



GRANT PROGRESS REPORT SUMMARY

Grant: 01312: *Association mapping study of Legg-Calve-Perthes Disease in the West Highland White Terrier, Yorkshire Terrier, and Cairn Terriers*

Principal Investigator: Dr. Alison Starr-Moss, PhD

Research Institution: Clemson University

Grant Amount: \$78,688.00

Start Date: 1/1/2010 **End Date:** 6/30/2013

Progress Report: End-Year 3

Report Due: 12/31/2012 **Report Received:** 1/9/2013

Recommended for Approval: Approved

(Content of this report is not confidential. A grant sponsor's CHF Health Liaison may request the confidential scientific report submitted by the investigator by contacting the CHF office. The below Report to Grant Sponsors from Investigator can be used in communications with your club members.)

Original Project Description:

Background: Legg-Calve-Perthes Disease (LCPD) is a debilitating developmental disease that affects small breeds of dog, particularly terrier breeds. The only outward indications of this condition are pain, lameness, and muscle atrophy of the hip joint. These signs are not exclusive to LCPD, and are often attributed to minor trauma during the early stages of disease. LCPD is primarily diagnosed by radiographic changes of the femoral head within the hip joint. Due to the developmental nature and the unknown etiology of the disease, LCPD is difficult to predict and prevent. No disease mapping strategies have been employed to date.

Objective: This study is using the Affymetrix canine single nucleotide polymorphism (SNP) chip to identify regions that are linked to LCPD in the West Highland White Terrier, Yorkshire Terrier, and Cairn Terrier breeds.

Grant Objectives:

Objective 1: Sample collection and phenotype confirmation. Collect a total of 200 samples with a minimum of 50 per breed.

Objective 2: Probe SNP array for genome wide association



Publications:

Starr-Moss AN, Nowend KL, Alling KM, Zepp EJ, Murphy KE (2011) Exclusion of COL2A1 in canine Legg-Calvé-Perthes disease. *Animal Genetics*. doi:10.1111/j.1365-2052.2011.02215.x

Report to Grant Sponsor from Investigator:

This study aims to identify genomic regions associated with Legg-Calve-Perthes Disease (LCPD) in terrier breeds, including West Highland White Terriers (WHWT), Yorkshire Terriers (YT), and Cairn Terriers (CT). To this end, we have completed a preliminary association study in a subset of our study population. One candidate gene has been sequenced in WHWT and excluded as being involved in canine LCPD.

Our initial goal was to collect blood samples from 200 dogs of three breeds; however insufficient numbers of study participants were obtained. Two additional breeds, Schipperkes (Schip) and Fox Terriers, have increased the numbers of study participants from 76 to 179. Relatedness among study participants is currently being assessed; thus the total number of samples available for the full-scale study are expected to be fewer than the total number presented here. These numbers still may not be sufficient to detect an association, given that LCPD is believed to be genetically complex, and we are examining five breeds as opposed to three. Plans for the remaining grant period include 1) genotyping the remaining WHWT, YT, CT, and Schip samples with the Illumina SNP array, 2) completing data analysis for the total study population.