Horse Coat Colour Test Information:

BLACK
A/A or A/a: Black pigment in the coat occurs in the points, mane, tail, lower limbs and tips of the ears. The “black” gene (or locus), known as the agouti gene, works together with the extension or “red” gene (that distributes red pigment in the coat). A dominant E allele must be present in the extension gene for the black pigment to appear in the coat. This means that a horse that is homozygous for the recessive e allele at the Red or Extension locus (e/e) will not have black pigment in the coat and will, therefore, be chestnut. A combination of E/e or E/E and A/A, A/a will produce a bay horse and
a/a: E/e or E/E together with a/a will produce a black horse where the black coat pigment is distributed throughout the coat.

RED
E/E or E/e: The dominant E allele at the red or extension gene allows black pigment in the coat and the distribution pattern of this black pigment is controlled by the Black or Agouti gene as described above.
e/e: A homozygous recessive e at the red or extension gene produces a chestnut horse.

Shading that occurs in liver chestnut and dark bay is not controlled by these genes.

CREAM DILUTION
The cream dilution gene is responsible for the dilution of red pigment in the coat in palomino, buckskin, cremello, perlino and smoky black and smoky cream horses. There are 2 alleles, given as CR (carrying the dilution factor) and N (the wild type that does not carry the dilution factor).
CR/N: Palomino, Buckskin and smoky black.
CR/CR: Cremello, Perlino and smoky cream
N/N: Non dilute or dilute colour caused by another gene and not the cream dilution gene.

TOBIANO
Tobiano paint pattern is controlled by a dominant gene. The pattern is generally characterized by white that crosses the spine, white on the limbs, normal facial markings and a mixed tail with the edges of the white pattern being regular and not mottled.
Test results are as follows:
TO/TO: Homozygous for the tobiano gene. The horse will have a tobiano pattern and will produce offspring that are always tobiano.
TO/N: The horse will have a tobiano pattern but only 50% of offspring with a non-tobiano mate will be tobiano.
N/N: The horse is not a tobiano. If it is a paint horse, the pattern is produced by another gene.

OVERO LETHAL WHITE MUTATION
Certain Overo paint horses carry a gene that produces a lethal mutation in the homozygous form (O/O). This mutation causes a solid white foal with intestinal abnormalities that are incompatible with life. The problem with breeding Overo patterns is that the physical appearance of the pattern that produces the lethal white is not exactly defined, but appears to be associated mainly with the frame overo pattern. This test specifically identifies the lethal Overo mutation and results are given as follows:
O/N: Overo
N/N: No known Overo lethal mutation present (other mutations causing lethal white type syndromes may occur but are unknown at this stage).
It is advisable in Overo breeding to always breed an O/N to an N/N in order to avoid lethal whites.