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## Sutter Dog Genetics Lab

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Our laboratory searches for the gene variants that make dogs susceptible to cancer and other diseases. By finding these genes and identifying mutations in them we aim to ultimately improve the health of both dogs and humans.

We are also interested in the genes that contribute to differences in body size in the dog. Due to selective breeding over many generations, Great Danes, Mastiffs and other giant breed dogs are 50 times more massive than Yorkshire Terriers and Chihuahuas. No other mammal species exhibits such size diversity!

By finding genes that promote a dog's normal body growth and genes that aid tumor formation, we ultimately want to learn how genes work together to control growth.

### Discovery of the first dog size gene

We participated in the recently published NIH study that showed that variation at the insulin-like growth factor-1 gene is a major determinant of body size in dogs. This gene is known to play a role in both normal human growth and several forms of cancer. We identified the gene by comparing dogs from 14 small breeds with dogs from nine giant breeds. Over 700 dogs were studied.

Genetically, body size and cancer susceptibility are called "complex traits," because a complicated mixture of unknown genes and environmental influences all contribute to the trait. Because each gene's contribution to the trait is likely to be modest, we need to study large numbers of dogs from many breeds to successfully identify the genes involved.

### We need your help!

We invite you to contribute to these projects. We are gratefully accepting blood samples and body measurements from many recognized breeds. We'll send you a collection kit containing empty blood vacutainer vials, a consent form, the body measurement protocol and a tape measure you can keep with our thanks. Normally the blood can be drawn from your dog during a regular veterinary visit. Blood is shipped back to our lab through normal USPS mail at ambient temperature. Your dog's data, such as health status, pedigree and AKC number, as well as your own contact information, will be kept strictly confidential.

Please contact us if you may be willing to contribute samples or if you'd like to help us spread the word among other dog breeders and owners.

Thank you!



What genes make this size difference possible?