

Laboratory Report

** Amended Report **

Laboratory #:	432615	Call Name:	Mack
Order #:	196797	Registered Name:	Broken Arrow's NotUR Avg Hustler
Ordered By:	Penny Allen	Breed:	Australian Shepherd
Ordered:	Dec. 25, 2023	Sex:	Male
Received:	Jan. 9, 2024	DOB:	Feb. 2021
Reported:	Feb. 13, 2024	Registration #:	DN65675902/E229224
Amended:	March 20, 2024		

Results:

Disease	Gene	Genotype	Interpretation
Chondrodystrophy with Intervertebral Disc Disease Risk Factor (CDDY with IVDD)	<i>CFA12 FGF4</i>	WT/WT	Normal (Clear) - No CDDY or Increased IVDD Risk
Coagulation Factor VII Deficiency	<i>F7</i>	WT/WT	Normal (Clear)
Collie Eye Anomaly	<i>NHEJ1</i>	WT/WT	Normal (Clear)
Cone Degeneration	<i>CNGB3</i>	WT/WT	Normal (Clear)
Craniomandibular Osteopathy	<i>SLC37A2</i>	WT/WT	Normal (Clear)
Degenerative Myelopathy (Common Variant)	<i>SOD1</i>	WT/WT	Normal (Clear)
Exercise-Induced Collapse	<i>DNM1</i>	WT/WT	Normal (Clear)
Hereditary Ataxia (Australian Shepherd Type)	<i>PNPLA8</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)
Junctional Epidermolysis Bullosa (Australian Shepherd Type)	<i>LAMB3</i>	WT/WT	Normal (Clear)
Multidrug Resistance 1	<i>ABCB1</i>	WT/M	Carrier (At-Risk)
Multifocal Retinopathy 1	<i>BEST1</i>	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 5 (Herding Dog Type)	<i>CLN5</i>	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 6	<i>CLN6</i>	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 8 (Australian Shepherd Type)	<i>CLN8</i>	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Progressive Rod-Cone Degeneration	<i>PRCD</i>	WT/WT	Normal (Clear)
Von Willebrand Disease I	<i>VWF</i>	WT/WT	Normal (Clear)

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

Interpretation:

Molecular genetic analysis was performed for 20 specific mutations reported to be associated with disease in dogs. We identified two normal copies of the DNA sequences in 19 of the mutations tested. Thus, this dog is not at an increased risk for the diseases associated with these 19 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 one copy of the mutation and, in either case, 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 Mar 20, 2024: Registration ID

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.