

# BREEDING FOR COLOUR

LORNA NEVE

Presented to the Poodle Club Seminar 1976 and reprinted by kind permission of the Poodle Club of NSW, from National Dog April 1984

The subject of breeding for colour is both an interesting one and a frustrating difficult one. Interesting as all genetics are, and difficult as most aspects of breeding for a purpose are, particularly with a slight uncertain science like genetics.

The word "Colour" as it relates to dogs and, in particular, Poodles is somewhat automatically thought to relate to coat colour, but it also relates to colour of eyes, points i.e. nose, eye rims, lips and toenails, and also to skin. I shall deal with coat, colour principally and touch on the other aspects briefly, as breeding for colour in Poodles is I think, mainly an attempt by a breeder to obtain Poodles of a predetermined COAT colour.

The Standard of the Poodle calls for a solid colour – in fact all solid colours are permissible. What is solid colour? The "solid" regard as meaning "without variation and without intervals of one colour breaking up the basic single colour." Breeders of Poodles must breed for dogs of a colour without variation and without any colour breaking up the basic colour. The Standard lists as faults "white markings on black or coloured Poodles, lemon or other markings on white Poodles" which seems superfluous if the Poodle must be a solid colour. However, it is obvious that the Solid Colour is a must. Shadings of colour on ear fringes, topknot, bracelets and some times even body coat are allowed up to 1 months of age not beyond.

## WHAT IS COLOUR?

The body cells of the dog contain a substance called melanin, which causes pigment to form and colour the dog. The density of that pigment and accordingly the darkness or richness of colour or, conversely, the lightness or paleness of colour is determined by the quantity and size of the granules of melanin in the body cells. The great density of melanin the darker or richer the colour. The affects not only coat but nose, eye rims, toenails, lips and skin.

The genes in the body's chromosomes control what the colour will be, how it will be distributed and the rate at which graying or paling from birth to old age will occur.

## COLOUR GENETICS

The body cells contain chromosomes for the growth, development, maintenance and procreation of all body tissues. These chromosomes contain genes which control the ways in which the body tissues will grow, develop, etc. A puppy inherits its genes from its parents and these genes are present in pairs - one inherited from the mother. We are concerned with the gene pairs which affect the colour of that puppy.

There is general agreement amongst geneticists on the fact that basically all dogs are either black or brown or yellow. The most usual form of colour in dogs with the range of colours such as Poodles have is black. Genes for colour production come in a number of forms and these are:-

### Dominant genes

- colouring black in Poodles.

### Recessive genes

- colouring brown
- apricot\*
- silver\*
- blue\*
- white\*
- cream
- Most usual in Poodle

### Modifying genes

- variations of above
- diluting or preventing production of colours developing in coats

## DOMINANT GENES

Whilst both of the parents carry in their gene pairs for colour a pair of genes for black they will only produce black coated puppies. However, when one parent carries a gene pair for black and the other for a recessive gene colour, such as brown in its gene pair, then whilst all their puppies will be black, some of them will carry a recessive brown gene and when any of those puppies are mated to another carrying a gene for brown then they will, generally, produce some brown-coated puppies.

When one parent is black and carries a gene pair for black and the other parent is brown then, all their puppies will be black but all possessing a gene pair made up of one for black and one for brown. Again when mated to another carrying a brown gene or a pair of brown genes they will produce some brown puppies usually in the ratio of 1 to 1 for black parents and 1 to 3 for one black and one brown parent.

The dominant gene will always overlay or mask the other gene, which will only produce its colour when a dominant

gene is not present in its gene pair. Thus if one is breeding for a particular colour in Poodles other than black, then the black dominant gene must be eliminated from the breeding stock, allowing the gene for the colour required to predominate.

## RECESSIVE GENE

All colours in Poodles, other than black, are generally produced by introduction of what I called recessive genes for another colour – brown, apricot, blue, silver etc. These genes are called 'recessive' because they recede in the presence of dominant genes and will only reappear when the dominant gene is absent.

## INHIBITING GENES

Some whites carry inhibiting genes, preventing colour from developing in the coat, the basic colour of black or brown showing only on the nose and foot pads. Another type of white is an extreme dilution of apricot or cream, when an apricot or cream becomes snow white, due to the combination of several types of dilution genes. Most white Poodles are of the latter type.

## SILVER MODIFYING GENES

When a pair of silvering genes modifies the basic black, a silver dog with a black nose is the result. When a pair of silvering genes modifies the basic brown, a silver beige dog with a brown nose is the result. A silver beige is always born a chocolate brown and the silvering process is the same as in silvers, the silver beginning in the extremities. On maturity the product is a lovely shade of silvery brown, so silver beige is one shade of diluted brown.

The shade of silver or silver beige is affected by the presence or absence of other types of dilution genes, therefore care must be taken that silver or most especially silver beige does not verge on white due to too many dilution genes further diluting colour.

It is wiser to breed silver Poodles back to blues when the colour becomes too washed out; in this way they recover the deeper sterling or the higher platinum silver colour.

## APRICOT MODIFYING GENES

Apricots are known as the red yellow series said to be completely different from the brown, the red yellow genes are being carried on a different chromosome. In contrast to the common silvering genes that dilute coat colour after birth apricot genes change the coat colour before birth.

When a black dog carries a recessive apricot gene, the result of a mating with an apricot bitch is a puppy born apricot with a black nose. When a brown dog carries a recessive apricot gene, the result of a mating with an apricot bitch is a puppy born apricot with a brown nose. If either carry other dilution genes along with the apricot the puppies will dilute to either cream or white, sometimes after birth, sometimes before, depending on which or all of several pairs of dilution genes being carried.

Some people who have not had experience with apricot breeding have mistakenly carried silver beige 'apricot'. It is important to know what is silver beige and what is apricot and other dilute shades, as apricot should definitely NOT be bred to any type of dilute brown. Puppies resulting from an apricot and shade of brown cross, could be any colour depending on the presence or absence of various recessive genes carried by the particular parents (more favourable for black puppies predominating in number). There would be no purpose to such a mating, as if one of the puppies turned out to be apricot, because of a recessive apricot gene being carried by the silver beige parent, the puppy would not stay apricot due to the dilution genes it received from the parent. Also any subsequent generations would show some brown noses in apricot and cream produced.

Care should be taken to avoid too much dilution of both apricot and silver beige colours in Poodles. Silver beige is a lovely colour of silver/brown if it does not dilute too far, remember that silver beige is inseparably connected to a brown nose and we do NOT want brown nosed creams. Silver beige can be bred to dark silver beige, silver or brown carrying a silver gene.

Apricot is best bred to apricot with only the darkest kept for breeding purposes. We do have apricot genes in the Poodle breed. They cannot be manufactured by combining colours, separate apricot genes are present in some Poodles, however, being recessive it takes a pair (one from each parent to show up). Silvering genes are probably the most common genes than dilute an apricot born puppy to a cream, so by selection we should make a special effort to separate silvering genes from apricot. A pair of brown genes produce brown nosed puppies, since our ideal apricot has black points we should try to eliminate the brown gene. Apricot can also be bred to black in an effort to darken colour, provide the blood lines of the stock are well known.

No black and tan marking genes should be present recessively. If the black and tan marking genes are present, some puppies will be black and tan or brindle or black born

apricots. The black born apricots and brindle born apricots do not breed true when mated to apricot born apricots, nor do they prove to be a better apricot colour in the adult. They usually mature into creams with black ear fringes, thus making them not a solid colour.

The ideals of good temperament and good confirmation must always be considered above coat colour; what good is a red apricot dog that hardly resembles a Poodle?

## MISMARKS

Coats with patches lighter in colour than the ground colour are usually found on the chest or feet and legs but they can extend to the head and ears are mismarked coats. Sometimes only a few hairs (which usually blend in on maturity) and sometimes large patches, these are known as harlequins in the UK and are bred exclusively as pets, as they cannot be registered with the kennel control. I have found mismarks seldom appear in a first colour cross, but the following generation generally produces it, even when two of the same colour are mated together.

When black is mixed with another colour it will take at least five (and possibly many more) test matings before the breeder is certain that the recessive gene colour has been eliminated. In this process type may have been completely sacrificed for the sake of colour and it will then take many generations to get good Poodle type back.

When two recessive colours are mated the result may be anything and good colour may be lost forever, and even if good type is retained, it is not very pleasing without good colour.

Remember, when breeding for colour, always breed for colour which will breed true in future generations. The best breeding is colour to its own colour and for this line-breeding is always safe providing type (conformation and temperament), balance and soundness are up to a good standard in the line.

If you must do otherwise (and it's definitely not recommended) then keep to those colours which are closely identified with the colour of your breeding Poodle. You will, most likely, be very disappointed in the result if you are not careful.

