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7 Identified Diseases Information as it Pertains to Woronecki Ranch Quarter Horses

At Woronecki Ranch Quarter Horses we take an ethical response to any genetic diseases as they are identified. AQHA previously had a 5-panel test requirement for breeding stallions since 2015. Two more diseases have been identified and AQHA has now required a 6-panel test. A 7th disease has been identified and could soon be added to the panel. We, as well as many other breeders, have decided to test for that (EJSCA). We also know that there could be many more diseases yet to be discovered. We order our tests through the VGL laboratory of the School of Veterinary Medicine at the University of California, Davis and provide those results to AQHA and buyers. VGL is internationally recognized as a pioneer and expert in DNA-based animal testing. The effects of these equine diseases are wide-ranging, from mild and manageable to severe and terminal. We have compiled a short description of each disorder tested. **In many instances we only test the necessary specific test based upon the parents' test results. If both parents are N/N on all or some diseases then the offspring is also N/N on those diseases by default. Please see ALL PAGES of this document link.**

Glycogen Branching Enzyme Deficiency (GBED) is a fatal genetic disorder that results from the inability to correctly store glycogen in several organs of the body. Most die within couple weeks of age, but none have been known to survive more than 2 months of age. These foals are often still born. **GBED is a recessive trait and only horses that inherit both recessive genes from each parent (G/G) will be afflicted. Carriers (N/G) and non-carriers (N/N) will have no problems in their lives as they will NOT be afflicted at all, and they will be able to perform all performance activities. If you decide to breed a carrier (N/G) it is highly advised to not breed to another carrier to avoid producing afflicted offspring.**

Hereditary Equine Regional Dermal Asthenia (HERDA) is an inherited skin condition primarily found in Quarter Horses that is characterized by hyperextensible skin, scarring, and severe lesions along the back of affected horses. **HERDA is a recessive trait and only horses that inherit both recessive genes from each parent (HDR/HDR) will be afflicted. Carriers (N/HDR) and non-carriers (N/N) will have no problems in their lives as they will NOT be afflicted at all, and they will be able to perform all performance activities. If you decide to breed a carrier (N/HDR) it is highly advised to not breed to another carrier to avoid producing afflicted offspring.**

Hyperkalemic Periodic Paralysis (HYPP) is an inherited disease of the muscles primarily found in Quarter Horses which is characterized by sporadic episodes of muscle tremors or paralysis. **HYPP is a dominant trait and carriers (N/H) will be afflicted but can be managed with careful nutritional care. It is highly recommended NOT to breed a carrier.**

Formerly known as IMM, Myosin-heavy chain myopathy (MYHM) is a muscle disease in Quarter Horses and related breeds that results in two distinct clinical disease presentations. The first presentation is called immune-mediated myositis or IMM and it is characterized by episodes of severe muscle atrophy following an autoimmune event. The second is severe muscle pain and damage termed non-exertional rhabdomyolysis or "tying-up" that is not associated with exercise and may or may not have muscle atrophy. **MYHM is a codominant trait and carriers (N/My) may develop a myosin-heavy chain myopathy. Horses with (My/My) may develop a more severe form of a myosin-heavy chain myopathy. It is highly recommended NOT to breed a carrier.** After consulting with veterinarians and experts in breeding who deem this disorder to not be as severe or common as HYPP or PSSM1, we have decided at this time to continue to breed certain individuals identified at WRQH. We will not breed carriers to carriers to minimize the potential. We have several aged horses that carry MYHM and have had no problems with them. If things prove differently, we will adjust at that time.

Malignant Hyperthermia (MH) is an inherited disease in which affected horses can be triggered by halogenated anesthetics, succinylcholine, stress, or excitement, which can induce a hyper-metabolic state characterized by symptoms including muscle contracture, elevated temperature, and an irregular heart rhythm. **MH is a dominant trait, and carriers (N/MH) will be afflicted if undergoing surgery or extreme stress. It is highly recommended NOT to breed a carrier.**

Polysaccharide Storage Myopathy (PSSM1) is a glycogen storage disease that results in the accumulation of abnormal complex sugars in muscle cells, which can lead to muscle pain, weakness, and reluctance to move. **PSSM1 is a dominant trait but carriers (N/PSSM1) can be managed with proper diet and exercise. It is highly recommended NOT to breed a carrier.**

Equine Juvenile Spinocerebellar Ataxia (EJSCA) is an inherited neurologic disease that causes ataxia. Affected foals develop ataxia, or incoordination, between 1 and 4 weeks of age. The disorder progresses within a few days until affected foals are unable to stand without assistance. **EJSCA is a recessive trait and only horses that inherit both recessive genes from each parent (JSA/JSA) will be afflicted. Carriers (N/JSA) and non-carriers (N/N) will have no problems in their lives as they will NOT be afflicted at all and they will be able to perform all performance activities. If deciding to breed a carrier (N/JSA) it is highly advised to not breed to another carrier to avoid producing afflicted offspring.**

Jacks Our Bartender (AQHA 4425254)

2003 Bay Roan Stallion

| | |
|--------------|-----|
| GBED Status | N/N |
| HERDA Status | N/N |
| HYPP Status | N/N |
| MYHM Status | N/N |
| MH Status | N/N |
| PSSM1 Status | N/N |
| EJSCA Status | N/N |

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VETERINARY GENETICS LABORATORY
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TELEPHONE: (530) 752-2211
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AQHA GENETIC DISEASE PANEL TEST RESULTS

| | |
|--|---|
| AMERICAN QUARTER HORSE ASSOCIATION P.O. BOX 200 AMARILLO, TX 79168-0001 | Case: QHA168729 Date Received: 04-Dec-2014 Print Date: 08-Dec-2014 Report ID: 0461-4992-5772-4006 Verify report at www.vgl.ucdavis.edu/myvgl/verify.html |
| Horse: JACKS OUR BARTENDER YOB: 2003 Breed: QH Sex: S Alt. ID: 5198859 | Reg: 4425254 |
| Sire: BARTENDERS MEMORY Dam: WATCH MISS JO JACKIE | Reg: 3736501 Reg: 3301428 |

| | | |
|-------|-----|---|
| GBED | N/N | N/N - Normal - Does not possess the disease-causing GBED gene |
| HERDA | N/N | N/N - Normal - horse does not have the HERDA gene |
| HYPP | N/N | N/N - Normal - Does not possess the disease-causing HYPP gene |
| MH | N/N | N/N - Normal - horse does not have the MH gene |
| PSSM1 | N/N | N/N - Normal - horse does not have the PSSM1 gene |

GBED - Glycogen Branching Enzyme Deficiency. Fatal disease of newborn foals caused by defect in glycogen storage. Affects heart and skeletal muscles and brain. Inherited as recessive disease.

HERDA - Hereditary Equine Regional Dermal Asthenia. Skin disease characterized by hyperextensible skin, scarring, and severe lesions along the back of affected horses. Typical onset is around 2 years of age. Inherited as a recessive disease.

HYPP - Hyperkalemic Periodic Paralysis. Muscle disease caused by defect in sodium channel gene that causes involuntary muscle contraction and increased level of potassium in blood. Inherited as dominant disease. Two copies of defective gene produce more severe signs than one copy.

MH - Malignant Hyperthermia. Rare but life-threatening skeletal muscle disease triggered by exposure to volatile anesthetics (halothane), depolarizing muscle relaxants (succinylcholine), and stress. Presumed inheritance as dominant disease.

PSSM1 - Polysaccharide Storage Myopathy Type 1. Muscle disease characterized by accumulation of abnormal complex sugars in skeletal muscles. Signs include muscle pain, stiffness, skin twitching, sweating, weakness and reluctance to move. Inherited as a dominant disease.

GBED testing performed under a license agreement with the University of Minnesota.
 HERDA testing performed under a license agreement with the University of California, Davis.
 PSSM1 testing performed under a license agreement with the American Quarter Horse Association.

**MYOSIN-HEAVY CHAIN MYOPATHY (MYHM)
 TEST REPORT**

| | | | |
|---|----------------------------|---------------------------|----------------------|
| Provided Information: | | Case: | NQ122908 |
| Name: | JACKS OUR BARTENDER | Date Received: | 21-Apr-2025 |
| Registration: | 4425254 | Report Issue Date: | 25-Apr-2025 |
| | | Report ID: | 1659-1778-5993-4131 |
| Verify report at vgl.ucdavis.edu/verify | | | |
| DOB: 04/25/2003 Sex: Stallion Breed: Quarter Horse | | | |
| Sire: | BARTENDERS MEMORY | Dam: | WATCH MISS JO JACKIE |
| Reg: | 3736501 | Reg: | 3301428 |
| Microchip: | | Microchip: | |

RESULT

INTERPRETATION

| | |
|---|------------|
| Myosin-Heavy Chain Myopathy (MYHM) | N/N |
|---|------------|

Normal. No copies of the MYHM allele detected. Horse does not have increased susceptibility for immune mediated myositis or nonexertional rhabdomyolysis caused by the MYHM allele.

EQUINE JUVENILE SPINOCEREBELLAR ATAXIA TEST REPORT

| | |
|---|--|
| <p><i>Provided Information:</i></p> <p><i>Name:</i> JACKS OUR BARTENDER</p> <p><i>Registration:</i> 4425254</p> | <p><i>Case:</i> NQ122908</p> <p><i>Date Received:</i> 21-Apr-2025</p> <p><i>Report Issue Date:</i> 25-Apr-2025</p> <p><i>Report ID:</i> 1027-5249-1863-0073</p> <p style="text-align: center; font-size: small;">Verify report at vgl.ucdavis.edu/verify</p> |
| <p><i>DOB:</i> 04/25/2003 <i>Sex:</i> Stallion <i>Breed:</i> Quarter Horse</p> | |
| <p><i>Sire:</i> BARTENDERS MEMORY</p> <p><i>Reg:</i> 3736501</p> <p><i>Microchip:</i></p> | <p><i>Dam:</i> WATCH MISS JO JACKIE</p> <p><i>Reg:</i> 3301428</p> <p><i>Microchip:</i></p> |

RESULT

INTERPRETATION

| | |
|--|-------------------|
| <p>Equine Juvenile Spinocerebellar Ataxia</p> | <p>N/N</p> |
|--|-------------------|

Normal. No copies of the allele associated with equine juvenile spinocerebellar ataxia (EJSCA) detected.