

Project proposal

Project title	<input type="text" value="A pathogenic role for SPARC in retinopathy and loss of vision in diabetes patients"/>	
First Supervisor	Professor <input type="text" value="Barbara Pierscionek"/>	<input type="text" value="Barbara Pierscionek"/>
Second Supervisor	<input type="text" value="Dr Natasha Hill"/>	
School	<input type="text" value="Life Sciences"/>	
Other member of supervisory team (no more than three KU supervisors in total)	<input type="text"/>	
Specific requirements beyond 2:1 degree	<input type="text"/>	

Project summary (max 4,000 characters)

The sight of diabetes patients is threatened by a number of complications, the most common of which is a condition known as diabetic retinopathy. This uncontrolled proliferation of poorly formed blood vessels in the retina of the eye leads to haemorrhaging and can result in loss of vision and ultimately blindness. It is estimated that around 40 % of people with diabetes have some form of retinopathy, and 1 in 12 of these have loss of vision (US National Eye Institute).

Obesity and Type 2 diabetes are associated with increased expression of an interesting matricellular protein known as SPARC. SPARC may play a number of roles in diabetes, and in particular there is evidence that SPARC plays an important role in the eye. It is important for maintaining eye lens transparency and retinal function and may be involved in the development of diabetic retinopathy. SPARC is upregulated by high levels of insulin and leptin, which are present in many type 2 diabetes patients.

The goal of this project is to test investigate the function of SPARC in the retina and in the development of diabetic retinopathy using novel 3D tissue culture models. The project involves the use of techniques including 3D cell culture, isolation of purified cell populations from tissue, western blotting, ELISA, HPLC, confocal microscopy and histological techniques to study retinal microvasculature.

This is a collaborative project between the Diabetes and Cardiovascular Research Group and Vision, Cognition and Neuroscience group.