



## Navicular Disease: Researchers Identify Potential Genes Involved

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A team of German researchers might have pinpointed the genes responsible in part for the development of [navicular disease](#) as the result of a [study of Hanoverian Warmbloods](#).

"Navicular disease, defined as the progressive degeneration of the navicular bone, bursa, and the distal (toward the ground) end of the deep digital flexor tendon that attaches to the navicular bone, is one of the main causes of chronic and, oftentimes, therapy-resistant forelimb lameness in horses," explained Ottmar Distl, DVM, PhD, a professor at the Institute for Animal Breeding and Genetics at the University of Veterinary Medicine in Hanover, Germany, and co-author of the study.

A [previous study](#) indicated that navicular disease is heritable. In that study, a segment of DNA called a qualitative trait locus (QTL) on chromosome 10 appeared to be associated with changes in the navicular bone of Hanoverians. The researchers found that horses with these QTLs had abnormally sized, shaped, and located nutrient channels of the navicular bone.

"In this study, we attempted to take a more in-depth look at these QTLs on chromosome 10 to see if we could identify any actual genes associated with the abnormalities in the nutrient foramina (channels within the bone)," said Distl.

He and his colleagues analyzed DNA from 192 related Hanoverians for the current study. They identified two separate genes that appear to increase the size and alter the shape of the distal border foramina (located at the lower edge of the bone), a clinical sign that is often associated with navicular disease.. Both genes are also involved in immune responses.

"At the moment it is not clear whether these particular genes are (the only ones) responsible for navicular disease," said Distl. "Nonetheless, this research brings us one step closer to identifying all of the genes responsible for navicular disease in Warmblood horses.

"The next steps will be to look on this genomic region and, particularly, at these candidate genes," he concluded. Distl will use DNA sequencing to further research the genetics behind navicular disease.

The study, "Refinement of quantitative trait loci on equine chromosome 10 for radiological signs of navicular disease in Hanoverian warmblood horses," was published in a special edition of *Animal Genetics*. The entire journal supplement, funded by the [Dorothy Russell Havemeyer Foundation](#), is available for free [online](#).



**Readers are cautioned to seek the advice of a qualified veterinarian before proceeding with any diagnosis, treatment, or therapy.**

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