

Look-Alike Colors

By Laura Hornick Behning



Robbi-Sue's Cassanova (Equinox Brigham x Robbi-Sue Misalert), a brown buckskin stallion (registered as dun), owned by Laura Bunke. When the cream gene is present on a brown base, as it is in this horse, the result is a very dark buckskin that is often mistaken for a non-dilute.

Identifying what color a horse is can sometimes be difficult. There are many colors that look similar, although they are caused by completely different genes. After seeing many examples of equine color, the knowledgeable breeder will pick up clues to help them differentiate between these “look-alike colors.”

Parentage can also play a part in the discovery process. Since all of the dilution genes and color modifiers (except flaxen) are dominant, a horse must get its color gene from at least one parent. For example, a dun horse must always have a dun parent and a gray horse must always have a gray parent; dilution genes and modifiers do not skip generations. If the suspected color gene is not present in at least one of the horse's parents, its offspring cannot be that color. Keeping this in mind helps when determining what color a horse might be, as there must be a clear “color line” in its pedigree. Having a colorful parent does not guarantee a horse is colorful, however. Like all dominant genes, the dilution genes and modifying genes are only passed along 50 percent of the time, unless the parent is homozygous for that gene, in which case it will always pass that gene on to its offspring. Thankfully, we now have DNA-based color tests for Red Factor (black or chestnut base color), Agouti (bay/brown), and the Cream dilution gene, taking much of the guesswork out of color identification.

Buckskins That Look Bay, Palominos That Look Chestnut

Probably the most often confused colors are between the various single cream dilutes and their non-dilute base colors. Particularly in

the Morgan breed, where we have so much of the sooty modifier turning clear coats into a much darker version of their original color, color identification can be a challenging—and confusing—task.

It is unusual, but occasionally palominos can look like flaxen red chestnuts. Some examples in our breed include Mac's Littlebritches (Mac's Baby x Golden Judy), a 1989 palomino gelding owned by Cindy Cerrigione of Connecticut, and Northerly Llwellyn (Northerly Intrigue x Northerly Gifted), a palomino gelding owned by Colleen McNichol of Four Seasons Farm in Minnesota. Both horses have one cream dilute parent. Both have sired clearly golden offspring from non-dilute mares, proving that they were palominos and not the flaxen chestnuts they resembled. Palominos can also be so dark (particularly palominos who have darkened with age, both on their bodies and in the mane and tail) as to appear liver chestnut, although generally some hints of gold remain in the coat.

Buckskin is another cream dilute that can exist in such dark variants as to be mistaken for a bay or brown horse. A visual clue that may be present on such horses is a large amount of light golden areas around the base of the ears and on the sides of the face between the eyes and nostrils. These areas generally are lighter than they would be on a bay or brown horse. Anne Wyland of Ancan Morgans in Michigan owns the buckskin (registered as bay) mare Aquila's Miss Bee Haven (Futurity Command x Aquila's Queen Bee), who looks almost bay because she is so dark. Springtown Laurel (Richfield Octavius x Rose Hill



Sleepys Select Rose (Midland Lipp-A-Tink x Sleepys Fuzzy Fanny), a 1983 chestnut sabino mare owned by Tammy Kastner of Ontario, Canada. The extensive roaning on this mare is caused by sabino, although not all sabinos are this roaned. This picture was taken when the mare was 17, so although she looks very much like a gray, keep in mind that a gray horse would be nearly white at this age; she also does not have a gray parent. There is also no true roan line in her pedigree; a true roan would not be dappled nor would the roaning extend to the head.

Pistachio) is another such buckskin Morgan. This 1993 mare really looks like a seal brown horse, and had been registered as such by her breeder. However, her owner Lisa Horning of NVS Morgans had her tested for the cream gene as well as the agouti (bay) gene and both are present, confirming the mare as a buckskin.

Finally, smoky blacks have been historically misregistered as dark chestnuts, browns, and even duns through the years. When you look at the 2002 stallion Triple S Silver Smoke (Triple S Chinook x Whippoorwill Victoria), owned by Nathan Painter, it is easy to see why! Born a silvery gray color with striking zebra stripes over



Mac's Littlebritches (Mac's Baby x Golden Judy), 1989 palomino stallion, owned at the time this picture was taken by Craig Cook of Arkansas. This stallion is a prime example of a palomino so dark and "red" as to be mistaken/misregistered as a chestnut. The palomino fillies to the right of him are his daughters, one of which is from a chestnut mare, proving that their sire is indeed a palomino.

his topline (a result of foal countershading striping, not the dun gene), Silver Smoke shed out to a deep rich chocolate color. Testing by UC Davis discovered what many suspected, that he was a black horse with one cream dilution gene from his palomino sire.

...And the Reverse is True Too!

Due to the pangare modifying gene, there are individual chestnut and bay Morgans that are so light as to appear palomino or buckskin. Pangare adds light areas to the muzzle (sometimes called "mealy muzzle"), around the eyes and ears, in the flanks, armpits, and underbelly. When pangare is present on a particularly light base color the effect can be a "look-alike cream dilute." Haflingers and Belgians are fabulous examples of light flaxen chestnuts with pangare. They are not palominos, but the effect is very similar! Similarly, light sandy bays with pangare look very much like buckskins, but lack the cream dilute gene.

Another modifier that can lighten a horse is wild bay, which reduces the black leg points on a bay horse to just a small amount, generally concentrated around the fetlock area. These horses are sometimes mistaken for chestnut. Simple Red Factor testing to determine base color will settle any questions about whether such horses are black based (bay) or chestnut based.

You probably are beginning to see how so many Morgans have been misregistered as to their correct color through the years!

Colors That Mimic Silver Dapple

Because of my personal interest in silver dapple Morgans (see www.mindspring.com/~morgans/silvermorgans.htm for more information), I hear from many people who ask if a certain horse is a silver dapple. Keep in mind, silver is a black-based color—the gene only dilutes black hair and since chestnuts have no black hair to dilute, they do not show the effects of the gene. Because silver browns and silver blacks look very much like a flaxen liver chestnut-chocolate colored bodies with light gray, flaxen, or silver-white manes and tails, this is the color with which they are most likely to be con-

fused. I've had many folks ask me if Mantic Peter Frost, Book's End Trademark, WHF Whistle Jacket, and other notable flaxens are silver dapples, and the answer is no. Generally the horses I am questioned about are from well-known and prolific flaxen lines, whereas the few existing silver lines are less common bloodlines and hence have (unfortunately) fewer descendants.

Another color often mistaken for silver is dark, sooty palomino, especially the heavily dappled dark palominos with the effect of the sooty gene also evident in their manes and tails, turning them gray or silver. The 1991 palomino stallion Skys-Ethete-Pride (EKS Skyclass x Ethans Golden Ethete, palomino) is one such horse. Interestingly, at certain times of the year he also can look like a flaxen red chestnut, truly a "horse of a different color!"

Another example of a very good "silver dapple look-alike" is the 2003 palomino filly Metigoshe Mariah (Beda Acres Gold Mercedes, palomino x Metigoshe Marquessa, black/dark chestnut), owned by Darrell Charlton of Idaho. Mariah was

born looking like a typical golden palomino, but shed out to a very dark chocolate color with a light gray mane and tail. This filly looks about as close to a silver dapple as you can get without actually *being* one genetically! This filly certainly proves how pervasive the sooty modifier is in our breed and how its presence on a horse can confuse those trying to identify color.

Because silver dapple has "dapple" in the name, many people mistakenly think all silvers are dappled, but they are not. Another helpful clue in distinguishing silvers from their red-based look-alikes is that flaxens and palominos generally (but not always) have lighter, flaxen-colored lower legs, whereas silver dapples usually (but not always) have darker lower legs. The Red Factor test will ultimately settle any confusion about a "suspect silver," as silvers will test as "black" but flaxens and palominos will test as "red" (chestnut).

Roan vs. Sabino

True, dark headed roan is sadly near extinction in our breed. The 1987 blue roan geld-

ing Caduceus Herod (Wyoming Flyhawk x Doll-Rose, roan) owned by Barbara Putnam of Iowa and the 1985 bay roan mare Viv Lamae (Double J Apollo, roan x Carlyle La Mae), owned by Ethel Fraser of Maine appear to be the last true roan Morgans. However, we do have lots of Morgans with roaning caused by different genes than the one responsible for true roan.

The addition of the rabicano gene, which causes a sort of brindling effect of white hairs along the barrel and ribcage of the horse, along with a "coon tail" (white hair at the tailhead in a striped pattern, like a raccoon's tail), is one gene that can make a horse look "roan."

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Metigoshe Mariah (Beda Acres Gold Mercedes, palomino x Metigoshe Marquessa, liver chestnut), a 2003 sooty palomino filly, owned by Darrell Charlton. Born looking like a typical palomino foal, Mariah darkened after shedding her foal coat and is now (bottom) a shade of palomino that is often mistaken for flaxen liver chestnut or silver dapple. Single cream dilutes can be very dark in shade; not all are the stereotypical "golden" color. In addition, they often change color as they age.



How can you distinguish a rabicano from a true roan? Rabicanos have roaning that is concentrated on their undersides and flank area in a brindled pattern, not covering most of the body evenly as in most true roans.

Another cause of look-alike roans is due to one of the most common modifying genes in the breed, sabino, also known as “high white.” Sabinos can be quite minimally marked and do not have to have much in the way of white markings to carry the genes responsible for this pattern and to pass it on. This sometimes causes surprises for the breeder when a flashy roaned Morgan with lots of chrome comes from seemingly “solid” parents! Some sabinos, even quite minimally marked examples, have an all-over roaning that increases with age. One such family of Morgans descends from a horse called Middland Lipp-A-Tink (Bald Mt Ebony Knight x Bo-Ann Of Laurelmont), a chestnut stallion foaled in 1971, who was owned by Carol Copeland of Pennsylvania. Another good example of a roany sabino was Lore Homer’s late great carriage driving horse Dawnhill Storm Cloud (UVM Red Cloud x Bald Mt Anntwilight), also a 1971 model. Both Lipp-A-Tink’s sire and Storm Cloud’s dam are by Easter Twilight, who is thought to be one possible source of their sabino roaning.

How do you tell the difference between a true roan and a sabino roan? True roans will retain a dark head and lower legs, whereas sabino roans have an all-over roaning, even on their faces, and often have white hairs mixed in their manes and tails as well. True roans must have a roan parent, whereas sabino roans may or may not have an obviously sabino roan parent.

Counterstriping or Dun Factor?

Probably no other color causes as much confusion as dun. A horse of any color can

have a dorsal stripe, and at times, seasonal, faint leg bars may appear. These markings are caused by the sooty modifier and serve the animal as camouflage. They are not the same thing as the dun gene, which causes a dilution of the body color and “dun factor markings,” which include leg barring, a hard-edged dorsal stripe, cobwebbing on the forehead, ear bars, and wither striping. Not all duns exhibit all the dun factor markings, but all duns show the effects of the dun dilution gene on their bodies, which will be a lighter version of their undiluted base color.

It also is important to keep in mind that the dun gene lightens both red and black hair, unlike the cream gene which does not dilute black hair unless homozygous. So black horses cannot carry dun without expressing it and becoming grullas; dun cannot “hide” on a black horse the way a single cream dilute gene can. In Morgans, the only proven dun line comes from the 1964 smoky grulla (registered as buckskin) (dun plus cream on a black base) mare Pendleton Buck Missy. Not all horses descended from Missy inherited her dun gene, however. This has caused further confusion when, for example, her lineback buckskin descendants are called dun, but really are not! Unfortunately, there is no DNA test for dun at this time, although UC Davis is working on it. There are several good resources for information on duns available online, including the Morgan-specific site Dun Central Station (www.duncentralstation.com).

Cream Dilutes vs. Champagne

As we have seen, the cream dilutes come in a variety of shades besides the classic golden palomino or buckskin. Palominos and the homozygous cream dilutes (cremellos, perlinos, and smoky creams) can have mottled skin (as can chestnuts), as well as a

Triple S Silver Smoke (Triple S Chinook, palomino x Whippoorwill Victoria, black), 2002 smoky black colt, owned by Nathan Painter. Silver Smoke had foal countershading- a dorsal and stripes down his sides- when he was born. It is actually very common for foals of all colors to have certain markings that mimic dun markings; this is nature’s camouflage for a young foal. These markings often can look similar to the dorsals, wither stripes and leg barring of a true dun, but they generally disappear with the shedding of the foal coat. Silver Smoke also does not have a dun parent, so he cannot be a grulla. In the third picture Silver Smoke was a three-year-old, and you can certainly see how smoky blacks were mistakenly registered as chestnuts, duns, or other colors through the years!

Glossary

Brindling: A pattern of lighter (white) or darker hairs causing a striped appearance, usually along the barrel of the horse.

Color Modifier: Color modifying genes modify the basic color of the horse: body color, mane and tail color, or both. These modifiers can range from very subtle to very extreme. Agouti, which changes black horses into bay or brown horses by restricting the black pigment to the “points” of the horse, is the most common modifier. Flaxen, which lightens the mane and tail of chestnut horses to a flaxen to platinum, is another modifier very common in Morgans. Gray, which adds white hairs progressively to the horse as it ages, and the various pinto patterns are other good examples of modifying genes.

Dilution Gene: Dilution genes dilute the body color of the horse and may or may not also have an effect on the points, depending on which dilution. Three different dilution genes exist in Morgans: dun, cream, and silver dapple. Dun acts on both red and black pigment, diluting it, but leaving the mane, tail, and points the base color of the horse.

Dun horses also have primitive markings such as a dorsal stripe, which extends down into the tail and barring on the legs. Cream acts differently depending on whether a horse has one (heterozygous) or two copies (homozygous) of the gene. One cream gene does not affect black pigment, only red, so chestnuts become palomino, bays, and browns become buckskin, but blacks remain black. Two cream genes, however, dilutes the horse still further—the so-called “double dilution effect.” The cremello (chestnut with two cream genes), perlino (bay/brown with two cream genes), and smoky cream (black with two cream genes) are the result. Double cream dilutes are a pale cream-white with pinkish skin and blue eyes. Silver dapple is a dilution

gene which only affects black pigment, so it can be present but will not “show” on a chestnut. It dilutes all the black hair on the bodies of black and bay horses to some shade of chocolate to charcoal, and lightens the mane to silver gray. While the gene is properly called “silver dapple,” many silvers are not heavily dappled.

Dominant: Dominant genes always will express themselves, in other words, show their effects on the horse. The only exceptions to this rule are one cream gene on a black, silver dapple on chestnut, and flaxen on colors other than chestnut; this is because those particular genes do not have effects on those particular pigments. A horse only needs one copy of a dominant color gene to be that color. This means that for a horse to be dun, gray, silver dapple, a cream dilute, etc. they *must* have one parent who was that color themselves. Dominant genes cannot skip generations. Most of the color genes are dominant, with only chestnut and flaxen being recessive.

Homozygous: There are two alleles at each locus, which is the area on the DNA strand where “coding” for a particular trait (in this case, color) is located. Being homozygous for a certain color means that these two alleles are the *same*. Being heterozygous means they are *different*, i.e.: one dominant copy of the gene and one recessive copy of the gene. For example, a horse who is homozygous for black carries two copies of the dominant black allele at its Extension locus (“EE”). If he had one dominant black gene (“E”) and one recessive red (chestnut) gene (“e”), he would be heterozygous for black (“Ee”). This homozygous or heterozygous state exists for each color locus possible in the equine.

Non-Dilute: A horse without a dilution gene, i.e.: a bay, black, brown or chestnut.

Pangare: This color modifier is often

referred to as “mealy,” but also is called pangaré (pan-guh-RAY). The effects of this modifier are seen along the underside of the horse, in the “soft” parts, or on the muzzle, behind the elbows, in the flanks, on the buttock, above or around the eyes and along the belly. The color of these areas with pangare usually ranges from red-gold to a pale cream. It can be present on any color.

Rabicano: Rabicano is a pattern of white hairs sometimes confused with roan. It consists of white hairs interspersed in a faint brindling pattern along the flank area, belly and up between the front legs. It also causes a “coon tail” of white banding at the tailhead. Rabicano horses can have such minimal expressions of the pattern that it is missed. The rabicano gene is dominant, so rabicano horses will have at least one rabicano parent.

Roan: True roan probably is extinct in Morgans. A true roan has a mixture of white hairs on the body, but the head, legs, and mane and tail remain the base color of the horse. As with all the patterns of white, there are degrees of expression, so that some roans are nearly white on the body while others remain fairly dark. Roan is dominant, so all roans have at least one roan parent.

Sabino: Sabino is a pinto pattern which may only manifest itself very minimally in the form of “normal” white markings. Sabino is now thought to be a collection of genes (polygenic) which would account for the variability in expression; some horses might inherit only part of the sabino “complex” of genes, whereas others inherit more and thus express the pattern more flamboyantly with white extending from “normal” markings onto the body in wild, often very roany patterns. In other breeds, sabinos can be so extensive as to be completely white, except for a small patch of colored hair, which usually remains on the ears.

Single Dilute: Generally used to refer to a horse with one cream dilution gene, i.e.: a palomino, buckskin, or smoky black, but could be extended to mean a horse with one copy of the dun or silver dilution genes as well.



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metallic sheen and pale amber eyes. This has been mistaken by some breeders as evidence of the champagne gene. Champagne has not been shown to exist in the Morgan breed. Champagne characteristics are quite distinctive. Champagne skin is a very odd, light "pumpkin colored" base with freckling, not the grayish-black mottled skin found on palominos. Champagne foals are born dark, almost like a non-dilute colored foal, and with deep blue eyes. When they shed, their foal coats, dilution is evident. This is the opposite of cream dilute foals, which in most cases are born looking dilute (and may have blue eyes) but sometimes, especially in Morgans, darken after the foal shed.

Which Brings Us To:

The Importance of Foal Coloring

If you know what color a horse was born, you now have an additional bit of valuable information to assist in identifying its color! For example, palominos are born pale, golden, or a peachy kind of red, and have pinkish skin for a few days after birth, like all

chestnut-based colors. Silver dapples, on the other hand, are born reddish with a gray mane and lighter tail (bay silvers), which can be misidentified as flaxen chestnut, or blue-gray to beige color (black silvers), which might be confused with black or palomino. However, a silver dapple's skin will be dark from the beginning, typical of most black-based foal colors. Dark buckskin foals often are born looking more clearly dilute; in other words, lighter than a typical bay foal, often with the bluish eyes common in cream dilute foals. Dun foals are born looking dilute, whereas a countershaded bay or chestnut looks like a normal bay or chestnut foal. Primitive markings on foals are not necessarily an indicator of the dun gene; they often are simply part of the foal's camouflage markings.

A bit of sleuthing is needed to accurately identify color. Appearance, pedigree, progeny, and foal coloring all give us clues and as more DNA tests are developed for the various dilutions and modifiers, we will be able to rely more on science and less on educated guesses! ■



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