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Malignant Histiocytosis in the Bernese Mountain Dog and How You Can Help

The laboratory of Dr. Elaine Ostrander and colleagues (Dr. Kenine Comstock and Dr. Julie Kerns) at the Fred Hutchinson Cancer Research Center (FHCRC) is conducting a study of Malignant Histiocytosis (MH) in Bernese Mountain Dogs. The goal of her team is to first find DNA variation that is associated with the disease and then eventually find the actual mutation that causes the disease. Recent advances with the canine genome project have facilitated the mapping of canine diseases and we are hopeful that we will soon understand the genetic cause of MH in the Bernese Mountain Dog.

Malignant Histiocytosis and the Bernese Mountain Dog

MH is a highly breed-specific genetic disease that has become of significant concern to BMD owners in the USA and Europe. The age of onset is late, generally 5 years or later. On average, one in every five Berner deaths is from MH and close to 80% of the cases of MH in dogs are seen in Berners. While MH is clearly genetic in the BMD, it's mode of inheritance is not well understood and the number of genes involved is still unknown.

The Search for the Genetic Basis of Malignant Histiocytosis

The researchers at FHCRC are scanning the dog genome to identify the genetic basis of MH. The scan involves looking at DNA markers that span the genome and trying to determine which DNA markers are associated with the disease. In order to do this type of analysis, DNA is isolated from the blood of both affected and unaffected Bernese Mountain Dogs. The researchers then scan the genome of each dog and compare unaffected to affected samples to determine which DNA markers are associated with the disease. Once we identify the markers that associate with the disease, we can do a more precise scan in those regions to narrow our search down to specific genes in that region. We expect that within the next two years, we will be able to discover the gene for MH which will be a major step towards understanding the disease and developing a diagnostic test for Berners.

Thanks to the generous help of Berner owners, we have collected a number of blood samples from affected and unaffected animals and we have initiated the first phase of the genome scan which involved looking at about 300 DNA markers spanning the genome. However, we are in desperate need of more samples from both affected and unaffected Berners.

Blood Samples Needed

To continue this project and to advance to the next step in our genome scan, we need to collect more blood samples from unaffected (control) and affected dogs. The control dogs need to be at least 10 years or older and never diagnosed with any type of histiocytosis (malignant, cutaneous, systemic). It is imperative that the lab be

notified if a control dog develops histiocytosis after a sample has been submitted. In addition, the lab will need to know the cause of death for the control animals in order to be absolutely sure that they were never affected with histiocytosis.

If you know that your Berner has MH or if you suspect that your dog has MH, please request a study kit and send in the blood sample, the supporting paperwork, and an explanation of why you think it is MH. It will be necessary to have pathology done to establish whether it is definitely MH and the researchers at the Ostrander lab will need to be informed of the diagnosis. Without a confirmed diagnosis, the sample can not be included in the study. All information about affected dogs will be kept confidential.

You can also help by passing this information on to other breeders and owners. The more samples we have (affected and unaffected), the faster we reach our goal of identifying the genetic basis of MH.

How to Donate

If you would like to donate a blood sample from your Berner, please request a free blood collection kit from Dr. Julie Kerns at jkerns@fhcrc.org or (206) 667-6980. The blood kit contains two 10cc blood collection tubes that your veterinarian can use to collect the samples. [Note: Unfortunately, veterinary costs to draw the blood and mailing costs to send the blood samples to FHCRC can not be reimbursed.] We are willing to FedEx the kits overnight in an emergency situation and in this case, you should phone us directly to request the kit.

Please have each of the two tubes filled with 6-8cc of blood. Don't worry if the tubes aren't filled completely. Please have your vet do his/her best to draw and send blood that is truly red in color and not dark red-black as this is a sign that the red blood cells have started to lyse and release enzymes that degrade the DNA.

In the kit, we will include an instruction sheet for how to collect the samples and label the tubes. In addition, we will need a pedigree for each dog in the study and any relevant health information for animals in the pedigree. **The pedigree information is vital for the study so please remember to provide it with the sample.**

We want to thank all who have helped with sample collection in the past. Your contributions are critical for the success of this project. If you have any questions, please email Dr. Julie Kerns (jkerns@fhcrc.org) or call 206-667-6980.

Thanks so much,

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