

## DNA testing for Inherited Disease

**UC Davis offers several tests to detect whether a horse may pass on specific diseases.**

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The Veterinary Genetics Laboratory at the University of California, Davis, offers DNA testing for several inherited equine diseases. Before breeding a horse, it's advisable to have it tested for the possibility that it can pass on an inherited disease. See the list below of inherited diseases in which DNA testing is available and then visit [www.vgl.ucdavis.edu/service/horse/index.html](http://www.vgl.ucdavis.edu/service/horse/index.html) for more information.

Hereditary equine regional dermal asthenia (HERDA) is a genetic skin disease predominantly found in the American Quarter Horse. HERDA is characterized by hyperextensible skin, scarring, and severe lesions along the backs of affected horses. Affected foals rarely show symptoms at birth. The condition typically occurs by the age of 2, most notably when the horse is first being broke to saddle. The diagnostic DNA test for HERDA that has been developed allows identification of horses that are affected or that carry the specific mutation.

Junctional epidermolysis bullosa (JEB) is an inherited disease that causes moderate to severe blistering of the skin and mouth, and sloughing of hooves in newborn foals. This condition is also known as red foot disease. Affected foals are typically born alive, but soon develop skin lesions at pressure points. To date, this mutation has been found only in Belgian draft horses and derivatives of that breed. The available DNA test detects the mutation that has been associated with JEB in Belgian draft horses and in other breeds derived from Belgian draft stock.

Hyperkalemic periodic paralysis (HYPP) is an inherited disease of the muscle, which is caused by a genetic defect. This genetic defect has been identified in descendants of the American Quarter Horse sire, Impressive. HYPP is characterized by sporadic attacks of muscle tremors (shaking or trembling), weakness and/or collapse. A DNA test is available to identify horses carrying the defective gene causing HYPP.

Glycogen branching enzyme deficiency (GBED) occurs in newborn foals. This fatal disease is seen in Quarter Horses and related breeds. The foals lack the enzyme necessary to store glycogen (sugars) in its branched form and therefore cannot store sugar molecules. This disease is fatal as the heart muscle, brain and skeletal muscles are unable to function. The Veterinary Genetics Laboratory, University of California, Davis has obtained a license from the University of Minnesota and has developed a diagnostic test that is now available to horse owners and associations.