

My life dream is to be part of the future of canine studies by running a rescue, rehabilitation, and adoption center for large breeds. I want to continue to study and be a part of the blossoming Dognition field in college and for the rest of my life. I see the importance in taking a wide range of courses like animal science, communications, business classes and psychology to help me with this. I also plan on working in shelters, with trainers, and learning as much as possible for people who work with dogs in one way or another. My interest in dogs all started from the purest love I have ever felt which has been for my dogs. Understanding how they came to behave and look the way they do has allowed me to better understand not only the relationship between humans and dogs, but also human kind as a whole and who I am as an individual.

The bond between man and dog is like no other in the world. According to The American Society for the Prevention of Cruelty to Animals (ASPCA) there are currently about 78.2 million of households in the U.S that have dogs as pets.¹ We live in an extremely dog-friendly society, in which the unconditional love between dog and owner is almost everywhere you turn. We see dogs when we walk down the street, and when we turn on the television. Some may describe today's bond with dogs as a societal obsession because of the way it has been played out in the media or been commercialized with "doggie-bakeries" or doggie-yoga ("Doga"). Despite the extremes of dog culture, it is ultimately about an incredibly strong bond between two species.

Where did the bond between man and dog come from? Has it always been as strong as it is today? Answers to these questions lie within the science of dog domestication, which is the basis for our strong emotional connection to canines. Dogs and humans self-domesticated with each other's help; dogs domesticated humans just as much as humans domesticated dogs. Neither species would have achieved the level of intelligence and sophistication that they have today if it was not for the other. The result of this relationship has been beneficial for both species in a variety of ways that has strengthened both the individual dog and human, and the bond between them.

Dogs are domesticated descendants of wolves. To explain this evolutionary process, I first need to explain a monumental experiment started by Dmitry Konstantinovich Belyaev, a Russian scientist whose career was focused on the study of genetics. He researched and then began this experiment at the Institute of Cytology and Genetics in Novosibirsk, Siberia where he later became the director of the Institute.²

Since the late nineteenth century, silver foxes have been bred in Russia for their fur.³ A common result of over breeding these foxes was that after generations of living in cages, their coats started to grow extremely long or short, becoming patchy and not thick. In 1948, Stalin prohibited the study of genetics in the USSR. Despite this regulation,

¹ "Pet Statistics." *ASPCA*. The American Society for the Prevention of Cruelty to Animals, n.d. Web. 28 Apr. 2013. <<http://www.aspc.org/about-us/faq/pet-statistics.aspx>>.

² Hare, Brian, and Vanessa Woods. *The Genius of Dogs*. New York: Dutton; the Penguin Group, 2013. 70-79. Print.

³ *Mammals of the Soviet Union* Vol.II Part 1a, Sirenia and Carnivora (Sea cows; Wolves and Bears), V.G Heptner and N.P Naumov editors, Science Publishers, Inc. USA. 1998.

Belyaev moved forward with his experiment. He worked under the pretense that we was experimenting with the silver foxes to breed them so that their hair grew back thick, a motive that would appear to support Russia's fur trade.⁴ In reality, the bravery that Belyaev displayed later resulted in one of the most telling canine domestication experiments ever conducted.

Instead of breeding these foxes for their physical characteristics, Belyaev began to breed them for their demeanor – specifically aggression. Belyaev and his team began with 130 foxes (100 female, and 30 male.) These foxes were taken from a fur farm, so they had been already bred inside cages for 50 years; this was desirable for the scientists because it meant they didn't have to capture the foxes from the wild.⁵ Skipping this step meant that these foxes were already used to being in cages, because it was all they had ever been exposed to.

Each silver fox was housed in an individual cage; the cages were set up side by side in two long rows. The scientists would walk past these cages and observe the fox's behavior as they walked closer. According to Belyaev, even though this first population of foxes was considered to all be “virtually wild animals,” and 90% of the foxes were fearful and/or aggressive when the humans came close, there was 10% that were more curious and/or quiet when the scientists walked past.⁶

The next phase of the experiment was to separate the initial 10% from the rest and breed them. Each new breeding season, the pups would interact with humans once a month until they were 7 months of age. At this point, the scientists would determine if the foxes were type A (the unfriendly 90%) or type B (the not-so-unfriendly 10%.) Now there were three groups: type A, type B, and the “control” population that bred randomly without any human interference.⁷ Within just eight generations of this breeding technique selecting for the “friendly” or “interested in humans” gene, Belyaev and his team began to see clear physical changes with the friendlier foxes (group B). They began to have a diverse range of characteristics that included floppy ears, patches of different colors, curly tails, and shorter and wider muzzles. These characteristics when compared to type A foxes are similar to the differences in the skulls of dogs compared to wolves. Finally, the desire to be close to and show affection for humans became a genetic characteristic as well.⁸

Dr. Brian Hare, the author of “The Genius of Dogs” and the director of the Duke Canine Cognition Center, said that when he visited these foxes, “they leapt into my arms, nuzzled against my face, and licked my cheeks with their little pink tongues.” Hare also made it clear that these foxes had not been raised or tamed by humans and had only had the same amount of human contact as the others in group-A. Group B foxes were selectively bred which resulted in physical and behavioral changes that had nothing to do with human alterations (besides determining which foxes belonged in which groups).⁹

⁴ Ibid

⁵ Ibid

⁶ *PBS Documentary: Dogs Decoded: NOVA*. Dir. Dan Child. Public Broadcasting Service, 2010. DVD.

⁷ Hare, Brian, and Vanessa Woods. *The Genius of Dogs*. New York: Dutton; the Penguin Group, 2013. 70-79. Print.

⁸ *PBS Documentary: Dogs Decoded: NOVA*. Dir. Dan Child. Public Broadcasting Service, 2010. DVD.

⁹ Ibid

Ultimately, the friendly gene yielded more dog-like characteristics than the other more aggressive foxes; as the *behavior* of the foxes was bred for sociability, the *physical* changes occurred as a byproduct. Domestication had been achieved.

Contrary to popular belief, wolves were not turned into dogs by artificial selection through humans who nurtured wolf cubs from a young age. Ray Coppinger, author of *"Dogs: A Startling New Understanding of Canine Origin, Behavior, and Evolution"* calls this false popular belief "Pinocchio Hypothesis" and points out the fallacies and ludicrousness of this common perception when describing it as "once the wolf is tamed to human wished, it turns into a dog. Somehow Mesolithic people, who had never seen a domestic dog, selected among those tamed and trained wolves for doglike characters that no wolf has ever shown: floppy ears, spotted coats, and other characteristics we think of as strictly doglike."¹⁰ Coppinger and countless other scientists believe that Belyaev's silver fox experiment explains the similar genetic transformation that occurred in the evolutionary domestication of wolves into dogs.

About 1.75 million years ago, when wolves and humans first met, wolves that were the least fearful and the most non-aggressive towards humans began to realize that they could take advantage of the waste produced by nomadic groups of hunters-and-gatherers, (such as feces, rotting meat and bones and vegetable scraps). Brian Hare describes the first few generations of these wolves as "silently approaching under the cover of darkness," but as these wolves continued to benefit from this new source of food, they were able to reproduce more productively, and consequently, "these offspring would inherit their parents' more relaxed genetic predisposition towards humans. This cycle would then repeat itself over generations as less reactive wolves introduced calmer offspring to this new method of foraging around human settlements."¹¹ These wolves soon started to show physical changes as they self-domesticated through natural selection, just like in the silver fox experiment. The "friendly-gene" yielded a more dog-like appearance as well as a better understanding of human gestures and voices.

One main reason that humans could even settle down in the first place was because of these wolves, which were by then becoming the first "proto-dogs." Because the proto-dogs hung around the groups of humans, they naturally did things that greatly benefitted the humans, such as bark when strangers approached, or shadow groups of hunters and lead the way to potential prey with their enhanced sense of smell.¹² It was the tolerant and friendly humans who realized the potential for help from these dogs. Consequently, with the help of the dogs, the humans could then hunt for shorter periods of time and have much more success. They no longer needed to be out hunting all day long with the prospect of coming back empty handed. This gave them more time to settle down and create real communities with specialized jobs and agricultural practices.

Humans are naturally attracted to things that understand us. Dogs understand humans in a way that no other species can, not even chimpanzees, our closest evolutionary relatives. Through domestication, dogs understand us in ways that make communicating easy. This might sound strange since dogs cannot talk, but research

¹⁰ Coppinger, Raymond, and Lorna Coppinger. "Wolves Evolve into Dogs." *Dogs: A Startling New Understanding of Canine Origin, Behavior, and Evolution*. New York: Scribner, 2001. 41-42. Print.

¹¹ Hare, Brian, and Vanessa Woods. *The Genius of Dogs*. New York: Dutton; the Penguin Group, 2013. 89. Print.

¹² Ibid. 91-93.

shows that dogs can innately understand humans, and humans can generally understand dogs, without constant verbal communication.

First off, dogs can understand human gestures such as pointing. Brian Hare conducted an experiment with his dog Oreo in which there was a treat under one of two cups, and the dog didn't know which one. Then Hare pointed to the cup it was under, and Oreo went to that cup and retrieved the treat. Hare conducted this experiment multiple times and with multiple dogs, and the dogs always observed, trusted, and acted upon the human's guidance. The human doesn't necessarily even have to point – a tilt of the head, a glancing of the eyes, or even a pointing of the foot, the majority of dogs succeed. Interestingly enough, wolves cannot do this. The distinctively primitive characteristic of wolves is evident when they often pay no attention whatsoever to the human and have made up their mind what cup to search under even before the human points.

But this is not the only type of intelligence and awareness of humans that dogs have. Dogs can also learn words, distinguish them from other similar words, and even understand a representation of something larger or smaller. A retired psychology professor named John Pilley has been teaching his Border Collie Chaser two words a day; now Chaser knows the words for 800 stuffed toys, 116 balls, 26 Frisbees, and 100 other miscellaneous plastic objects.¹³ Pilley and many other owners have been teaching their dogs words through the process of exclusion, in which the dogs infer that a new word is for a new toy or object, and then the dogs infer that it is the toy or object that doesn't have a name yet because all the others in a grouping have already labeled.¹⁴ This is a similar thought process to that of infants. Hare states, “dogs combines their understanding of our communicative intentions with an understanding of the symbolic nature of our helpful behavior.... No other species besides humans has demonstrated the ability to learn the meaning of words so quickly and with so much flexibility.”¹⁵ Again, the initial self-domestication of trusting and friendly wolves has led to smarter and more intuitive modern dogs.

Similar to the way dogs understand human language, humans can understand and differentiate between different types of dog barks with outstanding accuracy. At the Eötvös Loránd University in Hungary, Dr. Péter Pongrácz, an ethnologist, conducted a study addressing this point precisely. Pongrácz asked 36 people to listen to a set of recordings of dogs barking. 12 of the people were dog owners, 12 did not own a dog, and 12 owned the same breed of dog that was used for the barking recordings. The recordings were barks of dogs that were aggressive, fearful, or playful. The results were that all 36 participants could correctly categorize which bark matched which emotion.¹⁶ Since there was no discrepancy between the dog-owners and the non-dog-owners, this study demonstrates that an understanding of dogs must be ingrained in humans, and vice versa.

Dogs and humans not only self-domesticated, but they also helped each other throughout the process, which led to such a deep understanding and bond with one another. It is this profound understanding of one another that led to agricultural societies,

¹³ Ibid. 12.

¹⁴ Ibid

¹⁵ Ibid. 129-130.

¹⁶ Winerman, L. "When Dogs Bark, Humans Understand." *Apa.org*. American Psychological Association, May 2005. Web. 15 Apr. 2013. <<http://www.apa.org/monitor/may05/dogs.aspx>>.

over 400 different dog breeds,¹⁷ and countless jobs in which working dogs do in order to help people in numerous ways. Some of these jobs are medical and include guiding, hearing, mobility, seizure alert/response, narcolepsy alert/response, diabetic alert, psychiatric service, therapy, cancer sniffing, emotional support, and autism support.¹⁸ Other working dogs are employed for governmental services such as search and rescue, water rescue, detection (anything from bombs and drugs to cellphones in prisons,) and police work.¹⁹ Many individuals also give their dogs duties to help them with tasks like herding, sledding, hunting, and watching and standing guard. But the most pure bond between man and dog of all is in the form of love.

Dogs are extraordinary creatures and so it is no wonder that the study of dogs (also known as Dognition) has exploded in the past 10 years. Brian Hare says it best, “people from all sorts of disciplines realized what had been under our noses the whole time – dogs are one of the most important species we can study. Not only because they have become soft and complacent compared with their wild cousins, but because they were smart enough to come in from the cold and become part of the family.”²⁰ I love this quote because it touches on the two parts of why the bond between dogs and humans is so strong. The first is scientific: dogs understand us and our gestures, and vice versa, because of domestication. The second is emotion – dogs really are a part of the human family unit. Not only have I experienced this bond with the dogs I’ve had myself, but I have also observed it through the process of photographing owners with their dogs. One man I photographed called his dog Bugsy, “The love of my life.” Another couple told me that they “wouldn’t have been able to get through Christmas if it wasn’t for Jet.” These comments have given me insight into the world of human and dog relationships, as well as human nature in general; dogs fill the innate human desire to be unconditionally loved and understood.

Thinking back on each of the experiments I have discussed, and realizing how much dogs as a species have changed over thousands of years, I wonder if the transformation and self-domestication is over (for dogs and for any species, that is). Friendliness and tolerance genes have become more prominent over time because of the way they have benefitted humans and dogs. Is this progression over or is it still occurring? Is another beneficial gene advancing as we speak?

Perhaps people with a heightened ability for technology are succeeding more and in future generations we will make sense of the technological boom because of that genetic selection and growth. In terms of dogs, maybe ones that are more tolerant to time alone or playing with other dogs in day-care setting for hours on end might benefit more in today’s modern society because more people go to work early and come home late. Another beneficial gene for dogs might be the smaller, daintier dogs that can fit in purses and can be viewed as an “accessory” to some. Because of certain societal values such as

¹⁷ "Number of Dog Breeds in the World." *Numberof.net*. Mimbo, 8 Mar. 2010. Web. 29 Apr. 2013. <<http://www.numberof.net/number-of-dog-breeds-in-the-world/>>.

¹⁸ "Types of Working Dogs." *Service Dog Central*. N.p., n.d. Web. 29 Apr. 2013. <<http://servicedogcentral.org/content/node/280>>.

¹⁹ "20 Jobs Dogs Have Performed." *Dogguide.net*. Dog Guide, n.d. Web. 29 Apr. 2013. <<http://www.dogguide.net/20-jobs-dog-have-done.php>>.

²⁰ Hare, Brian, and Vanessa Woods. *The Genius of Dogs*. New York: Dutton; the Penguin Group, 2013. 14. Print.

excessive wealth, those types of dogs may genetically succeed more in the future. We can only imagine what sort of physical characteristics these genes may yield and the ways that dogs could change. These types of hypotheses beg the question what will the temperament of our species be like in 500 years and how will our relationship with dogs change? The bond built up from pure love has not changed thus far and will most likely stay the same if not grow and expand in new, exciting ways.