RESEARCH PROGRESS REPORT SUMMARY

Grant 02428: Identifying the Disease-Defining Autoantibodies in Canine Addison's Disease

Principal Investigator: Steven Friedenberg, DVM, PhD

Research Institution: University of Minnesota

Grant Amount: $181,864.00

Start Date: 3/1/2018 **End Date:** 8/31/2020

Progress Report: End-Year 1

Report Due: 2/28/2019 **Report Received:** 2/28/2019

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

Original Project Description:

Addison's disease is a common and life-threatening disorder in dogs in which the body's immune system destroys the outer layer of the adrenal glands. The adrenal glands produce hormones that are critical for energy metabolism, immune system function, intestinal health, and kidney function. Symptoms of Addison's disease can mimic other conditions, and as a result, many dogs remain undiagnosed for years. About one-third of dogs with Addison's disease are diagnosed only after suffering an acute adrenal crisis, which can cause a wide range of complications that require emergency stabilization and hospitalization. Today, there is no way to predict which dogs will develop Addison's disease before they become sick. If such a test were available, veterinarians would be able to evaluate high-risk dogs before they show signs, helping to prevent disease-related complications and potentially enabling earlier treatment. In this study, the investigator will use a novel approach combining gene and protein sequencing to identify the antibodies that target the adrenal glands in Standard Poodles, Portuguese Water Dogs, and English Cocker Spaniels with Addison's disease. These antibodies are produced by the immune system before the onset of clinical signs. The ability to identify these antibodies would therefore provide a test for early diagnosis. This research will contribute to progress in developing an important clinical test for Addison's disease that can help improve the lives of the many dogs at high risk of developing this life-threatening condition.

Publications: None at this time.

Presentations: Presentations were given at the Poodle and English Cocker Spaniel national specialty shows to promote sample collection as part of this research project.

Report to Grant Sponsor from Investigator:

During the first year of this project, we focused our efforts primarily on sample collection across our three target breeds (Standard Poodles, Portuguese Water Dogs, English Cocker Spaniels). We have collected nearly all the required control samples from Standard Poodles and Portuguese Water Dogs. We have also collected the majority of the newly diagnosed and older, affected Standard Poodles and Portuguese Water dogs required. Currently, we are focusing our efforts on increasing the number of English Cocker Spaniels we have enrolled in the study. We are also actively recruiting newly diagnosed patients across all three breeds through many online resources.

In addition to these sample recruitment efforts, are actively working with several core facilities at the University of Minnesota (histopathology, proteomics) to optimize the methods we will use to detect serum autoantibodies in dogs with a new diagnosis of Addison's disease. We expect to optimize these methods over the next 2-3 months. Once this has been completed, we will begin to analyze the samples we have collected for the presence of anti-adrenocortical autoantibodies.