Genetic Investigation of Intervertebral Disc Degeneration (IVDD) in Dachshunds

Herniation of the intervertebral disc (a "slipped disc") is a significant problem in dogs and a common cause of pain and difficulty walking. Although dogs of any breed can be affected, Dachshunds are 10–12 times more likely to suffer than other breeds, indicating the disorder probably has a genetic component and mutations in specific gene(s) play a role in the development of the condition.

Understanding the genes involved with the development of any inherited disease is beneficial because it can help predict which dogs are most at risk of developing the disorder and passing it on to their offspring, as well as helping the long term development of better therapies and treatments for some disorders.

Geneticists at the Kennel Club Genetics Centre at the Animal Health Trust (AHT), in collaboration with veterinary neurologists at the Centre for Small Animal Studies at the AHT, and Stone Lion Veterinary Hospital and the Dachshund Breed Council are embarking on a study to investigate the genetics of IVDD in Dachshunds, with the aim of developing a genetics tool that breeders can use to reduce the prevalence of the disease.

In 2011 a research group at the University of Copenhagen, led by Dr Merete Fredholm, published findings from their study investigating the genetics of disc calcification. Calcification, and degeneration of the disc are known risk factors for disc herniation. (Mogensen et al.). Their findings provided convincing evidence that gene’s on canine chromosome 12 (CFA12) affect the development of intervertebral disc calcification in the Dachshund.

In the UK Dachshunds are not routinely screened to assess their degree of disc calcification, so collecting DNA from dogs that we are confident have no, or few, calcified discs is very difficult. For that reason our study will focus on collecting DNA from dogs with herniated discs (cases) and comparing it with DNA from Dachshunds that are over 10 years of age and have no history of back pain (controls). Although not ideal controls (because we have no clinical data for these dogs), we hope that owners will be rigorous and only send us DNA from dogs that have genuinely never displayed any back pain at any time during their lives.

Phase 1 of our study will be to compare genetic markers on CFA12 between the cases and controls to see if there is a difference between the two sets of dogs. If there is this will be evidence that the genes controlling disc calcification also have a role to play in the development of disc herniation. If Phase 1 is successful we will move to Phase 2, which will be to try to pinpoint the precise mutations that are causing disc calcification/herniation. The successful identification of mutations will enable us to develop a DNA tool for breeders to use to reduce the prevalence of IVDD in the Dachshund.

Please see overleaf for details of the types of Dachshund that can contribute to our study:
What does our study need?

We need DNA from two classes of Dachshund:

1. **Cases.** Dachshunds, of any variety, that have been diagnosed with disc herniation by a veterinary neurologist. Please provide a copy of the MRI or other relevant reports.
2. **Controls.** Dachshunds, of any variety, that are over the age of 10 and have **NO** history of back pain.

The DNA can be collected via a simple cheek swab that owners can take themselves. We need DNA from at least 48 cases and 48 controls before we can progress with Phase 1 of the study.

If your Dachshund qualifies as either a case or a control please consider donating a DNA sample to contribute to the important research study.

Many thanks

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