

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

DATE: MONDAY 11 MARCH 2013

ATTENTION: Chiefs of Staff, News Directors



Encouraging steps forward in fight to save the Tasmanian devil

Scientists engaged in the fight to save the endangered Tasmanian devil have made some encouraging steps forward.

New research is providing direction for the development of a vaccine for the contagious cancer which is driving Tasmanian devils to the brink of extinction.

The Devil Facial Tumour Disease (DFTD) is a transmissible cancer that is spread from animal to animal through biting.

Until now, scientists believed that the tumours were able to avoid detection by the immune system because the Tasmanian devils have very little genetic diversity (preventing the immune system from recognising the tumour as foreign).

However, an international collaboration between the University of Tasmania's Menzies Research Institute Tasmania and the School of Zoology, the Save the Tasmanian Devil Program, the University of Cambridge, the University of Sydney and the University of South Denmark has discovered that the explanation is more complex.

Menzies' Professor Greg Woods says that the reason why the tumour cells do not get rejected when transplanted between devils is due to the nature of the DFTD cancer cells and not due to any fault of the devil's immune system.

On the surface of nearly every mammalian cell are major histocompatibility complex (MHC) molecules. These molecules enable the immune system to determine if a cell is friend or foe, triggering an immune response if the cell is foreign and a potential threat. However, this new research reveals that DFTD cancer cells lack these molecules, thereby avoiding detection by the devil's immune system.

The researchers found that the DFTD cells have lost the expression of MHC molecules, but that the genes that code for these molecules are still intact.

"This means that these genes could potentially be turned back on," Professor Woods said.

“By introducing signalling molecules such as interferon-gamma, a protein which triggers the immune response, the DFTD cells can be forced to express MHC molecules.

“This work highlights the potential for the development of a vaccine,” Professor Woods said.

Dr Menna Jones, from UTAS’ School of Zoology, said that “we now need to link these findings with cases of regressed tumours that we see in wild devils to understand the potential for the evolution of tolerance to the disease”.

While these results are important for understanding how to combat the disease at a biological level, the challenge is to ensure the species’ survival in the wild, said the Director of the Save the Tasmanian Devil Program, Dr Howel Williams.

“The Program, along with its partners in the Zoo and Aquarium Association and Devil Island Project, has established an insurance population of more than 500 disease free devils in captive breeding facilities throughout Australia, and in Devil Islands in Tasmania.

“We’re now working on protecting populations of healthy devils in the wild in large areas of natural habitat in Tasmania, on islands and peninsulas, physically isolated from diseased devils,” said Dr Williams.

The paper, titled ‘Reversible epigenetic down-regulation of MHC molecules by devil facial tumour disease’, was published today in the journal *Proceedings of the National Academy of Sciences (PNAS)*, one of the USA’s leading biomedical journals.

The first signs of DFTD were observed in 1996. Since then, sightings of devils across the State have declined by around 85 per cent. The Tasmanian devil is listed as ‘Endangered’ under the Commonwealth’s *Environment Protection and Biodiversity Conservation Act 1999*, and the Tasmanian Government’s *Threatened Species Protection Act 1995*.

Researchers from University of Cambridge (UK) and Menzies (Hobart) worked together in the Menzies research laboratories in Hobart to produce preliminary data which laid the foundations of this study. Cell samples were taken from Tasmanian devils from different areas of Tasmania. The study was then refined and completed in Cambridge in the United Kingdom.

This research was funded by the Wellcome Trust, EMBO, NHMRC, ARC and the Save the Tasmanian Devil Appeal, a fundraising initiative of the Save the Tasmanian Devil Program, administered by the UTAS Foundation.

AVAILABLE FOR INTERVIEW ON TUESDAY 12 MARCH 2013:

WHO: Professor Greg Woods, Menzies Research Institute Tasmania; Dr Menna Jones, UTAS School of Zoology; Mr Howel Williams, Program Director of the Save the Tasmanian Devil Program.

WHEN: TODAY (Tuesday, 12 March) at 10 am.

WHERE: Medical Science 1, 17 Liverpool Street, Hobart
(Please report to the main reception).

VISION: Lab footage available

Contact: Fiona Horwood, Communications Manager, Menzies (03) 6226 7751

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