

Beat: Lifestyle

## Don't Judge a Dog by its Breed

### A Dog's Behavior is More Individualistic

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**USPA NEWS** - The Labrador retriever has reigned supreme as the most popular dog in the United States for 31 years, according to the American Kennel Club, which describes the breed as friendly, active and outgoing, but new research suggests it's unwise to assume dogs will display specific personalities simply because they are the same breed, or to presume behaviors are exclusive to any specific breed.

In a study published in the journal *Science*, researchers said they found that dog breeds are not especially helpful in predicting the behavior of an individual canine. Breed type explains just 9 percent of variation in behavior, according to a combination of survey responses and DNA sequencing, they added. Scientists collected 18,385 survey responses from dog owners through a citizen science project called Darwin's Ark. They also received saliva samples from 2,155 of these dogs, which allowed the researchers to sequence the dog's DNA.

The combination of the genetic and survey data also revealed that 11 regions of the dog genome are significantly associated with behavior, including how often a dog howls and how comfortable a dog is around people. However, none of these genetic sites are specific to a breed. This suggests that the majority of behaviors assumed to be characteristics of a certain dog type actually predate the origin of breeds.

Dogs emerged around 10,000 years ago, and humans began intentionally breeding dogs just 2,000 years ago. In the years leading up to the 1800s, canines were selected for how well they could perform jobs like hunting and herding, but a shift in thinking occurred around 150 years ago during the Victorian era when people began to select dogs for their aesthetic traits and breeds were invented.

The idea that specific behaviors could emerge within the short time-span after breeds emerged suggested to the study team that something was off in humanity's assumptions of breed-specific personalities. "Behavior is complicated," said Elinor Karlsson, the director of the Vertebrate Genomics Group at the Broad Institute of the Massachusetts Institute of Technology and Harvard University, and a professor at the University of Massachusetts Medical School. "It involves dozens if not hundreds of changes in different genes," Karlsson, a senior author on the study, said. "It involves the environment. The idea that you could create behavior and select it in breeds in just 150 years just didn't make any sense. We knew it had to be a lot older than that."

This idea that certain behaviors began before dog breeds helps explain why the study team found that traits like retrieving, pointing and howling behaviors described as motor patterns are more heritable. The opinion is that these behaviors would have helped early dogs and their masters, and selective breeding of dogs who performed their jobs well allowed these behaviors to continue on. While no behavior is exclusive to a particular dog, there is some significance. For example, a genetic link was found between border collies and how easily a dog is taught and controlled. While genetics were not found to play a significant role in the perception of Labrador retrievers as especially comfortable with people.

"Breed can certainly play a role in terms of predisposing a dog to certain types of behaviors," said Emma Grigg, an animal behaviorist and researcher at the University of California, Davis, who was not a part of this study. "However, whether or not you see those behaviors in the adult dog depends on many factors, with the environment playing a huge role," she said. "Many of the breed behavioral stereotypes put forth by breeding clubs are just not supported by data." This study also challenges another stereotype: how aggressive a dog is because of their breed. The research team could not find evidence that genetics influence on how easily a dog is provoked by a frightening or uncomfortable stimulus.

Breed-specific legislation, such as the banning of pitbulls in certain cities, operate on the assumption that certain breeds of dogs are especially dangerous. These laws are not based in science, said Mia Cobb, who researches animal welfare at the University of Melbourne in Australia. Cobb was not a member of this study's research team, but her mutt Rudy has had his DNA sequenced by the Darwin's Ark project. "We now have numerous studies from different parts of the world which demonstrate that breed-specific legislation is ineffective at protecting the public or reducing dog attacks," Cobb said. "Any dog has the potential to be dangerous, regardless of its size or breed background. Because of this, dogs should not be declared dangerous based on their appearance."

Instead they should be assessed as individuals based on their behavior.”

Considering each dog as an individual can improve our relationship with dogs overall, Cobb said. This is especially true when selecting a pet, a time when owners often presume a dog of the same breed will be the same as their previous companion. Grigg agrees. “Choose the individual, not the breed,” she said. “It is important to remember that all dogs, regardless of breed or mixed ancestry, are individuals. They will likely have their own strengths and weaknesses, just like humans. They will have their own likes and dislikes; they may not be much like your last dog at all.”

While this study does not offer any advice for pet owners, its authors are especially interested in how the findings can contribute to research on human health. The paper is unique in that it includes mixed-breed dogs alongside pure breeds, according to first author Kathleen Morrill, a Ph.D. candidate at the University of Massachusetts Medical School. These mutts “added a lot of power” to the study, Morrill said, because a diverse cohort allows scientists to understand genetic influences more acutely.

This is important because scientists want to use dog genetics as a way to better study and treat human illnesses. Morrill and Karlsson are especially interested in the relationship between compulsive disorders in dogs and obsessive compulsive disorder in people. Examining how changes in dog DNA are associated with behavior changes is a step forward and may eventually result in developing improved treatments in people. “We’ll be applying everything we’ve learned in this study to the research we’re pursuing now on compulsive disorders,” Karlson said. “We treat dogs with compulsive disorders with the same drugs people use and they work just as badly. We hope to find a way to develop treatments that work better than what we have right now.”

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