

MEDIA RELEASE

Platypus Genome Secrets Revealed - *Nature*

Landmark research uncovers new clues to our own genetic blueprint

Under Strict global embargo until 3am Australian EST on Thu 8 May 2008

That most exotic of native Australian animals, the platypus, has today had its genome revealed. Published in the journal *Nature*, the platypus genome has shown ancient links with birds and reptiles and may provide a vital link in discovering our own genetic origins. For Australia this is of particular significance, as the platypus is the first Australian animal to have its genome sequenced.

The sequencing of the platypus genome is expected to open up new areas of research into human disease prevention. By comparing the human and platypus genomes, scientists can work out which genes have been conserved through evolution and might therefore be important in understanding our own DNA.

"The platypus is a very ancient offshoot of a mammal tree, so it was 166 million years ago that we last shared a common ancestor with platypuses", says Professor Jenny Graves from the Australian National University, one of the co-authors of the research. "It's the comparisons of humans with the platypus that can tell us about the fork in the road," says Professor Graves. "It was the moment when the platypus went one way and we went another way."

'Glennie', a female platypus collected at the Upper Barnard River on Glen Rock Station in New South Wales, had her DNA sequenced and investigated by a team of 100 international scientists including 26 Australians.

The platypus has always been unique – an egg-laying mammal with a bill like a duck, producing milk like a cow and with venom like a snake. *"That puts them somewhere between mammals and reptiles because they still maintain quite a lot of reptilian characteristics that we've lost, for instance they still lay eggs. So we can use them to trace the changes that have occurred as we went from being a reptile, to having fur to making milk to having live-born young" says Professor Graves.*

The genetics behind the venomous spurs of the male platypus may also prove useful. Camilla Whittington from the University of Sydney was one of the other scientists involved in the research. *"Venom in a mammal is extremely unusual" said Camilla, "this makes us think that there must be some interesting and potentially useful chemical compounds in the venom. We hope that our research into platypus venom will lead eventually to the development of human medicines such as painkillers and potent antibiotics."*

Scientists have been surprised by some aspects of the platypus gene sequence. For example they compared its genome with the human, mouse, dog, opossum and chicken and found that it shares 82% of its genes with these creatures.

But Professor Graves said one of the biggest surprises was how different the platypus sex genes were to those of other mammals. *"In humans and other mammals we have an X and a Y chromosome and it's the Y chromosome that has a gene which makes you a male. And we expected that platypuses would be basically the same - but they're absolutely not."*

This research may also be important in ensuring the future of platypuses in Australia. *"Now we need to use this data to build strong links to the general biology of platypuses and echidnas to help protecting these fascinating and iconic creatures" said Dr Frank Grützner, a study author from the University of Adelaide.*

Several of the Australian authors from the University of Melbourne, Australian National University, University of Adelaide and University of Sydney will front a national [media briefing](#) at Healesville Sanctuary in Victoria at 10.45am AEST on Thursday.

Additional resources including images are available at www.aus-smc.org/Platypus_genome.php.

For further information on the briefing or to follow the briefing online go to www.aus-smc.org. Contact Jason Limnios (0405 232 790) or Nigel Kerby (0413 043 399) for interviews with the Australian authors.

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