## Late Onset Ataxia (LOA)

**Affected breeds:** Parson Russell Terrier, Jack Russell Terrier

Late onset ataxia is noticed as a gradual loss of coordination when moving, and a loss of balance, which develops at between 6 – 12 months of age. The condition is progressive, with walking becoming difficult as the disease progresses. Owners often decide on euthanasia as affected dogs will often fall and have difficulty standing up.

Another test for ataxia in the PRT and JRT, known as SCA (Spinocerebellar Ataxia) is also available. There are also as yet unidentified mutations which cause other forms of ataxia in these breeds.

Late Onset Ataxia is caused by a recessive genetic mutation. This means that dogs which carry the mutation ("CARRIERS") are normal but will pass the mutation on to an average of 50% of their offspring. Puppies which inherit two copies of the mutation are at very high risk of Late Onset Ataxia ("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 Late Onset Ataxia in an affected dog

**This test will be reported as:**

**CLEAR** : no evidence of the Late Onset Ataxia mutation
**CARRIER** : carries one copy of the defect, which will be passed to 50% of offspring
**AFFECTED** : carries two copies of the defect, and are at very high risk of LOA

**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
AFFECTED X CLEAR = 100% CARRIER
CARRIER X CARRIER = 25% AFFECTED, 50% CARRIER, 25% CLEAR
AFFECTED X CARRIER = 50% AFFECTED, 50% CARRIER
AFFECTED X AFFECTED = 100% AFFECTED

**References**

Forman OP, De Risio L, Mellersh CS (2013) Missense Mutation in CAPN1 Is Associated with Spinocerebellar Ataxia in the Parson Russell Terrier Dog Breed. PLoS ONE 8(5): e64627. doi:10.1371/journal.pone.0064627