Celebrating its 25-year anniversary, the AKC Canine Health Foundation stands proudly today as a radiant leader of canine health research. This nonprofit organization holds tenure as the largest funder in the world of health research exclusively for dogs. Its pioneering spirit is alive today and the future promises good things are coming.

When Carillon Bedlington Terrier breeder Lucy Heyman bred her first litter of the rare lamblike breed in 1981, copper toxicosis affected 75 percent of the breed. The fatal inherited disease was a thorn in her side that ignited her passion and led her to build her breeding program on health advocacy.

“I endured my share of losses due to copper toxicosis,” says Heyman, an AKC Platinum Breeder of Merit and AKC delegate for the Bedlington Terrier Club of America. Copper concentrations in affected Bedlingtons could be more than 15 times the normal amount, resulting in severe liver disease. Without treatment, most dogs died at 3 to 7 years of age. When geneticists at Michigan State University began studying the blood samples and pedigree information from anyone who would contribute to the cause.

Using DNA markers generated by sequencing many parts of the canine genome in a first-of-its-kind study, the researchers identified a genetic marker linked closely to the mutation. The discovery led to a linked marker test for the autosomal recessive disorder. Vilma Yuzbasiyan-Gurkan, PhD, now professor of microbiology and molecular genetics and small animal clinical sciences at Michigan State, initiated the study with geneticist George Brewer, MD, of the University of Michigan.

The test empowered breeders to identify unaffected, affected and carrier dogs. They could selectively breed away from producing affected dogs. Importantly, they could breed quality carriers to non-carrier dogs and then replace the carrier parent with a quality non-carrier offspring in one or two generations. This breeding strategy maintained breed quality without producing affected dogs and helped to promote genetic diversity by reducing the risk of a genetic bottleneck and the proliferation of deleterious genes caused by a reduction in breed population size.

In 1995, Carillon produced the first Bedlington Terrier identified as a non-carrier of copper toxicosis. CH Carillon Fuzzy Logic came from a selective breeding in which Heyman used the linked marker test.

At the inaugural AKC Canine Health Foundation National Parent Club-Canine Health Conference in 1999 in St. Louis, Heyman met the lead investigators, including Dr. Yuzbasiyan-Gurkan, with whom she had corresponded frequently over the years. “It was wonderful to talk with them in person after many phone calls,” Heyman says. In 2006, a direct DM test became available for copper toxicosis in Bedlington Terriers. Funded by the AKC Canine Health Foundation (CHF), researchers at the Animal Health Trust in the United Kingdom identified a deletion mutation eliminating a major section of the copper metabolism gene, COMMD.

Today, fewer than 5 percent of Bedlington Terriers are affected by copper toxicosis. Heyman estimates. Copper toxicosis in Bedlington Terriers is a success story as told by the dramatic reduction in dogs dying early from liver disease.

Founded by the American Kennel Club in 1999 with a $3.29 million grant, the AKC Canine Health Foundation in 2020 is providing $3.29 million in funding. This supports 23 program areas, ranging from blood disorders, dermatology and allergic diseases to infectious diseases, oncology and ophthalmology.

Altogether, the AKC Canine Health Foundation has provided over $58.7 million in support of more than 1,030 research and educational grants. Over $21 million has come from AKC donations. CHF aims to advance the health of all dogs and their owners, a mission that resonates universally with dog lovers and aids fundraising efforts. The mantra is to prevent, treat and cure canine diseases.

“The AKC Canine Health Foundation has been integral to the evolution of canine health, including mapping the canine genome and developments in canine cancer; tick-borne diseases and copper toxicosis,” Heyman estimates. Copper toxicosis in Bedlingtons is a success story as told by the dramatic reduction in dogs dying early from liver disease.

The AKC Canine Health Foundation aims to advance the health of all dogs and their owners. The AKC Canine Health Foundation celebrates 25 years of advancing the health of dogs.
A Boxer named "Tasha" was chosen for the canine genome sequence, which was completed in 2008. The advantage of using this particular Boxer was that she had reduced amounts of variation across her genome. The genome sequence determined the 2.4 billion letters that make up the blueprint for how a dog is formed and functions. Known as the silent killer, hemangiosarcoma (HSA) is often not detectable until a dog suffers internal bleeding or even sudden death. Since 1995, CHF has provided grants to support research into HSA. Insightful research at North Carolina State University has found a possible link between the vector-borne Bartonella and HSA. As Bartonella invades and hides inside the cells of blood vessels, it may trigger an infectious state that leads to HSA. A newly funded HSA grant, known as the Shine On continuation study, will enable researchers at the University of Minnesota to follow 209 Portuguese Water Dogs, deemed highly affected breeds, over their lifetime. In the initial Shine On study that was developed in 2007, researchers detected cells associated with HSA in a dog’s circulation and used artificial intelligence (AI) to analyze the results.

In the lifetime study, researchers will use AI to detect early-stage HSA based on the Shine On SuspectOr (SOS) blood test. Dogs will be assigned a risk category for developing HSA, and those considered at high risk will be treated with the drug eBAT to prevent sudden death before the disease progresses.

The testing data is pertinent to their breed and to their lines of origin. As with copper toxicosis in Bedlington Terriers, the object is to avoid genetic testing. “While scientific advances in canine DNA testing are exciting, they also have to be applied with caution,” says Eddie Dziuk, OFA Chief Operating Officer and member of the AKC Delegates Canine Health Committee. "The dog community and even veterinary professionals often struggle with questions such as test purpose, accuracy, breed specificity/interpretation, and the cost of testing. This is a long-awaited and needed resource to address today's most pressing questions and make better use of these powerful tools to breed healthy dogs.”

Novel funding for the first Shine One study involved a three-way funding team comprised of the Golden Retriever Foundation, the AKC Canine Health Foundation, and the Portuguese Water Dog Foundation. CHF, which administered the first grant and followed its scientific progress, is helping to fund the new grant. The Portuguese Dog Health Initiative, begun in 2017, has both enjoyed funding boosts with AKC matching gift programs. Studies of tick-borne diseases, including Lyme disease, the most common tick-transmitted disease in the U.S., are the expanding geographical range of tick species and the increased disease incidence among dogs and humans. Co-infections, or simultaneous detection with multiple vector-borne agents, are being investigated for accurate diagnosis and early and comprehensive treatment. Efforts to understand why some tick-infected dogs remain asymptomatic are also part of this work.

Research addressing epigenetic and epigenetic disorders in dogs, is evaluating the effectiveness of dietary supplements in treating affected dogs, as well as the underlying genetics and disease mechanisms. The role of the gastrointestinal tract and the microbiome in the development and subsequent treatment of epilepsy also is being investigated. The knowledge gained from canine epilepsy research, particularly of dogs that are unresponsive to anti-epileptic drugs, may help researchers better understand human epilepsy.

**WHITE PAPER ON GENETIC TESTING**

The recent release of the “Review of the Current State of Genetic Testing,” a project co-funded by the AKC Canine Health Foundation and the Orthopedic Foundation for Animals (OFA), depicts a commitment to help dog breeders, owners and veterinarians interpret and understand genetic test results. The inspiration was written at the University of California-Davis by Liza Gershony, a project co-funded by the AKC Canine Health Foundation. "Through this effort, AKC Canine Health Foundation and its partners aim to provide information and guidelines to help people make informed decisions about their dogs."

As the AKC Canine Health Foundation (CHF) celebrates its 25-year anniversary, here are some ways you can support the important work of this nonprofit organization.

• The CHF Board of Directors is matching donations up to $150,000 from new and lapsed donors in support of the 25th Anniversary Endowment Campaign. Providing financial stability and sustainability for the research mission and organizational needs of the Foundation, the endowment campaign ensures that CHF will continue to positively impact canine health for years to come.

• A planned gift to the Heritage Society helps to secure the future of your beloved dog breed and advance the mission of CHF so that all dogs live long, healthy lives. By including CHF in your estate plans, you can be sure that your legacy honors your best friend.

• Participate in the Purina Parent Club Partnership (PPCP) Program to help your parent club fundraise for canine health studies that support your breed. PPCP provides funding directly to participating parent clubs and to AKC members, including AKC Canine Health Foundation, as a part of its mission to raise awareness of canine health issues and to support the health of dogs worldwide.

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Heyman has attended every AKC Canine Health Foundation National Parent Club Canine Health Conference and frequently volunteers to work at the CHF booth at events. She is a member of the CHF’s Heritage Society, having included a planned gift in her estate. “I am absolutely passionate about the AKC Canine Health Foundation,” Heyman says. “I love telling people about the good work of the Foundation and encourage them to donate and become members. For me, the joy of breeding healthy dogs that live the best lives possible wouldn’t be possible without the AKC Canine Health Foundation.”

The AKC and the Foundation are committed to providing new, scientifically sound and evidence-based information and guidelines for dog breeders and owners to assist in the ongoing mission to raise awareness of canine health issues and to support the health of dogs worldwide.