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Epilepsy research in Schipperkes

Epilepsy is a common neurological disorder in the Schipperke breed world-wide, and there is evidence of genes playing a major role in the disease predisposition. There is an ongoing research project on the genetic background of epilepsy in Schipperkes at the University of Helsinki and Folkhälsan Research Center in Finland. The aim of the project is to identify genes and mutations underlying epilepsy in the breed in order to gain knowledge about biological processes involved in epilepsy, and to develop tools to guide diagnosis and breeding practices.

The research project was started in 2006 by collecting blood samples and performing clinical studies at The Aisti Animal Neurology Hospital, Vantaa, Finland. Twenty two dogs participated in the clinical studies. In addition to the clinically examined dogs, detailed epilepsy questionnaires were collected from 66 dogs with epilepsy. The aim of the clinical studies and the collection of epilepsy questionnaires was to evaluate the clinical picture of the disease in Schipperkes, e.g. the typical age of onset, seizure type, seizure frequency and seizure duration. Based on this study, the average age of onset of seizures was 54 months (4.5 years), range 6-108 months.

The dogs experiencing epileptic seizures were normal according to a number of clinical studies (EEG, MRI, blood biochemistry, neurological examination): no external reason for seizures was found in the brain or in the blood count. According to the studies, the most common epilepsy type in the breed was focal secondarily generalised seizure.

In order to disentangle the genetics of epilepsy in the breed, DNA samples from a large number of epilepsy-affected and -unaffected dogs have been collected. To date, samples of 442 Schipperkes have been collected within the research project, and 101 of them have epilepsy according to the owners' reports. Samples from 120 dogs were selected for the preliminary studies to locate the epilepsy-predisposing gene/s in the breed; this sample set included 60 dogs with epilepsy and 60 unaffected old (above 8 years old) dogs. Close relatives (e.g. full siblings) were avoided in the study, as they can bias results in case-control studies. The relatedness of the dogs determines how samples can be used in genetic studies. The large number of samples in the DNA bank facilitated the sample selection for the study, and showed the benefit of having large sample collections with good health records.

These 120 Schipperke samples were included in the LUPA project (www.eurolupa.org) funded by the 7th framework program of the European Union. Schipperkes were analysed for whole genome to identify genes and variations associated with epilepsy. The preliminary results showed genomic regions that are likely to harbour epilepsy-associated genes. In order to confirm and refine the results, more detailed studies will now be performed within these genomic regions. One of the most important methods to confirm novel findings is to replicate them in a larger sample material. Thus, sample collection is still ongoing, and the hope of the research group is that Schipperke owners will participate in this study by sending their dogs' blood samples to the group. Samples from both epilepsy-affected and -unaffected dogs are needed.

Detailed information and instructions for sending the samples can be found at: <http://www.koirangeenit.fi/Englanniksi/participate.html>. Epilepsy questionnaires are collected from dogs with seizures: <http://www.koirangeenit.fi/Englanniksi/questionnaires.html>