

Perkins Student Projects | 2021

Welcome

Students form an integral part of the Harry Perkins Institute of Medical Research which is Western Australia's premier adult medical research institute.

With more than 200 staff and students, our mission is to improve the health of Western Australians through cutting edge research that translates into new ways to prevent and treat disease.

Our research focuses on the major diseases that face Western Australians today including cardiovascular disease, cancer, diabetes and obesity, ageing and nerve and muscle disease.

We provide project opportunities for students from any university enrolled in degrees including:

- Bachelor of Engineering with Honours
- Bachelor of Science with Honours
- Bachelor of Biomedical Science
- Relevant masters programs
- PhD studies

New facilities and technology

We have entered an exciting new era with our two new research centres at Nedlands and Murdoch. The new buildings combine the talent, technology and facilities available for medical research in Western Australia and enable greater collaboration between many of the State's major research groups.

The building at Nedlands, the main headquarters of the Perkins, is located at the QEII Medical Centre. The building at Murdoch is located on the Fiona Stanley Hospital campus.

Get in touch

We welcome contact from potential students. Details of how to get in touch with Perkins Laboratory Heads are provided in this leaflet or on our website at www.perkins.org.au

Cancer

Cancer Epigenetics Laboratory

Laboratory Head: Associate Professor Pilar Blancafort
pilar.blancafort@uwa.edu.au

- Project 1:** Manipulating the epithelial to mesenchymal transition by targeted epigenetic editing in breast cancer
Project 2: Development of novel therapeutic strategies to silence oncogenic fusions in childhood sarcomas
Project 3: Using Epi-CRISPR systems to sensitize breast and brain cancers to chemo and radiotherapies
Project 4: Targeted epigenetic reactivation of dormant tumour suppressors in liver cancer
Project 5: Development of a novel Epi-CRISPR platform to manipulate pro-immunogenic and immune-suppressive genes in breast cancer
Project 6: Epigenetic remodelling through the manipulation of Rab GTPases in breast cancer

Laboratory for Cancer Medicine

Laboratory Head: Professor Peter Leedman
[For further information](#)
peter.leedman@perkins.org.au

Cell Signalling Group

Laboratory Head: Associate Professor Evan Ingley
evan.ingley@perkins.uwa.edu.au
Project 1: Hitting the off-switch to stop cancer cells spreading - Control of migration and invasion by the invadopodia regulator AFAP1L1 in sarcoma
Project 2: Personalized Medicine for Sarcoma Patients - Using next generation sequencing and bioinformatic analysis to match the most effective chemotherapy to each sarcoma patient
Project 3: Improving the quality of blood during storage and transfusion for cancer patients - Investigating the role of tyrosine kinases in regulating integrity and longevity of red blood cells

Melanoma Discovery Laboratory

Laboratory Head: Professor Jonas Nilsson
jonas.nilsson@perkins.org.au
Project 1: Development of CAR-T therapies for melanoma
Project 2: Epigenetic regulation of immunotherapy of melanoma
Project 3: Modeling and Interrogating the immune system in humanised animal models

Cancer

Mitochondrial Medicine and Biology Laboratory

Laboratory Head: Professor Aleksandra Filipovska
aleksandra.filipovska@uwa.edu.au
Project 1: Energy dysfunction in prostate cancer
Project 2: The role of metabolism in obesity and insulin resistance
Project 3: Characterising the pathology of heart disease
Project 4: Developing new models of disease using CRISPR/Cas technologies
Project 5: The role of protein syntheses in health and disease

Synthetic Biology and Drug Discovery Laboratory

Laboratory Head: Professor Oliver Rackham
oliver.rackham@curtin.edu.au
Project 1: Beyond CRISPR-Cas9: new tools to manipulate genes
Project 2: Mitochondrial protein synthesis – a master regulator of disease?
Project 3: Using synthetic biology to create new therapeutics

Bioimaging Research and Innovation or Translational Engineering Laboratory (BRITelab)

Laboratory Head: Dr Brendan Kennedy
[For further information](#)
brendan.kennedy@uwa.edu.au

Oncofetal Ecosystem

Laboratory Head: Prof Ankur Sharma
ankur.sharma@perkins.org.au
Project 1: Onco-Fetal Reprogramming of Tumor Ecosystem
Project 2: Single cell genomics to understand immunotherapy response in HCC
Project 3: Tumor Evolution and Ecosystem
Project 4: Tumor Associated Macrophages

Genome Biology & Genetics

Epigenetics and Genomics Laboratory

Laboratory Head: Professor Ryan Lister
ryan.lister@uwa.edu.au

Project 1: Developing new molecular tools to edit the epigenome

Project 2: Investigating epigenome reconfiguration during learning and memory

Project 3: Artificial manipulation of human cell identity

Translational Renal Research Laboratory

Laboratory Head: Dr Aron Chakera
aron.chakera@uwa.edu.au

Project 1: Developing novel diagnostics for the earlier detection and treatment of peritonitis

Project 2: The role of mesothelial cells in peritoneal-dialysis associated peritonitis

Project 3: Understanding bacterial factors that predict more severe disease

Project 4: Using peritoneal dialysis as a uniquely accessible human system to study host-pathogen interactions linked to standardized clinical outcomes

Preventive Genetics Group

Laboratory Head: Professor Nigel Laing AO
nigel.laing@perkins.uwa.edu.au

<https://perkins.org.au/research/labs/genome-biology-genetics-program/neurogenetic-diseases-overview/>

Research Themes: Reproductive carrier screening, Development of improved diagnostics, Development of treatments for genetic muscle diseases.

Project 1: Genetic muscle disease therapy

Project 2: Muscle in a dish - patient iPSCs

Project 3: Improved diagnostics through characterisation of skeletal muscle actin gene (ACTA1) variants in gnomAD.

Rare Disease Genetics & Functional Genomics Laboratory

Head: Dr Gina Ravenscroft

gina.ravenscroft@perkins.uwa.edu.au

<https://perkins.org.au/research/labs/genome-biology-genetics-program/rare-disease-genetics-and-functional-genomics-overview/>

Research Themes: Disease gene discovery in neuromuscular disease, the skeletal muscle regulome, transcriptomic profiling in muscle disease, functional genomics, recurrent miscarriage

Project 1: Gene discovery in severe early-onset muscle disease

Project 2: Gene discovery in neurodegenerative disorders

Project 3: Investigating the muscle regulome

Project 4: snRNA-seq in skeletal muscle disease

Genome Biology & Genetics

Systems Biology and Genomics Laboratory

Laboratory Head: Professor Alistair Forrest
alistair.forrest@perkins.uwa.edu.au

Project 1: Single cell profiling meets single molecule sequencing

Project 2: Spatial transcriptomics of tumours

Project 3: Gene and alternative splice form discovery in single cells

Project 4: Cell-to-cell communication analysis

Project 5: Bioinformatics for single cell and spatial analysis of cancer

Cardiovascular Science & Diabetes

Molecular Endocrinology and Pharmacology Laboratory

Laboratory Head: Professor Kevin Pflieger
kevin.pflieger@uwa.edu.au

Project 1: Investigation of G Protein-Coupled Receptor Molecular Pharmacology

Vascular Engineering Laboratory

Laboratory Head: A/Prof Barry Doyle
barry.doyle@uwa.edu.au

For further information please visit our website and contact Barry.

<http://vasclab.mech.uwa.edu.au>

Translational 3d Printing Laboratory for Advanced Tissue Engineering (T3mPLATE)

Laboratory Head: Dr Elena Juan Pardo

For further information

elena.juanpardo@uwa.edu.au

