



3339: The Role of Select Enteric Bacteria in Dogs with Immune-Mediated Hemolytic Anemia

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Autoimmune diseases occur when the immune system of an animal mistakenly attacks different cells in their own body, like red blood cells. A common autoimmune disease in dogs is immune-mediated hemolytic anemia (IMHA) where the red blood cells are targeted and destroyed. This syndrome is commonly fatal in dogs and new tests and treatments are needed. It is unknown what causes the syndrome in all dogs, but there is now evidence that bacteria that live in the intestines sometimes get in the blood stream and can trigger autoimmune diseases, including IMHA.

There are 4 major bacteria that might be triggers that have been identified in a small number of human or dog studies that include *Enterococcus gallinarum*, *Prevotella copri*, *Papillibacter cinnamivorans*, and *Novibacillus thermophilus*. Most studies have looked for the bacteria in feces. In a pilot study, the investigators showed that these bacteria are also in the white and red blood cells of dogs with IMHA at higher levels than in the blood of healthy dogs. The research team will study a larger number of dogs with new techniques to better understand if there are other bacteria that can trigger the syndrome and determine if new diagnostic tests or treatments can be developed based on the results.

The team will also determine immune responses in dog white blood cells by examining the activity of over 10,000 genes with a technique called bulk RNA sequencing. Researchers believe that there may be patterns in which genes are turned on or off during IMHA that correlate with different outcomes like survival or development of blood clots, a common sequelae.

No veterinary study has evaluated bacteria in the blood of dogs with IMHA at the same time as studying the immune responses with bulk RNA sequencing. Completion of this study will hopefully identify new bacterial triggers of canine IMHA, develop new methods for identifying the cause of the syndrome in individual dogs, and help create new treatment strategies including the possible development of a vaccine against bacterial triggers.

Contribution: \$5,000

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