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Infection with koala retrovirus type B (KoRV-B), but not KoRV-A, is associated with chlamydial disease in free-ranging koalas (*Phascolarctos cinereus*)

The virulence of chlamydial infection in wild koalas is highly variable between individuals. Some koalas can be infected (PCR positive) with *Chlamydia* for long periods but remain asymptomatic, whereas others develop clinical disease. *Chlamydia* in the koala has traditionally been studied without regard to coinfection with other pathogens, although koalas are usually subject to infection with koala retrovirus (KoRV). Retroviruses can be immunosuppressive, and there is evidence of an immunosuppressive effect of KoRV in vitro. Originally thought to be a single endogenous strain, a new, potentially more virulent exogenous variant (KoRV-B) was recently reported. We hypothesized that KoRV-B might significantly alter chlamydial disease outcomes in koalas, presumably via immunosuppression. By studying sub-groups of *Chlamydia* and KoRV infected koalas in the wild, we found that neither total KoRV load (either viraemia or proviral copies per genome), nor chlamydial infection level or strain type, was significantly associated with chlamydial disease risk. However, PCR positivity with KoRV-B was significantly associated with chlamydial disease in koalas ($p=0.02961$). This represents an example of a recently evolved virus variant that may be predisposing its host (the koala) to overt clinical disease when co-infected with an otherwise asymptomatic bacterial pathogen (*Chlamydia*).

Biography

Peter Timms obtained his PhD in Molecular Microbiology from the University of Queensland, Australia in 1989. After 20+ years of working at QUT (Brisbane), he moved to the University of the Sunshine Coast, in 2014 where he is Professor of Microbiology. He has spent over 25 years working on all aspects of *Chlamydia*, in humans and animals (koalas). His team has made major discoveries in chlamydial genomics, evolution, vaccine development and basic mechanisms of pathogenesis. He has published over 240 papers.

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