



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

## GRANT PROGRESS REPORT REVIEW

**Grant:** 00613: *The Prognostic Significance of Chromosome Aneuploidy in Canine Lymphoma*

**Principal Investigator:** Dr. Matthew Breen, PhD

**Research Institution:** North Carolina State University

**Grant Amount:** \$113,929.00

**Start Date:** 8/1/2008      **End Date:** 7/31/2011

**Progress Report:** 24 month

**Report Due:** 7/31/2010      **Report Received:** 9/9/2010

**Recommended for Approval:** Approved

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*(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: Lymphoma is the most common life-threatening cancer in dogs, accounting for up to 24 percent of all canine malignancies. A large proportion of canine lymphomas are responsive to chemotherapy, increasing both the length and quality of an affected dog's life. However, there is considerable difference in the response to therapy working and overall survival time. This shows that there is a need to develop more improved forms of classification. In human lymphoma, the use of cytogenetics has been used to show the presence of frequent chromosome abnormalities that have both diagnostic and predictive importance. In previous studies the researchers have identified frequent chromosome abnormalities in canine lymphoma, including copy number changes (aneuploidy) of dog chromosomes 6, 15, 16, and 18.

Objective: In this project the researchers will use molecular cytogenetics to study a collection of lymphoma specimens, taken from dogs that were all treated with the same chemotherapy procedure as part of a clinical trial. This approach will allow us to determine if these frequent copy number abnormalities are able to predict response. This project hopes to increase the sophistication of diagnosis and life expectancy for canine lymphoma.

**Grant Objectives:**

Objective 1: Test the hypothesis that recurrent chromosome copy number aberrations (aneuploidy) in canine lymphoma have prognostic significance.

**Publications:****Report to Grant Sponsor from Investigator:**

During the first two years of this project, we showed that pooling DNA from overlapping BAC clones results in a more robust fluorescent signal in interphase analysis than using a single BAC clone and provides a higher signal to noise ratio. We generated the DNA used for the probes being used for this project en masse. Cells were isolated from 200 of our 315 archival patient samples and prepared for multicolor FISH analysis. Cytogenetic analysis of 160 archival cases was completed. Data for the copy number status of each of the four loci being tested in this project was assessed and statistical evaluation indicated that one of the four loci may be associated with disease free interval in canine lymphoma patients treated with single agent doxorubicin.

We now have entered into a NCE to allow us to continue with rigorous data analysis and to investigate the biology underpinning some of the discoveries at no cost to CHF.