AKC CANINE HEALTH FOUNDATION
2022-2023
GRANTS REPORT

2022 HIGHLIGHTS

Grants awarded in 2022 to help prevent, treat and cure canine disease.

GLIMPSE INTO 2023

Where is CHF-funded research headed next?

IMPACT

Changing dogs' lives with your help.

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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 2022, CHF awarded 54 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.

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2022 RESEARCH

In 2022, CHF awarded over $3.4 million in 54 research grants across 18 different research program areas, including multiple educational grants.

17 ACORN GRANTS

Acorn grants allow researchers to complete small, short timeframe projects, test research hypotheses, and/or generate preliminary data for possible future grant proposals as larger scale or longer term studies.

29 OAK GRANTS

Oak grants provide larger investments in studies and clinical trials In 2022, Oak grants ranged from $20,034 to $460,620.

2 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 2022, two 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 2022, theriogenology residency grants were awarded to Auburn University and The Ohio State University. Four Clinician-Scientist Fellowships were awarded to young scientists investigating ophthalmic diseases, cancer, and emergency treatment of baclofen (an anti-spasticity and muscle relaxant medication) intoxication in dogs.

2022 RESEARCH GRANTS

Dal Blood Group | 03098-A
Identify the genes associated to the Dal blood group to identify and facilitate matched blood donors.

Congestive Heart Failure | 03031
Determine if a diuretic medication increases blood chloride levels to benefit dogs with congestive heart failure.

Myxomatous Mitral Valve Disease | 03101-A
Clarify the contribution of the cell breakdown pathway to development of myxomatous mitral valve disease.

Epilepsy | 03036-A
Improve diagnosis and disease monitoring by using advanced imaging to identify brain lesions in epileptic dogs.

Epilepsy | 03039
Identify factors that predict drug resistance in newly diagnosed epileptic dogs to optimize treatment.

Epilepsy | 03040
Identify genes that cause specific forms of epilepsy in the Labrador Retriever and potentially other breeds.

Working Dogs | 03069
Assess the ability of different computer models to predict performance and health traits that support success in various working roles.

Hyperthermia | 03077-A
Compare the effectiveness of commonly used cooling techniques for dogs with exertional hyperthermia.

Gut Health | 03124
Investigate the molecular mechanisms of probiotics for GI disease or inflammation.

Parvovirus | 03140
Clinical trial to evaluate the efficacy of Gelatin tannate (GT) to treat parvovirus in dogs.

Chronic Hepatitis | 03028-A
Characterize the immune features of chronic hepatitis and how the immune system responds to treatment with cyclosporine.

Gallbladder Mucocele | 03030-A
Determine if C-reactive protein blood levels predict clinical decline and the need for gallbladder removal in dogs with gallbladder mucocele.

Gallbladder Mucocele | 03143
Explore the role of toxin exposure in the formation of gallbladder mucocele.

Copper Toxicosis | 03113
Identify genetic modifiers that influence copper-associated hepatopathy (diseased state of the liver) in the Dalmatian.

Heartworm Disease | 02986
Identify compounds that can be used to develop new treatments for heartworm infection. [OH]

Chagas Disease | 03083-A
Determine if development of clinical Chagas Disease is affected by coinfections with other vector-borne pathogens. [OH]

Chagas Disease | 03087
Determine prevalence of Chagas disease and associated cardiac abnormalities in dogs in West Virginia and Virginia. [OH]

Canine Leishmaniasis | 03090
Characterize the prevalence, lifestyle and medical risk factors, clinical disease, and local transmission of this vector-borne disease in dogs imported to Canada. [OH]

Rabies | 03118
Explore genetic biomarkers of rabies infection in the bloodstream, allowing for accurate detection in living dogs.

Chronic Kidney Disease | 03020
Determine if urinary ammonia excretion correlates with kidney function and long-term clinical outcomes in dogs with chronic kidney disease. [OH]

Pyelonephritis | 03021
Determine the ideal duration of antibiotic therapy for kidney infections (pyelonephritis) to maximize efficacy and lower the risk of drug-resistant bacteria. [OH]

Chronic Kidney Disease | 03026
Evaluate the effect of antioxidant treatment on active kidney damage and disease progression. [OH]

Lung Imaging | 03059
Determine if a sedated CT scan technique provides the same diagnostic quality for lung disease with less risk than an existing imaging technique that requires general anesthesia.

Pneumothorax | 03048-A
Evaluate if injecting a patient's own blood into leaking lung tissue can seal the leaks and treat pneumothorax without invasive surgery. [OH]

Kennel Cough | 03053-A
Identify genetic mutations linked to antibiotic resistance in an emerging respiratory bacterium and investigate antibiotic activity against it. [OH]

Agility Injury Risk | 03068-A
Develop a canine wearable that recognizes agility movements and activity to allow for objective study of training factors as they relate to injury risk.

Arthritis | 03076
Evaluate the relative effectiveness of fat-derived stem cells from lean, overweight, and obese dogs to treat canine arthritis.

Soft Tissue Sarcoma | 03017
Study the molecular characteristics of soft tissue sarcomas to inform drug development and techniques to improve margin visualization during surgical removal. [OH]

Tumor Removal Surgical Margins | 03019
Evaluate whether a fluorescent dye increases the odds of complete surgical tumor removal. [OH]

Mast Cell Tumors | 03009
Assess the ability of a new imaging technique to identify mast cell tumor spread to lymph nodes, allowing more complete and effective treatment. [OH]

Lung Cancer | 02992-A
Evaluate the ability of a dual-imaging technique to identify lymph nodes affected by lung cancer. [OH]

Oral Tumors | 03100-A
Develop a model to predict lymph node involvement in dogs with oral cancers. [OH]

Hemangiosarcoma | 03003
Evaluate whether the suppression of certain metabolic pathways can stop explosive growth of hemangiosarcoma cells.

Hemangiosarcoma Treatment | 03011
Assess the effectiveness of a vaccine used for melanoma and bone cancer to treat hemangiosarcoma

T-cell Lymphoma | 03007
Develop a drug that recruits normal T cells to eliminate cancerous T cells to improve outcomes for dogs with T-cell lymphoma. [OH]

B-cell Lymphoma | 02998
Characterize the genetic features of less common forms of B cell lymphoma and compare them to the most common diffuse large B cell lymphoma to see if existing treatments are effective against them. [OH]

Lymphoma | 03102-A
Demonstrate that minimal residual disease status of dogs post-treatment for lymphoma can be detected by using artificial intelligence technology on lymph node cytology.

Lymphoma | 03144
Clinical trial for a multi-drug oral chemotherapy protocol to treat multi-centric lymphoma.

Bone Cancer | 02999
Evaluate the use of magnetic resonance imaging (MRI) to quantify bone cancer tumor destruction in patients treated with the novel therapy of histotripsy. [OH]

Bone Cancer Immunology | 03000
Study the effects of histotripsy on immune cells and metastatic disease development in vitro to understand use of histotripsy as an immune therapy. [OH]

Bone Cancer Immunology | 02991-A
Determine how canine bone cancer cells interact with the immune system and if its signals used stimulate tumor growth or aggressive behavior. [OH]

Bone Cancer | 03015
Describe the cells present in various regions of bone tumors to assess how immune cells gain access to cancer cells and impact disease development. [OH]

Bone Cancer | 03095-A
Characterize the genetic signature of metastatic bone cancer to improve diagnosis, treatment, and prevention of cancer spread.

Cancer Detection | 03032-MOU
Develop a blood test for early detection of bone cancer as the initial step of the long-term strategy of early detection and targeted prevention. [OH]

Ocular Melanosis | 03094-MOU
Identify genetic mutations that cause this painful condition in the Cairn Terrier.

Semen evaluation | 03045-A
Create an automated method for sperm morphology evaluation to improve artificial insemination outcomes and assessment of infertility problems. [OH]

Uterine Disease | 03055
Develop miniature organs in a petri dish to improve study of canine pyometra and endometritis

Vaginal Infection | 03051-A
Determine which bacteria are present within the canine vagina and if they are resistant to antibiotics to improve treatment protocols for canine vaginal infection. [OH]

2023 AREAS OF FOCUS

CHF solicits research proposals that address areas of unmet need and immediate opportunity within canine health and veterinary medicine. All scientific research proposals undergo rigorous peer review to find those with the best approaches to tackle current health challenges facing dogs and their owners. This creates a portfolio of research grants with a multifaceted approach to canine health - utilizing genetics, molecular biology, epidemiology, new diagnostics, and novel treatments. In 2023, CHF will focus on the following areas of canine health: microbiome and canine health, preventative and early intervention medicine, active dogs, aging. infectious disease, and epilepsy.

2022 IN REVIEW

CONTINUED INVESTMENT FOR IMPROVED OUTCOMES

The AKC Canine Health Foundation (CHF) works hard to make sure we are supporting research from head to tail through our 23 research program areas. Productive research often leads to a follow-up question to help determine the why's and how's of disease. In 2022, CHF supported research to dive further into these topics.

- In 2018, CHF investigators evaluated variables in dogs with progressive stages of naturally occurring **heart disease** to identify dogs that are poorly responsive to diuretic medications and determine underlying causes for improved patient outcomes (#02436). With this background, in 2022 they are investigating if a select diuretic can restore blood chloride levels in dogs whose values are low (#03031).

- CHF and Breed Clubs partnered to support research into early cancer detection first in **hemangiosarcoma** (#02806-MOU) and then in 2022 with **osteosarcoma** (#03032-MOU).

- In 2020, CHF supported Dr. Tuohy's research to evaluate the efficacy of histotripsy to treat dogs with **osteosarcoma** (#02773). In 2022, Dr. Tuohy is furthering this treatment by quantifying how well it works using MRI (#02999), and how they immune system responds (#03000).

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING FOR DOG HEALTH

In this digital age, artificial intelligence and machine learning are being used in almost every facet of life. Many CHF grants awarded in 2022 are using this technology to assess dog health and their disease status more efficiently and with less bias, such as:.

- **sperm morphology** (#03045-A)
- determining minimum residual disease in **lymphoma** cases (#03102-A)
- identifying **sentinel lymph nodes** (#03100-A) in dogs with cancer
- **breeding values** of working dogs (#03069)

BARK-WORTHY NEWS!

Follow along on social media to get the latest in CHF news, including findings from CHF-supported grants, opportunities to participate in research, and grants to support!

CHF news, articles, webinars, and opportunities

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GENETIC TEST ADVANCEMENTS

MEGAESOPHAGUS (Grant 02709)
CHF-supported researchers at Clemson developed a genetic test to help breeders plan matings to decrease the incidence of megaesophagus in German Shepherd Dogs.

CRUCIATE RUPTURE (Grant 02624)
Investigators at the University of Wisconsin developed a genetic risk test for cruciate ligament rupture in Labrador Retrievers; one of the first genetic tests available for a canine complex disease.

EPILEPSY (Grant 02936)
CHF's continued investment in epilepsy research supported work that identified two genetic mutations that influence the development of idiopathic epilepsy in the Belgian Sheepdog and Belgian Tervuren.

2023 CLINICIAN—SCIENTIST FELLOWS

We thank the three 2022 fellows for their contributions to canine health. CHF recently awarded Clinician-Scientist Fellowships to researchers at the following institutions for 2023:

UCDAVIS VETERINARY MEDICINE   School of Veterinary Medicine UNIVERSITY OF WISCONSIN–MADISON   PennVet UNIVERSITY of PENNSYLVANIA   ILLINOIS College of Veterinary Medicine

Sponsors include the Orthopedic Foundation for Animals (OFA) and owners Carolyn and Gary Koch in honor of "Rumble" GCHP Hill Country's Let's Get Ready To Rumble (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 North Carolina State University and Virginia-Maryland Regional College of Veterinary Medicine in July 2023. Current residents continuing their 2-3 year programs include:

Auburn University | 02972-E
Lily Lewis, DVM
Residency Coordinator: Robyn R. Wilborn, DVM, MS, DACT

The Ohio State University | 02970-E
Gail McRae, DVM
Residency Coordinator: Erin E. Runcan, DVM, DACT

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

LEARNING OPPORTUNITIES

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.

In addition to theriogenology residencies and clinician-scientist fellowships, CHF supports research proposals that include undergraduates, graduate students, post-docs, interns, and technicians!

86% of the research grants that completed in 2022 (reported to date) provided opportunities for undergraduates, graduate students, veterinary students, interns and technicians.

7 Undergraduates
3 Veterinary Interns
17 Graduate Students
29 Technicians
14 Veterinary Students

A CHF funded research grant finishing in 2022 provided, on average, experience for **over 3 students, interns and technicians**!

akcchf.org/educationalgrants

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?
Contact us at
chf@akcchf.org

Support a research grant
or program area at
akcchf.org/donateRPA

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