

Lethal Acrodermatitis (LAD)

Affected breeds: Bull Terrier, Miniature Bull Terrier

Lethal Acrodermatitis (LAD) is characterised by poor growth, immune deficiency and skin lesions particularly on the paws. There is no affective cure for the condition, which is unfortunately lethal within a few months.

LAD causes severe retardation of growth, thick skin and painful blisters on the muzzle, eyes, nose, ears, feet, and mucous membranes which eventually leads to pneumonia and death. The most commonly affected areas are the muzzle, ears, feet, legs, and groin. Most breeders can recognize the disease in the puppy by the time it is six to eight weeks old because it is less than half the size of the other puppies in the litter and has flat, splayed feet with dermatitis.



LAD 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 will develop LAD ("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 LAD in an affected dog

This test will be reported as:

CLEAR : no evidence of the LAD mutation

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

AFFECTED : carries two copies of the defect, causing LAD

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

CLEAR X CLEAR = 100% CLEAR

References

Bauer, Anina et al. "MKLN1 splicing defect in dogs with lethal acrodermatitis." PLoS genetics vol. 14,3 e1007264. 22 Mar. 2018, doi:10.1371/journal.pgen.1007264