

**THERE'S HOPE.** Trilly, a 9-year-old Gordon setter, is part of a cancer vaccine study at the University of Wisconsin-Madison School of Veterinary Medicine.

## ONCOLOGY

# Clinical Trial Tests Universal Vaccine Against Canine Cancer

A 9-year-old Gordon setter named Trilly and a 9-year-old rat terrier mix named Norton were the first 2 dogs to receive a vaccine intended to protect them from cancer.

“We’re testing a totally novel way of creating an anti-cancer immune response,” says David Vail, a professor and board-certified oncologist at the University of Wisconsin-Madison School of Veterinary Medicine. “The holy grail would be to prevent cancer as opposed to waiting for it to start and then treating it.”

Cancer is the number 1 cause of illness and death in the aging dog population, with approximately 1 out of every 3 dogs affected and 6 million new cancer diagnoses made in dogs each year.

More than 800 patients are enrolled in the Vaccination Against Canine Cancer Study, making it the largest clinical trial conducted to date for canine cancer. The vaccine will target several cancers common to dogs, including lymphoma, osteosarcoma, hemangiosarcoma, and mastocytomas. The UW School of Veterinary Medicine is 1 of 3 participating institutions.

“The vaccine may not be effective, but this is probably the only approach to this type of vaccine, so we feel we have to try it,” says Stephen Albert Johnston, professor

Photo courtesy University of Wisconsin School of Veterinary Medicine



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**BRIEF SUMMARY:** Before using Coraxis™, please consult the product insert, a summary of which follows:

**WARNING**  
**DO NOT ADMINISTER THIS PRODUCT ORALLY**  
 • For the first 30 minutes after application ensure that dogs cannot lick the product from application sites on themselves or other treated animals.  
 • Children should not come in contact with application sites for two (2) hours after application.  
 (See Contraindications, Warnings, Human Warnings, and Adverse Reactions, for more information)

**CAUTION:** Federal (U.S.A.) Law restricts this drug to use by or on the order of a licensed veterinarian.

**INDICATIONS:** CORAXIS is indicated for the prevention of heartworm disease caused by *Dirofilaria immitis*. CORAXIS is also indicated for the treatment and control of the following intestinal parasites:

Intestinal Parasite	Intestinal Stage			
	Adult	Immature Adult	Fourth Stage Larvae	
Hookworm Species	<i>Ancylostoma caninum</i>	X	X	X
	<i>Uncinaria stenocephala</i>	X	X	X
Roundworm Species	<i>Toxocara canis</i>	X		X
	<i>Toxascaris leonina</i>	X		
Whipworm	<i>Trichuris vulpis</i>	X		

**CONTRAINDICATIONS:** Do not administer this product orally. (See WARNINGS.) Do not use this product (containing 2.5% moxidectin) on cats.

**WARNINGS:** For the first 30 minutes after application: Ensure that dogs cannot lick the product from application sites on themselves or other treated dogs, and separate treated dogs from one another and from other pets to reduce the risk of accidental ingestion. Ingestion of this product by dogs may cause serious adverse reactions including depression, salivation, dilated pupils, incoordination, panting, and generalized muscle tremors. In avermectin sensitive dogs,\* the signs may be more severe and may include coma and death.<sup>†</sup>

\* Some dogs are more sensitive to avermectins due to a mutation in the ABCB1 gene (formerly MDR1 gene). Dogs with this mutation may develop signs of severe avermectin toxicity if they ingest this product. The most common breeds associated with this mutation include Collies and Cattle crosses.  
<sup>†</sup> Although there is no specific antagonist for avermectin toxicity, even severely affected dogs have completely recovered from avermectin toxicity with intensive veterinary supportive care.

**HUMAN WARNINGS:** Not for human use. Keep out of the reach of children.

Children should not come in contact with application sites for two (2) hours after application. Causes eye irritation. Harmful if swallowed. Do not get in eyes or on clothing. Avoid contact with skin. Exposure to the product has been reported to cause headache, dizziness, and redness, burning, tingling, or numbness of the skin. Wash hands thoroughly with soap and warm water after handling.  
 If contact with eyes occurs, hold eyelids open and flush with copious amounts of water for 15 minutes. If eye irritation develops or persists, contact a physician. If swallowed, call poison control center or physician immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or physician. People with known hypersensitivity to benzyl alcohol or moxidectin should administer the product with caution. In case of allergic reaction, contact a physician. If contact with skin or clothing occurs, take off contaminated clothing. Wash skin immediately with plenty of soap and water. Call a poison control center or physician for treatment advice.  
 The Safety Data Sheet (SDS) provides additional occupational safety information. For a copy of the Safety Data Sheet (SDS) or to report adverse reactions call Bayer Veterinary Services at 1-800-422-9874. For consumer questions call 1-800-255-6826.

**PRECAUTIONS:** Do not dispense dose applicator tubes without complete safety and administration information.

Use with caution in sick, debilitated, or underweight animals. The safety of CORAXIS has not been established in breeding, pregnant, or lactating dogs. The safe use of CORAXIS has not been established in puppies and dogs less than 7 weeks of age or less than 3 lbs body weight.

Prior to administration of CORAXIS, dogs should be tested for existing heartworm infection. At the discretion of the veterinarian, infected dogs should be treated with an anthelmintic to remove adult heartworms.

CORAXIS is not effective against adult *D. immitis*. (See ANIMAL SAFETY - Safety Study in Heartworm-Positive Dogs.)

**ADVERSE REACTIONS:** Since CORAXIS contains 2.5% moxidectin, studies that demonstrated the safe use of a topical solution containing 2.5% moxidectin + 10% imidacloprid were acceptable to demonstrate the safety of CORAXIS.

**Field Studies:** Following treatment with a topical solution containing 2.5% moxidectin + 10% imidacloprid or an active control, dog owners reported the following post-treatment reactions:

OBSERVATION	Moxidectin + Imidacloprid n = 128	Active Control n = 68
Pruritus	19 dogs (14.8%)	7 dogs (10.3%)
Residue	9 dogs (7.0%)	5 dogs (7.4%)
Medicinal Odor	5 dogs (3.9%)	None observed
Lethargy	1 dog (0.8%)	1 dog (1.5%)
Inappetence	1 dog (0.8%)	1 dog (1.5%)
Hyperactivity	1 dog (0.8%)	None observed

During a field study of a topical solution containing 2.5% moxidectin + 10% imidacloprid using 61 dogs with pre-existing flea allergy dermatitis, one (1.6%) dog experienced localized pruritus immediately after product application, and one investigator noted hyperkeratosis at the application site of one dog (1.6%).

**Laboratory Effectiveness Studies:** One dog in a laboratory effectiveness study experienced weakness, depression and unsteadiness between 6 and 9 days after application of a topical solution containing 2.5% moxidectin + 10% imidacloprid. The signs resolved without intervention by day 10 post-application. The signs in this dog may have been related to peak serum levels of moxidectin, which vary between dogs, and occur between 1 and 21 days after product application.

The following clinical observations also occurred in laboratory effectiveness studies following application of a topical solution containing 2.5% moxidectin + 10% imidacloprid and may be directly attributed to the drug or may be secondary to the intestinal parasite burden or other underlying conditions in the dogs: diarrhea, bloody stools, vomiting, anorexia, lethargy, coughing, ocular discharge and nasal discharge. Observations at the application sites included damp, stiff or greasy hair, the appearance of a white deposit on the hair, and mild erythema, which resolved without treatment within 2 to 48 hours.

**ANIMAL SAFETY:** In a controlled, double-masked, field safety study, a topical solution containing 2.5% moxidectin + 10% imidacloprid was administered to 128 dogs of various breeds, 3 months to 15 years of age, weighing 4 to 157 pounds. The moxidectin + imidacloprid topical solution was used safely in dogs concomitantly receiving ACE inhibitors and anticonvulsants, antihistamines, antimicrobials, chondroprotectants, corticosteroids, immunotherapeutics, MAO inhibitors, NSAIDs, ophthalmic medications, sympathomimetics, synthetic estrogens, thyroid hormones, and urinary acidifiers. Owners reported the following signs in their dogs after application of moxidectin + imidacloprid topical solution: pruritus, fleshy/greasy residue at the treatment site, medicinal odor, lethargy, inappetence and hyperactivity. (See ADVERSE REACTIONS.) NADA # 141-417. Approved by FDA

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and director of the Center for Innovations in Medicine at Arizona State University, who developed the technology behind the vaccine. “The implications of success would be quite large for dogs and people.”

The trial is slated to run over 5 years. Cancer-free, healthy dogs between the ages of 6 and 10 will be randomized to receive either a series of the investigational vaccine or placebo vaccines. (In fact, researchers don't know which version Trilly and Norton received.) Two sets of vaccines will be given every 2 weeks, for a total of 4 treatments, and then annually. ■

**ANIMAL RESEARCH**

**USDA Says Cats Will No Longer Be Used in Deadly Research Tests**

The U.S. Department of Agriculture's (USDA) Agricultural Research Service (ARS) ended a controversial food-tasting testing practice that has been responsible for the deaths of more than 3000 cats since 1982. USDA officials said toxoplasmosis research will no longer use cats to study the effects of the parasite.

The ARS used kittens to study toxoplasmosis by feeding them raw meat, and putting the animals down once the parasite harvested in their system and their infected feces had been obtained.

According to the USDA and Centers for Disease Control, toxoplasmosis is the leading cause of death due to food-borne illness in the United States, though its rates have been cut in half since the ARS began its research into the disease.

Lawmakers in Congress had been pressuring the USDA to end the testing. Congressman Jimmy Panetta (D-CA) and Senator Jeff Merkley (D-OR) sponsored the Kittens in Traumatic Testing Ends Now Act (KITTEN Act) that sought to end taxpayer funded experiments on cats. “I commend the USDA for their decision to end this type of testing on kittens,” Panetta's office said in a statement.

The USDA said no cats have been infected for research purposes on the premises of any ARS facility since September 2018. ■

**ORGANIZATION NEWS**

**AVMA Task Force Will Look at Ways to Promote the Utilization of Veterinary Technicians**

An American Veterinary Medical Association (AVMA) task force has been convened to develop a plan to improve veterinary technician utilization. Among the issues the group will tackle are how to encourage the consistent use of credentialed veterinary technicians as part of a health care team, the lack of recognition for technicians, the differences between employees trained on the job and credentialed technicians, and the high turnover rates, low job satisfaction, and low wages for technicians.

The 10-member task force has until Dec. 31, 2019, to provide a report to the AVMA board of directors. **TPV**