BIOMEDICAL & VETERINARY SCIENCES

GRADUATE PROGRAM

ANNOUNCES

The Master of Science Seminar and Examination of

Sarah Marie Khatibzadeh

"Porcine Urinary Bladder Matrix in an *In Vitro* Equine Model of Tenogenesis"

Tuesday, June 11th, 2019
10:00 AM
VTH, Phase 4C, Conference Room 291

Bio

Dr. Khatibzadeh is a third-year resident in Large Animal Surgery at the VMCVM and has completed her MS research in the labrotatory of Dr. Linda Dahlgren. Originally from Dallas, Texas, Dr. Khatibzadeh lived in several states growing up. She earned her BS (Animal Science) and DVM degrees at Cornell University. Following veterinary school, she completed a mixed hospital-ambulatory internship in a private equine practice in downstate New York. She then completed a second internship at the Marion DuPont Scott Equine Medical Center in Leesburg before coming to the main campus for her residency. Following her MS defense and completion of her residency in July 2019, Dr. Khatibzadeh will be staying in Blacksburg to pursue a PhD through the BMVS program.

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Virginia Horse Industry Board

Virginia- Maryland College of Veterinary Medicine Equine Research Fund

VMCVM Office of Research and Graduate Studies

Lay Language Abstract

Tendon injuries are common in horses and are painful and can be career- and life-ending. The interior content (matrix) of normal tendons has a special structure and organization that makes tendons elastic and resistant to damage. Injured tendons heal by forming stiff, disorganized scar tissue that makes the tendon more likely to be re-injured. The lining of urinary bladders from pigs (UBM) provides a physical mesh and signaling factors that has helped heal injuries in several tissues to a more normal state. However, UBM has not been evaluated in a laboratory model of tendon tissue formation to determine how it can help heal tendon injuries. Three-dimensional models of tendon tissue formation were made with rat tail tendon matrix and stem cells collected from horse bone marrow. The models were placed under a steady level of tension for 3 weeks. The models were collected after 1 and 3 weeks to measure model width, numbers of total and live cells, cell and matrix organization, levels of tendon

matrix components and expression of genes found in tendons. Most cells in the models remained alive during the study period. Over time, UBM-treated and untreated models became narrower compared to their starting width. The width of UBM-treated models decreased faster than non-treated models in the first week of the study. Cells became longer, narrower, and oriented along the tension line. Expression of genes important in tendon development and structure either increased or was constant over time. UBM treatment did not change cell shape nor increase levels of tendon-associated genes, DNA, or tendon matrix components. Our novel tendon model successfully created organized tendon-like tissue when placed under tension. However, UBM treatment did not improve formation of tendon-like tissue more than models lacking UBM.

Publications

Khatibzadeh SM, Menarim BC, Nichols AEC, Werre SR, Dahlgren LA. 2019. Urinary bladder matrix does not improve tenogenesis in an in vitro equine model. J Orthop Res. Epub ahead of print.

SM Khatibzadeh and JA Brown. Surgical Management of Colic in the Foal. The Equine Acute Abdomen, 3rd ed. Ed. NA White, JN Moore, TS Mair. 2017.

WM Bradley, D Schilpp, and SM Khatibzadeh. Electronic brachytherapy used for the successful treatment of three different types of equine tumours. Equine Veterinary Journal. June 2017. 29(6): 293-298.

Sarah Khatibzadeh, Carvel Gold, Alison Keggan, Gillian Perkins, Amy Glaser, Edward Dubovi, Bettina Wagner. “West Nile virus specific immunoglobulin isotype responses in vaccinated and infected horses.” American Journal of Veterinary Research. December 2014. 76(1): 92-100.

Sarah Khatibzadeh. The Evolution of the Equine Surgery Specialty in the Twentieth and the Twenty First Centuries. American Veterinary Medical Association (AVMA) 2013 Veterinary History Student Summit Scholarship Competition Winner. Presented at 2013 AVMA Convention, Chicago, Illinois.

Kevin J. Cummings, Gillian A. Perkins, Sarah M. Khatibzadeh, Lorin D. Warnick, and Craig Altier. Antimicrobial resistance trends among Salmonella isolates obtained from horses in the northeastern USA, 2001-2013. American Journal of Veterinary Research. May 2016. 77(5): 505-513.

Kevin J. Cummings, Gillian A. Perkins, Sarah M. Khatibzadeh, Lorin D. Warnick, and Craig Altier. Antimicrobial Resistance Trends among Salmonella Isolates Obtained from Dairy Cattle in the Northeastern United States, 2004–2011. Foodborne Pathogens and Disease. April 2013. 10(4): 353-361.

Presentations

Sarah M. Khatibzadeh, Bruno C. Menarim, Anne E. C. Nichols, Stephen R. Werre, Linda A. Dahlgren. Effects of Urinary Bladder Matrix on

Tenogenesis in vitro. American College of Veterinary Surgeons Summit, Residents' Forum. Phoenix, Arizona. October 2018. Podium presentation.

Sarah M. Khatibzadeh. Diagnosis and Surgical Treatment of Conditions Affecting the Navicular Bursa. Virginia-Maryland College of Veterinary Medicine. Blacksburg, Virginia. November 2018. Resident seminar.

Sarah M. Khatibzadeh, Bruno C. Menarim, Anne E. C. Nichols, Stephen R. Werre, Linda A. Dahlgren. Effects of Urinary Bladder Matrix on Tenogenesis in vitro. American College of Veterinary Surgeons Summit, Residents' Forum. Phoenix, Arizona. October 2018. Podium presentation.

Sarah M. Khatibzadeh. Surgical Treatment of Guttural Pouch Mycosis in the Horse. Virginia-Maryland College of Veterinary Medicine. Blacksburg, Virginia. May 2017. Resident seminar.

Sarah M. Khatibzadeh. Negative Pressure Wound Therapy in Large Animals: Current Literature, Cross-Species Comparisons and Future Directions. Blacksburg, Virginia. April 2018. Resident seminar.

Sarah M. Khatibzadeh. Serum Amyloid A in Equine Septic Arthritis. American Association of Equine Practitioners Student Chapter, Guest Seminar. Virginia-Maryland College of Veterinary Medicine. Blacksburg, Virginia. November 2017. Podium presentation.

Sarah M. Khatibzadeh. Intraperitoneal Adhesions in the Horse: Pathophysiology, Prevention and Treatment. Virginia-Maryland College of Veterinary Medicine. Blacksburg, Virginia. October 2017. Resident seminar.

Sarah M. Khatibzadeh. Serum Amyloid A in Equine Practice. Maryland Veterinary Medical Association Annual Conference. Ocean City, Maryland. June 2017. Podium presentation.

Sarah M. Khatibzadeh. Surgical Treatment of Guttural Pouch Mycosis in the Horse. Virginia-Maryland College of Veterinary Medicine. Blacksburg, Virginia. May 2017. Resident seminar.

Sarah M. Khatibzadeh. Serum Amyloid A in Equine Septic Arthritis.

Virginia-Maryland College of Veterinary Medicine. Blacksburg, Virginia. December 2016. Resident seminar.

Sarah Khatibzadeh, Carvel Gold, Alison Keggan, Gillian Perkins, Amy Glaser, Edward Dubovi, Bettina Wagner. West Nile virus specific immunoglobulin isotype responses in vaccinated and infected horses. Cornell University, CVM, Student Research Competition. Best Scientific Content. Ithaca, New York. April 2014. Poster.

Sarah Khatibzadeh. The Evolution of the Equine Surgery Specialty in the Twentieth and the Twenty First Centuries. AVMA 2013 Convention, Student Summit. Chicago, Illinois. Podium presentation.

Awards and Academic Achievements

March 2019: Outstanding Masters Student Award for VMCVM
Virginia Polytechnic Institute and State University, Blacksburg, Virginia

October 2018: Residents' Forum Selected Presenter
American College of Veterinary Surgeons, Annual Summit, Phoenix, AZ

March 2018: Outstanding MS Presentation (Poster)
BVMS Annual Research Symposium, VMCVM, Blacksburg, VA

April 2014: Outstanding Scientific Content (Poster)
Annual Student Research Symposium, College of Veterinary Medicine, Cornell University, Ithaca, NY

July 2013: Scholarship Competition Winner, Veterinary History Student Summit
American Veterinary Medical Association Annual Convention, Chicago, IL

2012-2013: Phi Zeta Veterinary Honor Society Member
College of Veterinary Medicine, Cornell University, Ithaca, NY

Examination Graduate Committee

Major Advisor/Chair:

Linda Dahlgren, DVM, PhD, DACVS
Professor, Large Animal Surgery
Large Animal Clinical Sciences

Graduate Advising Committee Members:

Christopher Byron, DVM, MS, DACVS
Associate Professor, Large Animal Surgery
Large Animal Clinical Sciences

R. Scott Pleasant, DVM, MS, DACVS
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James Brown, BVSc, MS, DACT, DACVS
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