Our research focuses on metabolism

**Can metabolic health be improved by modulating sphingolipid biosynthesis?**

Intracellular accumulation of toxic lipid intermediates impairs the actions of insulin to regulate carbohydrate and lipid metabolism. This project will test the physiological effects of novel compounds we have developed to target the biosynthesis of different sphingolipid species, with a goal of improving metabolic and cardiovascular health.

**Understanding mitochondrial stress signaling**

Mitochondria are the key site for ATP production, but also participate in many other processes. But how do mitochondria communicate cell-to-cell? This project will examine the intercellular signaling pathways activated in response to mitochondrial bioenergetic stress and determine if there is an associated secretion of bioactive molecules.

**Promoting NAD\(^+\) biosynthesis to prevent diabetes and cardiovascular disease**

NAD\(^+\) is an important co-factor for many enzymes, including the family of sirtuin enzymes, which are critical for regulating metabolism and lifespan. This project will use genetic and pharmacological approaches to examine the effect of promoting NAD\(^+\) biosynthesis in mouse models of ageing, diabetes and cancer.

**Targeting metabolism to treat pancreatic cancer?**

Cancer cells reprogram their metabolism to use fuel (fat, protein and glucose) that allows them to proliferate and thrive. This project investigates how cellular energy metabolism is altered in pancreatic cancer. This will inform novel anti-cancer strategies to potentially improve treatment for pancreatic cancer.

**WHAT CAN YOU LEARN FROM US?**

- Genetic manipulation
- Animal physiology
- Cell culture
- Mass spectrometry
- Measures of oxidative metabolism
- Radiolabelled substrate metabolism
- Western blotting
- Molecular biology and biochemical assays

**OUR FOCUS**

How do different genes and pathways in the body balance food intake and energy expenditure to maintain a healthy body weight?

We aim to better understand the factors that regulate cellular metabolism under normal conditions and in disease.

**OUR TEAM 😊**

- **Prof Nigel Turner** – Lab Head
- **Dr Sarah Hancock** – Postdoctoral Research Fellow
- **Linda Garthwaite** – Senior Research Assistant
- **Amy Nguyen** – Research Assistant

**PhD Students**

- Jasmine Banks
- Laura Choong
- Thomas Lakeland
- Hemna Govindaraju

**Honours Students**

- Ying Fei Liew
- Michael Susietio
- Selene Jang

**RECENT PUBLICATIONS**