

Australians crack the code of koala's genetic blueprint

Melissa Davey

Australian scientists have sequenced the genome of the koala, winning a global race to unravel its genetic blueprint.

The achievement, announced on Tuesday, would allow researchers to diagnose and treat two diseases threatening to wipe out the species.

A leader of the research and professor of microbiology, Peter Timms, said it was “only right” his research team achieved the breakthrough.

“People probably assume only Australia would want to sequence the koala genome but in fact, researchers in the US and Europe are sequencing and working on koala genomes as well,” Professor Timms, from the Queensland University of Technology, said.

Sequencing the genome had unlocked many secrets of its immune system “virtually overnight” and allowed researchers to develop vaccines, he said.

Koala populations in Queensland and NSW have been crippled by the sexually transmitted disease chlamydia (Victoria is less affected), which causes infertility and blindness. The koala retrovirus, which integrates itself into koala DNA, causing tumours, is also a threat.



Breakthrough: Project members (from left) Peter Timms, Adam Polkinghorne, Rebecca Johnson and Mark Eldridge. Photo: Ben Rushton

“We’re trialling chlamydia vaccines as we speak,” he said. “While habitat destruction is an important aspect reducing koala numbers, despite everything we’ve tried, we can’t seem to turn that one around. But when it comes to diseases, we’ve got a chance here.”

Vaccines would initially be tested in koalas brought into animal welfare centres, he said.

The joint leader of the project from the Australian Museum Centre for Wildlife Genomics, Rebecca Johnson, said researchers now had an insight into the “unusual and complicated life” of koalas.

“Until we started this project, there were about 100 koala genes

known,” Dr Johnson said. “Currently we are at about about 12,000 and are now rapidly progressing to the complete set of 20,000 genes, which is roughly equivalent to humans.” Among the genes found was the koala interferon gamma gene, which plays a key role in marsupials’ defence against cancer.

The majority of koala genomic sequences shared similarities to that of the Tasmanian devil, which has been largely wiped out by a parasitic facial cancer, she said.

The scientists leading the project have now invited other experts to participate in a Koala Genome Consortium and will seek an extra \$5 million in funding over five years.