RELATIONSHIPS?
by Lial Kofoed

In conversation with other breeders we've all heard words such as linebreeding and inbreeding used, but I wonder how many breeders really could define these terms correctly. Another common topic of conversation is how closely one's own dogs are related to other animals. Often statements such as "my dog is a half-brother to Ch. Longtail" or "my dog is a grandson of Ch. Leftear" are heard. I suspect many of those who make such statements have no idea what these relationships really mean, in fact probably not many could accurately define the word relationship.
In order to test this hypothesis I offer the following quiz. Answers and a short explanation are found immediately following the quiz.

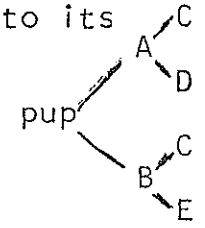
1. Relationship is most accurately defined as:
   a. the number of traits which look the same between the dogs in question.
   b. the % of common genes above the number of common genes in unrelated animals of the same breed.
   c. the amount of "common blood" as determined by the number and location (in pedigree) of common ancestors.

2. Animals with all 8 great grandparents in common but with different grandparents are _____ related.
   a. 100%
   b. 75%
   c. 25%
   d. 12½%

3. Littermates are_____ related.
   a. 100%
   b. 75%
   c. 50%
   d. 25%

4. A pup is _____ related to its sire.
   a. 100%
   b. 50%
   c. 25%

5. This pup is _____ related to its double grandsire C:
   a. 100%
   b. 50%
   c. 25%
   d. 12½%



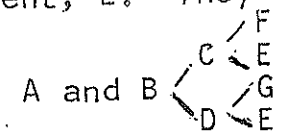
6. Linebreeding is best defined as:
   a. breeding of closely related animals.
   b. a form of inbreeding in which the relationship to a selected ancestor is kept relatively high.

c. mating of slightly related animals.

7. Half brothers are ____ related.
   a. 100%
   b. 50%
   c. 25%
   d. 12½%

8. Full cousins (2 grandparents in common) are ____ related.
   a. 100%
   b. 50%
   c. 25%
   d. 12½%

9. A and B are littermates with C and D as their parents and one common grandparent, E. They are ____ related.
   a. 100%
   b. 75%
   c. 56½%
   d. 33%



10. Double first cousins (all four grandparents the same) are ____ related.
    a. 100%
    b. 75%
    c. 50%
    d. 25%

11. Animals with one common grandparent are ____ related.
    a. 50%
    b. 25%
    c. 12½%
    d. 6¼%

12. A pup is ____ related to its grandparents.
    a. 50%
    b. 25%
    c. 12½%
    d. not related.

.....

Answers:

1. The correct answer is B. Relationship should tell you how many genes two animals have in common that they don't have in common with other unrelated animals of the same breed. Answer A is one way to guess relationship, but not a precise definition. Answer C may have thrown a few of you. "Blood" is an old breeders' term that relates to common anscestors, not common genes. For example, littermates have 100% the same "blood" but only only 50% related since each pup gets only some of the genes from each parent.

2. The correct answer is D. This is an example of how easy it is to confuse "blood" with relationship. Although

all the great grandparents were the same, different offspring of them were used, each with some different genes, so that by the time their genes filtered through three generations through three different pathways only 12½% fo the genes went both ways.

3. The correct answer isC. Each pup gets ½ of its genes from each parent, but the half they get will vary, so that from each parent ½ of the genes they get should be the same. There are two parents, so ½X½ (from each parent) X 2 (since there are 2 parents) equals the common gene percentage.

4. The correct answer is B. Of course a pup gets half of its genes from each parent.

5. The correct answer is B. The grandsire gave half his genes to each parent, and each parent gave ½ of that ½ (or one fourth) to the pup, so one fourth X 2 equals ½.

6. The correct answer si B. A is the definition used for inbreeding. C could be either mild inbreeding or linebreeding but since no mention of the selected anscestor is made it is not really the essential definition. The pedigree in problem #5 is an example of linebreeding to dog C.

7. The correct answer is C. Only half the genes of these dogs come from the common parent, and only an average of ½ of that half will be the same, so ½X½ equals one fourth

8. The correct answer is D. Similar reasoning to problem #2 applies here. If all four grandparents were the same the relationship would be ½ squared, or one fourth, but since only two are the same it's half that, or one eighth

9. The correct answer is C. You will remember that littermates are usually 50% related. Here the fact that the parents are related, through dog E, increases the probability that they will give common genes to their pups so the answer is over 50%, in fact 56 and one fourth %.

10. The correct answer is D. See problem #8 for explanation.

11. The correct answer is D. Here the relationship is ½ squared, divided by four, since one of four possible grandparents is the same.

12. The correct answer is B. I think you can figure this out. If you have problems, see the answer to #5.

This is probably a pretty hard quiz, and a score of 5 or more right indicates pretty reasonable knowledge. If you get less you need not feel bad, but just don't make rash statements about relationships! I hope you found this informative and worth your time. (P.S. I couldn't have gotten a perfect score without looking up some of the answers either.)

from Evergreen State SSC Echo