



# Horse Coat Color Results with Explanations

## Red Factor

e/e - Only the red factor detected. Basic color is sorrel or chestnut in the absence of other modifying genes.

E/e - Both black and red factors detected. Either E or e transmitted to offspring. Basic color is black, bay or brown in the absence of other modifying genes.

E/E - No red factor detected. Horse cannot have red foals regardless of the color of mate. Basic color is black, bay or brown in the absence of other modifying genes.

## Agouti

A/A - Black pigment distributed in points pattern. Basic color is bay or brown in the absence of other modifying genes.

A/a - Black pigment distributed in points pattern. Basic color is bay or brown in the absence of other modifying genes.

a/a - Only recessive allele detected. Black pigment distributed uniformly. Basic color is black in the absence of other modifying genes.

## Cream

N/N - No evidence for the Cream dilution altered sequence detected. Basic color is sorrel or chestnut, bay or black in the absence of other modifying genes.

N/Cr - Heterozygous, dilute, one copy of Cream gene. Typical colors are palomino, buckskin and smoky black in the absence of other modifying genes.

Cr/Cr - Double dilute (two copies of Cream gene). Typical colors are cremello, perlino and smoky cream in the absence of other modifying genes.

## Pearl

N/N - No evidence of the altered sequence detected.

N/Pr1 - One copy of the altered sequence detected. If Cream dilution is also present, a pseudo-double Cream dilute phenotype will result.

Pr1/Pr1 - Two copies of the altered sequence detected. On a chestnut base color, a uniform apricot color of body hair, mane and tail will result.

## Tobiano

N/N - No evidence of altered sequence detected. Horse is not Tobiano.

N/TO - One copy of altered sequence. Approximately 50% of the offspring will inherit Tobiano.

TO/TO - Two copies of altered sequence. Horse is homozygous for Tobiano. All offspring will inherit Tobiano.

## W10 Dominant White

N/N - No evidence of altered sequence detected.

N/W10 - One copy of the W10 mutation detected. Horse will display some degree of white spotting but the specific pattern cannot be predicted.

W10/W10 - Two copies of the W10 gene detected.\*

\* Homozygous W10/W10 horses may not be viable. This result may only be found in aborted fetuses produced in matings between two W10 carriers.

## Leopard / Appaloosa

N/N - No copies of Leopard Complex (Appaloosa) spotting.

LP/N - 1 copy of Leopard Complex mutation, 50% of offspring will inherit the Leopard gene.\*

LP/LP - 2 copies of Leopard Complex mutation, all offspring will inherit the Leopard gene.\* Horse has congenital stationary night blindness (CSNB).

\* Expression of Leopard Complex is variable and white patterning may not be present in all horses that inherit the gene.

## Appaloosa Pattern-1

N/N - No copies of PATN1.

N/PATN1 - 1 copy of PATN1, 50% of offspring will inherit the modifier mutation.\*

PATN1/PATN1 - 2 copies of PATN1 mutation, all offspring will inherit the PATN1 mutation.\*

\* In order for high levels of white spotting to be visible on horses that inherit PATN1, LP must also be present.

## Dun

D/D - Horse is homozygous for the Dun gene. All offspring should be dun dilute.

D/N - Horse has one copy of the Dun gene. Horse will transmit Dun gene to 50% of the offspring.

N/N - Markers inconsistent with horse being Dun.

## Silver

N/N - No evidence of the altered sequence detected.

N/Z - One copy of the altered sequence detected. Black-based horses will be chocolate with flaxen or lightened mane and tail. Bay-based horses will have lightened black pigment on lower legs, mane and tail. No effect on chestnut color.

Z/Z - Two copies of altered sequence detected. Black-based horses will be chocolate with flaxen or lightened mane and tail. Bay-based horses will have lightened black pigment on lower legs, mane and tail. No effect on chestnut color.

## Lethal White Overo

N/N - No evidence for the altered sequence detected.

N/O - One copy of the altered sequence detected. If bred to another N/O horse, there is a 25% chance of producing a lethal white overo foal. The N/O type has been detected in Paints (including breeding stock), Pintos, Thoroughbreds, Miniatures, Quarter Horses and Tennessee Walking Horses.

O/O - Only the altered sequence in the EDNRB gene detected. This result has only been obtained with samples from lethal white overo foals.

## Sabino 1

N/N - No evidence of altered sequence detected.

N/SB1 - One copy of the Sabino 1 gene detected. Horse typically may have 2 or more white legs, blaze, spots or roaning in the midsection and jagged margins around white areas.

SB1/SB1 - Two copies of the Sabino 1 gene detected. Complete or nearly complete white phenotype expected.

## Champagne

N/N - No evidence of altered sequence detected.

N/Ch - One copy of the altered sequence detected. Chestnut color (red) is diluted to gold, bay to tan with brown points and black to darker tan with brown points.

Ch/Ch - Two copies of the altered sequence detected. All offspring are expected to be Champagne diluted.

## Gray

N/N - No copies of the gray gene. Horse will not turn gray.

N/G - One copy of the gray gene. Horse will turn gray and approximately 50% of offspring will be gray.

G/G - Two copies of the gray gene. Horse will turn gray and all offspring will be gray.

## Splashed White

### SW-1

N/N - No copies of SW-1 mutation.

N/SW1 - Horse has one copy of the SW-1 mutation.

SW1/SW1 - Horse has two copies of the SW-1 mutation.

### SW-2

N/N - No copies of SW-2 mutation.

N/SW2 - Horse has one copy of the SW-2 mutation.

### SW-3

N/N - No copies of SW-3 mutation.

N/SW3 - Horse has one copy of the SW-3 mutation.

## Roan

Rn/Rn - 2 copies of Classic Roan variant are present. All offspring will inherit Classic Roan.

Rn/N - 1 copy of Classic Roan variant is present. 50% of offspring will inherit Classic Roan.

Rn\*/Rn\* - 2 copies of an alternative Roan variant are present. All offspring will inherit the alternative Roan variant.

Rn/Rn\* - 1 copy of Classic Roan and 1 copy of an alternative Roan variant are present. All offspring will inherit either Classic Roan or the alternative Roan variant.

Rn\*/N - 1 copy of an alternative Roan variant is present.

N/N - No copies of Roan are present.

The Roan Zygosity test is not a direct test for the Roan gene. The analysis is based on markers associated with Classic Roan in Belgian Draft Horses, Gypsy Cobs, Miniature Horses, Quarter Horses, Tennessee Walking Horses and Welsh Ponies.

Note: There are horses with a roaned appearance that test negative for the Classic Roan gene. The genetic basis for this pattern called roaning is not known at this time.