

PUG COLOR- A MATTER OF PREFERENCE AND GENETICS

If you are a breeder and fan of fawn Pugs, you probably know that when you breed 2 fawn Pugs together, all the puppies will be fawn. If you are working with black Pugs, or a combination of blacks and fawns, the picture is a little more complicated.

It is possible to have your dog's DNA tested to see what color genes he carries. A dog gets 1 color gene from each parent. The combination of the 2 genes is called the genotype. A fawn gene is signified by the letter N and a black gene is signified by the letter K. In Pugs, the black gene is dominant which means that if your Pug has the gene combination KN, he will be black but will carry a fawn gene. This color expression, being black, is called the phenotype. All fawn Pugs have the combination of NN. Black Pugs can be either KK, which is called dominant black, or KN which is black carrying a fawn gene.

Looking at the various combinations of color genes when 2 Pugs are bred are shown here.

KEY:

	Parent	
Parent	Puppy	Puppy
	Puppy	Puppy

	K	K
N	KN	KN
N	KN	KN

	K	N
N	KN	NN
N	KN	NN

	K	N
K	KK	KN
N	KN	NN

	K	K
K	KK	KK
N	KN	KN

The pairings illustrate the percentage of what genetic combinations could appear in a litter. For instance, a KN dog bred to an NN dog could produce a litter where half of the puppies are fawn (or NN) and half of the puppies are black carrying fawn (KN). This is where the whole picture falls apart and mother nature can get the last laugh. Depending on how the genes come together during fertilization, the 50:50 ratio may not hold and the litter could be born all fawn, all black or any other ratio. The only thing that will absolutely hold true is that the puppies can only be KN or NN.

Do not be alarmed if, when testing a dog that is KN, that it is noted on the report that the combination can be seen in dogs with a brindle pattern, such as Great Danes. While it is reported like this, it does not mean the N in the Pug is brindle, because brindle is not a normal variation in a purebred Pug. The only naturally occurring accepted colors are black and fawn. More genetic research is ongoing in the area of coat color in dogs so there may be information available in the future but this article attempts to explain the basics.

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