current pricing.

## CONTACT DETAILS

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For more information, visit

[sydney.edu.au/science/chemistry/spectroscopy](http://sydney.edu.au/science/chemistry/spectroscopy)

# CORE FACILITIES COMING SOON

## INFORMATICS CORE FACILITY (ICF)

The Informatics Core Facility will provide support to a broad range of informatics disciplines to researchers across all of the University's campuses. This core facility will begin providing bioinformatics services from March 2015. Other informatics services will be added in the future.

### OUR SERVICES

- access to bioinformatics software
- expert bioinformatics advice and analysis.

### OUR KEY TECHNOLOGIES

- CLC Genomics.

A key platform for the Informatics Core Facility is the University of Sydney's new High Performance Computing (HPC) service, which will be available from March 2015.

### ACCESS DETAILS

This facility will be available to University of Sydney and affiliated researchers.

### PROPOSED PRICING

Researchers have the option of purchasing an annual or half-year subscription, which includes access to CLC Genomics as well as a wide range of free/low-cost bioinformatics software, and bioinformatics advice.

- \$1500 annual subscription (March 2015 – February 2016)
- \$750 half-year subscription (September 2015 – February 2016).

### LOCATION

Available across all campuses.

### CONTACT DETAILS

For information about this core facility, please contact:

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## PRECLINICAL (SMALL ANIMAL) IMAGING CORE FACILITY (PICF)

The University of Sydney is establishing a new Preclinical (Small Animal) Core Facility to supplement existing preclinical imaging facilities located across campus.

The Preclinical Imaging Core Facility space in the Charles Perkins Centre research and education hub has been specially designed to accommodate a wide range of imaging equipment and is located adjacent to animal facilities. This core facility is expected to open in late 2015.

### OUR SERVICES

- expert advice and support for preclinical (small animal) imaging and analysis
- training
- facilitating access to external imaging facilities.

### OUR KEY TECHNOLOGIES

- high field MRI (field strength TBC)
- combined microCT and optical imager
- high resolution ultrasound.

### ACCESS DETAILS

The facility will, subject to limitations around movement of laboratory animals to and from the Charles Perkins Centre building, provide preclinical imaging services to internal and external researchers on a fee-for-service basis. Please contact the Core Facility Manager for details.

### PROPOSED PRICING

Fee for commercial users (excluding GST)		
CATEGORY	UNIVERSITY OF SYDNEY AND AFFILIATES	COMMERCIAL
Standard scans	\$100	\$300
Professional assistance	\$100	\$200
Training (modality specific)	TBC	TBC

Note: the above figures are proposed pricing only. Please contact the Core Facility Manager to confirm current prices.

### LOCATION

Basement 2, the Charles Perkins Centre research and education hub (Building D17).

### CONTACT DETAILS

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# UNIVERSITY-WIDE CORE RESEARCH FACILITIES



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