

Population Management Strategies for Reducing Koala Retrovirus (KoRV) Impacts on Captive Populations

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ABSTRACT. This manuscript summarizes the break-out session held on population management strategies for reducing koala retrovirus (KoRV) impacts on captive populations at the *Koala Conservation Workshop: The koala and its retroviruses: implications for sustainability and survival* held at San Diego Zoo, April 17–18, 2013. The goals of this break-out session were to identify research and population management activities that could facilitate reducing KoRV impacts on captive koala populations. Although both goals were met and suggested activities identified, no long term modifications to current breeding strategies were agreed upon due to current gaps in knowledge about KoRV. Herein, proposed research and population management activities developed at the workshop are described.

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Cooperative breeding programs sponsored by regional zoo associations typically utilize breeding strategies designed to retain gene diversity and limit inbreeding. These goals are accomplished by iteratively breeding individuals with the lowest average kinship (or relationship) within a population; since these animals have the fewest relatives, they are genetically underrepresented and have higher probabilities of possessing genetic variation at risk of being lost. Can current breeding strategies be modified to reduce koala retrovirus (KoRV) expression in captive populations, while still maintaining the genetic and demographic viability of those populations?

KoRV is known to be present in captive koalas throughout the US, Europe, and Australia. Given the regional representatives present at the Koala Conservation Workshop, the break-out session participants focused primarily on the management of populations in the US and Europe. Because additional koalas are expected to be imported into these populations from captive Australian populations in the next five years, ways in which future imports might impact the

prevalence of KoRV in the US and Europe were considered alongside breeding strategy modifications.

The discussion on possibilities for reducing KoRV expression in captive populations of koalas was primarily focused around two broad topics. The first topic was the need for additional, collaborative research on KoRV. In particular, it was suggested that increased testing for KoRV is needed and institutions that hold large numbers of captive koalas in the US and Australia should collaborate on both prospective and retrospective research. Studies on the association between disease and KoRV status are greatly needed to better inform modifications to population management. The second topic of focus was the implication of multiple KoRV variants being present in captive koala populations. Both KoRV-A and KoRV-B are present in the captive US population, with KoRV-A being the predominant variant. Because many break-out session participants were particularly concerned about disease associated with KoRV-B, actions or strategies that would limit or eliminate this variant in captive populations in the US and Europe were of particular interest.