

# En"RAGE"ing the islet: Investigating the role of the Receptor for Advanced Glycation End-Products (RAGE) in islet edocrine cells and diabetes.

## Project Description

Project duration:	PhD Project ( 3.5 years) or possible Honours (1yr)
Description:	<p>Type 1 diabetes is the most common chronic disease which manifests in early life. Although comprising only 10% of diabetes cases, type 1 diabetes makes up ~40% of the total cost of diabetes to Australia, due to its early life onset and complex clinical management. Type 1 diabetes is an autoimmune disease where the body "turns on itself" and actively destroys the cells which produce the sugar storage hormone insulin. Hence, there is no cure and individuals require life-long insulin administration for survival.</p> <p>Our team is investigating novel therapies targeting RAGE, an immunoglobulin-like receptor present on many types of immune cells and on endocrine (beta and alpha) cells of the pancreas during the development of T1D. The gene for RAGE is also located in the major region responsible for inherited susceptibility to T1D development. We have previously shown that RAGE inhibition using therapy leads to improvement in beta cell function and health and increases in regulatory T cells (Tregs), decreases in pathogenic CD8+ T cells thereby delaying T1D onset in our preclinical models. We have also shown that having higher levels of certain forms of RAGE helps to protect young people from developing T1D. This PhD is part of a comprehensive program of research in partnership with hospitals, other research teams and industry, integrating both clinical and preclinical studies. During this PhD project, you will uncover the critical role that RAGE expression on the endocrine beta and alpha cells plays in glucose homeostasis, beta cell damage and susceptibility to diabetes.</p>
Expected outcomes and deliverables:	<ul style="list-style-type: none"> <li>(i) Understanding of how clinical and translational teams function in a research environment.</li> <li>(ii) Measurement of beta and alpha cell function, structural damage and assays of glucose control.</li> <li>(iii) SEAHORSE assay and other mitochondrial assessments.</li> <li>(iv) Advanced microscopy (confocal and multispectral) and Multispectral flow cytometry techniques.</li> <li>(v) Preclinical physiological models of glucose control.</li> <li>(vi) Bioinformatics and advanced statistical analyses.</li> <li>(vii) Co-authorships on publications as first author where research contribution warrants this.</li> </ul>

	<p>Oral presentations, Abstract submission to local, national and international scientific meetings and active opportunity for contribution to other projects being performed by our team as long as these do not interfere or compete with with the PhD candidature completion timeframe. The completion of any compulsory PhD course work and a thesis in line with the guidelines of UQ are unconditionally expected and used to assess this research degree.</p>
Suitable for:	<p>Looking for someone motivated, energetic and ready to work with a great team! Must want to make a real difference for people living with diabetes 😊</p> <p>Must have either a medical or scientific undergraduate degree with a research higher degree (such as honours).</p> <p>Interested students who are looking for an Honours project can contact the supervisors to discuss possible short duration projects in this area.</p>
Primary Supervisor:	<p>Prof Josephine Forbes / Dr Amelia Fotheringham Diabetes and Metabolism Research Group</p>
Further info:	<p>Please contact us for more information and prior to submitting an Honours or PhD application:</p> <p><a href="mailto:josephine.forbes@mater.uq.edu.au">josephine.forbes@mater.uq.edu.au</a>; <a href="mailto:amelia.fotheringham@mater.uq.edu.au">amelia.fotheringham@mater.uq.edu.au</a></p>