UC DAVIS
VETERINARY MEDICINE
Veterinary Genetics Laboratory

LABRADOR RETRIEVER GENETIC HEALTH PANEL TEST REPORT

Provided Information:	***Case:*** **NCD227499**
Name: **GREAT LAKES PERCY**	***Date Received:*** 25-Sep-2023
Registration: **SS06017604**	***Report Issue Date:*** 03-Oct-2023
	Report ID: 0693-2948-8412-8042
	Verify report at www.vgl.ucdavis.edu/verify

DOB: **06/07/2018** *Sex:* **Male** *Breed:* **Yakutian Laika** *Microchip:* **956000005827385** *Color:* **Black**

Call Name: **Percy**

RESULT			INTERPRETATION
Centronuclear Myopathy (CNM)	**N/N**		No copies of the CNM mutation detected. Dog is normal.
Congenital Myasthenic Syndrome (CMS)	**N/N**		No copies of the CMS mutation detected. Dog is normal.
Copper Toxicosis	**ATP7A**	**N**	No copies of the ATP7A and ATP7B variants.
	ATP7B	**N/N**	
Cystinuria Type I-A	**N/N**		No copies of the cystinuria type I-A mutation detected. Dog is normal.
Exercise Induced Collapse (EIC)	**N/N**		No copies of the EIC mutation detected. Dog is normal.
Degenerative Myelopathy (DM)	**N/N**		No copies of the DM mutation.
Hereditary Nasal Parakeratosis (HNPK)	**N/N**		No copies of the HNPK mutation detected. Dog is normal.
Hyperuricosuria	**N/N**		No copies of the hyperuricosuria mutation detected. Dog is normal.
Narcolepsy	**N/N**		Normal. Dog does not carry the Labrador narcolepsy associated variant.
Pyruvate Kinase Deficiency (PKDef)	**N/N**		No copies of the PKDef mutation. Dog is normal.
Stargardt Disease	**N/S**		Carrier. One copy of the Labrador Retriever Stargardt disease variant detected.
Skeletal Dysplasia 2 (SD2)	**N/N**		No copies of the SD2 mutation detected. Dog is normal.
X-Linked Myotubular Myopathy (XLMTM)	**N**		No copy of the MTM1 mutation detected. Male is unaffected.
Progressive Rod-Cone Degeneration (PRCD)	**N/N**		Normal. Dog does not have the variant associated with PRCD.
DILUTE (D LOCUS)	**D/D**		No known dilution variants present.

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

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Laboratory Report

Laboratory #:	117279	**Call Name:**	Percy
Order #:	51635	**Registered Name:**	Great Lakes Percy
Ordered By:	Carolyn Cabot	**Breed:**	Labrador Retriever
Ordered:	Dec. 17, 2018	**Sex:**	Male
Received:	Dec. 31, 2018	**DOB:**	June 2018
Reported:	Jan. 9, 2019	**Registration #:**	SS06017604
		Microchip #:	956000005827385

Results:

Disease	Gene	Genotype	Interpretation
Centronuclear Myopathy	*PTPLA*	WT/WT	Normal (clear)
Copper Toxicosis (Labrador Retriever Type) ATP7A	*ATP7A*	WT/Y	Normal/Clear Male
Copper Toxicosis (Labrador Retriever Type) ATP7B	*ATP7B*	WT/WT	Normal (clear)
Degenerative Myelopathy	*SOD1*	WT/WT	Normal (clear)
Exercise-Induced Collapse	*DNM1*	WT/WT	Normal (clear)
Hereditary Nasal Parakeratosis	*SUV39H2*	WT/WT	Normal (clear)
Progressive Retinal Atrophy, Progressive Rod-Cone Degeneration	*PRCD*	WT/WT	Normal (clear)
Pyruvate Kinase Deficiency (Labrador Retriever Type)	*PKLR*	WT/WT	Normal (clear)
Retinal Dysplasia/Oculoskeletal Dysplasia 1	*COL9A3*	WT/WT	Normal (clear)
Skeletal Dysplasia 2	*COL11A2*	WT/WT	Normal (clear)

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

Interpretation:

Molecular genetic analysis was performed for 10 specific mutations reported to be associated with disease in dogs (nine deleterious mutations and one protective mutation). We identified two normal copies of the DNA sequences for the nine deleterious mutations tested. Thus, this dog is not at an increased risk for the diseases associated with these nine mutations. In addition, we identified a normal copy of the DNA sequence for *ATP7A*. Thus, this dog does not carry the protective mutation for Copper Toxicosis (Labrador Retriever Type).

Recommendations:

No mutations were identified. Thus, this dog is not at an increased risk for the diseases caused by or associated with the mutations tested. Because this dog is "clear" of these mutations, this dog will only pass the normal genes on to its offspring. 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.

This dog was also tested for a genetic mutation of the *ATP7A* gene which partially protects against copper toxicosis in dogs that have inherited the *ATP7B* mutation described above. This dog did not inherit the *ATP7A* gene mutation.

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.

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Canine Genetic Health Certificate™

Call Name:	Percy	**Laboratory #:**	117279
Registered Name:	Great Lakes Percy	**Registration #:**	SS06017604
Breed:	Labrador Retriever	**Microchip #:**	956000005827385
Sex:	Male	**Certificate Date:**	Jan. 9, 2019
DOB:	June 2018		

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

Disease	Gene	Genotype	Interpretation
Centronuclear Myopathy	*PTPLA*	WT/WT	Normal (clear)
Copper Toxicosis (Labrador Retriever Type) ATP7A	*ATP7A*	WT/Y	Normal/Clear Male
Copper Toxicosis (Labrador Retriever Type) ATP7B	*ATP7B*	WT/WT	Normal (clear)
Degenerative Myelopathy	*SOD1*	WT/WT	Normal (clear)
Exercise-Induced Collapse	*DNM1*	WT/WT	Normal (clear)
Hereditary Nasal Parakeratosis	*SUV39H2*	WT/WT	Normal (clear)
Progressive Retinal Atrophy, Progressive Rod-Cone Degeneration	*PRCD*	WT/WT	Normal (clear)
Pyruvate Kinase Deficiency (Labrador Retriever Type)	*PKLR*	WT/WT	Normal (clear)
Retinal Dysplasia/Oculoskeletal Dysplasia 1	*COL9A3*	WT/WT	Normal (clear)
Skeletal Dysplasia 2	*COL11A2*	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:	Percy	**Laboratory #:**	117279
Registered Name:	Great Lakes Percy	**Registration #:**	SS06017604
Breed:	Labrador Retriever	**Microchip #:**	956000005827385
Sex:	Male	**Certificate Date:**	Jan. 9, 2019
DOB:	June 2018		

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

Coat Color/Trait Test	Gene	Genotype	Interpretation
B Locus (Brown)	*TYRP1*	B/b	Black coat, nose and foot pads (carries brown)
E Locus (Yellow/Red)	*MC1R*	E/e	Black (carries yellow/red)

Interpretation:

This dog carries one copy of **B** and at least one copy of **b** at the b^c, b^d or b^s locus making the overall B locus genotype of this dog **B/b**. The overall B locus genotype for a dog is determined by the combination of the genotypes at the b^c, b^d, and b^s loci. The b^c, b^d, and b^s variants confer brown coat, nose, and foot pads when at least one of these DNA changes is present on both genes of the dog at the B locus. If the dog has one or no copies of **b** then the dog will have a black coat, nose, and foot pads. However, this dog's coat color is also dependent on the E, K, and A genes. This dog will pass on **B** to 50% of its offspring and **b** to 50% 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.

Christina J Ramirez, PhD, DVM, DACVP
Medical Director

Casey R Carl, DVM
Associate Medical Director