

**BIOMEDICAL & VETERINARY SCIENCES  
GRADUATE PROGRAM**



**ANNOUNCES**

The Master of Science Seminar and Examination of

**Lauren Trager**

**“Evaluation of extracorporeal shockwave for  
treatment of horses with thoracolumbar pain”**

**Friday, August 9th, 2019**

**8:00AM**

**Classroom 121**



## **Bio**



Lauren graduated with her DVM from the VA-MD College of Veterinary Medicine in 2014. She then completed an equine sports medicine internship at Virginia Equine Imaging in Middleburg, VA and returned to the VMCVM for an Equine Sports Medicine and Rehabilitation Residency through the American College of Veterinary Sports Medicine and Rehabilitation. Lauren's research during her residency focused on axial skeleton pathology and pain management and hoof wall fracture repair. Her clinical interests include diagnosis and management of axial skeleton pain, podiatry, ultrasonography and advanced diagnostic imaging.

## **Funded by**

Virginia Horse Industry Board  
VMCVM Office of Research and Graduate Studies

## Lay Language Abstract

Back pain, which may arise from the bone, muscle or soft tissue structures of the spine, is frequently diagnosed and treated in the horse. Horses will often present with back stiffness or pain on palpation, lameness, poor performance or avoidance behaviors under saddle. Assessment of the degree of pain is subjective due to individual interpretation and palpation technique. In an attempt to standardize quantification of pain, pressure algometry has become a validated, objective and repeatable measure of axial skeleton mechanical nociceptive threshold (MNT), which is defined as the minimum pressure required to induce a pain response. Treatment of back pain is centered on reducing inflammation, enabling proper muscle development and influencing correct movement. Recently, rehabilitation to increase the cross-sectional area (CSA) of the multifidus muscle, a deep spinal stabilizer, has become a focus of targeted physiotherapy. Although many treatment options for back pain exist, there is limited research documenting the efficacy of these treatments in horses. Extracorporeal shockwave therapy (ESWT), which consists of focused, high velocity acoustic waves, is one type of non-invasive, well-tolerated treatment for back pain. Despite its popularity, there is no research documenting effects of ESWT on equine spinal MNT or multifidus muscle CSA. This is the first study to document the effects of ESWT on spinal MNT and multifidus muscle CSA in horses with back pain. We hope that the results of this study will help guide treatment decision for horses with back pain.

## Publications

**Trager L**, Dahlgren L, Funk R, Clapp K, Werre S, Hodgson D, Pleasant R. (2019) Extracorporeal Shockwave Therapy Raises Mechanical Nociceptive Threshold in Horses with Thoracolumbar Pain. *Equine Veterinary Journal*. Accepted.

McKenzie H, Funk R, **Trager L**, Werre S, Crisman M. (2019) Immunogenicity of Potomac Horse Fever vaccine when simultaneously or co-administered with rabies vaccine in a multivalent vaccine or as two monovalent vaccines at separate sites. *Equine Veterinary Journal*. In print.

Kastenmueller K, Espinosa DA, **Trager L**, Stoyanov C, Salazar AM, Pokalwar S, Seder RA. (2013) Full-Length Plasmodium falciparum Circumsporozoite Protein

Administered with Long-Chain Poly (IC) or the Toll-Like Receptor 4 Agonist Glucopyranosyl Lipid Adjuvant-Stable Emulsion Elicits Potent Antibody and CD4 (+) T Cell Immunity and Protection in Mice. *Infection and Immunity* 81, 789-800.

Kastenmüller K, Wille-Reece U, Lindsay RW, **Trager L**, Darrah PA, Flynn BJ, Seder R. (2011) Protective T cell immunity in mice following protein-TLR7/8 agonist-conjugate immunization requires aggregation, type I IFN, and multiple DC subsets. *J Clin Invest* **121**, 1782.

## Presentations

### **Resident Rounds:**

1. “Shockwave Therapy: A Review of the Research and Current Clinical Applications” January 2019
2. “The Stifle: Sport Horse Focus” August 2018
3. “Diagnostic Imaging and Treatment of the Equine Thoracolumbar Spine” January 2018
4. “Underwater Treadmill Therapy for Equine Rehabilitation” September 2017
5. “Fetlock Osteochondral Disease in the Thoroughbred Racehorse” May 2017
6. “An Integrative Approach to Treatment of the Chronic Laminitic” October 2016

### **Research Symposium Poster Presentation:**

1. “Mechanical Evaluation of Equine Hoof Wall Fracture Repair Composites” March 2018

### **Continuing Education:**

1. “Understanding the Equinosis System” VMCVM Large Animal Continuing Education Day, Blacksburg, VA, January 2018

## Awards and Academic Achievements

### **Residency:**

Research Symposium Outstanding Master's Student Poster Award, 2018

**Veterinary School:**

Clifton Horse Society Award, 2014

Heather N. Hendrickson Memorial Scholarship Award, 2014

Herbert and Patricia Stuart Memorial Award, 2014

Dr. Olive K Britt Equine Award, 2014

**Examination Graduate Committee**

**Major Advisor/Chair:**

**R. Scott Pleasant, DVM, MS, DACVS**

Professor

Large Animal Clinical Sciences

**Graduate Advising Committee Members:**

**Linda A. Dahlgren, DVM, PhD, DACVS**

Professor

Large Animal Clinical Sciences

**Rebecca A. Funk, DVM, MS, DACVIM**

Clinical Associate Professor

Large Animal Clinical Sciences

**Kemba S. Clapp, DVM, DACVR**

Assistant Professor

Small Animal Clinical Sciences

**David R. Hodgson, BVSc, PhD, DACVIM**

Professor Emeritus

Large Animal Clinical Sciences





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