

# Veterinary oncologists advance cancer drugs for humans and pets

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As more pet owners are choosing to treat their pets' cancers through advanced medicine, veterinarians gain valuable knowledge about the progression and treatment of cancers in humans through pet trials of new drugs. To help organize nationwide trials in tumor-bearing dogs using cancer drugs, the National Cancer Institute has launched the Comparative Oncology Trials Consortium (COTC). Faculty members in the University of Missouri's Scott Endowed Program in Veterinary Oncology participated in COTC's first trial.

"Spontaneous cancers in companion dogs offer a unique, and largely unexplored translational research opportunity for cancer imaging, device and drug development," said Carolyn Henry, professor and director of the Scott Endowed Program in Veterinary Oncology in the MU College of Veterinary Medicine. "Comparative oncology at MU has a long history of advancing cancer treatments in both humans and dogs. In the first COTC trial, we examined a novel drug-delivery method that disrupts blood flow to the tumors but not to the surrounding tissue. The results were effective, and we observed a dramatic decrease in the size of the tumor in one of our patients."

In the study, veterinary oncologists investigated the efficiency of a novel method to deliver the gene for TNF- $\alpha$  to tumor blood vessels. TNF- $\alpha$  is protein made by the body naturally that has anti-tumor effects. Because of the TNF- $\alpha$  protein's toxicity, it cannot be administered through the bloodstream. The investigators found that the TNF- $\alpha$  gene could be targeted to the tumor using a bacteriophage-based delivery system.

Bacteriophage is a virus that can be engineered to target and infect tumor blood vessel cells. This targeted delivery system mitigated the side effects that are seen when the protein is administered systemically. The observations provided insight about the proper dosage of TNF- $\alpha$  to treat both dog and human patients, Henry said.

"Rodent models do not always exhibit the complex relationships between drug exposure and necessary biological changes in tumor tissue that exist in humans," Henry said. "This study provided unique information about the safety of this targeted TNF- $\alpha$  therapy that could not have been demonstrated with rodent animal studies."

The MU Scott Endowed Program in Veterinary Oncology provides many opportunities for translational research. One current project includes collaborating with Valco Instruments, which manufactures various products for the analytical industry, and IsoTherapeutics Group LLC, a company that develops novel diagnostic and therapeutic agents for the treatment of severe diseases, to develop a new technique that improves the administration of radiopharmaceuticals to treat dogs with bone cancer. The new technique shows promise in reducing the negative side effects of the therapy. Canine osteosarcoma, or bone cancer in [dogs](#), is very similar to bone cancer in children.

Source: University of Missouri-Columbia ([news](#) : [web](#))

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