ETALON DIAGNOSTICS

REPORT DATE: JANUARY 18, 2022

HORSE: HAAP ALIAS

OWNER: STEVE HUGUS

Genetic profile test results

HORSE ID: 010422_021

PACKAGES: ETALON DNA MINIPANEL

Horse and owner information

Horse
HAAP ALIAS

Date of birth
10-16-2021

Breed
Arabian

Age
3 m.o.

Color
Black

Sex
Stallion

Discipline
-

Height
-

Registry
Arabian Horse Registry

Reg number
684624

Sire
EA PUTTIN ONTHE RITZ

Dam
EA ALIYAH MAIS

Sire Reg & No.
Arabian Horse Registry
653110

Dam Reg & No.
Arabian Horse Registry
655188

Owner
Steve Hugus

Address
323 Sheep Camp

Phone
307-856-0212

City, State
Pavillion, WY

Email
shugus@wyoming.com

Postal code
82523

ETALON DIAGNOSTICS

HORSE: HAAP ALIAS

HORSE ID: 010422_021

Results Summary

Variant summaries:

Color: **a/a, E/e, nd1/nd1**

Health: **WNVR/n**

Speed: **Endurance Type**

Temperament: **Curious**

Gait: **Neg for DMRT3**

Performance and Abilities:

Curious
Two Curiosity variants; horse may be more curious than vigilant.

Non-"Gaited" DMRT3
No DMRT3 variants; likely non-gaited (*variants for novel "gait" abilities are currently in research).

Endurance
Endurance type myostatin; horse may accel at longer distance travel versus short distance sprint type activity.

Coat color:

Black (base)
Black (E) is the base coat color for this horse and is a relatively uncommon coat color on its own (usually it is found in combination with other colors or modifiers such as in Bay horses). A visible difference between a true black (Ee or EE), a dark chestnut (ee) or a bay (Aa or AA + E) can sometimes be seen in the fine hairs around the eyes and muzzle. On a true black these hairs typically remain black even if the horse is sun-bleached, while on other colors they will be lighter. Horse with one copy of the black variant (Ee) is "heterozygous black" and has a 50% chance of passing on black or red to any offspring.

non-Dun Primitive Markings (nd) - nd1/nd1
nd1/nd1 - Non-Dun (nd) Primitive Markings may result in dorsal striping, leg barring and "shadows" on the face and shoulder. Still in research, it is suspected in some cases that nd1 may also cause mild coat color dilution, though not as extensive as the Dun (D) variant. Horse with two copies of the nd1 variant will pass nd1 to 100% of any offspring.

Health Variants:

West Nile Virus Risk Symptom Susceptibility (WNVR) - WNVR/n
WNVR/n - One West Nile Virus Symptom Susceptibility Risk (WNVR) variant detected. Horse may have moderate severity of West Nile Virus symptoms if contracted. Horse has a 50% chance of passing on to any offspring. (*NOT a test for the presence of WNV) Read more about WNVR by clicking the name of the variant above.

Coat color

Base

Agouti (A) - a/a — ASIP — Negative

Gene or region: **ASIP**

a/a - No Dominant Agouti variants detected. Agouti (A) restricts black pigment to the outer regions of the body, the legs, mane & tail, nose, ear tips causing the otherwise black horse to appear Bay. Agouti is invisible on the red based coat.

Black (E) - E/e — MC1R — Black Based

Gene or region: **MC1R**

E/e - One Black variant and one Red variant detected.

Modifiers

Grey (G) - n/n — STX17A — Negative

Gene or region: **STX17A**

No Grey (G) variants detected.

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non-Dun Primitive Markings (nd) - nd1/nd1 — TBX3 — Likely Affected

Gene or region: **TBX3**

nd1/nd1 - Two non-Dun Primitive Markings variants detected. Non-Dun Primitive Markings can appear as a dorsal stripe, leg barring, shadows on the face and shoulders even in the absence of the Dun variant.

Dilutes

Sunshine (SUN) - n/n — SLC45ASUN — Negative

Gene or region: **SLC45ASUN**

No Sunshine variants detected.

Champagne (CH) - n/n

SLC36A1

Negative

Gene or region: **SLC36A1**

No Champagne (CH) variants detected.

Silver (Z) - n/n

PMEL17

Negative

Gene or region: **PMEL17**

No Silver (Z) variants detected. Silver affects only black base (E) coat colors and is invisible on a red-based coat. On black or bay, It has a disproportionate diluting effect on the mane and tail, and is sometimes called, "Chocolate Flaxen".

Cream (CR) - n/n

SLC45A2

Negative

Gene or region: **SLC45A2**

No Cream (CR) variants detected.

Pearl (PRL) - n/n

SLC45A2

Negative

Gene or region: **SLC45A2**

No Pearl (prl) variants detected.

Dun (D) - n/n

TBX3

Negative

Gene or region: **TBX3**

No Dun (D) variants detected. Dun is a modifier that dilutes the base coat color often revealing Primitive Markings such as a dorsal stripe, leg barring, shadows on the face and shoulders.

Whites

Frame/Lethal White Overo (LWO) - n/n

EDNRB

Negative

Gene or region: **EDNRB**

No Frame/Lethal White Overo (LWO) variants detected.

Leopard Spotting Complex (LP) - n/n

TRPM1

Negative

Gene or region: **TRPM1**

No Leopard Complex Spotting (SP) variants detected.

Pattern 1 (PATN1) - n/n

RFWD3

Negative

Gene or region: **RFWD3**

No Pattern (PATN1/n) 1 variants detected.

Sabino1 (SB1) - n/n

KIT

Negative

Gene or region: **KIT**

No Sabino (SB1) variants detected.

Tobiano (TO) - n/n

ECA3

Negative

Gene or region: **ECA3**

No Tobiano variants detected.

Splashed White (SW1) - n/n

MITF

Negative

Gene or region: **MITF**

No Splashed White 1 (SW1) variants detected.

Splashed White (SW2) - n/n

PAX3

Negative

Gene or region: **PAX3**

No Splashed White 2 (SW2/n) variants detected.

Splashed White (SW3) - n/n

MITF

Negative

Gene or region: **MITF**

No Splashed White 3 (SW3) variants detected.

Splashed White (SW4) - n/n

PAX3

Negative

Gene or region: **PAX3**

No Splashed White 4 (SW4) variants detected.

Dominant White (W) - n/n

KIT

Negative

Gene or region: **KIT**

No Dominant White (1-21) variants detected.

Health Variants

Color Related Risk

Lethal White Overo (LWO) - n/n	EDNRB		Negative

Gene or region: **EDNRB**

n/n - No Lethal White Overo (LWO) variants detected. Read more about LWO by clicking the name of the variant above.

Congenital Stationary Night Blindness (CSNB) - n/n	TRPM1		Negative

Gene or region: **TRPM1**

n/n - No Leopard Complex Spotting (LP) variants detected, which is related to the presence of Congenital Stationary Night Blindness (CSNB) if horse is LP/LP. Horses with one copy of the Leopard Complex Spotting (LP) variant are not currently known to suffer any ill effects as a result. Horses with Congenital Stationary Night Blindness (CSNB) which may experience the inability to see in low to no-light conditions. Read more about CSNB by clicking the name of the variant above.

Multiple Congenital Ocular Anomalies (MCOA) - n/n	PMEL17		Negative

Gene or region: **PMEL17**

n/n - No Silver variants detected which is related to the presence of Multiple Congenital Ocular Anomalies (MCOA). Read more about MCOA by clicking the name of the variant above.

Immune System

Foal Immunodeficiency Syndrome (FIS) - n/n	SLC5A3		Negative

Gene or region: **SLC5A3**

No Foal Immunodeficiency Syndrome (FIS) variants detected. Read more about FIS by clicking the name of the variant above.

Severe Combined Immunodeficiency (SCID) - n/n	DNAPK		Negative

Gene or region: **DNAPK**

No Severe Combined Immunodeficiency (SCID) variants detected. Read more about SCID by clicking the name of the variant above.

West Nile Virus Risk Symptom Susceptibility (WNVR) - WNVR/n	OAS1		Possibly Affected

Gene or region: **OAS1**

WNVR/n - One West Nile Virus Symptom Susceptibility Risk (WNVR) variant detected. Horse may have moderate severity of West Nile Virus symptoms if contracted. Horse has a 50% chance of passing on to any offspring. (*NOT a test for the presence of WNV) Read more about WNVR by clicking the name of the variant above.

Immune-mediated Myositis (IMM)	MYH1		Not ordered

Muscle Disorders

Glycogen Branching Enzyme Deficiency (GBED) - n/n	GBE1		Negative

Gene or region: **GBE1**

No Glycogen Branching Enzyme Deficiency (GBED) variants detected. Read more about GBED by clicking the name of the variant above.

Hyperkalemic Partial Paralysis (HYPP) - n/n	SCN4A		Negative

Gene or region: **SCN4A**

No Hyperkalemic Partial Paralysis (HYPP) variants detected. Read more about HYPP by clicking the name of the variant above.

Malignant Hyperthermia (MH) - n/n	RYR1		Negative

Gene or region: **RYR1**

No Malignant Hyperthermia (MH) variants detected. Read more about MH by clicking the name of the variant above.

Myotonia (MYT) - n/n	CLCN4		Negative

Gene or region: **CLCN4**

No Myotonia (MYT) variants detected. Read more about MYT by clicking the name of the variant above.

Polysaccharide Storage Myopathy type 1 (PSSM1) - n/n	GYS1		Negative

Gene or region: **GYS1**

No Polysaccharide Storage Myopathy type 1 (PSSM1) variants detected. Read more about PSSM1 by clicking the name of the variant above.

Neurologic Disorders

Cerebellar Abiotrophy (CA) - n/n	MUTYH		Negative

Gene or region: **MUTYH**

No Cerebellar Abiotrophy (CA) variants detected. Read more about CA by clicking the name of the variant above.

Lavender Foal Syndrome (LFS) - n/n	MYO5A		Negative

Gene or region: **MYO5A**

No Lavender Foal Syndrome (LFS) variants detected. Read more about LFS by clicking the name of the variant above.

Hydrocephalus (HDC)	B3GALNT2	Not ordered
Recurrent Laryngeal Neuropathy (RLN)	ECA3	Not ordered

Reproductive Disorders

Androgen Insensitivity Syndrome (AIS) - n/n	AR		Negative

Gene or region: **AR**

No pattern of Androgen Insensitivity Syndrome (AIS) variants detected. Read more about AIS by clicking the name of the variant above.

Impaired Acrosomal Reaction - Subfertility Risk (IAR) - n/n, iar/n	FKBP6IAR1...		Not Affected

Gene or region: **FKBP6IAR1, FKBP6IAR2**

No pattern for Impaired Acrosomal Reaction (IAR) - Subfertility Risk variants detected. Read more about IAR by clicking the name of the variant above.

Skin, Hoof and Connective Tissue Disorders

Hereditary Equine Regional Dermal Asthenia (HERDA) - n/n	PPIB		Negative

Gene or region: **PPIB**

No Hereditary Equine Regional Dermal Asthenia (HERDA) variants detected. Read more about HERDA by clicking the name of the variant above.

Junctional Epidermolysa Bullosis type 1 (JEB1) - n/n	LAMC2		Negative

Gene or region: **LAMC2**

No Junctional Epidermolysa Bullosis type 1 (JEB1) variants detected. Read more about JEB1 by clicking the name of the variant above.

Junctional Epidermolysa Bullosis type 2 (JEB2) - n/n	LAMA3		Negative

Gene or region: **LAMA3**

No Junctional Epidermolysa Bullosis type 2 (JEB2) variants detected. Read more about JEB2 by clicking the name of the variant above.

"Warmblood" Fragile Foal Syndrome (FFS)	PLOD1	Not ordered
Hoof Wall Separation Disease (HWSD)	SERPINB11	Not ordered
Naked Foal Syndrome (NFS)	st14nfs	Not ordered

Anhidrosis	ANHI	Not ordered

Occular Disorders

Equine Recurrent Uveitis Susceptibility Risk (ERUR)	BIEC2536712WB	Not ordered
Equine Recurrent Uveitis Symptom Severity (ERUS)	BIEC2421990WB	Not ordered
Squamous Cell Carcinoma Susceptibility Risk (SCC)	DDB2	Not ordered

Skeletal Disorders

Dwarfism (D)	ACAND1...	Not ordered
Friesian Dwarfism (FD)	B4GALT7	Not ordered
Lordosis	ECA20...	Not detected

Gene or region: **ECA20, ECA20, ECA20, ECA20**

Horses with one copy in each of the four Lordosis regions are not currently known to suffer any ill effects as a result. Horses with two copies in each of the four Lordosis regions exhibit signs of swayback. Currently studies are only proven in the N. Am. Saddlebred breed.

Endocrine Disorders

Equine Metabolic Syndrome Susceptibility Risk (EMS)	BIEC2263524EMS	Not ordered

Laminitis Susceptibility Risk - Equine Metabolic Syndrome related (LAM)	BIEC2263524_LAM	Not ordered

Height

Height (H1)	LCORL	Not ordered
Height (H2)	HMGA2	Not ordered

Health

Height (H2)	HMGA2	Not ordered

Performance and Abilities

Gait Type

Non-"Gaited" DMRT3	DMRT3		Detected

Gene or region: **DMRT3**

No DMRT3 variants; likely non-gaited (*variants for novel "gait" abilities are currently in research).

Performance

Endurance	MSTN		Likely Affected

Gene or region: **MSTN**

Endurance type myostatin; horse may accel at longer distance travel versus short distance sprint type activity.

Temperament

Curious	DRD4		Detected

Gene or region: **DRD4**

Two Curiosity variants; horse may be more curious than vigilant.
