

Study of canine genetics holds clues to better human health

27 June 2016, by Bryan Goodchild And Sarah Willey

Could dogs hold the key to better medical treatments for people? Elinor Karlsson, PhD, assistant professor of molecular medicine, is studying canine genetics to better understand human health.

Dr. Karlsson uses evolution as a tool to learn how the human genome stores and passes on inherited traits. To do so, she studies artificial selection and behavioral genetics in [dogs](#). In late 2015, her lab launched a recruitment project called Darwin's Dogs, using dogs as a model organism for studies of behavioral conditions, such as obsessive compulsive disorder.

What may come as a surprise to some is that dogs and humans evolved together. For thousands of years, humans have bred dogs to excel at behaviors like herding, tracking and retrieving. The genes at work in these behaviors, including genes related to neurological processes, disease development, diet and digestion, are actually surprisingly similar in dogs and in humans. Karlsson's research on obsessive compulsive disorder in dogs and in humans has demonstrated that dogs are an excellent model for studying and understanding the genetic basis for human psychiatric diseases. She is one of the authors on the landmark 2005 paper in *Nature* that sequenced the dog genome.

The Darwin's Dogs project, which launched last year, is recruiting [dog owners](#) to answer an online questionnaire about their pets' habits and to collect saliva samples from their pets.

"The ultimate goal is to look for genetic changes that correlate with certain behaviors," Karlsson said. "What we learn could help unlock the mysteries of the neural pathways that contribute to brain disorders."

Karlsson was surprised at how quickly word of the project spread, and how eager dog owners have

been in their willingness to collect their dogs' genomic information through saliva samples.

"In the last three months, our Darwin's Dogs website has had 130,000 hits from 78,000 visitors around the world," she said. "We currently have nearly 6,600 dogs enrolled thanks to the dog owners who have answered more than 610,000 questions."

In addition to the questionnaires, 1,900 saliva sample kits have been sent out, more than half of which have been returned for research, according to Jesse McClure, PhD, a postdoctoral fellow in the Karlsson lab. They are still looking for dog owners to volunteer.

More information: For more information on how to participate, visit darwinsdogs.org/

Provided by University of Massachusetts Medical School

APA citation: Study of canine genetics holds clues to better human health (2016, June 27) retrieved 18 June 2019 from <https://phys.org/news/2016-06-canine-genetics-clues-human-health.html>

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