



## Unlocking the secrets of the koala

**Dr Ben Moore from the Hawkesbury Institute for the Environment together with Professor William Foley from the Australian National University and Professor Phillip Hugenoltz from the University of Queensland have put together an international team\* of scientists to increase our understanding about the health of one of Australia's most iconic animals – the koala.**

'The diet of koalas consists of eucalyptus leaves which contain toxic chemicals possibly as a defence mechanism,' explains Dr Moore. 'Yet the koala is able to break down these toxins and digest them due to the composition of bacteria in its gut – microbiome. Although we know that the bacteria inside the koala's gut are invaluable to its survival and adaptation, we know very little about how the microbes adjust to different diets and environment. The release of koalas after rehabilitation into new areas often results in poor survival outcomes due to their microbiomes' failure to adjust. In this project we will investigate how koala microbiomes vary across time and location. We will focus on describing the variation of the microbiome in the hindguts of koalas, determining how they adapt to the natural toxins in the leaves they eat and to common antibiotics, will test whether microbial inoculations from well-adapted koalas can assist other koalas.'

Researchers will analyse the faecal microbiomes of koalas in different locations to maximise contrast in nutrition source and value. Using a range of analytical techniques, the chemical composition of koalas' dietary intake will be analysed. The success of microbial inoculations will be trialled and the microbiome sequenced and catalogued.

This project will help create a more secure future for koalas as well as improve the welfare and husbandry outcomes for captive koalas, provide insight into the role of microbes in helping koalas cope with their diet



Photograph by Katlin Miller, Conservation Ecology Centre

and search for new enzymes of value to the industry.

**Project Title:** Understanding the koala microbiome: unlocking the secrets of koala health and dietary specialisation, and successful husbandry and translocation

**Funding has been set at:** \$470,500

**Contact Details:** [b.moore@westernsydney.edu.au](mailto:b.moore@westernsydney.edu.au);  
<http://www.westernsydney.edu.au/hie>

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**\*Research team:**

Dr Ben Moore, **Hawkesbury Institute for the Environment**  
Professor William Foley, **Australian National University**  
Professor Phillip Hugenoltz, **University of Queensland**  
Professor Thomas Sicheritz-Ponten, **Technical University of Denmark**  
Professor Birger Moeller, **University of Copenhagen**  
Dr Joergen Hansen, **Evolva Biotech A/S**  
Dr Dan Lunney, **NSW Office of Environment and Heritage**  
Dr Jack Pascoe, **The Conservation Ecology Centre, Cape Otway, Victoria**

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