



AMERICAN KENNEL CLUB
**CANINE HEALTH
FOUNDATION**
PREVENT TREAT & CURE

GRANT PROGRESS REPORT REVIEW

Grant: 01311: *Genome-wide association mapping study of hypertrophic osteodystrophy in Irish Setters*

Principal Investigator: Dr. Keith E. Murphy, PhD

Research Institution: Clemson University

Grant Amount: \$74,237.00

Start Date: 1/1/2010 **End Date:** 12/31/2011

Progress Report: 6 month

Report Due: 6/30/2010 **Report Received:** 8/4/2010

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: Hypertrophic osteodystrophy (HOD) is a debilitating, metabolic bone disease that, in mild cases, can lead to deformation of mature bone, and in severe cases, can require euthanasia of affected dogs. At present, the cause of HOD is unknown. Most cases of HOD are observed shortly after vaccinations, the most often proposed causes are distemper virus infection, post-vaccination infection, bacterial infection, or other viral infections. The predominance of HOD in several breeds of dog suggests a heritable component of the disease. Due to the complex nature of the immune system and its many components, analysis of candidate genes would have to be exhaustive.

Objective: The researchers aim to identify genes involved in HOD with the whole genome association mapping using the canine single nucleotide polymorphism (SNP) chip. This resource will identify regions exhibiting linkage with HOD. Such regions will then be assessed for gene(s) involved in the disease.

Grant Objectives:

Objective 1: Sample collection and phenotype confirmation. Collect a total of 200 samples.

Objective 2: Probe SNP array for genome wide association.

Publications:

Report to Grant Sponsor from Investigator:

Hypertrophic Osteodystrophy (HOD) is an orthopedic disorder that afflicts puppies of large breeds. This study aims to dissect the genetic component(s) of HOD in the Irish Setter through genomic analyses. Genotypes for each dog will be assigned using computer algorithms and analyzed using statistical software. Genomic regions that produce statistically significant scores will be further examined for candidate genes. Two hundred samples are anticipated for the completion of this work: 100 normal, and 100 HOD-affected. Of these, 51 have been collected (25 normal, 26 affected). Only 32 (12 normal and 20 affected) fit the inclusion criteria (unrelated with confirmation of clinical status) thus far. The samples having met the inclusion criteria have been used in preliminary work. Preliminary data generated from 32 Irish Setter samples banked in the CHIC DNA repository have provided a potential region of interest, but this association is tenuous at best. Additional samples are required to complete the full-scale analyses. Both HOD-affected and normal samples are needed. Interested owners willing to participate in the study are referred to submission forms and instructions found at www.clemson.edu/cgr. All samples will be submitted to the OFA CHIC DNA repository. Questions regarding this study should be directed to Dr. Alison Starr (astarr@clemson.edu).