

Highlights from the 2021 National Parent Club Canine Health Conference

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The AKC Canine Health Foundation (CHF) held its 13th National Parent Club Canine Health Conference in August 2021. Due to ongoing concerns related to COVID-19, the conference was held in a virtual format for the first time which allowed CHF-funded investigators to present their latest findings to a larger and more diverse audience. (See “2021 Conference Registrants.”)



With a focus on One Health – a concept that recognizes the interconnected health of animals, humans, and our shared environments – investigators shared outcomes related to dermatology, canine cancer, neurology, epilepsy, and cardiology. The keynote address by 2021 Asa Mays, DVM Excellence in Canine Health Research Award recipient, Dr. Cindy Otto, reviewed findings from the 9/11 Medical Surveillance Study and their implications for the health and well-being of canine and human first responders. (See “The Life and Times of the Hero Dogs of 9/11.”) Thoughtful questions from the virtual audience proved, once again, how the continued collaboration of researchers, veterinary professionals, parent clubs, and dog lovers is critical to improve the health of all dogs.

Highlights from the scientific presentations include:

Dermatology

Dysbiosis or decreased diversity in the microbial population living in/on the skin is common in dogs with atopic dermatitis. This often manifests as an increase in the number of *Staphylococcus* bacteria resulting in secondary skin infections and worsening skin lesions. Topical medications such as shampoos, sprays, etc. are often all that is needed to treat superficial skin infections. If oral antibiotics are necessary, they should be prescribed based on the results of culture and sensitivity to avoid contributing to antibiotic resistance.

Lipids, or fats, are important to the skin barrier function, play a role in cell to cell communication, and more. CHF-funded investigators found that atopic dermatitis alters the lipid make-up of the skin and also results in systemic changes in lipid metabolism. Treatment of atopy causes lipid changes unique to each affected dog. Research continues to assess the overall lipid profile of atopy which could be used to predict and assess the risk and severity of disease as well as response to treatment.

People also suffer from atopic dermatitis and the disease characteristics are similar between dogs and humans. Targeted hygiene – allowing exposure to good microbes through pet ownership, and decreased exposure to harmful microbes such as those found in modern home construction – helps maximize immune system function and lowers the risk of allergies.

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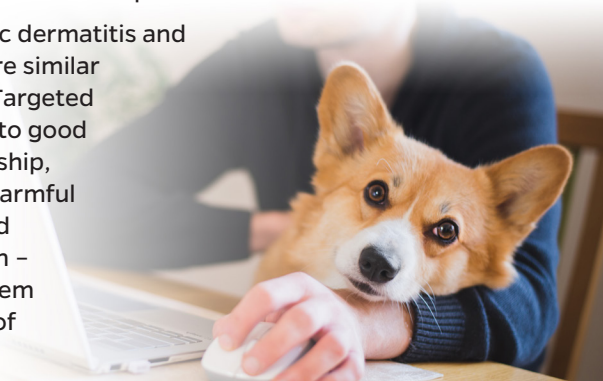


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Fall 2021

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Canines & Cocktails
 Orlando, FL

December 17-19

AKC National Championship
 Orlando, FL

Upcoming Webinars

Register at akcchf.org/vetvine

December 2021

Don't Skip Leg Day: The Importance of Medial Crural Fascia When Recovering From a TPLO
 Presented by Dominique Sawyere
 Hansford, BVSc, MS, DACVS-SA



Highlights from the 2021 National Parent Club Canine Health Conference *continued*

Cancer

CHF-funded investigators demonstrated a higher risk of lymphoma in Boxers living near chemical suppliers, crematoriums, or nuclear power plants. They also found a higher risk of bladder cancer in dogs exposed to insecticides, high ozone levels, and trihalomethanes (chlorination byproducts) in tap water. Dogs with higher levels of these chemicals lived with people that also had higher levels of these chemicals. Future studies will identify potentially avoidable household chemicals that contribute to cancer risk or early DNA damage to provide cancer prevention strategies in dogs and humans.

The cells and materials surrounding cancer cells, known as the tumor microenvironment, have a profound impact on the growth and spread of cancer. CHF-funded investigators found that the characteristics of collagen surrounding canine mammary tumor cells could predict the outcome or prognosis of this cancer. Additional study will better define the collagen characteristics of canine mammary tumors so that we can potentially manipulate the tumor microenvironment to prevent and treat this cancer.

CHF-funded investigators at Penn Vet have developed a canine oncopanel that sequences 283 different genes relevant to various canine cancers. The oncopanel can identify how many of these genes are mutated and exactly what are the mutated sequence(s). This technology will allow us to better define an individual dog's cancer and choose therapies targeted at each unique cancer.

Epilepsy

CHF-funded pilot studies demonstrated that CBD oil was well-tolerated by dogs and reduced seizure frequency in dogs with idiopathic epilepsy. A clinical trial is currently underway to build on these results and refine the best dose to achieve clinical response.

Neurology

Investigators at the University of Missouri and the Canine Genetic Diseases Network have identified more than 15 genetic mutations associated with lysosomal storage diseases in dogs. These conditions are defined by an abnormal accumulation of incompletely metabolized molecules within the lysosomes (recycling centers) of various cells. CHF continues to provide funding for sample analysis and mutation discovery in affected dogs.

CHF-funded investigators are characterizing the lifetime risk of dogs with various genotypes for degenerative myelopathy (DM), a progressive neurologic disease similar to ALS (amyotrophic lateral sclerosis) in people. They found that dogs with two mutated copies of the SOD1 mutation associated with this disease had an increased risk of clinical signs by age seven. Dogs with only one copy of the SOD1 mutation were at higher risk of clinical signs than dogs with no copies of the mutation, but were likely to die of some other cause before they developed clinical signs of DM.

Increasing evidence shows that dysbiosis (changes in the population of microbes living in the gastrointestinal tract) influences the immune system and may contribute to meningoencephalomyelitis of unknown origin (MUO) in dogs, a disease that resembles MS (multiple sclerosis) in humans. CHF-funded investigators have specifically found a potential association between this disease and levels of *Prevotella* bacteria in the gut and are recruiting dogs for a clinical trial to determine if supplementing these bacteria can decrease disease severity.

Cardiology

Genetic mutations associated with tricuspid valve dysplasia in Labrador Retrievers and arrhythmogenic right ventricular cardiomyopathy (ARVC) in Boxers have been identified. Additional study is underway to identify additional genetic mutations and factors that contribute to these conditions.

Cavalier King Charles Spaniels are at high risk for myxomatous mitral valve disease (MMVD). Three-dimensional imaging of the heart in this breed shows that the valve differs in size and shape compared to other breeds. Even within this breed, some valve characteristics are associated with an earlier age of onset for clinical disease. Research is ongoing to determine which valve characteristics can be used to identify dogs in earlier stages of disease and how the valve shape changes over time.

Select conference sessions are available to view on demand at caninecollege.akc.org.

Thank you to our sponsors - Purina and the AKC.

2021 AKC Canine Health Foundation National Parent Club Canine Health Conference Registrants

51

Canine Health
Researchers

214

Breeders

239

AKC Parent
Club Members
representing
120 Parent Clubs

144

Veterinarians and
Veterinary Support
Staff

16

US Veterinary
Students and
Theriogenology
Residents

The Life and Times of the Hero Dogs of 9/11

Summary of the Keynote Address from the 2021 AKC Canine Health Foundation National Parent Club Canine Health Conference

Dr. Cindy Otto spearheaded CHF-funded research on the physical and behavioral effects of deployment to the 9/11 disaster sites on search and rescue dogs for the past twenty years. Injuries and illnesses reported during deployment included mostly cuts, abrasions, fatigue, weight loss, and changes in appetite. Mild changes in various blood analytes such as liver enzymes and immunoglobulins were reported 2-5 years post-deployment. However, most of the studied search and rescue dogs died or were euthanized because of degenerative conditions such as arthritis, cancer, and cognitive dysfunction, whether they were deployed following 9/11 or not. Results of this valuable study show that search and rescue dogs are healthy, active, and fulfilled with their jobs. Of note, human handlers were more susceptible to post traumatic stress disorder if their canine partner died early.

The tragic events of 9/11 and study of the brave search and rescue dog teams that deployed for this event have provided valuable information for human and canine first responders. Teams better understand the importance of proper training on rubble and enforcing work/rest cycles, maintaining proper nutrition and hydration, flushing debris from eyes, and close monitoring of the dogs during deployment. The value of fitness, teamwork, and the human animal bond in supporting canine and human health has been confirmed. Finally, the Penn Vet Working Dog Center has been created as a national research and development center for detection dogs.

Thank you to Dr. Otto, her research team, and all the 9/11 search and rescue dog teams for their valuable contributions.



Photo credit: Dr. Cindy Otto

How You Can Help

As you plan your year-end giving, we invite you to consider the many ways you can support AKC Canine Health Foundation's mission to advance the health of all dogs and their owners:

Purchase a Brick

Looking for a unique gift or to make a tribute? Order a personalized engraved brick on the Walk of Champions or Path of Honor at the Purina Event Center and the proceeds will benefit canine health research. For a limited time, add a \$25 replica brick to your order as a lasting memento.

akcchf.org/brick

Amazon Smile

Remember CHF during your holiday shopping. Go to smile.amazon.com, select American Kennel Club Canine Health Foundation, Inc. as your charitable organization, and Amazon will donate 0.5% of eligible purchases to CHF.

Facebook Fundraiser

Raise money for canine health research right on Facebook. Use this link to easily create a Facebook fundraiser in support of the AKC Canine Health Foundation:

facebook.com/fund/akccaninehealthfoundation/



MISSION: The mission of the American Kennel Club Canine Health Foundation, Inc. is to advance 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.

Asa Mays, DVM Excellence in Canine Health Research Award

Named for Dr. Asa Mays, a member of the AKC Canine Health Foundation's first Board of Directors in 1995, the Asa Mays, DVM Excellence in Canine Health Research Award is a biennial honor presented to an investigator who demonstrates meritorious achievements in furthering the mission of identifying, characterizing, and treating canine disease and ailments. **This year's recipient is Cynthia M. Otto, DVM, PhD, DACVECC, DACVSMR.**

After earning a veterinary degree from The Ohio State University and a PhD from the University of Georgia, Dr. Otto became board certified in both veterinary emergency and critical care and veterinary sports medicine and rehabilitation. She worked as an attending clinician in the Penn Vet emergency service for over 20 years. She was a member of FEMA's Pennsylvania Urban Search and Rescue Task Force 1 from 1994 – 2010. In 2015, she created the Penn Vet Working Dog Center as a national research and development center for detection dogs where she still serves as Executive Director. Her work has resulted in over 60 published peer-reviewed articles and book chapters, as well as international speaking engagements.



The cornerstone of Dr. Otto's AKC Canine Health Foundation funded research has been the 9/11 Medical Surveillance Study. Since 2001, Dr. Otto has received almost \$600,000 in funding to study the physical and behavioral consequences of search and rescue dog deployment to the 9/11 disaster sites. To date, the work has produced 11 peer-reviewed publications describing the short- and long-term effects of deployment on toxicology, behavior, mortality, the dog-handler relationship, and more. Data analysis is ongoing, and the findings will help us protect not only the health and safety of search and rescue dogs, but provide valuable translational information benefitting the health of human handlers and first responders.

Recent CHF Grant Highlights

Grant 02907: Ultrasound-guided Histotripsy Ablation of Canine Brain Tumors through an Acoustically Transparent Cranial Window

Principal Investigator: John Rossmeisl, DVM, MS; Virginia-Maryland College of Veterinary Medicine

Investigate the safety and feasibility of using ultrasound-guided histotripsy, a non-invasive and non-thermal acoustic method of tissue destruction, to treat primary brain tumors in dogs.

Grant 02900: Optimizing Storage Conditions of Canine Feces for Fecal Microbiota Transplantation

Principal Investigator: Arnon Gal, DVM, PhD; University of Illinois

Determine fecal storage conditions and donor fecal characteristics that optimize the success of fecal microbiota transplantation (FMT) in dogs with acute and chronic enteropathies.

Grant 02851-A: Development of Regional Anesthesia Techniques to Treat Chronic Painful Conditions of the Stifle and Elbow in Dogs

Principal Investigator: Diego A. Portela, DVM, PhD; University of Florida

Develop a reliable technique to approach sensory nerves of the knee and elbow allowing for future studies on the effectiveness of local and regional nerve blocks to treat osteoarthritis.

See our full research grants portfolio at akcchf.org/research.

Canines & Cocktails

Join the fun at Canine & Cocktails, CHF's annual gala to celebrate achievements in canine health research. The event will be held Thursday, December 16, 2021 in conjunction with the AKC National Championship in Orlando, FL. For more information and to purchase tickets, visit akcchf.org/caninesandcocktails. We hope to see you there!



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