



2025 ANNUAL REPORT

**CENTER FOR COMPANION
ANIMAL HEALTH**



UC DAVIS

VETERINARY MEDICINE

Dear Friends and Supporters,

As we reflect on the past year at the Center for Companion Animal Health, I'm proud to share how our community's commitment has continued to transform lives — not only for the animals we serve but also for the people who love them.

This year continues to be one of remarkable progress and renewed purpose. Our researchers and clinicians have advanced critical studies in many areas, including infectious disease, oncology, neurology, genetics, surgery, anesthesia, and others, pushing the boundaries of what's possible in veterinary medicine. With your support, we have also funded multiple studies across the areas that impact our patients the most.

Equally inspiring has been the dedication of our students and early-career scientists, whose fresh ideas and compassionate drive are shaping the future of animal health. Through mentorship and collaboration, we're investing not just in cures, but in the next generation of leaders who will carry this work forward. We do this by sponsoring student summer research through the school's STAR program. We also helped fund the startup packages of multiple new faculty — really helping them hit the ground running and begin their research careers at UC Davis.

None of this would be possible without our donors and volunteers. Your belief in our mission — to improve the quality of life for companion animals everywhere — fuels every discovery, every innovation, and every recovery story. Together, we're not just advancing science; we're honoring the human-animal bond that enriches our world every day.

As we look to the year ahead, our focus remains clear: to lead with compassion, to explore with curiosity, and to deliver tangible impact for the animals who depend on us. With research funding from traditional sources greatly diminishing, your support is more important than ever. We will continue to increase our efforts to address this gap. This year alone, we were able to offer additional funding and even larger grants. Thank you for being part of this journey and for continuing to stand with us in our shared commitment to companion animal health.

With gratitude and hope,



Michael S. Kent, MAS, DVM, DACVIM, DACVR (RO), ECVDI (RO-Add on)
Director, Center for Companion Animal Health, UC Davis, School of Veterinary Medicine



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Our Focus

1

Academic Research to support innovative research and advance veterinary best practices for dogs, cats, and other companion animals.

2

Training to cultivate the next generation of professionals by providing residents and fellows with the opportunity to engage in impactful research within their specialized fields, all under the guidance of experienced faculty mentors.

3

Equipment to provide vital research equipment funding new equipment and to replace and repair the tools needed to support both animal health research and care.

4

Commitment to lead with compassion, to explore with curiosity, and to deliver tangible impact for the animals who depend on us.

Powered by generous individuals, veterinary collaborators, and mission-driven organizations, we're driving better health outcomes for companion animals. Your support makes this possible!



At a **GLANCE**

July 1, 2024-June 30, 2025

DONOR SUPPORT

\$1,327,139

Gift funds received from our donors

\$1,790,986

Earnings from our donor endowment funds

\$155,189

Memorialized gifts from our
Companion Animal Memorial Funds partners

IMPACT

\$1,592,035

Faculty Research Support
57 faculty research grants funded

\$339,429

Equipment Support
22 research equipment grants funded

\$100,114

Resident / Fellow / Student Support
11 resident / 2 fellow / 2 student
grants funded

\$451,353

Access to Care Support

\$22,979

Research Laboratory and Building
Support

DONATIONS

1,834

Individual Donations

1,689

CAMF Donations

18,560

Pets Memorialized
Through Donations

OUR FUTURE

\$63,345,990

Total endowment
value

MULTIPLIER EFFECT

\$63,092

Matching funds
received in
outside research
grants by
leveraging CCAH
donor funds.

OVER THE YEARS

\$35M

Funds allocated to
support
companion animal
research studies
since the inception
of the program.

Our **TEAM**



CCAH LEADERSHIP & SCIENTIFIC ADVISORY COMMITTEE



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DACVIM, DACVR, ECVI
Director**



**Danika Bannasch, DVM, PhD
Associate Director - Genetics**



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**Robert Rebhun, DVM, PhD,
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**Jodi Westropp, DVM, PhD,
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**Luke A. Wittenburg, DVM,
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ADMINISTRATIVE TEAM

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Center Manager**

**Lyra Pineda-Nelson
Account Manager**

**Chloe Hermann
Student Assistant**



**Natalia Vapniarsky, DVM,
PhD, DACVP**

Our **DONORS**



Friends of Companion Animal Honor Roll

We're so grateful for our donors! Because of your support we are able to continue our vital work to make the lives of our companion animal better, healthier and longer. It's your dedication and compassion that drive us forward, and we are truly grateful for your generosity. We are pleased to recognize donors who contributed \$1,000 or more to the Center for Companion Animal Health from July 2024 to June 2025.

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Companion Animal Memorial Fund

Thank you to our veterinary partners for honoring the memory of beloved pets through a gift to the Companion Animal Memorial Fund. We are pleased to recognize the more than 160 clinics and practitioners who donated to this fund in 2024. Thanks to our veterinary partners for raising over \$155,000 to improve the health and well-being of our companion animals.

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Wikiup Veterinary Hospital

Our **RESEARCH**



New CAT Research Studies



LARGE IMPACT! Up to \$50k grant made possible by single-donor gifts

Artificial Intelligence



AI-powered outcome prediction for chronic enteropathy in aging cats

Many older cats suffer from chronic digestive issues that are difficult to diagnose and manage. Because these conditions often mimic lymphoma, a white blood cell cancer, veterinarians face challenges in determining the best course of action. This project aims to develop an artificial intelligence (AI) tool to help predict disease progression and guide treatment decisions using routine clinical data that veterinarians already collect. The dataset will include feline patients from UC Davis and a collaborating French veterinary school. The goal is to forecast key outcomes, such as treatment response, overall survival, and the likelihood of a cat developing lymphoma within a year.

Cardiology



Artificial intelligence for radiographic detection of feline hypertrophic cardiomyopathy

Feline hypertrophic cardiomyopathy (HCM) is a heart disease that is difficult to detect and affects cats of all ages. Confirmatory diagnosis of HCM requires an echocardiogram performed by a veterinary cardiologist, which can be challenging for many pet owners due to cost, time, and access. Although chest X-rays are commonly used by general practice veterinarians for lung disease screening and routine checks for older patients or those undergoing anesthesia, they have limited diagnostic capacity for feline HCM because they cannot visually detect the thickening of the heart muscle. This study aims to use artificial intelligence to develop a tool that can accurately interpret chest X-rays to aid screening and presumptive diagnosis of feline HCM.

Dentistry



Mechanisms of Mesenchymal Stromal Cells mitochondrial transfer and CD8⁺ T cell metabolic reprogramming in cats

Feline chronic gingivostomatitis (FCGS) is a painful and debilitating disease that causes severe inflammation and ulceration in the mouth. While treatments like dental extractions and immune-suppressing drugs can help some cats, many do not respond. Research shows that in cats with FCGS, a type of immune cell called CD8⁺ T cells become overactive, exhausted, and unable to properly regulate inflammation. This project explores an innovative therapy using mesenchymal stromal cells (MSCs), which can transfer healthy mitochondria to damaged cells, helping them recover. We believe that by donating mitochondria, MSCs can "recharge" exhausted CD8⁺ T cells and restore their ability to control inflammation. This could bring long-lasting relief to cats with FCGS and open new doors for treating other immune diseases in animals.

Endocrinology

Advancing the understanding and management of primary congenital hypothyroidism in kittens

In kittens, primary congenital hypothyroidism (PCH) affects the thyroid gland, leading to slow growth, developmental delays and abnormal mental status. Kittens are typically treated with oral thyroid hormone replacement; however, this treatment doesn't work well for some kittens because their bodies don't respond to the hormone as expected—this is known as central resistance to levothyroxine (CRTH). This study will identify how often CRTH occurs in kittens with PCH and will test whether treatment with both thyroid hormones together can improve their outcomes. This research may improve the care of affected kittens and provide insights that benefit human medicine.



New CAT Research Studies



LARGE IMPACT! Up to \$50k grant made possible by single-donor gifts

Gastroenterology

Evaluating the role of antimicrobial-induced intestinal dysbiosis in chronic enteropathy in cats

Feline chronic enteropathy causes chronic digestive problems such as vomiting, diarrhea, inappetence, and weight loss, which may be linked to gut bacteria disruptions. This study evaluates the impact of common antibiotics on feline intestinal dysbiosis, and assesses the effects on intestinal inflammation using feline intestinal cells grown from archived tissue samples. We expect to find that antibiotics promote intestinal inflammation by changing gut bacteria, which may contribute to chronic digestive issues. These findings may lead to better treatments, dietary guidelines, and improved antimicrobial stewardship.

Feline Haws Syndrome as a spontaneous model for evaluation of the gut-brain axis: a comprehensive microbiome and metabolomic study

Haws syndrome (HS) is a common condition in cats characterized by elevated third eyelids and the droopy upper eyelids. The exact cause is unknown, but recent research from our group suggests a possible link between HS, nerve dysfunction to the eye, and an imbalance in the gut's natural microbes. This imbalance has been associated with various health problems affecting the eyes and brain (e.g., dry eye, glaucoma, Parkinson's, and Alzheimer's). This study aims to investigate how this gut imbalance contributes to this disease.

Hematology



Feline leukocyte preservation and phenotyping study

White blood cells (WBCs) are vital for fighting infections and studying them requires effective storage methods. Previous studies found that delaying cell separation lowered the number of healthy cells. Freezing the cells did not change their ability to grow, but did decrease the number of living cells. We will create a better method for freezing WBCs by testing new, cat-specific freezing solutions in order to help us better understand cat diseases and improve new diagnostics and treatments.

Infectious Disease

FIV/FeLV in Indian outdoor cats: Prevalence and risk factors using point-of-care testing (resident)

Feline Immunodeficiency Virus (FIV) and Feline Leukemia Virus (FeLV) weaken a cat's immune system, increasing the risk of infections and cancer. Their prevalence in India is poorly understood. This study will test outdoor-access companion cats in India using rapid test to estimate infection rates and identify risk factors like age, sex, and outdoor exposure. Immediate results will help veterinarians educate owners, improve vaccination and prevention strategies, and guide community disease control efforts. Findings will contribute to global efforts to reduce infectious diseases, contributing to improving feline health and welfare globally.



Safety and immunogenicity of an mRNA vaccine for feline infectious peritonitis in cats

Feline infectious peritonitis (FIP), caused by a feline coronavirus, remains one of the most deadly diseases in young cats. While several medications have been tested to cure FIP, there is still no vaccine to prevent disease. We have developed a new mRNA vaccine that has shown great promise in early lab studies. Now we will take the vaccine one step further to ensure its safety in cats and determine if it can elicit an immune response effective at preventing FIP.

Neurology



Skull-base microsurgery targeting bacterial reservoirs in feline vestibular otitis media-interna

Vestibular disease from otitis media-interna (OMI) is the most common neurological disorder in cats, manifesting as a severe balance disorder caused by bacterial infection of the middle and inner ear. This study will investigate a novel, fluorescence-guided interventional approach to collect microbiologic samples from both ear compartments, remove infected tissue, and identify bacterial diversity. The goal is to better understand the wide variety of bacteria involved and determine their response to antibiotics through genetic sequencing and lab testing.

New DOG Research Studies

Artificial Intelligence

Ensuring the safe deployment of AI diagnostics at the UC Davis Veterinary Medical Teaching Hospital

This study will evaluate how artificial intelligence (AI) can assist veterinarians in more quickly and accurately diagnosing certain diseases in dogs. Our AI system reviews electronic medical records to spot patterns that may indicate one of three specific and often hard-to-diagnose conditions: Addison's disease, leptospirosis, and liver shunts. Early and accurate diagnosis gives animals the best chance at effective treatment and recovery. The goal of this project is to safely integrate the AI system into everyday veterinary care. This is the first time AI will play a direct role in helping diagnose patients at our hospital, and we are focused on safety, education, and real-world testing. This approach will help build a strong foundation for how AI can be used responsibly in veterinary medicine.

Autoimmune Disease

The role of red blood cell aging in the pathophysiology of canine immune-mediated hemolytic anemia (resident)

As red blood cells (RBCs) age, they are removed from circulation to prevent them from rupturing within blood vessels. In some cases, however, the immune system mistakenly attacks and destroys RBCs prematurely, a condition known as immune-mediated hemolytic anemia (IMHA). IMHA is a common, life-threatening autoimmune disease which causes severe anemia and clotting in dogs. This study aims to determine if accelerated aging of RBCs occurs in IMHA and contributes to disease. We will develop new tests to detect changes in RBCs that signal accelerated aging and removal. Our findings could lead to better diagnostic tools and therapeutic targets, ultimately improving the diagnosis and quality of life for dogs affected by IMHA.

Cancer

Targeting RUNX2 expression in canine osteosarcoma to enhance chemosensitivity

Osteosarcoma is the most common bone tumor in dogs, highlighting the need for new treatments. This study targets RUNX2, a transcription factor protein that promotes tumor formation, metastasis and chemotherapy resistance. Its binding protein CBF β has been found to not only protect RUNX2 from breakdown but also enhance new RUNX2 protein formation. The results of this study will support future efforts aimed at identifying novel drugs or molecules that mimic the activity of this altered form of CBF β by inhibiting interaction with RUNX2.

Evaluation of Perianal Minimally Invasive Surgery approach for sacral lymphadenectomy

Apocrine gland anal sac adenocarcinoma (AGASACA) commonly metastasizes to the sub-lumbar lymph nodes (LNs), and survival times are improved with removal of metastatic LNs following primary tumor resection. Traditionally, this involves combining primary tumor removal with open abdominal surgery. Recently, a laparoscopic approach to the sub-lumbar lymph nodes has been reported. This proof-of-concept study will access the feasibility of a perianal minimally invasive surgery for LN removal in cadaveric large breed dogs.

Olfactomedin-like 3 in canine glioma

Canine gliomas are a common and lethal brain tumor. Even with aggressive treatment, most dogs typically survive 9–15 months after diagnosis, highlighting the critical need for alternative therapeutic strategies. Our laboratory has demonstrated that olfactomedin-like 3 (OLFML3) may play a prominent role in glioma progression; therefore, we aim to test the effect of intratumoral antibody-mediated neutralization of OLFML3 in a mouse glioma model. This research will assess treatment efficacy through survival studies in mice. We will then assess the immune cell infiltrate in the tumor to see the effects it has on the immune system.

New DOG Research Studies

Cancer

Determining the natural disease progression of canine high-grade glioma: A pilot study

Canine high-grade gliomas are fatal brain tumors that include astrocytoma and oligodendroglioma subtypes, often considered as a single entity. Previously, we observed distinct DNA mutations and differences in the immune cells that infiltrate the tumor across these subtypes moreover; we demonstrated that dogs with specific DNA mutations have worse overall survival. This study we will follow individual dogs from the time of diagnosis until death. We will determine the rate of tumor growth, the dog's neurological function, and the caregiver's perception of the dog's quality of life over time.

Characterization of canine glioma cell lines

The progress of developing treatments for canine gliomas is limited by the tools available. Among these tools are glioma cell lines, cells removed from glioma tissue and grown in a laboratory. These cell lines multiply indefinitely and are an abundant and reliable source of tumor cells for cancer research. Glioma tumors are not all the same, and there are differences in the glioma cell lines, including unique DNA and RNA alterations. This study will characterize canine glioma cell lines developed at UC Davis and compare them to those of the original tumors.

The role of the active transposable element LINE-1 in the development of canine osteosarcoma

More than a third of the canine genome consists of transposable elements (jumping DNA). The largest class of self-replicating transposable elements is LINE-1. Although the genome contains tens of thousands of copies of LINE-1, only a couple hundred remain functional. LINE-1 replicates through retro transposition, where it makes a DNA copy of its RNA and inserts it somewhere new in the genome. These new insertions can cause diseases, alter nearby gene expression, and lead to genome instability. This study will investigate the role of LINE-1 in canine osteosarcoma, a bone tumor that occurs almost exclusively in large-breed dogs.

Dentistry and Oral Surgery

Biomechanical stability of the mandible of large breed dogs under two rim excision mandibulectomy (resident)

Oral neoplastic lesions represent approximately 6% of cancer in dogs. For locally invasive tumors with minimal bone involvement, mandibular rim excision is a potential surgical approach in which a small segment of the mandible is excised, preserving the mandible's lower border. This procedure prevents mandibular instability while maintaining excellent functionality, esthetics, and ease of rehabilitation. There is no research on the biomechanics of the mandible after rim excision. This study will assess the biomechanical characteristics of the mandibular rim excision procedure in the lab to determine whether to include the mandibular canal during the excision.

Evaluation of two plating systems for fixation of mandibular condylar process fractures in dogs (fellow)

Head trauma in dogs often causes skull fractures. Fractures of the condylar process—a structure that forms part of the lower jaw's "hinge" joint and allows independent movement—are notoriously difficult to manage surgically. The only surgical methods that have been explored in veterinary medicine are removal of the fragmented bones. This study seeks to expand surgical treatment options for canine condylar fractures by investigating the application of specialized titanium plates. We will use stringent biomechanical testing to evaluate the quality of the fixation these plates provide.

Development and validation of a novel mandibular reconstruction device for large-breed dogs

Traumatic injury, infection, and cancer of the skull may lead to the loss or surgical removal of a large portion of a dog's lower jaw causing significant disability. We aim to develop a mandibular reconstruction device that replaces the natural joint and the missing jaw bone with a surgically implanted device. Using cadaveric dog skulls, we will validate its range of motion, strength, and resistance to wear to ensure it can withstand normal use.

New DOG Research Studies

Dermatology

Measuring antibiotic resistance in dogs given tetracycline antibiotics for autoimmune skin disease

In veterinary dermatology, the focus for treating bacterial skin infections has shifted from oral antibiotics to antiseptic topical therapies. However, tetracycline antibiotics like doxycycline and minocycline are still commonly prescribed for the long-term treatment of certain autoimmune skin diseases in dogs. This study aims to assess the antibiotic resistance in the natural skin bacteria of dogs treated with tetracycline antibiotics.

Evaluation of a novel biologic therapeutic for canine bacterial otitis externa

Several larger dog breeds are at an increased risk for ear infections, including German shepherds, Siberian huskies, and golden and Labrador retrievers. A BIO-PLY is a new treatment for chronic bacterial infections developed from the blood of healthy dogs. BIO-PLY is safe, has antibacterial properties, and has demonstrated efficacy in dogs and other animals, resolving severe ear infections in treated dogs. We propose to conduct a randomized, controlled clinical trial to evaluate BIO-PLY in treating bacterial ear infections in dogs.

Gastrointestinal

Utilizing canine intestinal organoids to investigate the role of dysbiosis in fading puppy syndrome

Fading puppy syndrome (FPS) is a fatal condition, and a previous study suggested that the gut microbial population (microbiome) is involved. This study will characterize the metabolites produced by the intestinal microbes of healthy and 'fading' puppies to identify specific beneficial and harmful metabolites. Then we will use intestinal organoids to assess their effects on intestinal function. This study may develop early diagnostic, preventative, and therapeutic tools to improve the survival of FPS.

Infectious Disease

Carbapenem-resistant Enterobacterales point prevalence survey

Carbapenem-resistant Enterobacterales (CRE) are difficult-to-treat bacteria because they are often resistant to many antibiotics. Dogs can become infected with CRE and spread bacteria to other pets or even to their owners. Most dogs first carry the bacteria in their gastrointestinal (GI) tract asymptomatically prior to developing disease. Currently, we do not know how many dogs are silently carrying the bacteria in their GI tract. This study will screen dogs for GI carriage of CRE and collect data to identify factors that increase a dog's risk of carrying CRE. Understanding the prevalence of CRE carriage in dogs in our region will provide a baseline to better understand the spread of this pathogen of critical concern.

Neurology

Determining the utility of Aquaporin-4 antibodies as a potential biomarker in dogs with GME (resident)

Granulomatous meningoencephalitis (GME) is an inflammatory disease that affects the central nervous system in dogs. Definitive diagnosis is challenging and currently requires microscopic evaluation of diseased brain tissues (a procedure that necessitates brain biopsy in a living patient). Brain biopsy can be performed successfully, but it is not often used in clinical cases. As a result, many dogs receive a presumptive diagnosis based on common clinical findings. Recently, the detection of aquaporin 4 (AQP4) autoantibodies in blood and cerebrospinal fluid (CSF) has been used to diagnose neuromyelitis optica in humans, a disease that shares many similarities with GME in dogs. This pilot study will characterize the AQP4 expression in affected brain regions and assay blood and CSF for the presence of autoantibodies against AQP4 in dogs with GME.

New DOG Research Studies

Neurology

Development of an ELISA panel to diagnose paroxysmal gluten-sensitive dyskinesia in dogs

Canine paroxysmal gluten-sensitive dyskinesia (PGSD) is a rare disease that causes intermittent episodes of abnormal involuntary movement. While gluten sensitivity in dogs is incredibly rare, PGSD is one form of the condition. Testing for antibodies to gliadin (a major component of gluten) and/or an enzyme called tissue transglutaminase 2 (TG2) is the only disease-specific diagnostic available for PGSD. Currently, no diagnostic laboratory in the United States offers antibody testing. Many dogs with PGSD respond to a gluten-free diet, so a timely diagnosis can be highly beneficial to quality of life. In this study, we will begin developing a test to measure antibody levels in dogs to gliadin and TG2, with an overall goal of implementing this test as an easier way to diagnose dogs with PGSD.

Cerebral hypometabolism assessed with positron emission tomography in dogs with epilepsy

Epilepsy is the most common brain disorder in dogs. In many cases, even when seizures are clearly present, traditional brain scans like MRI appear normal, which makes it difficult to identify what part of the brain is causing the seizures. This study will use PET scans to look at brain activity in dogs with epilepsy. By using a small amount of a sugar-based tracer called 18F-fluorodeoxyglucose (18F-FDG), the scan shows how different parts of the brain use energy. We will compare the brain activity of dogs with epilepsy to that of dogs without seizures. Understanding these patterns could help veterinarians better diagnose epilepsy, plan treatments, and possibly identify which dogs might benefit from novel therapies.

Development of a high-fidelity canine neurology simulator for veterinary student teaching

Neurological emergencies are common, and the stabilization and treatment of these unstable cases requires rapid integration of foundational knowledge with hands-on skills. High-fidelity simulation-based training can improve student engagement and learning and build confidence with neurological emergencies. Simulation scenarios can be tailored to the learner's needs without jeopardizing the safety and well-being of either the animal patient or the learner. Currently, no veterinary neurology simulator exists. This study will gather an interdisciplinary team of small animal emergency and critical care specialists, neurology specialists, biomedical engineers, and information technologists to build a canine high-fidelity neurology simulator. The simulator will then be piloted with a group of veterinary student volunteers and tested for usability and validity.

Endoscopic spine surgery to perform hemilaminectomy in dogs with intervertebral disc herniations

Intervertebral disc herniation (IVDH) is a common spinal condition in dogs. When a disc in the back pushes onto the spinal cord, it can cause pain, difficulty walking, or even paralysis. The standard surgery for this condition is hemilaminectomy, where a portion of the bone over the spinal cord is removed to relieve pressure; however, this traditional approach involves a large incision and significant muscle disruption, which can cause post-operative pain and slow recovery. Less invasive spine surgeries use endoscopes, reducing muscle damage, pain, and recovery time. This study will compare the outcomes of this new technique with traditional open surgery to assess how well the spinal cord is decompressed, how much pain dogs experience after surgery, and how well their back muscles are preserved in the long term.



New **DOG** Research Studies



LARGE IMPACT! Up to \$50k grant made possible by single-donor gifts

Neurology

Modeling canine Lafora disease using gene-edited iPSC-derived cortical organoids

Lafora disease is a fatal disease that typically begins around age five and causes seizures, confusion, and difficulty walking, eventually leading to severe neurological decline. It is caused by a genetic mutation in the NHLRC1 gene, which disrupts how the brain handles sugar. This results in toxic sugar-like deposits (Lafora bodies) that damage brain cells. This project aims to create the first laboratory-based model of Lafora disease using stem cell technology. We will use induced pluripotent stem cells to grow small, simplified "mini brains" (called cortical organoids) that mimic the developing dog brain. Using advanced gene-editing tools, we will introduce the disease-causing mutation, allowing us to study how Lafora disease develops at the cellular level and test potential therapies.

Clinicopathologic, cytological, and molecular markers of neutrophilic pleocytosis in dogs (resident)

Cerebrospinal fluid (CSF) analysis is a common diagnostic tool for dogs presenting with neurological signs. Neutrophilic pleocytosis is an abnormal elevation of neutrophils, a type of inflammatory cell, within CSF. Although significant, this finding is not specific for an underlying cause, which makes treatment decisions difficult; necessary treatments for one disease can be ineffective or even harmful if used for others. This study will evaluate CSF of dogs with neutrophilic pleocytosis to identify discernable differences in routine analysis parameters or specific proteins when comparing infectious and non-infectious neurologic diseases.

Accuracy of a novel 3D-printed semi-custom stereotaxic brain biopsy device

While biopsy is the best method for diagnosing brain disease, it is highly invasive. Existing methods, including direct CT guidance and the three-dimensional computer system that is also based on a CT (Brainsight[®]), are complex, difficult to use, fairly invasive, and costly. We developed an alternative brain biopsy system including a dome that is placed above the head, arches connecting to individualized dental molds, and custom biopsy guides secured to the dome. The objective of this research project is to show that the new device is effective and accurate.



Randomized double-blind crossover trial of vagus nerve stimulation in large-breed dogs with epilepsy

Epilepsy is the most common neurological disorder in dogs, yet 30% of affected dogs are refractory to medical treatment. This study investigates the Vagus Nerve Stimulator (VNS), a novel, small device surgically placed on the vagus nerve along the neck. It sends electrical signals to help control abnormal brain activity responsible for seizures. This clinical trial will evaluate VNS effectiveness in treating seizures in large-breed dogs and whether electroencephalography (EEG) can predict which dogs will respond best to treatment. This study could offer a safer, effective treatment for epilepsy and identify which dogs will benefit most from this therapy over traditional medication.

Orthopedics

Cartilage aging in large-breed dogs

Progressive cartilage deterioration causes Degenerative Joint Disease (DJD) or Osteoarthritis (OA). Pain medications provide only temporary relief, and joint replacements are limited to the hip. Cartilage tissue engineering offers a promising avenue for cartilage repair and regeneration, but effective application requires understanding how cartilage properties change based on age and joint location. This study will analyze the cartilage aging in large dogs to support the development of future regenerative and tissue-engineering solutions.



New DOG Research Studies

Orthopedics / Neurology

Biomechanical analysis of rigid and semi-rigid pedicle screw-rod fixation systems for the stabilization of the canine lumbosacral joint

Degenerative lumbosacral stenosis causes lower back pain and dysfunction. The problem develops when the intervertebral disc and surrounding tissues in the lower spine wear down, leading to instability and malalignment. One common surgical treatment involves placing rigid implants to stabilize the spine, but this appears to increase strain on adjacent intervertebral spaces, potentially causing additional problems. This study explores a new type of implant called a semi-rigid rod to overcome this problem.

Orthopedics / Surgery

Effect of locking bolts and varus insertion on canine cementless total hip stem stability and strain (resident)

Total hip replacement (THR) is commonly used to treat chronic hip pain in dogs, but femoral fissure or fracture around the implant remains a frequent complication. This study evaluates how a locking femoral stem implant affects the forces traveling through the femur. Research will be conducted using special bone replicas that mimic the dog's femur and ensure low variability and precise mechanical testing. Real-life implant placements will assess the bone's response to different mechanical forces.

Osteoarthritis is linked to low bone density and perioperative fracture in canine hip arthroplasty (fellow)

Total hip replacement is used to treat chronic hip pain in dogs but can lead to fissure or fracture of the femur around the implant. The study will use quantitative computed tomography (QCT) to measure bone mineral density before surgery and validate the accuracy of QCT. By assessing femoral bone geometry, density, and osteoarthritis (OA) severity, we aim to identify bone loss in dogs with severe OA and determine thresholds indicating higher risk for fracture.

Urinary Disease

Susceptibility of MDR E. coli isolates from canine UTIs to pivmecillinam and fosfomycin (resident)

Resistance to antibiotics is a global issue of concern. E. coli is the most common cause of urinary tract infections (UTI) in dogs, and resistant strains have made treatment more difficult. Alternative antimicrobial treatment options are needed. Pivmecillinam, an oral penicillin antibiotic, is effective in treating multidrug-resistant (MDR) E. coli bacterial isolates in humans; however, data regarding in vitro susceptibility of MDR E. coli urinary isolates from dogs are not published. Fosfomycin, a phosphonic antibiotic, is also effective against MDR E. coli UTI in people and has been recommended but not tested for use in dogs. This study will determine in vitro susceptibility of MDR urinary E. coli isolates from dogs to both pivmecillinam and fosfomycin.

Amino acid losses in dogs with acute kidney injury treated with renal replacement therapy

Malnutrition is common in patients with acute kidney injury (AKI). AKI impacts patients' nutrition status in various ways, including decreased absorption, altered metabolism, and increased dietary needs, leading to a severe loss of body mass. Renal replacement therapies are indicated when patients do not respond to standard clinical management. Achieving sufficient dietary protein and amino acid intake is challenging for patients undergoing hemodialysis, because their kidneys have a limited ability to process the necessary protein required to maintain body needs during the disease course and recovery. Given the crucial role of nutrition and protein intake in managing AKI patients, this study will investigate amino acid profiles in dogs with AKI and evaluate amino acid loss during hemodialysis.



New **COMPANION ANIMAL** Research Studies

Anesthesia

Effect of sugammadex on alfaxalone anaesthesia (resident)

Anaesthesia often carries many potentially life-threatening side effects, including depressed breathing. The ability to reverse drug effects helps improve anesthetic safety in emergency situations. Alfaxalone is a common veterinary anesthetic drug that has a steroid chemical structure. Because Sugammadex is a drug used to reverse a class of paralytic drugs that share a steroid chemical structure, we aim to test whether sugammadex can also reverse anesthesia caused by alfaxalone. If successful, this discovery will improve patient welfare by allowing veterinarians to hasten anesthetic recovery and treat anesthetic complications associated with alfaxalone administration.

Cardiology

Optimizing 18F-NaF PET imaging for atherosclerosis diagnosis in orange-winged Amazon parrots

Atherosclerosis is a serious condition affecting the arteries of many bird species and can lead to severe health issues. This study aims to optimize the PET-scan protocol for parrots by exploring a simpler intramuscular (IM) injection of 18F-NaF, the drug used to make a PET scan. We hypothesize that an IM injection will detect atherosclerotic lesions with a sensitivity similar to intravenous (IV) injections. By using lower tracer doses and shortening scanning times, the new protocol should make the procedure safer. This will improve the ability of veterinarians to diagnose and manage atherosclerosis in parrots.



Infectious Disease

Generation of molecular methods for the detection of fancy tailed guppy virus (FTGV)

Fancy tailed guppy virus (FTGV) was recently discovered in two different disease outbreaks among ornamental guppies in the United States and was found to be very similar to the Tilapia lake virus (TiLV). Although both TiLV and FTGV can cause disease and mortality in cultured fish, there are no validated diagnostic methods to distinguish between them. This study will develop and validate rapid diagnostic methods for these two viruses, allowing for concurrent, species-specific identification from various sources (fish tissues, water, substrate).

Exploring the in vitro efficacy of disinfectants against Nannizziopsis arthrosporioides (resident)

Nannizziopsis arthrosporioides are fungal infections that affect a wide variety of reptiles. While infections are usually confined to the skin, many animals experience systemic spread to internal organs. Environmental disinfection between patients is an important tool in reducing the spread of infection. It is unknown which disinfectants N. arthrosporioides will respond to. This study aims to fill that knowledge gap by assessing disinfectants against the growth of N. arthrosporioides.

Determination of the inhibitory effect of mefenoxam against Nannizziopsis guarroi (resident)

Nannizziopsis guarroi, the cause of "yellow fungus disease" or nannizziomycosis in reptiles, is an often-fatal infection in lizards. Current treatments involve a combination of systemic and topical antifungal agents, environmental decontamination, and biosecurity protocols. Treatment failure and mortality are all too common, underscoring the urgent need for effective, safe therapeutics. Mefenoxam, a fungicide, has an inhibitory action on fungi. Recent clinical successes using mefenoxam for the treatment of pythiosis in dogs have generated considerable research interest. This study will assess the in vitro efficacy of mefenoxam to inhibit the growth of N. guarroi. The results will drive future clinical studies of mefenoxam use in lizards suffering from nannizziomycosis.

New **COMPANION ANIMAL** Research Studies



LARGE IMPACT! Up to \$50k grant made possible by single-donor gifts

Orthopedic Surgery

In vitro evaluation of suture knot security after contact with poloxamer 407 hydrogel (resident)

Increases in antibiotic-resistant infections limit treatment options. Compared to systemic antibiotic treatments for resistant infections, topical treatments reach higher local concentrations with lower systemic concentrations, improving antibacterial effects while decreasing side effects. Poloxamer 407 hydrogel (pluronic gel) is liquid at low temperatures, allowing mixing with antibiotics, and becomes gelatinous at body temperature, staying within infected sites for longer. Suture knot security is critical to decreasing risk of incision breakdown and secondary infections. It is affected by suture material type, knot configuration, and the tying environment. We are using a materials testing machine to evaluate the security of common suture types and knots in the presence of pluronic gel, fat, and plasma. This will allow us to determine if pluronic gel affects knot security and whether knot or suture type influences this effect.

Pain Management

Pharmacokinetics and safety of grapiprant in orange-winged Amazon parrots (*Amazona amazonica*)

Osteoarthritis (OA) is a common disease that affects the joints of aging, injured, and obese animals. OA is a painful degenerative process that can decrease mobility and impact quality of life, and a major contributing factor for euthanasia of companion animals. Medical management includes the long-term use of drugs such as non-steroidal anti-inflammatory drugs (NSAIDs), opioids, gabapentin, and amantadine. Parrots have long life expectancies, emphasizing the need for long-term pain management. Grapiprant is a new NSAID targeting a specific receptor involved in inflammation within the joint, minimizing adverse effects seen with other NSAIDs. Currently, no information exists on how parrots metabolize and eliminate grapiprant. This study will use orange-winged Amazon parrots to test the effectiveness of this drug.

Rehabilitation



Development of an avian flight database to inform rehabilitation practices in birds of prey

Injured birds of prey treated at rehabilitation centers/hospitals undergo surgical and physical therapies before they are deemed ready to be released back into the wild. During medical checks, experts use mechanical instruments, such as goniometers, to measure joint range of motion while the bird is restrained. The final release decision is based on experts' observations of bird flight performance. To complement these traditional tools, we plan to develop a database of healthy raptor flight characteristics using a cutting-edge imaging system. We will achieve this goal by filming birds as they perform simple flight tasks in the new Bird Flight Research Center. The resulting dataset will be used to extract raptor-specific flight information, creating a baseline for comparing rehabilitation patients to healthy birds of the same species. This tool will guide raptor rehabilitation decisions and is expected to increase the successful release rate for raptors.

Reproduction



Role of inflammation-mediating cyclooxygenase pathway in embryonic development

Backyard chicken and companion bird health and reproduction can be affected by illness or infection, especially during embryonic development. The cyclooxygenase (COX) pathway is crucial for late stages of embryonic development, playing a role in forming tissues like bone, the reproductive system, and the heart; however, this pathway can be abnormally hyperactivated in response to injury or infection. While the COX signaling pathway remains poorly understood in early development, our lab has discovered that COX enzymes are active in developing chicken embryos, where gain or loss of COX signaling can lead to severe developmental defects, such as cranial malformations and brain cell damage. Using advanced genetic tools and techniques, we aim to uncover how COX signaling regulates bird health during development.

Our **EQUIPMENT**



Research **EQUIPMENT** Grants

Kowa Slit-Lamp SL-19 Plus

Principal Investigator: Bianca Da Costa Martins

The slit-lamp biomicroscope is essential for ocular exams because it provides the magnification needed to assess lesion depth. Photographing ocular lesions routinely requires patient sedation. Because the Kowa Slit-lamp SL-19 Plus has an integrated camera, it allows for real-time, high-magnification image acquisition during exams. Sedation is rarely required, which improves patient safety.

1.5mm Titanium Miniplate Kit

Principal Investigator: Boaz Arzi

The specialized Synthes 1.5mm titanium miniplate kit, used for mandibular and maxillofacial reconstruction in dogs, will be used for research and to train residents to perform reconstructive surgeries. The kit is clinically designated for complex maxillofacial fractures that require delicate fixation, particularly in challenging locations.

Surgical, Periodontics and Endodontics Instruments

Principal Investigator: Boaz Arzi

Dental and Oral Surgery Service residents will use these instruments to practice procedures on cadavers, enabling them to develop the high-level surgical skills needed for performing procedures on live patients.

Embedding Workstation

Principal Investigator: Clare Yellowley-Genetos

The Veterinary Orthopedic Research Laboratory (VORL) is focused on understanding the pathophysiology of multiple diseases associated with the musculoskeletal system, including arthritis, osteoporosis, bone fracture, cancers, bone metastasis, and tendinopathy. With this equipment, we will collect tissue samples, embed them in paraffin wax, and then take extremely fine sections. Using specialized stains, we will be able to examine the tissue structure and cellular biology of disease.

Pathology Microscope/Camera

Principal Investigator: Clinson Lui

Pathology microscope cameras capture high-resolution digital images from tissue slides used for research and diagnostics.

Main Bearing Rebuild for VORL's Musculoskeletal Tissue Mechanical Testing Machine

Principal Investigator: Denis Marcellin-Little

The Veterinary Orthopedic Research Laboratory (VORL) aims to find the best method for providing animals with artificial joints when their own joints fail from arthritis or injury. Successful fracture treatment or joint replacement relies on testing the strength and function of bone plates, screws, and implants. This equipment simulates the load an animal's body places on surgical parts or tissue, while measuring strength and stability. Research using this equipment will improve treatment function and quality.

Beckman Coulter Airfuge Tabletop Microultracentrifuge

Principal Investigator: Hugues Beaufriere

The Beckman Coulter Airfuge is a specialized benchtop ultracentrifuge that removes excess fat (lipemia) from blood samples, enhancing our ability to analyze them. High levels of lipemia can interfere with important lipoprotein tests performed by standard biochemical analyzer and lipoprotein electrophoresis. By clearing samples, the Airfuge ensures accurate test results and enables lipoprotein analysis through sequential separation by ultracentrifugation. Ultimately, this instrument will improve diagnostic precision, advance research (especially in exotic animal medicine), and enhance care.

Benchtop pH Meter

Principal Investigator: Jennifer Larsen

The Amino Acid Laboratory uses the pH meter to prepare biological samples from both research studies and clinical cases for analysis. We must adjust these samples—like urine, blood, and food—to maintain pH levels and accurately analyze various nutrients, including amino acids, vitamins, and other compounds. This analysis helps us evaluate individual veterinary patients and investigate the impact of different foods or medical treatments. This information guides treatment decisions and improves pet foods.

Repair of Freezer, -80

Principal Investigator: Jennifer Larsen

The Amino Acid Laboratory freezer stores samples, including blood, urine, tissue and food at super low temperatures. Low temperatures are critical for maintaining the stability of blood nutrients, which we analyze to assess animal health. We use the results to evaluate individual veterinary patients and perform research to investigate the impacts of different foods or medical treatments. This information guides treatment decisions and improves pet foods.

Densitometer

Principal Investigator: Krista Keller

Densitometers allow for measurement of optical density. In microbiology, densitometry is frequently used to quantify microbial suspensions. Quantifying microbes (bacteria or fungi) within a suspension is an important part of many experiments. For example, labs must quantify microbes to evaluate which antimicrobials best treat infections and which disinfectants best remove microbes from the environment. While counting bacteria or fungi manually under a microscope is time-consuming, the densitometer allows rapid, one-second quantification by measuring how much light is blocked by the solids (microbes), otherwise known as optical density.

Research **EQUIPMENT** Grants

Sebia Minicap Flex Capillary Electrophoresis

Principal Investigator: Melanie Ammersbach

This equipment will allow the clinical laboratory to perform in-house protein electrophoresis. Protein electrophoresis is used to detect certain types of cancers, such as lymphoma and multiple myeloma. It also expands the panel of tests available to detect and monitor diabetic patients. Performing these tests in-house will reduce the time it takes to get results.

Centrifuge

Principal Investigator: Michael Kent

This laboratory centrifuge prepares samples from patients in radiation oncology clinical trials for flow cytometry. This process allows us to see the different types of immune cells in cancer patients.

A.R.C. FOX (Vet) Diode Laser 810nm

Principal Investigator: Munashe Chigerwe

The FOX laser produces laser energy that is absorbed by the target tissue, allowing it to selectively destroy neoplastic (cancerous) cells while minimizing damage to surrounding tissue. This makes it a promising option for managing skin cancers and a strong complement to surgical excision. In addition to destroying cancerous cells, it enhances wound healing and tissue regeneration, which is especially beneficial following tumor excision.

CO2 Incubator, Plate Spinner, Manual and Electronic Pipettes, Cryo Storage and Cart

Principal Investigator: Robert Rebhun

The CO2 incubator is required to culture tumor cells and characterize their growth in the lab (in vitro), evaluate essential proteins and signaling pathways, and test drugs or therapies against these cells in the lab. The plate spinner, vortex mixer, pipettes, a laboratory cart, and storage boxes are essential to routine laboratory procedures for evaluating cancer cells in the lab and clinical cancer specimens.

VCCT Refrigerated Clinical Centrifuge and Label Printer

Principal Investigator: Robert Rebhun

A refrigerated benchtop centrifuge allows for the rapid and optimal processing of blood samples from patients in clinical trials. Analysis of these samples is critical for our trials testing novel drugs or immunotherapies as it helps determine levels of drug or antibodies in the blood. After processing, samples are stored in ultra-low temperature freezers or liquid nitrogen. Because normal labels freeze and fall off at these temperatures, a specialized label printer will ensure samples can be properly identified over time.

TissueLyser LT

Principal Investigator: Ryan Toedebusch

The TissueLyser LT effectively disrupts human and animal tissues as well as bacteria and yeast allowing reproducible yields of DNA, RNA, and protein in subsequent purification procedures. It even processes difficult-to-lyse tissues like heart and brain with the resulting DNA, RNA, and protein remaining intact. This capability enhances workflows and speeds up sample preparation for ongoing studies examining canine brain tumors, exploring neuroscience questions, and developing novel therapeutic avenues for canine diseases.

New Lens, Inspection and Warranty for Heidelberg Spectralis

Principal Investigator: Sara Thomasy

The Heidelberg Spectralis gives clinicians and clients unique views of ocular structures and improves patient care. By allowing clients to see ocular pathology in a new way, the device helps them make more informed treatment decisions. For example, when clients see how little corneal tissue is left with an infection using this technology, they often choose corneal surgery. The Spectralis also allows vision scientists to assess important eye structures to study their role in the disease process.

ELISpot Plate Reader

Principal Investigator: Terza Brostoff

Enzyme-linked immunosorbent spot assay (ELISpot) is an immunoassay designed to measure antigen-specific immune cells. While both the humoral (antibody) and cellular (T cell) arms of the adaptive immune response contribute to disease protection, the humoral arm is assayed more often because cellular assays are limited by availability, speed, complexity, and cost. ELISpot is unique as a biomarker assay to the cellular arm of the adaptive immune response. Because it can detect low-frequency antigen-specific T cells, ELISpot handles samples from post-mortem or pre-mortem sources. Applications include, but are not limited to, vaccine response (to cancer vaccines and pathogens), dendritic cell/monocyte/macrophage characterization, T cell subset characterization, epitope mapping, and antigen-specific memory B and T cell quantification.

Professional Camera Equipment

Principal Investigator: Tyler Jordan

Veterinary dermatology relies heavily on visually assessing skin conditions for diagnosis and treatment. Unfortunately, the field lacks standardized tools for evaluating and tracking skin lesions, making it challenging to measure treatment outcomes in clinical research. High-quality clinical images are essential for drawing evidence-based conclusions, comparing treatment options, and ensuring robust data for research publications. These professional-grade cameras will significantly enhance image quality and improve research reliability, increasing the likelihood of publication in high-impact journals.

Lift Tables

These tables will enable ophthalmology, dermatology, and primary care research teams to perform examinations and procedures on large-breed dogs at appropriate heights, ensuring safety and comfort for all.

Our **ACHIEVEMENTS**



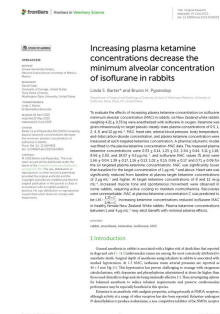
Aging



A non-randomized pilot study to test the feasibility of developing a frailty scale for pet cats

Frontiers in Veterinary Science (February 2025)
Colleran EJ, Delgado MM, Ren Y, German AJ, Gruen ME, Gunn-Moore DA, Romanowski K, Simpson W, Kirnos C, Ternes KK, Karnia J, Temples M, Taylor SL, Bain M, Buffington CAT

Anesthesia



Increasing plasma ketamine concentrations decrease the minimum alveolar concentration of isoflurane in rabbits

Frontiers in Veterinary Science (June 2025)
Barter LS, Pypendop BH



Target-controlled infusions of butorphanol worsen hemodynamics in isoflurane-anesthetized cats

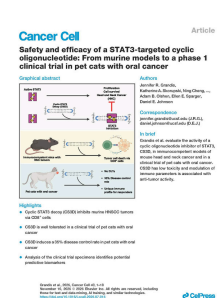
Frontiers in Veterinary Science (June 2025)
Pypendop BH, Cenani A, Machado ML, Barter LS



Ultrasound-guided trigeminal nerve approach at the level of the terygopalatine fossa in cat cadavers

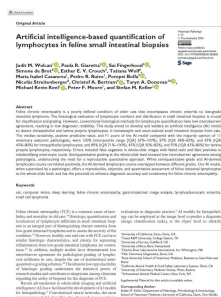
Veterinary Anaesthesia and Analgesia (November-December 2024)
Fernandez Barrientos MA, Cenani A, Brown CS, Arzi B, Wolfs E, Pypendop BH

Cancer



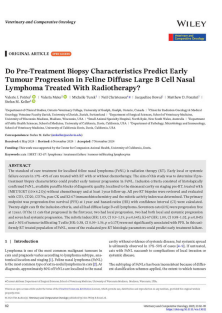
Safety and efficacy of a STAT3-targeted cyclic oligonucleotide: From murine models to a phase 1 clinical trial in pet cats with oral cancer

Cancer Cell (August 2025)
Grandis JR, Skorupski KA, Cheng N, Cui Z, Li H, Woerner LC, Gencel-Augusto J, Zeng Y, Shiah JV, Bhola NE, Sen M, Blum K, Kim MO, York D, Rebhun RB, Chang H, Murad NF, Olshen AB, Sparger EE, Johnson DE



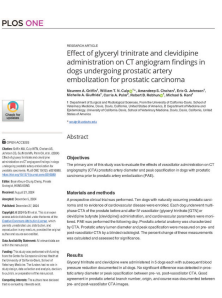
Artificial intelligence-based quantification of lymphocytes in feline small intestinal biopsies

Veterinary Pathology (March 2025)
Wulcan JM, Giaretta PR, Fingerhood S, de Brot S, Crouch EEV, Wolf T, Casanova MI, Ruivo PR, Bolfa P, Streitenberger N, Bertram CA, Donovan TA, Keel MK, Moore PF, Keller SM



Do pre-treatment biopsy characteristics predict early tumour progression in feline diffuse large B cell nasal lymphoma treated with radiotherapy?

Veterinary and Comparative Oncology (March 2025)
Poirier VJ, Meier V, Turek M, Christensen N, Bowal J, Ponzini MD, Keller SM

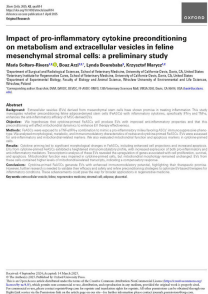


Effect of glyceryl trinitrate and clevidipine administration on CT angiogram findings in dogs undergoing prostatic artery embolization for prostatic carcinoma

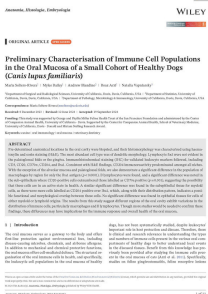
PLOS ONE (December 2024)
Griffin MA, Culp WTN, Chohan AS, Johnson EG, Giuffrida MA, Palm CA, Rebhun RB, Kent MS



Dentistry

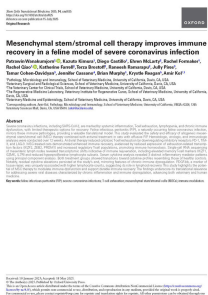


Impact of pro-inflammatory cytokine preconditioning on metabolism and extracellular vesicles in feline mesenchymal stromal cells: a preliminary study
Stem Cells
(June 2025)
Soltero-Rivera M, Arzi B, Bourebaba L, Marycz K

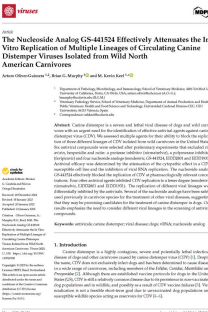


Preliminary characterisation of immune cell populations in the oral mucosa of a small cohort of healthy dogs (Canis lupus familiaris)
Anatomia, Histologia, Embryologia
(November 2024)
Soltero-Rivera M, Bailey M, Blandino A, Arzi B, Vapniarsky N

Infectious Disease



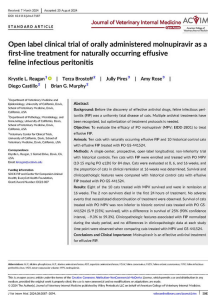
Mesenchymal stem/stromal cell therapy improves immune recovery in a feline model of severe coronavirus infection
Stem Cells Translational Medicine
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Wanakumjorn P, Kimura K, Castillo D, McLarty E, Formaker R, Qiao R, Farrell K, Brostoff T, Ramarapu R, Pires J, Cohen-Davidyan T, Cassano J, Murphy B, Reagan K, Kol A



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Viruses
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Oliver-Guimera A, Murphy BG, Keel MK

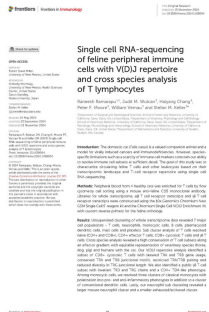


Doxycycline with or without famciclovir for infectious ophthalmic and respiratory disease: a prospective, randomized, masked, placebo-controlled trial in 373 kittens
Journal of Feline Medicine and Surgery
(November 2024)
Vernau KM, Kim S, Thomasy SM, Lucyshyn DR, Purpura J, Montgomery E, Surmick JD, Dubelko AR, Moussavi A, Kass PH, Maggs DJ



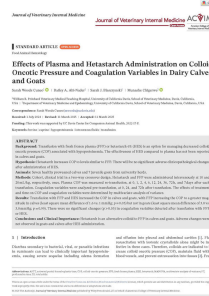
Open label clinical trial of orally administered molnupiravir as a first-line treatment for naturally occurring effusive feline infectious peritonitis
Journal of Veterinary Internal Medicine
(November-December 2024)
Reagan KL, Brostoff T, Pires J, Rose A, Castillo D, Murphy BG

Immunology



Single cell RNA-sequencing of feline peripheral immune cells with V(D)J repertoire and cross species analysis of T lymphocytes
Frontiers in Immunology
(November 2024)
Ramarapu R, Wulcan JM, Chang H, Moore PF, Vernau W, Keller SM

Internal Medicine



Effects of plasma and hetastarch administration on colloid oncotic pressure and coagulation parameters in dairy calves and goats
Journal of Veterinary Internal Medicine
(May-June 2025)
Cuneo SW, Abi-Nader BA, Blasczynski SJ, Chigerwe M



Trace element content is associated with urolith type in goats and pigs diagnosed with urolithiasis
American Journal of Veterinary Research
(April 2025)
Chigerwe M, Killilea DW, Hardgrove CN, Mann U, Stoller ML, Westropp JL

Research PUBLICATIONS

Nutrition



Fatty acid analysis and stability of selected edible oils used in homemade pet diets
Journal of Veterinary Internal Medicine
Medicine
(May 2025)
Larsen JA, Stockman J, Li X, Wang SC



Diurnal variation of serum phosphorus concentrations in intact male adult domestic cats
Journal of Veterinary Internal Medicine
(November-December 2024)
Chiang CF, Vanderstichel R, Stockman J, Larsen JA, Fascetti AJ

Ophthalmology



Ocular tolerance and tear film pharmacokinetics of 1 % penciclovir cream in cats
Research in Veterinary Science
(September 2025)
Pe'er O, Thomasy SM, Feuer E, Knych HK, Ofri R, Sebbag L

Pain

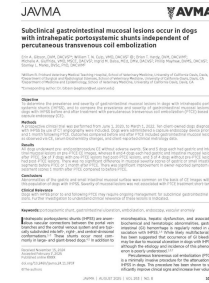


Pharmacokinetics of single-dose oral acetaminophen with and without concurrent administration of silymarin or N-acetylcysteine in orange-winged Amazon parrots (*Amazona amazonica*)
American Journal of Veterinary Research
(March 2025)
Megan L, Sanchez-Migallon Guzman D, Knych H, Beaufrère H

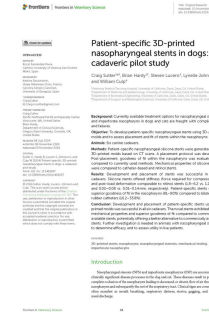
Surgery / Orthopedics



Radiographs acquired before total hip replacement in dogs underestimate femoral canal flare and misjudge trochanteric overhang
American Journal of Veterinary Research
(April 2025)
Bae S, Marcellin-Little DJ, Pritikin R, Garcia TC



Subclinical gastrointestinal mucosal lesions occur in dogs with intrahepatic portosystemic shunts independent of percutaneous transvenous coil embolization
Journal of the American Veterinary Medical Association
(February 2025)
Gibson EA, Culp WTN, Hardy BT, Giuffrida MA, Balsa IM, Mayhew P, Marks SL



Patient-specific 3D-printed nasopharyngeal stents in dogs: a cadaveric pilot study
Frontiers in Veterinary Science
(November 2024)
Sutter C, Hardy B, Lucero S, Johnson L, Culp W



24 CCAH donor-funded studies resulted in publications FY2024-2025



Access to Care **STARTS HERE**



Building Bridges to CARE

No matter where they call home, every animal deserves expert care—no matter the circumstances, no matter the outcome. Access to care isn't just about ensuring animals and their caretakers can connect with services. It's also about growing the skilled, supported, and inclusive workforce that makes this care possible. That's why we focus on the people who are shaping the future of shelter medicine—by training students and shelter staff, mentoring veterinarians, and breaking down barriers so the most vulnerable animals in shelters and communities don't have to wait for essential care.

Essential Training for Compassionate, Expert Care

In California alone, over 344,000 shelter animals lack adequate access to veterinary care staff. Through our Shelter Care Specialist Certification Program, hundreds of shelter staff members are gaining the medical, behavior, and operational skills to meet this challenge head-on.

At the same time, we're shaping the future of shelter medicine at its earliest stages. The UC Davis Koret Shelter Medicine (KSMP) Student Training Rotation remains one of the most popular clinical rotations, giving fourth-year students hands-on experience in High-Quality, High-Volume Spay/Neuter (HQHVSN), while directly serving Northern California communities and helping reduce free-roaming cat populations.

Advancing the Practice of Shelter Medicine

From mentoring the next generation to setting the bar for best practices, we're ensuring shelter veterinarians have the resources and knowledge to provide expert care for every animal who comes through their doors.

Shelter veterinarians face unique challenges every day: high caseloads, complex medical decisions, and the emotional weight of caring for animals with uncertain futures. In 2025, we launched



Students don't just practice critical skills—they immerse themselves in the broader animal welfare ecosystem and begin envisioning how they can contribute to closing care gaps.

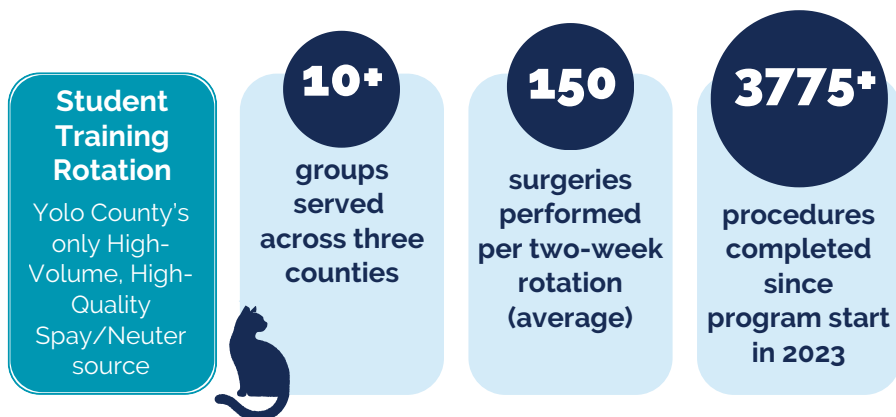
through Shelter Medicine

a year-long fellowship to provide early-career veterinarians with the ongoing mentorship, clinical development, and peer support they need to build sustainable, impactful careers in a demanding field.

Supporting shelter vets also means advancing the science and standards that guide their work. This year, KSMP Director Dr. Kate Hurley, Outreach Veterinarian Dr. Chumkee Aziz, and alumna Dr. Becky Stuntebeck contributed to the Association of Shelter Veterinarians' first-ever Guidelines for Humane Rabbit Housing in Animal Shelters—a three-year collaborative effort that establishes evidence-based standards for a species historically overlooked in shelter design.

Breaking Down Barriers

Our Director of Shelter Medicine Access to Care, Dr. Jennifer Bennett, created SCOPE, a new contextualized care framework, and shared it with veterinarians and students via national conferences, a webinar, and a Rural Area Veterinary Services (RAVS) volunteer trip, ensuring the practice of compassionate, effective patient- and client-centered care regardless of resources.



Ahead of the 2nd Annual California Adopt-A-Pet Day, the KSMP supported shelters' engagement efforts by translating promotional and adoption materials into California's most spoken languages, helping more than 200 shelters across the state connect with families who might otherwise have been left out.



Nearly 5,000 animals found homes, with 45% going to first-time adopters—proof that when we remove barriers, we grow the community of people who choose shelter pets.

Whether we're certifying frontline staff, supporting current and future veterinarians, or translating resources for diverse communities, every bridge we build connects more animals to the care they deserve. Thank you for helping us build them! **Learn more at www.sheltermedicine.com.**



Thank You

**Thanks to you, we can keep
advancing care for dogs, cats, and
all companion animals, alongside
their families.**

Photos by Lynda Niemeier-Teasdale appear
throughout this year's annual report. Learn about
her tribute to her late companion, Chloe at

Chloe's Cause.



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