



DNA test found for the inherited form of Dilated Cardiomyopathy (DCM) in both Standard Schnauzers and Giant Schnauzers

Recent research, at the Animal Molecular Genetics Lab at the University of Missouri College of Veterinary Medicine (UoM), discovered a gene mutation responsible for Dilated Cardiomyopathy (DCM) in young Standard Schnauzers and found the same mutation in a family group of Giant Schnauzers.

What is DCM?

Dilated cardiomyopathy (DCM) is a disease of the heart muscle, characterised by an enlarged heart that does not function properly. This often leads to congestive heart failure. The condition presents itself in all breeds but is usually (as in humans) a relatively 'late-onset' condition.

In a number of breeds, a hereditary factor has been found which causes the condition to appear at a much earlier age than would be considered 'normal'. Generally, the incidence of DCM in dogs increases with age, usually affecting dogs between four and ten years old. However, evidence suggests that some breeds (e.g. Dobermanns, Cockers) have a genetic susceptibility to the disease. In most breeds, male dogs are more susceptible to the disease than females.

An inherited form has recently been identified in Standard Schnauzers. The condition is known to present itself between 10 & 14 months and, almost without exception, once diagnosed; the condition is fatal within a matter of weeks or months, despite the best possible medication.

The same gene mutation has recently been found in a family group of Giant Schnauzers.

The major symptoms of DCM include lethargy, anorexia, rapid and excessive breathing; shortness of breath; coughing; abdominal distension; and transient loss of consciousness.

UoM research, using randomly selected DNA of 862 Schnauzers, showed 76% were 'Normal', (having 2 normal copies of the gene); 182 (21%) to be 'carriers', (having one normal and one mutated copy) and 22 (3%) 'Affected', (having 2 copies of the same mutated gene). Where their DNA was available, relatives of 'affected' dogs were also analysed. All tested parents found to be 'carriers'. Results from 'related'

dogs were found to be a mixture of 'Normal' and 'Carrier', as would normally be expected.

This research in Schnauzers also proved that the mutation was not restricted to any one coat colour, to any one family group or distinct bloodlines. The UoM College of Veterinary Medicine team is continuing to characterise the disease in Schnauzers and seeks information from breeders or owners of any Schnauzer diagnosed with DCM.

What does this mean for the breed in the UK?

Although not previously identified by the 3 UK health surveys ('09/'11/'13), a case of a 13 month old imported Schnauzer was reported to breed clubs in April, 2014.

In Standard Schnauzers, because the UoM research shows some 21% of the breed tested to be 'carriers', it must be worthwhile for breeders, especially those wishing to use imported or overseas dogs (irrespective of coat colour) in their breeding programme, to screen potential breeding partners and/or resultant puppies, for the mutation causing DCM. This would allow them to avoid the possibility of pups destined to be affected with DCM in future generations, whilst maintaining a diverse and healthy gene pool.

Mutation found in Giant Schnauzers

Testing of a UK Giant diagnosed with DCM, found the same mutation as presented in Standard Schnauzers (where it presented in both 'Pepper & Salt' and 'Black' coat colours). The affected dog's litter (9 pups) and parents were tested; both parents carried one copy of the mutation; 3 puppies were 'Normal'; 3 puppies were 'Carriers'; 3 puppies 'Affected'. UoM were keen to stress that they have not tested enough Giant Schnauzers to give any estimate of frequency of the mutation in this breed or a predisposition of coat colour.

Concerned Giant Schnauzer breeders may order the same DCM test available to Standard Schnauzer owners, through UoM's partnership with the Offa (Orthopedic Foundation for Animals) by going to www.Offa.org

Is there a clear way forward for Schnauzers and Giants?

Most definitely; YES! The DNA test is a (relatively simple to use) cheek swab and barcoded card to collect and send DNA for analysis.

The fee for new samples is \$65 (currently around £40.00).

With this test, it is possible for caring breeders of both sizes worldwide to reduce or eliminate DCM from our breeds. If a dog (dog or bitch) is found to be a carrier, its gene pool does not need to be lost to future generations. Simply by ensuring that the selected partner is 'Clear', no puppies would be 'Affected' and by testing

the whole litter, future breeding plans can be centred on 'Clear' pups. This ensures caring breeders are doing everything possible to ensure this condition is eradicated.

How can I organise a DNA test for DCM for my dog?

The DNA test is available through OFA at www.offa.org, (yes, 2-f's!!) – then look to the left side of the page for the link that says ORDER DNA TESTS and follow the links there to order the test. OFA staff will send a kit to collect DNA which uses a cheek swab and barcoded card – the card is what is mailed back to the lab for testing, and then OFA will report results. The card is specially treated to stabilize the DNA and does not need special handling on the trip to the lab.

The fee for new samples is \$65 (currently around £40.00).

Will the breed or Clubs know the result?

Not unless you want to be open with the Breed Clubs and fellow breeders – it is entirely your decision. UoM shares new information with the worldwide Schnauzer community, but only in analytical (numeric) terms, as it becomes available. If you don't wish your dog's name to be mentioned – it won't be. Finally UoM (and all caring Schnauzer & Giant owners) express their thanks to all the owners and breeders, mainly in the US, who supplied samples and information that helped make their discovery possible.

Finally:

Liz Hansen (UoM's research coordinator) said of a deceased 14 month old 'affected' :

"Too young, gone too soon – very sad".

It's worth underlining two other comments she made, which has relevance for all UK Schnauzer and Giant breeders & owners alike:

"... it's wise to use this DNA test as a tool, and one more trait to consider when making breeding choices. Choose carefully, but don't throw the good out with the bad."

With the DNA test now available, the breed(s) are able to retain the widest possible genetic diversity, so 'carriers' can be used in breeding programmes and 'normal' puppies used in future breeding plans. But probably her most important advice to all our breeders was:

"It's best to test, and go forward with knowledge."