

Hunting new genes and mechanisms of human disease with the help of man's best friends – dogs and cats

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Our research has focused on the development of spontaneous canine and feline models of human disease over the past decade and half. We take advantage of an experiment initiated by man ~23,000 years ago, taming of the wolf and, more recently, generating >400 strictly inbred pure dog breeds. Canine pure breeding has resulted in highly uniform genomes within each breed. That alone would not be very helpful without the fact that several of the essential components of most disease phenotypes can be found and measured in dogs. Dog is a large animal and clinically and physiologically closer to human than typical laboratory rodent models. Canine disorders usually respond to human medications and other clinical and phenomenological studies suggest that these traits may share biological mechanisms across species. The same with cats. We aim to utilize these two unique genetic systems to identify new genes for disease, morphology and behavior. Towards this aim, we have established a dog biobank with >80 000 samples from 330 different breeds. We have also ~5000 samples from ~50 breeds of cats. We work with many genetic traits in dogs and cats and have mapped >100 new loci and genes across traits. The presentation will demonstrate several examples of how the natural canine and feline disorders provide clinically and physiologically relevant models to corresponding human diseases.