

## LPN Research Update, September, 2012

The following material is from Prof James Mickelson, leader of the Minnesota LPN Research project and Katie Minor, principle coordinator for the study. It is in response to a set of three questions sent to them for the purpose of updating the 2012 ILU meeting in Leonberg.

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It's nice to hear from you. Please see our responses to your questions below.

- **1- Has the LPN1 manuscript been finalised, submitted and/or accepted for publication yet?**

*Unfortunately for all, we have not yet finalized the LPN1 manuscript. For a long time we were holding out hope that we would be able to publish LPN1 and other forms of PN together, but at this stage we feel that it is no longer appropriate to wait. A draft manuscript on LPN1 alone is being prepared now, and we hope to submit it this fall.*

- **2- Has there been any further progress on other forms of LPN? I know that Katie recently sent out requests for updates on Leonbergers currently in your study population, and wonder if this indicates that there has been any more progress made?**

*So far simple sequencing techniques of quite a few genes in the regions of the genome that appear to contain other PN loci have failed to find other LPN mutations. So, although our whole genome scans of PN cases that are not accounted for by the LPN1 mutation still suggests two different chromosomal locations that appear of interest, we are no closer to finding the mutations. It could be that these are not simple mutations in protein coding genes (they could be gene duplications or rearrangements or mutations not in the coding sequence), we are still not quite looking in the right location for genes to sequence, or we are sequencing the wrong genes. To further investigate these areas, the University of Berne group has done a whole genome sequencing of several dogs with susceptibility loci at these locations. This produces a tremendous amount of data that will take considerable time and analysis to complete.*

- **3- Lastly, does the LPN team there have any thoughts on the recent LEMP cases that have apparently occurred in our breed and do they think there may be any relationship between these two conditions or the pedigrees of those lines that appear to be affected?**

*We are very interested in pursuing LEMP further because of the nature of the disease itself, and the concern that some LEMP cases are being misidentified as the more commonly heard of LPN. We now know at least one of the dogs we were using as a case in our LPN study actually has LEMP. This could be muddying our LPN data a bit, and making that study more difficult. We would encourage owners of Leos with neurologic signs to have testing done to identify if the problem is one of the peripheral nervous system (LPN) or central nervous system (LEMP), and to inform*

*the researchers of these results (IMPORTANT). Given the relatively small breeding pool, there is likely considerable overlap in LEMP and LPN in some lines. For example, many, but not all LEMP cases are also DN/carriers for LPN1. To pursue LEMP further, we do need more well diagnosed cases. Samples can be sent to Minnesota using our Polyneuropathy submission form (attached). Could you give us an informed opinion about the frequency of presumed LEMP cases (known or suspected)?*

**In response to the email circulated by Tatiana Zavorina to ILU delegates on the 10<sup>th</sup> of September, I emailed an additional question to the team in Minnesota as follows:**

*Hello again Katie and Jim,*

*I wonder if I could trouble you for one further answer to a question that has been circulated to delegates for the upcoming meeting in Leonberg. Namely, is LPN-Leonberger Polyneuropathy - a unique illness specific to our breed, (hence the addition of the breed name in the title of the disease), or could it be a form of polyneuropathy that affects individuals from other breeds as well, such as Malamutes? In short, is it truly and unequivocally a Leonberger specific polyneuropathy? There is some concern that the term Leonberger Polyneuropathy is prejudicial to our breed and should not be used unless there is clear evidence that this is a breed specific illness. I know that there have been St Bernards identified as carriers of the LPN1 gene now, but we also know that, according to the "creation myth" of the Leonberger breed, there is common ancestry with the modern St Bernard. Can you shed any light on this debate which I could share with the upcoming meeting in Leonberg?*

*Many thanks, as ever, for your time.*

*Sharon Springel*

Katie Minor answered as follows:

*Hello Sharon,*

*The LPN1 mutation has been found only in Leonbergers and St. Bernards to date.*

*The Malamute PN and Greyhound PN are both caused by different mutation of the same gene (not the LPN1 gene). They are referred to respectively as:*

*[Alaskan Malamute Polyneuropathy](#)*

*[Greyhound Neuropathy \(GN\)](#)*

*“Leonberger polyneuropathy”, while admittedly not perfect, is a good name for owners and veterinarians to be able to find information pertinent to their dog when they do an internet or publication search.*

*Does the club have suggestions for an alternate name?*

*Katie*

The following reply also came back from James Mickelson:

*Just to chip in - Katie is entirely correct in her answer to your questions. And just to be clear, the mutated gene in the Malamute and Greyhound PN is a different gene than the mutated gene in Leonbergers and St Bernards.*