



HARRY PERKINS INSTITUTE  
OF MEDICAL RESEARCH

# PERKINS STUDENT PROJECTS



# ABOUT THE PERKINS

Thank you for your interest in becoming a student at the Harry Perkins Institute of Medical Research. Students form an integral part of what we do. Together, we're making progress every day toward preventing, diagnosing and defeating disease.

Since 1998, the Perkins has grown to become one of the nation's leading research hubs, where more than 400 research, professional and clinical trial staff work together to defeat disease.

Boasting two state-of-the-art research facilities on the QEII Medical Centre and Fiona Stanley Hospital precincts, as well as laboratories at Royal Perth Hospital, the Perkins has created a culture of innovation and collaboration to deliver better patient outcomes faster.

Research at the Perkins is focussed on the major diseases that impact the WA community. This includes cardiovascular disease, cancer, diabetes and rare genetic diseases. Our teams investigate the genetic causes of these diseases and develop new treatments to improve the quality and length of people's lives.

If you're like us and want to undertake cutting edge research that uncovers new ways to prevent and treat disease, then join us in our mission to improve community health.

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

If you are interested in a student project, please contact the Laboratory Head with whom you would like to work.

**Learn more at [perkins.org.au](http://perkins.org.au)**



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# WHY STUDY AT THE PERKINS



With friendly and cooperative teams and world-class amenities that include a 250 seat auditorium, tech laden meeting rooms and seminar rooms, on-site cafés, fantastic end-of-trip facilities and a range of fitness and recreational opportunities available on campus - the Perkins provides an exciting environment aimed at increasing both professional and social collaboration.

The Perkins combines scientific talent, advanced research technology and pioneering facilities to enable great partnerships between the State's major research groups. Our teams are led by global experts in their field - each making impactful breakthroughs that are changing the outcome for people facing disease.

You can give your career the ultimate head start by joining us at the Perkins. Be part of a learning environment that fosters excellence and innovation to help students develop the tools needed to succeed.

## STUDENT SCHOLARSHIPS

The Perkins offers a number of prestigious scholarships to support high-achieving students wanting to further their career in medical research.

Students must enrol for their degree through a Western Australian university and undertake their research at the Harry Perkins Institute of Medical Research under the supervision of a Perkins researcher.

Our Research Development Office can help with applications for top-up scholarships while you're undertaking a research project at the Perkins.

**Perkins Vacation Scholarships provide students with an exciting opportunity to learn valuable skills and sample real-life medical research in the labs of leading scientists.**

**If you are considering postgraduate research, speak to a group leader about a project opportunity and they can assist you in applying for a 6-week vacation scholarship.**

# STUDENT PROJECT OPPORTUNITIES

## CANCER PROGRAM

Perkins cancer researchers investigate some of the toughest to treat cancers, such as triple-negative breast cancer, liver cancer and melanoma. Listed below are some of the student projects that you could contribute to.

### Cell Signalling Group

Laboratory Head

Associate Professor Evan Ingley

[evan.ingley@perkins.uwa.edu.au](mailto: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

### Cancer Epigenetics Laboratory

Laboratory Head

Associate Professor Pilar Blancafort

[pilar.blancafort@uwa.edu.au](mailto: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

### Mitochondrial Medicine and Biology Laboratory

Laboratory Head

Professor Aleksandra Filipovska

[aleksandra.filipovska@uwa.edu.au](mailto: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](mailto: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

# STUDENT PROJECT OPPORTUNITIES

## CANCER CONT.

### **Oncofetal Ecosystem**

Laboratory Head

Prof Ankur Sharma

[ankur.sharma@perkins.org.au](mailto: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

### **Laboratory for Cancer Medicine**

Laboratory Head

Professor Peter Leedman

[peter.leedman@perkins.org.au](mailto:peter.leedman@perkins.org.au)

Project 1: Breast Cancer and novel therapies

Project 2: Head and neck cancer and new treatments

Project 3: Novel RNA-based therapies for liver cancer

### **Bioimaging Research and Innovation or Translational Engineering Laboratory (BRITelab)**

Laboratory Head

Dr Brendan Kennedy

For further information

[brendan.kennedy@uwa.edu.au](mailto:brendan.kennedy@uwa.edu.au)

## CARDIOVASCULAR SCIENCE AND DIABETES

### **Molecular Endocrinology and Pharmacology Laboratory**

Laboratory Head

Professor Kevin Pflieger

[kevin.pflieger@uwa.edu.au](mailto:kevin.pflieger@uwa.edu.au)

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

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

Laboratory Head

Dr Elena Juan Pardo

For further information

[elena.juanpardo@uwa.edu.au](mailto:elena.juanpardo@uwa.edu.au)

# STUDENT PROJECT OPPORTUNITIES

## GENOME BIOLOGY AND GENETICS PROGRAM

The Genome Biology and Genetics Program focuses on factors that affect health and well-being at the genetic, protein and population levels, with the aim of improving diagnosis and treatment of disease.

### Epigenetics and Genomics Laboratory

Laboratory Head

Professor Ryan Lister

[ryan.lister@uwa.edu.au](mailto: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](mailto: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](mailto:nigel.laing@perkins.uwa.edu.au)

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

### Systems Biology and Genomics Laboratory

Laboratory Head

Professor Alistair Forrest

[alistair.forrest@perkins.uwa.edu.au](mailto: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

### Rare Disease Genetics & Functional Genomics Laboratory

Laboratory Head

Associate Professor Gina Ravenscroft

[gina.ravenscroft@perkins.uwa.edu.au](mailto:gina.ravenscroft@perkins.uwa.edu.au)

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

# JOIN OUR COMMUNITY

## BE PART OF SOMETHING SPECIAL

You can learn more about the Perkins at one of our many community events. Come along to a Community Q&A panel discussion, sign up for an activity in the Lotterywest BioDiscovery Centre or take part in one of our major fundraising events.

The Perkins accepts volunteers in various areas of our operations. This includes office support in the community engagement and fundraising teams, and/or volunteering to support our major events.

For more information visit [perkins.org.au/get-involved](https://perkins.org.au/get-involved)



## MACA CANCER 200 RIDE FOR RESEARCH

The MACA Cancer 200 is a two-day 200km bike ride that raises funds for Perkins cancer research. Together we can beat cancer.



[cancer200.org.au](https://cancer200.org.au)

## NEW TOWN TOYOTA WALK FOR WOMEN'S CANCER

The NTT Walk for Women's Cancer is not a race, it's a journey. Walk through Perth and enjoy the familial feel of the event.



[walkforwomenscancer.org.au](https://walkforwomenscancer.org.au)



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