

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

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ATTENTION: Chiefs of Staff, News Directors



New facts uncovered about devil cancer

Scientists, including researchers at Menzies Research Institute Tasmania, looking into the Devil Facial Tumour Disease affecting Tasmanian Devils have uncovered startling new facts about the cancer.

Dr Elizabeth Murchison, from the Wellcome Trust Sanger Institute in the UK, is the lead author on the research paper *Genome sequencing and analysis of the Tasmanian devil and its transmissible cancer* published in the prestigious international journal *Cell*.

“The goal of the research was to understand the genetic changes that first caused DFTD to arise and to use genetic markers to characterise the cancer’s evolution and spread,” Dr Murchison said.

To this end the researchers sequenced the complete genomes of two DFTD tumours, from devils from Narawntapu on Tasmania’s north coast and from the Forestier Peninsula on Tasmania’s south coast.

Dr Murchison said that DFTD first arose in a single female devil. Although this devil is now dead, her DNA is still alive in the genome of DFTD.

She explained that DFTD is unusual in that it is a cancer that survived beyond the death of the devil that spawned it by adapting so it can be transmitted between hosts.

“The genomes of the Tasmanian devil and the DFTD cancer are very important from the perspective of conservation of a threatened species as well as for the insights they may provide into the origins and evolution of a cancer that can adapt in this way.

“The research results found DFTD is a relatively stable cancer and has fewer mutations than some human cancers.

“This indicates that cancers do not need to be very unstable in order to become transmissible,” Dr Murchison said.

Dr Murchison said devils have a similar number of genes to humans and more than 400 genes are mutated in DFTD.

“These include mutations in three genes that are known to be involved in human cancer.

“A distinctive type of mutation was found in DFTD,” Dr Murchison said.

“Further future work is required to understand how these mutations caused the cancer.”

Co-author, Associate Professor Greg Woods from the Menzies Research Institute Tasmania, an institute of UTAS, explained the research has found that as DFTD spreads across Tasmania the number of mutations increases producing different tumour subtypes.

“We have found evidence that one tumour subtype has overtaken others on the Forestier Peninsula.

“This suggests that this tumour subtype may have evolved a genetic advantage.

“Devils can also simultaneously carry more than one DFTD genetic subtype. This indicates that being infected once does not protect devils from subsequent infections of DFTD.”

This work was supported in part by a Wellcome Trust grant (077012/Z/05/Z), a Dr Eric Guiler Tasmanian Devil Research Grant and a L’Oreal UNESCO For Women in Science Fellowship, UK and Ireland.

About DFTD:

DFTD was first observed in North Eastern Tasmania in 1996. The disease is characterised by the appearance of tumours, usually on the face and inside the mouth of affected animals which usually cause death within months. DFTD spreads by the direct transfer of living cancer cells, usually through bites inflicted on the face during mating and feeding. DFTD is causing a dramatic population decline of the Tasmanian Devil.

The Save the Tasmanian Devil Program is the official joint strategy of the Australian and Tasmanian Governments, and the University of Tasmania. This research was funded by the Save the Tasmanian Devil Appeal, a fundraising initiative of the Save the Tasmanian Devil Program, administered by the University of Tasmania.

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