

# Researchers identify gene linked to common ailment in labrador retrievers

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Researchers at the University of Minnesota College of Veterinary Medicine have identified a gene in Labrador retriever dogs highly associated with the syndrome of exercise-induced collapse (EIC). After intense hunting or retrieving exercise, activities these dogs are trained to perform, affected Labradors start to lose control of their hind limbs. In most cases, their legs get wobbly and the limbs give out, and in rare cases the dogs may die. Labradors are the most common dog breed in the world and an estimated 3-5 percent of Labradors have this condition. The research is published in the journal *Nature Genetics*.

The research team identified a mutant form of the dynamin 1 gene as highly associated with EIC. The dynamin 1 protein normally functions to maintain proper chemical communication between adjacent nerves, also known as synaptic transmission. However, the mutated form of the dynamin protein appears to have diminished function, interrupting synaptic transmission during intense exercise, and causing the muscle-controlling nerves to not fire when directed to do so.

"This is very exciting because it is the first naturally occurring mutation of this gene identified in any mammal," said James Mickelson, Ph.D, professor of veterinary sciences at the University of Minnesota and co-principal investigator on the study. "Its discovery could offer insight into normal as well as abnormal neurobiology in both animals and humans."

Researchers also determined that up to 30 percent of Labrador retrievers are carriers of the mutation, and they developed a genetic test to indicate

whether dogs have the normal or mutated forms of the gene.

"The test can not only help confirm the diagnosis, but it can also help dog breeders ensure that no dogs inherit two copies of the mutated gene," said Edward "Ned" Patterson, D.V.M, Ph.D., assistant professor of veterinary medicine at the University of Minnesota and co-principal investigator of the study.

Owners can have their dogs tested through their veterinarian by submitting a blood sample to the University of Minnesota Veterinary Diagnostic Laboratory. Breeds such as Chesapeake Bay and curly-coated retrievers, which are closely related to Labradors, have also been found to have the dynamin 1 mutation. The research team is now determining what other breeds might be involved and more precisely defining the specific alteration in dynamin function.

Source: University of Minnesota

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