

Breast Cancer Not Welcome Here

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Breast cancer, known as mammary gland tumors in the dog, is the most common malignancy diagnosed in intact females. While males are rarely affected, more than 25% of intact females will develop a mammary tumor at some point in their life. Thankfully, only half of canine mammary tumors are malignant, but some of these malignant tumors can be quite aggressive and even fatal. Surgical removal of the palpable tumor is the treatment of choice. The prognosis for benign tumors is excellent but varies for different types of cancerous mammary tumors.

Canine mammary tumors and human breast cancer share similar clinical presentation, genetics, molecular marker expression, hormone dependency, and disease progression characteristics. Therefore, what we learn about the disease in one species may benefit both. This is one reason that a team of AKC Canine Health Foundation (CHF) funded investigators have been studying canine mammary tumors - from a new angle. The team is focusing not on the tumor cells themselves, but the environment in which the tumor lives and grows - known as the tumor microenvironment (TME). Treatments that alter the TME may be synergistic with standard chemotherapies that target the cancer cells. TME cells are more stable than actual cancer cells, and altering the TME may affect multiple types of cancer. But first, we must understand the TME.

Dr. Susan Volk and her team at Penn Vet are specifically studying collagen in the TME. Collagen is the most common molecule in the TME and it is believed that tumor cells use collagen to spread throughout the body and resist chemotherapy. To understand which collagen properties promote cancer, investigators compared the architecture and molecular features of collagen in normal mammary tissue, benign mammary tumors, and malignant
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Calendar of Events

Where to Find Us

April 22-24

Penn Vet Working Dog Conference
 Virtual

April 23-24

AKC Meet the Breeds
 Tampa, FL

June 23-25

ACVIM Forum
 Austin, TX

July 29 - August 2

AVMA Convention
 Philadelphia, PA

Upcoming Webinars

Join us for a canine cancer webinar series in May.

Stay tuned for registration details and additional 2022 webinars.



Breast Cancer Not Welcome Here *continued*

mammary tumors. They found that collagen fibers within cancerous mammary tumors are more varied in size and tend to be wider and more cross-linked than those found in normal and benign tissue. This more rigid collagen structure may favor tumor growth and spread. Collagen molecules are also altered in predictable ways in cancerous tissues and the genes responsible for creating these alterations are correspondingly more active.

These results confirm the similarities between canine and human breast cancer and provide critical information about how tumor-favorable conditions develop in the dog. Ongoing study will further explore how these TME changes direct tumor behavior and hopefully identify molecules and processes that we can disrupt to treat and prevent cancer spread. Dr. Volk and her team are currently developing a diagnostic panel to help identify which canine mammary tumor patients are at greater risk for cancer spread and therefore merit more aggressive treatment. They are also developing a collagen implant that can be used during tumor removal surgery to optimize healing and prevent tumor regrowth and spread.

This work shows great promise in providing a more accurate prognosis for dogs with mammary gland tumors as well as new treatment options. It is a great example of CHF's commitment to One Health and comparative research – recognizing that knowledge gained about canine disease can also benefit humans and vice versa. Learn more about these and additional CHF-funded canine cancer studies at akcchf.org/caninecancer.

A Win-Win Scenario

Canine mammary tumor samples used in these CHF-funded studies were collected from dogs participating in the Penn Vet Shelter Canine Mammary Tumor Program (PVSCMTP). This program provides cancer staging and surgical treatment to shelter dogs with mammary gland tumors. Once their cancer is addressed, these dogs are placed in foster or permanent homes. It's a win for the investigators to study naturally occurring canine mammary tumors. And it's a win for the shelter dogs who get their cancer treated, making them as healthy as possible when they join their new homes.



May is Pet Cancer Awareness Month

Once again in 2022, the AKC Canine Health Foundation will mark Pet Cancer Awareness Month by highlighting the impact of our funding for past and present canine cancer research. Already this year, CHF has awarded \$981,000 for 12 new canine cancer studies exploring:

- **More accurate diagnostics for soft tissue sarcoma, cutaneous mast cell tumors, and lung tumors,**
- **New treatments for hemangiosarcoma, lymphoma, and bone cancer,**
- **And more.**

Follow us on Facebook and visit akcCHF.org/caninecancer for more information about CHF's canine cancer research, including ways that you can support and participate in this important research.



Purina Parent Club Partnership Program

The Purina Parent Club Partnership (PPCP) Program enables *Purina Pro Club* members to designate a parent breed club within the program and accrue Purina Points by purchasing qualifying Purina pet foods. An annual donation from Purina is shared between the parent breed clubs and their Donor Advised Funds (DAF) held at the AKC Canine Health Foundation. In 2021, participating clubs earned \$99,230 for their DAFs held at CHF to support important work happening now for dogs everywhere.

"We are proud to begin the 20th year of the PPCP Program," says Scott Smith, CHF Board member and Managing Director of the Purina Professional Engagement Team. "The program's success is tied to the commitment of dog breeders and owners who choose to support their breed's health through PPCP and CHF-funded research. The shared goals and collaborative efforts of Purina and CHF are providing a healthy future for all dogs."

Since it began in 2002, PPCP has provided over \$8.6 million for canine health research, breed rescue, and/or educational efforts to positively impact the general well-being of dogs. Learn more at akcCHF.org/ppcp.



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: Irish Setter Club of Milwaukee

The Irish Setter Club of Milwaukee, Inc. (ISCM) was founded in 1949 to “promote, protect and strive for perfection” within the Irish Setter breed. In addition to hosting conformation, FastCAT, and field trial events, the club has been a dedicated supporter of the AKC Canine Health Foundation. Since 2004, under the leadership of Raffle Chair Marti Donnell, the ISCM has contributed more than \$68,000 to CHF in support of research projects studying cancer, cardiology, epilepsy, and more.

“We know that heart-wrenching health crises occur in all dogs, not just Irish Setters,” says Gwen Mazanetz, ISCM Treasurer. “That’s why our small club supports important canine health research through the AKC Canine Health Foundation. Our motto is ‘Help Us Help All Dogs.’”

Thank you to the Irish Setter Club of Milwaukee for their dedicated support of canine health research!



Recent CHF Grant Highlights

Grant 03028-A: Characterizing Immunohistopathology and Serum Immunoglobulin G in Immune-Mediated Chronic Hepatitis Dogs

Principal Investigator: Sarah Shropshire, DVM, PhD; Colorado State University

Characterize the immune features of immune-mediated chronic hepatitis and how they respond to cyclosporine treatment.

Grant 03009: Evaluating Accuracy for Identification of Sentinel Lymph Nodes in Dogs with Cutaneous MCT: A Comparison

Principal Investigators: Judith Bertran, DVM, MS and Natalie Worden, DVM; University of Florida

Compare the ability of imaging systems to detect cancerous cells in the lymph nodes of dogs with mast cell tumor (MCT).

Grant 02966: Corneal Cross-linking as Treatment for Corneal Ulceration - “Using Light to Save Sight”

Principal Investigator: Simon Pot, DVM; University of Zurich

A multi-site clinical trial to see if a corneal cross-linking procedure heals canine corneal ulcers faster and better than state-of-the-art medical therapy.

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

How You Can Help

Support the AKC Canine Health Foundation to help find better treatments, more accurate diagnoses, and an improved understanding of the mechanisms that cause disease in dogs. Whatever your capacity to give, there is a way for you to help. Learn more at akcchf.org/how-to-help.



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