

Factor VII Deficiency

Affected breeds: Deerhound, Beagle

Inherited factor VII deficiency is a disorder which affects the clotting mechanism of the blood. Blood clotting is an important response to wounding, in order that blood loss is controlled. Although Factor VII deficiency is considered one of the less severe clotting disorders, and affected individuals generally live normal lives, the condition could prove dangerous in the case of an accident or if surgery were necessary.

A mutation which causes Factor VII deficiency is present in the Beagle and Deerhound populations, and several other breeds. It is a recessive condition, which means that dogs which carry the mutation are healthy but will pass the mutation to on average 50% of their offspring. Dogs which inherit two copies of the mutation will be **AFFECTED**. The strict elimination of **CARRIERS** from breeding should be avoided, as rapid selection will endanger the gene pool.

This test is particularly useful for breeders:

- To identify **AFFECTED** dogs so that vets can be informed if the need for surgery arises, or if drugs which affect clotting are recommended.
- To identify **AFFECTED** dogs in which injury or wounds may result in excessive bleeding.
- To reduce the likelihood of **AFFECTED** puppies by informed breeding.

This test will be reported as:

CLEAR : no evidence of the Factor VII mutation

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

AFFECTED : carries two copies of the mutation, and will have Factor VII deficiency

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

AFFECTED X AFFECTED = 100% **AFFECTED**

AFFECTED X CARRIER = 50% **AFFECTED**, 50% **CARRIER**

AFFECTED X CLEAR = 100% **CARRIER**

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

CARRIER X CLEAR = 50% **CARRIER**, 50% **CLEAR**

References

Callan MB, Aljamali MN, Margaritis P, Griot-Wenk ME, Pollak ES, Werner P, Giger U High KA (2006) A novel mutation for factor VII deficiency in research beagle colonies. Journal of Thrombosis and Haemostasis 4: 2616-2622