

ABC's of Dog Breeding

Study Guide

Lesson 1, Part 1 -Genetics

- 1. REALIZE THE IMPORTANCE OF GENETICS IN A BREEDING PROGRAM**
 - Using basic rules of science can be a short cut to breeding better and healthier dogs.
- 2. COMMON MISCONCEPTIONS AMONG BREEDERS**
 - Linebreeding beginning in the 4th generation or beyond has a big genetic impact on a litter.
 - The pedigree is more important than the individual dog.
 - The Tail Male/Tail Female theory has validity.
 - Breeding to the relative of a favored ancestor is the same as breeding to the favored ancestor itself.
- 3. BE FAMILIAR WITH THE BASICS OF CHROMOSOMES AND GENES**
 - A dog has 39 pairs of chromosomes, of which genes form a part. A puppy receives 50% of its genes from its sire and 50% from its dam. Genes determine how each trait will look.
 - Define allele, locus, homologous chromosome and linkage.
- 4. UNDERSTAND HOW GENES ARE PASSED ON TO OFFSPRING.**
 - Be familiar with the analogy of 2 storage cases of architect's plans containing computer disks and pages of information stored on the disks.
- 5. KNOW THE BASICS OF CANINE REPRODUCTION.**
 - Understand the difference between mitosis and meiosis.
 - Know how sperm and eggs divide and how chromosome swapping works.
 - Understand the example of how ears are made on a puppy.
- 6. KNOW WHAT CROSSING OVER TELLS US**
 - Breeding revolves around chance and randomness.
 - Each littermate inherits a different set of genes.
 - A sire and dam may pass on a concentration of genes from their own sire and dam, which are the future puppy's grandparents. It's genetically possible for a puppy to resemble a grandparent with regard to a particular feature.

7. UNDERSTAND THE SEX CHROMOSOMES AND AUTOSOMES

- Sex chromosomes are the 39th pair of chromosomes and determine the sex of a puppy.
- The female carries 2 X chromosomes and the male carries one X and one Y chromosome.
- An autosome is any chromosome that is not a sex chromosome. Autosomes carry genes for body structure and temperament.