

# Cosmo

Breed: Lagotto Romagnolo  
Microchip number: 991003002239287  
Birth date: 2023-06-18

Registration number: 5100139845  
Test date: 2024-11-02  
ID kit: DBZTQXF



## Cosmo's Profile

### Pet information

**Registered name**

Cosmo

**Sex**

F

**Owner reported breed**

Lagotto Romagnolo

**Date of birth**

2023-06-18

**Microchip number**

991003002239287

### Genetic Diversity

**Cosmo's Percentage of Heterozygosity**

35%

### Health summary

At Risk 0 conditions

Carrier 0 conditions

Clear 271 conditions

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## Genetic Diversity

### Heterozygosity

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#### Cosmo's Percentage of Heterozygosity

35%

Cosmo's genome analysis shows an average level of genetic heterozygosity when compared with other Lagotto Romagnolo - Romagna Water Dogs.

#### Typical Range for Lagotto Romagnolo - Romagna Water Dogs

32% - 38%

## Health conditions known in the breed

Benign Familial Juvenile Epilepsy	Gene	Risk Variant	Copies	Inheritance	Result
	LG12	A>T	0	AR	<b>Clear</b>

### Information about the genetic condition

Onset of epileptic seizures in BFJE is between 5 to 9 weeks of age. The seizures consist of whole-body tremors, ataxia (uncoordinated movements), and stiffness. Some affected puppies are able to stand and/or walk during a seizure while others are recumbent and unable to stand. The epileptic signs can sometimes be associated with alterations of consciousness. Frequency of seizures can vary between individuals: there can be several seizures a day or sporadic seizures a few times a week. Usually an affected puppy seems completely normal between the seizures. However, in severe cases there can be neurological signs, such as generalized ataxia between the seizures. The BFJE form of epilepsy is relatively benign since the seizures typically end by 4 months of age.

### Breeder recommendation

This disease is autosomal recessive meaning that two copies of the mutation are needed for disease signs to develop. However dogs with one copy of the disease mutation have been reported as having a slightly increased chance of developing this disease. Breeding a carrier dog with one copy of the BFJE mutation with a clear dog with no copies of the BFJE mutation, will produce a litter with around half carrier puppies and half clear puppies. Puppies in a litter which is expected to contain carriers should be tested prior to breeding. Carrier to carrier matings are not advised as the resulting litter may contain affected puppies. Please note: It is possible that disease signs similar to the ones caused by the BFJE mutation could develop due to a different genetic or clinical cause.

Hyperuricosuria	Gene	Risk Variant	Copies	Inheritance	Result
	SLC2A9	G>T	0	AR	<b>Clear</b>

### Information about the genetic condition

HUU predisposes affected dogs to the formation of urate stones. Clinical signs of urolithiasis include hematuria, pain while urinating, and blockage of the urinary tract. Patients with urinary stones are more susceptible to urinary tract infections. Blockage of the urinary tract is a life-threatening condition that requires immediate veterinary care. In Dalmatians, the clinical signs are more common in males than in females. As many as 34% of all male Dalmatians are diagnosed with urate stones.

### Breeder recommendation

This disease is autosomal recessive meaning that two copies of the mutation are needed for disease signs to occur. A carrier dog with one copy of the HUU mutation can be safely bred with a clear dog with no copies of the HUU mutation. About half of the puppies will have one copy (carriers) and half will have no copies of the HUU mutation. A dog with two copies of the HUU mutation can be safely bred with a clear dog. The resulting puppies will all be carriers. Puppies in a litter which is expected to contain carriers should be tested prior to breeding. In some breeds, such as the Dalmatian, the frequency of the disease mutation is very high. Carriers and dogs with two copies of the disease mutation (genetically affected dogs) should be used for breeding purposes, with the aim of gradually reducing the frequency of the mutant gene within the breed population. Where possible, matings should be avoided that would result in litters that could contain dogs with two copies of the disease mutation, such as a mating between two dogs with two copies of the HUU mutation or between a dog with one copy and a dog with two copies of the HUU mutation. Please note: It is possible that disease signs similar to the ones caused by the HUU mutation could develop due to a different genetic or clinical cause.

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## Health conditions known in the breed

Lagotto Storage Disease	Gene	Risk Variant	Copies	Inheritance	Result
	ATG4D	G>A	0	AR	<b>Clear</b>

### Information about the genetic condition

The onset of clinical signs and pattern of progression vary considerably between individuals. The first signs can be seen at the age of 4 months to 4 years. Typically the first observable sign of LSD is usually progressive ataxia (uncoordinated movements), which may not be noticed by the owner. Some of the affected dogs also suffer from episodic nystagmus (involuntary eye movement). In some cases, nystagmus is the first sign noticed. Lagotto storage disease is a progressive condition leading to behavioral changes such as restlessness, depression, and aggression. The life expectancy of affected dogs depends on the progression of the disorder and the severity of the signs. Some dogs can live for several years with mild signs, but dogs with severe clinical signs are usually euthanized earlier.

### Breeder recommendation

This disease is autosomal recessive meaning that two copies of the mutation are needed for disease signs to occur. A carrier dog with one copy of the LSD mutation can be safely bred with a clear dog with no copies of the LSD mutation. About half of the puppies will have one copy (carriers) and half will have no copies of the LSD mutation. Puppies in a litter which is expected to contain carriers should be tested prior to breeding. Carrier to carrier matings are not advised as the resulting litter may contain affected puppies. Please note: It is possible that disease signs similar to the ones caused by the LSD mutation could develop due to a different genetic or clinical cause.

Progressive Rod Cone Degeneration (prcd-PRA)	Gene	Risk Variant	Copies	Inheritance	Result
	PRCD	G>A	0	AR	<b>Clear</b>

### Information about the genetic condition

Clinical signs of PRCD are related to progressive loss of function of rod photoreceptors, followed by loss of function of cone photoreceptors. Typical signs of disease include hyper-reflective tapetum and attenuated blood vessels. Age of onset for this form of PRA is generally early adulthood, although exact age of onset may vary significantly among different breeds. The disorder is progressive, causing increasing levels of vision loss and eventual blindness.

### Breeder recommendation

This disease is autosomal recessive meaning that two copies of the mutation are needed for disease signs to occur. A carrier dog with one copy of the prcd-PRA mutation can be safely bred with a clear dog with no copies of the prcd-PRA mutation. About half of the puppies will have one copy (carriers) and half will have no copies of the prcd-PRA mutation. A dog with two copies of the prcd-PRA mutation can be safely bred with a clear dog. The resulting puppies will all be carriers. Puppies in a litter which is expected to contain carriers should be tested prior to breeding. Carrier to carrier matings are not advised as the resulting litter may contain affected puppies. Please note: It is possible that disease signs similar to the ones caused by the prcd-PRA mutation could develop due to a different genetic or clinical cause.

## Traits

### Coat Color

	Gene	Variant	Copies	Result
<b>Fawn</b>	ASIP	ay	0	No effect
<b>Recessive Black</b>	ASIP	a	0	No effect
<b>Tan Points</b> Two copies, or occasionally one copy, of this variant may result in a black and tan coat color pattern.	ASIP	at	2	Tan points possible
<b>Dominant Black</b> One or two copies of the dominant black will give a dog a black coat (depending on other variants), black eye rims, nose and pads. One copy may also give a tiger striped appearance, known as brindle patterning.	CBD103	K <sup>B</sup>	2	Black possible
<b>Mask</b>	MC1R	E <sup>m</sup>	0	No effect
<b>Recessive Red (e1)</b> To show a solid red coat, a dog must inherit two copies of a Recessive Red variant, one from each parent. This can either be two copies of a particular variant, such as this one (e1) or two of any combination of recessive red variants. Recessive red coats will appear white, cream, yellow or red, although there are other variants that can result in a similar appearance. The amount of red pigment in the coat, called the intensity, is governed by other genes.	MC1R	e <sup>1</sup>	1	No effect
<b>Recessive Red (e2)</b>	MC1R	e <sup>2</sup>	0	No effect
<b>Recessive Red (e3)</b>	MC1R	e <sup>3</sup>	0	No effect
<b>Sable (Discovered in the Cocker Spaniel)</b>	MC1R	e <sup>H</sup>	0	No effect
<b>Widow's Peak (Discovered in Ancient dogs)</b>	MC1R	e <sup>A</sup>	0	No effect
<b>Widow's Peak (Discovered in the Afghan Hound and Saluki)</b>	MC1R	e <sup>G</sup>	0	No effect

### Color Modification

	Gene	Variant	Copies	Result
<b>Cocoa (Discovered in the French Bulldog)</b>	HPS3	co	0	No effect

## Color Modification

	Gene	Variant	Copies	Result
<b>Red Intensity</b>  Dogs with two copies of the Red Intensity variant are more likely to show yellow, cream or white coat shades instead of deeper red shades. If the dog does not display solid red or red coat patterns, there will be no visible effect. Other genes, notably variants in the KITLG gene, are also thought to contribute to red pigment intensity variation, so some dogs may have yellow or buff colored coats.	MFSD12	i	1	No effect
<b>Dilution (d1) Linkage test</b>	MLPH	d <sup>1</sup>	0	No effect
<b>Dilution (d2)</b>	MLPH	d <sup>2</sup>	0	No effect
<b>Dilution (d3)</b>	MLPH	d <sup>3</sup>	0	No effect
<b>Chocolate (basd)</b>	TYRP1	b <sup>asd</sup>	0	No effect
<b>Chocolate (bc)</b>  To show chocolate coloration a dog must inherit two chocolate variants, one from each parent. This can either be two copies of a particular variant, such as this one ("bc"), or two of any combination of chocolate variants.	TYRP1	b <sup>c</sup>	1	Black features likely, chocolate possible
<b>Chocolate (bd)</b>  To show chocolate coloration a dog must inherit two chocolate variants, one from each parent. This can either be two copies of a particular variant, such as this one ("bd"), or two of any combination of chocolate variants. This variant is unique in that it can occur on the same chromosome as another chocolate variant, where both variants are donated from one parent. If the other parent does not also donate a chocolate variant, the dog will still express black pigment, not chocolate.	TYRP1	b <sup>d</sup>	1	Black features likely, chocolate possible
<b>Chocolate (be)</b>	TYRP1	b <sup>e</sup>	0	No effect
<b>Chocolate (bh)</b>	TYRP1	b <sup>h</sup>	0	No effect
<b>Chocolate (bs)</b>  To show chocolate coloration a dog must inherit two chocolate variants, one from each parent. This can either be two copies of a particular variant, such as this one ("bs"), or two of any combination of chocolate variants.	TYRP1	b <sup>s</sup>	1	Black features likely, chocolate possible

## Coat Patterns

	Gene	Variant	Copies	Result
<b>Piebald</b> Dog with copies of the Piebald variant are likely to show white spotting, patches and/or a white coat, with two copies having a greater effect than one, although the strength of this effect may be influenced by other genes.	MITF	s <sup>p</sup>	1	White markings possible
<b>Merle</b>	PMEL	M	0	No effect
<b>Harlequin</b>	PSMB7	H	0	No effect
<b>Saddle Tan</b>	RALY	-	0	No effect
<b>Roan Linkage Test</b>	USH2A	TR <sup>r</sup>	0	No effect

## Coat Length and Curl

	Gene	Variant	Copies	Result
<b>Long Hair (lh1)</b> To show a long coat, a dog must inherit two copies of a Long Hair variant, one from each parent. This can either be two copies of a particular variant, such as this one (lh1) or two of any combination of long hair variants. However, there are other variants suspected to influence coat length.	FGF5	lh <sup>1</sup>	2	Long coat
<b>Long Hair (lh2)</b>	FGF5	lh <sup>2</sup>	0	No effect
<b>Long Hair (lh3)</b>	FGF5	lh <sup>3</sup>	0	No effect
<b>Long Hair (lh4)</b>	FGF5	lh <sup>4</sup>	0	No effect
<b>Long Hair (lh5)</b>	FGF5	lh <sup>5</sup>	0	No effect
<b>Curly Coat</b> One copy of this variant is likely to give a soft curl or wave whereas two copies are likely to give a tighter curl. A curly coat is less apparent in dogs with short hair than those with long. There is one other known Curl variant, and likely other unknown variants that exist.	KRT71	C	2	Curly coat likely

## Hairlessness

	Gene	Variant	Copies	Result
<b>Hairlessness (Discovered in the Chinese Crested Dog)</b> Linkage test	FOXI3	Hr <sup>cc</sup>	0	No effect
<b>Hairlessness (Discovered in the American Hairless Terrier)</b>	SGK3	hr <sup>ahT</sup>	0	No effect
<b>Hairlessness (Discovered in the Scottish Deerhound)</b>	SGK3	hr <sup>sd</sup>	0	No effect

## Shedding

	Gene	Variant	Copies	Result
<b>Reduced Shedding</b> One or two copies of the Reduced Shedding variant is likely to reduce a dog's tendency to shed. Copies of the Furnishings variant, particularly two, also reduce the tendency of a dog to shed.	MC5R	sd	2	Low shedder

## More Coat Traits

	Gene	Variant	Copies	Result
<b>Hair Ridge</b>	FGF3, FGF4, FGF19, ORAOV1	R	0	No effect
<b>Furnishings</b> Dogs with one or two copies of the Furnishing variant are likely to display a fuzzy beard, moustache and eyebrows, but a long or curly coat will make this variant less apparent.	RSPO2	F	2	Furnishings likely
<b>Albino</b>	SLC45A2	c <sup>al</sup>	0	No effect

## Head Shape

	Gene	Variant	Copies	Result
<b>Short Snout (BMP3 variant)</b>	BMP3	-	0	No effect
<b>Short Snout (SMOC2 variant)</b>	SMOC2	-	0	No effect

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## Eye Color

	Gene	Variant	Copies	Result
<b>Blue Eyes (Discovered in the Siberian Husky)</b>	ALX4	-	0	No effect

## Ears

	Gene	Variant	Copies	Result
<b>Floppy Ears</b> Dogs with zero copies of this variant are more likely to have permanently upright or prick ears, and fully folded ears are more likely with two copies inherited. Please note however that many genetic variants influence ear carriage. Dogs with some cartilage stiffness to their ears can sometimes raise their ears upright when 'at alert' but will flop down when relaxed.	MSRB3	-	2	Floppy ears more likely

## Extra Toes

	Gene	Variant	Copies	Result
<b>Hind Dewclaws (Discovered in Asian breeds)</b>	LMBR1	DC-1	0	No effect
<b>Hind Dewclaws (Discovered in Western breeds)</b>	LMBR1	DC-2	0	No effect

## More Body Features

	Gene	Variant	Copies	Result
<b>Back Muscle and Bulk</b>	ACSL4	-	0	No effect
<b>High Altitude Adaptation</b>	EPAS1	-	0	No effect
<b>Short Legs (Chondrodysplasia, CDPA)</b>	FGF4	-	0	No effect
<b>Short Legs (Chondrodystrophy, CDDY)</b>	FGF4	-	0	No effect
<b>Short Tail</b>	T-box	T	0	Full tail length likely

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Dental-Skeletal-Retinal Anomaly (Discovered in the Cane Corso)</b>	MIA3	Deletion	—	AR	Inconclusive
<b>2,8-dihydroxyadenine (DHA) Urolithiasis</b>	APRT	G>A	0	AR	Clear
<b>Acral Mutilation Syndrome</b>	GDNF	C>T	0	AR	Clear
<b>Acute Respiratory Distress Syndrome</b>	ANLN	C>T	0	AR	Clear
<b>Alaskan Husky Encephalopathy</b>	SLC19A3	G>A	0	AR	Clear
<b>Alexander Disease</b>	GFAP	G>A	0	AR	Clear
<b>Amelogenesis Imperfecta (Discovered in the Italian Greyhound)</b>	ENAM	Deletion	0	AR	Clear
<b>Amelogenesis Imperfecta (Discovered in the Lancashire Heeler)</b>	Confidential	-	0	AR	Clear
<b>Amelogenesis Imperfecta (Discovered in the Parson Russell Terrier)</b>	ENAM	C>T	0	AR	Clear
<b>Bandera's Neonatal Ataxia</b>	GRM1	Insertion	0	AR	Clear
<b>Bernard-Soulier Syndrome (Discovered in the Cocker Spaniel)</b>	GP9	Deletion	0	AR	Clear
<b>Canine Congenital Stationary Night Blindness (Discovered in the Beagle)</b>	LRIT3	Deletion	0	AR	Clear
<b>Canine Leukocyte Adhesion Deficiency (CLAD), type III</b>	FERMT3	Insertion	0	AR	Clear
<b>Canine Multifocal Retinopathy 1</b>	BEST1	C>T	0	AR	Clear
<b>Canine Multifocal Retinopathy 2</b>	BEST1	G>A	0	AR	Clear
<b>Canine Multifocal Retinopathy 3</b>	BEST1	Deletion	0	AR	Clear
<b>Canine Multiple Systems Degeneration (Discovered in the Chinese Crested Dog)</b>	SERAC1	Deletion	0	AR	Clear
<b>Canine Scott Syndrome</b>	ANO6	G>A	0	AR	Clear
<b>Cardiomyopathy and Juvenile Mortality (Discovered in the Belgian Shepherd)</b>	YARS2	G>A	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Centronuclear Myopathy (Discovered in the Great Dane)</b>	BIN1	A>G	0	AR	Clear
<b>Centronuclear Myopathy (Discovered in the Labrador Retriever)</b>	PTPLA	Insertion	0	AR	Clear
<b>Cerebellar Ataxia</b>	RAB24	A>C	0	AR	Clear
<b>Cerebellar Cortical Degeneration</b>	SNX14	C>T	0	AR	Clear
<b>Cerebellar Hypoplasia</b>	VLDLR	Deletion	0	AR	Clear
<b>Cerebral Dysfunction</b>	SLC6A3	G>A	0	AR	Clear
<b>Chondrodysplasia (Discovered in Norwegian Elkhound and Karelian Bear Dog)</b>	ITGA10	C>T	0	AR	Clear
<b>Chondrodystrophy (CDDY) and Intervertebral Disc Disease (IVDD) Risk</b>	FGF4 retrogene	Insertion	0	AD	Clear
<b>Cleft Lip &amp; Palate with Syndactyly</b>	ADAMTS20	Deletion	0	AR	Clear
<b>Cleft Palate</b>	DLX6	C>A	0	AR	Clear
<b>CNS Atrophy with Cerebellar Ataxia (Discovered in the Belgian Shepherd)</b>	SEPP1	Deletion	0	AR	Clear
<b>Coat Color Dilution and Neurological Defects (Discovered in the Miniature Dachshund)</b>	MYO5A	Insertion	0	AR	Clear
<b>Collie Eye Anomaly (CEA)</b>	NHEJ1	Deletion	0	AR	Clear
<b>Complement 3 Deficiency</b>	C3	Deletion	0	AR	Clear
<b>Cone Degeneration (Discovered in the Alaskan Malamute)</b>	CNGB3	Deletion	0	AR	Clear
<b>Cone Degeneration (Discovered in the German Shepherd Dog)</b>	CNGA3	C>T	0	AR	Clear
<b>Cone Degeneration (Discovered in the German Shorthaired Pointer)</b>	CNGB3	G>A	0	AR	Clear
<b>Cone-Rod Dystrophy</b>	NPHP4	Deletion	0	AR	Clear
<b>Cone-Rod Dystrophy 1</b>	PDE6B	Deletion	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Cone-Rod Dystrophy 2</b>	IQCB1	Insertion	0	AR	Clear
<b>Congenital Cornification (Discovered in the Labrador Retriever)</b>	NSDHL	Deletion	0	XD	Clear
<b>Congenital Dyshormonogenic Hypothyroidism with Goiter (Discovered in the Shih Tzu)</b>	SLC5A5	G>A	0	AR	Clear
<b>Congenital Eye Malformations (Discovered in the Golden Retriever)</b>	SIX6	C>T	0	AD	Clear
<b>Congenital Hypothyroidism (Discovered in the Tenterfield Terrier)</b>	TPO	C>T	0	AR	Clear
<b>Congenital Hypothyroidism (Discovered in the Toy Fox and Rat Terrier)</b>	TPO	C>T	0	AR	Clear
<b>Congenital Muscular Dystrophy (Discovered in the Italian Greyhound)</b>	LAMA2	G>A	0	AR	Clear
<b>Congenital Muscular Dystrophy (Discovered in the Staffordshire Bull Terrier)</b>	LAMA2	Deletion	0	AR	Clear
<b>Congenital Myasthenic Syndrome (Discovered in the Golden Retriever)</b>	COLQ	G>A	0	AR	Clear
<b>Congenital Myasthenic Syndrome (Discovered in the Heideterrier)</b>	CHRNE	Insertion	0	AR	Clear
<b>Congenital Myasthenic Syndrome (Discovered in the Jack Russell Terrier)</b>	CHRNE	Insertion	0	AR	Clear
<b>Congenital Myasthenic Syndrome (Discovered in the Labrador Retriever)</b>	COLQ	T>C	0	AR	Clear
<b>Congenital Myasthenic Syndrome (Discovered in the Old Danish Pointer)</b>	CHAT	G>A	0	AR	Clear
<b>Congenital Stationary Night Blindness (CSNB)</b>	RPE65	A>T	0	AR	Clear
<b>Craniomandibular Osteopathy (Discovered in Scottish Terrier breeds)</b>	SLC37A2	C>T	0	AD	Clear
<b>Craniomandibular Osteopathy (Discovered in the Australian Terrier)</b>	COL1A1	C>T	0	AD	Clear
<b>Craniomandibular Osteopathy (Discovered in the Basset Hound)</b>	SLC37A2	C>T	0	AD	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Craniomandibular Osteopathy (Discovered in the Weimaraner)</b>	SLC35D1	Deletion	0	AD	Clear
<b>Cystic Renal Dysplasia and Hepatic Fibrosis</b>	INPP5E	G>A	0	AR	Clear
<b>Cystinuria Type I-A</b>	SLC3A1	C>T	0	AR	Clear
<b>Cystinuria Type II-A</b>	SLC3A1	Deletion	0	AD	Clear
<b>Darier Disease (Discovered in the Irish Terrier)</b>	ATP2A2	Insertion	0	AD	Clear
<b>Deafness and Vestibular Dysfunction (DINGS1), (Discovered in Doberman Pinscher)</b>	PTPRQ	Insertion	0	AR	Clear
<b>Deafness and Vestibular Dysfunction (DINGS2), (Discovered in Doberman Pinscher)</b>	MYO7A	G>A	0	AR	Clear
<b>Degenerative Myelopathy</b>	SOD1	G>A	0	AR	Clear
<b>Demyelinating Neuropathy</b>	SBF2	G>T	0	AR	Clear
<b>Dental Hypomineralization</b>	FAM20C	C>T	0	AR	Clear
<b>Dilated Cardiomyopathy (Discovered in the Schnauzer)</b>	RBM20	Deletion	0	AR	Clear
<b>Disproportionate Dwarfism (Discovered in the Dogo Argentino)</b>	PRKG2	C>A	0	AR	Clear
<b>Dominant Progressive Retinal Atrophy</b>	RHO	C>G	0	AD	Clear
<b>Dystrophic Epidermolysis Bullosa (Discovered in the Basset Hound)</b>	COL7A1	Insertion	0	AR	Clear
<b>Dystrophic Epidermolysis Bullosa (Discovered in the Central Asian Ovcharka)</b>	COL7A1	C>T	0	AR	Clear
<b>Dystrophic Epidermolysis Bullosa (Discovered in the Golden Retriever)</b>	COL7A1	C>T	0	AR	Clear
<b>Early Adult Onset Deafness For Border Collies only (Linkage test)</b>	Intergenic	Insertion	0	AR	Clear
<b>Early Retinal Degeneration (Discovered in the Norwegian Elkhound)</b>	STK38L	Insertion	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Early-Onset Adult Deafness (Discovered in the Rhodesian Ridgeback)</b>	EPS8L2	Deletion	0	AR	Clear
<b>Early-Onset Progressive Polyneuropathy (Discovered in the Alaskan Malamute)</b>	NDRG1	G>T	0	AR	Clear
<b>Early-Onset Progressive Polyneuropathy (Discovered in the Greyhound)</b>	NDRG1	Deletion	0	AR	Clear
<b>Early-Onset Progressive Retinal Atrophy (Discovered in the Portuguese Water Dog)</b>	CCDC66	Insertion	0	AR	Clear
<b>Early-Onset Progressive Retinal Atrophy, (Discovered in the Spanish Water Dog)</b>	PDE6B	Deletion	0	AR	Clear
<b>Ehlers-Danlos Syndrome (Discovered in mixed breed)</b>	COL5A1	G>A	0	AD	Clear
<b>Ehlers-Danlos Syndrome (Discovered in the Labrador Retriever)</b>	COL5A1	Deletion	0	AD	Clear
<b>Epidermolytic Hyperkeratosis</b>	KRT10	G>T	0	AR	Clear
<b>Episodic Falling Syndrome</b>	BCAN	Insertion	0	AR	Clear
<b>Exercise-Induced Collapse</b>	DNM1	G>T	0	AR	Clear
<b>Factor VII Deficiency</b>	F7	G>A	0	AR	Clear
<b>Factor XI Deficiency</b>	FXI	Insertion	0	AD	Clear
<b>Familial Nephropathy (Discovered in the English Cocker Spaniel)</b>	COL4A4	A>T	0	AR	Clear
<b>Familial Nephropathy (Discovered in the English Springer Spaniel)</b>	COL4A4	C>T	0	AR	Clear
<b>Fanconi Syndrome</b>	FAN1	Deletion	0	AR	Clear
<b>Fetal Onset Neuroaxonal Dystrophy</b>	MFN2	G>C	0	AR	Clear
<b>Focal Non-Epidermolytic Palmoplantar Keratoderma</b>	KRT16	G>C	0	AR	Clear
<b>Generalized Progressive Retinal Atrophy (Discovered in the Schapendoes)</b>	CCDC66	Insertion	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Glanzmann Thrombasthenia Type I (Discovered in Great Pyrenees)</b>	ITGA2B	C>G	0	AR	Clear
<b>Glanzmann Thrombasthenia Type I (Discovered in mixed breed dogs)</b>	ITGA2B	C>T	0	AR	Clear
<b>Globoid Cell Leukodystrophy (Discovered in Terriers)</b>	GALC	A>C	0	AR	Clear
<b>Globoid Cell Leukodystrophy (Discovered in the Irish Setter)</b>	GALC	A>T	0	AR	Clear
<b>Glycogen Storage Disease Type Ia (Discovered in the German Pinscher)</b>	G6PC	Insertion	0	AR	Clear
<b>Glycogen Storage Disease Type Ia (Discovered in the Maltese)</b>	G6PC	G>C	0	AR	Clear
<b>Glycogen Storage Disease Type IIIa, (GSD IIIa)</b>	AGL	Deletion	0	AR	Clear
<b>GM1 Gangliosidosis (Discovered in the Portuguese Water Dog)</b>	GLB1	G>A	0	AR	Clear
<b>GM1 Gangliosidosis (Discovered in the Shiba)</b>	GLB1	Deletion	0	AR	Clear
<b>GM2 Gangliosidosis (Discovered in the Japanese Chin)</b>	HEXA	G>A	0	AR	Clear
<b>GM2 Gangliosidosis (Discovered in the Toy Poodle)</b>	HEXB	Deletion	0	AR	Clear
<b>Hemophilia A (Discovered in Old English Sheepdog)</b>	FVIII	C>T	0	XR	Clear
<b>Hemophilia A (Discovered in the Boxer)</b>	FVIII	C>G	0	XR	Clear
<b>Hemophilia A (Discovered in the German Shepherd Dog - Variant 1)</b>	FVIII	G>A	0	XR	Clear
<b>Hemophilia A (Discovered in the German Shepherd Dog - Variant 2)</b>	FVIII	G>A	0	XR	Clear
<b>Hemophilia A (Discovered in the Havanese)</b>	FVIII	Insertion	0	XR	Clear
<b>Hemophilia A (Discovered in the Labrador Retriever)</b>	Confidential	-	0	XR	Clear
<b>Hemophilia B</b>	FIX	G>A	0	XR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Hemophilia B (Discovered in the Airedale Terrier)</b>	FIX	Insertion	0	XR	Clear
<b>Hemophilia B (Discovered in the Lhasa Apso)</b>	FIX	Deletion	0	XR	Clear
<b>Hereditary Ataxia (Discovered in the Belgian Malinois)</b>	SLC12A6	Insertion	0	AR	Clear
<b>Hereditary Ataxia (Discovered in the Norwegian Buhund)</b>	KCNIP4	T>C	0	AR	Clear
<b>Hereditary Calcium Oxalate Urolithiasis, Type 1</b>	Confidential	-	0	AR	Clear
<b>Hereditary Elliptocytosis</b>	SPTB	C>T	0	AD	Clear
<b>Hereditary Footpad Hyperkeratosis</b>	FAM83G	G>C	0	AR	Clear
<b>Hereditary Nasal Parakeratosis (Discovered in the Greyhound)</b>	SUV39H2	Deletion	0	AR	Clear
<b>Hereditary Nasal Parakeratosis (Discovered in the Labrador Retriever)</b>	SUV39H2	A>C	0	AR	Clear
<b>Hereditary Vitamin D-Resistant Rickets Type II</b>	VDR	Deletion	0	AR	Clear
<b>Hypocatalasia</b>	CAT	G>A	0	AR	Clear
<b>Hypomyelination</b>	FNIP2	Deletion	0	AR	Clear
<b>Hypophosphatasia</b>	Confidential	-	0	AR	Clear
<b>Ichthyosis (Discovered in the American Bulldog)</b>	NIPAL4	Deletion	0	AR	Clear
<b>Ichthyosis (Discovered in the Great Dane)</b>	SLC27A4	G>A	0	AR	Clear
<b>Ichthyosis Type 2 (Discovered in the Golden Retriever)</b>	ABHD5	Deletion	0	AR	Clear
<b>Inflammatory Myopathy (Discovered in the Dutch Shepherd Dog)</b>	SLC25A12	A>G	0	AR	Clear
<b>Inflammatory Pulmonary Disease (Discovered in the Rough Collie)</b>	AKNA	Deletion	0	AR	Clear
<b>Intestinal Cobalamin Malabsorption (Discovered in the Beagle)</b>	CUBN	Deletion	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Intestinal Cobalamin Malabsorption (Discovered in the Border Collie)</b>	CUBN	Deletion	0	AR	Clear
<b>Intestinal Cobalamin Malabsorption (Discovered in the Komondor)</b>	CUBN	G>A	0	AR	Clear
<b>Intestinal Lipid Malabsorption (Discovered in the Australian Kelpie)</b>	ACSL5	Deletion	0	AR	Clear
<b>Junctional Epidermolysis Bullosa (Discovered in the Australian Cattle Dog Mix)</b>	LAMA3	T>A	0	AR	Clear
<b>Junctional Epidermolysis Bullosa (Discovered in the Australian Shepherd)</b>	LAMB3	A>G	0	AR	Clear
<b>Juvenile Cataract (Discovered in the Wirehaired Pointing Griffon)</b>	FYCO1	Deletion	0	AR	Clear
<b>Juvenile Dilated Cardiomyopathy (Discovered in the Toy Manchester Terrier)</b>	ABCC9	G>A	0	AR	Clear
<b>Juvenile Encephalopathy (Discovered in the Parson Russell Terrier)</b>	Confidential	-	0	AR	Clear
<b>Juvenile Laryngeal Paralysis and Polyneuropathy</b>	RAB3GAP1	Deletion	0	AR	Clear
<b>Juvenile Myoclonic Epilepsy</b>	DIRAS1	Deletion	0	AR	Clear
<b>L-2-Hydroxyglutaric aciduria (Discovered in the Staffordshire Bull Terrier)</b>	L2HGDH	T>C	0	AR	Clear
<b>L-2-Hydroxyglutaric Aciduria (Discovered in the West Highland White Terrier)</b>	Confidential	-	0	AR	Clear
<b>Lafora Disease (Linkage test)</b>	NHLRC1	Insertion	0	AR	Clear
<b>Lamellar Ichthyosis</b>	TGM1	Insertion	0	AR	Clear
<b>Laryngeal Paralysis (Discovered in the Bull Terrier and Miniature Bull Terrier)</b>	RAPGEF6	Insertion	0	AR	Clear
<b>Leigh-like Subacute Necrotizing Encephalopathy (Discovered in the Yorkshire Terrier)</b>	SLC19A3	Insertion	0	AR	Clear
<b>Lethal Acrodermatitis (Discovered in the Bull Terrier)</b>	MKLN1	A>C	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Leukodystrophy (Discovered in the Standard Schnauzer)</b>	TSEN54	C>T	0	AR	Clear
<b>Ligneous Membranitis</b>	PLG	T>A	0	AR	Clear
<b>Limb-girdle Muscular Dystrophy (Discovered in the Boston Terrier) Variant 1</b>	SGCD	Deletion	0	AR	Clear
<b>Limb-girdle Muscular Dystrophy, Type L3 (Discovered in the Miniature Dachshund)</b>	SGCA	G>A	0	AR	Clear
<b>Lung Developmental Disease (Discovered in the Airedale Terrier)</b>	LAMP3	C>T	0	AR	Clear
<b>Macrothrombocytopenia (Discovered in Norfolk and Cairn Terrier)</b>	TUBB1	G>A	0	AR	Clear
<b>May-Hegglin Anomaly</b>	MYH9	G>A	0	AD	Clear
<b>MDR1 Medication Sensitivity</b>	MDR1/ABCB1	Deletion	0	AD	Clear
<b>Microphthalmia (Discovered in the Soft-Coated Wheaten Terrier)</b>	RBP4	Deletion	0	AR	Clear
<b>Mucopolysaccharidosis Type IIIA (Discovered in the Dachshund)</b>	SGSH	C>A	0	AR	Clear
<b>Mucopolysaccharidosis Type IIIA (Discovered in the New Zealand Huntaway)</b>	SGSH	Insertion	0	AR	Clear
<b>Mucopolysaccharidosis Type VII (Discovered in the Brazilian Terrier)</b>	GUSB	C>T	0	AR	Clear
<b>Mucopolysaccharidosis Type VII (Discovered in the German Shepherd Dog)</b>	GUSB	G>A	0	AR	Clear
<b>Mucopolysaccharidosis VI (Discovered in the Miniature Pinscher)</b>	ARSB	G>A	0	AR	Clear
<b>Muscular Dystrophy (Discovered in the Cavalier King Charles Spaniel)</b>	Dystrophin	G>T	0	XR	Clear
<b>Muscular Dystrophy (Discovered in the Golden Retriever)</b>	Dystrophin	A>G	0	XR	Clear
<b>Muscular Dystrophy (Discovered in the Landseer)</b>	COL6A1	G>T	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Muscular Dystrophy (Discovered in the Norfolk Terrier)</b>	Dystrophin	Deletion	0	XR	Clear
<b>Muscular Dystrophy-Dystroglycanopathy (Discovered in the Labrador Retriever)</b>	LARGE	C>T	0	AR	Clear
<b>Muscular Hypertrophy (Double Muscling)</b>	MSTN	T>A	0	AR	Clear
<b>Musladin-Lueke Syndrome</b>	ADAMTSL2	C>T	0	AR	Clear
<b>Myeloperoxidase Deficiency</b>	MOP	C>T	0	AR	Clear
<b>Myotonia Congenita (Discovered in Australian Cattle Dog)</b>	CLCN1	Insertion	0	AR	Clear
<b>Myotonia Congenita (Discovered in the Labrador Retriever)</b>	CLCN1	T>A	0	AR	Clear
<b>Myotonia Congenita (Discovered in the Miniature Schnauzer)</b>	CLCN1	C>T	0	AR	Clear
<b>Myotubular Myopathy</b>	MTM1	A>C	0	XR	Clear
<b>Narcolepsy (Discovered in the Dachshund)</b>	HCRT2	G>A	0	AR	Clear
<b>Narcolepsy (Discovered in the Labrador Retriever)</b>	HCRT2	G>A	0	AR	Clear
<b>Nemaline Myopathy</b>	NEB	C>A	0	AR	Clear
<b>Neonatal Cerebellar Cortical Degeneration</b>	SPTBN2	Deletion	0	AR	Clear
<b>Neonatal Encephalopathy with Seizures</b>	ATF2	T>G	0	AR	Clear
<b>Neuroaxonal Dystrophy (Discovered in Spanish Water Dog)</b>	TECPR2	C>T	0	AR	Clear
<b>Neuroaxonal Dystrophy (Discovered in the Papillon)</b>	PLA2G6	G>A	0	AR	Clear
<b>Neuroaxonal Dystrophy (Discovered in the Rottweiler)</b>	VPS11	A>G	0	AR	Clear
<b>Neuronal Ceroid Lipofuscinosis 1</b>	PPT1	Insertion	0	AR	Clear
<b>Neuronal Ceroid Lipofuscinosis 12 (Discovered in the Australian Cattle Dog)</b>	ATP13A2	C>T	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
Neuronal Ceroid Lipofuscinosis 5 (Discovered in the Border Collie)	CLN5	C>T	0	AR	Clear
Neuronal Ceroid Lipofuscinosis 5 (Discovered in the Golden Retriever)	CLN5	Deletion	0	AR	Clear
Neuronal Ceroid Lipofuscinosis 7	MFSD8	Deletion	0	AR	Clear
Neuronal Ceroid Lipofuscinosis 8 (Discovered in the Alpine Dachsbracke)	CLN8	Deletion	0	AR	Clear
Neuronal Ceroid Lipofuscinosis 8 (Discovered in the Australian Shepherd)	CLN8	G>A	0	AR	Clear
Neuronal Ceroid Lipofuscinosis 8 (Discovered in the English Setter)	CLN8	T>C	0	AR	Clear
Neuronal Ceroid Lipofuscinosis 8 (Discovered in the Saluki)	CLN8	Insertion	0	AR	Clear
Obesity risk (POMC)	POMC	Deletion	0	AD	Clear
Osteochondrodysplasia	SLC13A1	Deletion	0	AR	Clear
Osteochondromatosis (Discovered in the American Staffordshire Terrier)	EXT2	C>A	0	AR	Clear
Osteogenesis Imperfecta (Discovered in the Beagle)	COL1A2	C>T	0	AD	Clear
Osteogenesis Imperfecta (Discovered in the Dachshund)	SERPINH1	T>C	0	AR	Clear
P2RY12-associated Bleeding Disorder	P2RY12	Deletion	0	AR	Clear
Palmoplantar Hyperkeratosis (Discovered in the Rottweiler)	DSG1	Deletion	0	AR	Clear
Paroxysmal Dyskinesia	PIGN	C>T	0	AR	Clear
Persistent Müllerian Duct Syndrome	AMHR2	C>T	0	AR	Clear
Phosphofructokinase Deficiency	PFKM	G>A	0	AR	Clear
Pituitary Dwarfism (Discovered in the Karelian Bear Dog)	POU1F1	C>A	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Polycystic Kidney Disease</b>	PKD1	G>A	0	AD	Clear
<b>Prekallikrein Deficiency</b>	KLKB1	T>A	0	AR	Clear
<b>Primary Ciliary Dyskinesia</b>	CCDC39	C>T	0	AR	Clear
<b>Primary Ciliary Dyskinesia (Discovered in the Alaskan Malamute)</b>	NME5	Deletion	0	AR	Clear
<b>Primary Lens Luxation</b>	ADAMTS17	G>A	0	AR	Clear
<b>Primary Open Angle Glaucoma (Discovered in Basset Fauve de Bretagne)</b>	ADAMTS17	G>A	0	AR	Clear
<b>Primary Open Angle Glaucoma (Discovered in Petit Basset Griffon Vendéen)</b>	ADAMTS17	Insertion	0	AR	Clear
<b>Primary Open Angle Glaucoma and Lens Luxation (Discovered in Chinese Shar-Pei)</b>	ADAMTS17	Deletion	0	AR	Clear
<b>Progressive Early-Onset Cerebellar Ataxia</b>	SEL1L	T>C	0	AR	Clear
<b>Progressive Retinal Atrophy (Discovered in the Basenji)</b>	SAG	T>C	0	AR	Clear
<b>Progressive Retinal Atrophy (Discovered in the Golden Retriever - GR-PRA 2 variant)</b>	TTC8	Deletion	0	AR	Clear
<b>Progressive Retinal Atrophy (Discovered in the Golden Retriever - GR-PRA1 variant)</b>	SLC4A3	Insertion	0	AR	Clear
<b>Progressive Retinal Atrophy (Discovered in the Lapponian Herder)</b>	IFT122	C>T	0	AR	Clear
<b>Progressive Retinal Atrophy (Discovered in the Lhasa Apso)</b>	IMPG2	Insertion	0	AR	Clear
<b>Progressive Retinal Atrophy (Discovered in the Miniature Long Haired Dachshund)</b>	RPGRIP1	Insertion	0	AR	Clear
<b>Progressive Retinal Atrophy (Discovered in the Papillon and Phalène)</b>	CNGB1	Deletion	0	AR	Clear
<b>Progressive Retinal Atrophy (Discovered in the Shetland Sheepdog - BBS2 variant)</b>	Confidential	-	0	AR	Clear
<b>Progressive Retinal Atrophy (Discovered in the Shetland Sheepdog - CNGA1 variant)</b>	CNGA1	Deletion	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Progressive Retinal Atrophy (Discovered in the Swedish Vallhund)</b>	MERTK	Insertion	0	AR	Clear
<b>Progressive Retinal Atrophy 1 (Discovered in the Italian Greyhound)</b>	Confidential	-	0	AR	Clear
<b>Progressive Retinal Atrophy Type III</b>	FAM161A	Insertion	0	AR	Clear
<b>Protein Losing Nephropathy</b>	NPHS1	G>A	0	AR	Clear
<b>Pyruvate Dehydrogenase Phosphatase 1 Deficiency</b>	PDP1	C>T	0	AR	Clear
<b>Pyruvate Kinase Deficiency (Discovered in the Basenji)</b>	PKLR	Deletion	0	AR	Clear
<b>Pyruvate Kinase Deficiency (Discovered in the Beagle)</b>	PKLR	G>A	0	AR	Clear
<b>Pyruvate Kinase Deficiency (Discovered in the Pug)</b>	PKLR	T>C	0	AR	Clear
<b>Pyruvate Kinase Deficiency (Discovered in the West Highland White Terrier)</b>	PKLR	Insertion	0	AR	Clear
<b>QT Syndrome</b>	KCNQ1	C>A	0	AD	Clear
<b>Renal Cystadenocarcinoma and Nodular Dermatofibrosis</b>	FLCN	A>G	0	AD	Clear
<b>Rod-Cone Dysplasia 1</b>	PDE6B	G>A	0	AR	Clear
<b>Rod-Cone Dysplasia 1a</b>	PDE6B	Insertion	0	AR	Clear
<b>Rod-Cone Dysplasia 3</b>	PDE6A	Deletion	0	AR	Clear
<b>Sensorineural Deafness (Discovered in the Rottweiler)</b>	LOXHD1	G>C	0	AR	Clear
<b>Sensory Ataxic Neuropathy</b>	tRNATyr	Deletion	0	MT	Clear
<b>Sensory Neuropathy</b>	FAM134B	Insertion	0	AR	Clear
<b>Severe Combined Immunodeficiency (Discovered in Frisian Water Dogs)</b>	RAG1	G>T	0	AR	Clear
<b>Severe Combined Immunodeficiency (Discovered in Russell Terriers)</b>	PRKDC	G>T	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>Shaking Puppy Syndrome (Discovered in the Border Terrier)</b>	Confidential	-	0	AR	Clear
<b>Skeletal Dysplasia 2</b>	COL11A2	G>C	0	AR	Clear
<b>Spinocerebellar Ataxia (Late-Onset Ataxia)</b>	CAPN1	G>A	0	AR	Clear
<b>Spinocerebellar Ataxia with Myokymia and/or Seizures</b>	KCNJ10	C>G	0	AR	Clear
<b>Spondylocostal Dysostosis</b>	HES7	Deletion	0	AR	Clear
<b>Spongy Degeneration with Cerebellar Ataxia (Discovered in Belgian Malinois - SDCA1)</b>	KCNJ10	T>C	0	AR	Clear
<b>Spongy Degeneration with Cerebellar Ataxia (Discovered in Belgian Malinois - SDCA2)</b>	ATP1B2	Insertion	0	AR	Clear
<b>Stargardt Disease (Discovered in the Labrador Retriever)</b>	ABCA4	Insertion	0	AR	Clear
<b>Startle Disease (Discovered in Irish Wolfhounds)</b>	SLC6A5	G>T	0	AR	Clear
<b>Startle Disease (Discovered in the Miniature American Shepherd)</b>	Confidential	-	0	AR	Clear
<b>Succinic Semialdehyde Dehydrogenase Deficiency (Discovered in the Saluki)</b>	ALDH5A1	G>A	0	AR	Clear
<b>Thrombopathia (Discovered in the Basset Hound)</b>	RASGRP1	Deletion	0	AR	Clear
<b>Thrombopathia (Discovered in the Eskimo Spitz)</b>	RASGRP1	Insertion	0	AR	Clear
<b>Trapped Neutrophil Syndrome</b>	VPS13B	Deletion	0	AR	Clear
<b>Van den Ende-Gupta Syndrome</b>	SCARF2	Deletion	0	AR	Clear
<b>von Willebrand's Disease, type 1</b>	VWF	G>A	0	AD	Clear
<b>von Willebrand's Disease, type 2</b>	VWF	T>G	0	AR	Clear
<b>von Willebrand's Disease, type 3 (Discovered in the Kooiker Hound)</b>	VWF	G>A	0	AR	Clear
<b>von Willebrand's Disease, type 3 (Discovered in the Scottish Terrier)</b>	VWF	Deletion	0	AR	Clear

## Other health conditions tested

Genetic Condition	Gene	Risk Variant	Copies	Inheritance	Result
<b>von Willebrand's Disease, type 3 (Discovered in the Shetland Sheepdog)</b>	VWF	Deletion	0	AR	Clear
<b>X-Linked Ectodermal Dysplasia</b>	EDA	G>A	0	XR	Clear
<b>X-Linked Hereditary Nephropathy (Discovered in the Navasota Dog)</b>	COL4A5	Deletion	0	XR	Clear
<b>X-Linked Hereditary Nephropathy (Discovered in the Samoyed)</b>	COL4A5	G>T	0	XR	Clear
<b>X-Linked Myotubular Myopathy</b>	MTM1	C>A	0	XR	Clear
<b>X-Linked Progressive Retinal Atrophy 1</b>	RPGR	Deletion	0	XR	Clear
<b>X-Linked Progressive Retinal Atrophy 2</b>	RPGR	Deletion	0	XR	Clear
<b>X-Linked Severe Combined Immunodeficiency (Discovered in the Basset Hound)</b>	IL2RG	Deletion	0	XR	Clear
<b>X-Linked Severe Combined Immunodeficiency (Discovered in the Cardigan Welsh Corgi)</b>	IL2RG	Insertion	0	XR	Clear
<b>X-Linked Tremors</b>	PLP1	A>C	0	XR	Clear
<b>Xanthinuria (Discovered in a mixed breed dog)</b>	Confidential	-	0	AR	Clear
<b>Xanthinuria (Discovered in the Cavalier King Charles Spaniel)</b>	Confidential	-	0	AR	Clear
<b>Xanthinuria (Discovered in the Toy Manchester Terrier)</b>	Confidential	-	0	AR	Clear

## Glossary of genetic terms

### Test result definitions

**At Risk:** Based on the disorder's mode of inheritance, the dog inherited a number of genetic variant(s) which increases the dog's risk of being diagnosed with the associated disorder.

**Carrier:** The dog inherited one copy of a genetic variant when two copies are usually necessary to increase the dog's risk of being diagnosed with the associated disorder. While carriers are usually not at risk of clinical expression of the disorder, carriers of some complex variants may be associated with a low risk of developing the disorder.

**Clear:** The dog did not inherit the genetic variant(s) associated with the disorder and will not be at elevated risk of being diagnosed with the disorder due to this genotype. However, similar clinical signs could develop from different genetic or clinical causes.

**Inconclusive:** An inconclusive result indicates a confident call could not be made based on the data for that genetic variant. Health testing is performed in replicates, and on occasion the outcomes do not agree. This may occur due to an unusual sequence of DNA in the region tested, multiple cell genotypes present due to chimerism or acquired mutations, or due to quality of the DNA sample.

### Inheritance mode definitions

**Autosomal Recessive (AR):** For autosomal recessive disorders, dogs with two copies of the genetic variant are at risk of developing the associated disorder. Dogs with one copy of the variant are considered carriers and are usually not at risk of developing the disorder. However, carriers of some complex variants grouped in this category may be associated with a low risk of developing the disorder. Dogs with one or two copies may pass the disorder-associated variant to their puppies if bred.

**Autosomal Dominant (AD):** For autosomal dominant disorders, dogs with one or two copies of the genetic variant are at risk of developing the associated disorder. Inheriting two copies of the variant may increase the risk of development of the disorder or cause the condition to be more severe. These dogs may pass the disorder-associated variant to their puppies if bred.

**X-linked Recessive (XR):** For X-linked recessive disorders, the genetic variant is found on the X chromosome. Female dogs must inherit two copies of the variant to be at risk of developing the condition, whereas male dogs only need one copy to be at risk. Males and females with any copies of the variant may pass the disorder-associated variant to their puppies if bred.

**X-linked Dominant (XD):** For X-linked dominant disorders, the genetic variant is found on the X chromosome. Both male and female dogs with one copy of the variant are at risk of developing the disorder. Females inheriting two copies of the variant may be at higher risk or show a more severe form of the disorder than with one copy. Males and females with any copies of the variant may pass the disorder-associated variant to their puppies if bred.

**Mitochondrial (MT):** Unlike the two copies of genomic DNA held in the nucleus, there are thousands of mitochondria in each cell of the body, and each holds its own mitochondrial DNA (mtDNA). Mitochondria are called the "powerhouses" of the cell. For a dog to be at risk for a mitochondrial disorder, it must inherit a certain ratio of mtDNA with the associated variant compared to normal mtDNA. mtDNA is inherited only from the mother.