



RESEARCH PROGRESS REPORT SUMMARY

Grant 02550: The Role of Bartonella spp. Exposure and Cardiac Genetic Variation on the Clinical Expression of Arrhythmogenic Right Ventricular Cardiomyopathy in the Boxer Dog

Principal Investigator: Edward Breitschwerdt, DVM
Research Institution: North Carolina State University
Grant Amount: \$63,105
Start Date: 2/1/2019 **End Date:** 1/31/2022
Progress Report: End-Year 2
Report Due: 1/31/2021 **Report Received:** 1/27/2021

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Original Project Description:

Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) in the Boxer dog is an adult onset, familial disease characterized by the presence of ventricular arrhythmias, fainting and sudden death. The investigators have identified a causative mutation in the cardiac Striatin gene that is highly associated with the development of Boxer ARVC, and have demonstrated that some Boxer dogs with the mutation have a more severe form of the disease and will become quite sick while others will remain free of clinical signs. The reason for the variability in clinical signs is unknown but is thought to be associated with concurrent factors for an individual dog which could include a role for chronic infections, as well as genetics, hormonal levels, or other external factors including diet or exercise. The range of disease manifestation of Bartonella infection in dogs is broad, but has been shown to infiltrate the heart muscle, and has also been identified in human beings with ARVC. The investigators hypothesize that chronic *Bartonella* spp. infection may lead to the development of a more severe form of Boxer ARVC. Understanding the role of this, and other infectious diseases, in the severity of ARVC may greatly improve the ability to manage this common and sometimes fatal heart disease.

Publications:

Due to the early stage of enrollment, we have no publications at this time.

Presentations:



Due to the early stage of enrollment, we have no presentations at this time.

Report to Grant Sponsor from Investigator:

We are on track to accomplish all of our aims for this study, though have increased the study period to reach our enrollment goals and have continued to experience delays in test results and recruitment because of the SARS-CoV2 pandemic. We have thus far enrolled nearly half of our proposed study population. Of the currently enrolled dogs, nearly one third have died or been euthanized and we have collected tissues from over half of those. Based on the preliminary results from the Boxers tested so far, detection of *Bartonella* spp. using routine methods (blood tests) in Boxers with ARVC is unlikely. However, multiple dogs have had evidence of *Bartonella henselae* infection when alternative samples were collected, including cheek swabs and skin biopsies obtained post-mortem.