RESEARCH PROGRESS REPORT SUMMARY

Grant 01843: Further Investigation of the Genes Controlling Canine Leukemia to Properly Diagnose and Control the Disease

Principal Investigator: Dr. Matthew Breen, PhD
Research Institution: North Carolina State University
Grant Amount: $131,265.00
Start Date: 1/1/2013  End Date: 12/31/2014
Progress Report: Mid-Year 2
Report Due: 6/30/2014  Report Received: 7/30/2014

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:

Leukemia represents a range of cancers, most often classified according to the type of blood cell affected and the clinical progression. Leukemia may be chronic, progressing slowly for many years with minimal symptoms, or acute, with sudden onset and rapid progression of symptoms, often resulting in euthanasia. The true incidence of leukemia in dogs is unknown, but there is consensus that many cases remain undiagnosed. Identification of characteristic genome alterations in many human blood cancers has identified changes that are associated with different cancer subtypes. Several of the subtypes have been shown to have better response to therapy and thus correlate with prolonged survival. In previous studies we have shown that canine leukemia presents with characteristic chromosome changes shared with those present in the human counterparts. In humans such aberrations have been linked to therapeutic response and this prognostic association is used to drive clinical management. In this multicenter study we will use high-resolution genome-wide cytogenetic evaluation to screen a large cohort of canine leukemia patients for the presence of recurrent cytogenetic changes, characteristic of the known major subtypes. This study will enhance our understanding of the pathogenesis of canine leukemia by identifying regions of the canine genome, and thus genes, that may be critical for the control of these cancers. Additionally, this study will provide data with translational value to impact our knowledge of the corresponding human disease.)
Grant Objectives:

To determine whether major subtypes of canine leukemia are associated with diagnostic DNA copy number aberrations.

Publications:


Report to Grant Sponsor from Investigator:

We have completed the molecular profiling of the cases proposed and identified regions of the canine genome that may be used a predictors of subtype. We continue to integrate the canine data with data from several hundred human cases and have been able to identify numerous shared changes, many of which are associated with prognosis in human patients. As such, knowing that the underlying genomics is shared, we are moving toward developing a means to able to accurately diagnose canine leukemia and also to suggest possible treatments that may improve outcome, as in human patients.