Available PhD Project:

Supervisor: Dr Kate Hughes
Supervisor profile page: https://www.research.vet.cam.ac.uk/research-staff-directory/principal-investigators/systems-pathology/Kate-Hughes

Project Title: Investigating the role of STATs in mammary tumourigenesis in rabbits using a dual histopathological and cell-culture based approach.

Description:

There are approximately 1.5 million pet rabbits in the United Kingdom. As these rabbits are pets, they frequently live to an advanced age and develop neoplasms, including mammary neoplasms. Many rabbit mammary tumours are malignant. The cause of tumour development is poorly understood, and it is difficult to predict how individual tumours will behave clinically. STAT3 and STAT5 are key molecular factors that control postnatal mammary development and are frequently aberrantly activated in human breast cancer. The project will examine the role of STAT3 and STAT5 in mammary tumourigenesis using archived tissue from clinical cases, and cell culture based techniques. Firstly, expression of STAT3 and STAT5 will be assessed at different mammary developmental stages, utilizing archived tissue. Primary mammary epithelial cells will be isolated from donated rabbit cadavers and these will be used to identify downstream STAT target genes. Primary mammary epithelial cells will be immortalised to provide a system in which rabbit mammary epithelial cells can be manipulated to better understand their biology and their transformation to cancer cells. Finally, expression of STAT3 and STAT5 and selected downstream target genes will be assessed in archived mammary tumours and expression of these proteins will be correlated with histopathological features, proliferation and survival data.

Skills to be learnt by student:

Histopathology, immunohistochemistry, immunofluorescence, cell culture [including isolation of primary cells], western blotting, RT-PCR, qRT-PCR.

Funding:

This project is not funded. Prospective students would be expected to apply for funding opportunities either through the University (http://www.vet.cam.ac.uk/grad/Prospectivestudents/funding) or other sources.

How to apply:
Contact the Supervisor to discuss before submitting an application.
More details on how to apply here: http://www.vet.cam.ac.uk/grad/Prospectivestudents/apply