

Project proposal

Project title	<input type="text" value="The decellularised pancreas as a natural scaffold for islet bioengineering"/>	
First Supervisor	Dr <input type="text" value="Natasha Hill"/>	<input type="text" value="Natasha Hill"/>
Second Supervisor	<input type="text" value="Dr Lucy Jones"/>	
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 Mike Stolinski"/>	
Specific requirements beyond 2:1 degree	<input type="text"/>	

Project summary (max 4,000 characters)

Diabetes is a major world health problem that results from the loss or malfunction of insulin producing cells in pancreatic islets. Regenerative medicine approaches could allow us to replenish the lost or damaged islet tissue and to treat diabetes more effectively. The goal of this project is to use the natural matrix of decellularised pancreas as a scaffold to create bioengineered islets for transplantation.

The extracellular matrix plays a vital role in regulating cellular differentiation and growth. Tissue specific characteristics, such as the composition of matrix proteins and matrix stiffness, are important factors in creating the correct niche environment that directs stem cell differentiation and tissue specific characteristics. Although progress has been made in determining islet matrix composition, the challenge of re-creating the 3D structural support and vascular network remains. The aim of this project is to utilise the native pancreas structure as a 3D scaffold and source of tissue specific matrix signals.

This is a collaborative project between Kingston University and Dr Aileen King and Prof Peter Jones at Kings College London. The student will be trained in a wide range of cell and tissue bioengineering techniques including organ decellularisation, islet transplantation, cell culture, confocal microscopy and scanning electron microscopy.