

likewise be absent. If, for example, there are no chestnuts, there will also be no palominos even if the cream gene is present.

Likewise, in breeds where all individuals have a specific modifier, base color will influence what is possible. All Fjords are dun, for example. But because Fjords are also genetically chestnut, black and bay, we see the full range of red duns, grullas and yellow duns. If one or more of the base colors was missing in the breed, then only the modified form of the available colors would be present. Tarpans, for example, are also uniformly dun. They are also uniformly grulla, because the base colors of chestnut and bay are not available. A red dun Tarpan would therefore be an unrealistic model.

For this reason, it is important to know which base colors are present (and common or uncommon) in each breed. Chart 1 gives information on the possible base colors for some of the more popular breeds in the model show ring. When the base colors are found only in conjunction with a specific modifier, they are noted as "always" modified. For those breeds that are only bay, or black or chestnut, they are noted as "never" modified.

### Modifiers

All the remaining horse colors are the result of genes that modify the three base colors. The following charts indicate which modifiers are found in each breed. The modifiers are broken down into:

- 1) White hairs, 2) Dilutions and 3) Patterns of white.

#### Modifiers That Add White Hairs

The first group of modifiers are those that distribute white hairs through the coat. The most common of these is grey. Many horsemen mistakenly think of grey as a separate color, but in fact it is a modifying gene that progressively lightens the horse's original color. All greys, therefore, are also either chestnut, black or bay. True roans have white hairs intermixed with their base color, but unlike greys they do not get lighter with age. They also have dark points, including the head, which has led many to refer to them as "dark-headed roans". Finally there is the rabicano pattern, which results in roaning on the flank (sometimes

Breed	Grey	True Roan	Rabicano
Arabian	Common	Not Present	Present
Akhal-Teke	Present	Not Present	Unknown
American Cream Draft	Not Present	Not Present	Not Present
Appaloosa	Present	Present	Rare
Andalusian/Lusitano	Common	Rare	Rare
Bashkir Curl	Present	Present	Unknown
Belgian (American)	Extinct	Present	Unknown
Belgian (Brabant)	Rare	Common	Unknown
Caspian	Common	Not Present	Unknown
Clydesdale	Extinct	Not Present	Unknown
Criollo	Present	Present	Unknown
Cleveland Bay	Not Present	Not Present	Unknown
Dales	Present	Extinct	Unknown
Dartmoor	Present	Rare	Unknown
Connemara	Common	Rare	Unknown
Exmoor	Not Present	Not Present	Not Present
Fell	Rare	Not Present	Unknown
Friesian	Prohibited	Prohibited	Extinct
Haflinger	Not Present	Not Present	Unknown
Hackney	Extinct	Rare	Present
Highland Pony	Common	Unknown	Unknown
Icelandic	Common	Present	Unknown
Lipizzan	Common	Not Present	Unknown
Miniature Horse	Common	Common	Unknown

Chart 2 - Modifiers that Add White Hairs

Chart 2 - Modifiers That Add White Hairs (continued)

Breed	Grey	True Roan	Rabicano
Missouri Fox Trotter	Common	Present	Unknown
Morgan	Rare	Rare	Unknown
Mountain Pleasure	Present	Present	Unknown
Noriker	Unknown	Present	Unknown
Norwegian Fjord	Not Present	Not Present	Not Present
Paint	Present	Present	Unknown
Paso Fino	Present	Present	Rare
Percheron	Common	Rare	Unknown
Peruvian Paso	Present	Present	Unknown
Quarter Horse	Present	Present	Present
Rocky Mountain	Rare	Rare	Unknown
Saddlebred	Present	Rare	Rare
Shagya	Common	Not Present	Unknown
Shetland (American)	Common	Common	Unknown
Shetland (British)	Present	Present	Unknown
Suffolk	Not Present	Not Present	Not Present
Shire	Common	Extinct	Unknown
Standardbred	Present	Present	Unknown
Tarpan	Not Present	Not Present	Not Present
Tennessee Walker	Present	Present	Unknown
Thoroughbred	Present	Rare*	Unknown
Welsh Mountain Pony	Common	Common	Present
Welsh Pony	Common	Common	Present
Welsh Cob	Rare	Rare	Present

\*A strangely marked stallion, Catch A Bird, has produced a few foals that appear to be true roans, although it is not known whether or not they will reproduce as roans..

forming a brindled pattern) and a skunk tail. Because this pattern is often quite subtle and can be hard to see in photographs, many breeds will have this column noted simply as "unknown". (Chart 2)

#### Genes That Dilute Color

There are four known dilution genes found in horses: cream, dun, silver and champagne. Although cremellos and perlinos are the result of two cream genes (and are therefore possible whenever a breed has the cream gene), they are given a separate column because so many registries restrict or penalize the color. (Chart 3)

#### Patterns of White

These are the genes that create distinct white patterns on the horse. Included are the genes that create distinct white patterns on the horse. Included are the pinto patterns (tobiano, sabino, splash overo, frame overo and manchado) and the appaloosa patterns, which are treated as a single pattern (later research may show that like the pinto patterns, some of the appaloosa patterns are genetically separate). Note that patterns designated as Prohibited are usually only denied

