

The Grey Gene

The previous installment of this column covered the difference between the basic colors of horses (bay, chestnut and black) and the genes that modify those basic colors. In this issue we will deal with the first, and probably the most common, modifier of those basic colors, which is grey.

How the Grey Gene Works

Many people do not realize that grey is not a distinct, separate color. Because it is so common, it is often classified along with bay, chestnut and black as a "basic" color. However, all grey horses are also either bay, chestnut or black, in addition to being grey. This is because the gene for grey (G) is a modifier which, over time, replaces the original dark hairs with white hairs. In other words, grey is not a color, but rather a gene responsible for the progressive loss of the original hair color. Because the gene affects the hair, and not the pigment in the skin, grey horses retain the black skin they were born with, which makes them easy to distinguish from horses that are truly white.

In regards to inheritance, grey is what is termed a simple dominant. This means that if it is inherited, the effect (progressive lightening of the coat) will be visible. It is not possible for grey to remain "hidden" in a breed for generations and crop up unexpectedly; the grey gene will lighten the horse no matter what other colors, modifiers or patterns are present. For this reason, a grey horse will always have at least one grey parent. Statistically, a grey horse will produce 50% grey foals, unless he carries two grey genes ("homozygous" for grey), in which case all his foals will be grey.

The Greying Process

In general, foals are born a few shades lighter than they will be as adults, but grey foals are an exception; they will usually be darker than a foal of the same base color not destined to turn grey. This is the reason for the saying among Percheron breeders that "blacks are born grey, and greys are born black." Aside from being born unusually dark, another tell-tale sign that a foal will eventually turn grey is the presence of a light grey ring around each eye. Otherwise, grey foals tend to be hard to distinguish from non-grey foals. (Although there have been rare reports of grey foals born white, Breyer's alabaster and dapple grey foals are basically unrealistic.)

So greys are born dark and turn progressively lighter each time they shed out. The rate at which a grey will lighten varies with each individual, although certain breeds have been bred for a certain rate of change. Percherons, for example, have been bred over time for a slow rate of greying, and tend to stay at the "rocking horse" dappled stage the longest. Some Shetland Ponies were specifically bred to turn near-white rapidly. The base color will also affect the apparent rate of greying, since it takes fewer white hairs to make a pale color seem white than it would with a dark color.

Just as with the speed of change, the areas that lighten first or remain darkest longest will vary somewhat among individuals, but

there is a common pattern for the progression. The first place to lighten is usually the face, with the exception of the nasal bones (which often develop an irregular, dark splotchy pattern) and the cheeks. Also typical in the early stages are white hairs in the tail, especially the tip. After that, the white will begin to show up at the groove of the neck behind the throatlatch (forming a "V"), on the chest and between the front legs, behind the elbows and along the flank. Usually at this point, if the horse is destined to dapple they will begin to appear on the sides, shoulders and neck. The dappling will become progressively more vivid and widespread, while the areas that greyed first remain the lightest. The dappling will spread to the limbs, usually starting with a light ring around the coronet and progressing in irregular blotches up the cannon bone. The insides of the legs will be lighter and more blotchy than the outsides. The forearms and stifles will often have erratic lines of white hairs, sometimes referred to as spider veins. The dappling will spread and fade until the horse seems mostly white, with the knees, hocks and hindquarters remaining darkest longest.

The manes and tails of most greys will lighten along with the coat, but this is largely influenced by the original color of the horse. Colors noted for light manes and tails (flaxen chestnuts and silver dapples) will have manes and tails that appear white quite early, while colors with black manes and tails will lighten much more slowly. Base colors with pale body colors and darker manes and tails (such as buckskins and duns) will seem to keep very dark manes and tails long after their bodies are white. Some rare greys keep a dark mane and tail regardless of their original color.

Variation in Greys

Most greys will go through similar phases of the greying process, but there is some variation. There are terms used to describe the various kinds of greys, but it's important to remember that in real horses, any particular shade of grey is temporary; a horse that is



Although aged greys can appear white, their dark skin is still visible where the hair is thin, like the muzzle and inside the ears (left). Even in areas where the hair is thicker, dark skin will make the horse appear somewhat grey - as illustrated by this light grey overo mare (right).



This dark grey mare shows greying on the poll and in the characteristic "V" along the jugular groove, while her cheeks, ears and neck remain dark.

dappled grey at five years may be extensively fleabitten by age seventeen. But for models, which don't change over time, these descriptive terms can be particularly useful.

Dapple greys are those greys that show dappling. Because the light and dark contrast is particularly striking, they are the most frequently seen greys in the model horse world. Unfortunately, most real horses don't stay this shade for long! *Iron greys* are greys that do not go through the dappling phase as they grey, but rather are a pretty even mixture of white and dark hairs. *White greys* (sometimes also called *porcelain greys*) are those greys with hair that is uniformly white. *Black grey* is a term used to refer to those horses who are very early in the greying process, and still appear mostly black.

One term that frequently confuses hobbyists is *rose grey*. Because the Arabian registry uses the term in their literature, many are under the mistaken impression that it is a uniquely Arabian color. The truth is that rose greys are merely greys that were born either chestnut or bay; it is the red hair present in the original coat that gives the grey its "rosey" tint. A rose grey can occur in any breed where a horse can be chestnut or bay, and grey. Because those two colors are statistically more common in the general horse population than black (the source of ordinary greys), rose greys are actually the most common variety of grey! It's also important to remember that the term is fairly subjective. Because bays (and even chestnuts) vary in how "red" they actually appear, the "rosiness" will vary with each horse. Some bays or dark chestnuts will never really seem rose-colored as they grey, or will only have rosey tints in some areas. For this reason, few registries distinguish between grey and rose grey, and register all such horses as "grey". It is probably more useful in most cases to designate the base color (bay-gone-grey, or chestnut-gone-grey) than it is to use the term rose.

Another variation of grey is the *fleabitten grey*. Some greys will develop small flecks of dark color - usually deep red - throughout their coat. Most horses that develop fleabiting do so after they have turned white, or nearly so, but it is possible for a horse to begin getting fleabites before they have finished dappling. The size and density of the fleabites varies with each individual. Fleabites do tend to increase as the horse ages, with the pattern stabilizing at some point. In some rare cases, horses have fleabitten so completely that they appear to have reverted to their original color.

Some rare variations in greys include blood marks, white spots and depigmentation. *Blood marks* are irregular areas of dark hair, usually red, that appear on some greys. Blood marks can develop at any time, and may increase in size as the horse ages. They can appear in any breed, but are most commonly associated with Arabians, where the trait is called "bloody shoulders", although they do not appear exclusively on the shoulders. Some blood marked horses can be so extensively marked as to appear pinto-patterned, like the famous Arabian stallion Al Nahr Montego. Other greys will develop large, oblong white spots in the coat that look like a reversed-out leopard pattern, but it is not believed to be related to any of the appaloosa patterns. As horses with this pattern grey further, the spots eventually blend in with the rest of the coat and disappear. Because it is a transient pattern, it does not currently have a formal name, although some authors have used the term *chubari* (which is actually another word for "leopard"). Thoroughbred breeders will often refer to them as *Tetrarch spots*, after the stallion of that name who was famous for having the pattern. Finally, some greys will begin to lose the pigment in their skin as well as in their hair, giving the skin on the muzzle and around the eyes a mottled appearance similar (but not related) to the mottling found on appaloosas. This depigmentation is fairly common in Lipizzaners and some strains of Arabians, and is considered by most to be quite undesirable.

Grey as a "Solid" Color

One thing that can confuse new hobbyists about the color grey is that the model horse hobby and the real horse industry have slightly different definitions of the term "solid". When horsemen refer to a "solid" colors, they usually are talking about colors other than pinto or appaloosa (patterns of white markings on the body). When hobby artists use the term "solid", they are often referring to those colors that are less complicated to paint. The non-solid colors are those that require more time and skill to create, and dapple grey is a notoriously difficult and time-consuming color to paint! For this reason, many pricelists do not have grey grouped with the solid colors. It's not even unusual to see white-greys placed on price lists under "solids" and dapple greys under "non-solid". Just remember that all greys are solids for the purposes of real horse classification.



This mare was born bay. Traces of her original color can be seen in the cool greys of her points (once black) and the warm greys of her body (once red).

Colors Confused with Grey

Because grey foals are born dark, they are frequently registered by their base color by owners unaware they will later turn grey (stud book errata are filled with statements like "so-and-so registered bay, now grey"). For this reason, some obvious greys will actually have papers stating they are black, bay or chestnut. But once they are a few years old, greys are usually pretty easy to identify.

One color that does cause confusion is roan. While both grey and roan involve a mixture of white and dark hair, the major differences are location and progression. White hairs on roans are restricted to the body, leaving the head, mane/tail and legs predominantly dark, as opposed to greys which lighten all over. Roan is also permanent, whereas grey is progressive. Roans will remain the color they are born, and not get progressively lighter. Some iron greys will look roan, especially if they have dark legs and dark manes and tails, but the lighter face is a good tip-off that they are really grey.

Another color that can sometimes be confused with grey is sabino. Sabino is actually a pinto pattern that varies greatly in appearance. In some cases where the sabino is very evenly flecked with white, the horse can appear grey (the horse on the cover of *The Ultimate Horse Book* is a good example of this type of sabino). Like the roans, the sabinos differ from grey in that they do not progressively lighten. Another tell-tale sign is the presence of extensive or irregular white markings. Many times the sabino will have an unusually dark mane, and very white legs, while a grey of the same shade that will tend to have a light mane and relatively dark legs.

Another color confused with grey is true white. Greys that have completed the greying process do look white, but their dark skin will usually give them a slightly grey or bluish cast, whereas true whites will have a creamy, or pinkish, cast from their underlying pink skin. Pink skin will also be visible around the muzzle, eyes, ears and genitals of a white horse, while those areas will be greyish-black on grey horses (unless the area was covered by a white marking when the horse was darker).

It can also be hard to spot a grey when the colored areas are small, such as with leopard appaloosas or pintos with a great deal of



This is the type of sabino pattern often mistaken for grey. The wide white facial markings give a clue to the horse's true color, as do his high white stockings (which are partially obscured in this picture by his muddy feet).



These two photos show the kinds of things to look for to tell sabinos from greys. Both of these Shires are sabinos. The horse on the left has an unusually wide blaze that continues under the jaw. The irregular mottling where the blaze covers the muzzle is also typical of sabinos. The horse on the right looks much like an iron (undappled) grey, but the irregular leg markings - especially the knee patch and belly spotting show him to be a sabino instead.

white. Sometimes it isn't until the horse is greatly aged and all color disappears that the grey gene becomes apparent. In the same way, grey can obscure patterns and colors that would otherwise be obvious, especially when the horse is at the all-white stage. This is the reason why some breeds that are predominantly grey (such as Andalusians and Welsh Ponies) occasionally produce "surprises" such as palominos, leopards and pintos.

While there can be some confusion in identifying greys, the biggest problem is caused when registries confuse the issue by calling greys by another name, or by calling something grey that isn't. Thoroughbred breeders refer to black-turned-grey as grey, but often call chestnut-turned-grey as "roan". Tennessee Walking Horse breeders will often register their blue roan sabinos as "grey", while Quarter Horse breeders often register their greys a "blue roan"

When in doubt, believe the color you see on the horse, and not the name it is given!

Painting Greys

It's already been said that greys, particularly dapple greys, are among the most difficult models to paint. While the technical aspect of painting a dapple grey is beyond the scope of this article, there are a few things that painters need to be aware of that will help them create more realistic greys.

The first thing to remember about greys is that most of them are actually chestnuts or bays, so most greys will be a warmer, browner shade of grey, even if they are not "rose" greys. Even black horses tend to be a warm black, with "blue" blacks extremely rare. Yet many dapple grey models appear unrealistically blue. A more realistic shade of grey can be achieved by adding a bit of burnt umber to the grays being used, even when the color being portrayed is a true black-turned-grey. Avoid using colors like Liquitex Concentrated Acrylic French Grey, which is already too blue, straight from the bottle. For those using Prismacolor pencils for dappling, the French Grey in that line is ideal for realistic grey tones.

Another common problem involves the size, shape and spacing of dappling. On a single horse, dapples will vary in size and shape



Although this gelding's front feet are quite light, they are not true markings, but part of the greying process. The coronets - along with the face and the tail tip - are one of the first areas to grey. In contrast, the hind feet have short socks, as is evident from their shell-colored hooves.

depending on the location on the body, yet many models are painted with uniformly round, evenly spaced dapples, much like those found on toy rocking horses. On real horses, dapples will tend to be small, faint, and more widely spaced on the rump, and larger and less

distinct on the forehead and underside of the belly. In light greys, this area may just have a blotchiness that only vaguely suggests dapples. The saddle area tends to contain the most vivid, distinct dappling, but the individual dapples are still irregular in shape. Many areas on greys are not really dappled at all (face, legs, etc.), but have indistinct blotches of light and dark.

A final problem comes with tails that are shaded "backwards". In most greys, the end of the tail will grey first, with the hairs at the base of the tail remaining dark the longest. Occasionally models are painted or haired with a light dock and a darker tip, which is less realistic. Manes usually grey pretty evenly, without strong areas of dark and light.

That covers greys and greying. Our next modifiers will be the roan gene and its close cousin, rabicano.

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