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Prairie Dog (*Cynomys ludovicianus*) is not a Host for Porcine Reproductive and Respiratory Syndrome Virus

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Porcine reproductive and respiratory syndrome virus (PRRSV) spreads regionally in spite of extensive biosecurity safeguards designed to prevent transmission among farms. Spread of PRRSV through wildlife reservoirs may account for cases of transmission, but little is known about potential reservoirs in many swine-rearing regions. Prairie dog (*Cynomys ludovicianus*), a rodent species, is widespread in the central and southwestern United States. Rodent species are potential reservoirs of PRRSV since the closest relative to PRRSV, lactate dehydrogenase elevating virus, uses another rodent, the house mouse, *Mus musculus*, as a host.

PRRSV sequence data from ORF 5 collected of a 5 year period from sequential breeding herd outbreaks and in growing pigs suggested the possibility that an additional virus reservoir could exist. Viral sequences that most closely matched isolates from the past reappeared periodically over this time frame. No new viruses were introduced from breeding stock introductions, semen, or area spread in this larege and isolated production system after calendar year 2000.

We evaluated if prairie dogs could be a wildlife reservoir of PRRSV by direct exposure of captured animals to PRRSV, followed by serological analysis of antibody formation for 28 days, and sequential virological and histopathological examination of tissues for evidence of viral RNA and lesions.

Twenty-three mixed-sex prairie dogs from a wild colony on a farm in the southwestern U.S.A. were enrolled in the study. Serum samples from all animals were negative for PRRSV by real-time PCR and ELISA. Sixteen animals were inoculated with a high-titered mixture of six wild-type viral strains recovered from swine in the vicinity of the prairie dog colony and seven animals were uninoculated controls. Two treated and one control animal were sacrificed at 3 to 7 day intervals through 28 days to recover tissue from lung, heart, liver, kidney, spleen, thymus, tonsil, salivary gland, pulmonary lymph node and mesenteric lymph node. Serum samples were collected from all animals remaining at each time point. All serum and tissue samples were negative for viral RNA at all time points in both treated and control animals. Clinical signs were unremarkable and no histopathological lesions of PRRS were observed. Humoral immunity was assessed on ELISA plates coated with recombinant PRRSV proteins, reacted with prairie dog serum, followed by goat anti-prairie dog IgG, and detected with HRP-conjugated rabbit anti-goat IgG. No seroconversion was observed over the 28 day time course of the study in any animal. We conclude that prairie dogs do not support replication of PRRSV and are not a reservoir of the virus.