

Background

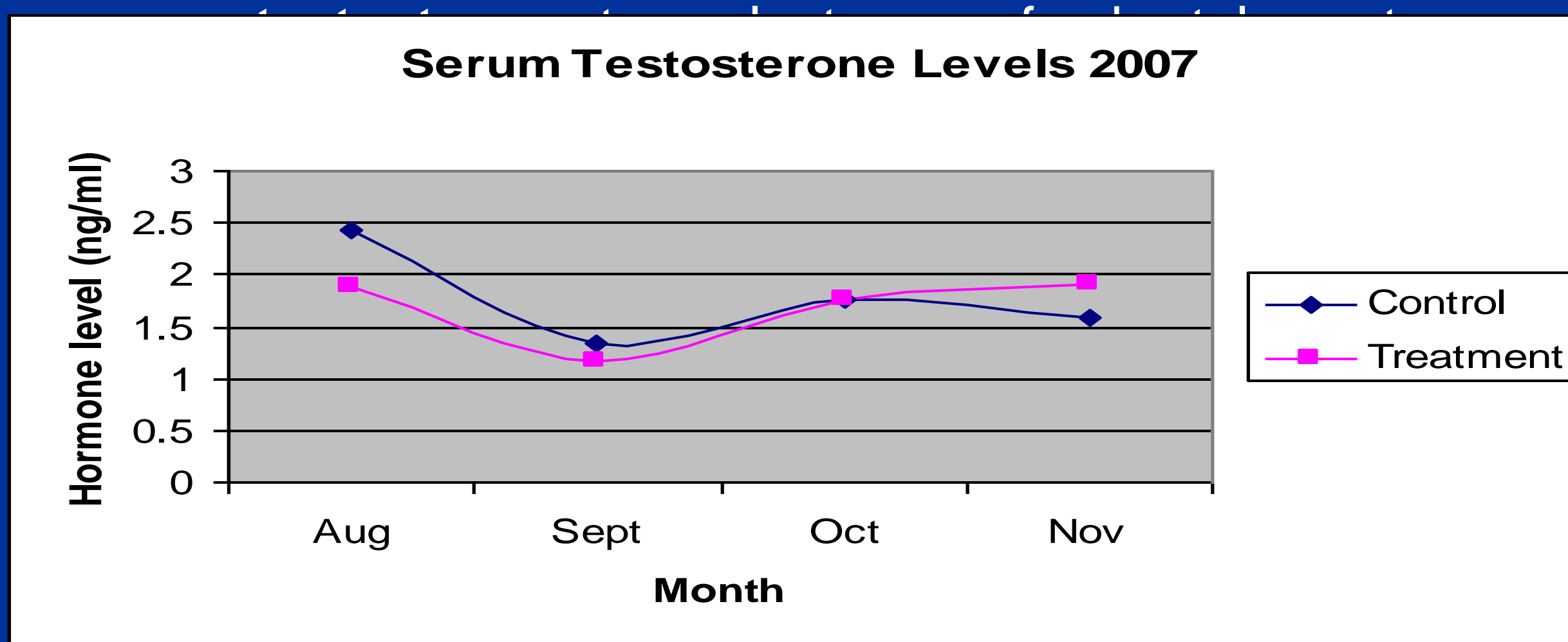
Elk overpopulation poses a challenging management problem in North America's parks. Fertility control is a promising nonlethal method for population management. Immunization against gonadotropin releasing hormone (GnRH) as a method of wildlife contraception is an area of intense investigation. Our previous work in captive female elk shows that a single immunization with a GnRH vaccine (GnRH/Blue Protein/AdjuVac™) during mid-gestation significantly decreases pregnancy rates for at least three years in subsequent breeding seasons. Calves born in spring 2006 nursing from these dams developed high serum antibody concentrations by 24 hours post-birth through colostral antibody transfer that waned by six months of age. The effects of high antibody concentrations during the neonatal period on long-term reproductive development and function are unknown. This study was designed to measure these potential effects.



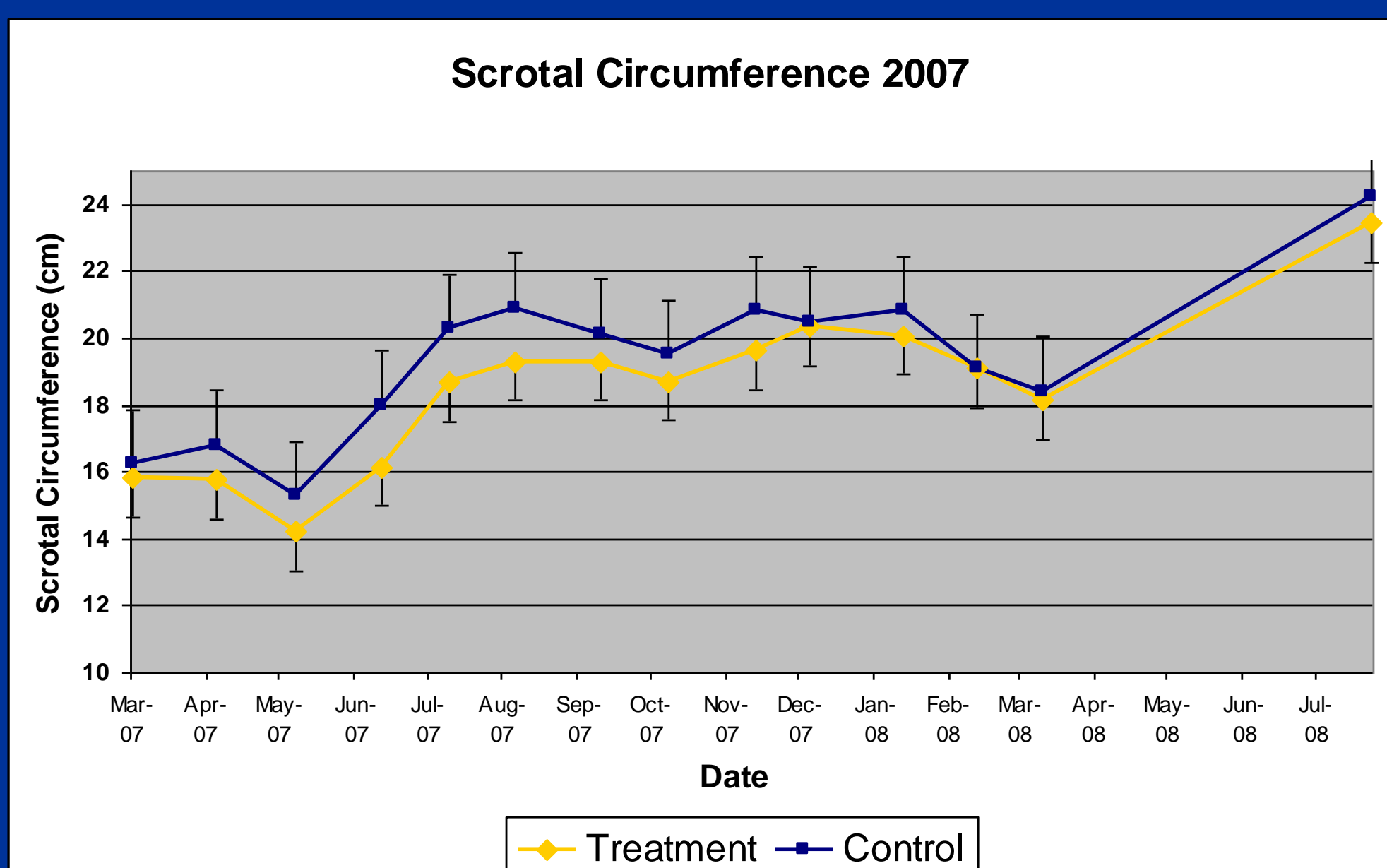
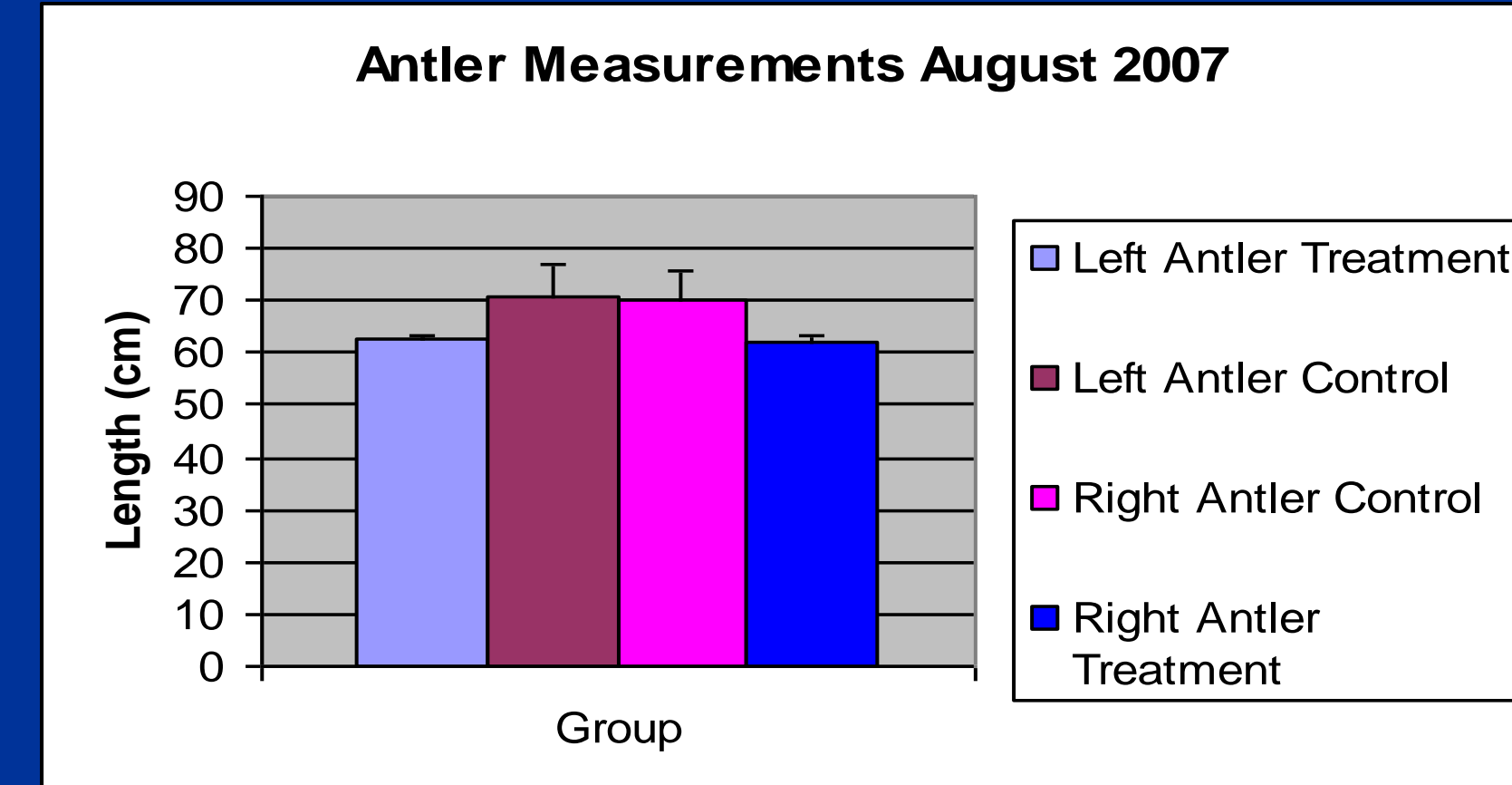
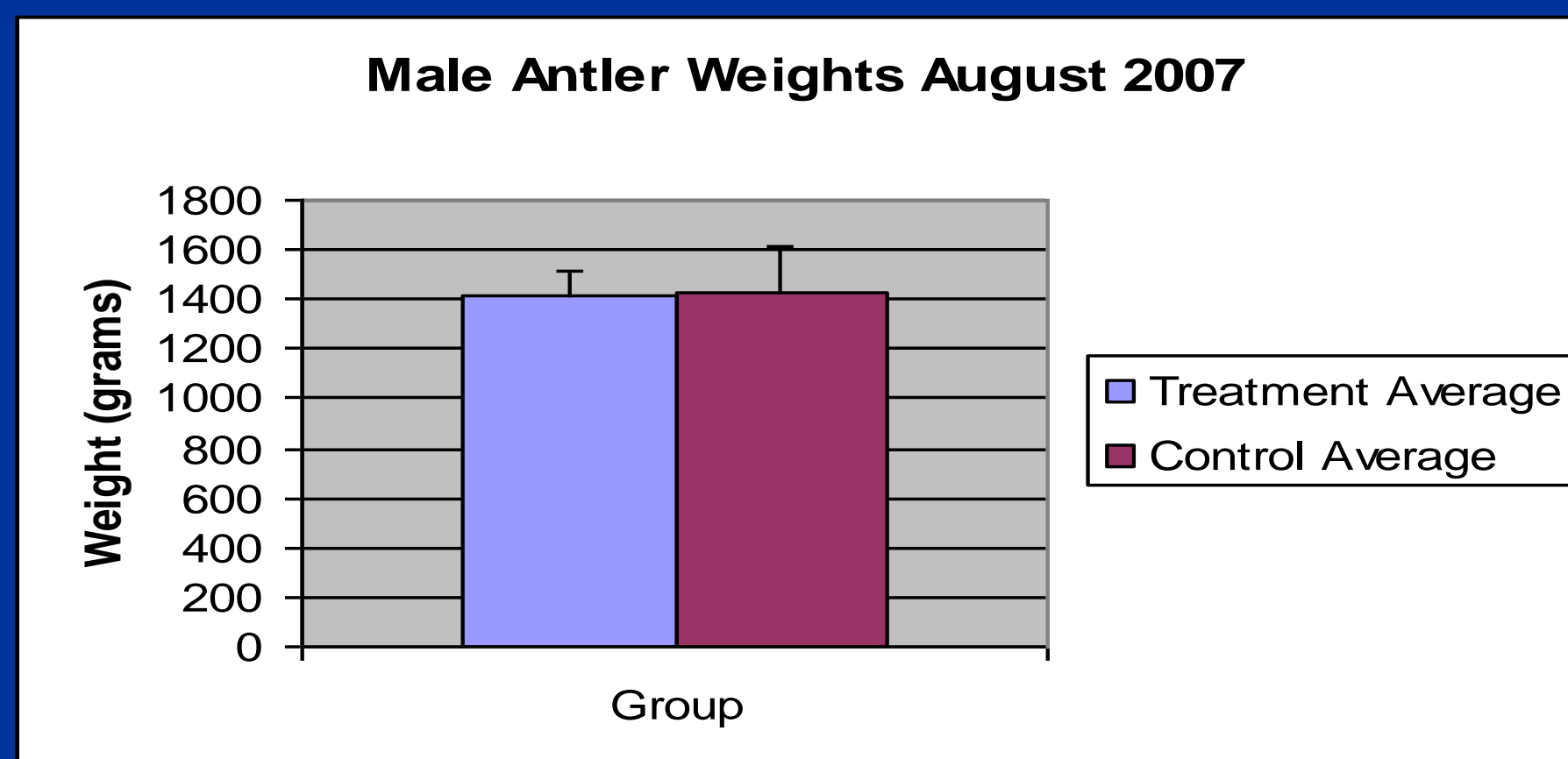
Methods and Results

Thirteen elk calves born to control or treated females were assessed for effects of maternal passive transfer of GnRH antibodies. A 2-tailed, 2-array t-test for all data showed no differences between treatment and control groups.

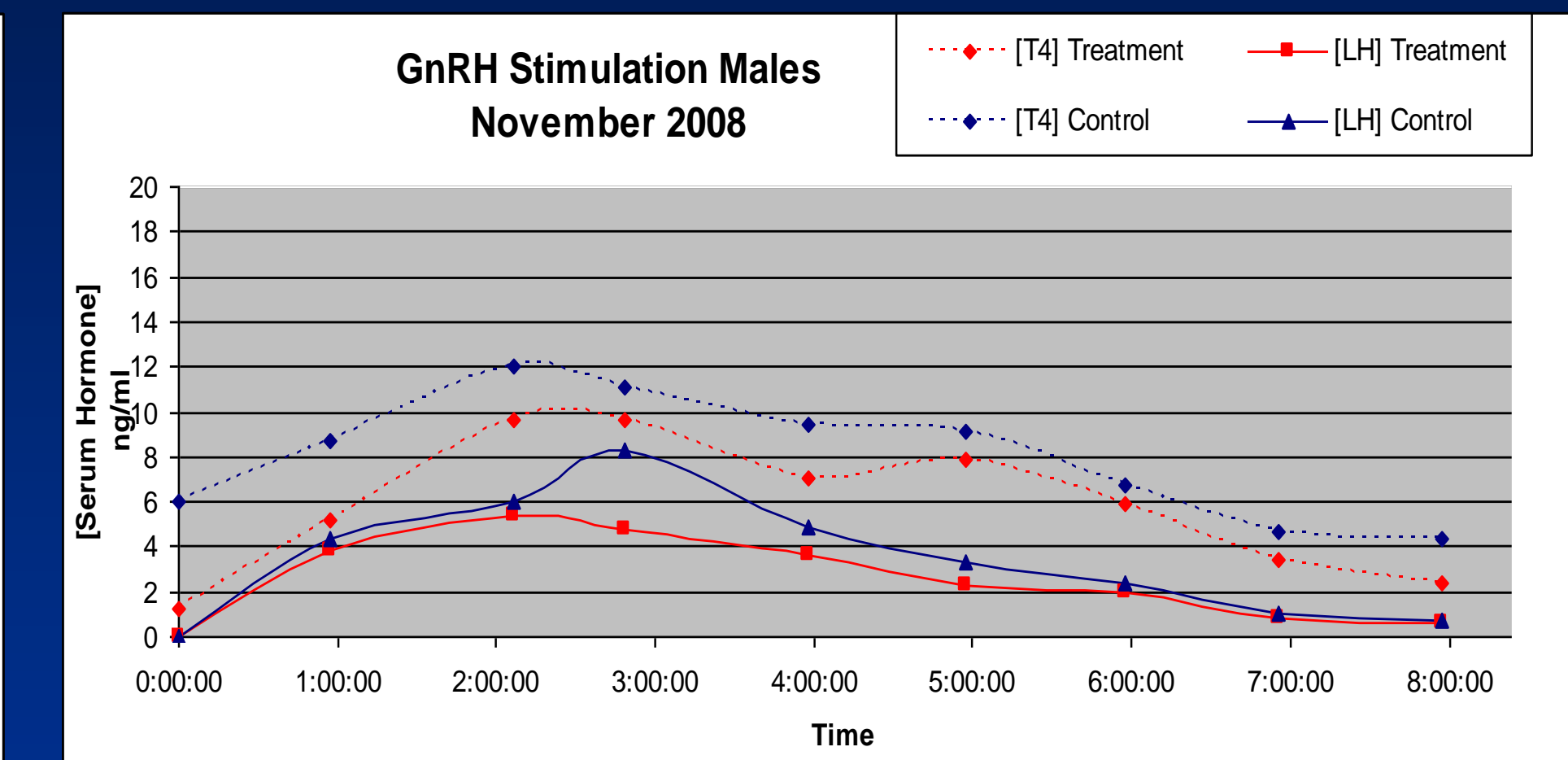
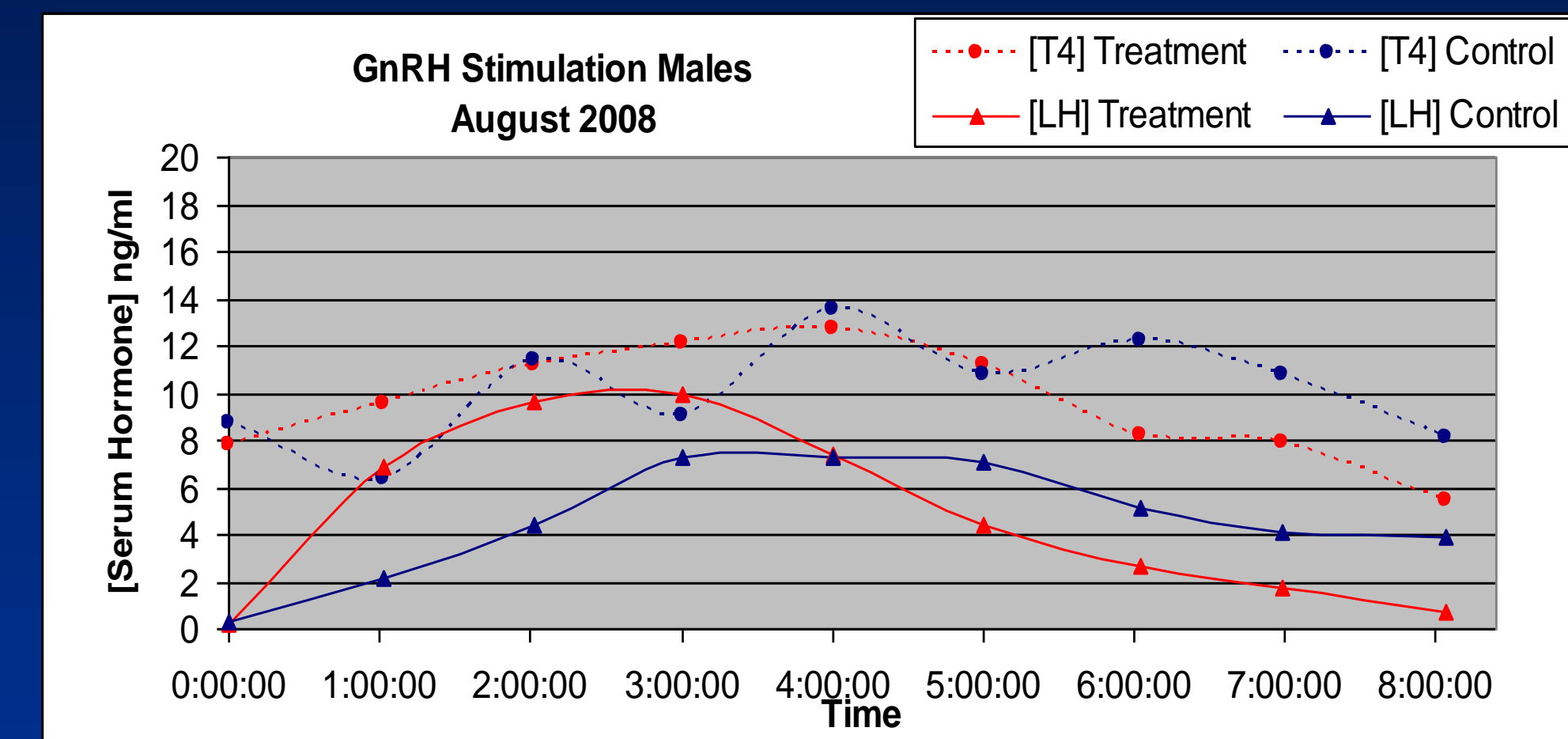
Measurements taken from male calves:



secondary sex characteristics such as antler development, neck girth, testes size, and semen characteristics

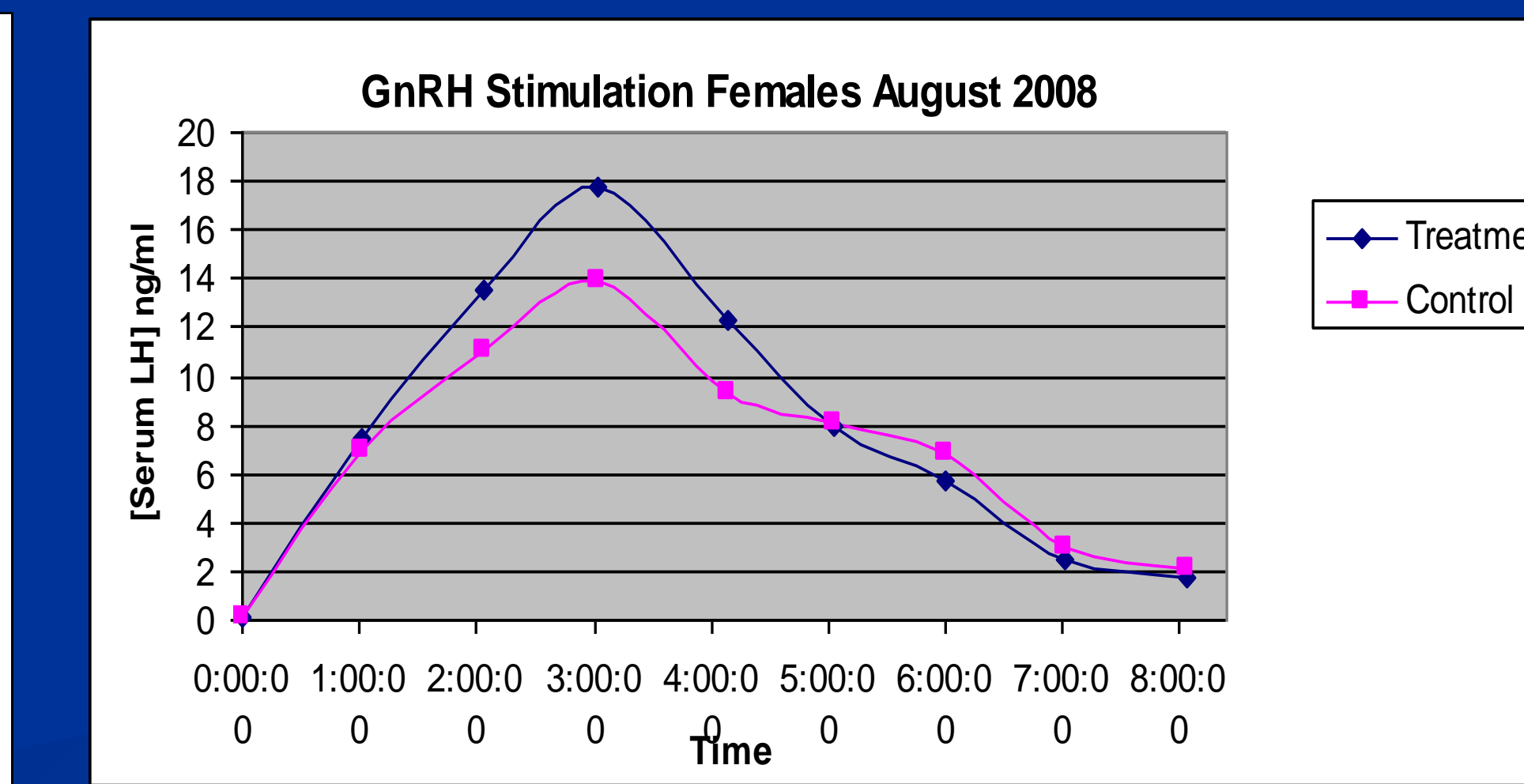
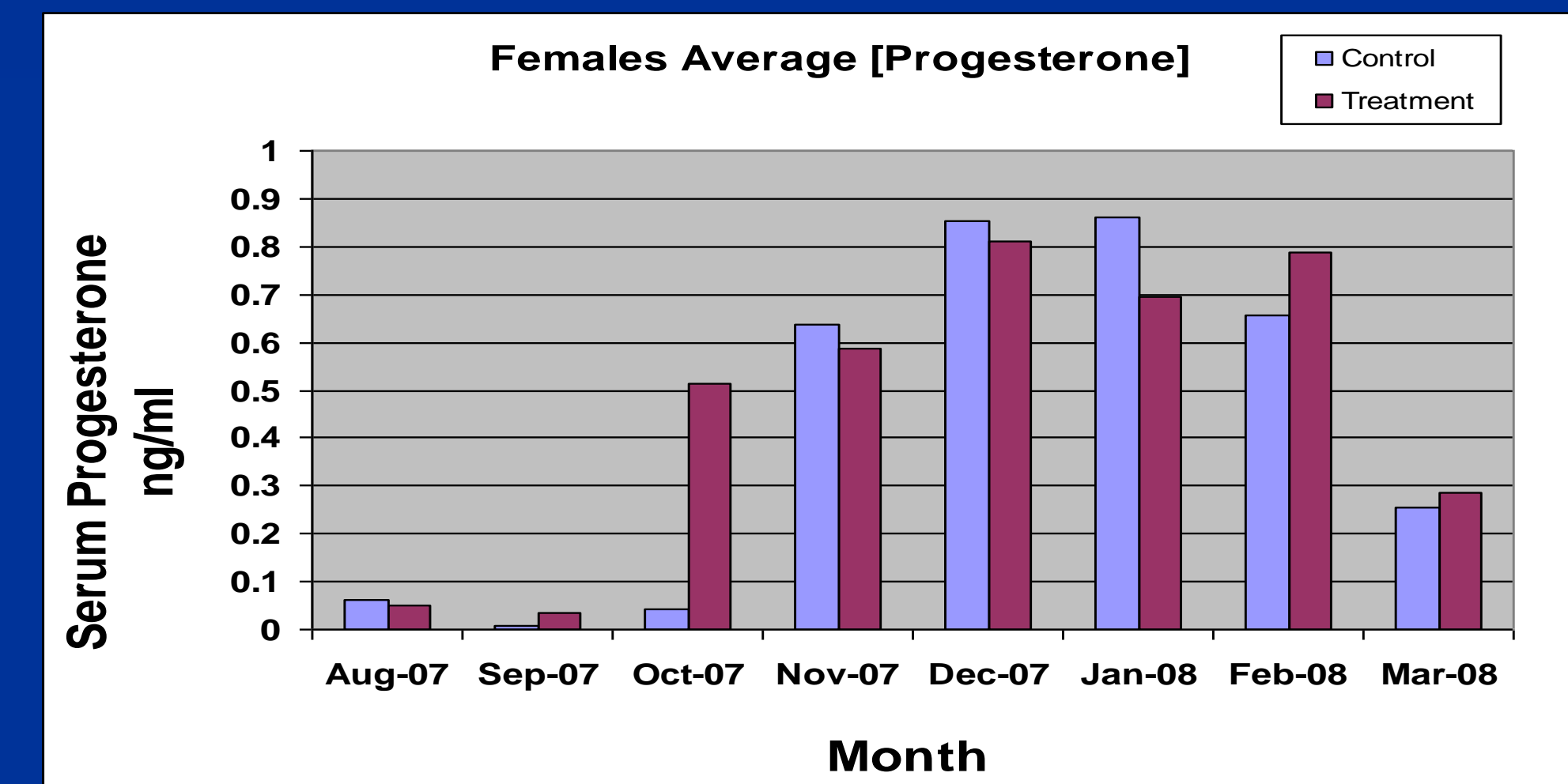


serum luteinizing hormone (LH) and testosterone over time in response to GnRH agonist to evaluate pituitary gonadotroph function



Female calves:

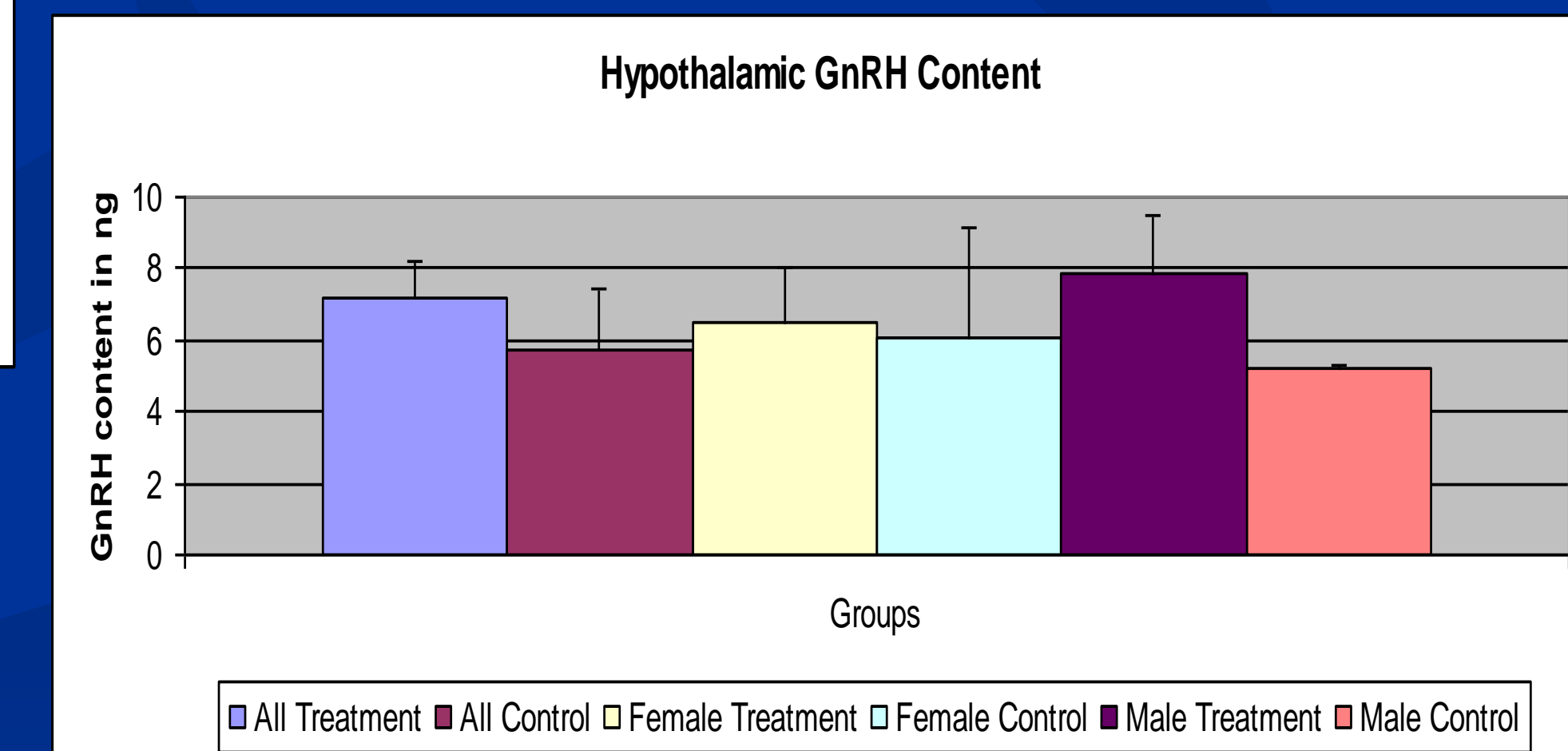
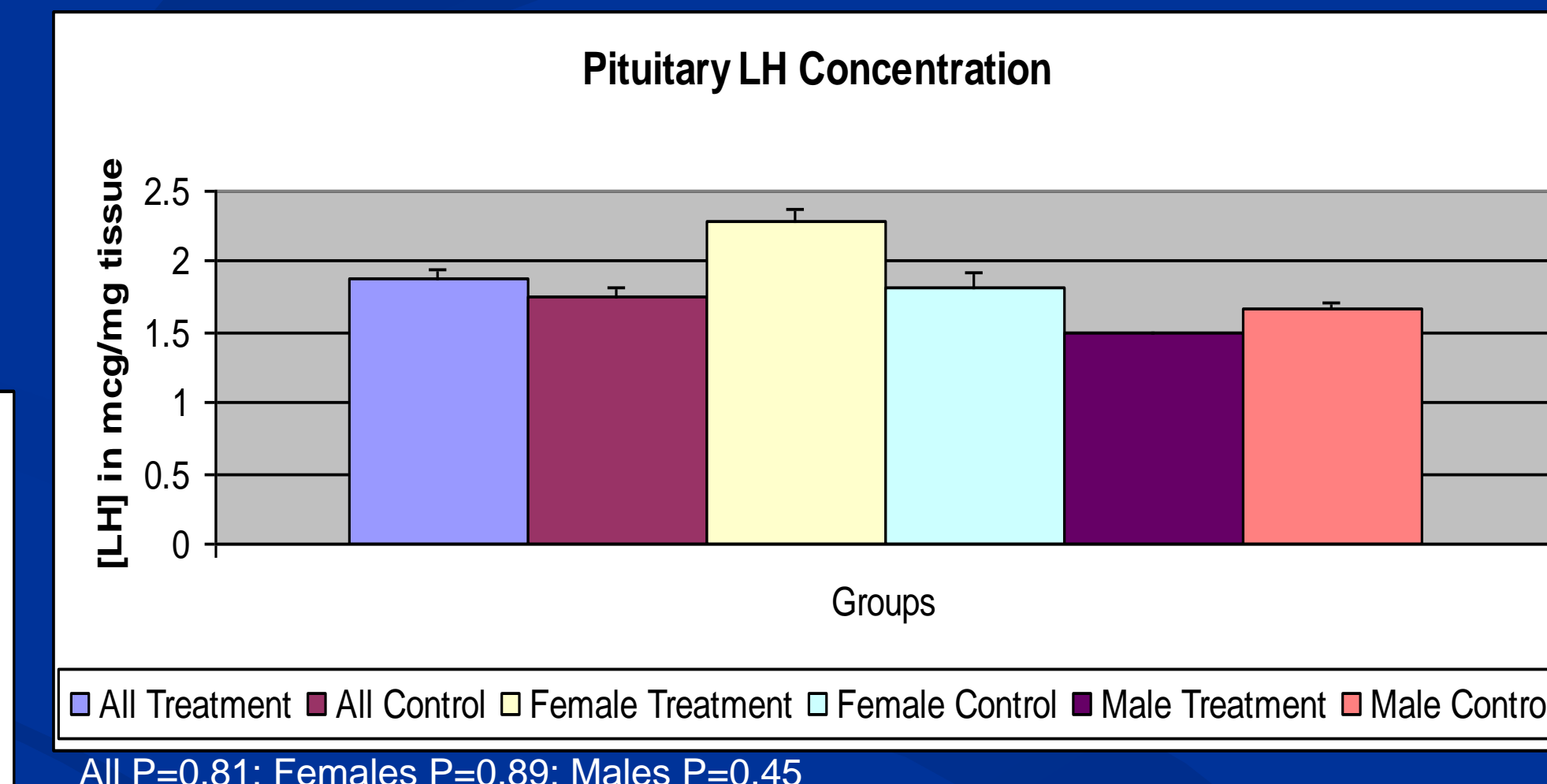
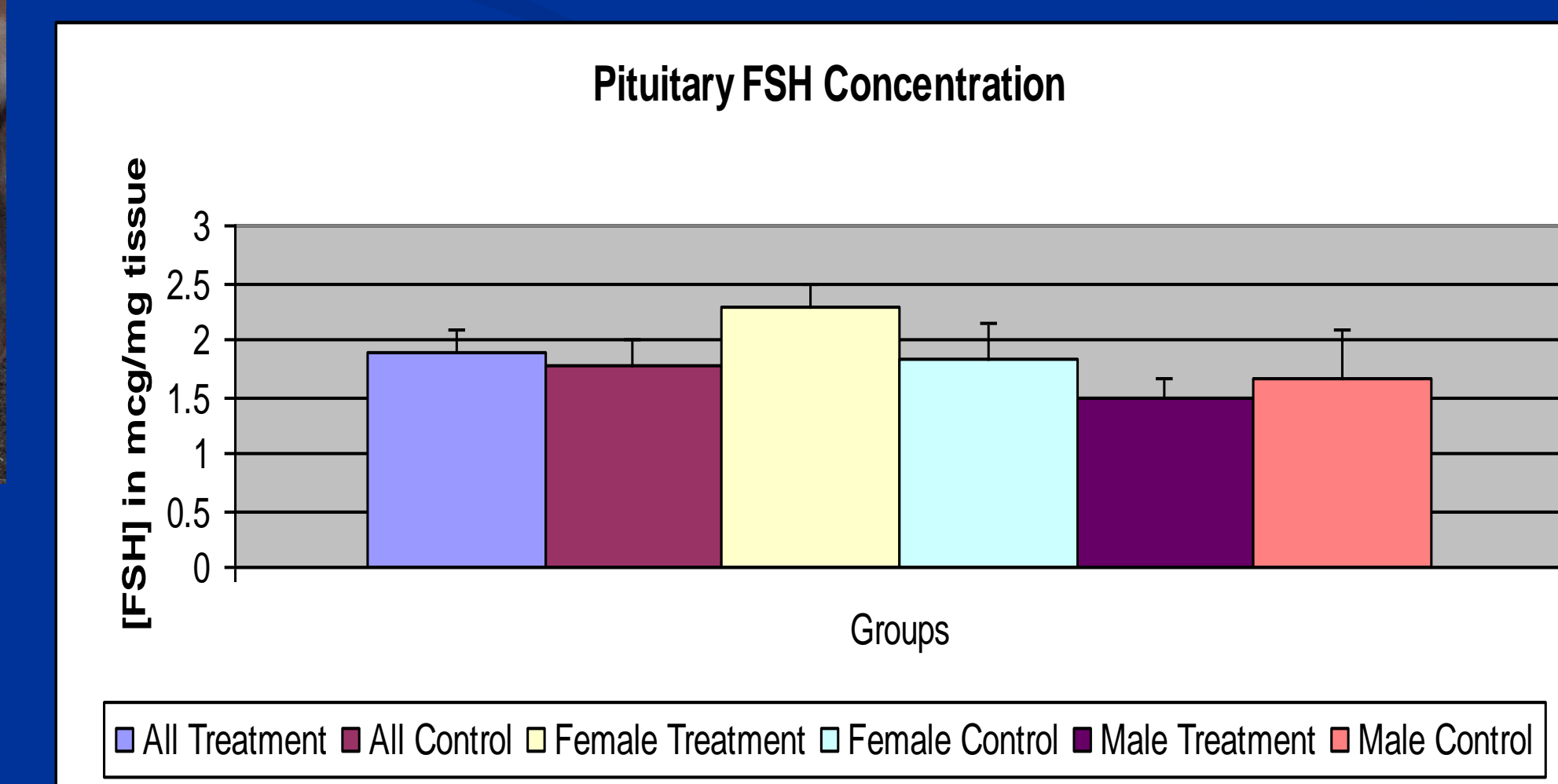
- serum progesterone measurement to evaluate age of pubertal onset
- serum LH measurement over time in response to GnRH agonist before 2008 breeding season to evaluate pituitary gonadotroph function
- exposed to fertile bulls during 2008 breeding season



All females became pregnant during the 2008 breeding season.

Post-mortem evaluations:

- pituitary for LH and follicle-stimulating hormone (FSH) concentrations via radioimmunoassay (RIA)
- hypothalamus for GnRH concentration via RIA
- sperm per gram of testicular tissue
- histological exam of testicular tissue



Conclusions

There appear to be no long-term effects of maternal GnRH antibody transfer on reproductive development and function in elk.



Acknowledgements

Funding for this project was provided by Morris Animal Foundation and by Merck/Merial. The Colorado Division of Wildlife and Tracy Davis provided access and