

BIOMEDICAL IMAGING

Imaging technologies enable researchers to non-invasively investigate our greatest health challenges and make new discoveries about the human body.

At Monash Biomedical Imaging (MBI), our full suite of multimodal and simultaneous imaging equipment alongside human testing facilities, support researchers from various disciplines to conduct their pre-clinical and clinical research.

Researchers from Monash University and other Australian and international universities benefit from our imaging technologies and experts across three coordinated Melbourne locations.

EXPERTISE

Our expert research support teams and administrative staff provide valuable guidance to enhance research project outcomes with the imaging data obtained using our range of technologies.

Our dedicated team includes electrical engineers, biomedical engineers, radiologists, psychologists, medical imaging technologists, MR physicists, cognitive neuroscientists and applied mathematicians.

To enhance your research, we can help you coordinate access across our facilities, as well as provide training and technique and methods development if required.

LOCATIONS

The Monash Clayton campus houses our most extensive range of pre-clinical and human imaging and testing equipment. We are ideally situated next to the Australian Synchrotron for research that takes advantage of multiple technologies.

We also operate pre-clinical facilities at AMREP (Prahran) and at the Monash Institute of Pharmaceutical Sciences (Parkville).

WORKING WITH US

- Collaborative research
- Fee for service
- Consultancies

HUMAN IMAGING

Clinical research imaging

In addition to a 3 Tesla magnetic resonance imaging scanner (MRI), we also operate Australia's only research-dedicated simultaneous MR-PET scanner. Primary research applications for MRI include neurocognitive, neurovascular, cardiovascular, respiratory and oncology imaging, and novel techniques and expertise in advanced imaging protocols.

Magnetic Resonance Imaging

The Siemens 3T Skyra has the latest technology for regional and head-to-toe imaging. The scanner has a 70cm wide bore, multi-transmit capabilities and a full range of imaging coils. The scanner console includes advanced reconstruction and analysis software, and multinuclear capabilities for functional and diffusion neuroimaging, perfusion imaging, flow quantification, and cardiovascular and musculoskeletal imaging.

Simultaneous MR-PET

The Siemens Biograph mMR scanner is capable of simultaneous magnetic resonance and positron emission tomography (MR-PET) imaging. Using this advanced technology, researchers can obtain simultaneous information about the anatomy, function and metabolic processes in the body.

Other stand alone and MR-compatible technologies

- Electroencephalography measures brain activity and is extensively used in cognitive research
- Ocular Motor/Eye Tracking systems measure ocular motor function
- Transcranial Magnetic Stimulation is used to manipulate neuronal activity
- Various auxiliary sensors measure EMG, ECG, respiration rate and skin conductance
- Hyperpolarised Xenon Gas Imaging measures the respiratory system's structure and function

PRE-CLINICAL IMAGING

Molecular Imaging

MBI offers non-invasive *in vivo* 3D-imaging using radioactive tracers (PET and SPECT) and fluorescence tracers (FLECT). These technologies are applicable for imaging metabolic disease, tumour progression and neurodegenerative conditions.

Computer Tomography

MBI operates high-resolution small animal 3D X-ray imaging computer tomography (CT) alongside our molecular imaging capabilities. This versatile technology is ideal for *in vivo* imaging of live small animal bones, lungs and implanted medical devices. Our large and small bore CT scanners offer a wide capacity for imaging, including digital archiving of museum specimens, mapping contrast enhanced soft tissue and investigating 3D structures.

Soft Tissue Imaging

MBI's small animal MRI scanners provide high-definition *in vivo* structural and functional imaging of internal organs and pathology. We also offer MRI scanning of large animals using our Siemens 3T Skyra. MRI research applications include stroke, oncology, neural tracing, oedema and fibrosis. Our small animal high-frequency ultrasound also offers excellent imaging and measurement of cardiac and blood vessel function, and tissue perfusion.

MONASH BIOMEDICAL IMAGING

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