



Project Title: The role of thrombospondin-1 and CD47 in diabetes and islet transplantation.		Code: WIMR5
Host School / Institute: Westmead Institute for Medical Research		Address: 176 Hawkesbury Road, Westmead
Certificates & Clearances required: Yes *Vaccination Certificate <i>Information on how to obtain certificates, where necessary, will be given to successful applicants.</i>		
Primary Supervisor: A/Prof Natasha Rogers		
Phone: 0448 122 468	Email: natasha.rogers@health.nsw.gov.au	
Co-Supervisor/team: Dr Kedar Ghimire (postdoctoral fellow)		
Project Type: Laboratory based		
Project Category: Molecular biology; Endocrinology/Metabolism		
Skills / Attributes of a successful student: Students with prior laboratory experience are at an advantage. However, prior experience is not a pre-requisite and students will be taught most skills if necessary. Students are expected to be punctual. Out-of-hours work is not expected, however, if students wish to undertake this when they are sufficiently independent, this will be supported by the supervisors. Students will be expected to learn a number of laboratory skills in a short period of time, and a rapid ascent to independence is also encouraged. There are always lab members (including immediate supervisors and other lab staff) available to help trouble-shoot with experimental work.		
Project Keywords: Diabetes mellitus; islet biology; transplantation		
<p>Project Description: Type I Diabetes mellitus (T1D) is a significant and growing public health problem. The standard treatment options for diabetes are limited to control of blood sugar levels through insulin replacement. However, insulin injections do not result in normal metabolic control, leading to complications affecting the eyes, heart and kidney. This contributes to morbidity and early mortality, and creates a substantial burden on the healthcare system.</p> <p>Islet transplantation is a potential cure for type I diabetes, but long-term success only occurs when sufficient numbers of islets are transplanted. Islet isolation for transplantation leads to devascularization and hypoxia, which are detrimental to islet survival. This project investigates a new pathway in islet cell biology, regulated by thrombospondin-1 and CD47, and the role this pathway plays in promoting islet cell stress and apoptosis, as well as islet transplant failure.</p> <p>This summer project will investigate the role of several new molecules in diabetes, and the roles these molecules play in driving islet cell death. The student will be analysing the expression of these molecules of interest in insulin-producing islet cells. The student will work with supervisors who have expertise in these areas. You will learn many useful and transferable research skills including experimental design, standard molecular biology techniques (cell culture, western blot, PCR), basic laboratory bench work (ELISA, immunohistochemical staining), and data analysis. There will also be the opportunity to work with mice, if desired, and assisting with islet cell transplantation. The applicant will also prepare a short presentation of his/her results and develop skills in preparing a manuscript for publication in a peer-reviewed journal. The applicant who contributes well will be rewarded with co-authorship on any resulting publication and there may be opportunities to develop and extend this topic into further projects suitable for Honours or MPhil work. Preference will be given to applicants who contact the supervisors to discuss the role in advance.</p>		