# RESEARCH PROGRESS REPORT SUMMARY

**Grant 02534:** Clinical Trial for Evaluation of Propranolol and Doxorubicin in the Treatment of Canine Hemangiosarcoma


**Principal Investigator:** Erin Dickerson, PhD

**Research Institution:** University of Minnesota

**Co-Investigators:** David R. Brown, PhD; University of Minnesota, Michael O. Childress, DVM, MS; Purdue University, Jennifer Mahoney, DVM and Pascale Salah; University of Pennsylvania



**Grant Amount:** $334,306.00

**Start Date:** 7/1/2019 **End Date:** 6/30/2023

**Progress Report:** End-Year 3

**Report Due:** 6/30/2022 **Report Received:** 7/1/2022


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**Original Project Description:**

Canine hemangiosarcoma is a largely incurable cancer in dogs, and treatment approaches to improve outcomes have remained relatively stagnant over the past few decades. Treatment remains a challenge partly because the cancer is frequently detected at an advanced stage and because these tumors are often resistant to chemotherapies. Recently published reports showed that propranolol, a drug used to treat heart disease in humans and dogs, substantially increased the survival time of human angiosarcoma patients when used in combination with standard of care treatments. Propranolol was also shown to sensitize hemangiosarcoma cells to doxorubicin, providing a more effective way to kill tumor cells. Because angiosarcoma is strikingly similar to canine hemangiosarcoma, this multi-institutional clinical trial has been designed to determine the efficacy of propranolol in dogs with hemangiosarcoma when used in combination with surgery and chemotherapy. The main goal of the study is to establish whether propranolol in combination with doxorubicin following surgery improves outcomes for dogs when compared to the use of chemotherapy and surgery alone. The investigators will also evaluate the plasma concentrations of propranolol achieved during dosing to assess whether the levels of propranolol correlate to survival times. If successful, the findings from this approach will be rapidly conveyed to the veterinary community, and the guidelines provided to clinicians for the use of propranolol and doxorubicin for the treatment of canine hemangiosarcoma.

**Publications:** None at this time

**Presentations:**

A summary of the study design and goals was given at the annual Veterinary Cancer Society meeting held November 4-6, 2021 (virtual meeting). The presentation was part of a special session on hemangiosarcoma.

An overview of the study was presented at the 12th Biennial AKC Canine Health Foundation National Parent Club Canine Health Conference (NPCCHC) held August 9-11, 2019 in St. Louis, MO

A summary of the study design was presented at the annual meeting of the Veterinary Cancer Society, held November 4-6, 2021 (virtual meeting).

A summary of the study design and pre-clinical data supporting the rationale for the study were presented to the Minnesota Veterinary Medical Association at their annual meeting, held February 10-11, 2022 (virtual meeting).

**Report to Grant Sponsor from Investigator:**

We opened the trial on July 1, 2019. As of June 27, 2021, we have enrolled 18 dogs in the study and no dose limiting toxicities within the initial 21-day assessment period have been observed. Based on these results, we are continuing to enroll dogs at the highest dose of propranolol (1.3 mg/kg) being tested.

Propranolol and doxorubicin levels in the blood from all of the dogs enrolled to date have been analyzed.

Currently, five dogs enrolled in the study are alive while thirteen dogs have succumbed to their disease. Two of the dogs have survived for more than two years. These dogs have graduated from the study, but we are continuing to monitor their progress. Three other dogs are alive, and one of these dogs will reach the 1-year survival milestone in approximately 12 weeks. The other two dogs are approaching their 9-month and 6-month milestones. We are excited about the potential for a third dog reaching the one-year milestone, and we are optimistic regarding the other two dogs who continue to do well.

We have completed the analysis of drug levels (propranolol and doxorubicin) in the blood samples.

Due to delays related to the pandemic, we requested an extension of the study in order to provide a complete follow-up (up to one year) for all of the dogs enrolled.