

Coat Color and Trait Certificate

Call Name:	Honan	Laboratory #:	72023
Registered Name:	OutWest Honan Sly Kowboy	Registration #:	DN45193003
Breed:	Australian Shepherd	Microchip #:	985-113-000-186-772
Sex:	Male	Certificate Date:	Dec. 26, 2017
DOB:	Feb. 2016		

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^t	Tricolor, black and tan
B Locus (Brown)	<i>TYRP1</i>	B/b or b/b	Carries brown and may have brown or black coat, nose and foot pads
Cu Locus (Curly Hair)	<i>KRT71</i>	Cu/Cu	Straight coat
D Locus (Dilute)	<i>MLPH</i>	D/D	Non dilute
E Locus (Yellow/Red)	<i>MC1R</i>	E/E	Black
E ^m Locus (Melanistic Mask)	<i>MC1R</i>	N/N	No melanistic mask
H Locus (Harlequin, Great Dane Type)	<i>PSMB7</i>	h/h	No harlequin
IC Locus (Improper Coat/Furnishings)	<i>RSPO2</i>	IC/IC	No furnishings, improper coat
K Locus (Dominant Black)	<i>CBD103</i>	K^B/k^Y	No agouti expression allowed (carrier)
L Locus (Long Hair/Fluffy)	<i>FGF5</i>	Lh/Lh	Longhaired
M Locus (Merle)	<i>PMEL</i>	m/m	Non merle
S Locus (White Spotting, Parti, or Piebald)	<i>MITF</i>	S/S	No white spotting, flash, parti, or piebald
T Locus (Natural Bobtail)	<i>T</i>	t/t	Normal tail

Interpretation:

This dog carries two copies of a^t 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 100% of its offspring.

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 one copy of **B** and one copy of **b** at the b^c , b^d , and b^s loci. The presence of all three of 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 one of the variants occurs on a separate copy 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 **Cu** which results in a straight 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** on to 100% of its offspring.

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 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 two copies of **N** which does not result in a melanistic mask on the muzzle of the dog. This dog will pass on **N** 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 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.

This dog carries one copy of **K^B** and one copy of **k^Y** 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 genes. This dog will pass on **K^B** to 50% of its offspring and **k^Y** to 50% of its offspring.

This dog carries two copies of **Lh** which results in long hair. 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 **Lh** on to 100% of its offspring.

This dog carries two copies of **m** and, therefore, does not have a merle coat color. This dog will pass on **m** 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 **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.



Christina J Ramirez, PhD, DVM, DACVP
Medical Director



Casey R Carl, DVM
Associate Medical Director

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