

Exogenous influences on serum testosterone concentrations in male African rhinoceros species.

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All rhinoceros species are in some degree of endangerment. Understanding the reproductive physiology of rhinoceros species will help in management decisions with both free-ranging and captive populations. In mammalian species studied, testosterone plays a key role in spermatogenesis and libido. Testosterone concentrations, depending on the species, may vary according to age, season, social status, stress factors, nutrition, and disease. Using an enzyme-linked immunoassay, we measured serum testosterone concentrations in 47 male black rhinoceros (*Diceros bicornis*) and 38 male white rhinoceros (*Ceratotherium simum*) housed at 43 different institutions in the United States. We analyzed the relationships between testosterone concentrations and age, time of year, and presence of conspecific males and females. In male black rhinoceros, serum testosterone concentrations rose until 8 years of age and then leveled off, probably indicating completion of sexual maturity, until a decline starting at 21 years of age, likely indicating senescence. No seasonal changes were noted in male black rhinoceros ( $P > 0.05$ ). Testosterone concentrations rose with increasing numbers of females present ( $P < 0.05$ ). Average testosterone concentrations also rose with an increased number of conspecific males ( $P < 0.05$ ). In white rhinoceros, testosterone rose during the first 14.5 years of life before leveling off, likely indicating completion of sexual maturity ( $P < 0.05$ ). In contrast to the black rhinoceros, a decrease in testosterone concentrations associated with a possible onset of senescence was not detected in white rhinoceros males ( $P > 0.05$ ). Similar to the black rhinoceros, no seasonal changes in testosterone were observed for white rhinos ( $P > 0.05$ ), and testosterone concentrations also rose in white rhinoceros males with increasing numbers of females present ( $P < 0.05$ ). These data may be useful in management decisions regarding when and where to move certain males considered valuable to a breeding program.

**Schedule for Phi Zeta Research Emphasis Day**

Friday, June 9, 2006

V1-101 and First Floor Hallway of Veterinary Academic Building

8:35: **Welcome and Introductions** – Paul Gibbs, President of Phi Zeta Upsilon**Morning Platform Presentations (V1-101)** Chaired by: Rowan Milner**Graduate Students:**8:45 **Lara R. DeRuisseau** - Neural deficits contribute to respiratory insufficiency in a mouse model of Pompe disease9:00: **John Friary** - GnRH immun contraception for the humane control of feral cats9:15: **Kathy K. Seino** - Preliminary investigation into the comparative efficacy of three West Nile Virus (WNV) vaccines in experimentally induced WNV clinical disease in horses9:30: **Ariel Womble** - Pulmonary disposition of tilmicosin in foals and *in vitro* activity against *Rhodococcus equi* and other common equine bacterial pathogens**Veterinary Students:**9:45: **Ann Golden** - Prevalence and intensity of parasite infection/infestation in the Virginia opossum (*Didelphis virginiana*) in Florida, USA10:00: **Stefanie A. Gelhardt** - The effects of overcrowding on pea crab dispersal in St. Joe Bay10:15 **Coffee Break** – First Floor Hallway of Veterinary Academic Building**10:15 – 11:30 Posters:***Graduate Students:***Pei-Ying Sarah Chan:** Respiratory related evoked potential (RREP) measures of respiratory sensory gating**Kathy K. Seino:** Protective immunity to intrathecal challenge of West Nile Virus (WNV) in a naturally exposed horse.*Residents:***Jennifer G. Ward:** Infection kinetics of *Anaplasma* spp. in cultured endothelial cells**Daren Hanshaw:** Canine H3N8 influenza virus infection in mice*Veterinary Students:***Maximilian Polyak:** Evaluation of cold storage, centrifugal perfusion and pulsatile perfusion techniques for ex-vivo hypothermic preservation of canine renal autografts for transplantation: Implications for clinical renal transplantation in dogs**Megan Romano:** Injury reduces equine synovial fluid hyaluronan concentration and molecular

weight

- Joanie Palmero:** Determination of regulatory detection periods for carprofen, flunixin, and deracox thin layer chromatography and liquid chromatography-mass spectrometry
- Lindsey M. Diley:** Papillary muscle measurements in cats with normal echocardiograms and cats with concentric left ventricular hypertrophy
- Wendy Conley:** A cadaveric model of transverse bone transport osteogenesis in the distal antebrachii of the dog as a limb salvage procedure

11:35 – **Lunch** - VAB First Floor Hallway

12:00 – 1:15: **Phi Zeta Lecture**

Introduction by Acting Dean James Thompson

**Charles Rupprecht, VMD, PhD**

Chief, Rabies Section, Centers for Disease Control and Prevention, Atlanta GA

***Rabies: Re-emergence, prevention and control***

1:15 **Faculty and Graduate Student Awards** V1-101 –

Phi Zeta Day Sponsor Acknowledgements: Paul Gibbs

Award Presentations: Charles Courtney, Associate Dean for Research/Graduate Studies

**Afternoon Platform Presentations by Interns/Residents** Chaired by Rick Alleman

- 1:45: **Angela J. Marolf:** Comparison of computed radiography and conventional radiography in detecting small volume pneumoperitoneum
- 2:00: **Jessica Siegal-Willott:** Clinical evaluation of distal limb radiography and growth plate closure in the juvenile Asian elephant (*Elephas maximus*)
- 2:15: **Bruce W. Christensen:** Exogenous influences on serum testosterone concentrations in male African rhinoceros species
- 2:30: **C. A. Ryan:** Pharmacokinetics and pharmacodynamics of pantoprazole in clinically normal neonatal foals
- 2:45: **D.A. Liska:** Pharmacokinetics of pentoxifylline in healthy adult horses after oral and intravenous administration
- 3:00: **Kristin Kirkby:** Bilirubin alone does not provide complete protection against ischemia-reperfusion injury in the rat kidney *in vivo*
- 3:15: **Nicole I. Strik:** Characterization of Major Surface Protein 5 of *Anaplasma phagocytophilum* and cross-reactivity with *Anaplasma. marginale*
- 3:30 - Break

3:45: Award Ceremony for Phi Zeta Presentations and Posters - Paul Gibbs