

AKC CANINE HEALTH FOUNDATION

# 2021-2022

GRANTS REPORT



## 2021 HIGHLIGHTS

Grants awarded in 2021 to help prevent, treat and cure canine disease.

## GLIMPSE INTO 2022

Where is CHF-funded research headed next?

## IMPACT

Changing dogs' lives with your help.



AMERICAN KENNEL CLUB  
**CANINE HEALTH  
FOUNDATION**<sup>®</sup>  
PREVENT TREAT & CURE<sup>®</sup>

The AKC Canine Health Foundation (CHF) is dedicated to advancing the health of all dogs and their owners. The Foundation maintains a diverse portfolio of innovative canine health research grants that aim to find better treatments, more accurate diagnoses, and an improved understanding of the mechanisms that cause disease in dogs. In 2021, CHF awarded 50 new health research and educational grants outlined here. Many new grants embrace a One Health approach by supporting research that improves the health of dogs while simultaneously considering the health of people and the environment. These studies are indicated by the symbol [OH].

*Thank you to all the dedicated dog owners, breeders, veterinary professionals, and researchers that continue to support CHF's mission so that all dogs can live longer, healthier lives.*





# 2021 GRANTS

In 2021, CHF awarded \$3.4 million in 50 research grants across 17 different research program areas, including multiple educational grants.

## 11 ACORN GRANTS

Acorn grants fund smaller, pilot studies requiring \$15,000 or less. These grants allow researchers to take the first steps to improve canine health.

## 30 OAK GRANTS

Oak grants provide larger investments (>\$15,000) in studies with the potential to advance the health of dogs. In 2021, Oak grants ranged from \$21,883 to \$348,559.

## 3 MOU GRANTS

Memorandum of Understanding (MOU) grants allow AKC Parent Clubs and stakeholders to fund research of direct importance to the health of their breed. In 2021, three new MOU grants were awarded to address health concerns for specific breeds and all dogs.

## 6 EDUCATIONAL GRANTS

CHF supports the next generation of canine health researchers and reproductive specialists through Clinician-Scientist Fellowships and the AKC/AKCCHF/TF Small Animal Theriogenology Residency Program. In 2021, theriogenology residency grants were awarded to the University of Florida and Virginia-Maryland College of Veterinary Medicine. Three clinician-scientist fellowships were led by young scientists undertaking a clinical trial for hemangiosarcoma, implementing a novel technique for urethral catheterization, and focusing on bacteria and immune system function in canine atopic dermatitis.

## 2021 RESEARCH GRANTS

### Immune-Mediated Hemolytic Anemia (IMHA) | 02988

Investigate a blood protein that may be associated with clotting to improve IMHA treatment.

### Mitral Valve Disease | 02955

Predict individual risk of myxomatous mitral valve disease and heart failure.

### Dermatomyositis | 02921-MOU

Perform molecular analysis of a chronic inflammatory and autoimmune disorder affecting skin and muscle and evaluate a novel drug treatment. [OH]

### Diabetes Mellitus | 02850-A

Evaluate the potential for the drug fenofibrate to reduce the risk of pancreatitis and other complications in diabetic dogs.

### Cushing's Disease | 02875

Validate a model for Cushing's disease caused by a pituitary tumor and use it to identify new treatment targets. [OH]

### Addison's Disease | 02945-MOU

Investigate the genetic basis of Addison's Disease in the Portuguese Water Dog for future development of a genetic test.

### CBD for Epilepsy | 02930

Determine CBD dose, safety, and tolerability for seizure reduction in dogs with refractory epilepsy. [OH]

### Epilepsy | 02931

Evaluate the number/type of seizures and the effects of anti-seizure drugs in epileptic dogs using electroencephalography (EEG). [OH]

### Epilepsy Genetics | 02936

Validate genetic variations associated with idiopathic epilepsy in Belgian Sheepdog and Tervuren breeds.

**Epilepsy | 02940**

Evaluate blood flow and brain activity in functionally connected regions of the brain in epileptic dogs to better understand and manage this disease. [OH]

**Acute GI Injury | 02859-A**

Use video capsule endoscopy to assess and define acute gastrointestinal injury in critically ill dogs.

**Pancreatitis | 02861-A**

Identify and characterize cardiovascular complications of acute pancreatitis in dogs to better understand disease severity and prognosis.

**GI Microbiome | 02899**

Study how the canine gut microbiome matures during the first year of life using advanced DNA sequencing technology.

**Fecal Microbiome Transplants | 02900**

Determine optimal fecal storage conditions and donor fecal characteristics for fecal microbiota transplantation using a targeted genomic approach. [OH]

**Leishmaniasis | 02838**

Develop new technologies for more accurate diagnosis of systemic canine leishmaniasis. [OH]

**Chagas Disease | 02980**

Assess use of four common systemic insecticides on kissing bug survival and investigate bug feeding patterns for management strategies. [OH]

**Spotted Fever Group Rickettsia | 02983**

Investigate the genetic, epidemiologic, and ecological features of emerging Spotted Fever Group Rickettsia species in dogs. [OH]

**Body Condition Scoring | 02849-A**

Develop and validate a new body condition scoring system to more accurately assess fat and muscle loss in canine athletes.

**Osteoarthritis | 02851-A**

Identify and develop reliable nerve blocks using blind and ultrasound-guided techniques to treat canine osteoarthritis.

**Osteoarthritis | 02868-A**

Evaluate intra-articular (joint) injection of cartilage/connective tissue cells to treat osteoarthritis.

**Degenerative Myelopathy | 02943-MOU**

Evaluate genetic and clinical data to identify risk factors for degenerative myelopathy in the German Shepherd Dog.

**Mammary Gland Tumors | 02920**

Identify tumor-permissive collagen characteristics in canine mammary tumors. [OH]

**Soft Tissue Sarcoma | 02855-A**

Define the effects of immunosuppressive cells in soft tissue sarcomas and evaluate three drugs that counteract them.

**Glioma | 02858-A**

Investigate why French Bulldogs with high grade gliomas respond poorly to immunotherapy-based treatment.

**Brain Tumors | 02907**

Investigate safety and feasibility of using ultrasound-guided histotripsy to treat canine primary brain tumors. [OH]

**Mast Cell Tumors | 02910**

Clinical trial of combination chemotherapy for improved canine mast cell tumor control.

**Oral Melanoma | 02879**

Identify the genes necessary for oral melanoma development in dogs.

**Surgical Margins | 02880**

Assess the accuracy of a new technology to provide real-time surgical margin assessment for soft tissue sarcomas and mammary cancer removal.

**Acute Myeloid Leukemia | 02987**

Identify relevant gene mutations associated with AML and more accurately classify AML subtypes in dogs for targeted drug development. [OH]



**Hemangiosarcoma | 02864-A**

Determine if luteinizing hormone (LH) binding increases hemangiosarcoma growth.

**Hemangiosarcoma | 02942**

Identify genetic and molecular features of hemangiosarcoma useful for early detection and prognosis.

**Hemangiosarcoma | 02946**

Multicenter inter-disciplinary clinical trial to identify biomarkers and genomic subgroups of canine hemangiosarcoma and define new therapies to prevent cancer spread. [OH]

**Lymphoma | 02885**

Evaluate environmental exposures to high-risk chemicals in Boxers with and without lymphoma. [OH]

**Lymphoma | 02890**

Investigate the role of “jumping genes” in T-cell lymphoma as potential new pathway for treatment. [OH]

**Lymphoma | 02912**

Clinical trial of adoptive natural killer cell therapy in combination with standard chemotherapy for lymphoma. [OH]

**Cataracts | 02959**

Search for new genetic variants associated with hereditary cataracts in the Miniature American Shepherd.

**Glaucoma | 02963**

Identify mutated genes associated with glaucoma in the Entlebucher Mountain Dog in order to develop a genetic test.

**Corneal Ulcers | 02966**

Large clinical trial of corneal cross-linking procedure, currently used in human medicine, to treat canine corneal ulcers. [OH]

**Cataracts | 02948-A**

Evaluate if tight blood sugar control delays the onset of cataract development in diabetic dogs. [OH]

**Cataracts | 02950-A**

Search for causative genetic mutations for late-onset hereditary cataracts in the Boston Terrier.

**Progressive Retinal Atrophy | 02952**

Identify the causal mutation for X-linked PRA in the Greyhound, determine its prevalence, and work towards development of a genetic test. [OH]

**Bartonellosis | 02819**

Identify Bartonella-specific antigens with a reliable blood test. [OH]

**Babesiosis | 02978-A**

Investigate Babesia exposure and infection in dogs in the upper Midwest United States. [OH]

**Global Tick-borne Diseases | 02981**

Identify diagnostic markers for anaplasmosis and ehrlichiosis for vaccine development. [OH]



CHF solicits research proposals that address areas of unmet need and immediate opportunity within canine health research and veterinary medicine. All research proposals undergo rigorous peer review to determine the best approaches to tackle health challenges dogs and their owners face. This creates a portfolio of research grants multifaceted in their approach to canine health, often utilizing genetics, molecular biology, epidemiology, new diagnostics, and novel treatments as their scientific premise. In this upcoming year, CHF will focus on the following areas of canine health: epilepsy, vector-borne disease, behavior, exercise, injury and rehabilitation, and cancer.

# 2021 IN REVIEW

## HOPE TO FIGHT HEMANGIOSARCOMA

CHF invested nearly \$500,000 in new hemangiosarcoma studies this year, featuring novel approaches to this devastating cancer in dogs. Investigators at Cornell University are looking for correlations between clinical stage and histological features of canine hemangiosarcoma tumor tissue. CHF is also partnering in a large clinical trial with Ethos Veterinary Health hospitals to provide dogs (and their families) access to a potentially life-changing treatment to fight canine hemangiosarcoma.



## ADVANCED DIAGNOSTIC TESTS

A major advancement in human and veterinary medicine, next-generation sequencing (NGS) is a technology that looks at DNA from blood or tissue for genetic variations associated with disease or organisms.

### TICK CHECK (Grants 02292 and 02528)

CHF-funded investigators used NGS to improve the accuracy and ease of diagnosing vector-borne infections in dogs by rapidly detecting the relative amounts of infectious organism DNA in dog blood samples. [doi.org/10.1186/s12917-021-02969-9](https://doi.org/10.1186/s12917-021-02969-9)

### PERSONALIZED MEDICINE (Grant 02502)

Taking a note from human medicine, PennVet investigators developed a Canine Oncopanel to analyze cancer genes using a NGS platform. This platform analyzes 283 cancer genes to detect mutations that drive common and rare canine cancers. This panel can be used on a standard biopsy sample, enabling precision medicine and targeted therapy.

[doi.org/10.1111/vco.12746](https://doi.org/10.1111/vco.12746)

## PANDEMIC PONDERINGS

In 2021, the world and researchers took time to reflect in the face of the COVID-19 pandemic. Many studies awarded in 2021 dove into improved understanding of canine diseases and how we treat them. One, in direct response to the unknowns of the virus, specifically assessed removal of aerosolized particulates on dog coats to inform routine decontamination for dogs prior to re-entering the home (Grant 02847-A). Other new studies approach prevention by investigating the way dogs interact with the world, including prevalence and distribution of ticks, risk of lymphoma development due to environmental factors, and adopting cutting-edge tools and techniques to more effectively treat canine patients.

## GENETIC TEST ADVANCEMENTS

### DWARFISM (Grant 02400-MOU)

Investigators at the University of Minnesota identified the genetic mutation responsible for dwarfism in Great Pyrenees. A DNA test for this mutation is now available.

### SLO (Grant 02488)

Genetic mutations highly predictive for symmetrical lupoid onychodystrophy (SLO), a painful inflammatory disease of the nail bed often seen in Bearded Collies, were associated with DLA Class II genes that regulate the immune system.



## TRUST YOUR GUT

The gut microbiome hosts a variety of bacteria and microbes that are integral to your dog's health. CHF-funded researchers are investigating how the microbiome contributes to obesity, epilepsy, and early development. Many studies rely on fecal microbiota transplantation (FMT) to treat disease by restoring microbiome diversity. FMT was first successful in human patients with recurrent *C. diff* infections and shows promise for other conditions in dogs.

## 2022 CLINICIAN–SCIENTIST FELLOWS

We thank the three 2021 fellows for their contributions to canine health. In 2022, CHF's Clinician-Scientist Program continues to support the next generation of canine health researchers at the following institutions:



Sponsors include Orthopedic Foundation for Animals, Westie Foundation of America, and owners Carolyn and Gary Koch with breeders Kristy and Kevin Ratliff in honor of "Rumble," GCHP Hill Country's Let's Get Ready To Rumble ([www.akcchf.org/rumble](http://www.akcchf.org/rumble)).

### AKC/AKCCHF/TF SMALL ANIMAL THERIOGENOLOGY RESIDENCY PROGRAM

This program is an educational collaboration between the American Kennel Club (AKC), AKC Canine Health Foundation (AKCCHF), and Theriogenology Foundation (TF) to increase the number of trained practitioners in companion animal theriogenology and clinical genetics. New residents will start at Auburn University, The Ohio State University, and University of Pennsylvania in July 2022. Current residents continuing their 2-3 year programs include:



**VA-MD College of Veterinary Medicine | 02846-E**  
Nicole Sugai, DVM  
Residency Coordinator: Julie T. Cecere, DVM, MS, DACT



**University of Florida | 02845-E**  
Anum Ahmed, DVM  
Residency Coordinator: Audrey A. Kelleman, DVM, DACT



**Colorado State University | 02668-E**  
Alex Horner, DVM  
Residency Coordinator: Fiona Hollinshead, BVSc, PhD, DACT



**Ohio State University | 02666-E**  
Joanna Koipillai, BVSc & AH  
Residency Coordinator: Marco A. Coutinho da Silva, DVM, PhD, DACT



**Auburn University | 02538-E**  
Jamie Douglas, DVM  
Residency Coordinator: Robyn Wilborn, DVM, MS, DACT

### WHERE ARE THEY NOW?

CHF supports the growth of veterinary science through its educational grants, conference sponsorship, and canine health projects, to achieve its mission to prevent, treat and cure canine disease for years to come.

Many past theriogenology residents are employed in various private practices, providing theriogenology services to dogs and their owners from Australia to Texas.

Alumni of the clinician-scientist fellowship have become current CHF-funded investigators. These include Dr. Steven Friedenber (UMN; Addison's disease, IMHA), Dr. Sita Withers (LSU; soft tissue sarcomas), Dr. Joanne Tuohy (VA-MD; osteosarcoma) and Dr. Eva Furrow (UMN; breed-specific hyperlipidemia).

A number of prior fellows continue to support CHF's mission, serve as co-investigators on CHF-funded research, and communicate important findings to CHF, its donors, and veterinary professionals.

*The AKC Canine Health Foundation is dedicated to advancing the health of all dogs and their owners by funding scientific research and supporting the dissemination of health information to prevent, treat and cure canine disease.*



Have a question?  
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