



RESEARCH PROGRESS REPORT SUMMARY

Grant 02536-MOU: Immunoprofiling to Combat Canine Immune Thrombocytopenia

Principal Investigator: Marjory Brooks, DVM and Dana LeVine, DVM, PhD

Research Institution: Cornell University and Iowa State University

Grant Amount: \$16,106

Start Date: 8/1/2018 **End Date:** 1/31/2021

Progress Report: End-Year 2

Report Due: 7/31/2020 **Report Received:** 8/14/2020

(The content of this report is not confidential and may be used in communications with your organization.)

Original Project Description:

Autoimmune disease develops in dogs when their immune system destroys normal healthy cells in the body. Immune thrombocytopenia (ITP) is a serious bleeding disorder that results from immune destruction of platelets, small blood cells that play a critical role in preventing bruising and bleeding after injury. Old English Sheepdogs and Cocker Spaniels appear to have a susceptibility to ITP, however, ITP afflicts all dogs regardless of breed. Dogs with ITP develop bruises and, in the most severe cases, may bleed from the intestinal and urinary tract or have fatal blood loss. Fortunately, most dogs survive ITP, but may relapse months to years after a first episode. The treatment of ITP involves protracted courses of potent immunosuppressive drugs that impact quality of life for both dog and owner. This study will use a genetic approach to understand what causes ITP. The investigators will identify laboratory markers that predict bleeding severity to aid veterinarians in treatment selection. The goals of this research are to improve ITP diagnosis and predictions of relapse, leading to targeted therapies that minimize treatment side effects.

Funding for the research is provided through the collaborative efforts and generosity of the Old English Sheepdog Club of America and English Cocker Spaniel Club of America Health and Rescue Organization. The AKC Canine Health Foundation supports the funding of this effort and will oversee grant administration and scientific progress.



Publications:

Makielski, K. M., Brooks, M. B., Wang, C., Cullen, J. N., O'Connor, A. M., & LeVine, D. N. (2018). Development and implementation of a novel immune thrombocytopenia bleeding score for dogs. *Journal of Veterinary Internal Medicine*, 32(3), 1041–1050. <https://doi.org/10.1111/jvim.15089>

A draft publication “A Flow Cytometric Assay and Preparation of Assay Controls for Detection of Platelet Bound Antibodies and Platelet Membrane Abnormalities in Clinical Studies of Canine Immune Mediated Thrombocytopenia” is in preparation and will be submitted for review to Veterinary Clinical Pathology.

Presentations:

Cornell University: Internal medicine seminar 01/18/19: “Canine Immune Thrombocytopenia”

An abstract is being presented as an eposter at the 2020 ACVIM virtual on-demand forum “Immune Profiles of Cocker Spaniels and Old English Sheepdogs, Breeds Predisposed to Autoimmune Blood Disorders” (authors: Barchilon M, Viall A, Gagne J, Phalen E, Boggiatto P, Schaut R, Jeffery U, Brooks MB, LeVine DN.)

Another abstract has been submitted for presentation at the the 62nd American Society of Hematology Annual Meeting and is currently under review.

Report to Grant Sponsor from Investigator:

We have now reached 80% of the target number of dogs to perform ITP genetic studies and our second batch of samples is now being analyzed. This total includes 43 dogs from breeds with known susceptibility to immune blood disorders (19 Old English Sheepdogs, 24 American and English Cocker Spaniels). We are still in need, however, of more samples from a comparison group of “aged” dogs in these breeds with no prior history of blood disorders. For our second aim of biomarker development, we have now reached 70% of our target number of dogs. Early analysis of data is beginning to show patterns of abnormalities to help differentiate cases with an underlying disorder from dogs with “true” autoimmune platelet destruction.