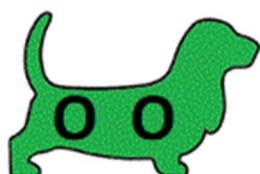


EXPLANATION OF SIMPLE AUTOSOMAL RECESSIVE INHERITANCE

- All of the genes inherited by dogs are contained within 39 different sets of chromosomes. Within those sets of chromosomes, there are thought to be approximately 19,000 genes that code for specific proteins, the building blocks for every living organism.
- Any chromosome between number 1 and 38 is called an Autosome. The 39th 'X/Y' chromosome determines the sex of the dog.
- Chromosomes (and therefore genes) are inherited in pairs, with one copy of each being inherited from each parent.
- With all diseases that are inherited as simple autosomal recessive traits, every dog can be classified genetically in one of three ways:



GENETICALLY CLEAR

This dog has inherited TWO NORMAL COPIES (OO) (one from each parent) of the gene associated with a particular disease. It will not itself have the disease and it cannot pass on a mutant copy of the gene to its offspring.



GENETIC CARRIER

This dog has inherited ONE NORMAL COPY (O) of the gene from one parent and ONE MUTANT COPY (X) from the other parent. A Carrier will not itself have the disease, but (on average) it will pass on a MUTANT copy of the gene to approximately HALF its offspring.



GENETICALLY AFFECTED

This dog has inherited TWO MUTANT COPIES (XX) of the gene (one from each parent). It will usually suffer from the disease (although clinical signs may not always develop during its lifetime). GENETICALLY AFFECTED dogs will ALWAYS pass on a MUTANT copy of the gene to their offspring.

PARENTS

Puppies (Expected Proportions)

CLEAR Parent + CLEAR Parent



100% CLEAR Puppies



CLEAR Parent + CARRIER Parent



50% CLEAR Puppies + 50% CARRIER Puppies



CLEAR Parent + AFFECTED Parent



100% CARRIER Puppies



CARRIER Parent + CARRIER Parent



25% CLEAR, 50% CARRIER, 25% AFFECTED Puppies



CARRIER Parent + AFFECTED Parent



50% CARRIER, 50% AFFECTED Puppies



AFFECTED Parent + AFFECTED Parent



100% AFFECTED Puppies

