Effects of gonadatropin releasing hormone (GnRH) immunization in molly mules
Caitlin Donovan, Timothy Hazzard, Frances Hathaway, Michelle Kutzler
Department of Animal Science, Oregon State University, Corvallis, OR

Introduction
Canine Gonadotropin Releasing Factor Immunotherapeutic® (canine GnRH vaccine, Pfizer Animal Health, New York, NY) is a vaccine labeled for the treatment of canine benign prostatic hyperplasia, which has been used to prevent estrous cyclicity and behavior in mares.1-2 Serum assayed from these vaccinated mares had elevated GnRH antibody titers and progesterone concentrations consistent with anestrus (<1.0 ng/mL).3 Female mules (mollies) display regular estrous cyclicity and behavior like the mare,4 and therefore, the objective of this study was to determine whether GnRH vaccination would effectively prevent estrous cyclicity in mollies as well. We hypothesized that vaccinated mollies would develop GnRH antibodies, which would prevent estrous cyclicity and behavior.

Keywords: GnRH, mule, vaccination, progesterone, estrous behavior

Materials and methods
Six mature privately-owned anestrous mollies with a history of overt estrous behavior during the previous spring and summer were used for this study. All mollies were vaccinated with the canine GnRH vaccine (5 mL, IM) at 0 and 3 weeks in February and March. Jugular venous blood samples were collected at 0, 3, 7, 11, and 15 weeks. Sera were separated, aliquoted, and frozen at -20°C until analyzed. Gonadotropin releasing hormone antibody titers were determined using a previously validated ELISA with 1 µg/mL luteinizing hormone releasing hormone as the antigen (71447-49-9, Sigma). Serum progesterone levels were measured using enzyme-amplified chemiluminescence (Immulite® 1000, Diagnostic Products Corporation, Los Angeles, CA) and owners were asked to evaluate reproductive behaviors. Data were analyzed as a repeated measure in time design using PROC MIXED in SAS (V. 9.2, SAS Institute Inc., Cary, SC). Significance was defined as p<0.05.

Results
There were no adverse reactions to vaccination in any of the mollies. All developed GnRH antibody titers that were significantly higher at week 7 compared to week 0 and 15. Serum progesterone concentrations remained consistent with anestrus (<1.0 ng/mL) post-vaccination. Owners reported that non-vaccinated mares co-housed with mollies displayed estrous behavior, but vaccinated mollies did not display estrous behavior.

Conclusion
These results provide evidence that administration of the canine GnRH vaccine can be an effective way of preventing estrous cyclicity and behavior in mollies. Further research with a larger sample size and a double-blind study protocol is needed.

References