CRUK Cambridge Centre MRes rotation project

Rotation Project Title	Investigation of chemotherapy resistance in a canine transmissible cancer
Head of Laboratory (PI) Name	Elizabeth Murchison
Second supervisor if applicable	
Programme	Quantitative studentship
Supervisor's Email	epm27@cam.ac.uk
Laboratory Location	Department of Veterinary Medicine

Project Outline	The canine transmissible venereal tumour (CTVT) is a transmissible cancer clone that is naturally transmitted between dogs by the physical transfer of living cancer cells. Thus, CTVT is an ancient cancer that first arose from the cells of an individual dog several thousand years ago, but which now circulates through global dog populations. Remarkably, CTVT is highly responsive to cytotoxic chemotherapy. However, despite overall excellent response to therapy, some CTVT tumours do not resolve with treatment. We will compare host and tumour genetic features of matched responsive and unresponsive CTVT tumours, and assess if the immunological makeup of the tumour microenvironment is a predictor of chemotherapy response. The project may provide broad insights into how the immune system influences chemotherapy response.
Experimental plan	We will compare host and tumour genetic features of matched responsive and unresponsive CTVT tumours, and assess if the immunological makeup of the tumour microenvironment is a predictor of chemotherapy response.
Main Techniques	• RNAseq analysis • Genome analysis • Histology and immunohistochemistry analysis
Key References	1. Murchison EP **2008** Clonally transmissible cancers in dogs and Tasmanian devils. ***Oncogene*** 27: S19 – S30 2. Murchison EP, Wedge DC §, Alexandrov LB, Fu, B, Martincorena I, Ning Z, Tubio JMC, Werner EI, Allen J, Barboza de Nardi A, Donelan EM, Marino G, Fassati A, Campbell PJ, Yang F, Burt A, Weiss RA, Stratton MR* **2014** Transmissible dog cancer genome reveals the origin and history of an ancient cell lineage. ***Science***. Jan 24;343(6169):437-40