Effects of a canine gonadotropin releasing hormone (GnRH) vaccination on male reindeer
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Introduction
Rutting is a behavior seen in male Norwegian reindeer (Rangifer tarandus) and includes losing weight, sparring between bulls, increased aggression toward humans, rubbing on trees, urinating on legs, protecting the harem, and establishing hierarchy.1 Photoperiod is the main contributor to rut as a decrease in day length increases melatonin secretion, which in this species increases gonadotropin releasing hormone (GnRH), luteinizing hormone (LH) and testosterone secretion, resulting in an increase of rutting behavior.1 Immunization against GnRH causes declines in testosterone concentrations in many mammals. The aim of this study was to determine if a canine GnRH vaccine manufactured in the U.S. would decrease serum testosterone concentrations and rutting behavior in reindeer. The hypothesis was the GnRH vaccination in male reindeer would decrease testosterone and rutting behavior.

Materials and methods
Two mature (6 and 11 years) intact male reindeer (latitude 39˚N) received a series of three 600-µg im injections of Canine Gonadotropin Releasing Factor Immunotherapeutic vaccine (Pfizer Animal Health, Exton, PA) at 0, 5 and 13 weeks (corresponding to 8/20/10, 9/24/10, and 11/19/10). Jugular venous samples were collected prior to vaccination. Serum testosterone was measured using chemilluminescence. All of the samples were tested within one assay. Rutting behavior was assessed by questioning the owner.

Results
Testosterone concentration peaked during the rutting season (5 weeks after initial vaccination) and then decreased to basal levels (<0.5 ng/ml) 13 weeks after initial vaccination (Figure). Two weeks after the second dose, rutting behavior decreased and the antlers were cast, which was five months earlier than previous years for antler casting.

Conclusion
Antler casting occurs soon after surgical castration in cervids.2 The behavioral and physical responses following GnRH vaccination support the hypothesis that immunocontraception decreases serum testosterone in reindeer.

Keywords: GnRH, rutting behavior, reindeer, testosterone, vaccination

References