

We are now able to offer testing for a selection of dog coat colour genes including A B D E K M and S*

Coat colour descriptions vary from breed to breed and it is important that you select the correct breed in order to identify which genes you need to test for. Please select **Coat Colour - 1 gene test** if you need to test one gene in your dog, select **Coat Colour - 2 gene test** if you need to test two genes in your dog, select **Coat Colour - 3 gene test** if you need to test three genes in your dog.

Click on the relevant breed below to see information about your breed, and to help you identify which gene(s) you should test for to help you identify the colour genetics in your dog.

If your breed is not listed then please contact June on 01223 395577 as we are looking to add additional breeds to the list as they are requested.

Alaskan Klee Kai
Australian Shepherd
Beagle
Border Collie
Brittany
Bulldog
Cardigan Welsh Corgi
Cocker Spaniel
Curly-coated Retriever
Dachshund (all breeds)
Dalmatian
Dobermann
English Setter
English Springer Spaniel
Field Spaniel
Flat-coated Retriever
French Bulldog
German Long-haired Pointer
German Short-haired Pointer
German Wire-haired Pointer
Labrador Retriever
Large Munsterlander
Newfoundland
Pointer
Pomeranian
Poodle
Portuguese Water Dog
Pug
Weimaraner
Whippet

*Some of the testing will be performed by a partner lab, and because of this it may take up to 4 weeks to receive the results

Alaskan Klee Kai



UKC Breed Standard: All coat colours acceptable provided that the facial mask is distinct and clearly visible and there is a contrasting lighter colour on the dog's throat, chest, breeches, feet, legs and underside. The overall appearance is one of symmetry.

DNA TEST AVAILABLE

Alaskan Klee Kai come in three recognized colour varieties: *black and white*, *gray and white*, or *red and white* (which may appear as a cinnamon or a dark auburn)

Genotype	Main Colour	Nose Colour	Hidden Colour
BB	black and white	black	none
Bb	black and white	black	red and white
bb	red and white	brown	none

Australian Shepherd



KC Breed Standard: Blue merle, black, red merle, red, all with or without tan points. All colours should be strong, clear and rich. White should not dominate the head. On all colours the areas covering and surrounding the ears and eyes are dominated by a colour other than white.

May have white as follows: full or part collar not extending beyond point of withers at the skin, chest, muzzle, moderate blaze, underparts, on fore-legs, on hind-legs, preferably not

extending above the hock joint.

DNA TEST AVAILABLE

Blue merles and blacks have black pigmentation on the nose (and lips). Red merles and reds have liver (brown) pigmentation on the nose (and lips).

Merle is a common pattern in Australian Shepherd. They can be merles of black, called "blue merle", or merles of brown, called "red merle". A single copy of the merle allele is usually visible; two copies usually result in a dog predominately white. The gene causing the difference between a black or red merle is the **B** locus. Red bicolor or red merle dogs are **bb**. There are a few Aussies that carry a gene causing the black to look grey and the brown to look pale brown as in Weimaraners. Such paler dogs are **dd** at the **D** locus. Grey or dilute is harder to notice in merle dogs and in bicolors or tricolors. Most Australian Shepherds are **a^t a^t** at the agouti locus so there is no need to test for alleles at the agouti locus. Although DNA tests are not yet available for alleles of the **K** locus, recent research has shown that black or blue dogs have at least one **K** allele. Dogs that have tan markings (tricolor or merle with copper) are **kk**. A few Aussies are bicolor black because they are **aa** at the agouti locus. Most Australian Shepherds are **EE** at the **E** locus. A few carry an **e** allele which causes "clear red" if homozygous.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEbbDD	brown(red), brown-tan-and-white or brown merle	brown	none
EebbDD	brown(red), brown-tan-and-white or brown merle	brown	clear red, red and white, or red merle
EEbbDd	brown(red), brown-tan-and-white or brown merle	brown	dilute
EebbDd	brown(red), brown-tan-and-white or brown merle	brown	clear red, red and white, or red merle dilute

EEBBdd	diluted black, bicolour, tricolour or blue merle	black	none
EeBBdd	diluted black, bicolour, tricolour or blue merle	black	clear red, red and white, or red merle
EEBbdd	diluted black, bicolour, tricolour or blue merle	black	brown(red), brown-tan-and-white or brown merle
EeBbdd	diluted black, bicolour, tricolour or blue merle	black	clear red, red and white, or red merle brown(red), brown-tan-and-white or brown merle
EEbbdd	diluted brown(red), brown-tan-and-white or brown merle	brown	none
Eebbdd	diluted brown(red), brown-tan-and-white or brown merle	brown	clear red, red and white, or red merle
eeBBdd	diluted clear red, red and white, or red merle	black	dilute black, bicolour, tricolour or blue merle
eeBbdd	diluted clear red, red and white, or red merle	black	brown(red), brown-tan-and-white or brown merle black, bicolour, tricolour or blue merle
eebbdd	diluted clear red, red and white, or red merle	brown	brown(red), brown-tan-and-white or brown merle
eeBBDD	clear red, red and white, or red merle	black	black, bicolour, tricolour or blue merle
eeBbDD	clear red, red and white, or red merle	black	brown(red), brown-tan-and-white or brown merle black, bicolour, tricolour or blue merle
eebbDD	clear red, red and white, or red merle	brown	brown(red), brown-tan-and-white or brown merle
eeBBDD	clear red, red and white, or red merle	black	dilute black, bicolour, tricolour or blue merle
eeBbDD	clear red, red and white, or red merle	black	brown(red), brown-tan-and-white or brown merle black, bicolour, tricolour or blue merle dilute
eebbDD	clear red, red and white, or red merle	brown	brown(red), brown-tan-and-white or brown merle dilute
EEBBDD	black, bicolour, tricolour or blue merle	black	none
EeBBDD	black, bicolour, tricolour or blue merle	black	clear red, red and white, or red merle
EEBbDD	black, bicolour, tricolour or blue merle	black	brown(red), brown-tan-and-white or brown merle
EeBbDD	black, bicolour, tricolour or blue merle	black	clear red, red and white, or red merle brown(red), brown-tan-and-white or brown merle

EEBBDd	black, bicolour, tricolour or blue merle	black	dilute
EeBBDd	black, bicolour, tricolour or blue merle	black	clear red, red and white, or red merle dilute
EEBbDd	black, bicolour, tricolour or blue merle	black	brown(red), brown-tan-and-white or brown merle dilute
EeEbDd	black, bicolour, tricolour or blue merle	black	clear red, red and white, or red merle brown(red), brown-tan-and-white or brown merle dilute

Beagle



KC Breed Standard: Tricolour (black, tan and white); blue, white and tan; badger pied; hare pied; lemon pied; lemon and white; red and white; tan and white; black and white; all white. With the exception of all white, all the above mentioned colours can be found as mottle. No other colours are permissible. Tip of stern white.

DNA TEST AVAILABLE

Test for the B-locus to identify liver/chocolate. Test for the E-locus to identify red/lemon. Test for the D-locus to identify blue

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black	black	none
EeBB	black	black	red/lemon
EEBb	black	black	liver/chocolate
EeBb	black	black	red/lemon, liver/chocolate
EEbb	liver/chocolate	brown	none
Eebb	liver/chocolate	brown	red/lemon
eeBb	red/lemon	black	liver/chocolate
eeBB	red/lemon	black	none
eebb	red/lemon	brown	liver/chocolate

Border Collie



KC Breed Standard: Variety of colours permissible. White should never predominate.

DNA TEST AVAILABLE

Presence of black, brown (red) and true red coat colours, and black and brown nose. Nose colour matches the primary colour. The Border Collie appears in many colours, with various combinations of patterns and markings. The most common colour is black with or without the traditional white blaze, collar, stockings, and tail tip, with or without tan points.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEbb	brown (red), brown & white, brown-tan-and- white, brown merle	brown	none
Eebb	brown (red), brown & white, brown-tan-and- white, brown merle	brown	true red, red & white, red merle
EEBB	black, bi-color, tri-color, blue merle	black	none
EeBB	black, bi-color, tri-color, blue merle	black	true red, red & white, red merle
EEBb	black, bi-color, tri-color, blue merle	black	brown (red), brown & white, brown-tan-and- white, brown merle
EeBb	black, bi-color, tri-color, blue merle	black	true red, red & white, red merle, brown (red), brown & white, brown-tan-and- white, brown merle
eeBB	true red, red & white, red merle	black	none
eeBb	true red, red & white, red merle	black	brown (red), brown & white, brown-tan-and- white, brown merle
eebb	true red, red & white, red merle	brown	brown (red), brown & white, brown-tan-and- white, brown merle

Brittany



KC Breed Standard: Orange/white, liver/white, black/white, tricolour, or roan of any of these colours. Nose dark or in harmony with coat colour. Black & white and liver & white tricolours have orange markings over eyes, on sides of muzzle, either side of chest, on inside of front legs and outside from knee downwards, on inside of hindlegs and outside from stifle downwards, and around vent.

DNA TEST AVAILABLE

Presence of black, brown (red) and true red coat colours, and black and brown nose.

Genotype	Main Colour	Nose Colour	Hidden Colour
eeBB	orange	black	none
eeBb	orange	black	liver
eebb	orange	brown	liver
EEBB	black	black	none
EeBB	black	black	orange
EEBb	black	black	liver
EeBb	black	black	orange, liver
EEbb	liver	brown	none
Eebb	liver	brown	orange

Bulldog



KC Breed Standard: Whole or smut, (i.e. whole colour with black mask or muzzle). Only whole colours (which should be brilliant and pure of their sort) viz., brindles, reds with their various shades, fawns, fallows etc., white and pied (i.e. combination of white with any of the foregoing colours). Dudley, black and black with tan highly undesirable.

DNA TEST AVAILABLE

The A-locus test can be used to identify the presence of black-and-tan (a^t). The B-locus test can be used to identify the presence of chocolate (b). The D-locus test can be used to identify the presence of dilution factor (d) which gives rise to diluted colours such as blue and lilac. The B locus test can be used to identify the presence of black coat colour (B).

Genotype	Main Colour		
bb dd	lilac		
Bb dd or BB dd	blue		
bb DD or bb Dd	chocolate		
E- B- $a^t a^t$	black and tan		

Cardigan Welsh Corgi



KC Breed Standard: All Acceptable colours are blue merle, brindle, red, sable, tri colour with brindle points and tri colour with red points.

All of the above with or without the typical white markings on head, neck, chest, underparts, legs and feet, white tail tip. White should not predominate on body or head where it should never surround the eyes. Nose and eye rims must be black. Liver and dilute colours highly undesirable.

DNA TEST AVAILABLE

Presence of black, "clear red", chocolate and sable colours, and mask. There are two **a** alleles at the agouti locus in Cardigan Welsh Corgi (**a^y** and **a^t**) which cause the two main underlying coat colour patterns: sable-and-white and tricolour. Note that colour terminology in Corgis is a bit confusing. Sable and red and fawn are different terms for dogs of the same agouti genotype. Other modifier genes cause the difference in the tone of red or the relative amount of black hairs in the red coat. Although Cardigans are often called "black", solid black or black and white are not colours in this breed. The Cardigans called black are all tricolour dogs with black on the dorsal area and white on the ventral area, and a bit of tan in between. Each of these agouti colours may occur with or without Merle. At the present time there is no DNA test for merle, but since the merle pattern is exhibited by the **Mm** heterozygotes, the phenotype is predictive of the genotype. Note that **MM** dogs are primarily white and conscientious breeders avoid producing such dogs since deafness is typical and eye defects are also common. Each of these agouti colours may also occur with or without brindle. Corgis that have at least one **a^y** allele will be brindle over most of the body, except on the white ventral surfaces. Dogs that are **a^t a^t** will have brindle only on their "points", i.e. they will be brindle where they would otherwise have had tan. At the present time, DNA testing is not yet available to detect the brindle allele. DNA testing for the "**a**" alleles in Cardigan Welsh Corgis that are sable or tricolour allows breeders to better predict the colours of pups from particular matings. Although some breeders believe they can "see" the difference between a homozygous and heterozygous fawn, this has not been reliable. Brown occasionally occurs in Cardigans, which is due to a **bb** genotype at the **B** locus. DNA test results will also report the genotype at the **B** locus. There are two common alleles in Cardigans at the **E** locus: **E^M** and **E**. Dogs with any combination of these alleles may be brindle. It is possible that the **e** allele occurs occasionally, although thus far it has not been found in this breed. Dogs that are **ee** can carry brindle and not have any black striping since they are not able to produce black or brown pigment. Note that the melanistic mask allele **Em** is dominant, but since many Cardigans have white on their muzzle, the black mask does not always show phenotypically.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBba ^t a ^t	black-and-tan	black	none
EeBba ^t a ^t	black-and-tan	black	red
EEBba ^t a ^t	black-and-tan	black	chocolate-and-tan
EeBba ^t a ^t	black-and-tan	black	red chocolate-and-tan
E ^m E ^m Bba ^t a ^t	black-and-tan with mask	black	none
E ^m EBba ^t a ^t	black-and-tan with mask	black	lack of mask
E ^m eBba ^t a ^t	black-and-tan with mask	black	red lack of mask
E ^m E ^m Bba ^t a ^t	black-and-tan with mask	black	chocolate-and-tan
E ^m EBba ^t a ^t	black-and-tan with mask	black	chocolate-and-tan lack of mask
E ^m eBba ^t a ^t	black-and-tan with mask	black	red chocolate-and-tan lack of mask
EEbba ^t a ^t	chocolate-and-tan	brown	none
Eebba ^t a ^t	chocolate-and-tan	brown	red
E ^m E ^m bba ^t a ^t	chocolate-and-tan with mask	brown	none
E ^m Ebba ^t a ^t	chocolate-and-tan with mask	brown	lack of mask
E ^m eBba ^t a ^t	chocolate-and-tan with mask	brown	red lack of mask
eeBba ^y a ^y	red	black	sable
eeBba ^y a ^y	red	black	sable chocolate
eebba ^y a ^y	red	brown	chocolate sable
eeBba ^y a ^t	red	black	sable black-and-tan
eeBba ^y a ^t	red	black	sable chocolate-and-tan black-and-tan
eebba ^y a ^t	red	brown	sable chocolate-and-tan black-and-tan
eeBba ^t a ^t	red	black	black-and-tan
eeBba ^t a ^t	red	black	chocolate-and-tan black-and-tan
eebba ^t a ^t	red	brown	chocolate-and-tan
EEBba ^y a ^y	sable	black	none
EeBba ^y a ^y	sable	black	red
EEBba ^y a ^y	sable	black	chocolate
EeBba ^y a ^y	sable	black	chocolate red
EEbba ^y a ^y	sable	brown	chocolate
Eebba ^y a ^y	sable	brown	chocolate red
EEBba ^y a ^t	sable	black	black-and-tan
EeBba ^y a ^t	sable	black	red black-and-tan
EEBba ^y a ^t	sable	black	chocolate-and-tan black-and-tan

EeBba ^y a ^t	sable	black	red chocolate-and-tan black-and-tan
EEbba ^y a ^t	sable	brown	chocolate-and-tan black-and-tan
Eebba ^y a ^t	sable	brown	red chocolate-and-tan black-and-tan
E ^m E ^m BBa ^y a ^y	sable with mask	black	none
E ^m EBBa ^y a ^y	sable with mask	black	lack of mask
E ^m eBBa ^y a ^y	sable with mask	black	red lack of mask
E ^m E ^m Bba ^y a ^y	sable with mask	black	chocolate
E ^m EBba ^y a ^y	sable with mask	black	chocolate lack of mask
E ^m eBba ^y a ^y	sable with mask	black	chocolate
E ^m E ^m bba ^y a ^y	sable with mask	brown	chocolate
E ^m Ebba ^y a ^y	sable with mask	brown	chocolate lack of mask
E ^m ebba ^y a ^y	sable with mask	brown	chocolate red lack of mask
E ^m E ^m BBa ^y a ^t	sable with mask	black	black-and-tan
E ^m EBBa ^y a ^t	sable with mask	black	black-and-tan lack of mask
E ^m eBBa ^y a ^t	sable with mask	black	red black-and-tan lack of mask
E ^m E ^m Bba ^y a ^t	sable with mask	black	chocolate-and-tan black-and-tan
E ^m EBba ^y a ^t	sable with mask	black	chocolate-and-tan black-and-tan lack of mask
E ^m eBba ^y a ^t	sable with mask	black	chocolate-and-tan black-and-tan lack of mask
E ^m E ^m bba ^y a ^t	sable with mask	brown	chocolate-and-tan black-and-tan
E ^m Ebba ^y a ^t	sable with mask	brown	chocolate-and-tan black-and-tan lack of mask
E ^m ebba ^y a ^t	sable with mask	brown	red chocolate-and-tan black-and-tan lack of mask

Cocker Spaniel



KC Breed Standard: Solid colours: Black; red; golden; liver (chocolate); black and tan; liver and tan. No white allowed except a small amount on chest.

Particolours:

Bicolours: Black and white; orange and white; liver and white; lemon and white. All with or without ticking.

Tricolours: Black, white and tan; liver, white and tan.

Roans: Blue roan; orange roan; lemon roan; liver roan; blue roan and tan; liver roan and tan.

Any colour or marking other than the above is undesirable.

DNA TEST AVAILABLE

Presence of black, liver and red colours, and black and brown nose.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black	black	none
EeBB	black	black	red
EEBb	black	black	liver
EeBb	black	black	red, liver
EEbb	liver	brown	none
Eebb	liver	brown	red
eeBB	red	black	none
eeBb	red	black	liver
eebb	red	brown	liver

Curly-Coated Retriever



KC Breed Standard: Black or liver

DNA TEST AVAILABLE

Presence of black and liver coat colours, and black or brown nose. Two colours are acceptable: black or liver. Either colour is correct. A prominent white patch is undesirable, but a few white hairs are allowable in an otherwise good dog. Black is the dominant colour. A black dog can carry recessive genes for liver colour or may carry only black genes.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black	black	none
EEBb	black	black	brown
EEbb	brown	brown	none

Dachshund (long, smooth, wire, miniature long smooth & wire)



KC Breed Standard: All colours permitted but no white permissible, save for a small patch on chest which is permitted but not desirable. The dapple pattern is expressed as lighter coloured areas contrasting with the darker base. Neither the light nor the dark colour should predominate. Double dapple (where varying amounts of white occur all over the body in addition to the dapple pattern) is unacceptable. Pied, tricolour and the dilute colours isabella and blue are highly undesirable. Nose and nails black in all colours

except chocolate/tan and chocolate dapple where they are brown.

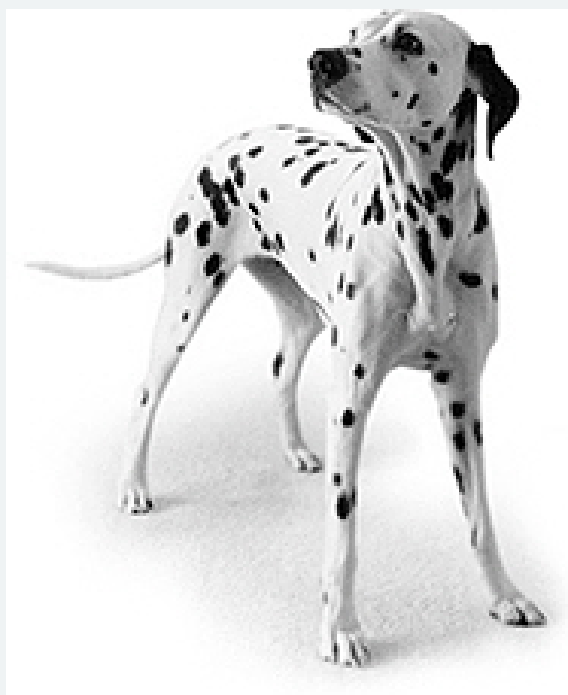
DNA TEST AVAILABLE

Presence of "true red", black or black and tan or red with dark tips and chocolate or chocolate & tan coat colours, and black or brown nose in all breeds: There are two "a" alleles at the agouti locus in Dachshunds (a^y and a^t) which cause the two main underlying coat colour patterns: sable and black-and-tan (or chocolate-and-tan). Note that colour terminology in Dachshunds is a bit confusing in regard to sable and red. Sable is a reddish colour with darker tips on some hairs. "Clear red" is a solid red with no hint of black tips on any hairs. However, Dachshund owners have often used these terms interchangeably. Each of these agouti colours may occur with or without dapple. Since the dapple pattern is exhibited by the **Mm** heterozygotes, the phenotype is predictive of the genotype. Note that "**MM**" dogs are primarily white, and conscientious breeders avoid producing such dogs since deafness and eye defects are common. White spotting also occurs in Dachshunds and no DNA test is yet available to predict this. It is often called piebald in Dachshunds and is inherited as a recessive. Each of these agouti colours may also occur with or without brindle. Dachshunds that have at least one a^y allele will be full-body brindles. Dogs that are $a^t a^t$ will have brindle only on their "points", i.e. they will be brindle where they would otherwise have had tan. At the present time, DNA testing is not yet available to detect the brindle allele. Dogs which are "**ee**" may carry brindle but would not express this pattern. DNA testing for the "a" alleles in Dachshunds that are sable or black-and-tan (or chocolate-and-tan) allows breeders to better predict the colours of pups from particular matings. Although some breeders believe they can "see" the difference between a homozygous and heterozygous fawn, this has not been reliable. There are two common alleles in Dachshunds at the **E** locus: **E** and $b > e$. True red Dachshunds are "**ee**" and this genotype masks the expression of brindle and tan points. Dachshunds have two alleles at the **B** locus: **B** and **b**. Dogs that are "**bb**" will have chocolate-and-tan coats if they are $a^t a^t$, but only their noses will be chocolate if they have an a^y or are "**ee**". Note: a coat of intermingled red and black or brown hairs, called "boar", also occurs in this breed - carriers cannot be distinguished at this time.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBBa ^t a ^t	black-and-tan	black	none
EeBBa ^t a ^t	black-and-tan	black	red
EEBba ^t a ^t	black-and-tan	black	chocolate

EeBba ^t a ^t	black-and-tan	black	red, chocolate
EEbba ^t a ^t	chocolate-and-tan	brown	none
Eebba ^t a ^t	chocolate-and-tan	brown	red
eeBBa ^y a ^y	red	black	sable
eeBba ^y a ^y	red	black	sable, chocolate
eebba ^y a ^y	red	brown	sable, chocolate
eeBBa ^y a ^t	red	black	sable, tan points
eeBba ^y a ^t	red	black	sable, chocolate, tan points
eebba ^y a ^t	red	brown	sable, chocolate, tan points
eeBBa ^t a ^t	red	black	tan points
eeBba ^t a ^t	red	black	chocolate, tan points
eebba ^t a ^t	red	brown	chocolate, tan points
EEBBa ^y a ^y	sable	black	none
EeBBa ^y a ^y	sable	black	red
EEBba ^y a ^y	sable	black	chocolate
EeBba ^y a ^y	sable	black	red, chocolate
EEbba ^y a ^y	sable	brown	chocolate
Eebba ^y a ^y	sable	brown	red, chocolate
EEBBa ^y a ^t	sable	black	tan points
EeBBa ^y a ^t	sable	black	red, tan points
EEBba ^y a ^t	sable	black	chocolate, tan points
EeBba ^y a ^t	sable	black	red, chocolate, tan points
EEbba ^y a ^t	sable	brown	chocolate, tan points
Eebba ^y a ^t	sable	brown	red, tan points

Dalmatian



KC Breed Standard: Ground colour pure white. Black spotted having dense black spots, liver spotted, liver brown spots; not running together but round and well defined. In size 2cm-3cm in diameter as well distributed as possible. Spots on extremities smaller than those on the body. Tricolours and spotting other than black or liver unacceptable. Bronzing on spots undesirable in adults. Some patching on ears or head not to be penalised.

DNA TEST AVAILABLE

Presence of black and liver (brown) colours, and black or brown nose. E-locus test can identify the presence of lemon which is unacceptable.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black	black	none
EeBB	black	black	lemon
EEBb	black	black	liver(brown)
EeBb	black	black	lemon, liver(brown)
EEbb	liver(brown)	brown	none
Eebb	liver(brown)	brown	lemon
eeBB	lemon	black	none
eeBb	lemon	black	liver(brown)
eebb	lemon	brown	liver(brown)

Dobermann



KC Breed Standard: Definite black, brown, blue or fawn (Isabella) only, with rust red markings. Markings to be sharply defined, appearing above each eye, on muzzle, throat and forechest, on all legs and feet and below tail. White markings of any kind highly undesirable.

DNA TEST AVAILABLE

Doberman Pinschers are all **E/E** and **a^t a^t**. They vary at the **B** locus however. Although, dogs of **b/b** genotype are called chocolate or brown in many other breeds, these dogs are called red in Doberman Pinschers. The **D** locus controls whether Doberman Pinschers are dark or dilute in coloration. Dogs with **d/d** genotype are dilute. If they have a **B** allele, their black is diluted to blue. If they have a **b/b** genotype, their reddish brown is diluted to a colour called Isabella or fawn in this breed. Their tan undersides are also diluted subtly if their genotype is **d/d**. Some Doberman Pinschers are also very pale cream or white. The gene causing this colour has not yet been identified.

Genotype	Main Colour	Nose Colour	Hidden Colour
bbDD	red-and-tan	brown	none
bbDd	red-and-tan	brown	dilute
BBdd	blue-and-tan	black	none
Bbdd	blue-and-tan	blue	red-and-tan
bbdd	Isabella-and-tan	pale brown	none
BBDD	black-and-tan	black	none
BbDD	black-and-tan	black	red-and-tan
BBDd	black-and-tan	black	dilute
BbDd	black-and-tan	black	red-and-tan dilute

English Setter



KC Breed Standard: Black and white (blue belton), orange and white (orange belton), lemon and white (lemon belton), liver and white (liver belton) or tricolour, that is blue belton and tan or liver belton and tan, those without heavy patches of colour on body but flecked (belton) all over prefer orange.

DNA TEST AVAILABLE

Presence of black or black tricolour, liver or liver tricolour and lemon colours, and black or liver nose. English Setters occur in several colours: black, liver, orange, and lemon, all with white. English Setters can also be and-tan and such dogs are usually called tricolour. Several genes and the interaction thereof contribute to these colours. The modifier genes causing the amount of dark patches is not known. All English Setters are ticked, a pattern is called belton. One gene that is necessary for black or liver coat colour is **K**, and the allele responsible is **K^B**. ES that are tricolour do not have a **K^B**, but are **k^y/k^y**. English Setters that are orange or lemon could be any genotype at the **K** locus since they are **e/e** and this masks the effects of **K**. Tricolour dogs must have an **a^t/a^t** genotype at the agouti locus.

Genotype	Main Colour	Nose Colour	Hidden Colour
K^bK^bEEBB	black	black	none
K^bk^yEEBB	black	black	tricolour
K^bK^bEeBB	black	black	orange
K^bk^yEeBB	black	black	orange, tricolour
K^bK^bEEBb	black	black	liver
K^bk^yEEBb	black	black	liver, tricolour
K^bK^bEeBb	black	black	liver, orange
K^bk^yEeBb	black	black	liver, orange, tricolour
k^yk^yEEBB	black tricolour	black	none
k^yk^yEeBB	black tricolour	black	orange
k^yk^yEEBb	black tricolour	black	liver
k^yk^yEeBb	black tricolour	black	liver, orange
K^bK^bEEbb	liver	liver	none
K^bk^yEEbb	liver	liver	tricolour
K^bK^bEebb	liver	liver	orange

$K^b k^y E e b b$	liver	brown	orange, tricolour
$k^y k^y E E b b$	liver tricolour	liver	none
$k^y k^y E e b b$	liver tricolour	liver	orange
$K^b K^b e e b b$	lemon	liver	liver
$K^b k^y e e b b$	lemon	liver	liver, tricolour
$k^y k^y e e b b$	lemon	liver	liver, tricolour
$K^b K^b e e B B$	orange	black	none
$K^b k^y e e B B$	orange	black	tricolour
$k^y k^y e e B B$	orange	black	tricolour
$K^b K^b e e B b$	orange	black	liver
$K^b k^y e e B b$	orange	black	liver, tricolour
$k^y k^y e e B b$	orange	black	liver, tricolour

English Springer Spaniel



KC Breed Standard: Liver and white, black and white, or either of these colours with tan markings.

DNA TEST AVAILABLE

Presence of black or liver colours, and black or brown nose.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black, black & white or tricolour	black	none
EeBB	black, black & white or tricolour	black	red
EEBb	black, black & white or tricolour	black	liver, liver & white or tricolour
EeBb	black, black & white or tricolour	black	red, liver, liver & white or tricolour
EEbb	liver, liver & white or tricolour	brown	none
Eebb	liver, liver & white or tricolour	brown	red
eeBB	red	black	none
eeBb	red	black	liver, liver & white or tricolour
eebb	red	brown	liver, liver & white or tricolour

Field Spaniel



KC Breed Standard: Black, black and tan, blue roan, blue roan and tan, liver, liver and tan, liver roan, liver roan and tan. In self coloured dogs, white or roan on chest is permissible. Clear black and white, liver and white, orange, red or golden unacceptable.

DNA TEST

Presence of black liver colours, and black or brown nose. E-locus test can identify the presence of red which is unacceptable.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black or blue roan or tricolour	black	none
EeBB	black or blue roan or tricolour	black	red
EEBb	black or blue roan or tricolour	black	liver, liver roan or liver with tan points
EeBb	black or blue roan or tricolour	black	red, liver, liver roan or liver with tan points
EEbb	liver, liver roan or liver with tan points	brown	none
Eebb	liver, liver roan or liver with tan points	brown	red
eeBB	red	black	none
eeBb	red	black	liver, liver roan or liver with tan points
eebb	red	brown	liver, liver roan or liver with tan points

Flat-coated Retriever



KC Breed Standard: Black or liver only.

DNA TEST AVAILABLE

Presence of black, liver and yellow coat colours, and black and brown nose. The nose should be black on black and brown on liver. E-locus test can identify the presence of yellow which is unacceptable.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black	black	none
EeBB	black	black	yellow
EEBb	black	black	liver
EeBb	black	black	yellow, liver
EEbb	liver	brown	none
Eebb	liver	brown	yellow
eeBB	yellow	black	none
eeBb	yellow	black	liver
eebb	yellow	brown	liver

French Bulldog



KC Breed Standard: The only correct colours are: Brindle; Fawn; Pied;

Brindle – Colour pattern caused by a mixture of black hairs and fawn hairs. White markings permitted provided that brindle predominates. Eye rims, eyelashes and lips black.

Fawn – Clear, self-coloured fawn with or without a black mask. White markings permitted, provided that fawn predominates. Cream and red shades less desirable. Eye rims, eyelashes and lips black.

Pied – Brindle Pied: White predominates with brindle patches. (The brindle as defined above). Fawn Pied: White predominates with fawn patches.

Whites are classified with peds for show purposes.

In peds, eye rims, eyelashes and lips should preferably be black.

Any white in the above colours should be clear with no ticking or spots.

All other colours highly undesirable, including solid black, black and white, black and tan, mouse, grey/blue, liver, chocolate and all patterns of these colours

DNA TEST AVAILABLE

DNA testing for **A, B, D, E** in French Bulldogs allows breeders to better predict the colours of pups from particular matings. All three **E** alleles have been shown to exist in French Bulldogs. Fawn Frenchies can be golden in colour by either of two genetic mechanisms. The colour does not differ enough in most dogs to differentiate these but the DNA tests do. There are "**ee**" fawn-red dogs and also traditional fawn dogs that have an **a^y** allele with an **E**. Although fawn, brindle and black are caused by neither the **E** locus nor the **B** locus in French Bulldogs, the occurrence of these colours is affected by the genotype at the **E** locus. Dogs that are "**ee**" cannot show brindle, even though they may carry the allele for brindle and pass it on to their pups. **E^m** indicates presence of a mask.

Brown or liver are disqualifications, as is a brown nose. Brown is caused by a "**bb**" genotype. There is a common chocolate colouration in the French Bulldog which is thought to be due to an as yet uncharacterised **B**-locus mutation. Testing for the **D**-locus will identify dogs which carry a dilution factor **d** (blue). Testing for **A**-locus will identify dogs which carry **a^t** (black and tan), or **a^w** (sable), **a^y** (dominant red/yellow i.e.fawn).

Genotype	Traditional Colour	Nose Colour	Hidden Colour
EEBB	traditional fawn or brindle (black)	black	none
EeBB	traditional fawn or brindle (black)	black	fawn-red or cream
EEBb	traditional fawn or brindle (black)	black	liver

EeBb	traditional fawn or brindle (black)	black	fawn-red or cream, liver
EEbb	liver	brown	none
Eebb	liver	brown	fawn-red or cream
eeBB	fawn-red or cream	black	none
eeBb	fawn-red or cream	black	liver
eebb	fawn-red or cream	brown	liver

German Longhaired Pointer



KC Breed Standard: Solid brown: white markings permissible especially on chest and feet. Dark brown roan: with varying sized brown patches, brown head with blaze or star. White, ticked: with varying sized brown patches, brown head with blaze or star. Trout-coloured roan: numerous small brown patches on white ground, brown head with blaze or star. Brown & White: either clear, or with large brown patches (e.g. saddle) and very few small patches; brown head with blaze or star. Black highly undesirable.

DNA TEST AVAILABLE

The presence of red/orange can be identified by testing for the E-locus. Ticking can be identified by testing for the S-locus.

Genotype	Main Colour	Nose Colour	Hidden Colour
$s^P s^P$	brown and white	brown	none
SS	solid brown	brown	none
$S s^P$	solid brown	brown	white markings

German Short-haired Pointer



Solid liver, liver and white spotted, liver and white spotted and ticked, liver and white ticked, solid black or black and white same variations (not tri-colour).

DNA TEST

The presence of liver can be identified with the B-locus. The presence of red/orange can be identified by testing for the E-locus. Ticking can be identified by testing for the S-locus.

Genotype	Main Colour	Nose Colour	Hidden Colour
BBs ^P s ^P	black and white	black	none
Bbs ^P s ^P	black and white	black	liver
bbs ^P s ^P	liver and white	liver	none
BBSS	solid black	black	none
BbSS	solid black	black	liver
BBSs ^P	solid black	black	white markings
Bbs ^P s ^P	solid black	black	liver, white markings
bbSS	solid liver	liver	none
bbSs ^P	solid liver	liver	white markings

German Wirehaired Pointer



KC Breed Standard: Liver and white, solid liver, black and white. Solid black and tricoloured highly undesirable.

DNA TEST

The presence of liver can be identified with the B-locus. The presence of red/orange can be identified by testing for the E-locus. Ticking can be identified by testing for the S-locus.

Genotype	Main Colour	Nose Colour	Hidden Colour
BBs ^P s ^P	black and white	black	none
Bbs ^P s ^P	black and white	black	liver
bbS ^P s ^P	liver and white	liver	none
BBSS	solid black	black	none
BbSS	solid black	black	liver
BBSs ^P	solid black	black	white markings
Bbs ^P s ^P	solid black	black	liver, white markings
bbSS	solid liver	liver	none
bbSs ^P	solid liver	liver	white markings

Labrador Retriever



KC Breed Standard: Wholly black, yellow or liver/chocolate. Yellows range from light cream to red fox. Small white spot on chest permissible.

DNA TEST AVAILABLE

Presence of black, chocolate, yellow, and diluted coat colours and black and brown nose. Labrador Retrievers commonly occur in three main colours: black, chocolate (brown), and yellow as shown in the photo above. Black or chocolate Labs always have nose leather and pads the same colour as their coat. However yellow Labs may have black or brown nose and pads, depending on their alleles at the **B** locus. Owners wishing to know about these main colours should order a DNA test for the **E** and **B** locus.

There is a wide variation in shades of yellow in Labs, however the gene causing this variation has not yet been found.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black	black	none
EeBB	black	black	yellow
EEBb	black	black	chocolate
EeBb	black	black	yellow, chocolate
EEbb	chocolate	brown	none
Eebb	chocolate	brown	yellow
eeBb	yellow	black	chocolate
eeBB	yellow	black	none
eebb	yellow	brown	chocolate

Large Munsterlander



KC Breed Standard: Head solid black, white blaze, snip or star allowed. Body white or blue roan with black patches, flecked, ticked, or combination of these.

DNA TEST AVAILABLE

Presence of black and brown colours, and black or brown nose. All Large Munsterlanders are black and white. Some are ticked/roan and others are plated, but solid black is not allowed. Because the breed originated from the German Longhair, there are still a few dogs that carry brown. Therefore, testing the B-locus allows breeders to detect brown carriers.

Genotype	Main Colour	Nose Colour	Hidden Colour
BB	black	black	none
Bb	black	black	brown
bb	brown	brown	none

Newfoundland



KC Breed Standard: Only permitted colours are:

Black: dull jet black may be tinged with bronze. Splash of white on chest, toes and tip of tail acceptable.

Brown: can be chocolate or bronze. In all other respects follow black except for colour. Splash of white on chest, toes and tip of tail acceptable.

Landseer: white with black markings only. For preference black head with narrow blaze, evenly marked saddle, black rump extending to tail. Beauty in markings to be taken greatly into consideration. Ticking undesirable.

DNA TEST AVAILABLE

B-locus testing determines black dogs that carry brown.

Landseer dogs always have two s^P alleles.

Although some dogs which are S/s^P heterozygotes have white toes, not all such dogs have this. A small white chest spot is no indication of an s^P allele.

Genotype	Main Colour	Nose Colour	Hidden Colour
BBSS	black	black	none
BbSS	black	black	brown
BBSs ^P	black	black	white markings
BbSs ^P	black	black	brown, white marking
BBs ^P s ^P	Landseer	black	none
Bbs ^P s ^P	Landseer	black	brown
bbSS	brown	brown	none
bbSs ^P	brown	brown	white markings
bbs ^P s ^P	brown and white	brown	none

Pointer



KC Breed Standard: Usual colours are lemon and white, orange and white, liver and white, and black and white. Self colours and tricolours are also correct.

DNA TEST AVAILABLE

Test for the B-locus and E-locus to identify hidden orange and liver colours

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black	black	none
EeBB	black	black	lemon
EEBb	black	black	liver
EeBb	black	black	orange, liver
EEbb	liver	brown	none
Eebb	liver	brown	orange
eeBB	orange	black	none
eeBb	orange	black	liver
eebb	lemon	brown	liver

Pomeranian



KC Breed Standard: All whole colours permissible, but free from black or white shadings. Whole colours are: white, black, brown, light or dark, blue as pale as possible. Orange which should be self-coloured and bright as possible. Beaver. Cream dogs have black noses and black eye rims. Whites must be quite free from lemon or any other colour. A few white hairs, in any of the self-coloured dogs permissible but

undesirable. Dogs (other than white) with white or tan markings highly undesirable and not considered whole coloured specimens.

Parti-coloured dogs, colours evenly distributed on body in patches. A dog with white or tan feet or chest should not be considered as a parti-coloured dog.

Shaded sables should be shaded throughout with three or more colours, the hair to be as uniformly shaded as possible, and with no patches of self-colour.

In mixed classes, where whole coloured and parti-coloured Pomeranians compete together, the preference should, if in all other points they are equal, be given to the whole coloured specimens.

DNA TEST AVAILABLE

Presence of black, brown and red (cream and orange) coat colours, and black and brown nose.

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black	black	none
EeBB	black	black	red/cream/orange
EEBb	black	black	brown
EeBb	black	black	red/cream/orange, brown
EEbb	brown	brown	none
Eebb	brown	brown	red/cream/orange
eeBB	red/cream/orange	black	none
eeBb	red/cream/orange	black	brown
eebb	red/cream/orange	brown	brown

Poodle – Miniature, Toy and Standard



KC Breed Standard: All solid colours. White and creams to have black nose, lips and eye rims, black toenails desirable. Browns to have dark amber eyes, dark liver nose, lips, eye rims and toenails. Apricots and reds to have dark eyes with black points or deep amber eyes with liver points. Blacks, silvers and blues to have black nose, lips, eye rims and toenails. Creams, apricots, reds, browns, silvers and blues may show varying shades of the same colour up to 18 months. Clear colours preferred. Non solid colours are highly undesirable and should be heavily penalised.

DNA TEST AVAILABLE

Presence of hidden brown and cream/apricot/red coat colours in the following breeds:-
 Miniature Poodle Standard Poodle Toy Poodle

Genotype	Main Colour	Nose Colour	Hidden Colour
EEBB	black	black	none
EeBB	black	black	cream/apricot/red
EEBb	black	black	brown
BbEe	black	black	cream/apricot/red, brown
EEbb	brown	brown	none
Eebb	brown	brown	cream/apricot/red
eeBB	cream/apricot/red	black	none
eeBb	cream/apricot/red	black	brown
eebb	cream/apricot/red	brown	brown

Portuguese Water Dog



KC Breed Standard: Black, white, various shades of brown, black and white, brown and white. Skin bluish under black, white, and black and white dogs.

DNA TEST

Presence of hidden brown colour.

Genotype	Main Colour	Nose Colour	Hidden Colour
BB	black or black-and-white	black	none
Bb	black or black-and-white	black	brown or brown-and-white
bb	brown or brown-and-white	brown	none

Pug



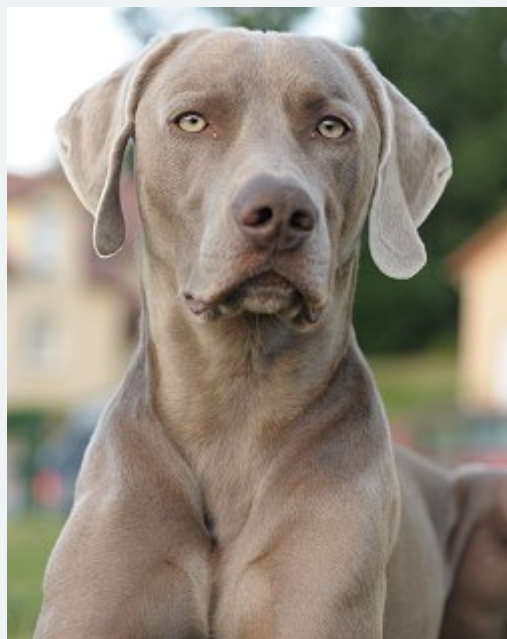
KC Breed Standard: Silver, apricot, fawn or black. Each clearly defined, to make contrast complete between colour, trace (black line extending from occiput to tail) and mask. Markings clearly defined. Muzzle or mask, ears, moles on cheeks, thumb mark or diamond on forehead and trace as black as possible.

DNA TEST AVAILABLE

Pug occur in two basic colours: black and fawn. The gene that controls this difference is **K**. All Pugs have masks, even though they cannot be seen on the black dogs. Therefore all are **E^ME^M** genotype. At the agouti locus, all Pugs are **a^ya^y** genotype. All Pugs have black nose leather and pads and are **BB**.

Genotype	Main Colour	Nose Colour	Hidden Colour
K^bK^b	black	black	none
K^bk^y	black	black	fawn
k^yk^y	fawn	black	none

Weimaraner



KC Breed Standard: The only correct colour is grey. Silver grey preferable. Shades of mouse or roe grey are acceptable; blending to lighter shade on head and ears. Dark eel stripe frequently occurs along back. Whole coat gives an appearance of metallic sheen. Small white mark permissible on chest. White spots resulting from injuries not penalised. Any other colour, including blue, highly undesirable.

DNA TEST AVAILABLE

Weimaraners are always **dd** at the D-locus, and should be **bb** at the B-locus. However **BB** or **Bb** leads to a blue coat colour which is highly undesirable. To confirm whether blue or grey test for the B-locus.

Genotype	Main Colour	Nose Colour	Hidden Colour
bbdd	Grey	grey	none
Bbdd	Blue	black	Grey
BBdd	Blue	brown	none

Whippet



KC Breed Standard: Any colour or mixture of colours.

DNA TEST AVAILABLE

Presence of black mask, even on black dogs or dogs with white markings occurring on the muzzle, and prediction of the chance this will occur in pups. At present, the coat colours black, fawn, Isabella, and brindle cannot be distinguished by DNA testing. Black mask is inherited as a dominant trait. It is not evident on black dogs or dogs with white markings on the muzzle, but they may carry this trait too. In dogs that have dilute colours, such as grey or grey brindle, the mask will be grey and difficult to detect.

Genotype	Main Colour	Nose Colour	Hidden Colour
EE	black or fawn or brindle	na	none
E ^m E ^m	black or fawn or brindle with mask	na	none
E ^m E	black or fawn or brindle with mask	na	lack of mask