

“ The important thing about scientific research is not so much the process of obtaining new facts but discovering new ways of thinking about them. Imagination is often more important than knowledge. After all, as Albert Einstein said, if we knew what it was we were doing, it would not be called research, would it? ”

- Professor Steve Wilton, Director of CMMIT

Student Opportunities





About the Centre

A joint research centre between Murdoch University and the Perron Institute, the Centre for Molecular Medicine and Innovative Therapeutics brings together researchers and specialist clinicians in a range of rare diseases as well as in rehabilitation.

The Centre has a deep focus on precision medicine, which researchers believe has the potential to transform healthcare on a scale equivalent to the way antibiotics transformed the fight against infectious diseases.

About our groups

Molecular Therapy

Professor Steve Wilton leads a research group that focuses on developing novel therapeutic strategies to treat inherited and acquired human diseases, through the use of genetic drugs (antisense oligonucleotides) to modify gene expression. The team have developed compounds to treat Duchenne muscular dystrophy as well as a range of other rare, and not so rare disorders.

Precision Nucleic Acid Therapeutics

Associate Professor Rakesh Veedu leads the development of novel therapeutic molecules that facilitate target-specific delivery of drugs or diagnostics to disease sites in the body.

Motor Neurone Disease

Professor Anthony Akkari and team are investigating new approaches to the treatment of the fatal motor neurone disease (MND), a disease affecting 350,000 people worldwide.

Neurodegenerative Diseases (including Parkinson's Disease)

Professor Sulev Kõks and his team aim to probe the genetics and molecular pathology of Parkinson's Disease – with the goal of improving the precision clinical management of patients.

Clinical Exercise and Cognition

Associate Professor Tim Fairchild leads an experienced team of researchers in the fields of biomechanics, physiology, motor control and cognition to promote the development of precision therapies.

Demyelinating Diseases Group (including Multiple Sclerosis)

Clinical Professor Allan Kermode and his team explore the clinical, laboratory, radiological, and immunogenic aspects of multiple sclerosis and related disorders, which affect over 25,000 Australians.

Blood Disorders

Professor Ross Baker and Dr Jim Tiao are working to address the unmet needs of patients who die or suffer from blood disorders as well as susceptibility to thrombosis and bleeding in response to anticoagulants or drugs that affect platelet function.

Myositis

Professor Merrilee Needham and her team are investigating the treatment, genetics and immuno-pathology of immune-mediated myositis, particularly inclusion body myositis.

Functional Genomics

Dr Sarah Rea investigates the functional consequences of genetic changes that are associated with neurodegenerative diseases such as ALS and Dementia and aims to identify novel therapeutic strategies to combat these diseases.

Cell-Tissue Systems Modelling

Professor Bruce Gardiner's research uses computational and mathematical models to integrate the physical, chemical and biological processes underlying diseases such as osteoarthritis, colorectal cancer, acute kidney injury and glaucoma.

Sepsis Diagnostic Research

Dr Andrew Currie leads a collaborative team of clinicians, veterinarians and medical researchers invested in finding new and better ways to diagnose, treat and prevent sepsis in newborns, adults and companion animals.

Economic Evaluation of Disease & Diagnostics

Associate Professor Khurshid Alam leads a group in the field of health economics and health care financing research in Murdoch where they conduct cost-effectiveness and cost-benefit analysis to examine value for money (VfM) and resource-allocation for clinical, laboratory and public health interventions.

Skin Integrity Research Group

Dr Kylie Sandy-Hodgetts research focuses on the clinical prevention and early identification of surgical wound complications such as surgical site infection and surgical wound dehiscence.

Improve your employment prospects, enhance your research skills or prepare for postgraduate study by undertaking an Honours, Masters, Accelerated Research Masters or Doctorate of Philosophy (PhD) degree with the Centre of Molecular Medicine and Innovative Therapeutics in one of the specialisations below.

PROJECT AREA	SUPERVISOR	STUDENT TYPE
Neurodegeneration in ALS and FTD <i>Amyotrophic lateral sclerosis, Frontotemporal lobar degeneration, Autophagy, Proteostasis, Cell signalling, Neuroinflammation.</i>	Dr Sarah Rea	Honours, Masters
Antisense Drug Development for inherited and acquired diseases. <i>Molecular Therapy; Antisense Mediated Therapies, Cell Modelling, Drug Development, Cardiovascular Disease, Kidney Diseases, Neurological and Neuromuscular Disorders, Inflammatory Disease, Drug toxicology.</i>	Dr May Aung-Htut , Dr Craig McIntosh , Professor Steve Wilton	Honours, Masters, aRMT, PhD
Precision Nucleic Acid Therapeutic and Diagnostic Development <i>Nucleic acid aptamer-based sensors for precision diagnosis; Nucleic acid drug delivery; Chemically-modified nucleic acid drug development for various disease conditions including Cancers.</i>	Associate Professor Rakesh Veedu , Dr Bao Le	Honours, Masters, aRMT, PhD
Characterising the autoimmune response in inclusion body myositis.	Dr Jerome Coudert	Honours, Masters, aRMT, PhD
Clinical Neurorehabilitation	Dr Yvonne Learmonth , Dr Ann-Maree Vallenge (collaborators Dr Fleur van Rens, MU; Allan Kermode, CMMIT; Alan Harvey Perron & UWA)	aRMT
Clinical Neurorehabilitation, Psychological Resilience Veterans, Gulf War Illness, inclusion body myositis (IBM), chronic pain, mental health, physical rehabilitation, psychological interventions, mind-body interventions (including yoga) randomised controlled trials, neurophysiological mechanisms, telehealth.	Dr Danielle Mathersul , Professor Merrilee Needham, Dr Yvonne Learmonth, Dr Hakuei Fujiyama	aRMT, PhD
Exercise as Therapy <i>Osteoarthritis, Paediatrics, Metabolic Conditions.</i>	Dr Alasdair Dempsey , Associate Professor Timothy Fairchild	Masters, aRMT, PhD
Metabolic Dysfunction <i>Identifying the role of particular metabolic pathways in type 2 diabetes progression.</i>	Associate Professor Timothy Fairchild (collaborators Dr May Aung-Htut, Dr Craig McIntosh, CMMIT; Professor Paul Fournier, UWA; Dr Luke Gray-Whiley and Dr Nicola Gray-Whiley, ANPC)	Masters, aRMT, PhD

How to apply

You can apply for a research degree at any time during the year. If your degree involves a standalone research project, such as a PhD, you can apply to start at any time. If your degree includes coursework, you'll need to apply to start at the beginning of the relevant semester.

Once you've chosen your research topic, found a supervisor and written your research proposal, you're ready to apply for postgraduate research at Murdoch.

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