

**BIOMEDICAL & VETERINARY SCIENCES
GRADUATE PROGRAM**



ANNOUNCES

The Master of Science Seminar and Examination
of

M.C. Seward, DVM, MBA

**“Feasibility of Targeting Canine Soft
Tissue Sarcoma with MR-Guided High
Intensity Focused Ultrasound”**

**Friday, May 4, 2018
10:00 am
VMIA Classroom 220**

Bio



M.C. is completing the fourth and final year of a radiology residency. A Colorado native, he completed his BS in Biological Science and an MBA with a concentration in Agricultural Business at Colorado State University. After working several years in the equine racing industry, he attended Ross University College of Veterinary Medicine followed by an equine medicine fellowship. Making the transition to private practice in small animal medicine, he continued to develop his interest in diagnostic imaging and ultrasound. He is supported by his wonderful family, wife Shawn, and four children, Ally, Braden, Chase and Dixon.

Funded by

Virginia–Maryland College of Veterinary Medicine
VMCVM Office of Research and Graduate Studies
Department of Small Animal Clinical Sciences

Lay Language Abstract

Soft tissue sarcomas (STS) are regionally invasive tumors in both people and dogs. Tissue-sparing treatment options for STS provide opportunities to advance both human and animal health. MR-guided high intensity focused ultrasound (MR-HIFU) is a non-invasive, radiation free treatment modality used to accurately target and treat tumors in people. This project explores the feasibility of using MR-HIFU to treat STS in dogs. Each tumor was evaluated in three-dimensions to determine the ultrasound transducer position and an appropriate path for the HIFU beam with consideration to nearby critical structures such as vessels, nerves, organs and bone. Tumors were classified as non-targetable, partially targetable or targetable. The portion of tumor volume that could be treated and the tumor depth were also measured. The majority of STS, particularly in truncal/axillary/extremity locations could be targeted. This is the first study to evaluate targetability of STS using MR-HIFU in dogs. MR-guided HIFU has potential as a therapeutic modality to treat STS in dogs and as a model for treatment of naturally-occurring STS in humans.

Publications

Seward, M., Daniel, G., Ruth, J., Dervisis, N., and Yarmolenko, P.; Feasibility of Targeting Soft Tissue Sarcomas with High Intensity Focused Ultrasound. Proceedings, American College of Veterinary Radiology Annual Scientific Meeting; Phoenix, AZ, October 18-21, 2017.

Seward, M., Quimby, J. and Randall, E.; Ultrasound Measurement of Cortical Medullary Ratios to Determine Progression of Chronic Renal Disease in Cats. Proceedings, American College of Veterinary Radiology Annual Scientific Meeting; Savannah, GA, October 8-11, 2013.

Presentations

Seward, M., Daniel, G., Ruth, J., Dervisis, N., and Yarmolenko, P.; Feasibility of Targeting Soft Tissue Sarcomas with High

Intensity Focused Ultrasound. 29th Annual BMVS Graduate Research Symposium, March 15, 2018. Poster Presentation.

Seward, M., Daniel, G., Ruth, J., Dervis, N., and Yarmolenko, P.; Feasibility of Targeting Soft Tissue Sarcomas with High Intensity Focused Ultrasound. Proceedings, American College of Veterinary Radiology Annual Scientific Meeting; Phoenix, AZ, October 20, 2017. Oral Presentation.

Seward, M., Ruth, J.D, Daniel, G.B.; Clapp, K.; Dervis, N.G., LaRoith, T., Yarmolenko, P.S.; The Use of MR-Guided High Intensity Focused Ultrasound in Combination with Low Temperature Sensitive Liposome Encapsulated Doxorubicin: Tissue Concentration and Acute Effects on Nerve Function in a Normal Dog Model. 33rd Annual Graduate Student Assembly Research Symposium & Exposition, March 29, 2017. Poster Presentation.

Seward, M., Ruth, J.D, Daniel, G.B.; Clapp, K.; Dervis, N.G., LaRoith, T., Yarmolenko, P.S.; The Use of MR-Guided High Intensity Focused Ultrasound in Combination with Low Temperature Sensitive Liposome Encapsulated Doxorubicin: Tissue Concentration and Acute Effects on Nerve Function in a Normal Dog Model. 28th Annual BMVS Graduate Research Symposium, March 16, 2017. Poster Presentation.

Seward, M., Ruth, J.D, Daniel, G.B.; Clapp, K.; Dervis, N.G., LaRoith, T., Yarmolenko, P.S.; The Use of MR-Guided High Intensity Focused Ultrasound in Combination with Low Temperature Sensitive Liposome Encapsulated Doxorubicin: Tissue Concentration and Acute Effects on Nerve Function in a Normal Dog Model. 27th Annual BMVS Graduate Research Symposium, March 17, 2016. Poster Presentation.

Seward, M., Quimby, J. and Randall, E.; Ultrasound Measurement of Cortical Medullary Ratios to Determine Progression of Chronic Renal Disease in Cats. Proceedings, American College of Veterinary Radiology Annual Scientific Meeting, Savannah, GA, October 8-11, 2013. Oral Presentation.

Examination Graduate Committee

Major Advisor/Chair

Gregory B. Daniel, DVM, MS, DACVR
Interim Dean, Virginia-Maryland College of Veterinary Medicine
Professor of Radiology, Small Animal Clinical Sciences

Graduate Advising Committee Members:

Kemba S. Clapp, DVM, DACVR
Assistant Professor of Radiology
Small Animal Clinical Sciences

Jeffrey D. Ruth, DVM, MS, DABVP, DACVR
Clinical Assistant Professor of Radiology
Small Animal Clinical Sciences

Nick Dervisis, DVM, PhD, DACVIM (Oncology)
Assistant Professor of Oncology
Small Animal Clinical Sciences

External Examiner

Pavel Yarmolenko, PhD

Assistant Professor

The Sheikh Zayed Institute for Pediatric Surgical Innovation
Children's National Medical Center in Washington D.C.



VIRGINIA TECH™