



HOOF WALL SEPARATION DISEASE

Hoof Wall Separation Disease (HWSD) is an autosomal recessive **genetic disorder** resulting from a single gene mutation.

A “**gene mutation**” is a permanent alteration in the DNA sequence.

“**Autosomal recessive**” refers to the mode of inheritance of a genetic condition.

Autosomal means that the passing of the gene onto the progeny does not depend on the gender of either the parent or the offspring.

Recessive means that the symptoms will only present themselves if a pony inherits two mutated copies of the gene, one from each parent.

A pony with **one copy** of the mutated gene (**carrier**) is **completely sound** and will not show any signs of the disease. It is not an acquired condition; the pony is born with the disease and it cannot be cured.



HWSD is characterized by an outer hoof wall at the dorsal aspect of the hoof (front- as the cross-section picture illustrates) losing connection with inner layers, causing it to crack and break away easily. The breaks and cracks begin to occur in young ponies- generally between 1 and 6 months of age. The condition affects all 4 feet. In severe cases the pony bears weight entirely on the sole of the foot which can lead to severe lameness, abscesses and laminitis. Affected ponies usually don't hold nailed shoes well. There are various degrees of severity of the condition with some ponies being able to stay in work, others requiring euthanasia.

Since 2014 the genetic test for HWSD has been available commercially.
The possible test results are:

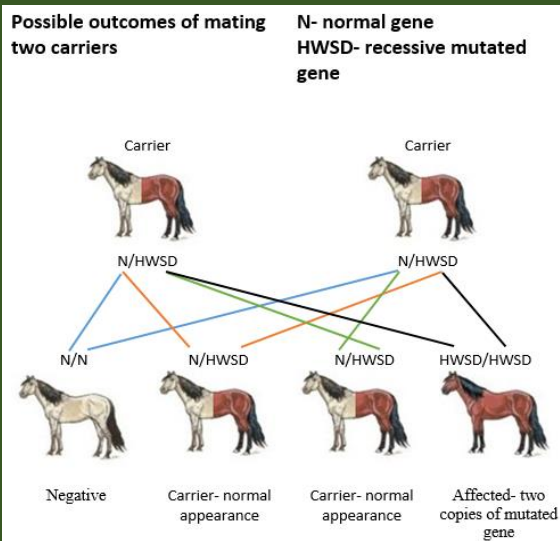
N/N – Negative- doesn't have the mutation

N/HWSD – Carrier- carries one copy of the mutation- shows no symptoms of the disease

HWSD/HWSD- Affected- shows symptoms of varying degrees

With the aid of the HWSD genetic test, it is now possible to avoid breeding an affected foal. To do so it is essential to avoid mating two carriers.

Possible outcomes of mating two carriers

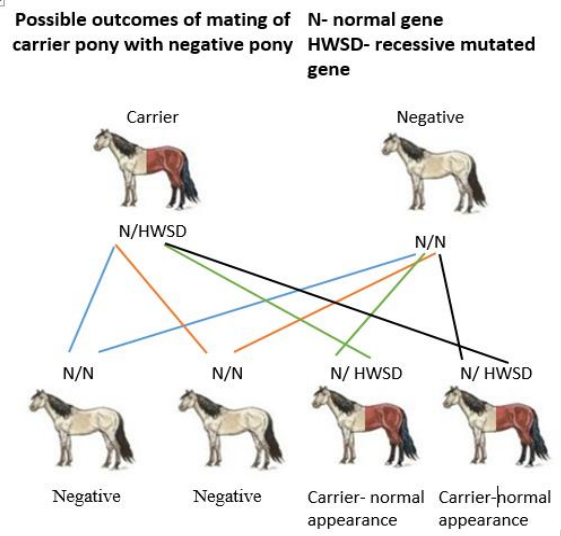


Likelihood of outcomes of mating of two carriers:

- 25% Negative
- 50% Carrier
- 25% Affected

Carriers should be bred only to negative ponies

Possible outcomes of mating of carrier pony with negative pony



Likelihood of outcomes of mating of a carrier pony with a negative pony:

- 50% Negative
- 50% Carrier
- 0% Affected

100% of ponies resulting from this mating will be clear of any symptoms of the disease. 50% of those will be negative- giving opportunity to choose future breeding animals free of the mutation.

It is important to realise that carriers must not be excluded from breeding. With the mutated gene spread as wide as it is, excluding carriers will only further contract the gene pool in an already compromised population and can cause appearance of other damaging traits. The sole purpose of testing is only to avoid matings that could result in affected foals being born.

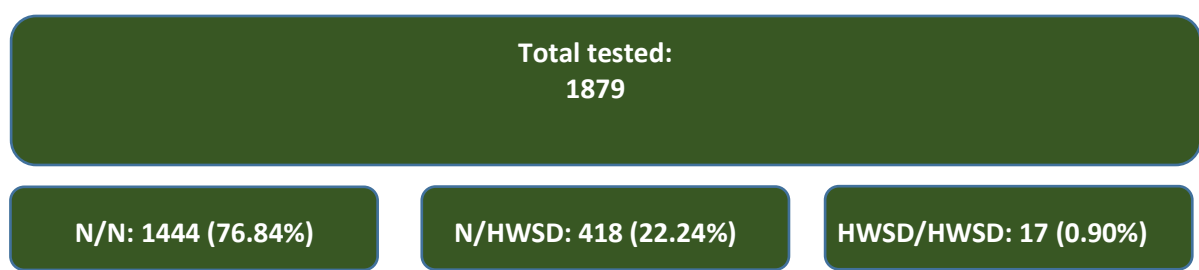
To find out more about testing your pony follow the link: <https://cpbs.ie/hwsd-form/>

Management of affected ponies involves controlling their living conditions, dietary supplementation, regular attention from a competent farrier and sometimes alternative shoeing. None of this can cure HWSD but it might lessen the symptoms and keep the affected pony in comfortable condition



The Connemara Pony Breeders' Society is working towards enabling the breeders to prevent any further production of HWSD affected ponies whilst preserving genetic diversity within the population and slowly reducing the prevalence of the mutation. To achieve that all breeding animals should be tested and breeding decisions made based on the test results. The Society strongly encourages breeders to undertake voluntary testing of mares and stallions not included in the compulsory testing.

From 2016 CPBS has implemented compulsory testing of colts presented for inspections and all registered foals with the results of the test stamped in their passports. The results of testing the foals born in 2016 are as follows:



The genetic research that led to discovery of the mutation was initiated by the Connemara Pony Research Group and carried out at the Bannasch Laboratory of University of California, Davis.
<http://connemara-pony.blogspot.ie>