

Earning their stripes: Chimeric and Roan Color Patterns in Thoroughbreds

Prior to the inception of the Gray/Roan (Gr/Rn) color classification by the Jockey Club in 1993, there were thousands of Thoroughbred horses misidentified as Roan (Rn), thereby perpetuating the myth that gray and roan are just different ways to describe the same "grayish" horse.

Today, there is still confusion about these color/pattern designations, even though (genetically speaking) the gene that produces a roan horse is entirely different than the gene that creates the gray horse.

Everyone agrees that a gray horse is born a dark, solid color, and lightens with age, while a roan horse is born roan, and remains roan throughout its lifetime. However, when it comes to Thoroughbreds, the Jockey Club has always maintained that there are no true "roan" Thoroughbreds. Instead, *all* horses with a pattern of white hairs are classified as Gray/Roan (Gr/Rn) at time of foal registration.



The gray Monarchos, winning the Kentucky Derby and as a sire

Even though the two definitions have been combined, (lumping *every* horse with some white hairs in their coat into the Gray/Roan designation) they still maintain a definition for gray or roan.

According to the Jockey Club, thoroughbreds with a coat that is a mixture of black and white hairs with black or gray "points" is considered gray, while a coat of red or brown and white hairs with black, chestnut or roan "points" is a roan.

The Phenomenon of Brindling



When an oddly patterned Thoroughbred named Catch a Bird (AUS) came on the scene in 1992, there was much debate concerning the origin of the very rare (especially in Thoroughbreds) coat pattern.

Although some believe these striking markings are the result of a one-time gene mutation, there is some evidence that Catch a Bird (AUS) was actually a chimera or mosaic, a phenomenon that occurs when one twin is “merged” with another.

True chimeric horses actually have two distinct DNA profiles. It is believed that the “brindling” is caused by one color/pattern gene being expressed over another color/pattern gene, thereby creating a two-tone or striped effect. When genetically tested, hair from the base color of the coat is genetically unrelated to the hair that is part of the brindle coloring.

In some cases (*Slewcy's Gale, right*) where the pattern appears on *one side* of the horse, it is believed that the brindling pattern is *chimeric* based. The fact that none of the documented Thoroughbreds classified as brindle have been able to pass a similar brindle pattern to their offspring is further evidence that the striped coat color is either a mutation or chimeric in nature.



When Catch a Bird became a sire, a few of his female offspring (Slip Catch as a foal, below) revived the "roan" debate. Several of his offspring have the characteristics of a true roan, while others do not. Lilac Hill, daughter of Slip Catch, is a winning mare (below right) in Australia.



The roan offspring of Catch a Bird

In support of the chimera/mosaic theory, it has been determined that only *some* of Catch a Bird's semen contains the "roan" marker, which is the first step in proving that Thoroughbreds may carry this coat color trait.

There is mounting evidence that Thoroughbreds not only *carry* the roan gene, but express it differently, and may pass this and other variations of the dominant gene trait to their offspring. With the widespread availability of DNA testing, it is inevitable that the American Jockey Club will have to revisit their definitions when it comes to color registration.

Establishing the existence of true roan in a Thoroughbred is only the first step. Convincing the Jockey Club that new designations should be added to the database will be a slow process, mired in red tape, confusion and tradition.

Sources:

- Horse Forum, 7/27/09
- Anne Peters, Thoroughbred Times, A Roan by any other name. May, 2002
- Wikipedia, "Brindle"
- White Horse Productions /winningcolors
- Winningcoloursfarm.com
- Pedigreequery.com/forums
- Thoroughbreds of Unusual Colors, windingcreekfarm.com