

VMSRTP Mentors Clinical and Translational Sciences

Coleman, Michelle (VLCS)

Scholarly Interests: Epidemiology, Equine Endocrinology, Equine Infectious Disease

Creevey, Kate (VSCS)

Ongoing research interests include infectious disease, and the genetic and environmental determinants of canine aging including comparative morbidity and mortality within and among dog breeds.

Gomer, Richard (BIOL)

There are a wide variety of available projects. One project that a student might like to do will be to test 3 potential therapeutics in a mouse model of liver fibrosis (cirrhosis); the potential therapeutics have all worked in mouse models of pulmonary fibrosis. The work will be able to be completed in a 2-3 month timeframe.

Jeffery, Nick (VSCS)

The first project investigates changes in neural gene expression following cranial cruciate ligament (CCL) injury. In humans, damage to this knee joint ligament not only affects the mechanical stability of the knee joint, but also affects the ability of the patient to accurately appreciate leg and joint position and movement. Since the CCL acts as both, a mechanical and sensory organ, prolonged loss of function after this type of injury may reflect alterations in the underlying neural circuitry. To address this, the project is designed to measure the effect that CCL injury has on circuits within the spinal cord using a rodent model. In later studies, this project will progress to test whether it is possible to use drugs to adjust these alterations and thereby reduce detrimental effects on joint function.

The second project explores the use of skin innervation density as a diagnostic tool for neuropathy in dogs. In human medicine, measurement of the density of intraepidermal nerve fibers via skin biopsies is a reliable method for diagnosing and classifying neuropathies. Dogs, such as Labrador retrievers, can be affected by neuropathies such as geriatric onset laryngeal paralysis polyneuropathy and other neuropathies. Diagnosis of these conditions, however, can be challenging as clinical signs may be vague and difficult to detect. The goal of this study is to determine if dogs diagnosed with a laryngeal paralysis have reduced density of skin innervation. Decreased intraepidermal innervation in these dogs would indicate that diagnosis is possible via skin biopsy, a procedure that is rapid, technically simple, inexpensive, and safe for patients with minimal adverse side effects.

Students conducting research in our lab will be supervised by Dr. Nick Jeffery and Dr Miriam Aceves (post-doc), and will work closely with a veterinary graduate student. Students will be exposed to the following laboratory techniques: tissue collection, preparation, and sectioning using a cryostat; histology and immunohistochemistry; imaging and basic stereology; statistical methods and experimental design. Students will also be expected to participate in a bi-weekly journal club. Depending on their contribution to the projects, students may be considered for co-authorship in any resulting posters or publications.

Jeffery, Unity (VTPB)

Our research is focused on gastrointestinal function testing, gastrointestinal pathogens, and intestinal microbial ecology with an emphasis on probiotics and prebiotics and how intestinal pathogens lead to disturbances in the intestinal microbiome of companion animals.

Dogs Helping Dogs project 1: Identifying thrombotic disseminated intravascular coagulopathy using special stains. Thrombotic disseminated intravascular coagulopathy (DIC) is a common complication of severe illness in canine patients. In thrombotic DIC, the blood clotting system is activated non-specifically, resulting in small blood clots forming in many organs. This causes organ failure, and because the components needed for clotting become exhausted, ultimately leads to uncontrollable bleeding. Clinically, it is very difficult to distinguish thrombotic DIC from primary bleeding disorders. This is a major barrier to developing targeted therapies for dogs with thrombotic DIC. In this project, we will use archived tissues collected from pet dogs that had clinical signs compatible with DIC. You will apply a special stain specific for fibrin (a component of blood clots) to these tissues, and we will identify which dogs have definitive evidence of thrombosis. This will help to better define which diseases in dogs cause thrombotic DIC.

Dogs Helping Dogs project 2: Morphometry of canine histiocytic sarcoma. Histiocytic sarcoma is a malignant tumor that can develop at many different sites in the body and has a variable appearance on cytology. This means that it can be difficult to distinguish histiocytic sarcomas from other mesenchymal tumors, and also from severe macrophagic inflammation. This is a problem because the optimal treatment for histiocytic sarcoma is different from the alternative diagnoses. In this study, you will photograph cytology specimens from dogs with histologically confirmed histiocytic sarcoma and specimens from dogs with diagnoses that mimic histiocytic sarcoma. You will then use image analysis software to analyze features of the cells. We will compare these features between the different types of tumors to identify features that can help to distinguish histiocytic sarcoma from other diagnoses.

Kornegay, Joe (VIBS)

We study the mechanisms of Duchenne muscular dystrophy and the development of potential therapies using the canine model.

Nabity, Mary (VTPB)

The projects in my lab will (in general) involve one of the following: investigation of biomarkers of kidney disease in dogs, exploration of diseases based on kidney biopsy (breed-specific and/or disease-specific), or evaluation of a new instrument for urine sediment examination.

Nghiem, Peter (VIBS)

We will evaluate genetic modifiers of Duchenne muscular dystrophy using the canine models. The student will develop a hypothesis and specific aims to answer scientific questions. They will have the opportunity to perform molecular techniques such as DNA, RNA, and protein extraction, PCR, western blot, light and immunofluorescence (confocal) microscopy, cell culture, among others to evaluate gene/protein expression. In addition, the veterinary student will assist in newborn puppy care, muscle strength testing, surgical muscle biopsy, and other outcome measures to evaluate disease progression.

Rech, Rachel (VTPB)

Diagnostic and comparative pathology with emphasis in Neuropathology; Pathogenesis of disease in cattle and pigs Diseases of wild boars

Robles, Heather (VSCS)

I have two main areas of scholarly interest. The first is bench top research focusing on identification and characterization of tumor initiating cells in solid tumors with a one health perspective (i.e. tumors similarities and treatment implications across species). The second focus of my research involves clinical trials in client owned dogs with spontaneously developing tumors as a basis for informing human clinical trials. Much of this research also has a one health implication designed to streamline drugs or therapies for human trials decreasing the cost of drug approval while improving therapeutic options for canines afflicted with cancer.

Rodrigues Hoffmann, Aline (VTPB)

I have broad experience in Veterinary Pathology pursuing macroscopic evaluation, histological examination and immunohistochemistry in tissues from different animal species, including small animals, large animals, laboratory animals, and exotic species. My particular area of interest is in Dermatopathology, providing diagnostic service, and working closely with our dermatologists, and with the dermatologists and clinicians from private clinics throughout the country that submit samples to our Dermatopathology Specialty Service. I provide diagnostic service and consultation to the Veterinary Medical Teaching Hospital at TAMU, and support collaborative research studies. My research focuses on investigating how the skin microbiome in animals could play a role/contribute to development of skin lesions. Our research group has shown that the skin in dogs and cats is colonized by diverse and rich microbial communities, and that healthy dogs have a more diverse skin microbiome when compared to allergic dogs.

Saunders, Brian (VSCS)

Osteosarcoma is a devastating metastatic bone tumor affecting both humans and veterinary species. Our lab has demonstrated that osteosarcoma cell invasion in 3D collagen matrices requires a group of proteinases termed MT-MMPs (consistent with other normal and abnormal cells). While we believe that the primary MT-MMP involved in these events is MT1-MMP, we need to confirm this with a series of experiments using siRNA to specifically reduce expression of several key MT-MMPs in our cell invasion assays. Participation in this project will allow the student to gain experience in cell culture, 3D serum-free invasion assays, Western blotting, RNA isolation, and qPCR. Successful participation in this project will result in co-authorship of a manuscript in addition to the abstracts and podium/poster presentations associated with the summer research program.

Scott, Erin (VSCS)

Medical and surgical ophthalmology in all species with a special interest in glaucoma and ocular pathology.

Steiner, Joerg (VSCS)

Small animal and comparative gastroenterology

Suchodolski, Jan (VSCS)

Our research is focused on gastrointestinal function testing, gastrointestinal pathogens, and intestinal microbial ecology with an emphasis on probiotics and prebiotics and how intestinal pathogens lead to disturbances in the intestinal microbiome of companion animals.

Vallone, Lucien (VSCS)

Diseases & surgery of the ocular surface

Watts, Ashlee (VLCS)

stem cell therapy

Weeks, Brad (VTPB)

Diagnostic anatomic pathology; collaborative research of inflammatory and neoplastic gastrointestinal disease, and cardiovascular disease. Veterinary medical education, particularly general pathology

Whitfield, Canaan (VLCS)

infectious diseases, NSAID pharmacology