

# Breeder Tips from United All Breed Registry

Featured Video:



Some Extinct Dog Breeds

Find out what tests are available for genetic diseases and conditions in your breeds



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Read the full story about discoveries linking human and canine diseases in the article [Mix, Match, Morph - How to Build a Dog](#), in the February 2012 issue of **National Geographic** magazine

Originally published by email, April 2013



## What does dog breeding have to do with cancer research??

A research collaboration of scientists is finding that the careful work of dog breeders over hundreds of years is yielding data that may be helpful in solving the health problems of humans.

The project is called CanMap and involves researchers at Cornell University, UCLA and the National Institutes of Health. They have gathered DNA from more than 900 dogs representing 80 breeds, as well as from canids such as gray wolves and coyotes.

Their remarkable discovery is that the vast array of characteristics we see in today's dog breeds is controlled by a very small number of genetic switches. The difference between floppy and erect ears is due to a single gene, as is wrinkled or smooth skin, a massive or tiny body and stumpy or tall legs. Rottweilers and dachshunds are only a few genes apart.

In contrast, physical traits or disease states in humans are usually the product of a complex interaction of many genes. Our height, for example, is determined by the interaction of some 200 gene regions. And yet, with a small toolkit of genetic switches, the variations in the dog world are astounding. If humans varied in height as much as dogs, the smallest would be two feet tall and the tallest would stand at 31 feet!

So why are dogs so different? Researchers point to the fact that canines were the earliest domesticated animal. Man's involvement from early in the history of the species tended to favor single genes with a large impact as breeders tended to grab traits they desired from across multiple breeds. Elaine Ostrander, who studies dog evolution and disease at the National Human Genome Research Institute at NIH notes how her colleagues **appreciate the work of dog breeders** thru the centuries and now, saying "We are the people who are doing the genetics, but breeders are the people who have done all the fieldwork."

What is this new information leading to? So far, more than a hundred dog diseases have been mapped to mutations in particular genes, many of them with human counterparts. For instance, the degenerative eye disease retinitis pigmentosa, a rare type of epilepsy and certain types of cancer are beginning to be better understood due to findings in dog DNA.

