

MEDIA RELEASE

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Unlocking the secrets behind the spread of DFTD

The secret behind the spread of the Devil Facial Tumour Disease is due to more than just a lack of genetic diversity within the species, research published by scientists working with the Save the Tasmanian Devil Program has revealed.

DFTD is a transmissible cancer that is spread from animal to animal through biting. Previously, it was thought that the transmitted tumour cells weren't rejected because of the lack of genetic variation within the Tasmanian devil population.

But Associate Professor Greg Woods, from the Menzies Research Institute Tasmania, said the latest research suggests that DFTD is more the fault of the tumour than the devil.

"The unique ability of DFTD to hide from the devil's immune system is intriguing and baffling," said Assoc. Prof. Woods.

"We know that a lack of genetic diversity is part of the reason, but we were keen to test the severity of this limited diversity - and the simple way to do this was through skin grafts."

To help with this procedure, the researchers called in the assistance of Royal Hobart Hospital plastic surgeon, Mr Frank Kimble. Skin samples from both healthy and diseased devils were grafted on to other devils. The theory was that if the grafts would take, then those devils must be very genetically similar.

"It has been a great honour to be involved in this important research," Mr Kimble said.

"Undertaking these procedures on the devils was quite difficult and one of the hardest aspects was getting the devils to keep their dressings on, just like working with some of my paediatric patients!

"This work certainly demonstrated to me the complexity of both the devils and the DFTD."

All of the five successful skin allografts performed by Mr Kimble were rejected within 14 days of surgery. Assoc. Prof. Woods said this result indicated there is enough genetic diversity within the species to produce a protective immune response.

“That result brings us back to the tumour,” Assoc. Prof. Woods said. “What is special about the tumour cells that they can avoid rejection by the host devil?”

“A lack of genetic diversity is still part of the answer, but there must be something else. Something is missing from those tumour cells.”

The challenge for the team now, said the manager of the Save the Tasmanian Devil Program, Mr Andrew Sharman, is to understand more about the tumour itself – particularly its ability to hide from the devil’s immune system.

The paper, titled ‘*Allorecognition in the Tasmanian devil (Sarcophilus harrisii), an Endangered Marsupial Species with Limited Genetic Diversity*’, was authored by Dr Alexandre Kreiss (Menzies Research Institute Tasmania), Ms Yuan Yuan Cheng (University of Sydney), Mr Frank Kimble (Royal Hobart Hospital), Mr Barrie Wells (The University of Tasmania), Dr Shaun Donovan (Royal Hobart Hospital), Associate Professor Kathy Belov (University of Sydney) and Associate Professor Greg Woods (Menzies Research Institute Tasmania).

It was published in ***PLoS ONE***, an interactive open-access journal for the communication of all peer-reviewed scientific and medical research. The paper is available online at: <http://dx.plos.org/10.1371/journal.pone.0022402>.

DFTD was first observed in 1996. Since then, devil numbers across the State have declined by around 80 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*.

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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