

## POSTER 3

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### **Evaluation of a Gonadotropin Releasing Hormone Vaccine for the Humane Control of Female Cats**

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The unwanted cat population in the U.S. numbers in the tens of millions and current control measures, including euthanasia and surgical sterilization, have had limited success in reducing it. The purpose of this study was to investigate the effectiveness of a gonadotropin releasing hormone (GnRH)-based vaccine for immunocontraception of female cats. It was expected that the treated cats would produce antibodies against GnRH and there would be a positive correlation between titer and contraception. Adult female cats were divided into a sham group (n = 5) receiving a placebo vaccine and a treatment group (n = 15) immunized with a single injection of 200 µg of synthetic GnRH coupled to keyhole limpet hemocyanin and combined with a mycobacterial adjuvant. GnRH antibody titer and serum concentrations of progesterone and estradiol-17β were determined monthly. For the duration of the study, the daily photoperiod was manipulated in an attempt to induce estrus.

A male breeding cat was housed with the females during estrus-inducing long-day periods, and continuous videography was used to monitor for signs of estrus and breeding. All five sham cats became pregnant within 1 month of the introduction of the male cat. Contraceptive GnRH antibody titers were detected in 12 of 15 treated cats by 60 days after immunization. When the titer in 4 treated cats decreased below 16,000, they became pregnant and were classified as nonresponders. The titers of the remaining 11 cats (responders) never decreased below 16,000. These cats displayed no signs of behavioral estrus and did not become pregnant by the end of the 24-month observation period.

From 60 days after immunization until the end of the study, progesterone concentrations in all responders remained at basal levels, and increased 2 months before parturition in all cats that became pregnant. The responder cats gained significantly more weight than the nonresponders by 14 months after immunization, which is the same response observed in cats undergoing ovariectomy. Twenty-four months after immunization, a 3 cm x 4 cm mass was discovered at the injection site of 1 treated cat, and 4 cats had 1 or more than 1 cm nodules near the injection site. Histopathological evaluation was consistent with a granuloma containing acid fast organisms, likely due to the adjuvant. A single-dose GnRH vaccine resulted in contraception in 73% of cats for at least 24 months. Further work is required to define the duration of immunity and long-term safety of GnRH immunocontraception.