RESEARCH PROGRESS REPORT SUMMARY

Grant 02536-MOU: Immunoprofiling to Combat Canine Immune Thrombocytopenia

Principal Investigator:	Marjory Brooks, DVM
Research Institution:	Cornell University
Grant Amount:	$16,106
Start Date: 8/1/2018	**End Date:** 1/31/2022
Progress Report:	End-Year 3
Report Due: 7/31/2021	**Report Received:** 8/2/2021

(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.

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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

An original report "Preliminary Evaluation of a Flow Cytometric Assay with Controls for Detection of Platelet Bound Antibodies in Canine Immune Thrombocytopenia " has been resubmitted for review to the journal *Veterinary Clinical Pathology*.

Presentations:

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

An abstract was presented at the 2020 ACVIM forum:
*Barchilon M, Viall AK, Gagne JE, Phalen EE, Boggiatto B, Schaut RE, Jeffery U, Brooks MB, LeVine DN. Immune profiles of Cocker Spaniels and Old English Sheepdogs, breeds predisposed to autoimmune blood disorders. E-poster presentation, Research Abstract Program of the 38th ACVIM Forum on Demand. Virtual. July 2020. *Journal of Veterinary Internal Medicine*. 2020; 2020; 34: 2905.

Report to Grant Sponsor from Investigator:

We have now reached our target numbers of dogs for both study aims! Our requests for samples for genetic studies from Old English Sheepdogs and Cocker Spaniels yielded 25 control samples (aged dogs with no blood disorders) and 23 ITP cases. These samples will be analyzed along with 78 samples from other ITP cases representing many other breeds to screen for genetic markers of autoimmune platelet destruction.

For our second study aim, we now have a total of 102 cases. After the recruitment phase ends in August, we will begin testing banked samples from these dogs to measure inflammatory markers. This data will then be combined for analysis with the dogs' clinical signs of bleeding, treatment and transfusion history, and overall survival. Our early findings are showing patterns of laboratory test abnormalities that seem to differentiate dogs with "true" autoimmune platelet destruction from those with an underlying disease process. Our additional data analyses will help determine if we can find tests that predict which dogs have the most severe forms of ITP to better individualize their therapy. This will spare dogs with mild disease the side effects of aggressive treatment while letting veterinarians know that they need to more aggressively treat those with markers of severe disease.

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