

Precious

Pearls

By IRENE STAMATELAKYS

When Janet Spears first laid eyes on the pale, young colt nursing under his chestnut dam, she didn't know what to think about his strange color.

"I bought Mr Unusual in 2003, when he was 2 weeks old, from a couple I used to work for," said Spears. "I knew he was a little different from the get-go—just didn't know until later how rare he really is."

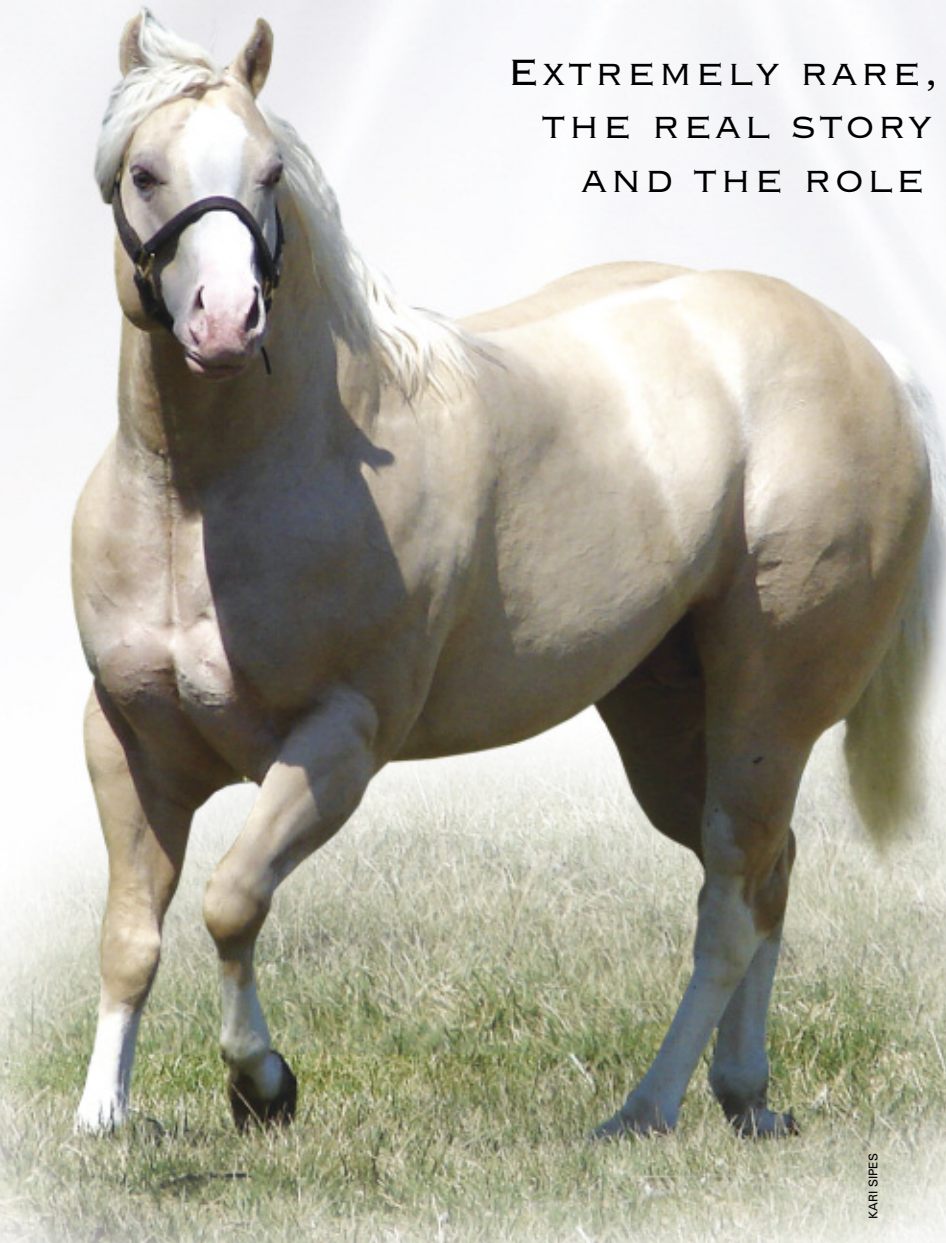
Spears describes her overo stallion as the color of straw, which just didn't make sense at the time, according to the laws of equine color genetics. Many people thought he was a pale palomino that would darken with age. Others said he was a champagne.

"I tested him to verify that his sire, Awesome Mr Conclusion, was truly his sire," said Spears, who lives in Lyons, Oregon. "I just wanted to make sure there wasn't some kind of mix-up. I knew that he couldn't be a palomino. It wasn't possible coming from a sorrel stallion and a chestnut mare, but being he was such a light color, I tested for cream just to make sure and he tested negative."

"His color is very hard to explain, and even harder to catch on film. In the summertime his coat is very shiny; even when dirty, he has an unusual sheen. His eyes are the same light tan as his body. Around his eyes, nose, under his tail and around his genitals, the skin is pinkish-purple with darker purple-looking specks, similar to those of a champagne."

Mr Unusual could easily be confused with a palomino, says Spears, but not with a cremello.

"He is very different from a cremello, as there is quite a lot of color to him, whereas there is mostly only pink skin on the cremello," she said. "Another big difference between him and the cremello is the eye color. They



KARI SIPES

EXTREMELY RARE,
THE REAL STORY
AND THE ROLE

With both a pearl allele and a cream allele, One Awesome Moment could easily be mistaken for a cremello. That's not possible, of course, since his sire, Mighty Awesome, is sorrel.

are not even close to blue—they are very much light tan.

"I wasn't sure what his color was, so I contacted Carolyn Shepard of the International Champagne Horse Reg-

istry (ICHR). She told me that there was a newly discovered gene in the Barlink Macho Man-bred horses."

Both the colt's sire and dam—Awesome Mr Conclusion and TNTs Pride

THERE'S NOTHING LIKE A REAL PEARL—DILUTION. GET BEHIND PEARL—ONCE KNOWN AS THE BARLINK FACTOR—PAINTS PLAYED IN THE DISCOVERY OF THIS LITTLE GEM.

And Joy—descend from Barlink Macho Man. Neither champagne nor cream, it turns out Mr Unusual carried a double dose of an entirely different dilution gene that lightened his coat color to a shade few breeders have ever seen.

Even today, very few people are familiar with this unusual dilution gene, commonly called the Barlink Factor but now officially named "pearl," and the unique colors the gene can produce. Paints played a leading role in the discovery of the pearl gene—it turns out that there are dozens of pearls and pearl-creams and hundreds of pearl carriers in the breed, waiting to surprise a lucky breeder with an unexpected gem.

THE COLOR OF PEARL

Both the emergence of pearls in the American Paint Horse and the story behind the discovery of the gene are easier to follow once you understand how the pearl gene works and the colors it produces.

Pearl is a dilution gene that modifies hair color. We'll look at three specific cases: the heterozygous pearl, the homozygous pearl and the heterozygous pearl with cream.

The heterozygous pearl has one pearl allele. There is no visible dilution of the hair coat.

"Most pearls are in 'plain clothes,'" said Shepard, who played a pivotal role in the discovery of pearls. "They are not so obvious."

Today, these pearl carriers can be identified through genetic testing. In

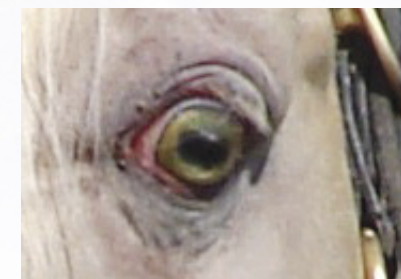
It takes two doses of pearl to change coat color. A homozygous pearl is visibly diluted—the coat, mane and tail are uniformly lightened to a paler shade.

the past, the only way to confirm their status was through their progeny.

That being said, several owners of Paint pearl carriers have reported skin with lighter mottling rather than uniformly pigmented skin. Heterozygous pearls in the Spanish breeds have not shown these characteristics.

"The terminology is not yet set in stone, of course," said Shepard. "Even though pearl is not always visible on the heterozygous non-creams, I've been calling them red pearl, bay pearl, brown pearl and black pearl. There are folks who think since you can't always see it, you should just call those horses red,

A palomino pearl, One Awesome Moment has green eyes.



KARI SIPES

bay, brown or black, and note that they 'carry pearl.' Once you know they carry, I think it's okay to call them by the 'base color + pearl' names."

Paint stallions Barlink Macho Man and Mighty Awesome are just two examples of heterozygous pearls.

It takes two doses of pearl to change coat color. A homozygous pearl is visibly diluted—the coat, mane and tail are uniformly lightened to a paler shade. On a red base (sorrel or chestnut), this color is frequently described as apricot. On a black base, the color is similar to a dark amber champagne. In general, skin color is also lightened.

"One interesting thing about the double pearls is that they can have really dark eyes," said Shepard.

Standard names have not been set, but Shepard calls these colors by the base color (red, bay, black or brown) plus homozygous pearl—for example, red homozygous pearl.

"It's also perfectly okay to substitute 'double' for 'homozygous,'" Shepard said. "I actually prefer 'red double pearl,' as this flows off the tongue better."



Thinking she might be champagne, Barlnk Peachs N Cream's owners tried to register the mare with the International Champagne Horse Registry, and thereby launched the search for a new dilution gene.

Mr Unusual, Barlnk Peachs N Cream and Barlnktwentyfourkarat are all homozygous pearls.

The heterozygous pearl with cream has both a pearl allele and a cream allele. The two genes interact to produce pseudo double cream dilutes, with pale skin and blue, yellow or green eyes. These foals surprisingly resemble a cremello or perlino, but often have a parent that is not visibly dilute, like a chestnut.

The pearl-cream nomenclature is pretty standard, and the colors are called palomino pearl, buckskin pearl, smoky brown pearl, and smoky black pearl.

One Awesome Moment is a 2000 palomino pearl overo stallion owned by Triple C Ranch LLC in Smithfield, Kentucky.

"He is a lighter palomino coloring, similar to a cremello," said trainer and ranch manager Kari Sipes. "He has freckling around his nose and eyes, has a lighter pigmentation of skin and he has green eyes."

Another good example of a palomino pearl is the 1988 overo stallion Barlink Gold Rush.

"I knew his color could not be explained by the colors of his sire

everywhere else, and he's a very light body color."

Buckskin pearls are easily confused with perlinos, says Shepard.

"Buckskin pearls are born a pale cream color with darker manes and tails," she explained. "At this stage, they closely resemble amber cream (champagne) foals. The points tend to fade as the horse ages, such that they end up looking like perlinos. However, the skin will freckle a bit darker, and the eyes will turn a shade of yellow-green, which should distinguish them from perlinos."

Stars Sunny Delight and Just A Honey Rose are two examples of buckskin pearls.

Smoky black and smoky brown pearls are extremely rare in Paints. R Smoken Lark appears to be a smoky black pearl, that is to say, a smoky black with one pearl gene. Shepard says his skin is diluted to near pink and his hair is a very unusual shade, somewhat resembling a smoky black cream.

FINDING PEARLS

In 2001, Carol and Don Schneider of Durango, Colorado, submitted a registration application to the International Champagne Horse Registry (ICHR) for Barlnk Peachs N Cream,

and dam," said owner Darla McConnell-Fox of Sandpoint, Idaho. "He looked cremello or champagne, but his parentage didn't support that. 'Gold Rush' has green eyes and dark pigmentation or freckling of the muzzle, eyes and genitalia. He has dark pinkish skin

The term "Barlink Factor" was coined in honor of Barlink Macho Man, a "plain clothes" pearl. "Macho" was not visibly dilute because he was heterozygous for the gene.



APHA FILE PHOTO



Owner Janet Spears describes Mr Unusual, a homozygous pearl, as the color of straw, very shiny, with light tan eyes and speckled skin.

COURTESY JANET SPEARS

a 1997 solid mare. Registered with the American Paint Horse Association (APHA) as a palomino, the mare appeared to be champagne. (See "True Champagne" in the October 2008 *Paint Horse Journal*.)

Shepard, ICHR president and registrar, remembers the case clearly. The mare's sire and dam—Barlnk Tardy Too and Barlink Snoopy Sue—were sorrels, and no dilute horses appeared in the first three generations of her pedigree.

"Peaches" didn't have an obvious champagne ancestor, her color was not quite right, and her eyes were so very dark that I just wondered about her," said Shepard. "But I couldn't think of what else she could possibly be [besides champagne] with the characteristics she had, so I gave her the tentative registration status."

Shortly thereafter, Shepard learned of other unusually colored Paints that looked much like champagnes without champagne parents—R Smoken Lark, Woodstock Chocoblanco and Raleighs Barlink. Studying the pedigrees, Shepard realized that the four horses shared Barlink Macho Man as a common ancestor.

Following her discovery, Shepard wrote the first article, published in

the July 2002 issue of the *Champagne Horse Journal*, describing a possible new dilution gene in Paint Horses that mimicked champagne, yet was different. In tribute to Barlink Macho Man, she called it the "Barlink Factor."

Before the test for the champagne gene was available, when a dilute horse tested negative for the cream gene, it was generally accepted as proof the horse was champagne. Barlnk Peachs N Cream, and others like her, tested negative for cream. Shepard was certain these horses weren't champagne and they weren't diluted by cream.

About the same time, an unusual dilution phenomenon in Iberian horses caught the attention of those who study equine color genetics. At first, it was believed that the champagne gene was at work. But that possibility was gradually eliminated, and it was discovered that the dilute horses were related through a common, non-dilute parent. The ICHR

discussion group came to the conclusion that perhaps an entirely new dilution

gene existed that behaved exactly like the Barlink Factor found in Paints. In Iberians, this dilution was commonly called pearl.

Then in 2003, Shepard came across Barlink Dun N Gold, an apparently homozygous Barlink Factor dilute who went back to Barlink Macho Man on only one side of the pedigree. The mare was out of My Tontime AQHA, the grand-dam of Barlink Macho Man. This proved to be a crucial discovery because Barlink Dun N Gold was registered as a palomino, but was by a sorrel out of a red roan—in effect two chestnut parents—which was impossible.

For the next three years, Shepard and others continued to study the Barlink family of horses, trying to understand the intricate workings of this new dilute gene. One question kept popping up. Why weren't the pseudo-cremello horses, with one Barlink Factor and one cream gene, producing foals like themselves?

In April 2006, Shepard came up with a theory.

"Nicole MacPherson and I had been watching [on a Web site], foal by foal, as One Awesome Moment's



Two doses of the pearl dilution gene visibly diluted the sorrel base coat, mane and tail on Barlnktwentyfourkarat to an apricot color.

COURTESY KAY SWINELINK

babies were being born,” she said. “They were all palomino or chestnut in his first few crops. I was cleaning a stall one day, thinking deeply as to why he wasn’t making any ‘Barlink cream’ babies like himself.

“I’ve never seen a Barlink cream make another Barlink cream from a non-dilute mate. They make regular cream dilutes [palominos, buckskins and smoky blacks]. Then it hit me. Barlink must be on chromosome 21, just like cream. If you look at the pedigrees, Barlink creams come from one cream parent and one Barlink parent. That would be why they don’t give both genes together. They can’t. When the chromosome numbers divide in half to make eggs and sperm, each gamete has only one copy of chromosome 21. So half of the sperm or eggs carry cream, and the other half carry Barlink. That means a Barlink cream will either give out cream or give out Barlink. There are no other options.”

Shepard had been in contact with Cecilia Penedo, PhD, of the Veterinary Genetics Laboratory at the University of California, Davis, who was studying the Barlink Factor. When Shepard shared her theory that June, she learned that Penedo was thinking—and researching—along the same lines. A few months later, in October 2006, UC-Davis made the test for the Barlink Factor available to the public, and the gene was initially named “apricot.”

In the days following the test launch, Shepard was on the road, getting hair samples from an Iberian dilute horse to submit to UC-Davis for testing. Results showed that the mutation found in Paints was exactly the same as the one found in Spanish horse breeds, such as Andalusians and Lusitanos.



It’s believed that My Tontime AQHA, grand-dam of Barlink Macho Man, introduced the pearl dilution gene into the Paint breed.

It then became clear that the Barlink horses were not the sources of a new mutation, but simply carried the genes, reflecting the Spanish ancestry of the Quarter Horse and Paint breeds. Dilute-color enthusiasts then rallied for the name to be changed from “apricot” to “pearl” to better reflect the gene’s origins.

THE SIMMELINK STORY

Although we know today that this unusual dilution gene was imported several centuries ago from Europe, it might have never caught our attention had it not been for the great stallion Barlink Macho Man.

Bred by Kay and Charles Simmelink of Madras, Oregon, Barlink Macho Man was a 1982 sorrel overo

stallion by Tuffys Two Spades AQHA and out of Prize’s Bar Link. “Macho,” a two-time national champion, earned 266 Open points, 52 grands and 30 reserves in halter competition, and was a Western pleasure point-earner.

As a sire, he is simply legendary. Macho’s 393 offspring have earned 13,095 halter and 11,195 performance points, propelling the Simmelinks to the top of APHA’s list of Lifetime Leading Halter Breeders by points earned, second based on halter point earners and fifth on the list of Lifetime Leading Performance Breeders by points earned. (See “High Desert Dynasty” in the January 1997 *Paint Horse Journal*.)

The Simmelinks were uniquely focused on producing overo halter horses that could also perform. Unbeknownst to them, the success and popularity of the “Barlink” horses would bring an old and rare dilution gene back into the limelight.

But the Simmelink story actually begins with Macho’s grand-dam, My Tontime AQHA. Purchased as 2-year-old in 1965, “Tina” was sired by Tonto’s Time, by Tonto Bars Gill, and out of My Leo Nita, by My Leo.

Although My Tontime was registered as a red roan, Kay Simmelink remembers the mare’s coloring as truly unique.

“My Tontime had such a golden, deep-burnished, gold-red color under her red roan-colored coat. She truly glittered,” said Kay. “With her copper-gold sheen under her roan hair, she definitely wasn’t like any other roans we’ve ever seen.”

It has been said that My Tontime introduced this dilution gene into the Paint breed. But where did she get it? As Kay recalls, Tina’s maternal line had some unusually colored horses as well.

“My Leo Nita—she wasn’t a dun [as she is registered],” said Kay, who recalls the mare being a light shade. “As I remember the pictures, she had sort of strange-colored eyes. They weren’t blue but more the color of her body. I remember thinking she was a very odd color.”

Kay has also seen old photos of My Leo, sire of My Leo Nita.

“He, too, was not the dun they registered him as,” she said. “He was so light—possibly a diluted palomino. You could barely see the white legs and face. My guess—cremello—but of course they [the American Quarter Horse Association] didn’t register them at the time.”

What color were they? Unfortunately, we’ll never know. My Tontime quietly carried both that secret and the pearl gene, passing them on to her daughter Prize’s Bar Link and her grandson Barlink Macho Man.

Macho’s first foal hit the ground in 1985, but it wasn’t until two years later that the Simmelinks saw anything unusual.

“When we bred Macho to his grand-dam, My Tontime, the baby was a beautiful dark golden color like the statues they used to give out for AQHA Grands—just glittered,” recalled Kay.

That cross in 1987 produced Barlink Dun N Gold. Though she was

registered as a palomino, her photo shows her to be, in fact, a red homozygous pearl.

At the time, no one knew what to call this color. As the Simmelinks continued breeding Macho, they eventually made two discoveries.

“We have found that we can get a gold-colored foal out of breeding a Macho to a Macho,” said Kay. “And we did learn quickly not to cross Macho on palominos or buckskins because he would dilute it on occasion and at that time it was not popular.”

In other words, crossing a pearl carrier with a pearl carrier could produce a homozygous pearl, and crossing a pearl carrier with a cream carrier could produce a pseudo-cremello or a pearl cream.

Over the years, the Simmelinks have bred a few homozygous pearls, including Barlnktwentyfourkarat and Barlnk Misters Gold, both sired by Barlnk Macho Man Two and out of Macho daughters. The foals had

gold coloration with same-colored manes and tails.

“We had to register these colts as sorrels, so we just sort of assumed they were diluted sorrels,” said Kay. “We knew Macho could certainly dilute a palomino mare, which at the time wasn’t very desirable like it is now. Now it’s the rage.

“At the time, anything lighter [than a palomino or dun] was not desirable. Now it’s hot property. Had we known what a goldmine we had, well, we could have added a lot more of the light colors to the breeds. All of these foals, their sire and dams are double-registered APHA and AQHA, so it impacts both breeds.”

For the Simmelinks, first and foremost on their minds was breeding quality horses that could halter and ride. Had they been less successful, the pearl gene probably would have slipped by unnoticed. Thanks to their legendary breeding program, this rare dilution gene, a legacy of the Paint’s heritage in the Spanish breeds, is alive and well today.



Barlink Mister Gold is part of the legendary Barlink family of horses bred by Kay and Chuck Simmelink. The “Barlinks” brought the pearl dilution to light.

COURTESY KAY SIMMELINK

COURTESY KAY SIMMELINK

The success and popularity of the “Barlink” horses would bring an old and rare dilution gene back into the limelight.

String of Pearls

KNOWN HOMOZYGOUS PEARLS

Ambitious Blonde
Barlink Dun N Gold
Barlnk Mist'ers Gold
Barlnk Peachs N Cream
Barlnktwentyfourkarat
Mr Unusual
Shesa Bit' Awesome

KNOWN CREAM PEARLS

Awesome Sugar Cookie
Barlinked In Gold
Barlink Gold Rush
Barlinkscodycandy
Grace N Elegance
Just a Honey Rose
Little Yella Fella
Looking Ata Dream
Machos Ladys Lass
Mighty Alrighly
Miss Cool Image
Mr Awesome Boy
One Awesome Moment
Oro Blanco Woodstock
Raleighs Barlink
R Smoken Lark
Sarco Tartanero (also dun)
Sheza Awesome Ticket
Shezablondewoodstock
Stars Sunny Delight
Twofeathers Karmalita

Two Tone Gold
Ultimateawesomemoment
WD Whatcha Lookin At
Wildfire Gem
Woodstock Angel Baby
Woodstock Chocoblanco

KNOWN PEARL CARRIERS

An Awesome Image
An Awesome Ticket
Annvers Glory
Awesome Andy
Awesome Mr Conclusion
Barlink Classical Joy
Barlink Macho Joy
Barlink Macho Man
Barlink Penny Wise
Barlinks Fancy
Barlinks Jewel
Barlinks Lasting Doll
Barlink Snoopy Sue
Barlink Triplecash
Barlnk Islebegrand
Barlnk Macho Man Two
Barlnk Meri Tardi
Barlnk Peaches Rita
Barlnks Conclusive Joy
Barlnk Tardy Too
Callin Granny
Exclusively Connected
J C Silver Cash
Jetalita Fools Gold



Ambitious Blonde, a red homozygous pearl, shows how the apricot color can vary from horse to horse.

COURTESY RICHARD MARCELLE

Manchester
Midnight Cassanova
Mighty Ambitious
Mighty Awesome
Mighty Cool Image
MyTontime (AQHA)
Palmer Mountain
Prize's Bar Link
Shes Mighty Concluson
Sir Nottingham
Sweet Dream Baby
TC Bit' Bonanza
TNTs Pride and Joy
Two Tone Barlink

This list was compiled by Carolyn Shepard, president and registrar of the International Champagne Horse Registry, based on APHA records, pedigree analysis, progeny records and owner testimonials.

"The horses on these lists are just the ones I know of," said Shepard. "There are, without a doubt, many more that have not come to my attention. This is, by no means, a complete list."

HOW MANY PAINTS CARRY THE PEARL GENE?

"Barlink Macho Man has 393 registered APHA foals, of which half would carry pearl," she said. "Mighty Awesome has 672 foals. Awesome Mr Conclusion has 135 foals. Barlnk Macho Man Two has 53 foals. Barlink Gold Rush has 82 foals. Awesome Andy has 102 foals."

In theory, half of those foals are pearl carriers. Pearl Paints, says Shepard, greatly outnumber the estimated 250 champagne Paints.

"Right there, just from offspring of those six stallions, there would be approximately 718.5 pearl-carrying foals," said Shepard. "And each of those pearl carriers has 50 percent pearl foals. So there are more than 1,000 of them out there in the world."



At first glance, Barlink Gold Rush looks like a cremello, but he's actually a pearl-cream or palomino pearl. Cremellos don't have his dark green eyes and freckling around the muzzle.

DEBBIE KRUGER

REAL PEARLS

Like cream, dun, champagne and silver, pearl is a dilution gene capable of changing base coat colors into something completely different. It has been found in Paints, Quarter Horses, Andalusians, Lusitanos, Peruvian Pasos and Gypsy Horses. There are seven known homozygous pearls, 27 pearl creams and an estimated 1,000 pearl carriers in the Paint breed.

"It is absolutely fascinating to see how widespread this is," said Shepard. "I wonder why we didn't notice it long before we did."

Currently, APHA does not recognize pearl as an official coat color. However, now that genetic testing is available to identify carriers, Paint pearl owners have one wish.

"I hope someday soon that APHA will recognize the pearl color," said Janet Spears, who owns Mr Unusual. "Every foal he produces carries the pearl gene. Mr Unusual is misregistered as a palomino, a color that he has no genes to produce. I was told that he would be registered as a palomino because he looked the closest to that color."



Jennifer Cline first discovered pearl when she bred Shesa Bit' Awesome, and is working to gain APHA recognition of the color.

COURTESY JENNIFER CLINE

Last fall, Jennifer Cline submitted a proposal to the APHA Registration Committee to recognize pearl as a new, approved coat color. Cline, who lives in Glendale, Oregon, bred and owns Shesa Bit' Awesome, a red homozygous pearl.

"My filly is a very unusual color, the color of apricot," wrote Cline in her proposal. "Without a white mane, she does not carry the cream gene. She is, however, registered as palomino as the APHA does not yet recognize pearl as a color."

"It seems odd to me that my registry would be so involved in the evolution of this particular color, yet not make it a choice for those who have these uniquely colored horses and who have contributed so much in the research. Our horses are still incorrectly identified as palominos, when clearly they are not."

Although the proposal was denied, Cline has not given up. "I am very dedicated to getting this color recognized," she said. "In the meantime, as more people learn about the pearl gene and colors, more pearl Paints are discovered and their popularity grows."

"I'll have to admit, however, that these gold colts are hot property," said Kay Simmelink. "Everyone seems to want that color." **[PHJ]**

COURTESY SAM ELLEDGE



Registered as a perlino, Stars Sunny Delight is genetically a buckskin pearl.