

Project proposal

Project title	<input type="text" value="The role of iron in the development of diabetes"/>	
First Supervisor	Dr <input type="text" value="Mike Stolinski"/>	<input type="text" value="Mike Stolinski"/>
Second Supervisor	<input type="text" value="Dr Adam LeGresley"/>	
School	<input type="text" value="Life Sciences"/>	
Other member of supervisory team (no more than three KU supervisors in total)	<input type="text" value="Dr Jean-Marie Peron, Pharmacy and Chemistry"/> <input type="text" value="Dr Rosie McNiece, Mathematics"/>	
Specific requirements beyond 2:1 degree	<input type="text"/>	

Project summary (max 4,000 characters)

MSc by Research

Recent epidemiological studies have described an association between the accumulation of iron in the liver and the development of diabetes. The reasons for this association are unclear; it is not known whether iron stimulates the onset of diabetes or whether diabetes itself leads to an accumulation of hepatic iron.

In an attempt to provide further understanding of this finding, this project will investigate the effects of iron on the fuel selection preferences of liver cells grown in culture. The student will investigate whether iron overload promotes metabolic pathways leading to steatosis (an accumulation of liver fat) and hepatic insulin resistance. This will be achieved by measuring the conversion of non-radioactive, stable isotopically labelled (non-radioactive) precursors of metabolites into lipids and carbohydrates. The gene expression of key regulators involved in substrate and iron metabolism will be determined. The student will be trained in a range of techniques including: cell culture, lipid extraction, PCR, nuclear magnetic resonance (NMR) analysis and the mathematical modelling of isotopic data. The supervisory team for this project is multidisciplinary and comprises individuals with experience in NMR, mathematical modelling, chemical pathology and lipid metabolism.

Dr Mike Stolinski, Life Sciences
Dr Adam Le Gresley, Pharmacy and Chemistry
Dr Jean-Marie Peron, Pharmacy and Chemistry
Dr Rosie McNiece, Mathematics
Mr Paul Waller, Life Sciences