Institute of Medical Biology
A*STAR

Seminar Announcement

- All Are Welcome -



Speaker: **Dr Elizabeth Murchison**
Department of Veterinary Medicine
University of Cambridge

Title: **"Genome analysis of clonally transmissible cancers in dogs and Tasmanian devils"**

Date : **20 Jan 2014 (Monday)**
Time : **2.00pm – 3.00pm**
Venue: **Aspiration Theatrette, Matrix Level 2M, Biopolis**
Hosts : **Dr Leah Vardy & Dr Colin Stewart**
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Abstract of the Seminar:
Tasmanian devil facial tumour disease (DFTD) and canine transmissible venereal tumour (CTVT) are the only two known naturally occurring clonally transmissible cancers. These are cancers that can be transmitted between individuals by the physical transfer of living cancer cells. Thus DFTD and CTVT are long-lived somatic cell lineages that each first originated once as cancers in single individuals but that have now spread through their respective host populations as parasitic clonal cell lineages. DFTD is spread by biting and is threatening its host species, the Tasmanian devil, with extinction. CTVT is a sexually transmitted cancer that affects dogs and has spread around the world together with its host. The genome sequences of DFTD and CTVT have revealed features of the individuals that first spawned these two lineages as well as patterns of mutation and selection that have driven the evolution and characterised the emergence and spread of these two unusual long-lived cancers. Clonally transmissible cancers are a poorly understood type of infectious pathogen; although there are only two known diseases of this type, such diseases can emerge rapidly and have disastrous implications for species conservation.

About the Speaker:
Elizabeth Murchison is Reader in Comparative Oncology and Genetics at the University of Cambridge, Department of Veterinary Medicine. Her laboratory studies the genetics, evolution and host interactions of clonally transmissible cancers. There are only two known naturally occurring clonally transmissible cancers, and these are the Tasmanian devil facial tumour disease (DFTD) and the canine transmissible venereal tumour (CTVT). These two clonal cell lineages are spread between individual hosts by the physical transfer of living cancer cells. DFTD is spread by biting and is threatening its host species, the Tasmanian devil, with extinction. CTVT is a sexually transmitted cancer that affects dogs and is found around the world. Elizabeth uses genetics and genomics to understand the origins, evolution and geographical spread of these two unusual diseases.

Elizabeth grew up in Tasmania, Australia, and studied biomedical science at the University of Melbourne. She travelled to New York to perform her PhD at Cold Spring Harbor Laboratory under the supervision of Prof Greg Hannon. Her PhD, which she was awarded in 2007, focussed on the endogenous functions of the RNA interference machinery in mammal. Elizabeth first heard of the Tasmanian devil facial tumour disease (DFTD) while at Cold Spring Harbor Laboratory. The key turning point in her career occurred in early 2006, when she came across a wild roadkill Tasmanian devil with symptoms of DFTD in remote central Tasmania. She then decided to use genetics to further understand the biology of DFTD.

In 2008 Elizabeth returned briefly to Australia to perform postdoctoral studies at the Australian National University, and in 2009 she took up an Australian government fellowship in the Cancer Genetics and Genomics Group at the Wellcome Trust Sanger Institute, UK. At the Sanger Institute Elizabeth led a consortium involved in sequencing the genomes of the Tasmanian devil and DFTD. She also sequenced the genome of CTVT and performed a comparative genetic analysis of geographically dispersed CTVT tumours. Elizabeth joined the Department of Veterinary Medicine at the University of Cambridge in 2013.

In 2009 Elizabeth was awarded a L'Oreal-UNESCO For Women in Science UK and Ireland Fellowship and in 2012 she was the recipient of the Eppendorf Award for Young European Investigators. She was selected to present the 2014 Balfour Prize Lecture by the Genetics Society and in 2012 she was the recipient of an MRC Jewellery Heirloom Award. In 2011 she delivered a TED talk entitled "Fighting a Contagious Cancer" which has been translated into 30 languages and viewed by a global audience more than 300,000 times.