

Advances in Canine Bone Cancer Research

By Sharon Albright, DVM, CCRT
Manager of Communications & Veterinary Outreach,
AKC Canine Health Foundation

New treatments are needed for canine bone cancer. Current treatment options include surgical removal of the tumor and chemotherapy to treat metastatic disease (cancer spread to distant parts of the body). Unfortunately, surgery can have complications, not all dogs are good candidates for surgery due to other health problems, and many affected dogs develop metastatic disease and only survive for one year or less after diagnosis.

Since 1995, the AKC Canine Health Foundation (CHF) and its donors have invested more than \$3 million in 42 studies to improve outcomes for dogs with bone cancer. Since canine bone cancer is similar to human adolescent bone cancer, what we learn about dogs could also help children affected by this devastating disease. There is exciting progress toward that goal.

A recent study conducted by 2016 CHF Clinician-Scientist Fellow Dr. Shirley Chu found that genetic mutations in canine bone cancer cells were similar even in different locations within a patient. However, the mutations were unique to each individual dog studied. Additional research could explore if these mutation differences indicate subtypes of bone cancer that should be studied to offer more targeted and effective treatments and a more accurate prognosis for affected dogs.

Another study showed that a unique form of bone cancer that strikes Irish Wolfhounds at a young age (less than 5 years old) is highly heritable with 65% of disease development attributed to genetic factors. Future studies will explore the specific genetic mutations that contribute to this form of cancer.

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In This Issue

Advances in Canine Bone Cancer Research

Purina Parent Club Partnership Program

Pet Cancer Awareness Month

Donor Spotlight: Molli and Doug Cook

Research Grant Highlights

Calendar of Events

Where to Find Us

June 15-17
ACVIM Forum
Philadelphia, PA



Advances in Canine Bone Cancer Research *continued*

Investigators at Tufts University described the DNA of canine bone cancer cell cultures, confirming that these cultured cells adequately represent natural disease. This means that scientists can study these cell cultures to see which chemical pathways are disrupted by cancerous mutations and could be targeted by new treatments.

Finally, an exciting line of study at the Virginia-Maryland College of Veterinary Medicine is concentrating on a treatment protocol for canine bone cancer using the technology known as histotripsy. This focused ultrasound treatment mechanically disintegrates tumor tissue without affecting surrounding muscle or nerve cells. The treatment was first tested on bone cancer tissue samples removed from donor dogs. After this successful study, histotripsy was used to treat five client-owned dogs with suspected bone cancer. These clinical trial participants received standard limb amputation surgery 1-2 days after the histotripsy treatment. They showed no significant adverse effects from the treatment and microscopic examination showed that histotripsy effectively disintegrated the tumor tissue while sparing surrounding normal tissues.

Exploration of histotripsy as a new treatment for bone cancer continues, as CHF funding is helping scientists determine the best way to monitor response to treatment and how it impacts the immune system. Other newly awarded grants will examine interactions between bone cancer and immune system cells – exploring how immune cells gain access to important regions within bone tumors and if and how they are manipulated to help the tumor grow. Study also continues on the genetic mutations found in bone cancer cells and how we can use them to develop better tests and treatments. And the exciting prospect of a blood test for early detection of canine bone cancer is under development at the University of Minnesota.

Canine bone cancer is a devastating diagnosis for dogs and their families. But thanks to the dedication of CHF's donors and funded investigators, there is hope. Hope for better diagnostic tests. Hope for more successful and less invasive treatment options. And hope for longer, healthier lives for the dogs we love. Learn more about CHF-funded bone cancer research, including how you can help, at akcchf.org/osteosarcomaRPA.

Purina Parent Club Partnership Donation



Parent Club PARTNERSHIP

Since it began in 2002, the Purina Parent Club Partnership (PPCP) Program has provided over \$8.8 million for canine health research, breed rescue, and educational efforts to positively impact the general health and well-being of dogs.

The PPCP Program enables *Purina Pro Club* members to earn Purina Points by purchasing qualifying Purina pet foods and submitting proofs of purchase. An annual donation from Purina is shared between *Purina Pro Club* members' designated parent breed club and that breed club's Donor Advised Fund at the AKC Canine Health Foundation (CHF). During 2022, PPCP Program participation resulted in over \$95,000 donated toward CHF-funded canine health research. Thank you to all who participated! Learn more at akcchf.org/ppcp.



May is Pet Cancer Awareness Month

The AKC Canine Health Foundation (CHF) marks Pet Cancer Awareness Month in May to highlight the impact of its funded canine cancer research. Since 1995, CHF and its donors have invested more than \$17 million in almost 260 research grants to help scientists study cancer at the cellular level and provide breakthroughs that allow veterinarians to diagnose cancer earlier and treat it more effectively.

Since many canine cancers share characteristics with similar human cancers, what we learn in dogs may also help people affected by cancer. This translational oncology approach is a great example of CHF's commitment to One Health – a concept that recognizes the interconnected relationship between animal, human, and environmental health.

Newly awarded canine cancer research grants are funding studies to evaluate a new chemotherapy protocol for canine lymphoma, examine biomarkers of canine bone cancer, identify genetic mutations that influence the development of anal sac carcinoma, and more.

Follow us on social media [@AKCCanineHealth](#) and visit akcchf.org/caninecancer during Pet Cancer Awareness Month and year-round for the latest updates on CHF-funded canine cancer research.



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.

Donor Spotlight: Molli and Doug Cook

Molli and Doug Cook are dog lovers on a mission to improve our understanding of degenerative myelopathy (DM), a progressive neurologic disease in dogs with characteristics similar to amyotrophic lateral sclerosis (ALS), or Lou Gehrig's Disease, in humans. After their beloved Boxer Bubba was diagnosed with DM at 9 years of age, they felt helpless as he lost rear limb function because of the lack of effective treatments for this disease. "There was nothing we could do to slow the disease or stop it," Molli said.

The Cooks turned their frustration into action, creating Bubba's Buddies – a non-profit organization focused on finding a cure for degenerative myelopathy and helping families of dogs affected by DM. Over the past few years, they have raised money and awareness for the study of DM, including a partnership with Project DM, a collaborative network of canine DM researchers at multiple veterinary colleges. While talking with Project DM researchers, they learned about the AKC Canine Health Foundation (CHF) and knew they had another ally in the fight to improve the health of all dogs.

"Coming together to support research for DM has the potential to help thousands of dogs each year," Molli says. "What better way to impact the lives of other dogs and dog parents!"

Bubba's Buddies now sponsors DM research funded through the AKC Canine Health Foundation – demonstrating the power of collaboration to amplify their positive impact on canine health.

Thank you to Molli, Doug, Bubba, and all of Bubba's Buddies!



Recent CHF Grant Highlights

Grant 03140: Efficacy and Tolerability of Gelatin Tannate (Tasectan®) in Canine Parvovirus-infected Dogs

Principal Investigator: Ran Nivy, DVM; Koret School of Veterinary Medicine

Clinical trial of a drug that restores intestinal wall function to reduce hospitalization time, severity of clinical signs, and fatality rate in dogs with parvovirus.

Grant 03139: Riluzole as a Neuroprotectant in Canine Degenerative Myelopathy

Principal Investigator: Joan Coates, DVM, MS; University of Missouri

Evaluate a drug that counteracts the buildup of glutamate to preserve nerve cells in dogs with this progressive neurologic disease.

Grant 03051-A: Antimicrobial Resistance in the Canine Vaginal Microbiome

Principal Investigator: Erika Ganda, DVM, PhD; Pennsylvania State University

Use genomics to examine antibiotic resistance patterns in bacteria commonly found in the canine vagina to improve treatment protocols.

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

How You Can Help

Participate in canine health research! Canine health researchers throughout the country are looking for dogs to help them better understand disease. In some cases, you and your dog need to live close to the research institution. In other cases, you can participate no matter where you live. DNA samples submitted to the Canine Health Information Center (CHIC) DNA Repository are always needed.

Learn more at akcCHF.org/participate.



chf@akcCHF.org
888.682.9696

8051 Arco Corporate Dr, Suite 300
Raleigh, NC 27617

akcCHF.org

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