2021–2022 Research Update

2022 EveryCat Health Foundation Grant Awards
2021 Miller Trust Grant Awards
2020–2021 CaP-K Grant Awards
2021-2022 EveryCat Health Foundation Research Update

EveryCat Health Foundation 2022 Grant Awards
Total funding $294,208

Principal Investigator(s): Ronald Hak Long Li, DVM, PhD, DACVECC; Wan Khoon Avalene Tan, BVSc, DAVECC; Joshua A. Stern, DVM, PhD, DACVIM (Cardiology); University of California Davis, School of Veterinary Medicine. $32,017
Heart disease is common in cats, and many develop blood clots that prove fatal. This study investigates a new theory of blood clot formation in cats with heart disease. If proven, new drugs can be developed to treat or prevent this deadly complication.

EC22-003: “Thromboelastography in cats with hypertrophic cardiomyopathy.”
Principal Investigator(s): Giulio Menciotti, DVM, MS, PhD; Ashley Wilkinson, DVM, MS, DACVIM (SAIM); Virginia-Maryland College of Veterinary Medicine, Virginia Tech. $31,297 (Ricky Fund)
Many cats with heart disease develop fatal blood clots for unknown reasons. One theory is that these cats have an increased tendency to form clots. This investigation uses a new method to measure this and determines if it’s more pronounced in cats with more advanced heart disease.

Principal Investigator(s): Anthony Abrams-Ogg; Matthew Kornya; Ontario Veterinary College, University of Guelph. $13,867 (Ricky Fund)
Many cats are prescribed Plavix (Clopidogrel) to prevent blood clot formation from various ailments, especially heart disease, but up to 20% are resistant to it. Currently this can only be diagnosed at a veterinary school. This study evaluates both in-house and reference lab tests so these cats can more readily be identified and appropriately treated.

EC22-005: “Acute phase protein and micro-RNA signatures for the diagnosis and prognosis of feline infectious peritonitis.”
Principal Investigator(s): Professor Danielle Gunn-Moore (DGM), BSc(Hon), BVMS, PhD, MANZCVS, FHEA, FRSB, FRCVS, RCVS Specialist in Feline Medicine; Royal (Dick) School of Veterinary Studies and The Roslin Institute, The University of Edinburgh. $7500 (Bria Fund)
Feline Infectious Peritonitis (FIP) is a serious viral disease that has no diagnostic test and was, until recently, invariably fatal. But with the recent discovery of effective treatments, diagnosing affected cats is critical. This study evaluates two new possibilities, acute phase proteins and micro-RNA, to determine if they can be used to develop an accurate diagnostic test.

EC22-007: “EIDD-2801 (Molnupiravir): establishing an oral dose and evidence for efficacy in cats with FIP.”
Principal Investigator(s): Brian Murphy, DVM, PhD, Dip ACP; Krystle Reagan, DVM, PhD, Dip ACVIM (SAIM); School of Veterinary Medicine, University of California, Davis. $33,550 (Bria Fund)
EC22-007 continued
With the recent discovery of effective treatments, Feline Infectious Peritonitis (FIP) is no longer considered a fatal disease in cats. But these treatments are not yet legally available, so this study evaluates the efficacy of a similar FDA approved antiviral drug, molnupiravir, which can be legally prescribed by veterinarians.

**EC22-015:** *“Effect of EPA and DHA supplementation on renal function biomarkers and systolic blood pressure of proteinuric and borderline proteinuric cats diagnosed with chronic kidney disease.”* Principal Investigator(s): Ana Luisa Guimarães Dias Lourenço, DVM, PhD, Dipl. ECVCN; Tomás Rodrigues Magalhães, DVM, PhD Student; Department of Zootechnics, University of Trás-os-Montes and Alto Douro, Portugal. $33,942 [Feline Kidney Disease Fund in honor of Vicki Thayer, DVM, DABVP (Feline) – Board Designated Match] (Sponsored by Zoetis)
While many animals, including people and dogs, are commonly given essential fatty acids (EFAs) as part of their treatment for kidney disease, this has never been investigated in cats. These researchers in Portugal will evaluate the effect of EFAs to determine if this therapy will benefit cats with kidney disease.

**EC22-018:** *“Characterization and causative investigation of Feline Gastrointestinal Eosinophilic Sclerosing Fibroplasia.”* Principal Investigator(s): Victoria Watson, DVM, PhD, Diplomate ACVP; Michigan State University; Jared Jaffey, DVM, MS, Diplomate ACVIM; Midwestern University. $9,026
Although rare, feline gastrointestinal eosinophilic sclerosing fibroplasia (FGESF) is a debilitating gastrointestinal disease of cats with an unknown cause. By collecting samples from across the world, these researchers will investigate possible causes, including parasites and cancer, leading to potential treatments.

**EC22-021:** *“Comprehensive mutational profiling of the oncogenomic landscape of commonly-occurring cancers in domestic cats to pave the way for precision veterinary medicine and understanding cancer biology.”* Principal Investigator(s): Dr. Louise van der Weyden; Dr. David Adams; Wellcome Sanger Institute, Cambridge, United Kingdom. $31,426 ($28,296 EveryCat Health Foundation, $3,130 Cancer/Oncology Fund) (Sponsored by IDEXX)
Targeted cancer treatments are successfully used in humans to treat a variety of neoplasia with few side effects. To do this in cats, these researchers in the UK will evaluate the genetic makeup of three common feline neoplasias (lymphoma, mammary cancer, and oral cancer) to pave the way to develop targeted feline cancer therapies.

**EC22-023:** *“The obesity–microbiome connection - determine gut flora signatures of obese cat.”* Principal Investigator(s): Xu Wang; Auburn University College of Veterinary Medicine. $34,583
Prior investigations of these researchers identified markedly different bacteria present in the intestinal tract of obese versus normal weight cats. This study will attempt to develop a diagnostic test to identify these bacteria, leading to potential novel treatments for obesity in cats as well as people.
EC22-028: “Unraveling the blood bacterial microbiome in healthy and febrile domestic cats via 16S rRNA metagenomics.” Principal Investigator(s): Ananda Muller, Ross University School of Veterinary Medicine; Katrin Hartmann, Ludwig-Maximilians-Universität München. $32,000
The bacterial population of the blood of cats is poorly understood. This study, a collaboration of Caribbean and German researchers, will investigate this in both healthy and sick cats, leading to greater understanding of many diseases and potential groundbreaking treatments.

EC22-038: “Dexmedetomidine–vatinoxan–ketamine for anesthesia in cats.” Principal Investigator(s): Bruno Pypendop, Linda Barter; University of California-Davis. $35,000
Anesthesia in cats commonly involves combinations of drugs to provide both sedation and pain relief, but the most common combination negatively affects heart function. This study adds an additional drug to counteract this effect. If successful, it will result in a new combination safer with fewer side effects.

2021 George Sydney and Phyllis Redman Miller Trust Grant Awards
Total funding $222,128

MT21-001: “Impact of the secondary bile acid ursodeoxycholic acid (Ursodiol) on the feline gut microbiota and metabolome.” Principal Investigator(s): Jenessa A. Winston, DVM, PhD, DACVIM; The Ohio State University. $26,437
An older drug, ursodiol, originally extracted from the bile of black bears, has been used in traditional Chinese medicine since the seventh century AD. It’s now commonly used in synthetic form in a variety of diseases of cats with little understanding of how it works. This study investigates its effects on the intestinal bacteria, leading to better treatments for cats with liver, intestinal, or kidney diseases.

MT21-003: “The role of microbial indole catabolites of tryptophan in host-microbiome cross-talk in cats with chronic enteropathies.” Principal Investigator(s): David Williams, University of Illinois. $32,880
Cats with intestinal disease often have decreased bacterial metabolites, called “indoles,” that leads to increased inflammation. By analyzing the intestinal bacteria and their metabolites, this investigation will attempt to identify the bacteria which produce indoles, leading to potential new treatments for intestinal disease.

MT21-005: “Prospective evaluation of unlicensed GS-441524-like antiviral therapy for treatment of feline infectious peritonitis.” Principal Investigator(s): Samantha J.M. Evans, DVM, PhD, DACVP; The Ohio State University. $4500 (Bria Fund)
Feline Infectious Peritonitis (FIP) is a serious viral disease that is no longer considered fatal with the recent discovery of an effective treatment. However, this drug is not licensed by the manufacturer for use in the U.S., resulting in owners buying the unapproved drug online. This study attempts to quantify its use and drug purity to document treatment until FDA approved drugs become available.
MT21-006: “The Prognostic Value of Circulating Galectin-3 in Feline Heart Failure.” Principal Investigator(s): Ryan Fries, University of Illinois. $22,850 ($17,646 Miller Trust, $5,204 Ricky Fund) Heart disease is common in cats, with some succumbing quickly and others living a long time. This study will develop a simple blood test to determine which cats are likely to have rapidly progressing disease so they can be managed appropriately.

MT21-010: “Non-genetic enhancement of feline adipose mesenchymal stromal cell immunomodulation with adenosine-loaded nanoparticles.” Principal Investigator(s): Natalia Vapniarsky, Boaz Arzi, Gang-yu Liu; University of California–Davis. $34,684 Previous grants to these researchers resulted in an effective stem cell treatment for most cats with severe stomatitis, a painful chronic inflammation of the mouth. For the few that didn’t respond, they propose to enhance stem cells with the addition of a potent anti-inflammatory drug (adenosine) leading to effective treatment of all cats with this debilitating disease.

MT21-012: “Precision Medicine Genomics for Cats (using the new cat reference genome) (continuation).” Principal Investigator(s): Leslie A. Lyons, PhD; University of Missouri. $34,945 EveryCat has been at the forefront of feline genomic medicine since its infancy, providing funding for initial groundbreaking studies as well as support for current research. This latest grant enables a major update to the “reference genome” which forms the basis for understanding of all genetic research as well as the discovery of the genetic basis of many diseases.

MT21-013: “Investigating Pectus Excavatum in Cats Using Rigorous Phenotyping and Population-Scale High-Throughput Sequencing.” Principal Investigator(s): Brian W Davis; Texas A&M University. $30,926 Several cat breeds are affected with “pectus excavatum,” a birth defect causing a severely flattened chest with significant mortality, but the cause is unknown. This study attempts to identify a genetic cause leading to selective breeding to reduce the incidence of this debilitating trait.

MT21-014: “Determining the genetics underlying diabetes mellitus in the domestic cat.” Principal Investigator(s): Dr. Rory Todhunter; Cornell University. $34,906 ($34,506 Miller Trust, $400, ECHF Diabetes Fund) Diabetes is one of the most common endocrine diseases in cats, and is difficult and expensive to treat. This study looks for a genetic cause or propensity in cats which, if identified early, will permit intervention before significant illness occurs.

CaP–K Grant Awards, 2020–2021
Total Funding $183,618

CaPK20-001: Investigating the genetic basis of total body phosphate overload in cats with mild azotemic chronic kidney disease. Principal Investigators: Dr. Rebecca Geddes; Royal Veterinary College, London, United Kingdom. $49,950 Many cats with chronic kidney disease develop high levels of phosphorus in their blood, leading to rapid decline and bone disorders. This study will perform whole genome sequencing to look for a genetic basis for this condition, leading to potential treatments and improved longevity.
CaPK20-003: Impact of feline circadian rhythms on phosphorus and parathyroid hormone concentrations. Principal Investigator: Andrea J. Fascetti, Professor, VMD, PhD, DACVN, DACVIM, University of California-Davis. $34,563
Blood phosphorus levels are often measured in cats, especially those with kidney disease but, in humans, the level varies during the day (called the “circadian rhythm”) affecting its interpretation. This study will measure the phosphorus level in normal cats throughout the day to determine if and how it changes, which will increase the accuracy of the interpretation of phosphorous levels and enable more accurate determination of abnormal results.

CaPK21-004: The impact of synbiotics on the gastrointestinal microbiome and phosphate homeostasis in cats with chronic kidney disease. Principal Investigators: Dr. Thurid Johnstone, Professor Caroline Mansfield, University of Melbourne. $49,355
The intestinal tract of cats contains many different bacteria in a delicate balance, but cats with kidney disease have alterations in these bacteria (“dysbiosis”) that may lead to worsening disease. This study compares the intestinal bacteria of normal cats to those with kidney disease to determine how it changes, leading to improved diagnostic tests and potential treatments with pre- and probiotics.

CaPK21-005: Evaluation of untargeted urinary metabolomic profiling, microRNA (miRNA), and advanced glycation end products (AGEs) in cats with chronic kidney disease (CKD). Principal Investigators: Joe Bartges, DVM, PhD, DACVIM, DACVN; Art Edison, MS, PhD; GRA. University of Georgia. $49,750
Kidney disease is common in cats, but current tests can’t diagnose it until the disease has progressed significantly. This study looks at different compounds in cat urine to determine if they can be used to diagnose kidney disease in earlier stages, improving the prognosis and longevity of these patients.

Since 1968, EveryCat Health Foundation has awarded OVER $8 million in grants for groundbreaking research that benefits every cat, every day. From disease prevention and veterinary treatment to healthy home habits, we advance the science of better medicine for millions of cats. Every cat, everywhere, every day.