

CANINE EPILEPSY RESEARCH PROJECT:

SNP association mapping for canine epilepsy

University of Minnesota

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Lay Abstract

We propose to develop a genetic screening test for canine epilepsy, a serious late-onset seizure disorder affecting a large number of breeds. The onset of seizures in dogs with epilepsy is typically from one to five years of age. The late onset means that often a dog has already been bred before it is known to be affected. In some individuals, seizures are well controlled with anticonvulsant medications, but a significant number of dogs have “refractory” seizures needing high doses of medications to achieve control. The severity of seizures may be such that the owner elects to have the dog euthanized. A genetic test for epilepsy would allow breeders to screen potential breeding animals for this common, frustrating, and potentially devastating disorder prior to making breeding decisions. We propose to use genetic markers to develop a screening linkage test for predicting epilepsy in Australian Shepherds. This approach to identifying the region of the canine genome containing the defective gene will ultimately lead to the prediction of candidate genes that can be characterized to define the precise defect responsible.

Science Summary

We propose to develop a genetic tests for epilepsy in dogs. Epileptic dogs will be identified and the mode(s) of inheritance determined in each breed. Owner questionnaires will be conducted to classify the phenotype of each individual in extended three generation pedigrees to determine the mode(s) of inheritance by pedigree analysis. Genetic analysis using genetic markers will be used to attempt to find a DNA marker linked to canine epilepsy. A number of linked markers will hopefully be identified and a linkage map of these markers to the epilepsy locus will be constructed. Comparative mapping across species may allow prediction of candidate genes based from the syntenic chromosomal position in humans which will then be sequenced to try to determine the casual mutation. Affected pedigrees and epileptic kindreds from the study breeds will be genotyped and the linkage data examined to determine if genetic heterogeneity exists within and between breeds. Dogs with predicted disease status will be followed to assess the accuracy of disease prediction based on the linkage or gene test.

Signing Parameters in Situations Involving Co-owners: In a situation involving a dog that is co-owned, a single co-owners may submit this Consent Form. In any case in which less than all co-owners’ signatures are provided, however, the signature(s) of the signing co-owner(s) shall and herewith does constitute his, her, or their representation that submission of this Consent Form is duly authorized by all co-owners.

Transmittal Information: After completion and signing, the Consent Form should be sent to the University of Minnesota Epilepsy Project, to the attention of Dr. Ned Patterson, at the following address:

Epilepsy Research Project
C/O Dr. Ned Patterson
Canine Genetics Lab
University of Minnesota
C339 Veterinary Teaching Hospitals
1352 Boyd Ave, St. Paul MN 55108

This study “ **SNP association mapping for canine epilepsy** “ has been approved by the University of Minnesota Institutional Animal Care and Use Committee (IACUC). If you have any question or concerns contact: **Moira Keane** - Director, Research Subjects' Protection Programs 612-626-5654