Project Title: Use of an immunoglobulin-synbiotic treatment for feline acute diarrhea

Principal Investigator(s): A. Jergens/K. Allenspach/J. Carnevale

Collaborating Investigator(s): J. Mochel

Veterinary Scholar Focused Abstract: (300 words or less):

We will investigate use of an immunoglobulin-synbiotic intervention (Intesto-Guard™) for treatment of acute diarrhea in shelter cats. The trial will be performed as a randomized, double blind and single center study enrolling a total of 30 cats. Animals will be randomized to receive either standard feline diet + Intesto-Guard™ (n=15) or standard feline diet + placebo (n=15). Each animal will be orally treated with either protocol for 10 consecutive days. Enrolled cats will be evaluated at baseline and during the clinical trial for general attitude (scored 0-3) and stool character (scored 0-7). Trial outcomes will include changes in clinical attitude and fecal stool consistency, duration to cessation of diarrhea, changes in microbiome, infectious disease agents, and fecal IgA excretion in response to either treatment.

Fecal samples for nematode/protozoa parasites, microbiome assessment (16S rRNA), infectious disease agents (fecal infectious disease panel by IDEXX), and fecal IgA will be collected at baseline and during the treatment period (days 0, 5, and 10). Samples will be archived until analysis.

This clinical trial will involve clinical evaluation and sample collection at the enrollment animal shelter near Ames, IA. A faculty member will work closely with the student during these site visits. Within the Comparative GI Laboratory at the CVM, the student will perform fecal sample preparation for analysis of microbiome and IgA excretion. These experiences will be a nice blend of clinical and basic science experiences for the interested student.

Study results will be suitable for presentation at a National/International Scientific meeting followed by a scientific publication with the student serving as a co-author.
Project Title: Phenotypic and functional characterization of intestinal organoids from healthy dogs and dogs with chronic enteropathies

Principal Investigator(s): A. Jergens/K. Allenspach/J. Mochel

Collaborating Investigator(s): D. Borcherding/Y. Ambrosini/T. Atherly

Veterinary Scholar Focused Abstract: (300 words or less):

Advances in GI research have allowed our lab to develop 3-dimensional tissue culture systems derived from canine intestinal stem cells, termed organoids or “mini-guts.” Previous studies have shown that intestinal organoids more closely mimic in vivo physiology across multiple species versus other tissue culture systems which makes them ideal for investigating canine chronic enteropathies, including inflammatory bowel disease (IBD). Our research group has recently characterized different epithelial cells within organoids derived from healthy dogs using light microscopy, electron microscopy, immunohistochemistry and RNA in situ hybridization (RNAscope). However, the phenotypic and functional characterization of organoids derived from dogs with chronic enteropathies, including IBD, has not yet been performed.

This SS project involves investigating the structure and function of organoids obtained from dogs with chronic intestinal diseases (IBD and protein-losing enteropathy [PLE]). We currently have >50 cell lines available from healthy and diseased dogs, including different breeds and ages of dogs. We also have on-going clinical trials investigating different therapies to reduce intestinal inflammation in dogs and where tissues are collected pre- versus post-treatment for organoid cultivation. This will allow the student to compare differences between healthy and diseased organoids in response to both treatment and cryopreserved conditions.

The specific research techniques the student will be exposed to will include some or all of the following: canine clinical trials, GI endoscopy, organoid cultivation/passage, light microscopy, electron microscopy, immunohistochemistry, RNA in situ hybridization and qRT-PCR for mRNA expression. The student will also participate in weekly lab meetings and research discussions.

It is anticipated that these comparative studies will result in a peer-reviewed publication and that the student serves as a co-author on this publication.
Group D
2019 ISU CVM SSRP Mentor Abstract #3

Project Title: “Making a better test for IMHA - Development of a flow cytometric assay for detection of anti-erythrocyte antibodies in the dog.”

Principal Investigator(s): Dana LeVine (VCS) and Austin Viall (VPath)

Collaborating Investigator(s): N/A

Veterinary Scholar Focused Abstract: (300 words or less):

Immune-mediated hemolytic anemia (IMHA) is an aggressive hemolytic disorder of dogs associated with significant morbidity and mortality. The disease results from aberrant production of anti-erythrocyte antibodies which promote erythrocyte destruction. Accurate, prompt diagnosis of IMHA is important for clinical management. Detection of anti-erythrocyte antibodies is essential for establishing a diagnosis. Anti-erythrocyte antibodies can be detected indirectly through their effects (ex. autoagglutination) or directly with immunoassays (ex. Coombs test). However, autoagglutination is variable in IMHA (42-87% of cases) and Coombs testing has a wide diagnostic sensitivity (60-90%). Flow cytometric assays for anti-erythrocyte antibodies have recently been reported and may be superior diagnostic tests for IMHA.

We propose to develop a flow cytometric assay for anti-erythrocyte antibodies for diagnostic use for IMHA in our veterinary hospital. For assay development, the analytic performance of a commercial anti-canine IgG antibody to detect anti-erythrocyte IgG will be evaluated. The process will entail optimization of staining protocols, data analysis, analytic accuracy, and precision of the antibody in serial experiments using normal erythrocytes and erythrocytes artificially coated with anti-DEA1 IgG. Once the assay is validated, references intervals for anti-erythrocyte antibodies will be established with blood from healthy dogs.

Furthermore, we will assess the performance of our assay relative to an immunochromatographic Coombs test. While this Coombs test has a diagnostic sensitivity of just 61%, the test is widely used clinically and thus represents a standard for assay comparison. An assay comparison study will be performed between the two tests using normal erythrocytes and erythrocytes artificially coated with anti-DEA1 IgG.

We anticipate the flow cytometric assay will be straightforward to develop and our assay will have superior analytic performance relative to the Coombs test. This project will set the foundation for us to subsequently assess the diagnostic performance of our assay in dogs with naturally occurring IMHA.
Clostridium difficile (CD) is a spore-forming, strictly anaerobic bacterium that causes a toxin-mediated enteric disease in humans and animals. CD infection has been associated with the use of antibiotics that results in disruption in normal enteric microflora (gut-dysbiosis), subsequent pathogen colonization and severe toxin-mediated colitis. Despite the fact that a majority of the currently used antibiotics can predispose CD infection by disrupting the normal gut flora, antibiotics are still used as the primary line of treatment against infection. Moreover, the Centers for Disease Control and Prevention recently listed CD as one among the three urgent threats in their report on emerging pathogens with antibiotic resistance. Since the toxins are the major virulence factors for CD infection, a search for an alternative, non-antibiotic therapeutic agents, which can reduce CD virulence without causing gut-dysbiosis opens a new research area.

My research focuses on the mechanism of CD pathogenesis and non-antibiotic strategies for preventing gut-dysbiosis and CD virulence. My research project involves screening and testing various small molecules for their effects on CD toxin production, cytotoxicity, toxin gene expression, sporulation and spore germination using anaerobic bacteriologic and molecular techniques. Additionally, we investigate potential zoonotic transmission of CD and genetic and evolutionary relationship between human and animal (more importantly pet) isolates of CD. The results from this research could help the medical and scientific community to develop and validate new strategies to control CD infection in humans and animals.
Project Title: Husbandry and Environmental Influences on Circulating Vitamin D₃ (25OHD₃) in Black Rhinoceros in North American Zoos

Principal Investigator(s): June Olds, DVM

Collaborating Investigator(s): Jesse Goff, DVM, BMS, Drew Makowski, BS, Heartland Laboratories, Ames, IA

Veterinary Scholar Focused Abstract: (300 words or less):

Published “normal” reference values (RV) for circulating 25-hydroxy-vitamin D₃ (25OHD₃) for the black rhinoceros (“BR”, Diceros bicornis spp.) [55 ng/ml +/- 34.2 ng/ml] reflect data from a small sample size (n=28) of free-living BR in Zimbabwe. Until recently very few results for 25OHD levels have been published for BR in human care. Vitamin D is essential to calcium homeostasis, but also serves as an important factor in immune function. AZA-accredited zoological institutions in North America routinely bank serum samples collected from rhinoceros obtained during health examinations. Additionally, many rhinoceros in captivity are trained for routine blood collection for health monitoring. This study will solicit fresh or banked frozen serum samples from North American zoos housing black rhinoceros. In addition to providing samples, a brief questionnaire will request information from each zoo about the husbandry of the animals (housing, seasonal outdoor access vs year-round outdoor access), diet fed at the time of sample collection, and any dietary supplements provided. Season for North American samples will be based upon the sample collection date (Spring [March-May], Summer [June-August], Fall [September-November], Winter [December-February]). Latitude will be determined by mapping the zoo location. Ideally, 4 samples from each captive animal will be available, representing the 4 seasons. If those samples are not available, then any sample from any time period will be accepted and samples will be generalized by season. Samples will be stored at -80 C until all samples are received and processed. The objective of this study is to compare seasonal variations of circulating 25OHD in North American BR within zoos, and assess husbandry influence of latitude, housing, and feed on circulating vitamin D levels in black rhinoceros, so that accurate normal RV can be established for the species, and guidance can be given for appropriate management of rhinoceros in human care.
Project Title: Alterations of symmetric dimethylarginine (SDMA) in hyperthyroid dogs with normal kidney function

Principal Investigator(s): Jean-Sebastien Palerme

Collaborating Investigator(s):

Veterinary Scholar Focused Abstract: (300 words or less):
Symmetric dimethylarginine (SDMA) is a novel renal biomarker that has shown great promise in estimating glomerular filtration rates in companion animals. Though many experimental as well as clinical studies have shown this biomarker to be more sensitive than more commonly used biomarkers (e.g. creatinine and blood urea), some data from human as well as animal studies suggest that extra-renal factors that alter metabolic rates (e.g. neoplasia, thyroid diseases) can affect the correlation between SDMA and glomerular filtration rates, compromising the dependability of SDMA as a renal biomarker.

Using a colony of healthy research dogs, we plan to investigate the relationship between thyroid status, renal function and serum SDMA levels. Dogs will have baseline bloodwork (CBC, chemistry, urinalysis and SDMA) and an iohexol clearance assays performed at three time points starting with enrollment (baseline). Following this, an iatrogenic hyperthyroid state will be induced with oral thyroxine supplementation. Once hyperthyroidism has been induced, dogs will have renal markers measured again in combination with an iohexol clearance assay. Finally, bloodwork and iohexol clearance values will be measured 1 month following cessation of oral thyroxine supplementation.

Data collecting in this study will contribute substantially to our understanding of the influence of extra-renal factors on SDMA variability in dogs.
Project Title: Dairy goat wellbeing: Development of benchmarking and training materials to aid the industry

Principal Investigator(s):
Dr. Paul Plummer

Collaborating Investigator(s):
Dr. Jan Shearer

Veterinary Scholar Focused Abstract: (300 words or less):

In recent years, the demand for dairy goat milk products has continued to rise and hence the number and size of commercial dairy goat operations has increased dramatically. Unfortunately, the rate of expansion is quickly outpacing the educational and training materials available to dairy goat producers on a number of topics including nutrition, facility design, evidence-based health protocols and wellbeing. Wellbeing (or welfare) is difficult to define as there are multiple definitions and interpretations. However, animal wellbeing is generally concerned with the animal’s quality of life, and includes having adequate food and water, comfortable housing that permits natural behavior and optimal health.

The aim of the project is to improve the welfare of dairy goats in the Midwest by providing producers with appropriate educational materials and training, combined with the knowledge of how to assess implementation success. The project is based at Iowa State University, College of Veterinary Medicine but will involve travel to dairy goat farms in Iowa, Wisconsin and Minnesota. The main role of the intern will be to assist with on-farm assessment of dairy goats and data collection. The ideal student will have experience working with and/or an interest in dairy goats and will be able to work independently as well as with others. Additionally the student will have a full driver’s license and be proficient in using Microsoft word and Excel.
Project Title: Development of Task-specific Educational Modules for Training Layer and Pullet Farm Employees on Animal Behavior and Well-being by Using Research-based Strategies to Elevate Management Standards

Principal Investigator(s): Yuko Sato, Mohamed El-Gazzar

Collaborating Investigator(s): Suzanne Millman, Brett Ramirez, Craig Rowles

Veterinary Scholar Focused Abstract: (300 words or less):

The objective of this proposal is to establish a training tool template for identifying and responding to gaps in caretaker knowledge and skills. The tool will comprise research and its application to creation of short, task-based educational modules for training and retraining employees, which will be a resource available to all producers. In response to poultry supervisor interests, the template for this training tool will focus on bird behavior and well-being.

We will address these two broad research objectives:
1. Illustrating impacts of housing environment on bird behavior and well-being, and
2. Illustrating impacts of housing management on bird behavior and well-being.

Selected student will assist in developing different clinical/experimental trials in a commercial cage-free facility and edit video recordings of such set trials/treatments to be used to develop training modules for poultry barn employees.
Project Title: Physiological and biopharmaceutical considerations for topical ocular drug delivery in dogs

Principle Investigator: Dr. Lionel Sebbag

Collaborating Investigators: Dr. Jonathan P. Mochel, Dr. Rachel A. Allbaugh

Veterinary Scholar Focused Abstract:

How to best apply a topical medication to the canine eye? For decades, veterinarians have answered this important question by extrapolating what is known in humans: One should only apply a single drop (as the ocular surface is capable of holding only 25-30 µL), and it is recommended to wait at least 5 min between different drugs to allow the first drop to be completely removed via lacrimal drainage. However, this information is likely inaccurate in dogs as the canine anatomy and physiology is quite different from humans. Specifically, dogs have a larger cornea and palpebral fissure compared to humans, and the canine tear volume is much larger (65 µL vs. 7 µL in humans).

The purpose of this study is to answer the following questions:

What volume of eye drop is the canine ocular surface capable of holding?

What is the retention time of an eye drop in a dog? Is there a difference between the instillation of 1 drop vs. 2 drops?

How does drug viscosity affect its retention on the ocular surface?

Is the systemic absorption of topical medications greater when the volume of an eye drop increases?

Eight healthy adult beagle dogs will be enrolled in the study. A series of experiments will be conducted using non-invasive methods, including external photography (camera with blue filter to detect fluorescein), tear collection, blood collection and fluorophotometry.

The study will provide clinicians and owners with a better understanding on how to use eye drops in the most appropriate manner. Should we use 2 drops (rather than a single drop) of each topical medication in dogs? Should we wait 10 min (rather than 5 min) between two different medications in dogs?

Ultimately, a better drug administration is important to obtain maximum therapeutic benefit, and this is true regardless of the disease being treated.
Project Title: Evaluating the effect of intra-articular gene therapy on joint inflammation in a canine model of mucopolysaccharidosis I (MPS I)

Principle Investigator(s): Jodi Smith (V PTH)

Collaborating Investigator(s): N. Matthew Ellinwood (AN SCI), Raymond Wang (Children’s Hospital of Orange County)

Veterinary Scholar Focused Abstract:

The mucopolysaccharidoses (MPSs) are a group of genetic diseases characterized by deficiencies in lysosomal enzymes that degrade glycosaminoglycans (GAGs). As a result of enzyme deficiency, GAGs cannot be degraded and accumulate in various body tissues. MPS type I is caused by deficiency of the enzyme alpha-L-iduronidase (IDUA), resulting in build-up of GAGs in both nervous and somatic tissues. Patients with MPS I develop hepatosplenomegaly, corneal clouding, cardiovascular disease, degenerative joint disease and variable neurological disease. Hematopoietic stem cell transplantation and intravenous enzyme replacement therapy have advanced treatment for MPS I, but these therapies have been suboptimal at decreasing GAG storage in cartilage and bone; thus, orthopedic complications continue to impair the quality of life of children with the disease. This study, led by Dr. Wang at Children’s Hospital of Orange County, seeks to determine the efficacy of intra-articular gene therapy (i.e. inserting the IDUA gene into joint tissue so the tissue will generate adequate levels of the IDUA enzyme locally) in a canine model of MPS I. The working hypothesis is that intra-articular gene therapy will reduce GAG storage and markers of joint inflammation, restoring healthy cartilage collagen and proteoglycan synthesis, and ameliorate joint pathology. The student participating in this project will assist in evaluating cartilage and synovium from treated and control MPS I dogs for collagen, proteoglycans, and markers of joint inflammation. The student will gain experience in basic laboratory techniques (e.g. pipetting, making solutions, etc.), immunohistochemistry, microscopy and data analysis.
Project Title: Metabolic adaptations of *Staphylococcus aureus* to intermediate antibiotic resistance

Principle Investigator(s): Greg A. Somerville, Ph.D. (UNL)

Collaborating investigator(s): Robert Powers, Ph.D. (UNL)

Abstract:

*Staphylococcus aureus* pose major health risks and cause significant economic hardships to livestock producers, food industries, and human and veterinary medical industries. To combat the health risks and mitigate the economic hardships of bacterial infections, antibiotic usage has increased in humans and animals. A consequence of increased antibiotic usage is increased bacterial antibiotic resistance, which is a major problem for veterinarians and physicians that can lead to treatment failures. In 2015 in response to the growing problem of antibiotic resistance, the FDA revised the 1996 Animal Drug Availability Act to “…include eliminating the feed and water use of medically important antimicrobial drugs for production purposes in food-producing animals and bringing all remaining therapeutic uses under the oversight of licensed veterinarians.”

Understanding how bacteria gain resistance to antibiotics, allows you to converse with clients about the magnitude and the hyperbole of antibiotic resistance. The first step in bacterial resistance is often a process called adaptive resistance, where bacteria adapt their metabolism and physiology to permit growth in the presence of intermediate concentrations of antibiotics. We study these metabolic adaptations and develop ways to reverse these them and re-sensitize bacteria to antibiotics. The goal of this work is to extend the usable life of new antibiotics and to make older antibiotics more efficacious in an environment where veterinarians are increasingly constrained in therapeutic options.
Title: “Ex-vivo biomechanical comparison of articular compression achieved following three differing lag screw repair configurations for complete, sagittal plane fractures of the equine proximal phalanx.”

Co-Summer Scholar Faculty Advisors
Dr. Dane M. Tarniuk, DVM, MS, DACVS-LA (Equine Surgery)
Dr. Kevin D. Kersh, DVM, DACVS-LA (Equine Surgery)

Veterinary Scholar Focused Abstract:

Stress fractures are common injuries in racehorses. In the equine proximal phalanx bone, a common configuration is a sagittal plane fracture. Fractures are repaired using lag screws to facilitate return to racing use. Various screw configurations exist:

1. Placement of a single 4.5mm bone screw halfway between the dorsal and palmar surface and immediately distal to the articular surface, with an additional 4.5mm centered screw inserted distally.

2. Placement of a single 5.5mm bone screw in the same location as option 1, with an additional centered 4.5mm screw inserted distally.

3. Placement of two 4.5mm bone screws in the same transverse plane near the articular surface, with one screw near the dorsal surface and the other near the palmar/plantar surface, with an additional centered 4.5mm screw inserted distally (“tripod configuration”).

Currently, a lack of knowledge exists regarding which repair method provides superior articular compression at the fracture gap.

Thirty proximal phalangeal (P1) bones from mature thoroughbreds will be collected and biomechanically tested. Specimens will undergo CT to ensure they are normal. A model of a sagittal plane fracture will be created using a band saw. Proximal phalangeal bones will be randomly assigned to three repair configuration groups (10 per group):

1. Single proximal 4.5 mm screw + single distal 4.5 mm screw
2. Single proximal 5.5 mm screw + single distal 4.5 mm screw
3. Two parallel proximal 4.5 mm screws + single distal 4.5 mm screw

Pressure sensitive film will be inserted in the fracture gap during cadaver repair. Following repair, film will be removed and analyzed using digital software to measure compressive pressure (mpa), compressive force (N), and area of compression (cm²) along the articular surface for each specimen.

Skills in basic statistics will be taught and applied as part of the project. Supervision of manuscript preparation for submission as a peer-reviewed publication and with the summer scholar student as first author will conclude the project.
The participating student scholar will gain valuable education and skills in:

- Study design & execution
- Principles of fracture physics / biomechanics
- Principles of lag screw insertion and basic orthopedic principles
- Data analysis and basic statistics
- Preparation of manuscript for peer-review journal submission as first author
- Exposure to equine orthopedics and sports medicine through working closely alongside equine surgeons in the large animal hospital

Further questions about this project are welcome:
Dr. Dane Tatarniuk (dtatar@iastate.edu) & Dr. Kevin Kersh (kkersh@iastate.edu);
Equine Surgery Service

Footnote:
a. Topaq Software (Sensor Products Inc., East Hanover NJ
b. Electrodynamnic Material Testing System 800LE3, Shakopee, MN

References:

Figure 1: Illustration of screw configuration 1 & 2 (left) and screw configuration 3 (right).

Image Courtesy of:
AOVet North America (https://www2.aofoundation.org/wps/portal/surgery?vet=horse)
Project Title: Optimization and efficacy testing of multi-viral and multispecies vaccines as implantable delivery devices

Principal Investigator(s): David Verhoeven

Collaborating Investigator(s): Brett Sponseller and Douglas Jones

Veterinary Scholar Focused Abstract: (300 words or less): Production animal and equine vaccines exhibit numerous shortcomings such as limited cross-strain protection and the need for repeated boosters to obtain protection. For instance, horses frequently need influenza booster vaccinations every 6 months while cows often need more than one vaccination but do not receive them due to cost or logistics of repeated vaccination in large herds. Here, we are developing a multi-viral vaccination strategy for swine, horses, cows, and humans using RNA technology (and protein for comparison) in an implantable vaccine delivery device. We are developing swine vaccines containing PRRS and a universal flu immunogens, horse vaccines containing equine herpes, flu, and west nile immunogens, and bovine vaccines containing parainfluenza and RSV immunogens. To deliver the vaccines, we are developing a unique platform that can release low doses of vaccine antigens for months to years after implantation under the skin. The student working on this project will gain experience with molecular and especially immunological techniques with efficacy testing first in mice followed by large animal vaccination pending outcomes of the murine studies. There will also be opportunities for the student to help with ongoing influenza vaccine trials in swine, mice, and ferrets in support of our universal flu vaccines.
Group D
2019 ISU CVM SSRP Mentor Abstract #14

Project Title: Molecular approach to study the pathogenesis of unculturable emerging viruses

Principal Investigator(s): Hiep Vu

Collaborating Investigator(s): N/A

Veterinary Scholar Focused Abstract: (300 words or less):

Project title:

New viruses continuously emerge (or re-emerge), causing substantial losses to the swine producers. The advent of next-generation sequencing (NGS), in combination with bioinformatics, has led to the discovery, classification and initial characterization of novel viruses at an accelerated speed never registered before. For instance, this metagenomics approach allowed us to identify the full genomes of several putatively new viruses such as atypical porcine pestivirus which have now been proposed to be associated with a significant clinical disease in swine for a long time but for which the real etiology remained a mystery. Many emerging viruses are not readily cultured in vitro; thus, posing a great challenge to obtain pure viral stocks with enough infectious virus titers to ascertain their virulent potential in the host (in vivo). Consequently, the biology and pathogenesis of newly emerging unculturable viruses often remains poorly understood.

Atypical porcine pestivirus (APPV) is a positive sense, single-stranded RNA virus (+ssRNA) which was first discovered in the U.S. by metagenomic sequencing. Subsequently, the viral genome is detected in many swine producing countries including Germany, the Netherlands, Austria, Canada and China, indicating that this virus might be widespread throughout the world. APPV genome is often detected in new born piglets with congenital tremor (an important disease that may impact entire herds, affecting piglet abilities to nurse, influencing their growth and development), leading to the assumption that this virus is the causative agent of congenital tremor in pigs. However, little is known about the viral pathogenesis. Until now, the virus has not been successfully cultured in vitro although significant effort has been made in different laboratories. Very importantly, the role of APPV in congenital tremor remains to be experimentally demonstrated. In this project, we seek to develop a molecular approach to study the molecular biology and pathogenesis of APPV in pigs.
Project Title: Retrospective Comparison of Locking and Non-locking Plating Systems of Canine and Feline Ilial Fractures

Principal Investigator(s): Brian Petrovsky, DVM; Jaron Naiman, DVM; Eric Zellner, DVM, DACVS-SA

Collaborating Investigator(s):

Veterinary Scholar Focused Abstract: (300 words or less):

Pelvic fractures are a common result of trauma in veterinary patients. While locking and non-locking plates are commonly used to repair ilial fractures, there is no direct comparison of the different plates and outcomes. Due to limited bone stock of the ilium, screw pullout is a concern in small dogs. This retrospective study will evaluate outcomes of locking and non-locking plates used for ilial fractures by comparing clinical signs, history, surgical fixation method, and radiographic assessment of implant and healing. We hypothesize that locking plates will have less screw pullout. This study may lead to a biomechanical plating study as well.
Project Title: Correlation of intraoperative antibiotic administration with hypotension

Principal Investigator(s): Eric Zellner, DVM, DACVS-SA, Brian Petrovsky DVM, Jaron Naiman, DVM

Collaborating Investigator(s):

Veterinary Scholar Focused Abstract: (300 words or less):

Perioperative antibiotics are recommended to reduce surgical site infections. However, there is some thought that administration of antibiotics causes a decrease in blood pressure and therefore antibiotics are not administered in hypotensive patients. There is currently no veterinary evidence that this occurs in the majority of the population. This study seeks to investigate the effect of antibiotic administration and speed of administration on change of arterial blood pressure. We hypothesize that (1) administration of cefazolin over 15 minutes will not result in a significant decrease in blood pressure and (2) administration of cefazolin over 3 minutes will not result in significant difference than cases administered over 15 minutes. In this project, we will enroll all surgical cases presented to Lloyd Veterinary Medical Center. Arterial blood pressures pre- and post- antibiotic administration will be recorded and analyzed for any significant variability.