

Primary Open Angle Glaucoma (POAG)

Affected breeds: Basset Hound, Basset Fauve de Bretagne, Petit Basset Griffon Vendeen

Glaucoma is a serious eye condition in which there is a build-up of pressure in the eye caused by inadequate drainage of fluid from within the eyeball. POAG can eventually lead to blindness. In affected dogs the condition becomes apparent at 4-6 years of age (Basset Hound, Basset Fauve de Bretagne) and 3-4 years (Petit Basset Griffon Vendeen).



The mutation is recessive, which means that dogs which carry the mutation ("CARRIERS") are normal but will pass it on to an average of 50% of their offspring. Puppies which inherit two copies of the mutation will develop POAG ("AFFECTED").

This test is particularly useful for breeders:

- To identify carriers among their breeding stock so that they can avoid CARRIER X CARRIER mating combinations which would risk AFFECTED puppies.
- To conclusively confirm POAG

This test will be reported as:

CLEAR : no evidence of the POAG mutation

CARRIER : carries one copy of the defect, which will be passed to 50% of offspring

AFFECTED : carries two copies of the defect, and will have POAG

The genetic status of dogs can be used to predict breeding outcomes when different combinations are mated:

CLEAR X CLEAR = 100% CLEAR

CARRIER X CLEAR = 50% CARRIER, 50% CLEAR

CARRIER X CARRIER = 25% AFFECTED, 50% CARRIER, 25% CLEAR

CLEAR X AFFECTED = 100% CARRIER

CARRIER X AFFECTED = 50% AFFECTED, 50% CARRIER

AFFECTED X AFFECTED = 100% AFFECTED

References

Oliver, J. A., Forman, O. P., Pettitt, L., & Mellersh, C. S. (2015). Two Independent Mutations in ADAMTS17 Are Associated with Primary Open Angle Glaucoma in the Basset Hound and Basset Fauve de Bretagne Breeds of Dog. *PLoS one*, 10(10), e0140436. <https://doi.org/10.1371/journal.pone.0140436>

Forman, O. P., Pettitt, L., Komáromy, A. M., Bedford, P., & Mellersh, C. (2015). A Novel Genome-Wide Association Study Approach Using Genotyping by Exome Sequencing Leads to the Identification of a Primary Open Angle Glaucoma Associated Inversion Disrupting ADAMTS17. *PLoS one*, 10(12), e0143546. <https://doi.org/10.1371/journal.pone.0143546>