

Genomic Breeding Values

What You Need to Know About DNA Breeding Values for Osteochondrosis

In March 2016, the Breeding Council recommended the following regarding the genomic breeding values for Osteochondrosis (OC): implementation of a predicate for stallions and mares based on DNA analysis for OC: the D-OC predicate.

As a result, in the stallion selection, riding horse stallions presented for 's-Hertogenbosch must be evaluated and have a Genomic breeding value (GBV) for OC and pass a radiographic examination for navicular syndrome and degenerative joint disease. Because of this protocol, the traditional radiographic examination for OC will be discontinued.

From 2016, the transition year to the new DNA predicate, the PROK examination as well as the DNA predicate D-OC may be used to secure the elite predicate for mares. In 2017, this method will be evaluated. As it is now planned, from the end of 2018, only the DNA predicate D-OC may be applied toward the elite predicate. Register A mares or foreign registered mares whose sire has not met KWPN radiographic standards must possess the D-OC and pass a radiographic exam for navicular syndrome and degenerative joint disease prior to studbook acceptance.

Below are answers to the most frequently asked questions regarding the new DNA predicate:

OCD Testing

What is needed to do a DNA test?

The owner will complete the 2 page form below and send to the KWPN-NA office with payment and the hair sample. These samples will then be sent to the Netherlands for testing and results will be sent to the owner in 6-8 weeks. Horses who pass are then granted the "D-OC" predicate.

Is the DNA test useable for each horse?

No, only for KWPN jumping and dressage horses and horses that are sufficiently related to those populations, such as horses from most Western European sporthorse studbooks. In all other cases, the old selection method will be used (PROK-examination and in case of approved and recognized stallions offspring testing).

What is the outcome of the DNA-test?

The outcome of the test DNA will be a genomic breeding value for OC (GFW OC). This value indicates the position of the horse relative to the current KWPN population. On average, 70% of the population of breeding values comes between 96 and 104. Scores a horse more than 104 then it may be expected that the horse inherits less OC to its offspring. Horses scoring 95 or below are expected to contribute negative for OC inheritance. When a horse scores 96 or higher, it receives the D-OC predicate.

Gives a DNA test always an outcome?

Yes, unless something has gone wrong with the submitted hairs, due to which a full DNA profile can not be traced. But that rarely happens.

What does the DNA analysis cost?

\$200 (us) for KWPN- NA members - paid to the KWPN-NA office

When will I receive the DNA analysis results?

That depends on the laboratory. We strive to have the results in 4 to 6 weeks.

From which date can be applied for the DNA predicate?

The DNA-predicate D-OC is already implemented. Horses that have undergone a DNA test and have obtained a genomic breeding value higher than 95, may apply for the predicate D-OC.

Where will the genomic breeding values be published?

Breeding values of approved/recognized stallions will be published in the Stallion Database, *In de Strengen* magazine and in the Breeding Values book. Genomic breeding values for mares may be viewed by their respective registered party only in MyKWPN. These breeding values may be made public only with permission of the registered party.

May the DNA analysis be repeated?

There is no benefit in repeating the analysis. A horse's DNA does not change. What can happen is that the GFW score decreases over the years. This is caused by the fact that the genomic breeding value in the complete population will increase, because the population improves due to this selection. That is the ultimate goal.

Can a horse which did not pass the PROK examination earn the DNA predicate D-OC?

Yes. A horse can have OC itself by external non-hereditary conditions and / or trauma, and therefore it is not PROK-worthy and therefore falls outside the boat in the current situation. With a DNA-test, it is possible to better distinguish between the hereditary and non-hereditary factors of OC. Therefore, genomic selection is such a valuable tool for breeding. A not PROK worthy horse can, based on the genetic material, have a Genomic Breeding Value (GFW) higher than 95 and can in that case get the DNA predicate D-OC.

Will the PROK continue after 2016?

Yes, it will still exist for non-related jumping and dressage horses and for Gelder and Harness horses. Also, for riding horses, at least in 2017 it is possible to get a mare the elite predicate based on the PROK predicate. Based on the evaluation of the method in 2017, the plan for the future will be determined. Each year a number of yearlings undergoes a complete X-ray examination and DNA analysis to keep the DNA reference group of 3000 horses up to date. As it is planned now for 2018 onwards, the PROK investigation for jumper and dressage horses will be limited to navicular syndrome and degenerative joint disease. A full PROK investigation remains possible, but it will not benefit stallions for approval and it will not count towards the Elite predicate for mares after 2018.

May the new DNA predicate also be used for the sport inspection?

No, as the genomic breeding value for OC provides information about breeding and thus heritability.