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## CONFOCAL BIO-IMAGING FACILITY

RESEARCH ENGAGEMENT | DEVELOPMENT | INNOVATION

**Western Sydney University Confocal Bioimaging Facility is fuelling advances related to biology, medicine, plant sciences, molecular biology, engineering and nanotechnology.**

Confocal Bioimaging Facility contains state-of-the art confocal and multi-photon microscopes as well as a suite of other microscopy instruments. By analysing fluorescence emitted from a sample, confocal imaging unites the power of optical microscopy, biology, biophysics, chemistry and computational methods. We are able to visualize the 3D structure of living cells, to decipher how genes, molecules and proteins work and interact in cells and organisms and how they are affected by environmental, physiological and disease conditions. We also help find solutions by using imaging and microanalysis of materials and engineering samples, in forensics and photonics.

The Confocal Facility provides:

- Access to confocal, multiphoton and wide-field microscopes
- Advanced confocal imaging using FRAP, FLIM, FRET, FCS and spectral imaging methods
- 2D, 3D and time lapse image visualization and analysis
- Development and validation of bioimaging techniques specific to each project, sample preparation advice, ongoing support, advice in processing and image analysis and preparation of data for publication
- Training, advice in research solutions, assistance in developing individual imaging protocols and associated data analysis in molecular sciences, microbial, invertebrate, plant and animal biology, agriculture, biomedicine, chemistry, forensics and biophotonics
- Sample analysis on a fee-for-service or collaborative basis.





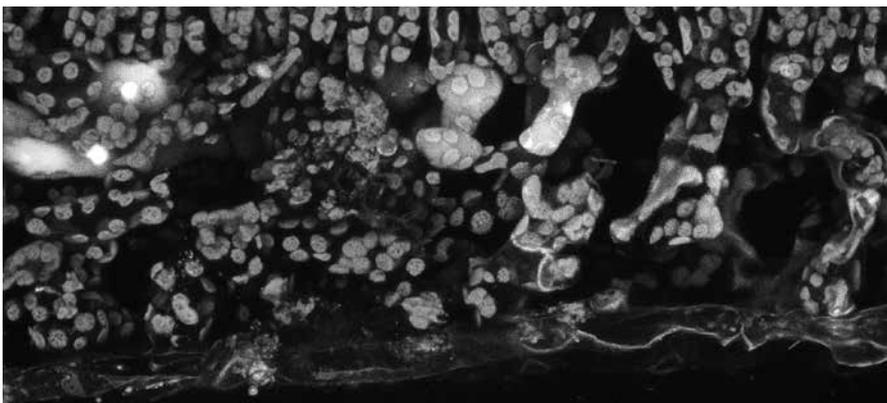
## INSTRUMENTS

- Inverted Leica TCS SP5 laser scanning confocal microscope – This system uses AOBs variable spectral detection instead of traditional emission filters and has the following laser lines: 405, 458, 476, 488, 496, 514, 561, 594 and 633 nm. It has micro-spectral detection capability and has a fully tunable Multi-Photon imaging system; a Becker & Hickl Fluorescence Lifetime Imaging (FLIM) system and fluorescence correlation spectroscopy system.
- Upright Leica SP5 (with DM6000B microscope) with 458, 476, 488, 514, 543 and 633 nm laser lines and the Horiba Raman spectral detection capability.
- The Confocal Facility also contains other light and fluorescence microscopes and equipment including: a Fluorescence Olympus BX60 microscope and Jenoptik ProgRes C14 digital camera and a Fluorescence Leica MZ12 stereomicroscope and JVC digital camera.

Examples of samples that can be analysed:

- Sub-surface optical sectioning and 3D imaging of cells, tissues and plants
- Imaging of gene and protein dynamics in living cells (msec, sec, min or hrs)
- Effects of drugs and reagents on cells and microbes
- Imaging using fluorophores to analyse pH, ions as calcium, apoptosis, oxidative stress or redox changes in live cells, plants or organisms
- Cellular events associated with cancer and various diseases
- Microanalysis of samples and elemental mapping
- 3D architecture of microfilms and biofilms
- Microspectral analysis in 2D, 3D or over time
- Sub-surface 3D imaging of non-transparent samples (e.g., concrete, steel, microelectronics) by laser reflection methods
- Sample analysis for forensic and engineering sciences

If you have a sample that you would like to analyse or have any questions, please contact the Confocal Bioimaging Facility. We can provide free-of-charge preliminary 3D confocal sample assessment to get you started.



### FOR FURTHER INFORMATION ON CONFOCAL IMAGING, TRAINING AND RESEARCH PLEASE CONTACT:

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