



RESEARCH PROGRESS REPORT SUMMARY

Grant 01935-B: Abnormalities in the Stomach's Ability to Contract Predisposes Large-Breed Dogs to Bloat

Principal Investigator: Dr. Laura L. Nelson, DVM

Research Institution: Michigan State University

Grant Amount: \$233,774.00

Start Date: 1/1/2014 **End Date:** 6/30/2017

Progress Report: End-Year 3

Report Due: 12/31/2016 **Report Received:** 1/10/2017

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

Original Project Description:

Gastric dilatation-volvulus (GDV or bloat) is a devastating disease common in large and giant-breed dogs. Occurring most frequently in older dogs with a close relative who has also suffered the condition, the stomach becomes both displaced and distended with air. Without emergency medical stabilization and surgical intervention, affected dogs quickly experience shock, damage to the stomach wall, and death. Most of the research relating to GDV has described risk factors for the disease, determinants of outcome with treatment, and the effectiveness of preventive surgery (gastropexy). However, the underlying cause of GDV remains unknown. Abnormalities in the ability of the stomach to contract have been documented in dogs after naturally-occurring GDV. An analogous stomach condition in cattle, left-sided displacement of the abomasum (LDA) has been shown to, in some instances, be associated with abnormalities in the motilin gene. Motilin is an important driver of stomach contraction. This suggests that LDA and potentially GDV may be primarily caused by a stomach that does not properly contract, and that this condition may be inherited. This study will help to determine the relationship between abnormal stomach contraction and GDV, and to define the biochemical and genetic alterations that may be associated with these stomach abnormalities. The long term goal is to develop a test to identify dogs at high risk for GDV. This would allow for early detection and offer selective breeding as an option to eliminate the condition and determine best preventive therapies.



Publications:

None at this time.

Report to Grant Sponsor from Investigator:

We have identified and enrolled the majority of unaffected (high risk and low risk) dogs in all breed groups and a number of affected dogs. We hope to complete enrollment this year with the inclusion of affected dogs of all breeds.

Results of motility evaluation remain preliminary due to incomplete enrollment of affected dogs. We have observed a relationship between low fasting pH and some breeds, but full enrollment is needed before we can consider it to be significant.

Preliminary results show a relationship between low motilin, ghrelin, and GDV. This relationship exists across all breed groups sampled. Continued enrollment is needed to confirm this finding.

Finally, we have completed candidate gene analysis for MLN and GHRL, the genes for the motilin and ghrelin hormones, in the Great Dane. At this time, it appears that a mutation of these genes is NOT associated with GDV risk in the Great Dane.