



The University of Sydney

MEDIA RELEASE

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Platypus venom linked to pain relief and antibiotic advancements

New research released today in the scientific research journal *Nature* reveals links between platypus venom and its potential benefits for advancing pain relief and antibiotic medication.

The Platypus Genome Project involved three University of Sydney academics in collaboration with 89 researchers worldwide in an international investigation of platypus venom and immune genes.

Research author, Dr Kathy Belov from the University's Faculty of Veterinary Science, said: "Our wildlife is an untapped resource for biomedical discovery. Platypus molecules have the potential to be developed into novel and powerful therapeutics."

"We have discovered the genes that code for the major component of platypus venom. Venom in a mammal is unusual, and we wanted to see where these genes came from, and whether they are related to venom in snakes and lizards," said Dr Belov.

PhD students Camilla Whittington and Emily Wong have determined that the venom, which is delivered by the hind spur of the male platypus, is present due to genes that emerged at least 50 million years ago. This finding means that the common ancestor of the platypus and echidna may have also been venomous.

The researchers will continue to investigate the uses of the platypus venom in pain management, similar to the uses of snake venom, which has been used to develop various blood thinning and pain relief treatments.

In their natural habitat platypus venom is believed to be used mainly for fighting between males, but it can also be used for defence. Dogs which have been spurred can die and in humans it causes excruciating pain which is not relieved by morphine.

Dr Belov and her team are collaborating with other Australian research teams including the Walter and Eliza Hall Institute for Medical Research and The Department of Primary Industries to develop these novel platypus molecules for human and animal therapeutic use.

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Background information

The platypus is an Australia egg-laying mammal. Platypuses are unusual because they have both mammalian and reptilian features. They lactate, like mammals, yet lay eggs, like birds and reptiles. They are venomous, similar to some reptiles.

Adult male platypuses are venomous. They have a spur on each hind leg connected to a venom gland.

Antimicrobial peptides are believed to play a key role in protecting marsupial and monotreme young from disease, as they are born very undeveloped and without a functioning immune system. There are a large number of these genes in the platypus genome because when young hatch from the egg, they require protection against microbes (bugs and germs) until their immune system develops.

*A genome is divided into chromosomes, chromosomes contain genes, and genes are made of DNA.