

Title: The First Survey of Bovine *Babesia* Species Infecting Yaks (*Bos grunniens*) in Mongolia

Abstract: Yak (*Bos grunniens*) farming is an important part of Mongolia's livestock industry. Yaks survive in harsh mountain environments; provide meat, milk, and wool; and serve as a mode of transportation. In Mongolia, yaks are frequently raised alongside other livestock animals such as cattle, Bactrian camels, sheep, goats, and horses. Recently, we demonstrated that *Babesia bovis*, *Babesia bigemina*, and *Babesia naoakii*—parasites with the potential to cause clinical bovine babesiosis—infect not only cattle but also Bactrian camels in Mongolia. However, yaks have never been surveyed for *Babesia* infections in this country. In the present study, we surveyed yaks in 8 Mongolian provinces: Bayankhongor, Bayan-Ulgii, Khovd, Khovsgol, Omnogovi, Ovorkhangai, Uvs, and Zavkhan. Blood samples were taken and deoxyribonucleic acid (DNA) was extracted from 375 yaks. Furthermore, Giemsa-stained thin smears were prepared from 315 of the 375 blood samples and then examined for the microscopic detection of *Babesia* parasites. Microscopy revealed that 34 (10.8%) of 315 blood smears were positive for *Babesia* parasites. All 375 DNA samples were then tested for *B. bovis*, *B. bigemina*, and *B. naoakii* infection using specific polymerase chain reaction assays. We observed that 238 (63.5%) yaks in all surveyed provinces and 8 (2.1%) yaks in 3 provinces (Bayankhongor, Bayan-Ulgii, and Omnogovi) were positive for *B. bovis* and *B. bigemina*, respectively. However, all yaks tested were negative for *B. naoakii*. This epidemiological survey, the first to report *Babesia* infection in Mongolian yaks, suggests that disease management strategies for yaks in this country should further address bovine babesiosis.