



# UNDERSTANDING THE BASIC GENETICS OF CAT COLORS

## What colors do you find on cats?

There are two basic colors of cats, black and red. These are called "dominant" colors. The color of all cats relates to these two colors in some way, by changing the color or covering it up.

There is also a "dilute" of each color. The dilute of black is blue. The dilute of red is cream.

**Black**  
**(dominant color)**



**Red**  
**(dominant color)**



**Blue**  
**(dilute of Black)**






**Cream**  
**(dilute of Red)**







## What color kittens will these cats have?

Remember that blue is the dilute of black, and cream is the dilute of red. A dominant color can produce both dominant and dilute kittens, but a dilute color bred to a dilute color will only produce dilute colored kittens.

Black bred to Black will result in Black or Blue kittens			
FATHER (SIRE)	MOTHER (DAM)	Male Kittens	Female Kittens
		 	 

Blue bred to Blue will result only in Blue kittens			
FATHER (SIRE)	MOTHER (DAM)	Male Kittens	Female Kittens
			

**Red bred to Red will result in Red or Cream kittens**

FATHER (SIRE)	MOTHER (DAM)	Male Kittens	Female Kittens
			

**Cream bred to Cream will result only in Cream kittens**












FATHER (SIRE)	MOTHER (DAM)	Male Kittens	Female Kittens
			

Sometimes, the dominant colors of black and red are combined on one kitten, and that is called tortoiseshell. When the dilute colors of blue and cream are combined, it is called blue-cream.




Black bred to either Red or Cream will result in Red, Cream, Tortoiseshell or Blue-Cream kittens			
FATHER (SIRE)	MOTHER (DAM)	Male Kittens	Female Kittens
	 OR 	 	 

Blue bred to Cream will result in Cream or Blue-Cream kittens			
FATHER (SIRE)	MOTHER (DAM)	Male Kittens	Female Kittens
			

**Black bred to either Tortoiseshell or Blue-Cream will result in Black, Blue, Red, Cream, Tortoiseshell or Blue-Cream kittens**

FATHER (SIRE)	MOTHER (DAM)	Male Kittens	Female Kittens
	 <p style="text-align: center;"><b>OR</b></p> 	   	   

**Blue bred to Tortoiseshell  
will result in Black, Blue, Red, Cream, Tortoiseshell or  
Blue-Cream kittens**

FATHER (SIRE)	MOTHER (DAM)	Male Kittens	Female Kittens
		   	   

**Blue bred to Blue-Cream will result in Blue, Cream, or Blue-Cream kittens**

FATHER (SIRE)	MOTHER (DAM)	Male Kittens	Female Kittens
		 	 

**But, what about white?**

White is probably the most difficult to explain and understand. White is NOT a color.

The gene that results in a white cat is one that allows a "cover" or "mask" of white to hide the true color of the cat.





Many white cats are born with a spot of color on their heads, and that color will indicate the true color of the cat.

Therefore, a cat that appears to be white will breed the same as any of the other colors shown above, depending upon which color it "masks".



## What is a tabby pattern?

Each of the four solid colors (black, blue, red, cream) we have discussed can be combined with a tabby pattern. Tabby patterns can be with, or without, white. The four basic tabby patterns are classic, mackerel, spotted and ticked, as shown below:

<b>TABBY PATTERN NAME</b>	<b>DESCRIPTION</b>
<p style="text-align: center;"><b>Classic Tabby</b></p> <p>This is a Silver Classic Tabby American Shorthair</p>	<div style="display: flex; align-items: center;">  <div> <p>The Classic Tabby pattern can easily be noticed because the cat will have swirls and a circle on its side. It also has a "butterfly" pattern across its shoulders which lead into thick lines down the spine.</p> </div> </div>
<p style="text-align: center;"><b>Mackerel Tabby</b></p> <p>This is a Brown Mackerel Tabby and White Manx</p>	<div style="display: flex; align-items: center;">  <div> <p>The Mackerel Tabby pattern is defined by stripes instead of swirls. This pattern does not have a "butterfly", but it does have thinner spine lines than a Classic Tabby. The solid stripes on the body go from the spine to the belly.</p> </div> </div>
<p style="text-align: center;"><b>Spotted Tabby</b></p> <p>This is a Brown Spotted Tabby American Curl Shorthair.</p>	<div style="display: flex; align-items: center;">  <div> <p>The Spotted Tabby pattern has spots instead of lines. The spine lines will be spotted also.</p> </div> </div>
<p style="text-align: center;"><b>Ticked Tabby</b></p> <p>This is an Ebony Ticked Tabby Oriental Shorthair</p>	<div style="display: flex; align-items: center;">  <div> <p>The Ticked Tabby pattern is a little more complex in that each hair shaft has "bands" of light and dark color on it. Overall, you will see an evenness to the pattern and the cat will not obviously look like a "normal" tabby would.</p> </div> </div>

## Then, what is a Patched Tabby?

The blue and black (brown) colors can also be combined with red in a tabby pattern to make the cat a patched tabby. It can also be with, or without, white. Patched tabbies are always female.

### Patched Classic Tabby

This is an Brown Patched Classic Tabby and White Scottish Fold



All of the tabby patterns above can also be combined with red and/or cream to create a Patched Tabby.

The patched tabby will have splotches of red, or sometimes cream, scattered throughout the tabby pattern.

## What else will affect the color of a cat?

If a silver cat is introduced into a breeding program, that will affect the basic color of a cat. The cat will appear to be any of the above colors, but when the coat is parted you will see a white undercoat color. Depending upon the amount of color retained on the fur, the cat will be either a Shaded (more color) or a Smoke (least color).



This cat is a Tortoiseshell Smoke, and you can see the white undercoat showing through the color.

## What causes a cat to have just some white on it?

The white gene will sometimes interfere with color, and will restrict the color to certain parts of the body. Cats can have white in varying degrees – anywhere from a little white and lots of color, to half-white and half-color, to mostly white with only a bit of color, or have lots of color and just a little bit of white.

When a cat is a color plus white, it is called a Bi-color. When the white restricts the color to only the head and tail, the color pattern is called "Van". This cat is a Blue Patched Tabby and White Persian (Van).



Cats can also, occasionally, have white "loquets" (spots) in the throat area, or on their belly. This is not caused by the same white spotting factor that we have described above, and is often found in random-bred cats rather than pedigreed ones.

## What about pointed cats, like the Siamese?

Pointed cats have a special “Siamese” gene that limits the color to certain areas. Where the color appears is the coolest part of the cat, that is the head, paws and tail. The body is warmer, and stays a lighter color. As a cat gets older, the blood flow to the body will decrease causing it to cool somewhat. When that happens, you will see the color from the “points” start to appear on the body also.

Pointed cats can be found in all of the colors we’ve described above, but the color is only on the head, paws and tail. The cat shown is a Seal Point Siamese.



## Can a pointed cat also have white on it?

In certain breeds, like the Birman, the point color is combined with white. The Birman always has white restricted to its paws, because of a special white-spotting factor gene that confines white to the paws.

The cat shown is a Blue Point Birman with white “gloves” on its paws.

Another pointed breed that has white in restricted areas is the Ragdoll. It can either have white on its paws (in a different pattern than the Birman), or be a bi-color.



## Are colors called by other names than black, or red?

Yes, sometimes colors are called by other names. It often depends upon the breed what the name of the color is called. For example, a black Oriental is still a black cat, but it is called ebony.

The cat shown is an Ebony Oriental.

