

Steve and I attended an Epilepsy seminar recently with Professor Hannes Lohi, PhD who is a Professor of Molecular Genetics at the University of Helsinki in Finland. Professor Lohi previously studied Human Genetics. He joined the Helsinki University at the age of 33 to specialise in canine genetics when he realised a lot of testing on dogs was similar to humans as they shared a lot of genes so any advances made with dogs may in future help humans and vice versa. As most genetic testing starts with animals he realised there was not much research into canine epilepsy. He has 20 people working in his team, 6 million Euros of sponsorship and over 60,000 samples of dogs DNA mostly from Finland. This is the largest canine DNA bank in the world with over 330 breeds represented.

He started his lecture by stating that we are all in this together and all need to help each other and encourage more owners and breeders to submit DNA samples to help with the current research. Epilepsy can and does affect all dog breeds including cross breeds. Research so far has shown that there is no one gene responsible for producing epilepsy as in many other health disorders. He feels there are possibly 6 or more genes responsible. Identifying this many genes is proving difficult but he feels if he had enough samples to work from sooner or later there could well be a breakthrough. Some countries are already collaborating but he would like to see a lot more countries that hold DNA samples sharing and working together

Professor Lohi went on to explain in some depth about DNA testing for all sorts of diseases within dogs and would like to see all breeding dogs DNA tested. Another aspect of DNA testing is to prove parentage which is important when looking for genetic diseases. This point was raised at this year's AGM and is currently under discussion within the GSMD Club. He said there are different types of epilepsy caused by different gene mutations. He feels environment and behaviour can have an influence on them. He said many dogs will have the mutated genes that can cause epilepsy but it is only when so many come together and sometimes maybe other factors involved that the dog will have seizures. It does not necessarily come from both parents but could be just one with other factors coming into play. Bearing this in mind the question was asked should we breed from dogs that are suspected to be carriers. His answer was there is no scientific evidence yet to determine the cause of epilepsy so at this stage it would be impossible and impractical to rule out all the dogs suspected of carrying the mutated genes. He thinks in-breeding causes many problems within breeds and called for more diversity within breeds to avoid bottlenecks. Thus the larger the gene pool the better. If you throw out all the dogs with epilepsy plus all the dogs thought to carry the mutated gene you would end up with very few dogs, if any, left. At the moment the mode of inheritance is, at best, an educated guess. If and when, a test can be achieved carriers can be bred to clear dogs the same as with all other genetic diseases in the meantime we have to carry on making the best choices we can with the little information we have. No dog with seizures should be bred. Breeders need to be open about epilepsy and dogs that are suffering from it.

The blood from two Springhaze dogs that suffered from seizures was sent to Prof Lohi a few years back. At present he receives maybe two or three samples from affected dogs with epilepsy. This is nowhere near enough and to get further with the research will need DNA samples from 100's or maybe even 1000's of affected dogs. This is why everyone with an affected dog of any breed needs to participate.

It is now possible to send a swab test instead of blood which is a lot easier and cheaper. He said blood is better as you can get more data from it but swab testing is sufficient so long as it is done correctly. He says it is best to send 4 or 5 swabs from the dog to ensure there is enough to test as 95% of the swab will contain bacteria from the dog's mouth.

It will be a major breakthrough when the day comes when a test for dogs carrying the mutated genes for epilepsy is produced.

At present all dogs can be DNA tested through the site [www.mydogdna.com](http://www.mydogdna.com) the test costs 100 euros. This test gives a full DNA analyses of your dog plus test results for any diseases within your breed. At present there are only two tests available for the GSMD which are P2RY12 (Bleeding disorder) and MH (Malignant Hyperthermia).

I would like to take this opportunity of asking anyone with a seizing dog to submit a sample to Professor Lohi for his research in the hope of one day eradicating this terrible disease.