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

Canine Genetic Health Certificate™

Call Name:	Rook	**Laboratory #:**	159643
Registered Name:	RR MANNYS ROOKIE OF THE YEAR	**Registration #:**	SS15290302
Breed:	Labrador Retriever	**Microchip #:**	956000012362925
Sex:	Male	**Certificate Date:**	Jan. 7, 2020
DOB:	Oct. 2019		

This canine's DNA showed the following genotype(s):

Disease	Gene	Genotype	Interpretation
Cystinuria (Labrador Retriever Type)	*SLC3A1*	WT/WT	Normal (clear)
Elliptocytosis	*SPTB*	WT/WT	Normal (clear)
Hyperuricosuria	*SLC2A9*	WT/WT	Normal (clear)
Myotubular Myopathy 1	*MTM1*	WT/WT	Normal (clear)
Narcolepsy (Labrador Retriever Type)	*HCRTR2*	WT/WT	Normal (clear)
Progressive Retinal Atrophy, Cone-Rod Dystrophy 4	*RPGRIP1*	WT/WT	Normal (clear)
Progressive Retinal Atrophy, Golden Retriever 2	*TTC8*	WT/WT	Normal (clear)
Pyruvate Kinase Deficiency (Labrador Retriever Type)	*PKLR*	WT/WT	Normal (clear)

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

Christina J Ramirez, PhD, DVM, DACVP
Medical Director

Casey R Carl, DVM
Associate Medical Director

Paw Print Genetics® performed the tests listed on this dog. See the Laboratory Report for interpretation and recommendations based on these findings. 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. 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. Genetic counseling is available at Paw Print Genetics.

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Coat Color and Trait Certificate

Call Name:	Rook	**Laboratory #:**	159643
Registered Name:	RR MANNYS ROOKIE OF THE YEAR	**Registration #:**	SS15290302
Breed:	Labrador Retriever	**Microchip #:**	956000012362925
Sex:	Male	**Certificate Date:**	Dec. 29, 2021
DOB:	Oct. 2019		

This canine's DNA showed the following genotype(s):

Coat Color/Trait Test	Gene	Genotype	Interpretation
B Locus (Brown)	*TYRP1*	B/b or b/b	Carries brown and may have brown or black coat, nose and foot pads
D Locus (Dilute)	*MLPH*	D/D	Non dilute
E Locus (Apricot/Yellow/Red) - e (Common Variant Found in Many Breeds)	*MC1R*	E/e	Black (carries yellow/red)

Interpretation:

The overall B locus genotype for a dog is determined by the combination of genotypes present at the b^c, b^d, and b^s loci. The b^c, b^d, and b^s variants confer brown when at least one of these DNA changes is present on both genes of the dog at the B locus. This dog carries two copies of **B** at the b^s locus. In addition, this dog carries one copy of **B** and one copy of **b** at both the b^c and b^d loci. The presence of both these variants on a single copy of the gene cannot be excluded. Thus, due to the particular combination of variants detected, the overall B locus genotype of this dog is **B/b** or **b/b** and cannot be determined without additional testing of parental samples. Therefore, this dog carries brown and may have brown or black coat, nose and foot pads.

If the b^c and b^d variants each occur on separate copies of the B locus, the dog will be brown (**b/b**). However, if these variants occur on the same copy of the gene, the dog will be black (**B/b**). Therefore, the final B locus genotype for this dog can be inferred by evaluating the color of this dog's nose. If this dog's nose is brown, the final B locus genotype of this dog is **b/b** and this dog will pass on **b** to 100% of its offspring. If this dog's nose is black, the final B locus genotype of this dog is **B/b** and this dog will pass on **b** to 50% of its offspring. If this dog is B/b it can produce offspring with a black or brown coat, nose and foot pads. However, this dog's coat color is also dependent on the E, K, and A genes.

This dog carries two copies of **D** which does not result in the "dilution" or lightening of the black and yellow/red pigments that produce the dog's coat color. The base coat color of this dog will be primarily determined by the E, K, A, and B genes. This dog will pass on **D** to 100% of its offspring.

This dog carries one copy of **E** and one copy of **e** which allows for the production of black pigment. However, this dog's coat color is also dependent on the K, A, and B genes. This dog will pass **E** on to 50% of its offspring and **e** to 50% of its offspring, which can produce a yellow/red coat (including shades of white, cream, yellow, apricot or red) if inherited with another copy of **e**.

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.

Blake C Ballif, PhD
Laboratory & Scientific Director

Casey R Carl, DVM
Associate Medical Director

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