589A - Identifying Genes Regulating Addison's Disease in the Portuguese Water Dog (PWD)

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Grant Amount - $75,600.00 Project Dates : 7/1/2006 - 6/30/2008

Abstract: Addison's disease, or primary adrenocortical insufficiency, is characterized by destruction of the adrenal cortex, resulting in the inability to produce cortisone when stimulated with the hormone ACTH. In Portuguese Water Dogs (PWDs), this disease occurs with a frequency of 1-2 percent, and is a heritable autoimmune disease of low penetrance, caused by several interacting genes. Using both new and existing data, we propose to identify regions of the PWD genome that contain genes regulating the frequency of Addison's disease. Within those large regions we propose to identify the specific DNA sequence variants that are associated with Addison's. To date we have obtained DNA from about 90 Addisonian PWDs, as well as a number of unaffected PWDs, for which no family history of Addison's is reported. We have already identified two genomic regions, on canine chromosomes 12 and 37, that appear to be associated with the disease. To identify candidate genes, we will make selections using the newly available canine genome sequence, as well as the more detailed human genome sequence. Once affected gene disease frequency is identified, our long term hope is that prognostic tests can be developed that will aid breeders in selecting the most genetically compatible dogs for future breeding.

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