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Genetics and Evolution of Transmissible Cancers in Dogs and Tasmanian Devils

Dr Elizabeth Murchison

Fellow of Medical Sciences,
King's College, Cambridge

WOLFSON LECTURE THEATRE
CHURCHILL COLLEGE

7.30 p.m., Monday 11th June, 2012

Each individual cancer is a clonal cell lineage that emerges through an evolutionary process when a single cell of the body acquires somatic mutations that drive proliferation and survival. As it develops, cancer can spread through the body to invade distant tissues. However, it does not normally spread or survive outside of the body. Clonally transmissible cancers are clonal cell lineages that survive beyond the deaths of their hosts by acquiring adaptations for transmission between hosts. Rare examples of cancer transmission between humans have been reported due to transfer of cancer cells in utero, by surgical injury, by experimental inoculation and by inadvertent transplantation of cancer cells with donated organs. However, there are only two known naturally occurring clonally transmissible cancers that have spread between multiple hosts and these are the transmissible venereal tumour of dogs and the facial tumour of Tasmanian devils. These two cancers are specialised parasitic clonal cell lineages that spread between individuals through physical contact and have survived long after the deaths of the animals from which they originally emerged.

The goal of the research is to understand how cancers can become transmissible and survive in multiple hosts. By studying the genetics and evolution of the canine and Tasmanian devil transmissible cancers it is hoped that changes that allow cancers to survive long-term and to evade the immune systems of their hosts will be understood.

About the speaker:

Doctor Murchison is a Research Fellow in the Cancer Genetics and Genomics Group at the Wellcome Trust Sanger Institute. She graduated with a Bachelor of Biomedical Science in 2002 from the University of Melbourne, Australia, and obtained a Ph.D. in 2007 from Cold Spring Harbor Laboratory in New York. Elizabeth holds a Research Fellowship at King's College Cambridge and she has previously held Fellowships from the European Molecular Biology Organisation (EMBO) and the American Australian Association. She has received several Awards, including the L'Oreal-UNESCO For Women in Science UK and Ireland Fellowship (2009) and the 2012 Eppendorf Award for Young European Investigators. Elizabeth is a keen public communicator, and she recently presented a TED talk at TEDGlobal 2011. Elizabeth's research is focused on the genetics and evolution of clonally transmissible cancers.

Additional note:
The CSAR Lectures are open to all; CSAR members are admitted free. Non-members are asked to

make a nominal donation of £3.00.

Coffee and biscuits will be available in the Wolfson Foyer from around 7pm until the start of the lecture. Location information: http://www.chu.cam.ac.uk/about/visitors/directions.php

The talk will be held in the lecture theatre in Wolfson Hall (4):