Technical Reports of the Australian Museum, Online (2014) No. 24, pp. 103–105.
ISSN 1835-4211 (online)
http://dx.doi.org/10.3853/j.1835-4211.24.2014.1628

Koala Retrovirus Workshop Conclusion. The Future of KoRV Research—Foundational and Applied

Geoffrey W. Pye,*[1] Rebecca N. Johnson,[2] and Alex D. Greenwood[3]

[1] San Diego Zoo Global, San Diego, CA 92101, USA

[2] Australian Centre for Wildlife Genomics,
Australian Museum, Sydney NSW 2010 Australia, and

[3] Department of Wildlife Diseases,
Leibniz Institute for Zoo and Wildlife Research, 10315 Berlin, Germany
gpye@sandiegozoo.org · rebecca.johnson@austmus.gov.au · greenwood@izw-berlin.de

Abstract. This manuscript summarizes the conclusion session of the *Koala Conservation Workshop: The koala and its retroviruses: implications for sustainability and survival* held at San Diego Zoo, April 17–18, 2013. The main goals of the workshop were to determine the current state of foundational research of koala retrovirus (KoRV), the future foundational research needed, to initiate the need for applied research, and to create a collaborative international effort on KoRV that would directly help the sustainability and survival of both captive and free-ranging koalas *(Phascolarctos cinereus)*. The seven areas of future collaborative research of the workshop were determined to be: *(1)* Does KoRV cause disease in koalas? *(2)* Does KoRV cause population declines? *(3)* Are there KoRV-free koalas? *(4)* What is the importance of the variants of KoRV? *(5)* Is KoRV or its variants horizontally transmitted? *(6)* Do koalas develop an immune response to KoRV? *(7)* What is the role of prevention and therapy in free-ranging and captive koalas?

Pye, Geoffrey W., Rebecca N. Johnson, and Alex D. Greenwood. 2014. Koala Retrovirus Workshop conclusion. The future of KoRV Research—foundational and applied. In *The Koala and its Retroviruses: Implications for Sustainability and Survival*, ed. Geoffrey W. Pye, Rebecca N. Johnson and Alex D. Greenwood. *Technical Reports of the Australian Museum, Online* 24: 103–105.

Does KoRV cause disease in koalas?

There is plenty of supportive evidence to suggest that koala retrovirus (KoRV) causes lymphoid neoplasia in koalas *(Phascolarctos cinereus)* (Canfield *et al*., 1987, Canfield *et al*., 1988; Worley *et al*. 1993, Hanger *et al.,* 2000; Tarlinton *et al*., 2005), but, at this time, no-one has definitive proof of this. A missing resource impeding progress is the lack of an annotated koala genome. However, as presented by Rebecca Johnson, this situation is changing rapidly with the sequencing of a koala genome and transcriptome which is now in the annotation stage (Johnson *et al*., 2014, this volume). Important evidence for a causal role in disease by KoRV that is currently lacking is integration site differences of KoRV in diseased versus healthy tissues. It was agreed that this is crucial information that should be determined as soon as possible. It has been suggested that KoRV may cause disease by immunosuppression (Fiebig et al., 2006; Denner, 2014, this volume). However, KoRV positive koalas mount a strong immune response to antigens derived from *Chlamydia* (Timms, 2014, this volume). The consequence of KoRV on immune response thus requires further investigation to determine if KoRV has a broad, specific, or no effect on koala immune function. It was identified that there was a need to standardize both the collection of tissue samples from suspected KoRV-related diseased koalas and the epidemiological survey methods used to examine the data. In addition, studies looking at the potential immune suppressive effects of KoRV were identified as an important need.

* author for correspondence