Coat Colour: E-Locus (Yellow/Red Coat Colour)

Applicable Breeds: Numerous including Australian Shepherd, Beagle, Border Collie, Brittany, Cardigan Welsh Corgi, Cocker Spaniel, Dachshund, Dalmatian, English Setter, English Springer Spaniel, Field Spaniel, Flat-coated retriever, German Long-haired Pointer, German Short-haired Pointer, German Wire-haired Pointer, Labrador retriever, Pomeranian, Poodle

There are several genes which are responsible for the determination of coat colour. At the present time Animal DNA Diagnostics Ltd can test for two of the major loci – the E-Locus, which can result in yellow-red hair colour, and the B-Locus, which can result in brown hair. Both of these can be carried as "hidden" genes and become visible in future generations. It is these "hidden" genes which DNA testing can reveal, enabling breeders to predict the likely coat colour outcomes with specified breeding combinations.

The E-Locus is responsible for yellow/red coloured hair, which is sometimes also described as apricot, lemon or cream.
The presence of ee at this locus leads to red/yellow coloured hair, while the dominant E variant over-rides this. The presence of ee over-rides the B-Locus, although the B-Locus still determines nose colour.

This test is particularly useful for breeders:

- To identify dogs with hidden copies of e, i.e. hidden yellow/lemon/red/cream/apricot genes.

This test will be reported as:

EE : no hidden yellow/red gene
Ee : one hidden copy of the yellow/red gene
ee : is yellow/red, with nose colour determined by the B-Locus

Typical Breeding Outcomes:

Please study the Inheritance Chart (B-Locus and E-Locus) below to identify probable outcomes from different mating combinations.

References

Newton JM, Wilkie AL, He L, Jordan SA, Metallinos DL, Holmes NG, Jackson IJ, Barsh GS (2000) Melanocortin 1 receptor variation in the domestic dog. Mammalian Genome 11: 24-30

Dog coat colour inheritance (B-Locus and E-Locus)

		Sire								
		BBEE Black	**BBEe Black**	**BbEE Black**	**BbEe Black**	**BBee Yellow**	**Bbee Yellow**	**bbee Yellow**	**bbEE Brown**	**bbEe Brown**
Dam	**BBEE Black**	All black	All black	All black	All black	All black	All black	All black	All black	All black
	BBEe Black	All black	¾ black ¼ yellow	All black	¾ black ¼ yellow	½ black ½ yellow	½ black ½ yellow	½ black ½ yellow	All black	¾ black ¼ yellow
	BbEE Black	All black	All black	¾ black ¼ brown	¾ black ¼ brown	All black	¾ black ¼ brown	½ black ½ brown	½ black ½ brown	½ black ½ brown
	BbEe Black	All black	¾ black ¼ yellow	¾ black ¼ brown	9/16 black ¼ yellow 3/16 brown	½ black ½ yellow	3/8 black ½ yellow 1/8 brown	¼ black ½ yellow ¼ brown	½ black ½ brown	3/8 black ¼ yellow 3/8 brown
	BBee Yellow	All black	½ black ½ yellow	All black	½ black ½ yellow	All yellow	All yellow	All yellow	All black	½ black ½ yellow
	Bbee Yellow	All black	½ black ½ yellow	¾ black ¼ brown	3/8 black ½ yellow 1/8 brown	All yellow	All yellow	All yellow	½ black ½ brown	¼ black ½ yellow ¼ brown
	bbee Yellow	All black	½ black ½ yellow	½ black ½ brown	¼ black ½ yellow ¼ brown	All yellow	All yellow	All yellow	All brown	½ brown ½ yellow
	bbEE Brown	All black	All black	½ black ½ brown	½ black ½ brown	All black	½ black ½ brown	All brown	All brown	All brown
	bbEe Brown	All black	¾ black ¼ yellow	½ black ½ brown	3/8 black ¼ yellow 3/8 brown	½ black ½ yellow	¼ black ½ yellow ¼ brown	½ brown ½ yellow	All brown	¾ brown ¼ yellow

Use this chart to identify the likely proportions of colours in litters from parents already tested for the E-Locus and B-Locus.

These proportions are average expectations and are subject to variation due to chance.

Note: “Brown” is referred to as chocolate or liver in some breeds, while “Yellow” is referred to as red, apricot, lemon or cream.

Yellow dogs can have either brown or black noses depending upon the B-Locus: BB and Bb dogs will have black noses, while bb dogs will have brown noses.