Paw Print Genetics
A division of Genetic Veterinary Sciences, Inc.

220 E. Rowan, Suite 220
Spokane, Washington 99207
www.pawprintgenetics.com
(509) 483-5950

Laboratory Report

Laboratory #:	50956	**Call Name:**	Sadie
Order #:	22525	**Registered Name:**	Planet K9 Sapphire Sadie
Ordered By:	Roberta Lilienthal	**Breed:**	Rough Collie
Ordered:	April 17, 2017	**Sex:**	Female
Received:	May 1, 2017	**DOB:**	Sept. 2015
Reported:	May 11, 2017	**Registration #:**	dn43915704

Results:

Disease	Gene	Genotype	Interpretation
Progressive Retinal Atrophy, Rod-Cone Dysplasia 2	*RD3*	WT/WT	Normal (clear)

WT, wild type (normal); M, mutant

Interpretation:

Molecular genetic analysis was performed for a specific mutation reported to be associated with Progressive Retinal Atrophy, Rod-Cone Dysplasia 2 in dogs. We identified two normal copies of the DNA sequences in the mutation tested.

Recommendations:

No mutations were identified. Thus, this dog is not at an increased risk for the disease caused by or associated with the mutation tested. Because this dog is "clear" of this mutation, this dog will only pass the normal gene on to its offspring. Normal results do not exclude inherited mutations not tested in this gene or other genes that may cause medical problems or may be passed on to offspring. 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.

Christina J Ramirez, PhD, DVM, DACVP
Medical Director

Casey R Carl, DVM
Associate Medical Director

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850 E. Spokane Falls Blvd., Suite 200
Spokane, Washington 99202
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Laboratory Report

Laboratory #:	18341	**Call Name:**	Sadie
Order #:	7932	**Registered Name:**	Sadie of Lost Acres
Ordered By:	Christy Moder	**Breed:**	Collie
(Co-)Owner:	Karen Plemback	**Sex:**	Female
Ordered:	Jan. 4, 2016	**DOB:**	Sept. 2015
Received:	Jan. 28, 2016	**Registration #:**	-
Reported:	Feb. 5, 2016		

Results:

Disease	Gene	Genotype	Interpretation
Collie eye anomaly	*NHEJ1*	WT/WT	Normal (clear)
Degenerative myelopathy	*SOD1*	WT/WT	Normal (clear)
Multidrug resistance 1	*ABCB1*	M/M	Affected/At Risk

WT, wild type (normal); M, mutant

Interpretation:

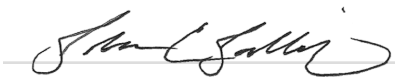
Molecular genetic analysis was performed for three specific mutations reported to be associated with disease in dogs. We identified two normal copies of the DNA sequences in two of the mutations tested. Thus, this dog is not at an increased risk for either of the diseases associated with these two mutations. However, we identified two mutant copies of the DNA sequences for *ABCB1*. Thus, this dog is affected with/at risk for 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 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 affected with multidrug resistance 1 prior to administration of any medications. Breeding of this dog is not recommended because 100% of the offspring from a breeding between an *ABCB1* normal dog (WT/WT) and an *ABCB1* affected dog (M/M) will be carriers (WT/M) of the mutation for multidrug resistance 1 and a breeding between an *ABCB1* carrier dog (WT/M) and an *ABCB1* affected dog (M/M) will result in 50% of the offspring being 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 final results for multidrug resistance and collie eye anomaly were reported to the client via phone on Jan. 15, 2016.



Blake C Ballif, PhD
Laboratory & Scientific Director

Christina J Ramirez, PhD, DVM, DACVP
Medical Director

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. These tests were developed and their performance determined by Paw Print Genetics™. This laboratory has established and verified the tests' accuracy and precision. Because all tests performed are DNA-based, rare genomic variations may interfere with the performance of some tests producing false results. If you think these 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.