

# *From CHF:* A Brighter Future

## *New Researchers Tackle New Strategies for Canine Bone Cancer*

*By Sharon M. Albright, DVM, CCRT*

We need new strategies to treat and even prevent bone cancer in dogs! Osteosarcoma, the most common form of bone cancer in dogs, is a tumor that usually affects the limbs of middle-aged to older,

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large-breed dogs and carries a dire prognosis. As cancerous cells replace the normal bone, causing swelling, pain, and increased risk of fracture, the need for innovative treatment strategies intensifies.

Standard treatment involves removing the primary tumor through amputation of the affected limb or various salvage techniques, plus chemotherapy to address cancer cells that have spread to other parts of the body. Unfortunately, less than half of dogs receiving standard treatment survive more than a year after diagnosis. Osteosarcoma in dogs shares many characteristics with the human form of this disease, typically diagnosed in adolescents. Given the striking parallels, our insights into canine bone cancer may have the potential to significantly advance our understanding and treatment approaches for both dogs and children.

Not only new ideas but also new researchers who can build on our current understanding of canine bone cancer and use evolving technologies to fight this devastating disease are needed to improve outcomes for affected dogs. Thankfully, AKC Canine Health Foundation (CHF)–funded investigators at the University of Minnesota are doing just that—testing bold new strategies to address bone cancer while training the next generation of canine health researchers!



*Julia Medland, DVM, MS, DACVIM*

## HELPING DOGS AND PEOPLE

One CHF-funded study is examining why dogs and children with immune cells inside their bone tumors survive longer than those whose immune cells remain outside of the tumors (CHF Grant 03015: The Immune and Molecular Landscape of Canine Osteosarcoma at the Single-Cell Level). This cutting-edge research is using DNA technology to pinpoint the specific types of immune cells and their precise location within the tumor. Understanding the immune landscape that leads to improved clinical responses is a deliberate step toward a brighter future for dogs facing this devastating disease.

Dr. Julia Medland is a newly appointed Assistant

Professor of Oncology at the University of Minnesota College of Veterinary Medicine contributing to this research. Originally from Australia, Medland was mentored by the study's Principal Investigator, Dr. Jaime Modiano, during her residency and invited to join the project team.

"Osteosarcoma is a frustrating cancer with a lot still unknown about it," says Medland. "The more we learn, the more complex and challenging the disease appears. We really need to reframe how we approach and treat the disease to benefit both dogs and people."

Medland plans to stay in a university setting where she can be active in clinical practice plus have ample opportunities to collaborate on more extensive research projects. "I like to stay busy in the clinic, but still contribute to research," she says. "I love to teach students both in the classroom and the clinic. Oncology is



*Caitlyn Callaghan*

poorly understood in veterinary medicine. I want to show students what is available for cancer treatment in companion animals, so they can take that with them no matter what they do in their career."

## YOUNG BLOOD

Those are important lessons that have been passed along to veterinary student Caitlyn Callaghan. Callaghan knew she wanted to specialize in oncology as soon as she entered veterinary school at the University of Minnesota. She secured a Veterinary Summer Scholars position in Modiano's lab during her summers, where she learned sample processing techniques for this bone cancer study and shadowed Medland in the clinic. "It was a great experience and solidified my interest in oncology," Callaghan says.

Since her father is a human oncologist, Callaghan grew up with exposure to the science of cancer. "Cancer treatment options for dogs are definitely increasing," she notes. "I want to make sure dog owners know that they have access to these many options."

Callaghan also attended the 2023 AKC Canine Health Foundation National Parent Club Canine Health Conference, where she learned about breed clubs and their dedication to supporting canine health research through CHF. "It was a positive introduction to working

with purebred dog club members and their unique breed health needs."

Callaghan will present about the conference experience to her peers in Minnesota so others can learn what organizations like CHF, the American Kennel Club, and the Orthopedic Foundation for Animals provide to the veterinary profession.



Courtney Labé

## LIFELONG LEARNING

Another Veterinary Student Scholar, Courtney Labé, has contributed to the bone cancer immunology study as well as a CHF-funded study seeking to develop a blood test for early detection of bone cancer (CHF Grant 03032-MOU: Early Detection of Canine Osteosarcoma). Given the challenges of effectively treating canine bone cancer, this study focuses on detection of the earliest cancer cell changes and will help scientists develop strategies to prevent the abnormal cells from developing into a full-fledged tumor.

"Prior to veterinary school, I worked as an assistant to the internal medicine and oncology department at a referral hospital and fell in love with clinical oncology," Labé says. "I entered veterinary school with a desire to contribute to the small animal medical oncology community. It has its challenges, but I don't think there's a more rewarding or exciting field out there."

Labé plans to pursue specialty training in medical oncology following graduation. "I'm grateful for CHF's support of ongoing projects such as the Canine Osteosarcoma Early Detection study," she continues. "I think it's important for veterinary students to view continual engagement with research as part of the lifelong learning involved in veterinary medicine. I am thankful to be surrounded by classmates and instructors who value continued improvement in patient outcomes and critical analysis of new research."

## INNOVATION AND ACCELERATION

Exciting developments mark this ongoing bone cancer research. The bone cancer immunology study has wrapped up its DNA sequencing phase, while the early detection study is actively collecting samples. Thanks to Modiano's entire laboratory team—including students, residents, professors, technicians, and more—progress is being made against this devastating cancer. CHF and its donors know that bold new strategies and attracting bright minds into canine health research are needed to continue the fight against cancer and many other diseases affecting our beloved dogs.

"I am fortunate that these projects merge two of the best parts of my job: working with and for dogs and working with brilliant and motivated people," Modiano says. "Bone cancer is a dreadful disease,



*Jaime Modiano, VMD, Ph.D.*

and far too common in large and giant dogs. Our projects are addressing the impact of this disease by developing strategies for prevention, with the intent of reducing its overall incidence, and by improving our understanding for how we can use the immune system to improve treatment outcomes.

"One way in which we find strength and creativity to innovate and accelerate progress is through diversity and inclusion. Our team members come from many walks of life, and their individual life experiences and motivation are a constant source of new ideas. Fostering their relationship with CHF and the community of dog lovers who support us reinforces their enthusiasm and brings even greater hope for the health and wellbeing of future generations of dogs."—**S.M.A.**

*To learn more about CHF-funded cancer research and educational grants, visit* akc-chf.org/research.

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