



## Research areas

CAI researchers currently supervise RHD students across a wide range of disciplines, including:

Biology	Medicine
Biomedical Imaging	Microimaging
Chemistry	Molecular Imaging
Computer Science	MRI
Developmental Biology	Nanotechnology
Engineering	Neurosciences
EPR	NMR
fMRI	Physics
Imaging Technology	Psychology
Materials Science	Radiography
Mathematics	Radiology

## When to apply

Admission and enrolment for both domestic and international candidates can be processed at any time of the year.

## How to apply

1. Browse through our research projects  
[cai.centre.uq.edu.au/research](http://cai.centre.uq.edu.au/research)
2. Find your potential supervisors  
[cai.centre.uq.edu.au/team/academic](http://cai.centre.uq.edu.au/team/academic)
3. Contact [hdr@cai.uq.edu.au](mailto:hdr@cai.uq.edu.au)

## Further information

**W:** [cai.centre.uq.edu.au/study/higher-degree-research](http://cai.centre.uq.edu.au/study/higher-degree-research)  
**T:** +61 7 3365 4100  
**E:** [hdr@cai.uq.edu.au](mailto:hdr@cai.uq.edu.au)

Centre for Advanced Imaging  
 The University of Queensland  
 Brisbane Qld 4072 Australia

 [facebook.com/UQ.CAI](https://facebook.com/UQ.CAI)

 @UQ\_CAI

CRICOS Provider Number 00025B



Centre for Advanced Imaging  
[cai.centre.uq.edu.au/study](http://cai.centre.uq.edu.au/study)

## Higher Degree by Research



Want to learn more and browse through our  
 available research projects?  
[cai.centre.uq.edu.au/research](http://cai.centre.uq.edu.au/research)

The University of Queensland's Centre for Advanced Imaging (CAI) is at the forefront of imaging science and is the only centre of its kind in Australia. The Centre is also a research platform for UQ Neurosciences – one of UQ's research strengths.

CAI is an integrated, multimodal research facility with a rich collaborative environment. The Centre brings together the skills of a large multidisciplinary team of researchers, industry experts, and state-of-the-art research facilities.

Imaging and spectroscopic techniques are key platforms for studying the structure and function of living organisms in health and disease, molecular characterisation and drug discovery. CAI's collaborations with clinical research sites, including national and international research institutes, maximises the translational impact of our research.

Providing a comprehensive 'end-to-end' biomedical imaging capability and driving research through an integrated progression from a laboratory to a clinical setting, the Centre undertakes research in a variety of areas.

Key areas of research include:

- molecular and biomedical imaging including magnetic resonance imaging (MRI) and positron emission tomography (PET) in humans and animal models (including comparative oncology)
- nuclear magnetic resonance (NMR)
- electronic paramagnetic resonance spectroscopy (EPR)
- materials science
- development and engineering of imaging technology
- data analysis and applications of novel computational methods
- structural biology and chemistry

The Centre houses the most comprehensive range of advanced magnetic resonance instrumentation in the southern hemisphere, including Australia's first 7T whole body human scanner and the only 900 MHz NMR magnet in Australia.

CAI researchers work on innovations in spectroscopic and imaging technology, imaging biomarker development and biomedical research disciplines.

CAI's vision is to be a world leader in the development and application of cutting-edge imaging science and technology, through innovation, translation, education and collaboration.



PET/CT image highlighting melanoma tumour cells in the flank of a mouse.

## Why imaging?

Imaging and spectroscopy are key platform technologies for studying structure and function at the molecular, cellular and whole organism levels.

Research at CAI is diverse, ranging from the study of epilepsy, Alzheimer's disease and cardiovascular disease, research to understand the neurobiology of language, learning and memory, and genetic and environmental influences on brain structure and function, the development of new imaging techniques, to the evaluation of cancer imaging agents and therapeutics. Our researchers play an active role in the development of novel imaging and spectroscopy technologies. Technology developed at UQ is incorporated into most clinical MRI scanners in use today.

## Why apply for a Higher Degree By Research?

### A UQ research strength

Imaging science is recognised as one of UQ's research strengths. CAI is also a key platform technology for UQ Neurosciences, another UQ research strength.

### International reputation

Our researchers are at the cutting edge of imaging and spectroscopy research, working to:

- develop new imaging agents and technologies
- analyse molecular structure and function
- study major diseases such as cancer, cardiovascular and neurodegenerative diseases.

## Multidisciplinary environment

Researchers and students at the Centre come from a wide range of disciplines including engineering, chemistry, physics, mathematics and computer science to biology, medicine and psychology.

CAI's researchers collaborate with clinical research sites, maximizing the impact of spectroscopy and imaging on translational research. This provides a comprehensive 'end-to-end' biomedical imaging capability, driving research through an integrated progression from the lab to the clinic.

## Industry engagement

A unique aspect of CAI is the extent of industry involvement in the application of medical imaging, pharmaceutical discovery, and the development of radiotracers and biomarkers; providing the possibility of internships throughout your HDR.

## Student support

The Centre attracts a multidisciplinary and cohesive community of students from around the globe to continue their research training. STAC, the Centre's active student association, organises social activities and provides many exciting opportunities for networking and professional development.

The Centre also offers a supportive mentoring structure to enhance personal and professional growth, an annual symposium, and a weekly seminar program featuring notable experts and national and international speakers.

High-resolution fibre orientation distribution of the mouse hippocampal structures, imaged ex-vivo at 100 micron resolution using CAI's 16.4T MRI scanner.

