# *Media News*

Branford, USA, January 7, 2009

## Saving the Devil: 454 Sequencing Study Uncovers Likely Culprit in Tasmanian Devil Transmissible Cancer

*Tasmanian Devil project represents one of many ongoing wildlife management research studies to use high-throughput 454 Sequencing Systems to prevent devastation of earth's diverse species and ecosystems.*

A study published in the journal, Science, reports that an international team of scientists has identified cells in the nervous system, called Schwann cells, to be the possible cause of the facial tumor disease which is decimating Australia's Tasmanian devil population. Schwann cells make up a type of tissue that cushions and protects nerve fibers but, until now, had no known association with the cancer. The discovery stems from the team's efforts to fully characterize the genes in Tasmanian devil tumor cells using transcriptome sequencing with the Genome Sequencer FLX System from 454 Life Sciences, a Roche Company (SIX: RO, ROG; OTCQX: RHHBY). The findings may indicate new avenues for research to develop future diagnostic tools and treatments for this devastating disease.

Research to understand the root cause of diseases which threaten the Earth's diverse ecosystems is a key element in the growing field of wildlife management. While high-throughput 454 Sequencing Systems provide scientists with deeper insights into many human illnesses, they also enable groundbreaking research to fight the various diseases devastating animals in the wild. One example, devil facial tumor disease (DTFD) is a transmissible cancer unique to Tasmanian devils and is transmitted from animal to animal by biting. The deadly disease is characterized by large tumors on the face and mouth which often spread to internal organs. Scientists predict that the rapid spread of DTFD, coupled with an absence of diagnostic tools, treatments and vaccines, could lead to extinction of wild Tasmanian devils within 35-50 years.

In order to identify the tissue of origin of the tumors, the team used the Genome Sequencer FLX System to sequence both diseased and healthy transcriptomes-- the complete set of genes that are "turned on" in a specific cell. The researchers then compared gene expression results between the two tissues and found that the tumors' genetic signature best matched that of Schwann cells found in the

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peripheral nerve. The underlying mechanism for how these nervous system cells spawned cancer cells is still unknown.

The initiative represents one of a number of international efforts to fully characterize the Tasmanian devil genome using the 454 Sequencing Systems. A team from Pennsylvania State University and the Children's Cancer Institute Australia are using the GS FLX System with GS FLX Titanium chemistry to sequence whole genomes of two geographically distinct Tasmanian devils. "The long reads generated using the Roche 454 Sequencing System allowed for identification of genetic variation prior to complete genome assembly. Using this approach we were able to rapidly define the extent of genome-wide genetic diversity within the Tasmanian devil population" said Vanessa Hayes of Children's Cancer Institute Australia.

"We are excited to see that the 454 Sequencing platform is being adopted widely in wildlife management studies, including ongoing research on killer whales, honey bees, salmon and the Tasmanian devil," said Christopher McLeod, President and CEO of 454 Life Sciences. "By uncovering important clues into the molecular basis of this deadly cancer, the platform is helping to prevent the devastation of a species that is under the threat of rapid extinction."

For more information on 454 Sequencing Systems, visit www.454.com.

**About Roche**

Headquartered in Basel, Switzerland, Roche is one of the world's leading research-focused healthcare groups in the fields of pharmaceuticals and diagnostics. As the world's biggest biotech company and an innovator of products and services for the early detection, prevention, diagnosis and treatment of diseases, the Group contributes on a broad range of fronts to improving people's health and quality of life. Roche is the world leader in in-vitro diagnostics and drugs for cancer and transplantation, and is a market leader in virology. It is also active in other major therapeutic areas such as autoimmune diseases, inflammatory and metabolic disorders and diseases of the central nervous system. In 2008 sales by the Pharmaceuticals Division totaled 36.0 billion Swiss francs, and the Diagnostics Division posted sales of 9.7 billion francs. Roche has R&D agreements and strategic alliances with numerous partners, including majority ownership interests in Genentech and Chugai, and invested nearly 9 billion Swiss francs in R&D in 2008. Worldwide, the Group employs about 80,000 people. Additional information is available on the Internet at www.roche.com.

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Murchison et al. The Tasmanian devil transcriptome reveals Schwann cell origins of a clonally transmissible cancer. (2009). Science. ePub ahead of print.

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