

*Preface: This article was written many years ago. Today we do have color gene testing so test breeding is not necessary. Thank you to Mrs. Clark for allowing us to share this very interesting and informative article.*

## **BLUE RECESSIVE EXPLANATION!**

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A blue is recessive! Any dilute pigment is a recessive. Blue is a dilute pigment. A recessive needs two copies of the gene for it to be seen and both parents need to have it to produce it. Same with other recessives (other than coat color), and that's how something like a bad topline will show up when you breed a good topline to a good topline – both parents are carrying the recessive for a bad topline -- and who knows how many generations that could have been carried!! When it shows up in the produce, that dog is dominant because you actually see it on him. So back behind there someone bred to a bad topline!

Blue is a dilution of black. Fawn can carry blue and you not know it. Blue can carry fawn without being obvious. Fawns and blues are recessive colors. For example, if you breed two fawns you will never get other colors. Being a doubled recessive gene they can "hide" no other colors genetically. Black dogs on the other hand can exhibit black, but hide fawn and/or blue so when bred to another dog who is hiding those same colors, you could quite well produce black, fawn and blue in a given litter.

Each generation you have the same chance of passing it on. It does not get diluted. Each generation will have pups that either carry the fawn gene or they do not. If they do carry it, the next generation has the same odds of carrying it or not. It is all in the "drop of the beans". There is no set number you can use and say we have x amount of generations clear, so now we are color pure. The furthest back I have heard was a case many years ago in which they found the color 18 generations back.

I would say most of the blues and blacks in the USA do have fawn somewhere in the ancestry, so it would not be unusual for even a "color-pure" pedigree to produce fawns or blue-masked fawns. And of course it becomes all the more likely if the fawn is in the first few generations of the cross.

Blue and black people like to say their lines are color pure. You can never say that with 100% accuracy. The only way you can be fairly certain is to do a test breeding....breeding blue to fawn. If there are no fawns and it was a decent size litter, you can be fairly sure, but not positive. It could be just how those color gene beans happen to fall. You can do it over and over again and make yourself 99.99 percent sure....but there is always a slight doubt since it is impossible to prove a negative. You can, however, do this particular breeding (blue x

fawn) and have fawns thereby proving that you DO carry the fawn gene.

It is always important to keep in mind that recessive colors like blue and fawn MUST come from both sides of the pedigree. All too often people say, "Oh, that fawn came from the stud dog", or "The fawn came from the dam's side". In fact, it must have come from both parents and the appearance of fawn in a litter is conclusive proof that both parents carry the fawn gene.

A blue can hide fawn and a fawn can hide blue! That's because a blue dog is actually a black dog with two of those dilution genes. And since a black dog can hide fawn (or brindle), a blue dog could also hide it. Blue as we think about it genetically is not actually the steel-blue color you see on the dog. Blue is a double dose of a dilution gene that turns any black on the dog into a steel color that we call blue. Any

color can carry a single dilution gene, and can also express a double dose of the gene. A double-dilute brindle has blue stripes, a fawn has a blue mask, a merle or harl would have blue spots, and a black dog turns entirely blue. So you can certainly have a fawn Dane with a normal black mask that carries the dilution gene. This is how a fawn will hide blue.

A true color pure black/blue pedigree will predict color and prevent mismarks to a high degree of accuracy. But, it also limits options for breeding, and can put some fabulous dogs out of the reach of the "pure-color" breeder. A mix-color breeding opens a bigger gene pool and, if you really understand what you are doing, you can minimize any resultant mismarks and even produce genetically color pure offspring by doing those non-color-pure breedings.

This then is my explanation of why breeding mixed colors is not for the faint of heart.