Genetic Profile Test Results

HORSE ID: 022021_018

Horse: Haap Khamsoun

PACK: Etalon DNA Minipanel

Owner: Steve Hugus

Horse and Owner Information

Horse	Haap Khamsoun	**DOB**	2016-09-30
Breed	Arabian	**Age**	4 years, 5 months
Color	Black	**Sex**	Mare
Discipline	. . . . .	**Height**	. . . . .
Registry	Arabian Horse Registry	**Reg Number**	671595
Sire	ENCHANTE NOCHE	**Dam**	EA ALIYAH MAIS
Sire Reg & No.	Arabian Horse Association 636549	**Dam Reg & No.**	Arabian Horse Association 655188
Comments	. . . . .		

Owner	Steve Hugus	**Address**	323 Sheep Camp
Phone	307-856-0212 3078560212	**City, State**	Pavillion, WY
Email	shugus@wyoming.com	**Postal Code**	82523

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Results Summary

Coat Color:	Haap Khamsoun has two Black variants and no Red variants, indicating the base coat color appears Black. As a result of the variant count in each of the following, she has a minimum 100% chance of passing Black to any offspring.
Variant Summary:	**aa, EE, nd1/nd2** **Myostatin: Endurance Type** **3 panel negative: CA n/n, LFS n/n, SCID n/n**
Traits:	Haap Khamsoun has not tested positive for any known disease variants on this panel. *The DNA was also tested on our discovery/validation platform for non-Dun Primitive Markings. Preliminary results indicate this horse is heterozygous for non-Dun Primitive Markings (nd1/nd2) and may pass it to 50% of any offspring.
Please note:	Your analysis is ongoing and may include some regions marked with an asterisk denoting the following. * Discovery - This gene detection is in the early stages of discovery and will have varying reliability results. ** Inconclusive - Not a bad omen! Simply put, the gene of interest did not reveal itself (neither a positive nor a negative; no result, therefore unknown).

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Coat Color Results

Base

Agouti	-/-	***ASIP***	aa - No dominant Agouti variants detected; restricts any Black base to appear Bay.	More about A
Black/Red	+/+	***MC1R***	EE - Two Black variants detected and no Red.	More about E

Modifier

Brindle/IP	-/-	***IKBKG***	No Brindle/IP variants detected.	More about IP
Grey	-/-	***STX17A***	No Grey variants detected.	More about G

Dilution

Champagne	-/-	***SLC36A1***	No Champagne variants detected.	More about CH
Cream	-/-	***SLC45A2***	No Cream variants detected.	More about CR
Dun	-/-,+/-	***TBX3***	nd1/nd2 (non-dun with possible primitive markings). One non-dun1 variant and one non-dun2 variant detected. No Dun variants detected.	More about Dun
Pearl	-/-	***SLC45A2***	No Pearl variants detected.	More about prl
Silver	-/-	***PMEL17***	No Silver variants detected.	More about Z

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Coat Color Results, continued

White Patterns Results

Dominant White	-/-	***KIT***	No Dominant White variants detected (DW1-21).	More about DW
Frame Overo (LWO)	-/-	***EDNRB***	No Frame Overo (LWO) variants detected.	More about LWO
Leopard Complex Spotting (LP)	-/-	***TRPM1***	No Leopard Complex Spotting (LP) variants detected.	More about LP
Pattern 1 (LP modification)	-/-	***RFWD3***	No Pattern 1 (LP modification) variants detected.	More about PATN1
Splashed White (MITF)	-/-,-/-	***MITF***	No Splashed White 1 or Splashed White 3 variants detected.	More about SW (MITF)
Splashed White (PAX3)	-/-,-/-	***PAX3***	No Splashed White 2 or Splashed White 4 variants detected.	More about SW (PAX3)
Sabino 1	-/-	***KIT***	No Sabino variants detected.	More about SB1
Tobiano	-/-	***ECA3***	No Tobiano variants detected.	More about TO

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Health Genetics 1

Immune System

Foal Immunodeficiency Syndrome	-/-	***SLC5A3***	No Foal Immunodeficiency Syndrome variants detected.	More about fis
Severe Combined Immunodeficiency	-/-	***DNAPK***	No Severe Combined Immunodeficiency variants detected.	More about scid
West Nile Virus Susceptibility*	+/-	***OAS1***	WNVR*/n - Increased susceptibility to West Nile Virus symptoms if contracted.	More about WNVR*
Immune-mediated Myositis*	**	***MYH1***	**Upon request only, inquire about upgrade.	More about IMM*

Muscle Disorders

Glycogen Branching Enzyme Deficiency	-/-	***GBE1***	No Glycogen Branching Enzyme Deficiency variants detected.	More about gbed
Hyperkalemic Periodic Paralysis	-/-	***SCN4A***	No Hyperkalemic Periodic Paralysis variants detected.	More about HYPP
Malignant Hyperthermia	-/-	***RYR1***	No Malignant Hyperthermia variants detected.	More about MH
Myotonia	-/-	***CLCN4***	No Myotonia variants detected.	More about myt
Polysaccharide Storage Myopathy (type 1)	-/-	***GYS1***	No Polysaccharide Storage Myopathy type 1 variants detected.	More about PSSM1

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ETALON DIAGNOSTICS

Health Genetics 2

Neurologic Disorders

Cerebellar Abiotrophy	-/-	***MUTYH***	No Cerebellar Abiotrophy variants detected.	More about ca
Lavender Foal Syndrome	-/-	***MYO5A***	No Lavender Foal Syndrome variants detected.	More about lfs

Reproductive Disorders

Androgen Insensitivity	-/-	***AR***	No Androgen Insensitivity variants detected.	More about as
IAR - Subfertility*	+/-,+/-	***FKBP6***	Two IAR Subfertility* variants detected; likely no effect.	More about iar*

Skin Disorders

Hereditary Equine Regional Dermal Asthenia	-/-	***PPIB***	No Hereditary Equine Regional Dermal Asthenia variants detected.	More about herda
Junctional Epidermolysa Bullosis (type 1)	-/-	***LAMC2***	No Junctional Epidermolysa Bullosis (type 1) variants detected.	More about jeb1
Junctional Epidermolysa Bullosis (type 2*)	-/-	***LAMA3***	No Junctional Epidermolysa Bullosis (type 2*) variants detected.	More about jeb2*

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Other Genetics

Trait Genetics

Lordosis*	-/-,+/-,-/-,-/-	***ECA20***	No pattern of Lordosis* variants detected.	More about L*
Curiosity/Vigilance*	+/+	***DRD4***	Two Curiosity variants detected; likely more curious than vigilant.	More about Cur/Vig
Myostatin/Speed	-/-	***MSTN***	Two Endurance variants detected; likely Endurance ability over Sprint.	More about MSTN
DMRT3	-/-	***DMRT3***	No DMRT3 variants detected.	More about DMRT3

New Additions

Equine Recurrent Uveitis (Risk)*	***	***ECA18***	***DNA Minipanel PLUS only, inquire about upgrade.	More about ERU
Equine Recurrent Uveitis (Severity)*	***	***ECA20***	***DNA Minipanel PLUS only, inquire about upgrade.	More about ERU
Equine Metabolic Syndrome*	***	***FAM174A***	***DNA Minipanel PLUS only, inquire about upgrade.	More about EMS
Laminitis Risk*	***	***FAM174A***	***DNA Minipanel PLUS only, inquire about upgrade.	More about LAM
Squamous Cell Carcinoma*	***	***DDB2***	***DNA Minipanel PLUS only, inquire about upgrade.	More about SCC
Tiger Eye*	***	***SLC24A5***	***DNA Minipanel PLUS only, inquire about upgrade.	More about Tiger Eye
Dwarfism*	***	***ACAN***	***DNA Minipanel PLUS only, inquire about upgrade.	More about Dwarfism

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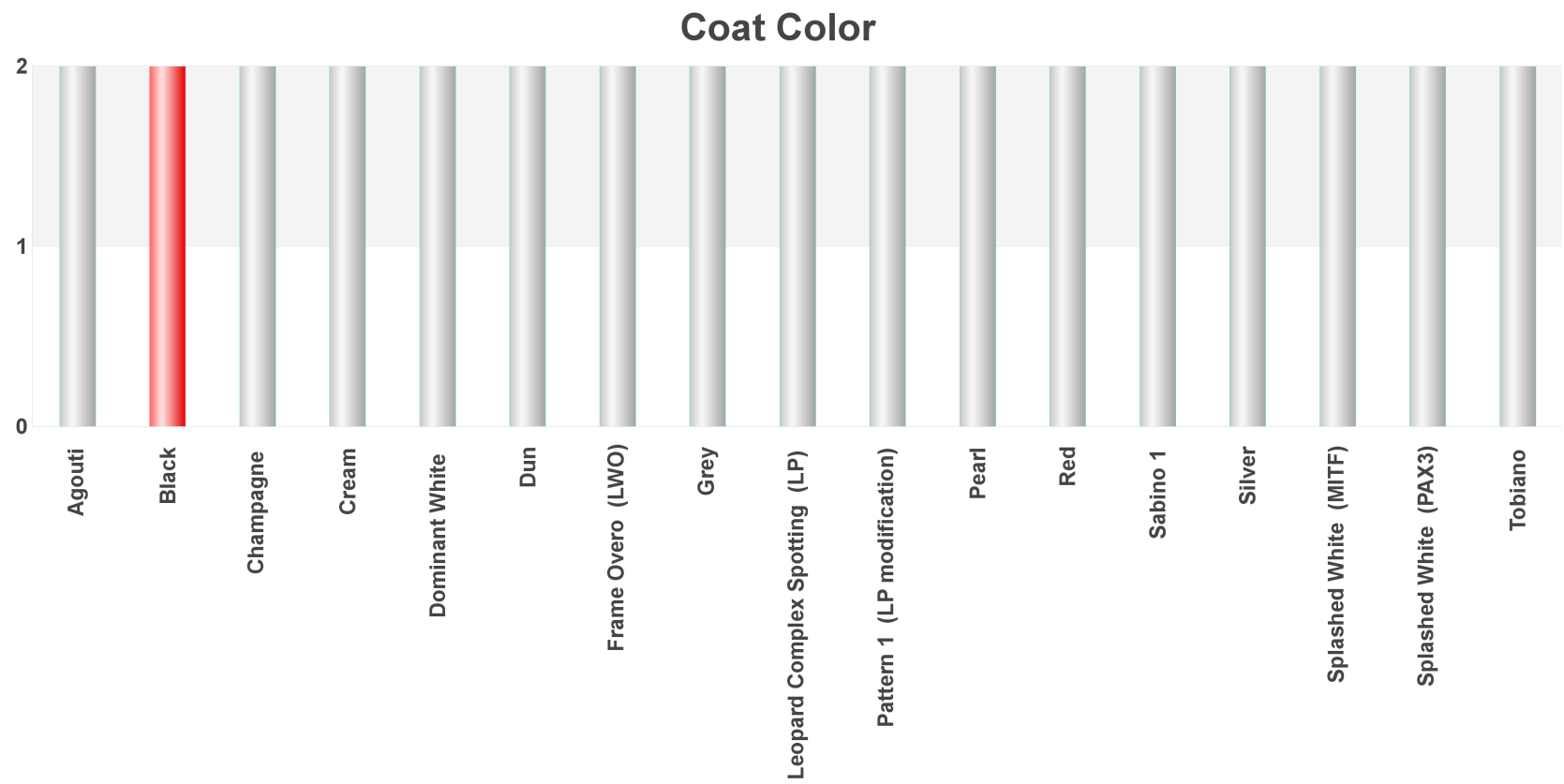
Inheritance Probabilities



Coat Color Inheritance Probabilities: The bar graph above depicts the number of variants for specific coat color phenotypes based upon your horse's genetic testing results. Completely filled red bar represents two such variants (homozygous) and a half-filled yellow bar represents one such variant (heterozygous).

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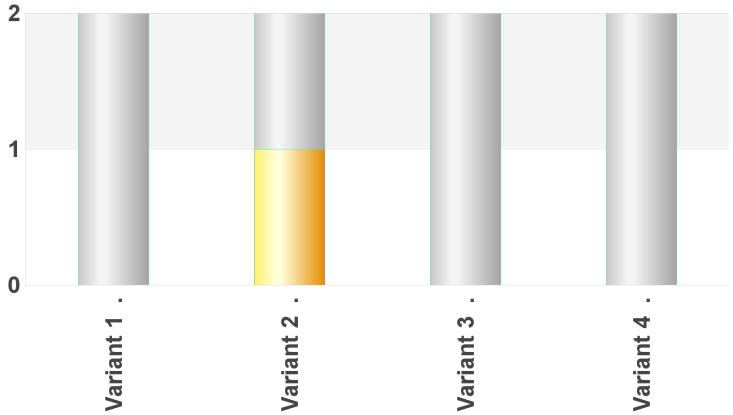
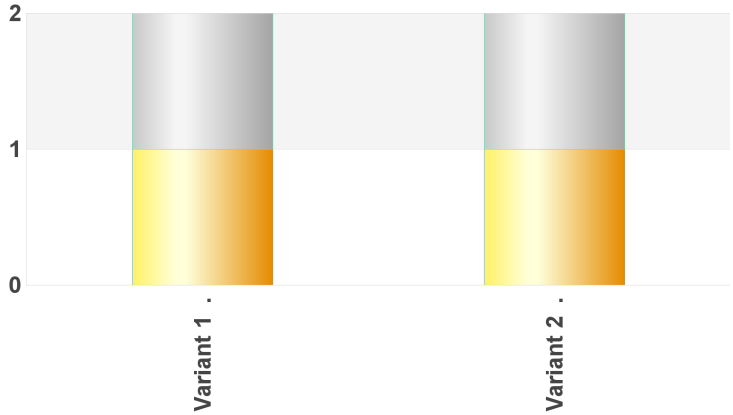
Inheritance Probabilities

Lordosis



Not affected

IAR Subfertility*



Not affected

Multi-variant Risk Charts: Each chart represents a trait, and each bar indicates a distinct risk or variant presence. These act in combination to produce the trait. A red bar indicates the horse carries 2 risk variants at the site; a partly-yellow bar indicates 1 risk variant; and a fully-grey bar indicates 0 risk variants. If all bars are red, then the horse carries two risk variants at each risk site and is likely affected. If all bars contain yellow or red, but are not all red, then the horse is likely a carrier. Otherwise, the horse is not a likely a carrier of the tested trait.

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Defining Genetics & More Info

Variant:	One of two or more alternative forms of a gene that arise by mutation and are found at the same place on a chromosome.
Variants: Heterozygous vs. Homozygous?	Variant calls are written in a way that denotes their origin and whether they are DOMINANT (uppercase) or recessive (lowercase). For example, at MC1R (also known as extension), Black is dominant and thus written as "E" whereas Red is recessive and thus denoted as "e". Therefore, an EE horse is homozygous for Black (and thus appears black), an ee horse is homozygous for Red (appears Red), and an Ee horse is heterozygous (shows the dominant variant, thus is Black).
Gene:	A unit of heredity that is transferred from a parent to offspring and is thought to determine some characteristic of the offspring.
Genotype:	The genetic constitution or make up of an individual organism.
Heterozygous:	A pair of genes which are different (not the same). One is typically dominant and one recessive.
Homozygous:	A pair of genes that are identical (of one type).
Phenotype:	The observable or visible characteristics of an individual resulting from their genotype or the interaction of their various genes and environment.

The results depicted in this report do not constitute veterinary or medical advice. Any medical of veterinary advice should be sought from your veterinarian regarding these results or any health issues or questions you may have about your animal. Breed, sex, gene interaction, unknown genes and individual variances may impact the results, phenotypes, and behaviors in any animal in unknown and unpredictable ways. Please be advised that your animals' health is important to us and you should feel free to contact us should you have any further questions or feedback on our diagnostic platform, results reporting, or general questions. We value your input and thank you!