His traits

Explore the genetics behind Ranger's appearance and size.

← Back

embark

A number of genes are known to affect coat color in dogs. They all interact and in some cases other, often unknown, genetic effects may also influence color and pattern.

We cannot yet test for some color patterns, for example, spotting and ticking.

Expand all

E Locus (MC1R)

No dark mask or grizzle (Ee)

K Locus (CBD103)

More likely to have a patterned haircoat ($k^y k^y$)

Intensity Loci

Linkage Test

Any light hair likely apricot or red (Intense Red Pigmentation)

A Locus (ASIP)

Black/Brown and tan coat color pattern ($a^t a^t$)

D Locus (MLPH)

Dark areas of hair and skin are not lightened (DD)

Cocoa (HPS3)

No co alleles, not expressed (NN)

B Locus (TYRP1)

Black or gray hair and skin (Bb)

Saddle Tan (RALY)

Not saddle tan patterned (II)

S Locus (MITF)

Likely solid colored, but may have small amounts of white (Ssp)

M Locus (PMEL)

One merle allele; may express merle (M*m)

R Locus (USH2A) Linkage Test

Likely no impact on coat pattern (rr)

H Locus (Harlequin)

No harlequin alleles (hh)

Other Coat Traits

Furnishings, shedding, and curls are all genetic. Several genes are at work here, and they all interact. In fact, the combination of these genes explains the coat traits of 90 percent of AKC registered dog breeds.

Expand all

Furnishings (RSPO2) Linkage Test

Likely furnished (mustache, beard, and/or eyebrows) (FF)

Coat Length (FGF5)

Likely long coat (LhLh)

Shedding (MC5R)

Likely light shedding (CT)

Coat Texture (KRT71)

Likely curly coat (TT)

Hairlessness (FOXI3) Linkage Test

Very unlikely to be hairless (NN)

Hairlessness (SGK3)

Very unlikely to be hairless (NN)

Oculocutaneous Albinism Type 2 (SLC45A2) Linkage Test

Likely not albino (NN)

Other Body Features

We are discovering the genetic basis for an increasing number of other body features, including hind dew claws and the shape of your dog's head. Take our surveys to help us make new discoveries.

Expand all

Muzzle Length (BMP3)

Likely medium or long muzzle (AC)

Tail Length (T)

Likely normal-length tail (CC)

Hind Dewclaws (LMBR1)

Unlikely to have hind dew claws (CC)

Chondrodysplasia (Chr. 18 FGF4 Retrogene)

Not indicative of chondrodysplasia (normal leg length) (NN)

Blue Eye Color (ALX4) Linkage Test

Less likely to have blue eyes (NN)

Back Muscling & Bulk, Large Breed (ACSL4)

Likely normal muscling (CC)

Body Size

Body size is a complex trait that is affected by both genetic and environmental variation. Our genetic analysis includes genes that, together, explain over 85 percent of the variation in dog body size. Below are your dog's results for some of the most important size-related genes.

Expand all

Predicted Adult Weight
38 lbs

Body Size (IGF1)
Intermediate (NI)

Body Size (IGFR1)
Intermediate (GA)

Body Size (STC2)
Intermediate (TA)

Body Size (GHR - E191K)
Intermediate (GA)

Body Size (GHR - P177L)
Larger (CC)

Performance

Physical performance traits are interesting for all dogs, especially those that want to perform in more strenuous environments. These traits also shed light on the history of dogs and what they have been bred for. For example, the high altitude mutation we test for causes similar changes in oxygen usage as a mutation found in people from the Himalayas!

Expand all

Altitude Adaptation (EPAS1)

Normal altitude tolerance (GG)

Appetite (POMC)

Linkage Test

Normal food motivation (NN)