Dictionary

Genetic terms

Chromosome

A chromosome is a long piece of DNA that carries genetic information. Horses have 64 chromosomes (32 pairs), getting one chromosome from the dam (mother) and one from the sire (father) in each pair.

Gene

A gene is a small segment of DNA that contains the information for a specific protein/ trait, such as how to produce certain pigments that affect coat color.

Locus (plural: loci)

The location of a gene on a chromosome.

Mutation

A mutation is a change in the DNA sequence

Alleles

Different versions of a gene. Horses inherit one allele from each parent, so they always have two alleles for each gene.

Wild-type allele

The wild-type allele is the “standard”, usually the most common allele, in contrast to mutations, which are new variations.

Mutant allele

A mutant allele is a different and less common variation of a gene

How Alleles Influence Coat Color

Dominant Allele (written in capital letters)

Only one copy is needed for a dominant allele to have an effect
Example: Z/Z and Z/z look the same.

Recessive Allele (written in lowercase letters)

Two copies of a recessive allele are needed to have an effect.
Example: E/E and E/e have the same effect, but e/e is different.

Incomplete Dominant

One allele does not fully overpower the other.

- One copy → a lighter/softer effect (e.g., CR/n)
- Two copies → a stronger effect (e.g., CR/CR)

Codominant

Both alleles have an equal effect.

How Many Copies a Horse Has

Heterozygous

Two different alleles (e.g., G/g).

Homozygous

Two identical alleles (e.g., G/G or g/g).

Genotype vs. Phenotype

Genotype

The genetic information a horse carries. It may not always be visible.

Phenotype

The visible appearance, such as the actual coat color.

Explained: The horse might appear black from the outside, while it is actually carrying cream. In this case, we might say: Phenotype is black, while the genotype is smoky black (black + cream).

Horse Terms

Foal Camo

Foals are often born lighter, and their true color appears after their foal coat sheds. This lighter coat is believed to help young foals blend into their surroundings.

- Foals with Roan or LP may have less foal camo
- Certain breeds like Friesians tend to have less foal camo

Mottling

Speckled or blotchy pattern of pigmented and non-pigmented skin that appears around the muzzle, eyes, and genitals. It can be seen in horses with pearl, champagne or LP.

Points

The mane, tail, lower legs, and edges of the ears. Often used when talking about black points in a bay horse.

Primitive markings

Primitive markings may include:

- **Dorsal stripe**: A long, dark line on the back that follows the spine all the way down into the tail. Sometimes there are horizontal stripes extendign fromn the dorsal, creating a fish-grate like pattern.
- **Leg barring**: Horizontal stripes on the legs, usually behind the knees and to the sides of the hocks. Also called zebra or tiger stripes.
- **Shoulder stripes**: A stripe on the shoulder area. Can vary from a shadow or smudge near the withers to multiple stripes.
- **Bider markings**: cobweb-like markings on the shoulder, mainly found in "primitive" breeds (e.g. Mongolian Horse)
- **Cobwebbing or face masks**: Cobweb-like rings or fine lines on the forehead. The (fore)head may also be entirely dark.
- **Eartips**: The eartips may be darker in color and show stripes. The ears may have a white tip at the end.
- Body stripes

Soft parts

The soft parts or areas of a horse include the lower belly, flanks, behind the elbows, inside of the legs, on the muzzle, and around the eyes.

A Useful Note

Every horse has the same genes, but not every horse has the same alleles of those genes.

So instead of saying “This horse has no cream gene”, we should say:

- “This horse does not have the cream allele,” or
- “This horse is n/n for cream,” or
- "This horse does not carry cream."