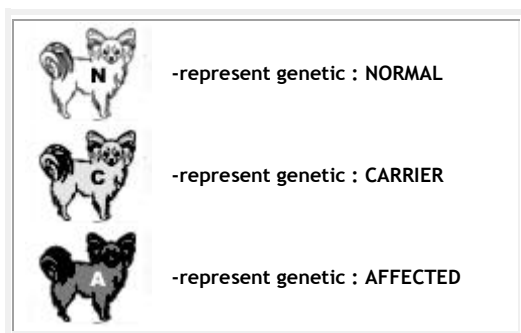


Papillon Club of America Health & Genetics



RECESSIVE GENE INHERITANCE PATTERN

GENETIC CHART
Applicable to GM-1 and PRA

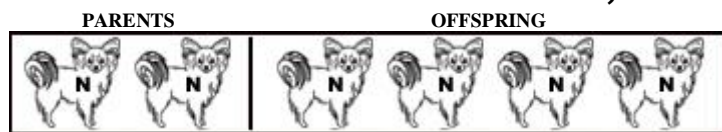


These are only six possibilities for mating.
Each of our dogs is the product of one of these six breeding combinations.

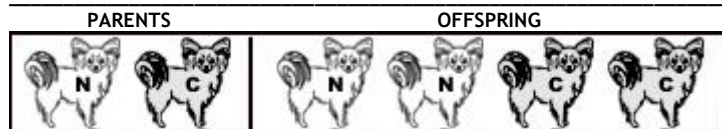
Both GM-1* and PRA, Progressive Retinal Atrophy, are recessive genes.

This chart can be applied to the genetic inheritance pattern of each disease.

EXPECTED AVERAGE RESULT, BASED ON A MINIMUM OF 16 PUPPIES



Both parents are NORMAL, not carrying the recessive gene.
100 % of the puppies will be NORMAL.



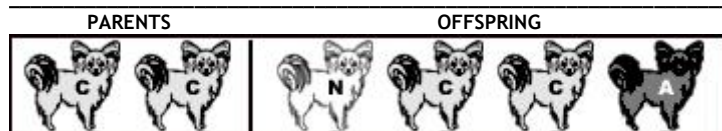
One parent is NORMAL, one parent is CARRIER of the recessive gene ... 50 % of the offspring will be NORMAL, 50 % will be CARRIERS.

In "Storage" disease Carriers can be detected by a blood assay. In PRA, Carriers can not be detected that easily thus pedigree analysis is critical



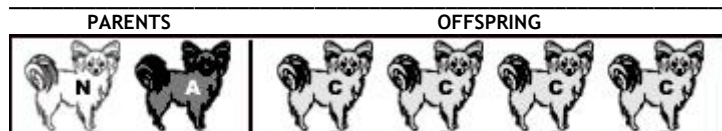
An AFFECTED parent will always produce CARRIER offspring. In this situation, only 50 % of the offspring will be AFFECTED, but the other 50 % will still be CARRIERS.

AFFECTED individuals used for breeding automatically identify their offspring's as CARRIERS.



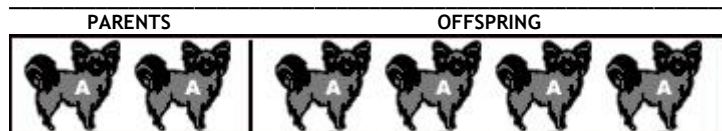
CARRIER to CARRIER breedings will produce 25 % AFFECTED offspring ; 25 % NORMAL offspring ; and 50 % CARRIERS.

In "Storage" disease, the process of genetic identification has been simplified for us. In PRA, the identification of the different offspring's genetic make-up is extremely complex.



An AFFECTED parent will always produce 100 % CARRIER offspring.

AFFECTED parent breed to NORMAL parent will not produce any AFFECTED offspring, but they will all be CARRIERS.



AFFECTED parent bred to AFFECTED parent will always produce all AFFECTED offspring.