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Genetic testing for Lethal Acrodermatitis (LAD)

We are pleased to inform you about research progress regarding lethal acrodermatitis (LAD) in Bull Terriers and Miniature Bull Terriers. After intensive research in an international consortium we identified the causative genetic defect for LAD.

LAD is inherited with monogenic autosomal recessive inheritance. Thanks to the results of our study, genetic testing for LAD will become possible at specialized laboratories. This will help to avoid the non-intentional breeding of affected puppies. Starting January 15th, 2018, the genetic test will be offered by

Animal Health Trust (<http://www.ahtdnatesting.co.uk/>)

Antagene (www.antagene.com)

Genoscooper Laboratories (www.mydogdna.com, offering later in spring 2018)

PennGen (<http://research.vet.upenn.edu/penngen>)

The University of Bern will not provide a genetic test for LAD.

Explanation of the genetic test result:

There are two copies of each gene in the genome of a dog. One copy is inherited from the father and one from the mother. If a trait is inherited in an autosomal recessive manner, it means that an animal will only get the disease if it receives defective gene copies from both the father and the mother. Thus, to produce an affected puppy, both parents (father and mother) must carry the defective gene. However, the carriers with only one copy of the defect will not be affected themselves.

Lethal acrodermatitis (LAD) - Autosomal recessive inheritance		
Genotype: normal/normal (clear)	Genotype: normal/LAD (carrier)	Genotype: LAD/LAD (affected)
This animal does not carry the genetic defect and has no risk of developing LAD. The dog cannot pass the genetic defect to its offspring.	This animal carries one copy of the defective gene. The dog has no risk of developing LAD. However, this defect will be passed to its offspring with a probability of 50%. Such an animal should only be mated to a clear animal.	This animal carries two copies of the defective gene and is affected by LAD. Most LAD affected dogs will have to be euthanized before they reach one year of life due to poor quality of life.

Carriers have a 50% probability of passing the defective gene copy to their offspring. If two carriers are mated, there is a risk that 25% of the offspring will be affected by LAD. Therefore, the mating of two carriers should be strictly avoided (also legally forbidden in many countries). Carriers do not have to be categorically excluded from breeding. However, carriers should only be mated to clear dogs so that no homozygous affected puppies will be produced.

Breeding Advice:

We do not yet have an accurate estimate for the frequency of the LAD genetic defect in Bull Terrier or Miniature Bull terrier populations. However, the defect is recessive, which means that all dogs can be bred from safely, but carriers (and genetically affected dogs) should only be bred to DNA tested, clear dogs. About half the puppies from any litter that has a carrier parent will themselves be carriers and any dogs from such litters that will be used for breeding should themselves be DNA tested prior to breeding so appropriate mates can be selected.