

## **Silver Colour and Multiple Congenital Ocular Anomalies (MCOA) Syndrome**

Eye issues associated with the silver gene were historically linked to Rocky Mountain horses, which have a high percentage of silver in their gene pool. However, the silver gene in any breed produces a range of eye effects from those which have no obvious impact on the horse through to those which may have a significant effect on the horse's vision and horse and potentially rider welfare. This continuum of eye effects related to the silver gene is termed Multiple Congenital Ocular Anomalies (MCOA) Syndrome

The degree to which a horse is affected is related to how many copies of the gene a horse carries. A horse that carries one copy of the silver gene (Z/n or heterozygous for silver) is likely to be unaffected or have minimal effects- most commonly cysts in their eyes which are generally benign.

A horse who is homozygous for silver (carries two copies of the silver gene – Z/Z) will likely be affected although this severity may vary. They may present with a wide range of eye problems including retinal detachment, retinal dysplasia, large protrusive corneas, dysfunctional pupils that lack typical pupillary response, myopia (near sightedness), iridociliary cysts and cataracts.

Horses who have one copy of silver will on average pass it on to progeny 50% of the time, whereas horses with two copies will always pass on a copy. It is strongly recommended that silver is not bred to silver. Not breeding silver to silver eliminates the chance of producing a homozygous silver and therefore the more severe problems associated with 'Z'.

It should be noted that silver does not show on chestnut horses, but the effects associated with silver remain.

### References

<https://vgl.ucdavis.edu/test/silver>

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[https://equiseq.com/learning\\_center/health/ocular-defects](https://equiseq.com/learning_center/health/ocular-defects)

<https://www.rmhorse.com/multiple-congenital-ocular-anomalies-mcoa/>