

Natural antibodies could combat Tasmanian devil cancer

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Credit: Save the Tasmanian Devil Program

Deakin University scientists may have found a way to stop the cancer that has been killing Tasmanian devils for the past 20 years.

And the devils (*Sarcophilus harrisii*) could actually already hold the solution – natural antibodies found in the marsupial's immune system.

Dr Beata Ujvari, from Deakin's Centre for Integrative Ecology within

the School of Life and Environmental Sciences, investigated differences in molecules found in the devils' immune systems, comparing those that had the [cancer](#), known as the Tasmanian Devil Facial Tumour Disease, and those that didn't.

We know from human and animal studies that certain natural antibodies are able to recognise and kill cancerous cells, so we wanted to see whether the presence of these molecules would also determine tumour development in Tasmanian devils," Dr Ujvari said.

"We found that devils that have a higher ratio of these natural antibodies were less likely to have cancer.

"We can deduce then that devils with higher natural antibody ratio are therefore less susceptible to the contagious cancer."

Dr Ujvari said the results could potentially halt the spread of disease that has devastated the Tasmanian devil population since its first sighting in 1996, hopefully enabling new vaccine and treatment options.

The research, "Immunoglobulin dynamics and cancer prevalence in Tasmanian devils (*Sarcophilus harrisii*)" is published in the latest edition of *Nature Scientific Reports*.

"Anti-tumour vaccines that enhance the production of these natural antibodies, or direct treatment of the cancer with [natural antibodies](#), could become a solution to help halt this disease," Dr Ujvari said.

"This process known as 'active immunotherapy', is becoming more and more accepted in treating human cancers, and we think it could be the magic bullet in saving the Tasmanian devils from extinction."

The facial cancer is spread from devil to devil via biting during social

interactions, and has caused massive population declines of Tasmanian devils since its first sighting in 1996, in Tasmania.

Dr Ujvari said that because the cancer was transmitted from devil to devil, their [immune system](#) should recognise the cells as foreign objects, like a pathogen, and work to eliminate them from the victim's system.

"However, this disease's cells are able to avoid recognition by the devils' immune systems and develop into large ulcerating tumours that ultimately kills the animals," she said

In 2009, the Australian Government listed the Tasmanian devil as Endangered under national environmental law. It is also listed as Endangered under the Tasmania's Threatened Species Protection Act 1995.

The Tasmanian devil has also been listed as Endangered on the Red List of the International Union for the Conservation of Nature and Natural Resources.

More information: Beata Ujvari et al. Immunoglobulin dynamics and cancer prevalence in Tasmanian devils (*Sarcophilus harrisii*), *Scientific Reports* (2016). [DOI: 10.1038/srep25093](https://doi.org/10.1038/srep25093)

Provided by Deakin University

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