

Horse Coat Color Tests

The basic coat colors of chestnut, bay, brown and black horses are controlled by the interaction between two genes: Extension (gene symbol E) and Agouti (gene symbol A). The Extension gene (red factor) controls the production of red and black pigment. Agouti controls the distribution of black pigment either to a points pattern (mane, tail, lower legs, ear rims) or uniformly over the body. The effects of approximately 10 other genes may modify these pigments to provide an array of colors in the domestic horse ranging from white to black.

The basic colors can be diluted by at least four genes: Cream, Champagne, Dun and Silver although the Champagne gene is not known to exist in the Morgan breed. The effect of the Cream gene depends on the number of doses the horse has. A single copy of Cream produces palominos, buckskins and smoky blacks. Two doses of Cream produce cremellos, perlinos and smoky creams. Dun and Silver do not show a dosage effect.

Several genes may be involved in the production of white spotting patterns. The Sabino test identifies the presence and dosage of the Sabino 1 gene. The Lethal White Overo test identifies the gene responsible for the Frame-Overo pattern which is associated with a lethal disease in newborn foals called Overo Lethal White foal syndrome.

Most coat colors can be determined based on physical appearance or phenotype alone. However, genetic testing may be necessary to define phenotypes that are visually ambiguous, such as bays with flaxen manes and tails or chestnuts with dark manes and tails. The same holds true when it is desirable to know which coat colors can be produced by breeding stock.

Researchers at the Veterinary Genetics Laboratory and other institutions are working towards the identification of the specific genes and mutations responsible for coat color traits in the horse. In the future, diagnostic tests may be available for all the major coat color genes. Currently, genetic tests are available for: Extension (Red Factor), Agouti, Cream Dilution and Lethal White Overo,.

Coat color tests are \$40 for the first test on a horse plus \$25 for each additional test completed using the same hair sample. Positive results of coat color testing can be recorded on your registration certificate for \$25 if the kit is order through the AMHA however, this requires submission of the original registration application.

[Click here for the application to apply for a Coat Color Testing Kit.](#)

For more detailed information about coat color and coat color testing visit the website for the Veterinary Genetics Laboratory (VGL) The VGL conducts all of the Parentage Analysis for the American Morgan Horse Register. They are also the world's leading authority in equine coat color testing and research.

For more information:

<http://www.vgl.ucdavis.edu/services/coatcolorhorse.php>