

Bern, 15.04.2017

Genetic Testing for Leucoencephalomyelopathy (LEMP) in Leonbergers

Many Leonbergers suffer from neurological diseases, especially forms of polyneuropathy. Two hereditary forms of polyneuropathy, termed Leonberger polyneuropathy type 1 (LPN1) and type 2 (LPN2), were genetically characterized in 2010 and 2014 by the Universities of Bern and Minnesota, and genetic tests developed.

In addition, in 2008 another neurological disorder, termed leucoencephalomyelopathy (LEMP) was described in Leonbergers for the first time by the University of Bern. The LEMP disease is a recessively inherited neurodegenerative disorder that affects the white matter of the central nervous system (CNS). A similar disease has been described in Rottweiler dogs. Canine LEMP is characterized by slowly worsening gait abnormalities, especially spontaneous knuckling, dragging of the paws and hypermetria of the thoracic limbs, and a characteristic pattern on magnetic resonance imaging (MRI). Affected dogs show corresponding gross lesions in the cervical spinal cord white matter that may extend to the thoracic spinal cord, as well as to the brain; peripheral nerve and muscle biopsies are unremarkable. Canine LEMP often shows a juvenile onset and is characterized by a generalized progressive ataxia. Spinal reflexes of affected dogs are mostly normal. In the progressive clinical course of the disease, affected dogs become increasingly immobile within a few months. Like many diseases of the CNS, there is no effective treatment for LEMP. Since in most cases the dog is not in pain, but is strongly restricted in its quality of life, owners are encouraged to ask a veterinarian for advice.

We are excited to announce that together with colleagues from the University of Minnesota, we were able to identify two causative mutations for different forms of LEMP (one in Leonbergers and one in Rottweilers) and offer gene tests for diagnostics. Our studies also indicate that the Rottweiler mutation is present in Great Danes.

In conclusion, besides LPN1 and LPN2 testing, with the new LEMP test, there are now three genetic tests available for Leonberger dogs.

The Universities of Minnesota and Bern will start offering genetic testing for the newly-identified recessively inherited LEMP mutation, to accompany our LPN testing, **starting April 15th, 2017** (for more details see below). At this time we recommend that all breeding dogs should be tested for all three tests: LPN1, LPN2 and LEMP.

For LEMP we recommend avoiding matings that could produce LEMP-D/D (i.e. affected) dogs. Having only one LEMP-D/N parent, with a LEMP-N/N parent, will ensure that no LEMP-D/D offspring will be born. In a global group of more than 5,000 Leonbergers which have been submitted to our laboratories, about 14% were LEMP-D/N carriers.

Instructions for ordering the LEMP test in Europe

For genetic testing a 1-5 ml EDTA blood sample of the animal in question is required. Blood samples should be sent in a padded envelope by regular mail without cooling to our laboratory. Order forms can be downloaded from:

http://www.genetics.unibe.ch/services/index_eng.html

All three tests for the same dog cost 175 CHF/EUR. A single test (of choice) costs 100 CHF/EUR, and two tests (of choice) for the same dog cost 150 CHF/EUR.

Dog owners who submit a blood sample from a dog affected with neurological disease, together with neurological exam, may receive the LEMP test results for free.

There is no need for a new blood sample if a sample has already been submitted to the Institute of Genetics of the University of Bern for LPN testing, as the LEMP test can be performed on this same sample for 50 CHF/EUR after pre-payment onto the account of the Institute of Genetics (University of Bern):

IBAN: CH530900000603151885, BIC: POFICHBE (Postfinance, CH-3030 Bern).

Please mention the lab ID (LB no.) and send an e-mail to:

cord.droegemueller@vetsuisse.unibe.ch

After the receipt of your payment we will submit the LEMP results by E-Mail or regular mail.