

**Jahrestagung der Gesellschaft für Virologie
Munich, Germany, 15-18 March 2006**

**Koala retrovirus (KoRV): properties and transspecies transmission
in vitro and *in vivo***

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Aim: Transspecies transmission is a common property of retroviruses. The human immunodeficiency viruses (HIV-1/2) are the product of such a transspecies transmission and the potential risk of transmission of porcine endogenous retroviruses (PERVs) after xenotransplantation of pig organs is under study. KoRV is a γ -retrovirus closely related to GaLV and PERV. Here we analysed properties and host range of a new KoRV isolated from an animal in a German zoo.

Results: The virus was isolated from mitogen-stimulated blood cells of a healthy koala. For the first time KoRV was shown to infect productively human and rat cell lines *in vitro*. In addition, rats were infected *in vivo*. Immunological detection methods based on specific antisera as well as real time PCR and *in vitro*-neutralization assays were developed; the transmembrane envelope p15E was cloned. When immunising with recombinant p15E, neutralising antibodies were induced. KoRV had immunosuppressive properties, purified virus modulated cytokine production.

Conclusion: These data and the high phylogenetic relationship between KoRV and GaLV indicate a recent transspecies transmission of a γ -retrovirus to disparate host species able to initiate fatal diseases in the new host. They also suggest that KoRV and PERV may infect other species including man. The experimental transspecies transmission of the KoRV into rats represents an animal model that allows the study of new vaccination strategies against retroviruses like PERV, FeLV and HIV and evaluating the efficacy of anti-retrovirals.

Cite as:

Uwe Fiebig, Manuel García Hartmann, Norbert Bannert, Reinhard Kurth, Joachim Denner. 2006. Koala retrovirus (KoRV): properties and transspecies transmission *in vitro* and *in vivo*. Proceedings of the Jahrestagung der Gesellschaft für Virologie, Munich, Germany, 15-18 March 2006.