

# Basic Feline Genetics

The following statements are generally true – but there are exceptions, including breed specific traits that are not covered here. **This information is not meant to be a complete manual on cat genetics.** For more information, please refer to more comprehensive books on the subject.

1. A red or cream kitten must have a red, cream, or tortoiseshell dam. A red or cream female kitten must also have a red or cream sire.
2. Tortoiseshell cats are almost always female, but males can and do occur occasionally (and are not always sterile).
3. A kitten with white spotting (calico, black and white, blue mitted, red bicolor, etc.) must have a parent with white spotting.
4. Two dilute cats (including blue, lilac, fawn, or cream) cannot produce a non-dilute color such as black, red, sable, seal point, chocolate, or cinnamon. The dilute gene must be present in both the sire and dam's pedigree in order to produce a dilute offspring.
5. Two chocolate cats (including lilac, chestnut, lavender, champagne, and platinum) cannot produce a non-chocolate color (such as black, sable, seal point, or ebony), but may produce a cinnamon kitten (including fawn). The chocolate gene must be present in both the sire and dam's pedigree in order to produce chocolate offspring. The same is true of the cinnamon gene. Two cinnamon cats cannot produce a kitten with chocolate or black coloration.
6. A tabby kitten must have a tabby parent. Tabby coloration includes lynx point, chinchilla, and shaded. The exceptions are red or cream cats, which may appear tabby ("ghost markings") without having a tabby parent. Whether or not a red or cream can produce as a tabby will depend on whether it is a genetic tabby (with a tabby parent) or whether it is a genetic non-tabby (without a tabby parent). A red or cream tabby that is not a genetic tabby cannot produce a tabby, lynx, chinchilla, or shaded offspring without being bred to a genetic tabby.
7. Two classic tabby parents cannot produce a mackerel or spotted tabby kitten.
8. A cat with a white undercoat (e.g. shaded silver, chinchilla silver, silver tabby, cameo, or smoke) must have a parent with a white undercoat.

9. A shaded or chinchilla kitten must have at least one parent with white undercoat and one parent that is tabby. Tabby coloration includes lynx point, chinchilla, and shaded.
10. Two colorpointed parents cannot produce a non-colorpointed offspring.
11. To get a colorpointed kitten, both parents must be carrying the colorpointed gene (even if they do not appear colorpointed themselves). A mink colored cat carries the colorpoint gene.
12. A white kitten must have at least one white parent.
13. The color white masks the underlying genetic coloration of the cat. A white cat breeds as both a white (the color you see) and as the masked coloration (which you don't see). The masked color/pattern can be determined through genetic testing, based on the white cat's pedigree, and/or through the analysis of the coloration of offspring. Interestingly, white kittens may have a small spot of color on top of their heads when born. This color should be noted as it can indicate the color that the white is masking. The spot of color may be visible for several months, but usually disappears as the kitten matures.
14. Two longhair parents cannot produce a shorthair kitten.

For further information on feline genetics, we recommend the following:

- Meow A Genetic Concert for Cats, Kerry Janet Fowler, 2017
- Robinson's Genetics For Cat Breeders & Veterinarians, Fourth Edition, Carolyn Vella, Lorraine Shelton, John McGonagle, Terry Stanglein, 1999.