

Laboratory Report

Laboratory #:	71124	Call Name:	Maggie
Order #:	31079	Registered Name:	Shadow Mt's Maggie
Ordered By:	Julie Vanderlinden	Breed:	Australian Shepherd
Ordered:	Nov. 24, 2017	Sex:	Female
Received:	Dec. 4, 2017	DOB:	Sept. 2011
Reported:	Dec. 11, 2017	Registration #:	DN31936202
		Microchip #:	034296281

Results:

Disease	Gene	Genotype	Interpretation
Collie Eye Anomaly	<i>NHEJ1</i>	WT/WT	Normal (clear)
Cone Degeneration	<i>CNGB3</i>	WT/WT	Normal (clear)
Degenerative Myelopathy	<i>SOD1</i>	WT/WT	Normal (clear)
Hereditary Cataracts (Australian Shepherd Type)	<i>HSF4</i>	WT/WT	Normal (clear)
Hyperuricosuria	<i>SLC2A9</i>	WT/WT	Normal (clear)
Multidrug Resistance 1	<i>ABCB1</i>	WT/M	Carrier
Multifocal Retinopathy 1	<i>BEST1</i>	WT/WT	Normal (clear)
Neuronal Ceroid Lipofuscinosis 6	<i>CLN6</i>	WT/WT	Normal (clear)
Progressive Retinal Atrophy, Progressive Rod-Cone Degeneration	<i>PRCD</i>	WT/WT	Normal (clear)

WT, wild type (normal); M, mutant; Y, Y chromosome (male)

Interpretation:

Molecular genetic analysis was performed for nine specific mutations reported to be associated with disease in dogs. We identified two normal copies of the DNA sequences in eight of the mutations tested. Thus, this dog is not at an increased risk for the diseases associated with these eight mutations. However, we identified one normal copy and one mutant copy of the DNA sequences for *ABCB1*. Thus, this dog is a carrier of Multidrug Resistance 1.

Recommendations:

Multidrug Resistance 1 is inherited in an autosomal incomplete dominant manner in dogs. Based on this, and the fact that this dog showed a mutation in one copy of the *ABCB1* gene, this dog is a carrier of Multidrug Resistance 1 and at a low risk of developing neurological disease when given certain medications. Dogs affected with this disease lack the ability to remove certain drugs and toxins from the central nervous system putting them at risk for developing neurologic symptoms that could range from tremors, excess salivation, anorexia, and blindness to coma and even death. Though adverse reactions to certain drugs are most commonly seen in dogs having two copies of the mutated gene, carrier dogs can also experience drug sensitivities and dosages need to be adjusted accordingly. Thus, dogs that have one or two mutant copies of the gene are considered at risk for adverse drug reactions. Your veterinarian should be notified that this dog is a carrier for Multidrug Resistance 1 prior to administration of any medications. When carriers of this mutation are bred with another dog that also is a carrier of the same mutation, there is risk of having affected pups. For each pup that is born to this pairing, there is a 25% chance that the puppy will inherit two copies of the mutation and a 50% chance that the puppy will inherit