

NASS Genetic Testing for SCID/CA, Regulations and Information

adopted by NASS BOD 2-3-21

At the February 2021 NASS BOD meeting the NASS Breeding Committee recommended that NASS establish the following regulations and recommendations to address the existence of two potentially fatal genetic disorders which exist in Arabian horse populations—Severe Combined Immunodeficiency (SCID), and Cerebellar Abiotrophy (CA).

Both disorders are autosomal recessive traits, meaning that a horse has either no ability to pass on the disorder, so is “clear”, or the horse is a “carrier” and has a 50% chance to pass on one gene to its offspring. Two “clear” horses can never produce anything but “clear” offspring. A clear horse bred to a carrier will have in theory a 50% chance of producing offspring clear and 50% carriers. Two carriers bred to each other will have a 25% chance of producing a “clear” offspring, a 25% chance of producing an affected offspring which will not survive, and a 50% chance of producing a healthy, but “carrier” horse.

The overall incidence of both SCID and CA are relatively small in the Arabian population. And the actual chance of having an affected foal is extremely small. Here is a statistical example:

“Last January at the Plant and Animal Genome VI Conference held in San Diego, California, researchers Domenico Bernocco, Ph.D., D.V.M., of Stormont Laboratories, Inc., at Woodland, California, and Ernest Bailey, Ph.D., of the M. H. Gluck Equine Research Center at the University of Kentucky (where he’s researched SCID) presented their findings on the occurrence of the SCID gene. “Based on testing 386 Arabian horse foals registered in 1997, the frequency of the SCID gene carriers was 8.29 percent (32/386),” the abstract states. “Using this phenotypic frequency, we would expect 0.17 (1 out of 582) of Arabian foals to be affected with SCID based on a random breeding population.” (Mary Jane Parkinson from VetGen website)

Also, the goal is not the total elimination of carrier horses, as this would also narrow genetic diversity in the breed.

The World Arabian Horse Organization suggests voluntary testing and comments:

“It is important to understand that inherited genetic disorders in Arabian horses know no boundaries. They have been reported in all blood lines of the Arabian breed and reported cases have come from almost all countries where Arabians are being bred today. It is also important to understand that there is nothing to be gained from “pedigree witch-hunts”. Through science, we can all learn to deal with facts as they are today, and not to “point fingers” at individual horses from the past which may or may not have been the original sources of these genetic disorders. It also has to be said that it may not be possible or wise to eliminate a genetic disorder altogether, because by doing so an unwanted side effect might be to also eliminate other beneficial traits and diminish, rather than enhance, the gene pool.”

“We as a breed must recognize the importance of breeding carrier horses of good quality because that genetic pool should not be lost or the breed will suffer. We need to think in terms of preserving traits, rather than discarding individuals or entire bloodlines. We’ve all heard the horror stories of other animal breeds where mass elimination of specific lines only led to the production of genetic traits far worse than the one breeders hoped to eliminate.”

Since there is now a reasonably-priced genetic test which identifies “carrier” horses for both SCID and CA, NASS is instituting the following policy and regulations in order to assist breeders in making smart breeding decisions. Horses who are “carriers” are not affected health-wise in any way by their carrier status, and they still can be used for breeding as long as the chosen mate is not a carrier.

For those who would like to read more in depth, here are a couple of suggested web links:

<https://www.vetgen.com/equine-ref-CIDAnUpdate.html>

https://www.arabianhorses.org/export/content.export/aha-docs/ Genetics_Disorders_and_Arabians.pdf

NASS Policy Addition to the NASS Guidelines for Breeding: Genetic Testing

Beginning with the foaling year 2021 all Shagya-Arabian and Part-Shagya-Arabian foals born are required to have genetic testing for SCID and CA in order to be registered in NASS unless both parents are already on record with the NASS Registrar as being "clear". Each horse's test results will be on file with the NASS Registrar, noted on the registration certificate and recorded in the Swiss Database.

Beginning with the inspection year 2021 all mares and stallions approved for Shagya-Arabian breeding must have their SCID and CA test results on record with the NASS Registrar and their test results will be recorded in the Swiss Database. If the horse's parents are already on record with the NASS Registrar as being "clear", SCID and CA tests will not be necessary and the horse will be recorded as "clear".

In addition, the NASS Breeding Committee encourages owners of both mares and stallions who are already approved for breeding to get their horses tested for SCID and CA and supply the results to the NASS Registrar, who will enter the results on the Swiss Database.