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

Coat Color and Trait Certificate

Call Name:	Lucky Lad	**Laboratory #:**	226909
Registered Name:	Lucky Lad	**Registration #:**	PR22533204
Breed:	Standard Poodle	**Microchip #:**	956000013736970
Sex:	Male	**Certificate Date:**	April 13, 2021
DOB:	Feb. 2020		

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

Coat Color/Trait Test	Gene	Genotype	Interpretation
A Locus (Agouti)	*ASIP*	a^t/a	Tricolor, black and tan (carries bicolor/solid)
B Locus (Brown)	*TYRP1*	B/b	Black coat, nose and foot pads (carries one copy of brown)
D Locus (Dilute)	*MLPH*	D/D	Non-dilute (does not carry dilute)
E Locus (Yellow/Red)	*MC1R*	E/E	Black
E^m Locus (Melanistic Mask)	*MC1R*	E^m/N	Melanistic mask (carrier)
I Locus (Intensity)	*MFSD12*	I/i	Normal intensity (carrier)
K Locus (Dominant Black)	*CBD103*	K^B/K^B	No agouti expression allowed
M Locus (Merle)	*PMEL*	m/m	Non merle
S Locus (White Spotting, Parti, or Piebald)	*MITF*	s^p/s^p	Nearly solid white, parti, or piebald

Interpretation:

This dog carries one copy of **a^t** and one copy of **a** which results in tan points and can also present as a black and tan or tricolor coat color. However, this dog's coat color is also dependent on the E, K, and B genes. The tan point coat color is only expressed if the dog is also E/E or E/e at the E locus and k^y/k^y at the K locus. This dog will pass on **a^t** to 50% of its offspring and **a** to 50% of its offspring.

This dog carries one copy of one of the b mutations and has a B locus genotype of **B/b**. Thus, this dog typically will have a black coat, nose, and foot pads. However, this dog's coat color is dependent on the genotypes of many other genes. This dog will pass one copy of **B** to 50% of its offspring and one copy of **b** to 50% of its offspring. This dog can produce b/b offspring if bred to a dog that is also a carrier of a b mutation (B/b or b/b). Depending on the breed, b/b dogs may be referred to as brown, chocolate, liver or red.

This dog does not carry any copies of the d^1 or d^2 mutations and has a D locus genotype of **D/D** which does not result in the "dilution" or lightening of the pigments that produce the dog's coat color. This dog will pass one copy of **D** to 100% of its offspring and cannot produce d/d dogs.

This dog carries two copies 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 on **E** to 100% of its offspring.

This dog carries one copy of **E^m** and one copy of **N** which results in a melanistic mask on the muzzle of the dog. However, a melanistic mask may be unrecognizable on a dog with a dark coat color. This dog will pass on **E^m** to 50% of its offspring and **N** to 50% of its offspring.

This dog carries one copy of the i mutation and has an I locus genotype of **I/i** which does not result in the lightening of the light, phaeomelanin pigments that produce the dog's coat color in an e/e dog. This dog will pass one copy of **I** to 50% of its offspring and one copy of **i** to 50% of its offspring. This dog can produce i/i offspring if bred to a dog that is also a carrier of an i mutation (I/i or i/i).

The K locus genotype for this dog is $\mathbf{K^B/K^B}$ which prevents expression of the agouti gene (A locus) and allows for solid eumelanin (black pigment) production in pigmented areas of the dog. However, this dog's coat color is also dependent on its genotypes at the E and B loci. This dog will pass on $\mathbf{K^B}$ to 100% of its offspring.

This dog carries two copies of **m**, the non-merle, wild-type allele of the *PMEL* gene, and, therefore, does not have a merle coat color/pattern. This dog will pass on one copy of the **m** allele to 100% of its offspring.

This dog carries two copies of $\mathbf{s^p}$ which results in a nearly solid white, parti, or piebald coat color. This dog will pass on one copy of $\mathbf{s^p}$ to 100% of its 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.

**Note: At the client's request, this certificate was amended on April 13, 2021 to update the microchip number for this dog.*

Blake C Ballif, PhD
Laboratory & Scientific Director

Casey R Carl, DVM
Associate Medical Director