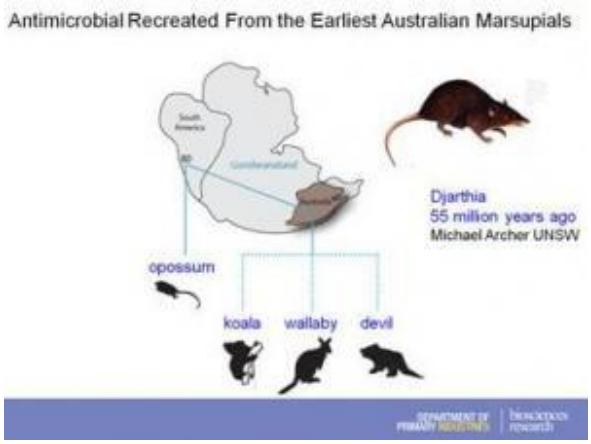
ANCIENT WALLABY GENE REVEALS POTENTIALLY POTENT NEW ANTIBIOTIC

Professor Ben Cocks and a team of fellow researchers have recreated the DNA of an ancestral wallaby gene from 60 million years year ago – a time when Australia was still part of Gondwana.



Their work is part of an international quest launched by the Infectious Diseases Society of America to produce ten antibiotics to combat multi-resistant bacteria by 2020.

Taking a new approach by exploring the 'lower reaches' of the tree of life to find a suitable candidate, it holds out hope for a super antibiotic – one that may be up to ten times more potent against multi-drug-resistant bacteria than tetracycline and ampicillin, according to initial lab tests.

After searching the genome of the tammar wallaby, the scientists identified genes that code for 14 peptides, part of the animal's innate immune system, which help protect its extremely tiny and vulnerable new-born against infection while they are in the pouch. Wallaby pouches harbour many bacteria similar to the superbugs that affect humans in hospitals.

Then, using bio-computational modelling, they worked backwards to recreate the original ancestral marsupial gene that codes for these peptides.

'There's a possibility these ancient peptides could be developed as intravenous treatment for people who have infections that are resistant to available antibiotics,' says Dr Cocks who is Professor of Animal Genetics and Genomics and Research Director of Bio-Sciences at the Victorian Department of Primary Industries.

Professor Cocks says another application for which such a 'new' chemical shows promise is mastitis, a big problem for the global dairy industry. Mastitis is calculated as costing Australia's dairy industry tens of millions of dollars in losses every year – and a staggering $1.8 billion in the US, he says.

His team has also identified eight candidate genes in platypus. 'Marsupial and monotreme young are protected by antimicrobial peptides that are potent, broad spectrum and salt resistant. Hence the genomes of our distant relatives may hold the key for the development of novel drugs to combat multidrug-resistant pathogens,' he concludes.

The work was a collaborative effort including Kathy Belov at the University of Sydney. The research findings were published in the international on-line science journal PLoS ONE and reported in New Scientist. (ER)

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