

# Genetics of Coat Color in Newfoundland Dogs

*a summary of our studies in Newfoundlands*

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The coat colors allowed in the show ring for Newfoundlands vary among countries. However Newfs occur in black, brown, grey, and all of these with random white spotting.

## Black



The traditional coat color in Newfs is black. Newfs are black because they are  $K^B/K^B$ . They are also all  $E/E$ . Black that is inherited as a dominant is caused by having at least one copy of the  $K^B$  allele plus at least one copy of the  $E$  or  $E^M$  allele. Ariel is the daughter of a Landseer Newfoundland but has no white markings.

## Brown, B Locus Genotypes

Tyrosinase Related Protein 1 (TYRP1) is the gene responsible for brown coat colors in dogs (and mice and cattle and cats). Three different mutations in this gene can produce brown. Based on the brown Newfs we've tested, such as Sebastian, the  $b^c$  allele, is the typical brown allele in this breed.





The Newf from South America, at the left, is brown (b/b) and dilute (d/d) and therefore a pale brown.

## Blue, D Locus Genotypes

"Grey" is used as the name for diluted black in Newfoundlands. The locus causing grey or "dilute" is classically known as the D locus. Grey dogs, such as Semana, the pup at the right, are d/d in genotype at this locus.

Many grey Newfoundlands experience hair loss and the other associated symptoms of Black Hair Follicular Dysplasia or Color Dilution Alopecia.



## Landseer Spotting

Fraulein, at the right, is an example of a Landseer Newfoundland. Landseers are so named after the painter Landseer who depicted Newfs of this coloration in several of his paintings. Although white spotting can occur in black, brown, or grey (see the photo at the right) Newfs, only the black and white ones are known as Landseers.

The gene causing white spotting in Newfoundlands is *MITF*.



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