Identification of Babesia, Theileria, Ehrlichia and Anaplasma spp from SA mammals (small grant)

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Parasites and other infectious agents may pose a threat to endangered wildlife species, and wild animals can be reservoirs of pathogens of veterinary and zoonotic importance. Since wildlife hosts are usually asymptomatic, the danger to domestic animals and humans may be overlooked. Severe disease outbreaks may occur in wild animals, e.g. when a naïve animal is introduced into an endemic area or when a latent infection is activated by stress factors such as those which occur as a result of translocation. Babesia, Theileria, Ehrlichia and Anaplasma spp are potentially pathogenic tick-transmitted intracellular protozoa/rickettsias. Indigenous mammals may be infested with a variety of organisms, many appearing to be novel species or novel variants of species. Molecular characterisation is the only appropriate investigation technique. Reverse line blot hybridisation is used as a screening test to detect and differentiate Babesia, Theileria, Ehrlichia and Anaplasma spp. Positive specimens are subjected to cloning of full-length 16S and/or 18S rDNA, sequencing and phylogenetic analysis. Similarity matrices are constructed using the two-parameter model (Kimura) and the Jukes and Cantor correction model for multiple-base changes. Phylogenetic relationships between known species and sequence data obtained are analysed using neighbor-joining and maximum parsimony phylogenetic analyses. Our laboratory has the following blood specimens to analyse: 124 black rhinoceros (*Diceros bicornis*), 77 black-backed jackal (*Canis mesomelas*), 21 eastern rock sengi (*Elephantulus myurus*) and 17 brown (*Parahyaena brunnea*) and spotted (*Crocuta crocuta*) hyaenas. Under stress conditions black rhinos, an endangered species, are known to be susceptible to babesiosis, which can be fatal. Black-backed jackals, which occur widespread throughout South Africa, can serve as a reservoir for pathogens detrimental to domestic dogs and endangered indigenous canids (e.g. African wild dogs).