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Dog's Best Friend

Stephanie Jacques

Kansas State University

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Dog’s best friend: Humans are fetching up new ideas to improve health of canine companions

By Stephanie Jacques

A DOG’S SMILE — THAT DROOLING, BAD-BREATH SMILE — warms a dog lover’s heart and begs for a pat on the head or a scratch behind the ears.

Kansas State University researchers and veterinarians are giving that and more to improve health for man and his best friend.

College of Veterinary Medicine researchers are extending pets’ quality of life while learning more about diseases that cross the species barrier between animals and people, such as breast cancer, bone cancer and arthritis.

“Similarly to how diseases in animals have been studied to advance human health, what we know about human diseases also can be applied to animal health,” said Denver Marlow, university veterinarian and director of K-State’s Comparative Medicine Group.

“There are many noninfectious, naturally occurring diseases that affect both animals and humans.”

According to researchers in the College of Veterinary Medicine, understanding and treating dogs with naturally acquired diseases can provide insights into human diseases since dogs have cellular similarities to humans, often share human environments and can share diseases.

“It all goes back to One Health,” Marlow said. “What we learn about animal health helps advance veterinary and human medicine, as well as the discovery of new vaccines, drugs or therapies for treating or preventing diseases in animals and humans.”

The One Health concept that human health is linked to animal and environmental health encourages collaboration among human health professionals, veterinarians and scientists on various stages of research — basic research in a lab, model system testing, safety testing and, finally, clinical trials.

Among those working on health-related research in the college are three researchers who are at various research stages and who are specifically investigating diseases that affect dogs and humans.
As a veterinary student working in clinics, I’ve seen several dogs get cancer — nearly every one above the age of 10 — so I wanted to make a change,” Liu said.

Nguyen and Liu said the targeted approach could prolong dogs’ quality of life and give a comparison to what the therapy can do for humans.

“If a dog gets cancer at age 10 and we uncover death but we can prolong their quality of life,” Nguyen said. “This is an approach, a treatment, that could save two — that’s worth in dog time, that’s long time. In humans, a comparable time frame would give more time to a patient for personal care.”

Give a dog a bone-seeking chance

Built into a veterinarian's DNA is a love for animals and a desire to improve their health and wellbeing. Raelene Wouda, assistant professor of clinical sciences, is such a soul who is trying new treatment approaches to give her patients and their owners hope.

Wouda and her colleague Mary Lynn Haggardt, associate professor of clinical sciences, oversee an active clinical trials program at K-State’s Veterinary Health Center. One of their current clinical trials is enrolling pet dogs diagnosed with osteosarcoma, a type of primary bone cancer in dogs and people, particularly children and young adults.

“Clinically and genetically, osteosarcoma is indistinguishable between dogs and humans,” Wouda said. “Any treatment we develop that shows clinical benefit in our canine patients can therefore be translated to provide benefit for children with osteosarcoma.”

The osteosarcoma clinical trial at K-State is part of a multi-institutional trial overseen by the National Institutes of Health National Cancer Institute’s Comparative Cancer Research Center and its comparative oncology program.

Nationwide, the clinical trial has now enrolled more than 150 of the 200 dogs needed to enroll enough to study the therapeutic arm of the cancomb study, a molecularly targeted drug that modifies the patient’s immune system. Preliminary research suggests that rapamycin might inhibit the spread of disease to the lungs, which is common in the late stages of osteosarcoma. Wouda hopes the osteosarcoma clinical trial at K-State’s Veterinary Health Center is paving the way for targeted therapeutics that are needed in veterinary medicine.

“Currently, a variety of osteosarcoma treatments are available, but none are ideal,” Wouda said. “Osteosarcoma clinical trials are necessary to develop treatments that provide benefit for our canine patients. We hope that by adding rapamycin to a patient’s treatment plan, we are providing an additional way to kill or inhibit the tumor cells in the dogs and improve their survival time, or even achieve a cure in a certain population of patients,” Wouda said.

According to Wouda, a growing number of pet owners are seeking high-level medical care for their pets. They might choose to participate in clinical trials for a variety of reasons, including access to novel therapies. Clinical trials are especially attractive to owners whose pets have no response to standard-of-care treatment or for those that the existing therapies do not achieve ideal outcomes, she said. The willingness increases the chances of success for comparative studies like the osteosarcoma trial that will benefit both cancer and human health.

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“Osteosarcoma is an aggressive disease and we need to gain new insights into treatments,” Wouda said. “Through these clinical trials, we can learn about new treatments that are effective for dogs, but also for people.”

Wouda added, “We are excited to be involved in this study because of the potential to improve outcomes for our canine patients and the clinical benefit in our canine patients can therefore be translated to provide benefit for children with osteosarcoma.”