conservation programme and develop innovative techniques to mitigate the human-elephant conflict.

EMERGING VIRAL DISEASES IN WILDLIFE WITH SPECIAL EMPHASIS ON ELEPHANTS AND RHINOS

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Although many infectious diseases that have scourged humans and animals over the centuries have largely been brought under control in the industrialized world over the past decades – the most striking examples being the global eradication of smallpox and rinderpest - paradoxically we are currently being confronted with an ever increasing number of new infectious disease outbreaks. The origin of most of these outbreaks can be found in wild animal reservoirs from which these agents escape due to a complex mix of predisposing factors in our globalizing world. In turn it also affects wild animal populations by the spill- over or spill-back of the agents involved from humans or domestic animals into wildlife.

Over the past decades, several bacterial and viral infections have been reported in elephants worldwide. Tuberculosis and anthrax have been diagnosed in elephants. A new member of the Mycobacterium spp, *Mycobacterium elephantis*, is now recognized as an emerging pathogen among elephants. In addition, there is serological evidence for leptospirosis in Asian elephants. Cowpox virus, herpesvirus, and coxackievirus infections have been reported in both Asian and African elephants. Since the identification of the elephant endotheliotropic herpes virus (EEHV) in 1995 as a causative agent of fatal hemorrhagic disease of Asian elephants, the virus has caused significant mortality among newborn and young Asian and African elephants both in captivity and in the wild. In 1995, an outbreak of encephalomyocarditis (EMC) virus infection was reported in free-ranging African elephants in South Africa. Surveillance based studies indicated that this outbreak was probably caused by a significant increase of the population of infected myomorph rodents.

In captivity, black rhinoceroses (Diceros bicornis) have been plagued by many disease entities that have not been described in this species in the wild. Recent efforts towards the conservation of endangered rhinoceroses in several areas including re-introduction of the animals into regions where they have lived previously have been been hampered by mortalities among translocated animals. Sero-surveillance studies performed in free-ranging black and white (Ceratotherium simum) rhinoceros in the Republic of South Africa,, Namibia, and Kenya indicated the presence of antibodies specific to viruses causing Rift valley fever(12%), Akabane disease(59.8%), bluetongue (55%), African horse sickness (27.9%), epizootic haemorrhagic disease of deer (19.4%), parainfluenza type 3 (25.3%), bovine herpes 1 (3.1%), equine herpes 1 (8.8%) and bovine viral diarrhea (1.2%) as well as four serovars of Leptospira interrogans, (ranging 1.2 to 8.8%). In addition, infections with cowpox virus, several parasites such as *T. congolense*, *T. simiae spp*, and T. *godfreyi*, Theileria spp., Neospora caninum and microfilaria, as well as fungi (Coccidioidomycosis) have been shown to cause disease of varying severity in black and/or white rhino's.

Laboratory based diagnostics and ongoing epidemiological as well as virus discovery programmes that will also be targeting elephants and rhino`s will benefit greatly from the development of novel serological and molecular techniques. This will yield a better insight into the infectious agents that should be considered in the management of captive and semi-wild elephants and rhino`s and in future conservation efforts for these animals.

THREE FATAL CASES OF ENDOTHELIOTROPIC ELEPHANT HERPES VIRUS IN ASIAN ELEPHANT (*ELEPHAS MAXIMUS*) CALVES.

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ZSL Whipsnade holds a successful breeding group of Asian elephants (*Elephas maximus*). Currently there is one breeding bull and five cows. Two cows have a dependant calf and one cow is in her last trimester of pregnancy. Between 2006 and 2009, three calves (2.1) developed clinical signs of endotheliotropic elephant herpes virus (EEHV). Signs progressed quickly. They started with minor lethargy and depression in all cases. Cyanosis of the tongue appeared in early stages of disease and progressed throughout the disease process. Oedema was present, mainly on the head and trunk and all three calves died within 48 to 53 hours after onset of clinical signs despite intensive treatment with antiviral drugs. One calf also received elephant plasma during treatment.

Post-mortem was highly suggestive for EEHV. Pericardial effusion, extensive petechial to ecchymotic haemorrhages involving the epi- and endocardial heart surfaces and throughout the myocardium, diffusely scattered petechiae within the viscera and parietal peritoneal serous membranes and intracranial haemorrhages have all been reported in the Whipsnade Zoo elephants. No inclusion bodies could be observed during histo-pathological examination in any of the cases. PCR confirmed EEHV1b in the first case and identical EEHV1a in the other two cases.

This presentation will discuss the clinical signs, the treatment protocols and the post-mortem findings of all cases.

EXPANDED GENETIC ANALYSIS OF FIVE MORE ELEPHANT ENDOTHELIOTROPIC HERPESVIRUS GENOMES (EEHV2, 2X EEHV5 AND 2X EEHV6) FROM ASIAN OR AFRICAN ELEPHANTS AND ITS USE FOR DEVELOPMENT OF NEW DIAGNOSTIC AND SEROLOGICAL REAGENTS

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