Genetic Profile Test Results

Horse: Kharisma do Summerwind

Owner: Lynn Kelley

Horse and Owner Information

Horse	Kharisma do Summerwind	**DOB**	2016-10-06
Breed	Mangalarga Marchador	**Age**	0 years, 4 months
Color	Bay	**Sex**	Stallion
Discipline	. . . . .	**Height**	11 hands
Registry	USMMA	**Reg Number**	USM00000307
Sire	Hawke do Summerwind	**Dam**	Gralha M.U.G.
Sire Reg & No.	ABCCMM 038398-5	**Dam Reg & No.**	ABCCMM 067323-6
Comments	. . . . .		

Owner	Lynn Kelley	**Address**	10487 E Rising Sun Dr
Phone	602.999.3915	**City, State**	Scottsdale, AZ
Email	futurefoal@gmail.com	**Postal Code**	85262-3013

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Results Summary

Coat Color:	Kharisma do Summerwind has one Red allele and one Black, indicating his base coat color appears Black. One copy of the Dominant Agouti allele was detected; invisible on a Red base, it pushes/restricts Black out to points; legs, ear tips, etc. appearing Bay. One Grey allele was detected which may result in greying of the entire coat (possibly appearing White at maturity). As a result of the allele count in each of the following, he has a minimum 50% chance of passing Red or Black, and 50% Dominant Agouti, and 50% Grey to any offspring.
Allele Summary:	**Aa, Ee, G/n, nd1/nd2, TT (Endurance Type)**
Traits:	Kharisma do Summerwind has not tested positive for any recessive disease alleles on this panel. *His DNA was also tested on our discovery/validation platform for non-Dun Primitive Markings. Preliminary results indicate he is heterozygous for non-Dun Primitive Markings 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 - One dominant Agouti allele detected; restricts any Black base to appear Bay.	More about A
Black/Red	+/-	***MC1R***	Ee - One Black allele detected and one Red.	More about E

Modifier

Brindle/IP	-/-	***IKBKG***	No Brindle/IP alleles detected.	More about IP
Grey	+/-	***STX17A***	Gg - One Grey allele detected.	More about G

Dilution

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

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Coat Color Results, continued

White Patterns Results

Dominant White	-/-	***KIT***	No Dominant White alleles detected (DW1-21).	More about DW
Frame Overo (LWO)	-/-	***EDNRB***	No Frame Overo (LWO) alleles detected.	More about LWO
Leopard Complex Spotting (LP)	-/-	***TRPM1***	No Leopard Complex Spotting (LP) alleles detected.	More about LP
Pattern 1 (LP modification)	-/-	***RFWD3***	No Pattern 1 (LP modification) alleles detected.	More about PATN1
Splashed White (MITF)	-/-,-/-	***MITF***	No Splashed White 1 nor Splashed White 3 alleles detected.	More about SW (MITF)
Splashed White (PAX3)	-/-,-/-	***PAX3***	No Splashed White 2 nor Splashed White 4 alleles detected.	More about SW (PAX3)
Sabino 1	-/-	***KIT***	No Sabino 1 alleles detected.	More about SB1
Tobiano	-/-	***ECA3***	No Tobiano alleles detected.	More about TO

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Health Genetics 1

Immune System

Foal Immunodeficiency Syndrome	-/-	***SLC5A3***	No Foal Immunodeficiency Syndrome alleles detected.	More about fis
Severe Combined Immunodeficiency	-/-	***DNAPK***	No Severe Combined Immunodeficiency alleles detected.	More about scid
West Nile*	+/-	***OAS1***	WNVR*/n - Increased susceptibility to West Nile Virus.	More about WNVR*

Muscle Disorders

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

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Health Genetics 2

Neurologic Disorders

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

Reproductive Disorders

Androgen Insensitivity	-/-	***AR***	No Androgen Insensitivity alleles detected.	More about as
IAR - Subfertility*	-/-,+/+	***FKBP6***	Two IAR Subfertility* alleles detected.	More about iar*

Skin Disorders

Hereditary Equine Regional Dermal Asthenia	-/-	***PPIB***	No Hereditary Equine Regional Dermal Asthenia alleles detected.	More about herda
Junctional Epidermolysa Bullosis (type 1)	-/-	***LAMC2***	No Junctional Epidermolysa Bullosis (type 1) alleles detected.	More about jeb1
Junctional Epidermolysa Bullosis (type 2*)	-/-	***LAMA3***	No Junctional Epidermolysa Bullosis (type 2*) alleles detected.	More about jeb2*
Warmblood Fragile Foal Syndrome	-/-	***PLOD1***	No Warmblood Fragile Foal Syndrome alleles detected.	More about WFFS

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Other Genetics

Trait Genetics

Lordosis*	-/-,-/-,-/-,+/-	***ECA20***	No pattern of Lordosis* alleles detected.	More about L*
Curiosity/Vigilance*	+/+	***DRD4***	Cur - GG - Two Curiosity alleles detected; likely more curious than vigilant.	More about Cur/Vig
Myostatin/Speed	-/-	***MSTN***	TT (Endurance Type) - Two Endurance alleles detected; likely Endurance ability over Sprint.	More about MSTN
Gait	-/-	***DMRT3***	No Gait alleles detected.	More about Gaited

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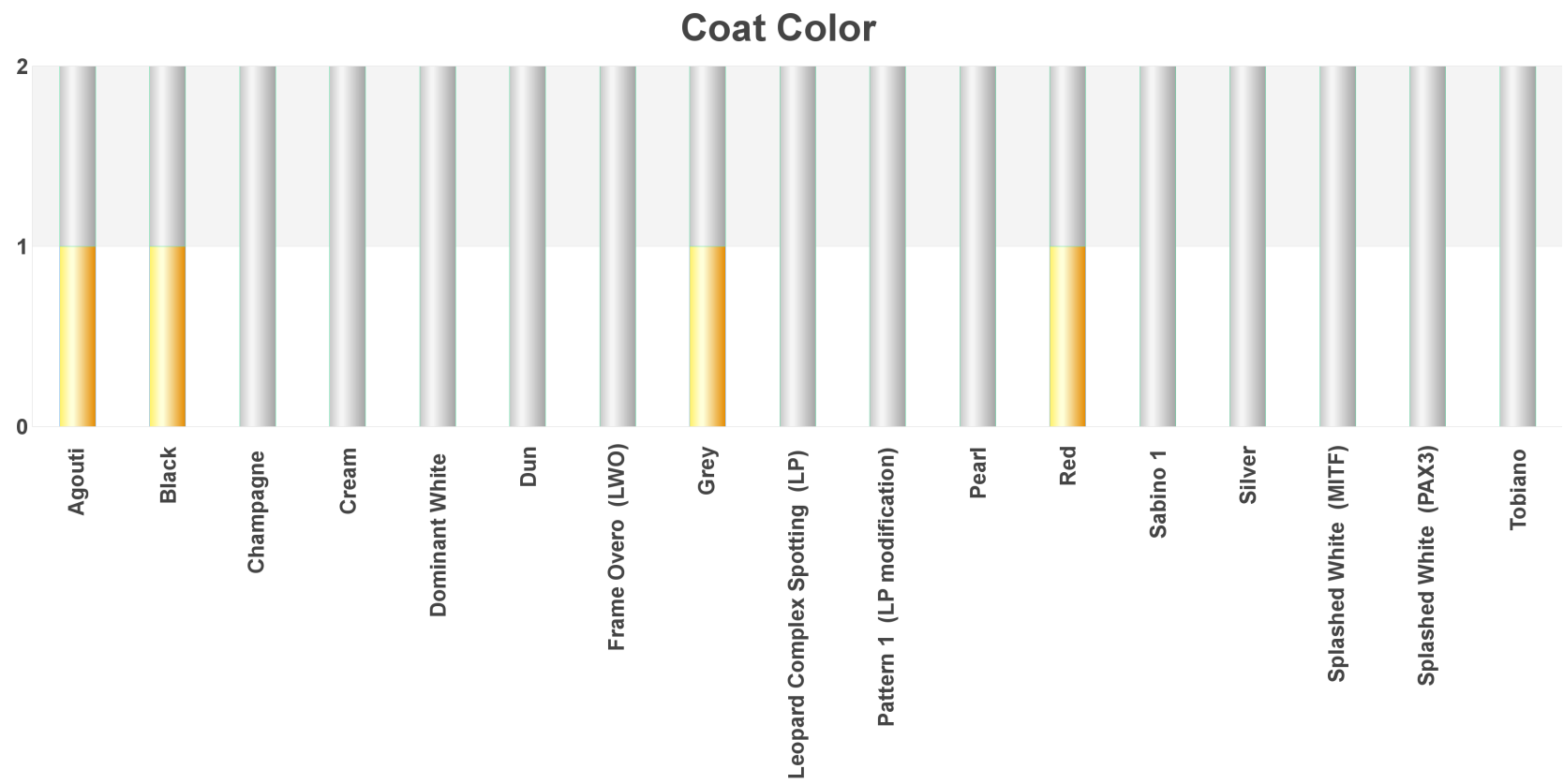
Inheritance Probabilities



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

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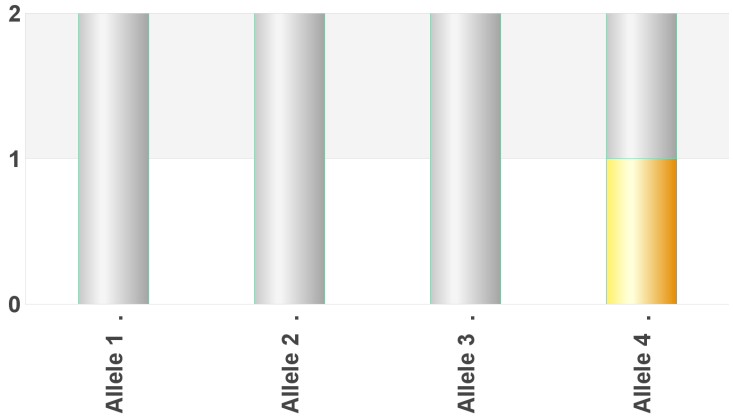
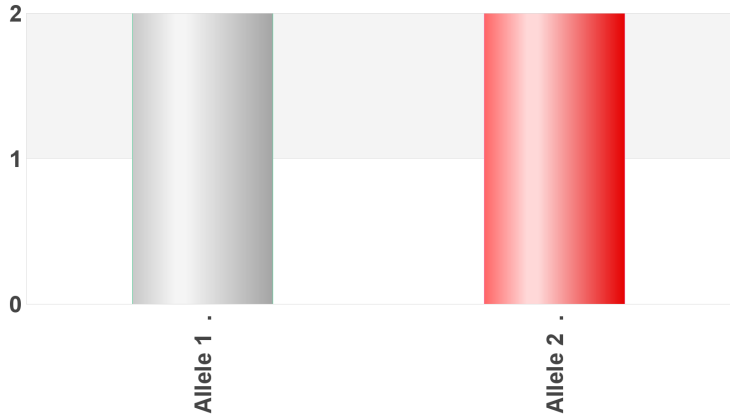
Inheritance Probabilities

Lordosis



Not Affected

IAR Subfertility*



Not Affected

Multi-allele Risk Charts: Each chart represents a trait, and each bar indicates a distinct risk or allele presence. These act in combination to produce the trait. A red bar indicates the horse carries 2 risk alleles at the site; a partly-yellow bar indicates 1 risk allele; and a fully-grey bar indicates 0 risk alleles. If all bars are red, then the horse carries two risk alleles 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

Allele:	One of two or more alternative forms of a gene that arise by mutation and are found at the same place on a chromosome.
Alleles: Heterozygous vs. Homozygous?	Allele 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 allele, 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!