



Canine Genetics Progress Report

Breed: Miniature Schnauzer

Condition: Hereditary Cataract

Date: June 2009

Recent / Current Funding:

Funding Body: Kennel Club Charitable Trust

Amount: £250,000

Start Date: 01.03.2006, duration 36 months

The above grant is specifically to study Hereditary Cataract (HC) and Progressive Retinal Atrophy (PRA) in the Golden Retriever, the Tibetan Spaniel and the American Cocker Spaniel but it is our intention to also study any breeds for which we can collect sufficient samples.

Sample Collection

To date we have DNA samples from 170 Miniature Schnauzers (MS) in storage, submitted from nine countries: UK, Czech Republic, Sweden, Finland, USA, Denmark, Norway, Germany and Spain. Of these 57 have cataracts in at least one eye, 97 had clear eye certificates at the time their samples were submitted and for the remaining dogs we have no eye information. Before he sadly died in March Dr Keith Barnett examined all the eye certificates/reports from the dogs with cataracts and in his opinion

14 of the samples are from dogs affected with congenital hereditary cataract (CHC). Because the remaining 21 dogs with cataracts that he examined originated from a number of different countries, have been examined by several different ophthalmologists and have a variety of different types of cataract it is difficult to be confident which have hereditary forms of cataract. For this reason we decided to focus initially on CHC.

Active Research

Early in 2009 we initiated experiments to assess the quantity and quality of DNA from all 14 CHC cases and 20 controls. For the controls we chose the oldest dogs we had samples from that had clear eyes at the time of examination. This quality control procedure was in preparation for genotyping the samples with 22,000 genetics markers, as part of a Whole genome Scan (WGS), in an attempt to identify marker associated with CHC.

Unfortunately the amount and/or the quality of DNA for some of the samples was insufficient for a WGS. This can happen sometimes, for a variety of reasons, and our usual policy is to contact owners of dogs for which we have insufficient DNA, and ask for a repeat sample. We contacted the owners of 15 dogs to request additional samples, including a swab kit with each letter. Unfortunately we only received replacement samples from 3 dogs (1 affected, 2 controls). The total number of samples for which we have sufficient, high quality DNA for a WGS is unfortunately only 13, of which only 2 are from CHC affected dogs. Regrettably this small number of samples will not yield meaningful results from a WGS so we are unable to proceed at this time.

Additional Samples

We will need to collect more samples from Miniature Schnauzers with CHC before we can progress with a WGS. The 14 dogs with CHC for which we already have samples are not old dogs, so we would expect that the majority might still be alive and available for providing a repeat sample. If this is the case we would urge their owners to please

consider providing a new sample, and if they need a new swab kit to please contact the AHT (bryan.mclaughlin@aht.org.uk).

We will also continue to collect samples from Miniature Schnauzers with other forms of cataracts. We will collate the clinical details of their opacities, in an attempt to identify sufficient that are affected with clinically similar cataracts to undertake a WGS to identify markers associated with that form of cataract.

Additional Funding

The funding from the Kennel Club Charitable Trust has now expired. As part of the project we purchased sufficient high-density SNP arrays (the materials used for undertaking WGSs) to analyse the DNA from 432 dogs. We had nominated up to 48 for the Miniature Schnauzer study but due to the problems with samples highlighted above we have had to re-allocate those arrays to other breeds, because the arrays have a limited shelf life and the 3-year funding period was formally coming to an end.

The Kennel Club has extended funding to the Animal Health Trust over the next five years; these funds will be used to provide core salaries for the Canine Genetics Group staff so the work we do will continue. However, this does mean that additional funding for a WGS will need to be sought, as and when we have collected sufficient DNA samples from affected dogs.