

# Australian first: Kangaroo genome mapped

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Australian researchers will today launch the world first detailed map of the kangaroo genome, completing the first phase of the kangaroo genomics project.

Researchers at the ARC Centre of Excellence for Kangaroo Genomics (KanGO), including University of Melbourne, ANU, WEHI, University of Sydney, University of NSW and the Australian Genome Research Foundation (AGRF) have built a framework to assemble the genome of a model kangaroo, the tammar wallaby.

"A good map is crucial for finding our way around a new genome," said KanGO Director Prof. Jenny Graves, who divides her time between ANU and University of Melbourne.

"It enables us to explore how the genome of mammals - including humans - is organized, how it functions, and how it evolved."

"Now the world can use information on kangaroo genes and sequences to explore how mammals develop and function," she said.

DNA sequence obtained by the Australian Genome Research Facility (AGRF) with funding from the Victorian government will be arranged using the genome map.

Researchers say the international race to sequence the genomes of significant species is driven by the power of genome comparisons – particularly of species that are distantly related – to reveal secrets of the

genome in humans, as well as other mammals.

"Australia's weird and wonderful animals are making crucial contributions," Professor Graves said.

"The kangaroo has helped to consolidate Australia's reputation in this important genomics era," she said.

Graves says genomic information is extremely powerful. She says KanGO researchers used the kangaroo genome map to solve fundamental genetic puzzles, for instance discovering the gene that controls the sex of a baby, and overturning theories of the origin of our blood proteins.

The map and sequence will open up new areas of research into how genes are turned on and off during development of all mammals.

"Kangaroos are a marvellous model for studying human development and reproduction because they are born very early and complete much of their development in the pouch - rather than the womb," said Laureate Professor Marilyn Renfree of the University of Melbourne's Zoology Department, who takes over as KanGO Director today.

"This makes them a powerful tool for studying the genes and hormones involved in mammalian reproduction and development."

Professor Graves says that access to the next generation sequencing technologies will mean that the wealth of genetic information in Australia's native flora and fauna can now be tapped into.

"This will provide a depth of understanding never thought possible until recently and lead to new and exciting applications in the field of biotechnology."

Source: University of Melbourne

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