

Laboratory Report

** Amended Report **

Laboratory #:	304213	Call Name:	Graham
Order #:	137878	Registered Name:	AusableRVR's Wants and Needs
Ordered By:	Jocelyn Ehgoetz	Breed:	Australian Shepherd
Ordered:	April 23, 2022	Sex:	Female
Received:	May 2, 2022	DOB:	Feb. 2022
Reported:	May 9, 2022	Registration #:	KC4162702
Amended:	May 10, 2022	Microchip #:	956000011031900

Results:

Disease	Gene	Genotype	Interpretation
Collie Eye Anomaly	<i>NHEJ1</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)
Intestinal Cobalamin Malabsorption (Australian Shepherd Type)	<i>AMN</i>	WT/WT	Normal (clear)
Intestinal Cobalamin Malabsorption (Border Collie Type)	<i>CUBN</i>	WT/WT	Normal (clear)
Multidrug Resistance 1	<i>ABCB1</i>	M/M	At-Risk/Affected
Multifocal Retinopathy 1	<i>BEST1</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 two mutant copies of the DNA sequences for *ABCB1*. Thus, this dog is at risk for/affected with Multidrug Resistance 1.

Recommendations:

Multidrug Resistance 1 is inherited in an autosomal incomplete dominant manner. Based on this, and the fact that this dog showed a mutation in both copies of the *ABCB1* gene, this dog is at 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 at risk for Multidrug Resistance 1 prior to administration of any medications. Breeding of

this dog is not recommended if you wish to eliminate this mutation from your lines because 100% of the offspring from a breeding between an *ABCB1* at-risk/affected dog (M/M) and an *ABCB1* normal dog (WT/WT) will be carriers (WT/M) of the mutation for Multidrug Resistance 1 and approximately half of the offspring from a breeding between an *ABCB1* at-risk/affected dog (M/M) and an *ABCB1* carrier dog (WT/M) will be at risk for/affected with Multidrug Resistance 1. In either case, all puppies from this dog may be susceptible to having adverse drug reactions. Dogs related to this dog have an increased risk to be affected by or carry the mutated gene. Additional testing for this mutation is indicated for related dogs.

Paw Print Genetics® has genetic counseling available to you at no additional charge to answer any questions about these test results, their implications and potential outcomes in breeding this dog.

NOTE: The following fields were adjusted at the client's request on May 10, 2022: Registration ID, Name, Registered Name



Blake C Ballif, PhD
Laboratory & Scientific Director



Christina J Ramirez, PhD, DVM, DACVP
Medical Director

Paw Print Genetics® performed the tests listed on this dog. The genes/diseases reported here were selected by the client. Normal results do not exclude inherited mutations not tested in these or other genes that may cause medical problems or may be passed on to offspring. The results included in this report relate only to the items tested using the sample provided. These tests were developed and their performance determined by Paw Print Genetics. This laboratory has established and verified the test(s)' accuracy and precision with >99.9% sensitivity and specificity. The presence of mosaicism may not be detected by this test. Non-paternity may lead to unexpected results. This is not a breed identification test. Because all tests performed are DNA-based, rare genomic variations may interfere with the performance of some tests producing false results. If you think any results are in error, please contact the laboratory immediately for further evaluation. In the event of a valid dispute of results claim, Paw Print Genetics will do its best to resolve such a claim to the customer's satisfaction. If no resolution is possible after investigation by Paw Print Genetics with the cooperation of the customer, the extent of the customer's sole remedy is a refund of the fee paid. In no event shall Paw Print Genetics be liable for indirect, consequential or incidental damages of any kind. Any claim must be asserted within 60 days of the report of the test results.