

*Roan horses are eye-catchers, but their distinctive color can be confusing. Just because a horse has white hair mixed with another color, you can't automatically assume it's a roan.*



***Cowboy color:** Roan is a color traditionally favored by cowboys. Here, Martin Black rides a red roan at a production sale in New Mexico.*

# The White stuff

Article by REBECCA OVERTON

**Y**ou might call The Presidents Hat a genetic impossibility. At least that's what the gelding was when the American Paint Horse Association registered him in 1998.

Sired by the famous Paint stallion Sacred Indian and out of Continetta (AQHA), The Presidents Hat was registered as a red roan tobiano.

But he couldn't be a red roan. Genetically, it couldn't happen.

Although Continetta is a red roan, Sacred Indian is a bay tovero. Not just any bay tovero, however. Sacred Indian is homozygous for the black and tobiano genes.

"Because he's homozygous for black, he can't produce anything that doesn't have black points," explained Karen Banister of White Harvest Farms in Brighton, Colorado. Banister's daughter, Elizabeth, owns Sacred Indian, and her niece, Ashleigh Dechant, owns The Presidents Hat.

"If you breed him to a red roan mare, his get will always be bay roans."

This is because the bay gene is dominant to the red gene.

Sacred Consuela, a full sister to The Presidents Hat, is also registered as a red roan, but, like her brother, she is a bay roan, as well.

APHA listed both horses as red roans because at the time they were registered the association did not recognize bay roan as an approved color. The horses more closely resembled red roan than blue roan, the other roan color on APHA's list of approved hues, and so were given that designation.

Roan, a horse coat color traditionally favored by cowboys, is distinctive, but it can be misleading. Just because a horse has white hair mixed in with a base coat of another color doesn't automatically make it a roan.

In 1999, APHA added bay roan to its list in an attempt to identify coat color as accurately as possible.

"We want to be as genetically correct as we can," APHA Registrar Cindy Grier said.

"Sometimes it's not possible to go back and correct the old records, so we're trying to make sure the ones we do now are as complete and correct as possible. In a case like The Presidents Hat, we'll do corrections to our certificates at no charge."

By October 30, 2001, out of 639,923 horses in APHA's Regular Registry, 17,079 were red roans, 3,786 were blue roans and 479 were bay roans.

"There are probably a lot of bay roans in those red roan numbers," said Grier.

APHA verifies a horse's parentage by looking at photographs of its sire and dam to see their color.

"We also use get and produce records to see if a horse has produced any other roan foals out of a nonroan parent," Grier noted.

Sometimes it can take a bit of detective work to determine if a horse is really a roan.

## Name game

In the world of equine genetics, experts readily acknowledge the roan pattern is one of the most eye-catching—and confusing.

One of the reasons identifying roan can be so challenging is because the term is used in two different ways to describe coat color, explained Dr. Phillip Sponenberg, professor of pathology and genetics at the Virginia-Maryland Regional College of Veterinary Medicine.

"Roan is a general term used for the intermixture of white hairs and colored hairs in all animals," Sponenberg writes in his book *Equine Color Genetics*.

"In that general sense, all of the patterns on horses that arise from such an intermixture could be called roan. . . .

"It is important to note, though, that roan also refers to a very specific pattern of white hairs in horses. As a result, the use of roan in its general sense can be very misleading."

White hair mixed with colored hair can give a horse's coat a silvery effect. The roan pattern is identified by the background color of a horse's coat.

Thus, roans come in a rainbow of hues, such as strawberry, palomino and purple, the latter resulting when roan is combined with mahogany bay, brown and seal brown.

APHA registers horses as red, blue or bay roans because chestnut (red), black (blue) and bay are the basic equine coat colors. Other equine associations, such as the American Quarter Horse Association (AQHA), register horses as blue or red roan, lumping bay roans in with red as APHA did before 1999.

"It's fairly common to call a bay roan a red roan," Sponenberg noted.

AQHA sometimes runs into the same registration dilemma that APHA encounters.

"Because of the different types of roans, we occasionally find a horse that throws a roan that, genetically, it shouldn't," said Gary Griffith, AQHA Executive Director of Registration.

"Then we get pictures and do parentage verification."

APHA added bay roan to distinguish between roans that have base coats that are bay and those that have sorrel or chestnut. The association defines bay roan as a mixture of white hair on a base coat of red to reddish brown.

Bay roans usually have black lower legs, and a black mane and tail.

The association defines red roan as a more or less uniform mixture of white hair and red hair on a large portion of a horse's body. However, its head and lower legs are usually darker, and

the mane and tail may be red, flaxen or white.

Blue roan is defined as a uniform mixture of white hair and black hair on a large part of a horse's body. The animal may have a few red hairs as well. The color is usually darker on the horse's head and lower legs.

In the classic or true roan pattern, the head, mane, lower legs and tail are always darker.

"The true classic roans with dark heads and dark feet are pretty rare in the Paint Horse breed," Sponenberg said.

Roaning patterns, such as rabicano, add another ingredient to the mix. Typically, this pattern, which is also known as ticking, is uneven and is expressed more heavily on a horse's flanks and barrel than on its forehead.

Rabicano is usually limited to a few white hairs on the base of a horse's tail and on its flank. It is also known as skunk tail or coon tail.

In another roaning pattern called frosty, the mixture of white is more

uneven than in the classic roan. Frosty horses tend to have roan areas mainly over bony prominences, such as the hip, over the shoulder and down the spine. The mane and tail tend to be roan, and the head can have roan areas, too.

Still another pattern, sabino, can include extensive roaning, which causes some people to confuse a sabino horse with a roan.

"Extremely roan sabinos can be confused with classic roan horses," said Sponenberg, "but white on the legs and faces, as well as roan areas on the head, will give these horses away as sabinos.

"Roan areas on sabinos are also less even and uniform than they are on classic roans, and the areas are likely to be patched or flecked."

### So what is it?

Roan horses are standouts, to be sure. In fact, that's why Kate Mordaunt bought a blue roan stallion in 2000.

When Mordaunt, of Cedar Rapids, Iowa, saw Mr Good And Plenty, it was love at first sight.

"I bought him because of his color," she said. "I had never seen that color of horse before."

Sired by Zippos Mr Good Bar (AQHA), Mr Good And Plenty is out of Jets Classy Doll.

The 6-year-old stallion holds World and Congress Championships in Western pleasure. He has sired some red roan babies, and Mordaunt is waiting to see what this year's foal crop will bring.

Standing at Double L Paint Horses in Cedar Rapids, Mr Good And Plenty has attracted many clients.

"We have a waiting list for blue roan overos," said Lori Hanson, who, with her husband, Lyle, owns the Double L.

"Show people like them because the color is different. They seem to want something that stands out on the rail."

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**So sabino:** *Ropers Reflection is a red roan sabino. His white legs and face are clearly sabino traits.*



DARRELL DODDS

## Back to the beginning



**True roan:** This blue roan breeding stock Paint is a classic roan because it has a dark head, mane, lower legs and tail.

According to conventional wisdom, roans are durable and work well under tough conditions.

"Cowboys used to think roans were lucky," Paint Horse breeder and trainer Karen Banister said.

Cowboys appreciated many roans' flint-hard hooves and the horses' ability to withstand the rigors of ranch work.

"Roans are popular, but difficult to get," Banister said.

Many roans hark back to Roan Hancock, AQHA Number 456, who was a 1935 red roan stallion. Sired by Joe Hancock, a brown Quarter Horse, Roan Hancock was out of an unregistered horse named Burnett Riding Mare.

More recently, Peptoboonsmal (AQHA), a 1992 red roan stallion, and his 1972 blue roan dam, Royal Blue Boon (AQHA), have made a name for themselves as

producers of outstanding cutting horses. Both are owned by Elaine Hall of Weatherford, Texas.

Peptoboonsmal was sired by Peppy San Badger (AQHA), the famous King Ranch cutting horse. Peppy San Badger's numerous honors include winning the 1977 National Cutting Horse Association (NCHA) Futurity and the 1978 NCHA Derby.

The sorrel cutter set a record as the first derby champion to be sired by another derby champion, Mr San Peppy.

Peptoboonsmal's titles include 1995 NCHA Futurity Champion, 1996 NCHA Derby finalist and finalist at the 1996 NCHA Super Stakes.

Royal Blue Boon threw Bet Yer Blue Boons, a 1990 red roan mare who won the 2000 NCHA Open Championship. Owned by Oxbow

Ranch of Weatherford, Texas, Bet Yer Blue Boons was sired by Freckles Playboy (AQHA).

Another red roan Quarter Horse, Zippos Mr Good Bar, has sired many roan Paints. Out of the 1984 stallion's 28 get in the APHA Registry, 14 are registered as red roans and one is listed as a blue roan.

Zippos Mr Good Bar, who was inducted into the National Snaffle Bit Association Hall of Fame in 2000, has sired multiple World and Congress champions. He earned a Superior in Western Pleasure and is on the AQHA leading sires list.

Owned by John and Sondra Narmont of Auburn, Illinois, Zippos Mr Good Bar was sired by the great sorrel Western pleasure horse Zippo Pine Bar (AQHA), and is out of Tamara Wess (AQHA), a red roan mare.

## Genetics lesson

So, what makes a horse a roan genetically, or, as the experts say, phenotypically? A roan horse must have one roan allele, which is written as  $Rn^{Rn}$ .

An allele is one of two or more forms of a gene that occupies the same position on matching chromosomes. Chromosomes carry the genes that determine an animal's hereditary traits.

Normally, an individual has two alleles for each trait, one from each parent. Because the roan

allele ( $RnRn$ ) is dominant, most roan horses produce roan offspring 50 percent of the time.

Roan is believed to be linked to other genes that determine coat color, which makes establishing the inheritance of the gene more complicated because the genes are usually passed along as a group.

The roan gene is closely associated with the E gene, which determines a red or black base coat, and the tobiano (TO) gene. Therefore, roans have a high per-

centage of offspring that are the same color as the roan parent.

For example, when red roans, which have a sorrel base coat, are bred to sorrels, the offspring are 50 percent sorrels and 50 percent red roans. A blue roan, whose roan gene is linked to its dominant E (black) gene, is likely to produce a high percentage of black and bay roans.

If a horse's roan gene is linked to the recessive e (sorrel) gene of a heterozygous ( $Ee$ ) individual, the horse should produce only red roans when bred to sorrel mates.

Because roan is dominant, theoretically it should never skip a generation. However, sometimes that rule doesn't seem to apply.

"In most cases, a close inspection of the nonroan generation reveals that the offspring are minimally roaned," explained Spollenberg.

"This complicates the picture somewhat, because if you have a really dark roan horse in which the roan is not prominently expressed, sometimes you have nonroan horses that have a few white hairs that look the same as the roan horse."

Homozygous roans, or horses that carry two  $Rn^{Rn}$  alleles, are rare, but more are being discovered. Although it was once believed that the  $Rn^{Rn}Rn^{Rn}$  combination was lethal, the existence of homozygous roans proves this wrong.

Many homozygous roan embryos are absorbed during their early stage of development. Because such offspring are rare, they are being lost somewhere, most likely before they become developed.

Contrary to popular thought, roan-to-roan crosses do not produce lethal white foals.

Kelly Haberman, a Paint Horse breeder in Asotin, Washington, was concerned when she considered breeding two red roans because she had heard the cross could result in a lethal white.



BEN IVERSON



PATTI CAMPBELL

**Red or bay?** Irresistible Kid (top), a red roan overo, displays the silvery effect roaning can have. The Presidents Hat (above), a bay roan tobiano, was registered as a red roan before bay roan was approved by APHA.

But after talking with equine genetics experts at the University of California–Davis, she bred her 1998 red roan stallion, Mr Irresistible Kid, to Barlink Cupie Doll, his red roan grand dam.

Now, Kelly and her husband, Mike, are awaiting the foal's birth. The couple became interested in roans when they purchased Barlnk Barb Bea, another red roan mare, in 1997.

"We fell into the roan coloring when we bought Barlnk Barb Bea, who had been bred to Mr Kid Clue (AQHA)," Kelly explained.

"We were not breeding for a roan, but now that we have one, we're thrilled."

When Mr Irresistible Kid was born, Kelly was told that red roans are the most difficult color to show in halter because their muscles can't be seen as clearly, due to their coat color.

Mr Irresistible Kid proved the other breeders wrong.

The 4-year-old quickly earned a Superior in halter, stood Grand 30 times and won 16 Reserves. In addition, he won the Oregon Paint Horse Breeders Triple Crown Futurity as a yearling and was the Northwest Coordinating Committee's Reserve High-Point Halter Stallion All Ages in 2000 and 2001.

"When he comes into the pen, his muscles just bulge," Kelly said. "You can see them from the stands."

"Is he hard to show because of his color? No. He really stands out from the crowd."

### Color changers

Roan horses are different, to be sure. Because extremely roan horses have a large amount of white hair, they are often confused with white or gray horses.

But while the roan gene covers specific parts of the body with a light coating of white hair, the white gene (W) completely covers the body with an even, white coat.

The gray gene (G) causes a light sprinkling of white hair over the entire coat, which becomes lighter as the horse grows older. Eventu-

## Want to know more?

If you would like to learn more about the wonderful world of roan genetics, the following books and pamphlets can help:

- *Equine Color Genetics* by Dr. D. Philip Sponenberg. Published by Iowa State University Press in 1996. To order, call (800) 862-6657.

- *Horse Genetics* by Dr. Ann T. Bowling. Published by Oxford University Press in 1996. To order, call (800) 445-9714.

- *American Paint Horse Association's Guide to Coat Color Genetics* and *APHA's Guide to*

*Registration*. To order, call APHA's 24-hour forms request line at (817) 834-2742, extension 271.

- *Horse Color Explained* by Jeanette Gower. Published by Trafalgar Square Publishing in 2000. To order, call (800) 423-4525.

- *The Color of Horses* by Dr. Ben K. Green and paintings by Darol Dickinson. The sixth edition of the book, which was first published in 1974, was printed by Mountain Press Publishing Company in 2001. To order, call (800) 234-5308.



**Blue boy:** Mr Good And Plenty is a good example of a blue roan because he has a uniform mixture of white hair on black.

ally, the animal turns completely gray or white.

A foal may appear roan at birth, or the color may become apparent after the baby sheds its foal coat. But roans do not become progressively lighter with age, as do gray horses. Instead, some roans become darker with age.

When a roan's hair regrows over a wound, the hair often doesn't come back in as white, so scars and brands are readily apparent, making many roan owners protective of their horses' coats.

Roans change color according to the season. They are lightest in

spring, when they shed their winter coats. They are more medium-colored in summer. In winter, they sometimes become so dark they don't look like a roan.

In fact, these seasonal changes led to the Icelandic term for roan—*litförótt*—which means "always changing color."

"I love owning a roan," Kelly Haberman said.

"I put about 12,000 miles a year on my truck hauling to shows, and I seldom see another red roan in the show ring.

"It's fun owning a horse of a different color." 🐾