



*Southern Oregon*  
**VETERINARY SPECIALTY CENTER**

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## DID YOU KNOW?

Herding breed dogs such as Collies, Border Collies, and Old English Sheepdogs are at risk for a genetic defect leading to increased sensitivity and potential toxicity to many common drugs. It has been known for many years that the Collie and associated breeds are sensitive to ivermectin medications. Recently, the gene and mechanism causing this sensitivity have been identified.

The gene, MRD1-1, which may be missing or only partially expressed in these dogs, encodes for a membrane protein called P-glycoprotein. This protein is responsible for binding to many commonly used drugs when they are prescribed at the recommended dosages considered safe for other dogs. Reduced dosages are recommended for patients having the genetic defect. It is, therefore, important to know which patients are affected. A partial list of these drugs is included in the table below. As you can see, these include common pain medications, antibiotics, chemotherapy medications and steroids.

Identifying this genetic defect in your patients as part of their general health profile is suggested. More medications will probably be added to the list as research continues.

Testing involves a simple mucosal cheek swab which may be submitted to the address below.

<p><b>ANTICANCER AGENTS:</b></p> <p>doxorubicin, vincristine, vinblastine, actinomycin-D</p>	<p><b>STEROID HORMONES</b></p> <p>aldosterone, cortisol, dexamethasone, methylprednisolone</p>
<p><b>OPIOIDS:</b></p> <p>loperamide, morphine, butorphanol</p>	<p><b>ANTIMICROBIALS:</b></p> <p>erythromycin, ketoconazole, itraconazole, tetracycline, doxycycline</p>
<p><b>IMMUNOSUPPRESSANTS:</b></p> <p>cyclosporine</p>	<p><b>CARDIAC DRUGS:</b></p> <p>digoxin, diltiazam, verapamil</p>
<p><b>MISCELLANEOUS:</b></p> <p>ivermectin, amitriptyline, acepromazine, odansetron</p>	

Veterinary Clinical Pharmacology Lab  
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[www.vetmed.wsu.edu/vcpl](http://www.vetmed.wsu.edu/vcpl)

Phone: 509-335-3745

Cost: \$60/dog or \$51 each for 5 or more samples. No refrigeration required. Ship by regular mail. Samples received by Tuesday afternoon will have results by Friday afternoon.

A more complete review of the breeds affected, mechanism of action and drugs of concern is included in the January issue of *Veterinary Compendium* (Mealey KL. Adverse Drug Reactions in Herding-Breed Dogs: The Role of P-Glycoprotein. *Compendium Vet* Jan 2006:23-33.)