White Cats

Genetics of Colour Variation and Breeds
from 'Genetics for Cat Breeders' by Roy Robinson

The completely white animal with orange, blue or odd eyes (one eye orange, the other blue), is due to the dominant gene ***W***. The short-haired breed is *L-W* and the long-haired is ***llW-***. The gene is fully dominant, hence the presence of one gene is sufficient to create a solid white animal. The majority of whites are in fact heterozygotes ***(Ww***), mainly it seems because of a propensity of breeders to cross the white to a black or blue, either to improve eye colour (in the case of the orange-eyed variety), coat quality or body type. There is no disadvantage in this; indeed in skilled hands, the results can be beneficial. The deep orange eye, so desired for the orange-eyed variety, will only be achieved or maintained by breeding from the better animals in this respect.

The blue or odd-eyed white is engendered by one of the expressions of the ***W*** gene. In addition to producing the white coat, the gene also produces blue eyes. It does not do this in all animals (otherwise the orange-eyed variety would not exist) but in a fair proportion of cats. The completely blue-eyed for appears more frequently than the odd-eyed, as a rule. If a breeder prefers the blue-eyed variety, only matings between blue-eyed animals should be made. This is the only method by which the chances of breeding blue-eyed kittens can be maximized. However, the occurrence of either orange- or blue-eyed kittens is such a chancy business that the breeder has little control over the breeding at will of any particular eye colour The mating of orange-eyed animals together can produce blue-eyed kittens and vice versa. The occurrence of the odd-eyed cat is even more a chance event and there is little prospect of these ever being bred to order.

The deafness associated with the blue-eyed variety is an expression of the ***W*** gene. Not all blue-eyed white cats are deaf nor do all orange-eyed white animals have normal hearing. The proportion of deaf animals is fairly low, but too high for any complacency in the opinion of many people. In a protected environment, deafness is not a major hazard although deaf queens can be indifferent mothers because they cannot respond to the piping of kittens. Most people object to the presence of deafness on ethical or aesthetic grounds because it distracts from the wholesomeness of the cat. The only practical method of counteracting the deafness is not to breed from detectable deaf individuals. The deafness will probably never be totally eradicated but attempts can be made to keep the incidence at a low level.

It is possible to create a true breeding strain of blue-eyed white cats by combining the ***cs*** and ***W*** genes. The genotype ***cscsWW*** will be blue eyed due to cs and white due to ***W***. This animal has indeed been produced in the lithely built Foreign White. It is unfortunate that deafness may be a recurring problem. Much will depend in this connection upon the effectiveness of keeping the incidence at a low level.

The completely white coat should not be taken at its face value of an apparent absence of all other coat colour genes. This false idea occasionally finds expression in the belief that the mating of a white cat with a coloured will produce offspring of the same colour as that of the coloured parent. A few matings will soon show that the belief is untrue. In general, white cats may carry a variety of genes masked by the whiteness and unexpected results will occur. Sometimes close study of the parentage of a white cat can give a good idea of the genes which may be carried by the animal and the results which may be expected from various matings.

Source: **Genetics for Cat Breeders**, Third Edition, by Roy Robinson, F.I. Biol.; ©Pergamon Press, 1991; ISBN 0-08-037506-5