

# Horse Smarts

**Table 1: Equine Color Genetics<sup>1</sup>**

Locus Name	Symbol	Gene	Allele	Allele effect	Mode of Inheritance
Agouti	A	ASIP	A	Restricts black pigment to points	Dominant
			a	Black pigment throughout body	Recessive
Appaloosa	LP	TRPM1	lp	No spotting	Recessive
			LP	Appaloosa spotting pattern	Incomplete dominant
Champagne Dilution	CH	SLC36A	ch	No dilution	Recessive
			CH	Dilution of both red and black pigment	Dominant
Cream Dilution	CR	MATP	cr	No dilution	Recessive
			CR	Dilution of red pigment to yellow	Incomplete dominant
Pearl Dilution		not published	pr	Increased dilution in combination with <i>CR</i> , when homozygous effect is similar to <i>CH</i> -	Recessive
Dominant White	W	KIT	w	non-spotted	Recessive
			W1-W17	White spotting	Incomplete dominant
Dun	D	TBX3	d1, d2	non-dun	Recessive
			D	Dilution with dorsal stripe	Dominant
Extension	E	MC1R	E	Allows expression of black pigment	Dominant
			e	Prevents expression of black pigment when homozygous	Recessive
Frame Overo	O	EDNRB	o	non-frame	Recessive
			O	Frame overo	Incomplete Dominant- OLWS homozygotes
Gray	G	STX17	g	non-gray	Recessive
			G	progressive graying of base coat color	Dominant
Roan	RN	KIT	rn	non-roan	Recessive
			RN	roan	Dominant
Sabino1	SB1	KIT	sb1	non-sabino	Recessive
			SB1	White spotting	Incomplete dominant-homozygotes are solid white
Silver Dilution	Z	PMEL17	z	non-silver	Recessive
			Z	Requires <i>E</i> allele as it only affects black pigment, lightening it to a chocolate color and turning mane and tail hair from black to cream/silver	Incomplete dominant-not expressed in horse with ee
Splashed White (MITF)		MITF	MITF+	non-splash	Recessive
	SW1		MITF <sup>prom1</sup>	white spotting	Dominant
	SW3		MITF <sup>C280Sfs*20</sup>	white spotting	Incomplete dominant-Homozygotes lethal?
	Macchiato		MITF <sup>N310S</sup>	white spotting	Incomplete dominant-Homozygotes lethal?
Splashed White (PAX3)	SW2	PAX3	PAX3+	non-splash	
			PAX3 <sup>C70Y</sup>	white spotting	Incomplete dominant-Homozygotes lethal?
Tobiano	TO	KIT	to	non-spotted	Recessive
			TO	Tobiano spotting	Dominant