

Student research at the Baker Institute
Begin a research career that will shape the future

baker.edu.au/study

The Baker Heart and Diabetes Institute

We are one of the world's most respected medical research institutes.

The Baker Heart and Diabetes Institute is an independent, internationally renowned medical research facility, with a history spanning more than 97 years.

We are dedicated to reducing death and disability from heart disease and diabetes and their related disorders. These prevalent and complex diseases are responsible for the most deaths and the highest health costs in the world.

The Institute is located adjacent to The Alfred hospital and has established links with universities and is a partner of the Alfred Research Alliance.

Our research



The Baker Institute is committed to tackling the deadly trio of diabetes, cardiovascular disease and obesity. Our 33 laboratories, with the best and brightest scientific minds, are the engine room that delivers innovative solutions for a healthier community.

Our impact

- Identifying the genetic and environmental causes of disease.
- Contributing to prevention strategies to mitigate an individual's risk of diabetes and cardiovascular disease.
- Developing treatment options for chronic diseases and their complications.
- Developing programs to manage disease, particularly in high-risk groups.
- Informing policy and developing best practice treatment guidelines and education programs.
- Commercialisation of scientific discoveries, including the development of new drugs and devices.
- Providing credible health information to the community.

Why choose the Baker Institute?

Give your career the ultimate head start and take your place at the world-renowned Baker Institute.

We are one of the few medical research institutes in the world, and the only Australian institute, with the scale, vision and expertise that is dedicated to tackling the deadly trio of cardiovascular disease, diabetes and obesity.

With over 440 scientists, clinicians, research nurses, professional services and students, the Baker Institute provides a collaborative, stimulating and supportive environment for students to develop the skills and confidence needed to launch their careers. Begin your study at the Baker Institute and be part of the next generation of medical researchers.

Career development

Our supervisors provide high-quality one-on-one research training and mentorship in a collaborative team environment to facilitate an exciting and dynamic learning experience for students.

Students attain skills and knowledge through professional development opportunities including:

- weekly and special seminars
- student workshops
- national and international conference opportunities.

World-leading research

A diverse range of pioneering research projects will ensure that students can get a feel for working in a research laboratory that is closely connected to clinical facilities.

Clinical trials

Various research projects at the Institute have a clinical trial component. These trials may involve testing new drugs, devices or lifestyle strategies to help manage pre-existing medical conditions, while others may look at preventative measures to reduce the risk of disease.

Our research is focused on the most pressing patient needs and supports the translation of our discoveries from benchtop to bedside.

State-of-the-art technology platforms

Our investment in world-leading technology platforms and expertise provides students, scientists and collaborators with unique 'onsite' resources to drive innovative world-class research.

Gender Equity and Diversity

The Institute's Gender Equity and Diversity Committee was formed in 2014 to establish initiatives to address the issue of female under-representation at senior levels in science at the Institute, and more broadly across the sector.

Reconciliation Action Plan

Our Innovate Reconciliation Action Plan (2022–2024) formalises the Baker Institute's ongoing commitment to strengthen relationships with Aboriginal and Torres Strait Islander peoples, engage staff in reconciliation and continue our innovative program of health research that aims to benefit the lives of all Australians.

Environmental, Social and Governance

Our commitment to healthy communities includes examining how we operate and how our decisions impact others. It includes analysing our practices, ensuring that we are a socially responsible organisation and supporting advocacy efforts to develop healthy communities, in line with the expectations of our staff, students, board, supporters and the community.



Our research platforms

9.4T MRI

The 9.4T animal magnetic resonance imaging system is optimised for high-resolution sample imaging.

Baker Specialist Clinics

Our mission is to reduce death and disability from cardiovascular disease, diabetes and related conditions through research, education and healthcare delivery.

Bioinformatics Platform

Our team of bioinformaticians have backgrounds in applied math, biostats and computational biology. They use data-driven approaches to interrogate large biomedical datasets such as the UK Biobank and internally created omics data.

Biomarker Discovery Platform

Provides the infrastructure for the detection and quantification of biomarkers, such as proteins, peptides and nucleotides, in any biological fluids and samples.

Flow Cytometry

Specialises in the multi-component analysis of fluorochrome-labelled single cells from any given organ with the main analysis being cells of the immune system.

High-Performance Computing Facility

Our onsite high-performance computing infrastructure has a dedicated cluster of 10 nodes with a current total of 700 CPU cores, 5TB of RAM and over 1 petabyte of local storage.

Magnetic Particle Imaging

Magnetic Particle Imaging (MPI) is a new non-invasive imaging method that detects iron oxide nanoparticles to produce 2D and 3D images. MPI imaging is more sensitive and significantly faster than MRI and PET imaging.

Metabolomic Profiling Facility

The Metabolomics (lipidomic) Profiling Facility uses state-of-the-art tandem mass spectrometry to obtain metabolic profiles (primarily lipids) from cell and animal models.

Microscopy Platform

The Microscopy Platform enables researchers to perform leading-edge microscopy to advance the treatment of cardiovascular disease, diabetes, and related disorders.

PET-CT

The Mediso NanoPET/CT is a small animal preclinical scanner suitable for a wide variety of radioactive tracer imaging and computer tomography (CT).

Preclinical cardiology trials

The Preclinical Cardiology Microsurgery and Imaging Platform team are leaders in clinical assessments of animal models for trials of new medicines.

Proteomics Research Platform

The Proteomics Research Platform develops and applies advanced proteomics methods to further our understanding of cardiac disease, pathways, targets, and drug effects.

Single-Cell Omics Platform

The Single-Cell Omics Platform applies single-cell omic approaches to understand complex tissues in the context of development and disease.

Our university departments

Good science does not thrive in isolation.



Enrolments for Doctorate of Philosophy (PhD) or Master of Philosophy (MPhil) by research.

The **Baker Department of Cardiometabolic Health** is a collaborative initiative with the Melbourne Medical School leveraging strengths in cardiometabolic capabilities and translation. Research and innovation are applied to improve the lives of people with, or at risk of, cardiovascular disease, obesity and diabetes.

Honours enrolment is possible through other University of Melbourne departments.



Enrolments for Doctorate of Philosophy (PhD) or Master of Philosophy (MPhil) by research and Honours.

The **Monash Alfred Baker Centre for Cardiovascular Research** brings together the combined strengths of the three leading institutions in cardiovascular research and clinical care to deliver innovative solutions for cardiovascular diseases and improve outcomes for patients.

Discovery research and clinical students enrolled through the Central Clinical School, School of Public Health or other associated departments at Monash can interact with the Centre to build a pipeline of clinician-research talent.



Enrolments for Doctorate of Philosophy (PhD) or Master of Philosophy (MPhil) by research and Honours.

Through the **Baker Department of Cardiovascular Research, Translation and Implementation Science** we have co-appointed research staff accredited to supervise Honours, Masters and PhD students. Researchers are experts in cardiovascular disease, diabetes and public health research. Working together to translate our discoveries into practice.



Enrolments for Doctorate of Philosophy (PhD) or Master of Philosophy (MPhil) by research.

The **Baker-Deakin Department of Lifestyle and Diabetes** brings together researchers with a focus on public health research and physical activity in the context of diabetes. Researchers are developing advanced solutions for the prevention and management of type 2 diabetes.

For more information, visit <https://baker.edu.au/research/university-departments>.

Student opportunities at the Baker Institute

Internal funding and grants for PhD students

Government scholarships awarded through Universities or funding agencies (e.g. National Health and Medical Research Council, National Heart Foundation and relevant societies) can fund research students at the Institute. Students who have been successful in obtaining an external scholarship are eligible to undertake their studies with the Institute. Universities and societies also offer travel awards and travelling fellowships for students to attend conferences. The Institute actively seeks opportunities to partner with Universities to provide scholarships to research students based on merit.

The Baker Institute's Bright Sparks Program supports early career scientists by providing postgraduate scholarships through to postdoctoral fellowships. The program is completely funded by our generous donors.

Bright Sparks PhD Top-Up

The Baker Institute is committed to supporting academic excellence and encouraging scholarly achievement in students undertaking PhD studies in our programs. Funding is awarded based on academic merit, and PhD students who hold an externally funded postgraduate research scholarship are eligible to compete for a Baker Institute top-up. Applications for Baker Institute top-ups open early in the academic year and are dependent on the availability of funds. Top-ups will be approx \$6000 annually and granted to successful candidates for a maximum of 3 years. Prior candidature will be taken into account.



Bright Sparks PhD Stipend

The stipend is separate from the Baker Institute PhD Student top-ups and is directed to quality postgraduate students who, for reasons outside their influence (timing of enrolment, missed dateline, out of the system for a while, etc.) require some internal stipend support. The support is for one-year only. This award is open to all Baker Institute registered students within the first year of their PhD studies who are not in receipt of a scholarship.

Travel funding/fellowships

(Baker Travel Awards, Harold Mitchell Fellowship, Primary Carer travel support)

Prizes and Awards

All 2nd and 3rd year Baker Institute postgraduate students submit a 3-minute oral presentation at least once in their PhD candidature.

The **Julie Campbell Award** will be for the best presentation by a PhD student in the category of discovery research and **Rod Andrew Award** for clinical and population health. The awards add value to the successful candidate's CV and future career opportunities. Prize participation also builds oral scientific communication skills.

The **Paul Korner Medal** is a prestigious award for outstanding achievement that was established in honour of Paul Korner's distinguished contribution to medical research and the Baker Institute.

Vacation Internship Program

A 6-week paid internship program over the summer period (November - February) for undergraduate students in the final year of their degree.

Student Committee

Join in on various student-organised events (e.g. student dinners, networking events, Wellness Wednesdays, Honours Talks, Baker Institute Student Symposium).

Mentoring Program

The Baker Institute aims to continue building knowledge and professional connections among students, early career researchers and early career staff through the Baker Institute Mentoring Program.

Research areas

The Baker Heart and Diabetes Institute is one of the few institutes in the world where the work of our staff spans from benchtop to bedside. To help you find the laboratories that conduct research in the area you are interested in, we have tagged them with the following icons.



Basic Research



Translational Research



Clinical Research



Population Health



Aboriginal Health



Cardiovascular Disease



Diabetes



Obesity and Metabolism

We encourage prospective students to browse the projects we have on offer [listed on our website](#).

Supervisors are always happy to discuss projects with students and many can be tailored to Honours, Master or Doctorate of Philosophy by research.

Further information on the listed projects is available on our website and we encourage you to view the project and overarching research of the group.

Student research projects

Please visit our laboratory web pages to see their current student research opportunities.

Atherothrombosis and Vascular Biology | Professor Karlheinz Peter



Visit: <https://baker.edu.au/research/laboratories/atherothrombosis-vascular>

Biomarker Discovery | Associate Professor Bing Wang



Visit: <https://baker.edu.au/research/laboratories/biomarker-discovery>

Cardiac Cellular Systems | Dr Alex Pinto



Visit: <https://baker.edu.au/research/laboratories/cardiac-cellular-systems>

Cardiometabolic Health and Exercise Physiology | Associate Professor Erin Howden



Visit: <https://baker.edu.au/research/laboratories/cardiometabolic-health-exercise-physiology>

Cardiovascular Endocrinology | Dr Morag Young



Visit: <https://baker.edu.au/research/laboratories/cardiovascular-endocrinology>

Cardiovascular Inflammation and Redox Biology | Professor Judy de Haan



Visit: <https://baker.edu.au/research/laboratories/inflammation-redox-biology>



Clinical Diabetes and Epidemiology | Professor Jonathan Shaw

Visit: <https://baker.edu.au/research/laboratories/clinical-diabetes>



Clinical Electrophysiology | Professor Peter Kistler

Visit: <https://baker.edu.au/research/laboratories/clinical-electrophysiology>



Diabetes Clinical Research | Associate Professor Neale Cohen

Visit: <https://baker.edu.au/research/laboratories/diabetes-clinical-research>



Diabetes and Population Health | Professor Dianna Magliano

Visit: <https://baker.edu.au/research/laboratories/diabetes-population-health>



Diabetes and Vascular Medicine | Professor Alicia Jenkins

Visit: <https://baker.edu.au/research/laboratories/diabetes-vascular-medicine>



Haematopoiesis and Leukocyte Biology | Professor Andrew Murphy

Visit: <https://baker.edu.au/research/laboratories/haematopoiesis-leukocyte-biology>



Heart Failure Research | Professor David Kaye

Visit: <https://baker.edu.au/research/laboratories/heart-failure-research>



Imaging Research | Professor Tom Marwick

Visit: <https://baker.edu.au/research/laboratories/imaging-research>



Inflammation and Cardiovascular Disease | Dr Tin Soe Kyaw

Visit: <https://baker.edu.au/research/laboratories/inflammation-cardiovascular-disease>



Lipoproteins and Atherosclerosis | Professor Dmitri Sviridov

Visit: <https://baker.edu.au/research/laboratories/lipoproteins-atherosclerosis>



Mechanobiology and Microfluidics | Associate Professor Sara Baratchi

Visit: <https://baker.edu.au/research/laboratories/mechanobiology-microfluidics>



Metabolomics | Professor Peter Meikle

Visit: <https://baker.edu.au/research/laboratories/metabolomics>

Molecular Imaging and Theranostics | Associate Professor Xiaowei Wang



Visit: <https://baker.edu.au/research/laboratories/molecular-imaging-theranostics>

Molecular Metabolism of Ageing | Dr Brian Drew



Visit: <https://baker.edu.au/research/laboratories/molecular-metabolism-ageing>

Molecular Proteomics | Associate Professor David Greening



Visit: <https://baker.edu.au/research/laboratories/molecular-proteomics>

Non-Communicable Diseases and Implementation Science | Professor Brian Oldenburg



Visit: <https://baker.edu.au/research/laboratories/implementation-science>

Physical Activity | Professor David Dunstan



Visit: <https://baker.edu.au/research/laboratories/physical-activity>

Preclinical Disease and Prevention | Associate Professor Melinda Carrington



Visit: <https://baker.edu.au/research/laboratories/preclinical-disease-prevention>

Becoming a Baker Institute student

Studying at the Baker Institute allows for a unique learning environment with an abundance of expertise.

The Institute accepts research students for Honours, Masters and PhD programs enrolled through an Australian University. By undertaking a project led by specialised scientists in medical research, students benefit from the experience of dedicated researchers making a difference to human health. Based next to the Alfred Hospital researchers collaborate closely with clinicians and allow for a bench-to-bedside approach to science with research projects ranging from fundamental to clinical research.

Students at the Baker Institute come from varied backgrounds and form a strong student community at the Baker Institute and the Alfred Research Alliance. The Baker Institute student committee together with the Research Training and Education Committee (RTEC) facilitate student events, including an annual student retreat. RTEC also monitors candidature progression and supervision.

Baker Institute supervisors have appointments with a range of universities including:

Australian Catholic University

University of Melbourne

Deakin University

University of Queensland

La Trobe University

University of Sydney

Monash University

University of Tasmania

RMIT University

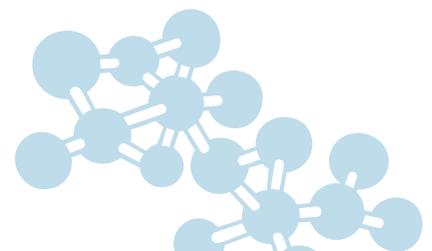
University of Western Australia

Swinburne University

How to apply

- 1** Visit our website www.baker.edu.au/study
- 2** Review the postgraduate research opportunities on offer in your area of interest.
- 3** Contact supervisors directly by email and discuss the suitability of a project.
- 4** Apply for enrolment and relevant scholarships with a collaborating university or funding body.

General enquiries can be directed to: study@baker.edu.au





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