

Coat Color and Trait Certificate

Call Name: Lottie
Registered Name: Lottie of the Kinni
Breed: Golden Retriever
Sex: Female
DOB: Dec. 2024

Laboratory #: 486933
Registration #: SS51025603
Microchip #: 933000321181217
Certificate Date: April 17, 2025

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

Coat Color/Trait Test	Gene	Genotype	Interpretation
A Locus (Agouti)	<i>ASIP</i>	a ^t /a	Tricolor, black and tan (carries bicolor/solid)
A ^S Locus (Saddle Tan)	<i>RALY</i>	N/A ^S	Saddle tan/creeping tan (non saddle tan carrier)
B Locus (Brown)	<i>TYRP1</i>	B/B	Black coat, nose and foot pads (does not carry brown)
Brachycephaly	<i>BMP3</i>	BR/BR	Likely medium to long muzzle
Co Locus (Cocoa, French Bulldog Type)	<i>HPS3</i>	CO/CO	Black coat, nose and foot pads (does not carry cocoa)
Cu Locus (Curly Hair)	<i>KRT71</i>	Cu/Cu ^C	Wavy/Curly coat (carrier)
D Locus (Dilute)	<i>MLPH</i>	D/D	Non-dilute (does not carry dilute)
E Locus	<i>MC1R</i>	e ¹ /e ¹	Yellow/Red
H Locus (Harlequin, Great Dane Type)	<i>PSMB7</i>	h/h	No harlequin
Hairlessness	<i>SGK3</i>	Rh/Rh	Coated
Hr Locus (FOXI3 Hairless Gene Test, Mexican Hairless, Peruvian Hairless and Chinese Crested Type)	<i>FOXI3</i>	hr/hr	Coated
I Locus (Intensity)	<i>MFSD12</i>	I/I	Normal intensity
IC Locus (Improper Coat/Furnishings)	<i>RSPO2</i>	IC/IC	No furnishings, improper coat
K Locus (Dominant Black)	<i>CBD103</i>	K ^B /K ^B	No agouti expression allowed
L Locus (Long Hair/Fluffy)	<i>FGF5</i>	Lh ¹ /Lh ¹	Longhaired (carries two copies of long hair)
M Locus (Merle)	<i>PMEL</i>	m/m	Non merle
Polydactyly (Common Variant)	<i>LMBR1</i>	pd/pd	Normal (typical) toes (likely no hind dewclaws)
Polydactyly (Great Pyrenees Type)	<i>ALX4</i>	pd/pd	Normal (typical) toes (likely no double hind dewclaws)
R Locus (Roan/Ticked)	<i>USH2A</i>	r/r	No roan or ticking
S Locus (White Spotting, Parti, or Piebald)	<i>MITF</i>	S/S	No white spotting, flash, parti, or piebald

SD Locus (Shedding)	<i>MC5R</i>	sd/sd	Low shedding
ST Locus (Screw Tail, Bulldog and Terrier Type)	<i>DVL2</i>	N/N	No kinked or screw tail
T Locus (Natural Bobtail)	<i>T</i>	t/t	Normal tail

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 an **A^s** allele and one copy of **N**, the wildtype sequence. This combination of alleles is also found in dogs with a saddle tan coat color. However, this dog's coat color is also dependent on the E, A, and K loci. Saddle tan is found only in dogs that are also E/E or E/e at the E locus, k^y/k^y at the K locus, and a^t/a^t or a^t/a at the A locus. This dog will pass the **N** allele to 50% of its offspring and the **A^s** allele to 50% of its offspring, which can produce saddle tan dogs.

This dog does not carry any copies of the b^a, b^c, b^d, b^e, b^h, and b^s 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 100% of its offspring and cannot produce b/b dogs.

This dog carries two copies of the BR Allele which is found in dogs with medium to long muzzles. However, the actual muzzle length of the dog is a result of a combination of factors including multiple variants in other genes. This dog will pass one copy of BR to 100% of its offspring and can produce dogs with medium to long muzzles.

This dog does not carry any copies of the co (cocoa) mutation and has a Co Locus genotype of **CO/CO**. 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 including the B Locus (Brown). This dog will pass one copy of **CO** to 100% of its offspring and cannot produce co/co (cocoa) dogs.

This dog carries one copy of **Cu^c** and one copy of **Cu** which results in a wavy or curly coat. However, the overall coat type of this dog is dependent on the combination of this dog's genotypes at the L, Cu, and IC loci. This dog will pass **Cu^c** on to 50% of its offspring and **Cu** to 50% of its offspring.

This dog does not carry any copies of the d¹, d², or d³ 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 **e¹** which inhibits production of black pigment. The coat color of this dog will be yellow/red (including shades of white, cream, yellow, apricot or red). This dog will pass **e¹** on to 100% of its offspring.

This dog carries two copies of **h** and will not have a harlequin coat color. The dog will pass on **h** to 100% of its offspring.

This dog does not carry any copies of the rh¹ or rh² mutations and has a genotype of HR/HR which does not result in hairlessness in the Scottish Deerhound. This dog will pass one copy of HR to 100% of its offspring.

This dog carries two copies of the recessive **hr** allele which results in a coated dog. This dog will pass on the **hr** allele to 100% of its offspring.

This dog does not carry a 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 100% of its offspring and cannot produce i/i dogs.

This dog carries two copies of **IC** and will therefore have no furnishings (improper coat). However, the overall coat type of this dog is dependent on the combination of this dog's genotypes at the L, Cu, and IC loci. This dog will pass **IC** (improper coat) on to 100% of its offspring and can produce puppies with improper coat if bred with a

dog that carries one copy (**F/IC**) or two copies (**IC/IC**) of the mutation for improper coat.

The K locus genotype for this dog is **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 **K^B** to 100% of its offspring.

This dog carries two copies of Lh¹ which results in long hair. This dog will pass one copy of Lh¹ 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 the *LMBR1* **pd** allele which is found in dogs with normal, typical toes and likely no hind dewclaws. However, polydactyly can result from variants in other genes. This dog will pass one copy of **pd** to 100% of its offspring.

This dog carries two copies of the *ALX4* **pd** allele which is found in Great Pyrenees dogs without bilateral double dewclaws. However, polydactyly can result from variants in other genes. This dog will pass one copy of **pd** to 100% of its offspring.

This dog does not carry a copy of R or R^{Ti} and has a genotype of r/r which does not result in roan or ticking in the white areas of the coat. This dog will pass one copy of r to 100% of its offspring.

This dog carries two copies of **S** which results in a solid coat with no white spotting, flash, parti, or piebald coat color. This dog will pass on one copy of **S** to 100% of its offspring.

This dog carries two copies of **sd** which has been associated with lower shedding. However, the overall degree of shedding for this dog is dependent on the combination of this dog's genotypes at the SD and IC loci. This dog will pass **sd** on to 100% of its offspring.

This dog does not carry a copy of ST and has a genotype of N/N which does not result in a screw or kinked tail in the bully breeds. This dog will pass one copy of **N** to 100% of its offspring.

This dog carries two copies of **t** which results in a tail of normal length (no bobtail). This dog will pass on **t** 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.

Paw Print Genetics® performed the testing on the dog listed on this certificate. The genes/traits reported here were selected by the client. Normal results do not exclude inherited mutations not tested in these or other genes that may cause variation in traits, 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.