

Name: **Green Meadow Millie**
 AKC #: **WS709845/03**
 Birth Date: **12/17/2020**
 Colors/Markings: **Black Rust & White**
 Breeder(s): **Atlee Weaver**

Breed/Variety: **Bernese Mountain Dog**
 Sex: **Female**

<p>Yallant Knight Ot Zennenhund Rossii WS637298/01 08-19 (Russia) Black Rust & White AKC DNA #V880798</p>	<p>Sennenhund Rossii Zhoker RKF 4014054</p>	<p>Sennenhund Rossii KrisKent RKF 3211523</p>	<p>Sennenhund Rossii Ferdinand RKF 2844167</p>	<p>Lad's Bogart RKF 2179190</p>
			<p>Sennenhund Rossii Alberta RKF 2027947</p>	<p>Zhaldin Feser Sennenhund Rossii RKF 2418452</p>
			<p>Emillion V. 'T Rijkenspark NHSB 2757252</p>	<p>(Not Available Online) (Not Available Online) CH Zanzebern Defender WS240523/01 06-08 (Australia) Black Tan & White OFA35E OFEL35 AKC DNA #V495489 Zeni Nora V.'T Rijkenspark NHSB 2589164</p>
		<p>Terra De Bern Vetta For Sennenhung Rossii RKF 3356982</p>	<p>Terra De Bern Charlotta RKF 2698255</p>	<p>Espahan Maximus V. 'T Rijkenspark NHSB 2624081</p>
			<p>Lord V. Geissberg NHSB 613618</p>	<p>Quinta De La Rosa Av Milkereek RKF 2038445</p>
			<p>Berni Zonen Land Kadril RKF 1375475</p>	<p>(Not Available Online) (Not Available Online) (Not Available Online)</p>
	<p>Sennenhund Rossii Zheneva II RKF 3753784</p>	<p>Ciceron RKF 1842912</p>	<p>Nana's Odin-Wigowitsch RKF 1416737</p>	<p>(Not Available Online) (Not Available Online)</p>
			<p>Sennenhund Rossii Esta Elita RKF 1756107</p>	<p>(Not Available Online) (Not Available Online)</p>
			<p>Berni Zonen Tal Lastochka RKF 1361953</p>	<p>(Not Available Online) (Not Available Online)</p>
		<p>CH Black Mountain Berner Hansel WS452399/04 01-15 Black Rust & White OFA26G OFEL26 AKC DNA #V735733</p>	<p>GCHB CH Snowbliz's Blackmountain Berner Schulz WS391068/04 01-13 Black Rust & White None OFEL AKC DNA #V670308</p>	<p>Highlander Van'T Pachthof WS313868/01 02-10 (Belgium) Black Rust & White AKC DNA #V592867</p>
			<p>Blackmountain Berners Leah WS974143/05 01-14 Black Rust & White OFA57G OFEL57</p>	<p>Geneva Van 'T Stokerybos WS261643/02 11-09 (Belgium) Black Rust & White AKC DNA #V548509</p>
			<p>Hemingwayh Van 'T Pachthof WS305931/01 03-10 (Belgium) Black Tan & White AKC DNA #V586333</p>	<p>High Country Clyde WS31182/04 03-11 Black Rust & White AKC DNA #V636649</p>
<p>Hemingwayh Katie Lou WS355080/01 05-12 Black Rust & White</p>	<p>Katie Lou Valentine WS094253/01 04-06 Black Rust & White OFA29G</p>	<p>Rojo's Chasserni Jaiki' WS249862/07 06-10 Black Rust & White</p>		
	<p>Brutus Boaz Elohim WR076915/02 11-04 Black Rust & White OFA40G AKC DNA #V361587</p>	<p>Ellanorha May Valentine WS042931/05 11-04 Black Tan & White</p>		
	<p>Batch Santy Bazaltin CMKU 2552/01</p>	<p>Bernice Van 'T Beertjes Hof UCS 0903118</p>		
<p>Hemis Callie WS631831/01 04-21 Black Rust & White</p>	<p>Samson XXIII WS47758/05 12-15 Black Rust & White AKC DNA #V791892</p>	<p>Skyviews Tiny Bear WS992539/03 10-13 Black Tan & White AKC DNA #V718379</p>	<p>Whispering Pines Clyde WS337965/11 08-11 Black Rust & White AKC DNA #V691253</p>	
		<p>Wigglin Shelia WS406923/03 11-14 Black Rust & White</p>	<p>Whisper Winds Whitney WS306727/02 08-11 Black Rust & White</p>	
		<p>Oh Henry The King WS971749/01 09-12 Black Rust & White</p>	<p>Mechanic Mack WS366163/03 08-12 Black Rust & White</p>	
	<p>Lizzy Joy WS81694/10 04-19 Black Rust & White</p>	<p>Penny V WS456105/06 12-15 Black Rust & White</p>	<p>Reba Jack WS166583/05 04-09 Black Rust & White</p>	
		<p>Willowbrook Black Beauty WS315655/06 09-11 Black Rust & White</p>	<p>Willowbrook Prince WS322393/07 07-11 Black Rust & White AKC DNA #V650743</p>	
		<p>Trojers Buster WS028898/01 11-04 Black Rust & White AKC DNA #V452493</p>	<p>Willowbrook Sierra WS292544/03 01-11 Black Rust & White</p>	
<p>Tujaligetetti Rettina WS106473/01 03-05 (Hungary) Black Rust & White</p>				

AMERICAN KENNEL CLUB

NAME

GREEN MEADOW MILLIE

NUMBER

WS70984503

BREED

BERNESE MOUNTAIN DOG

SEX

FEMALE

COLOR

BLACK RUST & WHITE

DATE OF BIRTH

DECEMBER 17, 2020

SIRE

VALIANT KNIGHT OT ZENNENHUND ROSSII
WS63729801 08-19 (AKC DNA #V880788) (RUS)

DAM

HEMIS CALLIE
WS63183101 04-21

BREEDER

ATLEE WEAVER

OWNER

ADEN A MILLER
4503 TOWNSHIP ROAD 606
FREDERICKSBURG OH 44627-9604



AMERICAN KENNEL CLUB®

CERTIFICATE ISSUED
APRIL 13, 2023

This certificate invalidates all previous certificates issued.

If a date appears after the name and number of the sire and dam, it indicates the issue of the Stud Book Register in which the sire or dam is published.

For Transfer Instructions, see back of Certificate.

This Certificate issued with the right to correct or revoke by the American Kennel Club.

REGISTRATION CERTIFICATE

Orthopedic Foundation for Animals
Elbow Dysplasia Evaluation Report



A Not-for-Profit
Organization

GREEN MEADOW MILLIE
registered name

WS70984503
registration no.

BERNESE MOUNTAIN DOG
breed

F
sex

film/test/lab #

12/17/2020
date of birth

990005005042136
tattoo/microchip/DNA profile

34
age at evaluation in months

2503218
application number

BMD-EL17018F34-C-VPI
O.F.A. NUMBER

This number issued with the right to correct or
revoke by the Orthopedic Foundation for Animals.

11/20/2023
date of report

Veterinarian

HOLMES WAYNE VETERINARY SERVICES
8461 STATE ROUTE 241
FREDERICKSBURG OH 44627

Owner

ADEN MILLER
4503 TOWNSHIP ROAD 606
FREDERICKSBURG OH 44627

RADIOGRAPHIC EVALUATION OF PHENOTYPE WITH RESPECT TO ELBOW DYSPLASIA

ELBOW JOINTS -- FLEXED LATERAL VIEW

negative for elbow dysplasia L R

ELBOW DYSPLASIA

GRADE I L _____ R _____
GRADE II L _____ R _____
GRADE III L _____ R _____

RADIOGRAPHIC FINDINGS

degenerative joint disease (DJD) L _____ R _____
united anconeal process (UAP) L _____ R _____
fragmented coronoid process (FCP) L _____ R _____
osteochondrosis L _____ R _____

G.G. KELLER, DVM, MS, DACVR
CHIEF OF VETERINARY SERVICES

Orthopedic Foundation for Animals
Hip Dysplasia Evaluation Report



A Not-for-Profit
Organization

GREEN MEADOW MILLIE
registered name

BERNESE MOUNTAIN DOG
breed

film/test/lab #

990005005042136
tattoo/microchip/DNA profile

2503218
application number

11/20/2023
date of report

WS70984503
registration no.

F
sex

12/17/2020
date of birth

34
age at evaluation in months

BMD-27067G34F-C-VPI
O.F.A. NUMBER

This number issued with the right to correct or
revoke by the Orthopedic Foundation for Animals.

Veterinarian

HOLMES WAYNE VETERINARY SERVICES
8461 STATE ROUTE 241
FREDERICKSBURG OH 44627

Owner

ADEN MILLER
4503 TOWNSHIP ROAD 606
FREDERICKSBURG OH 44627

RADIOGRAPHIC EVALUATION OF PELVIC PHENOTYPE WITH RESPECT TO HIP DYSPLASIA

_____ **EXCELLENT HIP JOINT CONFORMATION**
superior hip joint conformation as compared with
other individuals of the same breed and age

✓ _____ **GOOD HIP JOINT CONFORMATION**
well formed hip joint conformation as compared
with other individuals of the same breed and age

_____ **FAIR HIP JOINT CONFORMATION**
minor irregularities of the hip joint conformation as
compared with other individuals of the same
breed and age

_____ **BORDERLINE HIP JOINT CONFORMATION**
marginal hip joint conformation of indeterminate
status with respect to hip dysplasia at this time --
Repeat study in six months

_____ **MILD HIP DYSPLASIA**
radiographic evidence of minor dysplastic
changes of the hip joints

_____ **MODERATE HIP DYSPLASIA**
well defined radiographic evidence of dysplastic
changes of the hip joints

_____ **SEVERE HIP DYSPLASIA**
radiographic evidence of marked dysplastic
changes of the hip joints

RADIOGRAPHIC FINDINGS

- _____ subluxation
- _____ remodeling of femoral head/neck
- _____ osteoarthritis/degenerative joint disease
- _____ shallow acetabula
- _____ acetabular rim/edge change

- _____ unilateral _____ left _____ right
- _____ transitional vertebra
- _____ spondylosis
- _____ panosteitis


G.G. KELLER, DVM, MS, DACVR
CHIEF OF VETERINARY SERVICES



CERTIFICATE OF RESULTS

OWNERS NAME: ARIE MILLER
PET'S NAME:** JILL

PET'S REGISTRATION #: NOT PROVIDED
PET'S BREED: BERNESE MOUNTAIN DOG
TEST: SOD1B DEGENERATIVE MYELOPATHY
DATE: 6/28/2023

Test Score Explanation:

(CLEAR/NORMAL): These dogs have two copies of the normal gene and will not develop degenerative myelopathy due to this mutation.

TEST SCORE*:

A

SAMPLE ID #:

426479

For detailed result explanation
please visit our website:

www.GenSolDx.com

*All samples submitted to GenSol become the property of GenSol and may be used for internal quality control and/or research purposes. Test results provide information concerning a pet's DNA sequence and are not an indication or guarantee of pet's disease state or condition. Test results alone should not be used to diagnosis, treat or prevent disease.

**GenSol warrants its test results to be accurate for the sample obtained from the above dog. In the event of a valid claim, owner's sole remedy is a refund of the fee paid. IN NO EVENT SHALL GEN SOL BE LIABLE FOR INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND. Any claim must be asserted within one year of the report of test results.


**Please consult a licensed veterinarian
to discuss the implications of the above test results.**

125 North Main Street Unit 1846, Clayton, GA 30525

1-844-369-3686 - info@Gensoldx.com

WWW.GENSOLDX.COM

BREED ANCESTRY

 Bernese Mountain Dog : 100.0%

GENETIC STATS

Predicted adult weight: **79 lbs**

TEST DETAILS

Kit number: EM-19663236

Swab number: 31220412301831

BERNESE MOUNTAIN DOG

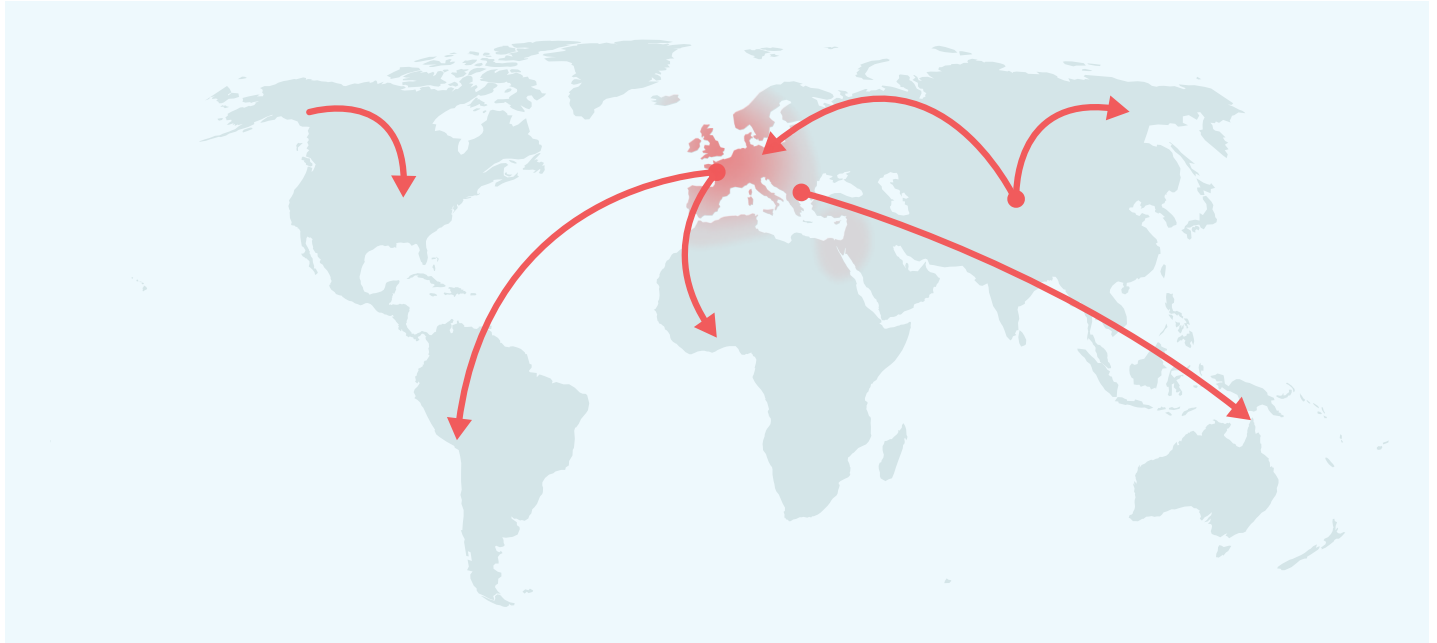


Fun Fact

Berners can haul up to 1,000 pounds - 10 times their weight!

The Bernese Mountain Dog, commonly referred to as a 'Berner', is a versatile working dog that is both visually pleasing and a loyal companion. The Bernese Mountain Dog was bred to herd cattle, pull carts and be a watchdog in the Swiss farmlands. The ancient 'Molossian' breed is considered the main contributor to Mastiff-type dogs, which include the Berner. It is likely that the Molossian bred with farm dogs from the Swiss Alps in the first century B.C., developing a number of Swiss Sennenhund ("mountain dog") breeds, including the Berner Sennenhund. It is thought that the Berner continued working on these Swiss farmlands for over 2,000 years, before their primary purpose switched from herding cattle to appearing as a show dog in the early 20th century. They were first classified as the Bernese Mountain Dog at this time by the Swiss Kennel Club. Following World War I, in which the breed nearly became extinct, Berners were exported to America before being accepted by the AKC as an official breed in 1937. Breed development faltered somewhat during World War II before Berners became an established and popular breed in the mid to late 20th century. This easygoing breed likes to be around their owners, where their calm and intelligent nature makes them a beloved family dog. Berners exhibit their working dog instincts in their willingness to learn and relative ease to be trained. Their heritage also often results in being protective and sometimes shy towards new people and dogs. Early socialization training allows the Bernese Mountain Dog to learn to overcome initial caution around new things. This breed is a large dog, weighing around 100 pounds, and likes to keep busy, so it is important training is conducted while young and manageable. While they are well-tempered dogs, they are slow to mature and often exhibit puppy behavior for a number of years before reaching full maturity. Due to their beautiful and thick double coat, Berners tend to shed generously, requiring frequent brushing to keep under control. Unfortunately, owing to their size and limited gene pool, Bernese Mountain Dogs are prone to health problems and have a life expectancy of between 6-8 years. Nonetheless, this lovable dog

MATERNAL LINE



Through Jill's mitochondrial DNA we can trace her mother's ancestry back to where dogs and people first became friends. This map helps you visualize the routes that her ancestors took to your home. Their story is described below the map.

HAPLOGROUP: A1e

This female lineage likely stems from some of the original Central Asian wolves that were domesticated into modern dogs starting about 15,000 years ago. It seemed to be a fairly rare dog line for most of dog history until the past 300 years, when the lineage seemed to "explode" out and spread quickly. What really separates this group from the pack is its presence in Alaskan village dogs and Samoyeds. It is possible that this was an indigenous lineage brought to the Americas from Siberia when people were first starting to make that trip themselves! We see this lineage pop up in overwhelming numbers of Irish Wolfhounds, and it also occurs frequently in popular large breeds like Bernese Mountain Dogs, Saint Bernards and Great Danes. Shetland Sheepdogs are also common members of this maternal line, and we see it a lot in Boxers, too. Though it may be all mixed up with European dogs thanks to recent breeding events, its origins in the Americas makes it a very exciting lineage for sure!

HAPLOTYPE: A228

Part of the large A1e haplogroup, we have spotted this haplotype in village dogs in the Democratic Republic of the Congo and in the Dominican Republic. Among breeds, we see it frequently in big dogs like Saint Bernards, Leonbergers, and Great Danes. However, we also see it in small breeds including wire Fox Terriers and Rat Terriers. That's a pretty wide size range!

Registration: American Kennel Club

(AKC)

TRAITS: COAT COLOR

TRAIT	RESULT
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E Locus (MC1R)

The E Locus determines if and where a dog can produce dark (black or brown) hair. Dogs with two copies of the recessive **e** allele do not produce dark hairs at all, and will be "red" over their entire body. The shade of red, which can range from a deep copper to yellow/gold to cream, is dependent on other genetic factors including the Intensity loci. In addition to determining if a dog can develop dark hairs at all, the E Locus can give a dog a black "mask" or "widow's peak," unless the dog has overriding coat color genetic factors. Dogs with one or two copies of the **Em** allele usually have a melanistic mask (dark facial hair as commonly seen in the German Shepherd and Pug). Dogs with no copies of **Em** but one or two copies of the **Eg** allele usually have a melanistic "widow's peak" (dark forehead hair as commonly seen in the Afghan Hound and Borzoi, where it is called either "grizzle" or "domino").

No dark mask or grizzle (EE)

K Locus (CBD103)

The K Locus **K^B** allele "overrides" the A Locus, meaning that it prevents the A Locus genotype from affecting coat color. For this reason, the **K^B** allele is referred to as the "dominant black" allele. As a result, dogs with at least one **K^B** allele will usually have solid black or brown coats (or red/cream coats if they are **ee** at the E Locus) regardless of their genotype at the A Locus, although several other genes could impact the dog's coat and cause other patterns, such as white spotting. Dogs with the **k^Yk^Y** genotype will show a coat color pattern based on the genotype they have at the A Locus. Dogs who test as **K^Bk^Y** may be brindle rather than black or brown.

More likely to have a patterned haircoat (k^Yk^Y)

TRAITS: COAT COLOR (CONTINUED)

TRAIT	RESULT
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Intensity Loci LINKAGE

Areas of a dog's coat where dark (black or brown) pigment is not expressed either contain red/yellow pigment, or no pigment at all. Five locations across five chromosomes explain approximately 70% of red pigmentation "intensity" variation across all dogs. Dogs with a result of **Intense Red Pigmentation** will likely have deep red hair like an Irish Setter or "apricot" hair like some Poodles, dogs with a result of **Intermediate Red Pigmentation** will likely have tan or yellow hair like a Soft-Coated Wheaten Terrier, and dogs with **Dilute Red Pigmentation** will likely have cream or white hair like a Samoyed. Because the mutations we test may not directly cause differences in red pigmentation intensity, we consider this to be a linkage test.

Any light hair likely yellow or tan (Intermediate Red Pigmentation)

A Locus (ASIP)

The A Locus controls switching between black and red pigment in hair cells, but it will only be expressed in dogs that are not **ee** at the E Locus and are **k^Yk^Y** at the K Locus. Sable (also called "Fawn") dogs have a mostly or entirely red coat with some interspersed black hairs. Agouti (also called "Wolf Sable") dogs have red hairs with black tips, mostly on their head and back. Black and tan dogs are mostly black or brown with lighter patches on their cheeks, eyebrows, chest, and legs. Recessive black dogs have solid-colored black or brown coats.

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

D Locus (MLPH)

The D locus result that we report is determined by two different genetic variants that can work together to cause diluted pigmentation. These are the common **d** allele, also known as "**d1**", and a less common allele known as "**d2**". Dogs with two **d** alleles, regardless of which variant, will have all black pigment lightened ("diluted") to gray, or brown pigment lightened to lighter brown in their hair, skin, and sometimes eyes. There are many breed-specific names for these dilute colors, such as "blue", "charcoal", "fawn", "silver", and "Isabella". Note that in certain breeds, dilute dogs have a higher incidence of Color Dilution Alopecia. Dogs with one **d** allele will not be dilute, but can pass the **d** allele on to their puppies. To view your dog's **d1** and **d2** test results, click the "SEE DETAILS" link in the upper right hand corner of the "Base Coat Color" section of the Traits page, and then click the "VIEW SUBLOCUS RESULTS" link at the bottom of the page.

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

TRAITS: COAT COLOR (CONTINUED)

TRAIT	RESULT
<p>Cocoa (HPS3)</p> <p>Dogs with the coco genotype will produce dark brown pigment instead of black in both their hair and skin. Dogs with the Nco genotype will produce black pigment, but can pass the co allele on to their puppies. Dogs that have the coco genotype as well as the bb genotype at the B locus are generally a lighter brown than dogs that have the Bb or BB genotypes at the B locus.</p>	<p>No co alleles, not expressed (NN)</p>
<p>B Locus (TYRP1)</p> <p>Dogs with two copies of the b allele produce brown pigment instead of black in both their hair and skin. Dogs with one copy of the b allele will produce black pigment, but can pass the b allele on to their puppies. E Locus ee dogs that carry two b alleles will have red or cream coats, but have brown noses, eye rims, and footpads (sometimes referred to as "Dudley Nose" in Labrador Retrievers). "Liver" or "chocolate" is the preferred color term for brown in most breeds; in the Doberman Pinscher it is referred to as "red".</p>	<p>Black or gray hair and skin (BB)</p>
<p>Saddle Tan (RALY)</p> <p>The "Saddle Tan" pattern causes the black hairs to recede into a "saddle" shape on the back, leaving a tan face, legs, and belly, as a dog ages. The Saddle Tan pattern is characteristic of breeds like the Corgi, Beagle, and German Shepherd. Dogs that have the ll genotype at this locus are more likely to be mostly black with tan points on the eyebrows, muzzle, and legs as commonly seen in the Doberman Pinscher and the Rottweiler. This gene modifies the A Locus a^t allele, so dogs that do not express a^t are not influenced by this gene.</p>	<p>Not saddle tan patterned (ll)</p>
<p>S Locus (MITF)</p> <p>The S Locus determines white spotting and pigment distribution. MITF controls where pigment is produced, and an insertion in the MITF gene causes a loss of pigment in the coat and skin, resulting in white hair and/or pink skin. Dogs with two copies of this variant will likely have breed-dependent white patterning, with a nearly white, parti, or piebald coat. Dogs with one copy of this variant will have more limited white spotting and may be considered flash, parti or piebald. This MITF variant does not explain all white spotting patterns in dogs and other variants are currently being researched. Some dogs may have small amounts of white on the paws, chest, face, or tail regardless of their S Locus genotype.</p>	<p>Likely to have little to no white in coat (SS)</p>

TRAITS: COAT COLOR (CONTINUED)

TRAIT	RESULT
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M Locus (PMEL)

Merle coat patterning is common to several dog breeds including the Australian Shepherd, Catahoula Leopard Dog, and Shetland Sheepdog, among many others. Merle arises from an unstable SINE insertion (which we term the "M*" allele) that disrupts activity of the pigmentary gene PMEL, leading to mottled or patchy coat color. Dogs with an **M*m** result are likely to be phenotypically merle or could be "non-expressing" merle, meaning that the merle pattern is very subtle or not at all evident in their coat. Dogs with an **M*M*** result are likely to be phenotypically merle or double merle. Dogs with an **mm** result have no merle alleles and are unlikely to have a merle coat pattern.

No merle alleles (mm)

Note that Embark does not currently distinguish between the recently described cryptic, atypical, atypical+, classic, and harlequin merle alleles. Our merle test only detects the presence, but not the length of the SINE insertion. We do not recommend making breeding decisions on this result alone. Please pursue further testing for allelic distinction prior to breeding decisions.

R Locus (USH2A) LINKAGE

The R Locus regulates the presence or absence of the roan coat color pattern. Partial duplication of the USH2A gene is strongly associated with this coat pattern. Dogs with at least one **R** allele will likely have roaning on otherwise uniformly unpigmented white areas. Roan appears in white areas controlled by the S Locus but not in other white or cream areas created by other loci, such as the E Locus with **ee** along with Dilute Red Pigmentation by I Locus (for example, in Samoyeds). Mechanisms for controlling the extent of roaning are currently unknown, and roaning can appear in a uniform or non-uniform pattern. Further, non-uniform roaning may appear as ticked, and not obviously roan. The roan pattern can appear with or without ticking.

Likely no impact on coat pattern (rr)

H Locus (Harlequin)

This pattern is recognized in Great Danes and causes dogs to have a white coat with patches of darker pigment. A dog with an **Hh** result will be harlequin if they are also **M*m** or **M*M*** at the M Locus and are not **ee** at the E locus. Dogs with a result of **hh** will not be harlequin. This trait is thought to be homozygous lethal; a living dog with an **HH** genotype has never been found.

No harlequin alleles (hh)

TRAITS: OTHER COAT TRAITS

TRAIT	RESULT
<p>Furnishings (RSPO2) LINKAGE</p> <p>Dogs with one or two copies of the F allele have "furnishings": the mustache, beard, and eyebrows characteristic of breeds like the Schnauzer, Scottish Terrier, and Wire Haired Dachshund. A dog with two I alleles will not have furnishings, which is sometimes called an "improper coat" in breeds where furnishings are part of the breed standard. The mutation is a genetic insertion which we measure indirectly using a linkage test highly correlated with the insertion.</p>	<p>Likely unfurnished (no mustache, beard, and/or eyebrows) (II)</p>
<p>Coat Length (FGF5)</p> <p>The FGF5 gene is known to affect hair length in many different species, including cats, dogs, mice, and humans. In dogs, the T allele confers a long, silky haircoat as observed in the Yorkshire Terrier and the Long Haired Whippet. The ancestral G allele causes a shorter coat as seen in the Boxer or the American Staffordshire Terrier. In certain breeds (such as Corgi), the long haircoat is described as "fluff."</p>	<p>Likely long coat (TT)</p>
<p>Shedding (MC5R)</p> <p>Dogs with at least one copy of the ancestral C allele, like many Labradors and German Shepherd Dogs, are heavy or seasonal shedders, while those with two copies of the T allele, including many Boxers, Shih Tzus and Chihuahuas, tend to be lighter shedders. Dogs with furnished/wire-haired coats caused by RSPO2 (the furnishings gene) tend to be low shedders regardless of their genotype at this gene.</p>	<p>Likely heavy/seasonal shedding (CT)</p>
<p>Hairlessness (FOXI3) LINKAGE</p> <p>A duplication in the FOXI3 gene causes hairlessness over most of the body as well as changes in tooth shape and number. This mutation occurs in Peruvian Inca Orchid, Xoloitzcuintli (Mexican Hairless), and Chinese Crested (other hairless breeds have different mutations). Dogs with the NDup genotype are likely to be hairless while dogs with the NN genotype are likely to have a normal coat. The DupDup genotype has never been observed, suggesting that dogs with that genotype cannot survive to birth. Please note that this is a linkage test, so it may not be as predictive as direct tests of the mutation in some lines.</p>	<p>Very unlikely to be hairless (NN)</p>
<p>Hairlessness (SGK3)</p> <p>Hairlessness in the American Hairless Terrier arises from a mutation in the SGK3 gene. Dogs with the DD result are likely to be hairless. Dogs with the ND genotype will have a normal coat, but can pass the D</p>	<p>Very unlikely to be hairless (NN)</p>

TRAITS: OTHER COAT TRAITS (CONTINUED)

TRAIT RESULT

Oculocutaneous Albinism Type 2 (SLC45A2) LINKAGE

Dogs with two copies **DD** of this deletion in the SLC45A2 gene have oculocutaneous albinism (OCA), also known as Doberman Z Factor Albinism, a recessive condition characterized by severely reduced or absent pigment in the eyes, skin, and hair. Affected dogs sometimes suffer from vision problems due to lack of eye pigment (which helps direct and absorb ambient light) and are prone to sunburn. Dogs with a single copy of the deletion **ND** will not be affected but can pass the mutation on to their offspring. This particular mutation can be traced back to a single white Doberman Pinscher born in 1976, and it has only been observed in dogs descended from this individual. Please note that this is a linkage test, so it may not be as predictive as direct tests of the mutation in some lines.

Likely not albino (NN)

Coat Texture (KRT71)

Dogs with a long coat and at least one copy of the **T** allele have a wavy or curly coat characteristic of Poodles and Bichon Frises. Dogs with two copies of the ancestral **C** allele are likely to have a straight coat, but there are other factors that can cause a curly coat, for example if they at least one **F** allele for the Furnishings (RSPO2) gene then they are likely to have a curly coat. Dogs with short coats may carry one or two copies of the **T** allele but still have straight coats.

Likely straight coat (CC)

TRAITS: OTHER BODY FEATURES

TRAIT RESULT

Muzzle Length (BMP3)

Dogs in medium-length muzzle (mesocephalic) breeds like Staffordshire Terriers and Labradors, and long muzzle (dolichocephalic) breeds like Whippet and Collie have one, or more commonly two, copies of the ancestral **C** allele. Dogs in many short-length muzzle (brachycephalic) breeds such as the English Bulldog, Pug, and Pekingese have two copies of the derived **A** allele. At least five different genes affect muzzle length in dogs, with BMP3 being the only one with a known causal mutation. For example, the skull shape of some breeds, including the dolichocephalic Scottish Terrier or the brachycephalic Japanese Chin, appear to be caused by other genes. Thus, dogs may have short or long muzzles due to other genetic factors that are not yet known to science.

Likely medium or long muzzle (CC)

Tail Length (T)

Whereas most dogs have two **C** alleles and a long tail, dogs with one **G** allele are likely to have a bobtail, which is an unusually short or absent tail. This mutation causes natural bobtail in many breeds including the Pembroke Welsh Corgi, the Australian Shepherd, and the Brittany Spaniel. Dogs with **GG** genotypes have not been observed, suggesting that dogs with the **GG** genotype do not survive to birth. Please note that this mutation does not explain every natural bobtail! While certain lineages of Boston Terrier, English Bulldog, Rottweiler, Miniature Schnauzer, Cavalier King Charles Spaniel, and Parson Russell Terrier, and Dobermans are born with a natural bobtail, these breeds do not have this mutation. This suggests that other unknown genetic mutations can also lead to a natural bobtail.

Likely normal-length tail (CC)

Hind Dewclaws (LMBR1)

Common in certain breeds such as the Saint Bernard, hind dewclaws are extra, nonfunctional digits located midway between a dog's paw and hock. Dogs with at least one copy of the **T** allele have about a 50% chance of having hind dewclaws. Note that other (currently unknown to science) mutations can also cause hind dewclaws, so some **CC** or **TC** dogs will have hind dewclaws.

Likely to have hind dew claws (CT)

TRAITS: OTHER BODY FEATURES (CONTINUED)

TRAIT	RESULT
-------	--------

Blue Eye Color (ALX4) LINKAGE

Embark researchers discovered this large duplication associated with blue eyes in Arctic breeds like Siberian Husky as well as tri-colored (non-merle) Australian Shepherds. Dogs with at least one copy of the duplication (**Dup**) are more likely to have at least one blue eye. Some dogs with the duplication may have only one blue eye (complete heterochromia) or may not have blue eyes at all; nevertheless, they can still pass the duplication and the trait to their offspring. **NN** dogs do not carry this duplication, but may have blue eyes due to other factors, such as merle. Please note that this is a linkage test, so it may not be as predictive as direct tests of the mutation in some lines.

Less likely to have blue eyes (NN)

Back Muscling & Bulk, Large Breed (ACSL4)

The **T** allele is associated with heavy muscling along the back and trunk in characteristically "bulky" large-breed dogs including the Saint Bernard, Bernese Mountain Dog, Greater Swiss Mountain Dog, and Rottweiler. The "bulky" **T** allele is absent from leaner shaped large breed dogs like the Great Dane, Irish Wolfhound, and Scottish Deerhound, which are fixed for the ancestral **C** allele. Note that this mutation does not seem to affect muscling in small or even mid-sized dog breeds with notable back muscling, including the American Staffordshire Terrier, Boston Terrier, and the English Bulldog.

Likely normal muscling (TC)

TRAITS: BODY SIZE

TRAIT	RESULT
-------	--------

Body Size (IGF1)

The I allele is associated with smaller body size.

Larger (NN)**Body Size (IGFR1)**

The A allele is associated with smaller body size.

Larger (GG)**Body Size (STC2)**

The A allele is associated with smaller body size.

Larger (TT)**Body Size (GHR - E191K)**

The A allele is associated with smaller body size.

Intermediate (GA)**Body Size (GHR - P177L)**

The T allele is associated with smaller body size.

Larger (CC)

TRAITS: PERFORMANCE

TRAIT	RESULT
-------	--------

Altitude Adaptation (EPAS1)

This mutation causes dogs to be especially tolerant of low oxygen environments (hypoxia), such as those found at high elevations. Dogs with at least one **A** allele are less susceptible to "altitude sickness." This mutation was originally identified in breeds from high altitude areas such as the Tibetan Mastiff.

Normal altitude tolerance (GG)

Appetite (POMC) LINKAGE

This mutation in the POMC gene is found primarily in Labrador and Flat Coated Retrievers. Compared to dogs with no copies of the mutation (**NN**), dogs with one (**ND**) or two (**DD**) copies of the mutation are more likely to have high food motivation, which can cause them to eat excessively, have higher body fat percentage, and be more prone to obesity. Read more about the genetics of POMC, and learn how you can contribute to research, in our blog post (<https://embarkvet.com/resources/blog/pomc-dogs/>). We measure this result using a linkage test.

Normal food motivation (NN)

HEALTH REPORT

How to interpret Jill's genetic health results:

If Jill inherited any of the variants that we tested, they will be listed at the top of the Health Report section, along with a description of how to interpret this result. We also include all of the variants that we tested Jill for that we did not detect the risk variant for.

A genetic test is not a diagnosis

This genetic test does not diagnose a disease. Please talk to your vet about your dog's genetic results, or if you think that your pet may have a health condition or disease.

Summary

Of the 256 genetic health risks we analyzed, we found 2 results that you should learn about.

Notable results (2)

ALT Activity

Degenerative Myelopathy, DM



Clear results

Breed-relevant (1)

Other (252)

BREED-RELEVANT RESULTS

Research studies indicate that these results are more relevant to dogs like Jill, and may influence her chances of developing certain health conditions.



















 Degenerative Myelopathy, DM (SOD1A)	Notable
 Von Willebrand Disease Type I, Type I vWD (VWF)	Clear

Registration: American Kennel Club (AKC)





















OTHER RESULTS



















Research has not yet linked these conditions to dogs with similar breeds to Jill. Review any increased risk or notable results to understand her potential risk and recommendations.

 ALT Activity (GPT)	Notable
 2-DHA Kidney & Bladder Stones (APRT)	Clear
 Acral Mutilation Syndrome (GDNF-AS, Spaniel and Pointer Variant)	Clear
 Alaskan Husky Encephalopathy (SLC19A3)	Clear
 Alaskan Malamute Polyneuropathy, AMPN (NDRG1 SNP)	Clear
 Alexander Disease (GFAP)	Clear
 Anhidrotic Ectodermal Dysplasia (EDA Intron 8)	Clear
 Autosomal Dominant Progressive Retinal Atrophy (RHO)	Clear
 Bald Thigh Syndrome (IGFBP5)	Clear
 Bernard-Soulier Syndrome, BSS (GP9, Cocker Spaniel Variant)	Clear
 Bully Whippet Syndrome (MSTN)	Clear
 Canine Elliptocytosis (SPTB Exon 30)	Clear
 Canine Fucosidosis (FUCA1)	Clear
 Canine Leukocyte Adhesion Deficiency Type I, CLAD I (ITGB2, Setter Variant)	Clear
 Canine Leukocyte Adhesion Deficiency Type III, CLAD III (FERMT3, German Shepherd Variant)	Clear
 Canine Multifocal Retinopathy, cmr1 (BEST1 Exon 2)	Clear
 Canine Multifocal Retinopathy, cmr2 (BEST1 Exon 5, Coton de Tulear Variant)	Clear
 Canine Multifocal Retinopathy, cmr3 (BEST1 Exon 10 Deletion, Finnish and Swedish Lapphund, Lapponian Herder Variant)	Clear



















OTHER RESULTS

 Canine Multiple System Degeneration (SERAC1 Exon 4, Chinese Crested Variant)	Clear
 Canine Multiple System Degeneration (SERAC1 Exon 15, Kerry Blue Terrier Variant)	Clear
 Cardiomyopathy and Juvenile Mortality (YARS2)	Clear
 Centronuclear Myopathy, CNM (PTPLA)	Clear
 Cerebellar Hypoplasia (VLDLR, Eurasier Variant)	Clear
 Chondrodystrophy (ITGA10, Norwegian Elkhound and Karelian Bear Dog Variant)	Clear
 Cleft Lip and/or Cleft Palate (ADAMTS20, Nova Scotia Duck Tolling Retriever Variant)	Clear
 Cleft Palate, CP1 (DLX6 intron 2, Nova Scotia Duck Tolling Retriever Variant)	Clear
 Cobalamin Malabsorption (CUBN Exon 8, Beagle Variant)	Clear
 Cobalamin Malabsorption (CUBN Exon 53, Border Collie Variant)	Clear
 Collie Eye Anomaly (NHEJ1)	Clear
 Complement 3 Deficiency, C3 Deficiency (C3)	Clear
 Congenital Cornification Disorder (NSDHL, Chihuahua Variant)	Clear
 Congenital Hypothyroidism (TPO, Rat, Toy, Hairless Terrier Variant)	Clear
 Congenital Hypothyroidism (TPO, Tenterfield Terrier Variant)	Clear
 Congenital Hypothyroidism with Goiter (TPO Intron 13, French Bulldog Variant)	Clear
 Congenital Hypothyroidism with Goiter (SLC5A5, Shih Tzu Variant)	Clear
 Congenital Macrothrombocytopenia (TUBB1 Exon 1, Cairn and Norfolk Terrier Variant)	Clear



















OTHER RESULTS

 Congenital Myasthenic Syndrome, CMS (COLQ, Labrador Retriever Variant)	Clear
 Congenital Myasthenic Syndrome, CMS (COLQ, Golden Retriever Variant)	Clear
 Congenital Myasthenic Syndrome, CMS (CHAT, Old Danish Pointing Dog Variant)	Clear
 Congenital Myasthenic Syndrome, CMS (CHRNE, Jack Russell Terrier Variant)	Clear
 Congenital Stationary Night Blindness (LRIT3, Beagle Variant)	Clear
 Congenital Stationary Night Blindness (RPE65, Briard Variant)	Clear
 Craniomandibular Osteopathy, CMO (SLC37A2)	Clear
 Craniomandibular Osteopathy, CMO (SLC37A2 Intron 16, Basset Hound Variant)	Clear
 Cystinuria Type I-A (SLC3A1, Newfoundland Variant)	Clear
 Cystinuria Type II-A (SLC3A1, Australian Cattle Dog Variant)	Clear
 Cystinuria Type II-B (SLC7A9, Miniature Pinscher Variant)	Clear
 Day Blindness (CNGB3 Deletion, Alaskan Malamute Variant)	Clear
 Day Blindness (CNGA3 Exon 7, German Shepherd Variant)	Clear
 Day Blindness (CNGA3 Exon 7, Labrador Retriever Variant)	Clear
 Day Blindness (CNGB3 Exon 6, German Shorthaired Pointer Variant)	Clear
 Deafness and Vestibular Syndrome of Dobermans, DVDob, DINGS (MYO7A)	Clear
 Demyelinating Polyneuropathy (SBF2/MTRM13)	Clear
 Dental-Skeletal-Retinal Anomaly (MIA3, Cane Corso Variant)	Clear



















OTHER RESULTS

 Diffuse Cystic Renal Dysplasia and Hepatic Fibrosis (INPP5E Intron 9, Norwich Terrier Variant)	Clear
 Dilated Cardiomyopathy, DCM (RBM20, Schnauzer Variant)	Clear
 Dilated Cardiomyopathy, DCM1 (PDK4, Doberman Pinscher Variant 1)	Clear
 Dilated Cardiomyopathy, DCM2 (TTN, Doberman Pinscher Variant 2)	Clear
 Disproportionate Dwarfism (PRKG2, Dogo Argentino Variant)	Clear
 Dry Eye Curly Coat Syndrome (FAM83H Exon 5)	Clear
 Dystrophic Epidermolysis Bullosa (COL7A1, Central Asian Shepherd Dog Variant)	Clear
 Dystrophic Epidermolysis Bullosa (COL7A1, Golden Retriever Variant)	Clear
 Early Bilateral Deafness (LOXHD1 Exon 38, Rottweiler Variant)	Clear
 Early Onset Adult Deafness, EOAD (EPS8L2 Deletion, Rhodesian Ridgeback Variant)	Clear
 Early Onset Cerebellar Ataxia (SEL1L, Finnish Hound Variant)	Clear
 Ehlers Danlos (ADAMTS2, Doberman Pinscher Variant)	Clear
 Enamel Hypoplasia (ENAM Deletion, Italian Greyhound Variant)	Clear
 Enamel Hypoplasia (ENAM SNP, Parson Russell Terrier Variant)	Clear
 Episodic Falling Syndrome (BCAN)	Clear
 Exercise-Induced Collapse, EIC (DNM1)	Clear
 Factor VII Deficiency (F7 Exon 5)	Clear
 Factor XI Deficiency (F11 Exon 7, Kerry Blue Terrier Variant)	Clear

OTHER RESULTS

 Familial Nephropathy (COL4A4 Exon 3, Cocker Spaniel Variant)	Clear
 Familial Nephropathy (COL4A4 Exon 30, English Springer Spaniel Variant)	Clear
 Fanconi Syndrome (FAN1, Basenji Variant)	Clear
 Fetal-Onset Neonatal Neuroaxonal Dystrophy (MFN2, Giant Schnauzer Variant)	Clear
 Glanzmann's Thrombasthenia Type I (ITGA2B Exon 13, Great Pyrenees Variant)	Clear
 Glanzmann's Thrombasthenia Type I (ITGA2B Exon 12, Otterhound Variant)	Clear
 Globoid Cell Leukodystrophy, Krabbe disease (GALC Exon 5, Terrier Variant)	Clear
 Glycogen Storage Disease Type IA, Von Gierke Disease, GSD IA (G6PC, Maltese Variant)	Clear
 Glycogen Storage Disease Type IIIA, GSD IIIA (AGL, Curly Coated Retriever Variant)	Clear
 Glycogen storage disease Type VII, Phosphofruktokinase Deficiency, PFK Deficiency (PFKM, Whippet and English Springer Spaniel Variant)	Clear
 Glycogen storage disease Type VII, Phosphofruktokinase Deficiency, PFK Deficiency (PFKM, Wachtelhund Variant)	Clear
 GM1 Gangliosidosis (GLB1 Exon 2, Portuguese Water Dog Variant)	Clear
 GM1 Gangliosidosis (GLB1 Exon 15, Shiba Inu Variant)	Clear
 GM1 Gangliosidosis (GLB1 Exon 15, Alaskan Husky Variant)	Clear
 GM2 Gangliosidosis (HEXA, Japanese Chin Variant)	Clear
 GM2 Gangliosidosis (HEXB, Poodle Variant)	Clear
 Golden Retriever Progressive Retinal Atrophy 1, GR-PRA1 (SLC4A3)	Clear
 Golden Retriever Progressive Retinal Atrophy 2, GR-PRA2 (TTC8)	Clear

OTHER RESULTS

 Goniodysgenesis and Glaucoma, Pectinate Ligament Dysplasia, PLD (OLFM3)	Clear
 Hemophilia A (F8 Exon 11, German Shepherd Variant 1)	Clear
 Hemophilia A (F8 Exon 1, German Shepherd Variant 2)	Clear
 Hemophilia A (F8 Exon 10, Boxer Variant)	Clear
 Hemophilia B (F9 Exon 7, Terrier Variant)	Clear
 Hemophilia B (F9 Exon 7, Rhodesian Ridgeback Variant)	Clear
 Hereditary Ataxia, Cerebellar Degeneration (RAB24, Old English Sheepdog and Gordon Setter Variant)	Clear
 Hereditary Cataracts (HSF4 Exon 9, Australian Shepherd Variant)	Clear
 Hereditary Footpad Hyperkeratosis (FAM83G, Terrier and Kromfohrlander Variant)	Clear
 Hereditary Footpad Hyperkeratosis (DSG1, Rottweiler Variant)	Clear
 Hereditary Nasal Parakeratosis (SUV39H2 Intron 4, Greyhound Variant)	Clear
 Hereditary Nasal Parakeratosis, HNPk (SUV39H2)	Clear
 Hereditary Vitamin D-Resistant Rickets (VDR)	Clear
 Hypocatalasia, Acatalasemia (CAT)	Clear
 Hypomyelination and Tremors (FNIP2, Weimaraner Variant)	Clear
 Hypophosphatasia (ALPL Exon 9, Karelian Bear Dog Variant)	Clear
 Ichthyosis (NIPAL4, American Bulldog Variant)	Clear
 Ichthyosis (ASPRV1 Exon 2, German Shepherd Variant)	Clear

OTHER RESULTS

<input checked="" type="checkbox"/> Ichthyosis (SLC27A4, Great Dane Variant)	Clear
<input checked="" type="checkbox"/> Ichthyosis, Epidermolytic Hyperkeratosis (KRT10, Terrier Variant)	Clear
<input checked="" type="checkbox"/> Ichthyosis, ICH1 (PNPLA1, Golden Retriever Variant)	Clear
<input checked="" type="checkbox"/> Inflammatory Myopathy (SLC25A12)	Clear
<input checked="" type="checkbox"/> Inherited Myopathy of Great Danes (BIN1)	Clear
<input checked="" type="checkbox"/> Inherited Selected Cobalamin Malabsorption with Proteinuria (CUBN, Komondor Variant)	Clear
<input checked="" type="checkbox"/> Intervertebral Disc Disease (Type I) (FGF4 retrogene - CFA12)	Clear
<input checked="" type="checkbox"/> Intestinal Lipid Malabsorption (ACSL5, Australian Kelpie)	Clear
<input checked="" type="checkbox"/> Junctional Epidermolysis Bullosa (LAMA3 Exon 66, Australian Cattle Dog Variant)	Clear
<input checked="" type="checkbox"/> Junctional Epidermolysis Bullosa (LAMB3 Exon 11, Australian Shepherd Variant)	Clear
<input checked="" type="checkbox"/> Juvenile Epilepsy (LGI2)	Clear
<input checked="" type="checkbox"/> Juvenile Laryngeal Paralysis and Polyneuropathy (RAB3GAP1, Rottweiler Variant)	Clear
<input checked="" type="checkbox"/> Juvenile Myoclonic Epilepsy (DIRAS1)	Clear
<input checked="" type="checkbox"/> L-2-Hydroxyglutaricaciduria, L2HGA (L2HGDH, Staffordshire Bull Terrier Variant)	Clear
<input checked="" type="checkbox"/> Lagotto Storage Disease (ATG4D)	Clear
<input checked="" type="checkbox"/> Laryngeal Paralysis (RAPGEF6, Miniature Bull Terrier Variant)	Clear
<input checked="" type="checkbox"/> Late Onset Spinocerebellar Ataxia (CAPN1)	Clear
<input checked="" type="checkbox"/> Late-Onset Neuronal Ceroid Lipofuscinosis, NCL 12 (ATP13A2, Australian Cattle Dog Variant)	Clear



















OTHER RESULTS

<input checked="" type="checkbox"/> Leonberger Polyneuropathy 1 (LPN1, ARHGEF10)	Clear
<input checked="" type="checkbox"/> Leonberger Polyneuropathy 2 (GJA9)	Clear
<input checked="" type="checkbox"/> Lethal Acrodermatitis, LAD (MKLN1)	Clear
<input checked="" type="checkbox"/> Leukodystrophy (TSEN54 Exon 5, Standard Schnauzer Variant)	Clear
<input checked="" type="checkbox"/> Ligneous Membranitis, LM (PLG)	Clear
<input checked="" type="checkbox"/> Limb Girdle Muscular Dystrophy (SGCD, Boston Terrier Variant)	Clear
<input checked="" type="checkbox"/> Limb-Girdle Muscular Dystrophy 2D (SGCA Exon 3, Miniature Dachshund Variant)	Clear
<input checked="" type="checkbox"/> Long QT Syndrome (KCNQ1)	Clear
<input checked="" type="checkbox"/> Lundehund Syndrome (LEPREL1)	Clear
<input checked="" type="checkbox"/> Macular Corneal Dystrophy, MCD (CHST6)	Clear
<input checked="" type="checkbox"/> Malignant Hyperthermia (RYR1)	Clear
<input checked="" type="checkbox"/> May-Hegglin Anomaly (MYH9)	Clear
<input checked="" type="checkbox"/> Methemoglobinemia (CYB5R3, Pit Bull Terrier Variant)	Clear
<input checked="" type="checkbox"/> Methemoglobinemia (CYB5R3)	Clear
<input checked="" type="checkbox"/> Microphthalmia (RBP4 Exon 2, Soft Coated Wheaten Terrier Variant)	Clear
<input checked="" type="checkbox"/> Mucopolysaccharidosis IIIB, Sanfilippo Syndrome Type B, MPS IIIB (NAGLU, Schipperke Variant)	Clear
<input checked="" type="checkbox"/> Mucopolysaccharidosis Type IIIA, Sanfilippo Syndrome Type A, MPS IIIA (SGSH Exon 6, Dachshund Variant)	Clear
<input checked="" type="checkbox"/> Mucopolysaccharidosis Type IIIA, Sanfilippo Syndrome Type A, MPS IIIA (SGSH Exon 6, New Zealand Huntaway Variant)	Clear

OTHER RESULTS

<input checked="" type="checkbox"/> Mucopolysaccharidosis Type VI, Maroteaux-Lamy Syndrome, MPS VI (ARSB Exon 5, Miniature Pinscher Variant)	Clear
<input checked="" type="checkbox"/> Mucopolysaccharidosis Type VII, Sly Syndrome, MPS VII (GUSB Exon 3, German Shepherd Variant)	Clear
<input checked="" type="checkbox"/> Mucopolysaccharidosis Type VII, Sly Syndrome, MPS VII (GUSB Exon 5, Terrier Brasileiro Variant)	Clear
<input checked="" type="checkbox"/> Multiple Drug Sensitivity (ABCB1)	Clear
<input checked="" type="checkbox"/> Muscular Dystrophy (DMD, Cavalier King Charles Spaniel Variant 1)	Clear
<input checked="" type="checkbox"/> Muscular Dystrophy (DMD, Golden Retriever Variant)	Clear
<input checked="" type="checkbox"/> Musladin-Lueke Syndrome, MLS (ADAMTSL2)	Clear
<input checked="" type="checkbox"/> Myasthenia Gravis-Like Syndrome (CHRNE, Heiderterrier Variant)	Clear
<input checked="" type="checkbox"/> Myotonia Congenita (CLCN1 Exon 23, Australian Cattle Dog Variant)	Clear
<input checked="" type="checkbox"/> Myotonia Congenita (CLCN1 Exon 7, Miniature Schnauzer Variant)	Clear
<input checked="" type="checkbox"/> Narcolepsy (HCRTR2 Exon 1, Dachshund Variant)	Clear
<input checked="" type="checkbox"/> Narcolepsy (HCRTR2 Intron 4, Doberman Pinscher Variant)	Clear
<input checked="" type="checkbox"/> Narcolepsy (HCRTR2 Intron 6, Labrador Retriever Variant)	Clear
<input checked="" type="checkbox"/> Nemaline Myopathy (NEB, American Bulldog Variant)	Clear
<input checked="" type="checkbox"/> Neonatal Cerebellar Cortical Degeneration (SPTBN2, Beagle Variant)	Clear
<input checked="" type="checkbox"/> Neonatal Encephalopathy with Seizures, NEWS (ATF2)	Clear
<input checked="" type="checkbox"/> Neonatal Interstitial Lung Disease (LAMP3)	Clear
<input checked="" type="checkbox"/> Neuroaxonal Dystrophy, NAD (VPS11, Rottweiler Variant)	Clear



















OTHER RESULTS

 Neuroaxonal Dystrophy, NAD (TECPR2, Spanish Water Dog Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 1, NCL 1 (PPT1 Exon 8, Dachshund Variant 1)	Clear
 Neuronal Ceroid Lipofuscinosis 10, NCL 10 (CTSD Exon 5, American Bulldog Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 2, NCL 2 (TPP1 Exon 4, Dachshund Variant 2)	Clear
 Neuronal Ceroid Lipofuscinosis 5, NCL 5 (CLN5 Exon 4 SNP, Border Collie Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 5, NCL 5 (CLN5 Exon 4 Deletion, Golden Retriever Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 6, NCL 6 (CLN6 Exon 7, Australian Shepherd Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 7, NCL 7 (MFSD8, Chihuahua and Chinese Crested Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 8, NCL 8 (CLN8, Australian Shepherd Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 8, NCL 8 (CLN8 Exon 2, English Setter Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 8, NCL 8 (CLN8 Insertion, Saluki Variant)	Clear
 Neuronal Ceroid Lipofuscinosis, Cerebellar Ataxia, NCL4A (ARSG Exon 2, American Staffordshire Terrier Variant)	Clear
 Oculocutaneous Albinism, OCA (SLC45A2 Exon 6, Bullmastiff Variant)	Clear
 Oculocutaneous Albinism, OCA (SLC45A2, Small Breed Variant)	Clear
 Oculoskeletal Dysplasia 2 (COL9A2, Samoyed Variant)	Clear
 Osteochondrodysplasia (SLC13A1, Poodle Variant)	Clear
 Osteogenesis Imperfecta (COL1A2, Beagle Variant)	Clear
 Osteogenesis Imperfecta (SERPINH1, Dachshund Variant)	Clear



















OTHER RESULTS

<input checked="" type="checkbox"/> Osteogenesis Imperfecta (COL1A1, Golden Retriever Variant)	Clear
<input checked="" type="checkbox"/> P2Y12 Receptor Platelet Disorder (P2Y12)	Clear
<input checked="" type="checkbox"/> Pachyonychia Congenita (KRT16, Dogue de Bordeaux Variant)	Clear
<input checked="" type="checkbox"/> Paroxysmal Dyskinesia, PxD (PIGN)	Clear
<input checked="" type="checkbox"/> Persistent Mullerian Duct Syndrome, PMDS (AMHR2)	Clear
<input checked="" type="checkbox"/> Pituitary Dwarfism (POU1F1 Intron 4, Karelian Bear Dog Variant)	Clear
<input checked="" type="checkbox"/> Platelet Factor X Receptor Deficiency, Scott Syndrome (TMEM16F)	Clear
<input checked="" type="checkbox"/> Polycystic Kidney Disease, PKD (PKD1)	Clear
<input checked="" type="checkbox"/> Pompe's Disease (GAA, Finnish and Swedish Lapphund, Lapponian Herder Variant)	Clear
<input checked="" type="checkbox"/> Prekallikrein Deficiency (KLKB1 Exon 8)	Clear
<input checked="" type="checkbox"/> Primary Ciliary Dyskinesia, PCD (NME5, Alaskan Malamute Variant)	Clear
<input checked="" type="checkbox"/> Primary Ciliary Dyskinesia, PCD (CCDC39 Exon 3, Old English Sheepdog Variant)	Clear
<input checked="" type="checkbox"/> Primary Hyperoxaluria (AGXT)	Clear
<input checked="" type="checkbox"/> Primary Lens Luxation (ADAMTS17)	Clear
<input checked="" type="checkbox"/> Primary Open Angle Glaucoma (ADAMTS17 Exon 11, Basset Fauve de Bretagne Variant)	Clear
<input checked="" type="checkbox"/> Primary Open Angle Glaucoma (ADAMTS10 Exon 17, Beagle Variant)	Clear
<input checked="" type="checkbox"/> Primary Open Angle Glaucoma (ADAMTS10 Exon 9, Norwegian Elkhound Variant)	Clear
<input checked="" type="checkbox"/> Primary Open Angle Glaucoma and Primary Lens Luxation (ADAMTS17 Exon 2, Chinese Shar-Pei Variant)	Clear



















OTHER RESULTS

 Progressive Retinal Atrophy (SAG)	Clear
 Progressive Retinal Atrophy (IFT122 Exon 26, Lapponian Herder Variant)	Clear
 Progressive Retinal Atrophy, Bardet-Biedl Syndrome (BBS2 Exon 11, Shetland Sheepdog Variant)	Clear
 Progressive Retinal Atrophy, CNGA (CNGA1 Exon 9)	Clear
 Progressive Retinal Atrophy, crd1 (PDE6B, American Staffordshire Terrier Variant)	Clear
 Progressive Retinal Atrophy, crd4/cord1 (RPGRIP1)	Clear
 Progressive Retinal Atrophy, PRA1 (CNGB1)	Clear
 Progressive Retinal Atrophy, PRA3 (FAM161A)	Clear
 Progressive Retinal Atrophy, prcd (PRCD Exon 1)	Clear
 Progressive Retinal Atrophy, rcd1 (PDE6B Exon 21, Irish Setter Variant)	Clear
 Progressive Retinal Atrophy, rcd3 (PDE6A)	Clear
 Proportionate Dwarfism (GH1 Exon 5, Chihuahua Variant)	Clear
 Protein Losing Nephropathy, PLN (NPHS1)	Clear
 Pyruvate Dehydrogenase Deficiency (PDP1, Spaniel Variant)	Clear
 Pyruvate Kinase Deficiency (PKLR Exon 5, Basenji Variant)	Clear
 Pyruvate Kinase Deficiency (PKLR Exon 7, Beagle Variant)	Clear
 Pyruvate Kinase Deficiency (PKLR Exon 10, Terrier Variant)	Clear
 Pyruvate Kinase Deficiency (PKLR Exon 7, Labrador Retriever Variant)	Clear

OTHER RESULTS

 Pyruvate Kinase Deficiency (PKLR Exon 7, Pug Variant)	Clear
 Raine Syndrome (FAM20C)	Clear
 Recurrent Inflammatory Pulmonary Disease, RIPD (AKNA, Rough Collie Variant)	Clear
 Renal Cystadenocarcinoma and Nodular Dermatofibrosis (FLCN Exon 7)	Clear
 Retina Dysplasia and/or Optic Nerve Hypoplasia (SIX6 Exon 1, Golden Retriever Variant)	Clear
 Sensory Neuropathy (FAM134B, Border Collie Variant)	Clear
 Severe Combined Immunodeficiency, SCID (PRKDC, Terrier Variant)	Clear
 Severe Combined Immunodeficiency, SCID (RAG1, Wetterhoun Variant)	Clear
 Shaking Puppy Syndrome (PLP1, English Springer Spaniel Variant)	Clear
 Shar-Pei Autoinflammatory Disease, SPAID, Shar-Pei Fever (MTBP)	Clear
 Skeletal Dysplasia 2, SD2 (COL11A2, Labrador Retriever Variant)	Clear
 Skin Fragility Syndrome (PKP1, Chesapeake Bay Retriever Variant)	Clear
 Spinocerebellar Ataxia (SCN8A, Alpine Dachsbracke Variant)	Clear
 Spinocerebellar Ataxia with Myokymia and/or Seizures (KCNJ10)	Clear
 Spongy Degeneration with Cerebellar Ataxia 1 (KCNJ10)	Clear
 Spongy Degeneration with Cerebellar Ataxia 2 (ATP1B2)	Clear
 Stargardt Disease (ABCA4 Exon 28, Labrador Retriever Variant)	Clear
 Succinic Semialdehyde Dehydrogenase Deficiency (ALDH5A1 Exon 7, Saluki Variant)	Clear

OTHER RESULTS

 Thrombopathia (RASGRP1 Exon 5, American Eskimo Dog Variant)	Clear
 Thrombopathia (RASGRP1 Exon 5, Basset Hound Variant)	Clear
 Thrombopathia (RASGRP1 Exon 8, Landseer Variant)	Clear
 Trapped Neutrophil Syndrome, TNS (VPS13B)	Clear
 Ullrich-like Congenital Muscular Dystrophy (COL6A3 Exon 10, Labrador Retriever Variant)	Clear
 Ullrich-like Congenital Muscular Dystrophy (COL6A1 Exon 3, Landseer Variant)	Clear
 Unilateral Deafness and Vestibular Syndrome (PTPRQ Exon 39, Doberman Pinscher)	Clear
 Urate Kidney & Bladder Stones (SLC2A9)	Clear
 Von Willebrand Disease Type II, Type II vWD (VWF, Pointer Variant)	Clear
 Von Willebrand Disease Type III, Type III vWD (VWF Exon 4, Terrier Variant)	Clear
 Von Willebrand Disease Type III, Type III vWD (VWF Intron 16, Nederlandse Kooikerhondje Variant)	Clear
 Von Willebrand Disease Type III, Type III vWD (VWF Exon 7, Shetland Sheepdog Variant)	Clear
 X-Linked Hereditary Nephropathy, XLHN (COL4A5 Exon 35, Samoyed Variant 2)	Clear
 X-Linked Myotubular Myopathy (MTM1, Labrador Retriever Variant)	Clear
 X-Linked Progressive Retinal Atrophy 1, XL-PRA1 (RPGR)	Clear
 X-linked Severe Combined Immunodeficiency, X-SCID (IL2RG Exon 1, Basset Hound Variant)	Clear
 X-linked Severe Combined Immunodeficiency, X-SCID (IL2RG, Corgi Variant)	Clear
 Xanthine Urolithiasis (XDH, Mixed Breed Variant)	Clear

OTHER RESULTS

β -Mannosidosis (MANBA Exon 16, Mixed-Breed Variant) Clear

Mast Cell Tumor No result

Registration: American Kennel Club (AKC)



HEALTH REPORT

Notable result

ALT Activity

Jill inherited one copy of the variant we tested for Alanine Aminotransferase Activity

Why is this important to your vet?

Jill has one copy of a variant associated with reduced ALT activity as measured on veterinary blood chemistry panels. Please inform your veterinarian that Jill has this genotype, as ALT is often used as an indicator of liver health and Jill is likely to have a lower than average resting ALT activity. As such, an increase in Jill's ALT activity could be evidence of liver damage, even if it is within normal limits by standard ALT reference ranges.

What is Alanine Aminotransferase Activity?

Alanine aminotransferase (ALT) is a clinical tool that can be used by veterinarians to better monitor liver health. This result is not associated with liver disease. ALT is one of several values veterinarians measure on routine blood work to evaluate the liver. It is a naturally occurring enzyme located in liver cells that helps break down protein. When the liver is damaged or inflamed, ALT is released into the bloodstream.

How vets diagnose this condition

Genetic testing is the only way to provide your veterinarian with this clinical tool.

How this condition is treated

Veterinarians may recommend blood work to establish a baseline ALT value for healthy dogs with one or two copies of this variant.

HEALTH REPORT

Notable result

Degenerative Myelopathy, DM

Jill inherited one copy of the variant we tested for Degenerative Myelopathy, DM

What does this result mean?

This result should not impact Jill's health but it could have consequences for siblings or other related dogs if they inherited two copies of the variant. We recommend discussing this result with their owners or breeders if you are in contact.

Impact on Breeding

Your dog carries this variant and will pass it on to ~50% of her offspring.

What is Degenerative Myelopathy, DM?

The dog equivalent of Amyotrophic Lateral Sclerosis, or Lou Gehrig's disease, DM is a progressive degenerative disorder of the spinal cord. Because the nerves that control the hind limbs are the first to degenerate, the most common clinical signs are back muscle wasting and gait abnormalities.

When signs & symptoms develop in affected dogs

Affected dogs do not usually show signs of DM until they are at least 8 years old.

How vets diagnose this condition

Definitive diagnosis requires microscopic analysis of the spinal cord after death. However, veterinarians use clues such as genetic testing, breed, age, and other diagnostics to determine if DM is the most likely cause of your dog's clinical signs.

How this condition is treated

As dogs are seniors at the time of onset, the treatment for DM is aimed towards increasing their comfort through a combination of lifestyle changes, medication, and physical therapy.

Actions to take if your dog is affected

- Giving your dog the best quality of life for as long as possible is all you can do after receiving this diagnosis.

INBREEDING AND DIVERSITY

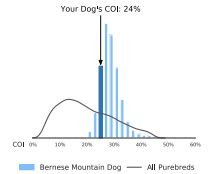
CATEGORY

RESULT

Coefficient Of Inbreeding

Our genetic COI measures the proportion of your dog's genome where the genes on the mother's side are identical by descent to those on the father's side.

24%

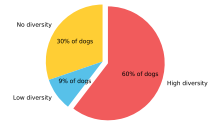


MHC Class II - DLA DRB1

A Dog Leukocyte Antigen (DLA) gene, DRB1 encodes a major histocompatibility complex (MHC) protein involved in the immune response. Some studies have shown associations between certain DRB1 haplotypes and autoimmune diseases such as Addison's disease (hypoadrenocorticism) in certain dog breeds, but these findings have yet to be scientifically validated.

High Diversity

How common is this amount of diversity in purebreds:



MHC Class II - DLA DQA1 and DQB1

DQA1 and DQB1 are two tightly linked DLA genes that code for MHC proteins involved in the immune response. A number of studies have shown correlations of DQA-DQB1 haplotypes and certain autoimmune diseases; however, these have not yet been scientifically validated.

High Diversity

How common is this amount of diversity in purebreds:

