

## **Assessing Mother to Offspring Transmission of Chronic Wasting Disease Using Transgenic Mouse Models**

**Willingham K; McNulty E; Anderson K; Hayes-Klug J; Nalls A; Mathiason C**

### **Abstract**

Chronic wasting disease (CWD) is the transmissible spongiform encephalopathy (TSE), or prion disease, of free-ranging and captive cervids (deer, elk and moose). The presence of sufficient infectious prions in the tissues, bodily fluids (urine, saliva, and blood) and environments of clinical and preclinical CWD-infected animals is thought to account for its high transmission efficiency. Recently it has been recognized that transmission from mother to offspring may contribute to the facile transmission of some TSEs. Although the mechanism of maternal transmission has yet to be elucidated, the extended asymptomatic TSE carrier phase, lasting years to decades, suggests that maternal transmission may have implications in the spread of prions. Placental trafficking and/or secretion in milk are two means by which maternal prion transmission may occur. In these studies we explore CWD maternal transmission during early and late CWD infection using a transgenic mouse model (TgCerPRP) expressing cervid prion protein. Naïve and CWD-infected dams were bred during early (45 dpi) and late (120 dpi) infection and were allowed to bear and raise their offspring. Milk was collected from the dams for prion analysis, and the offspring were observed for TSE disease progression. Terminal tissues harvested from these dams and offspring were analyzed for prions. We have demonstrated: 1) that CWD-infected TgCerPRP females successfully breed and bear offspring, 2) the presence of PrPCWD in reproductive and mammary tissue harvested from CWD-infected dams, and 3) clinical disease progression in offspring born to CWD-infected dams.

### **Keywords:**

We are currently analyzing terminal tissue harvested from offspring born to CWD