



Summary



Variant summary

A genetic "variant" can also be called an "allele". It refers to genetic differences within a specific genetic region. For instance: The coat colors Cream, Pearl, Sunshine and Snowdrop are all different coat color dilutions, and may have slightly different effects on how the horse appears. However, each of these is all found within the same genetic region of the horse genome "SLC45A2" and so they are "variants" of that region. Typically, a horse can have two variants within each region; one inherited from the father and one from the mother. On very rare occasions, a "variant" or "mutation" actually mutates yet again making it appear as if a horse has three or more variants within a region!

Color:

A/a, E/e, nd1/nd2

Health:

gbed/n, WNVR/n

Speed:

Sprint Type

Temperament:

Curious

Gait:

Neg for DMRT3

AQHA:

LWO n/n, GBED gbed/n, HERDA n/n, HYPP n/n, MH n/n, PSSM1 n/n, MYHM n/n

APHA:

LWO n/n, GBED gbed/n, HERDA n/n, HYPP n/n, MH n/n, PSSM1 n/n, MYHM n/n

Genetic notes

Immune-mediated Myositis (MY): No Immune-mediated Myositis variants detected.

Dominant White 35 (W35) "Holiday": No Dominant White 35 variants detected.



Performance and Abilities

Abilities can also be largely genetic and are, thus, also inherited much like coat or eye color. An example of a genetic ability can be seen with the Myostatin region (MSTN). Horses inheriting two variants of "sprint-type" myostatin tend to be faster in short bursts, while horses with two "endurance-type" may not be as quick, but may have longer distance abilities. Similarly, horses with two DMRT3 variants may have a smoother gait and or be seen as "gaited" however, they may not be able to perform the clear 3 beat canter or tempi change seen in a non-DMRT3 horse.

Curious:

Two Curiosity variants; horse may be more curious than vigilant.

Non-"Gaited" DMRT3:

No DMRT3 variants; likely non-gaited (*variants for novel "gait" abilities are currently in research).

Sprint:

Sprint type; horse may accel at short distance, quick bursts of speed over endurance type activity.

[Full report](#)



Coat color

Bay (Base):

Coat color can be one of the most interesting subjects when it comes to genetics as a great many of the variants can be easily seen on the horse tested. At the same time, there are many variants resulting in a broad range of visible effects on the horse despite a "dominant" or "partial dominant" reputation. For example: A horse may test positive for "Lethal White Overo" (EDNRB) and the classic appearance of that horse may include white markings, often across the face, and possibly a blue eye or two. "Overo" is defined as a "dominant" gene (LWO). However, there are many cases of horses who do have the Lethal White Overo variant but still may not have white markings or blue eyes.

[Full report](#)

Black (E) + Agouti (A): Bay (A, E) is a very common coat color in horses. Bay requires at least one black variant (E) and at least one Agouti/Bay variant (A). The Agouti restricts the black pigment to the outer points including the mane, tail, lower legs, and sometimes the tips of the ears. Bay horses have black skin under their coat, except beneath white markings. Horse with two Black (EE) and two Agouti (AA) have a 100% chance of passing Black and Agouti to any offspring. Horse with one Black (Ee) and one Agouti (Aa) have a 50% chance of passing Black or Red and a 50% chance of passing Agouti to any offspring.

non-Dun Primitive Markings (nd) - nd1/nd2:

nd1/nd2 - Non-Dun (nd) Primitive Markings may result in dorsal striping, leg barring and "shadows" on the face and shoulder. Still in research, it is suspected in some cases that nd1 may also cause mild coat color dilution, though not as extensive as the Dun (D) variant. Horse has a 50% chance of passing to any offspring.



Health Variants

Health variants are genetics we see are highly correlated with a particular disease, trait, or change but may not necessarily mean the horse will actually have or contract that issue. Knowing that a horse is at a higher risk for a particular disease is helpful in the day-to-day management of that animal. For example, we know that Recurrent Laryngeal Neuropathy (RLN or "Roaring") has an associated set of health variants. Therefore, if a horse tests positive for two health variants (RLN/RLN) one might avoid extended stressful disciplines or events that may encourage the development of roaring such as endurance or eventing.

[Full report](#)

Glycogen Branching Enzyme Deficiency (GBED) - gbed/n:

gbed/n - One Glycogen Branching Enzyme Deficiency (GBED) variant detected, resulting in "Carrier" status. Horse has a 50% chance of passing to any offspring. Caution is recommended when breeding to avoid another carrier and thus a 25% chance of "Likely Affected" offspring.

West Nile Virus Risk Symptom Susceptibility (WNVR) - WNVR/n:

WNVR/n - One West Nile Virus Symptom Susceptibility Risk (WNVR) variant detected. Horse may have moderate severity of West Nile Virus symptoms if contracted. Horse has a 50% chance of passing on to any offspring. (*NOT a test for the presence of WNV)



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