



EVALUATING GENETIC DIVERSITY AMONG BREEDING LINES OF SIBERIAN HUSKIES: INCLUDING GENES FOR IMMUNITY TO DISEASES

This study is designed to measure levels of genetic diversity in the Siberian Husky breed and examine the level of diversity in the gene region that controls immune function (produces antibodies). It is anticipated that the Siberian has maintained genetic diversity and if confirmed, it will permit initiation of a long-term genetic study of the whole Siberian genome (a very large project).

Jean Dubach, PhD. at Loyola University of Chicago Comparative Medicine, Institutional Genomic Core Lab, is a world-famous exotic animal geneticist. Her research projects include investigations of the interactions between levels of genetic variability and health in wild carnivores. She will compare the data collected to the known information from her study on a wild canine species, the coyote.

Natural adaptations from *Canis Lupus* to *Canis Lupus Familiaris* occurred over a time period of roughly 300,000 years. Most dog breeds recognized now are composites or created breeds, bred only recently, for specific attributes. However, Siberian Huskies are thought to be one of the purest versions of the canine genome. The majority of their genetic changes came about as adaptations rather than controlled breeding for specific attributes. As a "natural breed", they have more genetic diversity than many other breeds. This is important as one of the biggest problems with the narrowing of the gene pool is a greater susceptibility to active and newly emerging diseases.

This study is a first step to so much more. Dr Dubach will begin by looking at overall levels of genetic variation in each individual and at one gene that is involved with immune response to pathogens. This gene codes for antibodies that fight various infectious diseases. Since the Siberian husky tends to be an active outdoor breed, we want to understand how well they might be able to fight some of the new emerging zoonotic diseases. We will also be able to compare diversity in this gene region to wild coyotes that have high pathogen exposure rates.

Dr. Dubach is doing the actual DNA analysis as part of her research. This has made it possible for the Trust to be involved. Lee Cera, the Trust's Health Chair, applied for a grant and the Trust was awarded the \$5,000 needed for the materials and supplies.

Dr. Dubach needs blood or clots, tissue, whiskers, or hair with the follicles attached. We are hoping to collect DNA samples from up to four generations. All of the samples will be coded and confidential. However, individuals turning in samples from related dogs or kennel samples are certainly welcome to their own results. She would also like to know the pedigree of each individual, if possible.

Decoding the Siberian genome is a huge project that will only be completed with the input from many, many studies such as this. Most of these individual studies will still need the DNA banked at the CHIC DNA Bank, so please, continue to bank your dog's DNA with the CHIC DNA Bank. It will go a long way to improving the health of future generations of Siberian Huskies.