

DEVIL FACIAL TUMOUR DISEASE UPDATE

April 2005

Pathology:

The research undertaken by the laboratory team continues to focus on the key areas identified in the January progress report – these are defining the relevant physiological parameters of the Tasmanian devil (both diseased and non-diseased) to identify the difference the disease makes to body function, furthering the case definition of DFTD (ie defining the type of cancer it is) and exploring possible causes for the disease.

The progress report identified the process being worked through to achieve these outcomes.

Among the work conducted since the release of the progress report, further work has been conducted in the case definition field in partnership with Western Australia's Murdoch University.

This work is a major part of the research as identifying the origin of the cancer cells gives clearer indicators towards possible causes.

Using immunohistochemistry (which involves staining cells to characterise their make-up) results so far have further supported initial results which indicated cells being of a neuro-endocrine origin.

Pathology examinations have also been conducted on a number of dead devils reported to be suffering from suspicious lumps. No new cases of DFTD were diagnosed in devils outside of areas already identified as disease positive.

Work continues in the areas of immunology where assessments of T-cell capacity are being undertaken. Very little is known about the Tasmanian devil's mechanism for immune defence and this work is targeted at areas of the defence mechanism that specifically relate to anti-cancer response.

Further characterisation of the tumour and devil chromosomes continues with some change in the markers for the tumour being identified since the last update on research. The team is also focusing on establishing many more tumour cell lines for further work to rule in or out possible viral

causes. Work also continues in the area of endocrinology in an attempt to identify possible indicators of tumour development in pre-clinically affected animals. Samples are also being assembled for initial proteomic analysis; this is work also being undertaken for possible pre-clinical identification of affected devils.

Experimental design and planning is continuing for the pilot trials investigating chemical residue levels in Tasmanian devils. As stated in the last update, this work may give some indication as to whether further large-scale work is required in this area. As the tumour is better defined genetic factors and genomic insertions appear to more likely causative possibilities.

The Animal Health team has also been involved in the establishment of the quarantine aspect of the project. This has involved pre-quarantine placement veterinary examination and ongoing monitoring. Results of this work will be an important part of understanding whether disease is transmissible between animals and how it may be transmitted.

In addition to the progress in the work being undertaken by the Animal Health team, the international journal *Science* looked at the approach being taken by the research team.

The approach was then looked at by independent experts.

“It’s an excellent example of a sensible response to a new wildlife disease about which we know very little,” says Andrew Dobson, a population ecologist at Princeton University in the *Science* article.

Management:

The trapping program to collect founder devils for insurance populations as part of the management response detailed in February has been continuing.

A total of 25 young animals was identified to be sourced from areas where no record of the disease exists despite ongoing monitoring and an extensive trapping regime.

The 25 devils will be housed in secure quarantine pens located in urban and offshore locations to ensure they are fully isolated from wild

populations and in areas outside where the disease is currently identified as occurring.

All 25 animals selected would be in good physical condition and removed just prior to complete weaning to minimise risk of potential exposure to the disease, as they will have had minimal contact with other devils at that age.

The young animals will be kept in the secure facilities and closely monitored over at least a 12 month period to determine if any signs of DFTD appear, as the disease does not usually become apparent in devils until they are at least two years old.

If no signs appear the animals could be utilised as founders to establish and maintain a new, genetically diverse captive population in wildlife parks and zoos, as a backup strategy against extinction in the wild.

Because of a genetic distinction between devils in different locations of Tasmania, half of the population will be sourced from the eastern part of the state, and half from the west to represent the separate provenances.

Currently the full intake of 10 juvenile Tasmanian devils from Narawntapu National Park has been achieved.

A total of seven female and three male devils were trapped at the national park from three different locations to maximise genetic diversity in the area.

The female devils from this program will be relocated to a separate quarantine facility on Maria Island next month.

The males will be kept at a different location.

An additional intake of three animals was sourced from the Southport area last month, completing the intake of eastern provenance devils. This area was selected as no evidence of the disease has been recorded despite intensive monitoring of the area.

These devils are being temporarily housed in the south before they are similarly relocated as for the Narawntapu devils.

The intake of western insurance devils has also just commenced.

A total of 12 young animals will be sourced from western populations covering an area of over 120 kilometres of the west coast. These devils will be relocated to the DPIWE quarantine facility at Taroona for ongoing monitoring.

All areas identified for trapping have not had any record of the disease despite ongoing monitoring. A pre-trapping monitoring program of twice the usual duration is also undertaken prior to animals being sourced.

All animals are also subject to pre-quarantine entry veterinary examinations as well as ongoing monitoring and clinical examination.

Planning is also continuing on wild management trials identified for the Tasman and Forestier Peninsulas and south of Narawntapu National Park.

Monitoring program

A trapping program last month focussed on the long-term site at Bronte Park. This is part of furthering our understanding of the ongoing impacts of the disease.

Over a 10-day period, the program aimed to gather data that would enable changes in the population over a 12-month period to be assessed.

The program followed the same program for March 2004 with 50 traps covering a 35 square kilometre area.

Last month the program captured 38 devils (14 adults and 24 juveniles) which compares with 40 animals (26 adults and 14 juveniles) for the corresponding period the previous year.

Although further analysis is required to compensate for trapping variabilities, preliminary figures over the two year period are currently indicating that Bronte Park's breeding population has halved over the past year.

Interestingly the decline of older animals has also coincided with evidence that the number of juveniles surviving in the area has increased. Although, it is positive that devils are showing some mechanisms to counter the disease, whether these mechanisms are sufficient requires further study.

Ongoing work and analysis is being conducted in this area to assist in understanding longer term impacts of the disease on populations.