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5 Panel Information as it Pertains to Woronecki Ranch Quarter Horses

At Woronecki Ranch Quarter Horses we order a genetic kit through AQHA and the results are sent to VGL laboratory of the School of Veterinary Medicine at the University of California, Davis. 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) doesn't allow a foal to store enough sugar in its cells for energy, function of the brain, heart and skeletal muscles. 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 deciding 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) causes the skin on a horse's back to literally peel away. The skin will slough becoming loose and tented to never return to its original position. HERDA is a recessive trait and only horses that inherit both recessive genes from each parent (HDR/HDR) will be afflicted. **Carries (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 deciding 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 a muscle condition that leads to weak muscles or severe twitching of the muscles. In most cases symptoms include tremors, weakness, cramping, sweating and inability to relax. In severe cases horse can collapse from a heart attack or respiratory failure and die. **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.**

Malignant Hyperthermia (MH) is a rare but deadly disorder triggered by the use of anesthesia, muscle relaxant succinylcholine and stress. The horse will often experience high heart rate along with rapid breathing and extreme fever. This can also lead to death in some cases. Some horses are also a carrier of PSSM along with MH. **MH is a dominant trait and carriers will be afflicted if undergoing surgery or extreme stress. It is highly recommended NOT to breed a carrier.**

Polysaccharide Storage Myopathy (PSSM1) is when the muscles store too much glycogen causing muscle stiffness and muscle tying up. Most horses experience pain with strenuous exercise. **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.**

Paddys Gin Dart JW (AQHA Pending)
2016 Bay Stallion

GBED Status	N/G	Carries one copy of the gene. If a broodmare, breed to N/N stallions.
HERDA Status	N/N	
HYPP Status	N/N	
MH Status	N/N	
PSSM1 Status	N/N	



VETERINARY GENETICS LABORATORY
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AQHA GENETIC DISEASE PANEL TEST RESULTS

AMERICAN QUARTER HORSE ASSOCIATION P.O. BOX 200 AMARILLO, TX 79168-0001	Case: QHA192967 Date Received: 11-May-2015 Prim Date: 15-May-2015 Report ID: 5224-0099-7667-9013 Verify report at www.vgl.ucdavis.edu/myvgl/verify.html
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Horse: **TRR PADDYS TEXAS GIN** Reg: **4801457**
 YOB: 2006 Sex: Stallion Breed: Quarter Horse Alt. ID: 5641519

Sire: PADDYS IRISH WHISKEY Reg: 2983308
 Dam: TRR MISS BAY GIN Reg: 4163196

GBED	N/N	N/N - Normal - Does not possess the disease-causing GBED gene
HERDA	N/HRD	N/HRD - Carrier - horse carries one copy of 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.



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AQHA GENETIC DISEASE PANEL TEST RESULTS

AMERICAN QUARTER HORSE ASSOCIATION P.O. BOX 200 AMARILLO, TX 79168-0001	Case: QHA206619 Date Received: 31-Aug-2015 Print Date: 07-Sep-2015 Report ID: 4458-5030-6925-9164 Verify report at www.vgl.ucdavis.edu/myvgl/verify.html
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Horse: **ZAN CHARM N CASH JW** Reg: **4975024**
 YOY: 2007 Sex: Mare Breed: Quarter Horse Alt. ID: 5848424

Sire: MARK OF DASHTINATION Reg: 4200640
 Dam: ZAN HUMMING JAY Reg: 3607707

GBED	N/G	N/G - Carrier - Heterozygous (one normal and one 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.

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GBED REPORT

<p>JODIE WORONIECKI 7075 28TH ST. HEBRON, ND 58638</p>	<p>Case: NQ31315 Date Received: 31-May-2016 Print Date: 08-Jun-2016 Report ID: 9613-5350-8589-8013 Verify report at www.vgl.ucdavis.edu/myvgl/verify.html</p>
<p><i>Horse:</i> PADDYS GIN DART JW <i>Reg:</i> AQHA Pending <i>DOB:</i> 04/25/2016 <i>Sex:</i> Stallion <i>Breed:</i> Quarter Horse</p>	
<p><i>Sire:</i> TRR PADDYS TEXAS GIN <i>Reg:</i> 4801457 <i>Dam:</i> ZAN CHARM N CASH JW <i>Reg:</i> 4975024</p>	

GBED Test Result

N/G

Result Codes:

- G/G Affected - Homozygous for GBED (two copies of the GBED gene).
- N/G Carrier - Heterozygous (one normal and one GBED gene).
- N/N Normal - Does not possess the disease-causing GBED gene.

The condition is inherited as a recessive trait. This means that breedings between two carrier (N/G) horses have a 25% chance of producing an affected foal (G/G). Affected foals usually die at a young age or will need to be euthanized due to weakness. Breedings between carrier and normal (N/N) horses produce only normal foals but 50% of these are expected to be carriers.



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HERDA TEST RESULT

<p>JODIE WORONIECKI 7075 28TH ST. HEBRON, ND 58638</p>	<p>Case: NQ31315 Date Received: 31-May-2016 Print Date: 08-Jun-2016 Report ID: 8365-7877-4172-3002 Verify report at www.vgl.ucdavis.edu/myvgl/verify.html</p>
<p><i>Name:</i> PADDYS GIN DART JW <i>Reg:</i> AQHA Pending <i>DOB:</i> 04/25/2016 <i>Sex:</i> Stallion <i>Breed:</i> Quarter Horse</p>	
<p><i>Sire:</i> TRR PADDYS TEXAS GIN <i>Reg:</i> 4801457 <i>Dam:</i> ZAN CHARM N CASH JW <i>Reg:</i> 4975024</p>	

HERDA Test Result

N/N

Result Codes:

- N/N Normal - horse does not have the HERDA gene
- N/HRD Carrier - horse carries one copy of the HERDA gene
- HRD/HRD Affected - horse has two copies of the HERDA gene

Hereditary equine regional dermal asthenia (**HERDA**) is a degenerative skin disease characterized by hyperextensible skin, scarring, and severe lesions along the back of affected horses. Affected foals rarely show symptoms at birth. The condition typically occurs by the age of two, most notably when the horse is first being broke to saddle. HERDA is an autosomal recessive trait which means that breedings between carrier (N/HRD) horses have a 25% chance of producing an affected foal (HRD/HRD). Breedings between carrier and normal (N/N) horses produce normal foals, but 50% of these are expected to be carriers.

This test is specific for the mutation in the *cyclophilin B* gene (PPIB) that has been shown to be associated with HERDA. For more information go to <http://vgl.ucdavis.edu>.