

Health & Research report – Sept 23, 2014

Research for heritable diseases affecting Berger Picards continues at the University of Missouri-Columbia College of Veterinary Medicine, in the Animal Molecular Genetics Laboratory (AMGL) lead by Dr Gary Johnson.

With BPCA funding the AMGL completed a whole genome sequence (WGS) of a Picard with Canine Multifocal Retinopathy (CMR) about 1 year ago. We know that the mutation causing this condition in Picards is not the same mutation causing CMR in Coton de Tulear or Great Pyrenees, and we are continuing to evaluate other mutations to find the causative one for the issue in Picards. Dr Guiliano (at the University of Missouri) and Dr Pickett (at Virginia Tech) are veterinary ophthalmologists that have seen and documented CMR in Picards in the US. If an ophthalmologic exam suggests CMR in a Picard, it may be useful for the ophthalmologist to discuss the case with one or both of them to compare what they saw to what is already known in the breed. Personal communication between Dr Pickett and a French ophthalmologist suggests that CMR has been fairly commonly diagnosed in the past among European Picards, but may not be reported as much recently. It is unclear if this is due to fewer dogs having this condition, or fewer dogs being examined by veterinary ophthalmologists at an age when CMR is likely to be seen.

The AMGL also has recently submitted DNA from a Picard with early onset Progressive Retinal Atrophy (PRA). This condition is equivalent to macular degeneration seen in humans. The dog chosen for sequencing was blind at age 2yrs. This WGS was funded by the European clubs and individuals, and we are very appreciative of this contribution to research. The WGS data has come off the sequencer, and yesterday (Sept 22), the alignment was completed. We could begin evaluation of this sequence immediately, but because there are over 200 known genes that are expressed in the retina, a gene-by-gene search would take a huge amount of time. We are waiting for a mutation report, which should be available to the research team in the next 2-4 weeks. With this report, we can prioritize which mutations found in this dog are likely to alter the function for genes that affect the retina, and hopefully identify a mutation responsible for this form of PRA in Picards.

In addition, due to the generosity of Beverly & Joseph Conroy, we have WGS data from a clinically normal Picard that can be used to compare the other sequences to, which is very helpful. Funds are being raised to do a WGS on a later onset PRA Picard as well.

Progress with the WGS data has been slowed from our anticipated schedule because the collaborating researcher from the Animal Science department who writes the algorithms used to analyze the vast amount of data generated by a WGS has cattle research as his first priority – so at times, the analysis of dog data has to wait for completion of cattle data. The custom-created software used to generate the mutation reports is being updated, optimized and error-corrected now, and when this is complete, all 120 canine WGS's generated so far will be re-aligned and new mutation reports

generated, which hopefully will help to identify causative mutations for several unsolved diseases.

There are currently 226 samples from Picards in the CHIC DNA Bank & the DNA collection at U of MO (about ½ from Europe, ½ from US & Canada), which give an excellent basis for this research and other projects that may come up in the future. DNA tests for the mutations discovered by the research team at AMGL are offered through partnership with the Orthopedic Foundation for Animals (OFA – website www.OFFA.org) at a reasonable price, and using a cheek swab to make testing easy.

Any Picard owner that has not yet sent a blood sample to the CHIC DNA Bank is encouraged to do so. All Picards contributing to the gene pool (used for breeding) should be DNA banked. In addition, any Picard diagnosed with a condition that may be inherited should be DNA banked, along with samples from normal relatives of the affected dog. Even if research is not immediately initiated, it is important to bank DNA from these dogs while they are available so that research can be done at some point. Samples in the CHIC DNA Bank can be made available to qualified researchers at laboratories around the world. No researcher gets the entire DNA sample, and they are only sent DNA from dogs that fit their research criteria. This way, sampled dogs may participate in research for many diseases over time. Please go to www.CanineHealthInfo.org for sample submission information, or email me (HansenL@missouri.edu) with any research questions you may have.

Hopefully, as researchers and Picard owners around the world, we can continue to collaborate and cooperate to work towards better health for the Picard.

Sincerely,
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&
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