

Nature and Nurture

A Basic Look At Temperament

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There has been much discussion regarding the role of genetics in temperament. One question that is relatively easy to clarify is who influences temperament more: sire or dam? From a genetic standpoint, sire and dam influence temperament 50% respectively. To be very basic, when a sex cell is created (sperm or egg), it contains HALF of the genetic material of the donating parent. Therefore, upon fertilization, the produced embryo has 100% of its genetic material. If one parent is pure for a dominant trait and the other is recessive for the same trait, then the dominant will be expressed. Various researchers are trying to track canine genetics in the Dog Genome Project. Part of the genome project is to learn more about the genetics behind not only health but also behavior. Let's look at an example of genetics to get us started.

In Sheltie colors, B - brown (sable) is dominant over b - black (as in tri or bi-black). If you breed a pure for brown dog to a black, all the puppies will look brown but carry a black gene. If you breed a brown carrying for black to a brown carrying for black, you will get some pups pure for brown, pure for black or brown carrying a black recessive. A brown carrying a black bred to a black will produce browns carrying for black and black. Two pure for brown dogs will only produce brown. Two blacks will only produce black. This is a simple two-gene thing – dominant/recessive.

However, life is not that simple. Color and patterns are more than a simple couple of genes. Color and patterns are polygenetic. In other words, more than two genes are involved. Toss in the other genes that can affect color and patterns like white factoring, the merling gene, brindling, bi factoring, and partially dominant genes. Shelties are not just brown and black! To further complicate things, just because a dog looks something, does not mean it genetically is. Remember back to high school Biology? Genotype is what the genetics are and phenotype is what we observe. For example: how many sable merles do not look merled? The dog looks sable (phenotype) but in reality is a merle (genotype). The merling gene is partially dominant. Whenever a merle gene is present, it will be expressed – and only one is needed for expression. The merling gene is a form of dilution factor. Using M for merle: BBM or BbM would be sable merle (one pure for brown, one carrying a black recessive); bbM would be a black merle. The black will dilute to blue mottled with black. If there is tan or not determines if the dog is what we call a blue merle or a bi-blue. MM is a double merle. BB/BbMM is a double dilute sable merle and bbMM is a double diluter black (blue) merle. A double merle is a predominantly white dog due to the double merling. It is not to be confused with an excess of white factoring which produces color headed whites and piebalds. There are MANY genes that determine the color and pattern of dogs. How does this relate to

temperament? It does not, but most people can relate to color genetics, as they are visible traits. This makes them a good starting block for genetics in other things. Now that we are warmed up, let's look at temperament!

There is much research being done as to the genetics behind behavior in dogs. Temperament is thought to be a polygenetic trait. As of now, the genes for temperament have yet to be identified and isolated. What is known is that there are genetic influences of temperament. Once the egg and sperm unite, if fertilization is successful, the groundwork for health, color, size, coat and even behavior is started. Breed traits are basically predispositions that begin on a genetic level: e.g., young puppies exhibiting temperament traits of the breed without any formal training. There may be a strong work drive - Border Collies. There may be a predisposition to scenting - Bloodhounds. Other breeds have a strong desire to chase - Greyhounds. Some puppies may have a predisposition towards fear or dominance. Genetics lay the foundation for what we have to work with. Genetics is the Nature half. To complicate matters, there are many external factors that influence the temperament of a dog. This is the Nurture half. Make the analogy of grooming for the show ring. How many exhibitors use various grooming aids such as chalk, coat clipping and even hair color to influence the look of the dog? Technically in the show ring, this practice is supposed to be frowned upon. A dog should be shown clean but natural. However, it makes a good analogy. Take what nature gives you and build upon it.

Ideally, to help encourage sound temperaments in offspring, only dogs with sound temperaments should be bred. But are sound parents enough? When breeding, more than just the parents need to be looked at until the genetics behind temperament are better understood. Dogs from lines with a predominance of consistently sound temperaments should be bred. This will help increase the chance of passing good temperaments on to the offspring (though not a guarantee). If a line is producing a lot of questionable dogs as opposed to sound dogs, there may be a genetic predisposition for poor temperaments in that line. (Poor in this context means: shy/fearful, aggressive, overly dominant, undesired temperament traits.) Here is where the question of which parent more greatly influences temperament comes into play.

A male can influence a LINE genetically more than a female. Why? Look at how many times a year a male can be bred as opposed to a female. Does he have more influence over a single pup than the female? No. Remember each parent contributes 50% of his/her genetic material to an offspring. However, a male who has something bad or good can spread it faster through a line than a female can. A male can sire more litters in a month than a female could have her entire safe breeding life. Therefore, a male with poor temperament can affect the line to a greater degree than the female. The dam is the most influential socially with the pups. Not only does she contribute half of her genetics, she is the first social interaction a pup will have. Littermates and the breeder are next in line. So in this respect, the dam has more influence socially. If two parents have poor temperaments, the chance of reproducing this trait is greater. Therefore, breeding for correct temperament and insisting sire and dam have it is important. Again, to be safe, go a step further and look to relatives of these dogs. If one or both has a good temperament

but has produced poor pups or has more poor relatives that you are comfortable with, reconsider the breeding of this dog. Remember, the actual genetics behind temperament are not fully known. This means there is no genetic test as of now for temperament genes.

So, you have bred the two best dogs in temperament that you can. You have increased the probability of pups with good temperaments (Nature). Now we come into the environmental factors of temperament (Nurture). What are you doing to help ensure the genetics you tried to reproduce can develop? The term “Kennel Dog” gets tossed around quite a bit. To some, this means a dog that has lived most of its life in a kennel situation. The dog is socialized basically to that environment and the show ring. The dog may be confident in these situations but gets nervous when outside of them. There can be varying degrees of this. However, puppies that are raised in a kennel environment and placed in homes while still puppies can show the effects of being a “Kennel Dog.” I have worked with multiple “Kennel Dogs” that were either grown out show pups who did not make the cut or retired show dogs placed in pet homes. With some of these dogs, a solid temperament is evident. The dogs may show apprehension at a new thing due to a lack of good socializing but recover fast from the initial shock. These are dogs that probably come from good backgrounds but the socializing, especially as younger pups, was not done adequately to things other than the show ring and kennel. The dog is genetically predisposed to better handle stresses and soon “comes out of his shell.” However, other dogs remain scared of their own shadows and take more work to get the dogs to even accept a new person. These dogs may have a genetic predisposition to shyness or even fear. They may never be as outgoing as other dogs no matter how much work is done. How many of us have seen dogs that consistently “shy” or even panic in the ring? If the dog was properly trained and socialized to a show atmosphere the dog should not be shying. The dog should be comfortable in the show environment. If the dog is not, two things can be assumed: either the dog lacks proper socialization or the dog has a predisposition to a poor temperament. If we see many dogs from the same breeder/line shying in the ring, this should raise a red flag. If different people own them, another red flag should be raised. What is being produced for temperament and/or how are the dogs being worked with?

It was once thought that neonatal puppies should never be handled. Newer thoughts are that handling gently of the neonatal puppy can help with very early socializing. Organizations that breed service dog puppies are exploring this concept more and more. First, puppies are bred with health, working ability (part of temperament) and overall temperament as foremost concerns. Next, as the puppies grow, they are handled and exposed to new things long before they go to raisers. Neonatal massage if done properly can be a great tool in early socializing and teaching pups to relax. Pups worked gently with during the first 12 days of life showed a lessening in stress and greater recovery when exposed to new things. Picking up, gentle exposures to temperature changes, etc (just lifting out of the whelping box is a change for the neonate), all are forms of socializing. Pups left alone during this time often grew into more emotionally reactive adults. As eyes and ears open, the pups are gradually and gently exposed to sounds and sights. Play yards are enriched with things to climb, knock about, crawl under, etc. Toys

are rotated so that the pups get exposed to many different things. They are given different surfaces to walk on like grass, gravel, wood, concrete and metal. This is all done in a controlled environment. Puppies are gradually introduced to new situations so as not to startle them and risk developing fear responses. Just because a pup is too young to leave the home safely is no excuse for not beginning early socializing. Some service dog organizations begin teaching basic behaviors on cue such as sit, walking with humans, lying down as well as building confidence in young pups before they go to raisers for the next 12 – 24 months. These puppies are given not only the best genetic basis possible, but early work to help improve the developing temperament of the pup. People breeding dogs need to keep this in mind: early socializing starting from birth. What about fear stages we all hear about? Puppies go through stages all through their development. Some of these stages include apprehension or even fear of new things. Some trainers and behaviorists try to give set ages for when a growing pup will enter these “fear stages.” However, I have found that the timing of stages varies puppy to puppy. Some pups never appear to go through them. Some are at the other end of the spectrum and seem to be afraid all the time. Therefore, age-related fear stages, in my opinion, should be used as a guide and not law. Each puppy is an individual. When we try to pigeonhole all pups into a concept, we can end up retarding ourselves and inadvertently affecting the development of the individual pup. Again, use these stages as a guide but know not to expect all pups to fall into them. The prime time for socializing is between 3 – 14 weeks of age with fear responses generally escalating around five weeks of age and leveling off at about 10 weeks or so. If a puppy develops a fear of something during this time, he may remain fearful of it unless worked with. The developing fears can also include things a pup was not exposed to before leaving the breeder’s home. So, get creative and see what scenarios you can mimic in your home to help give the pups you have produced a boost on the nurturing that will hopefully happen in their future environments. Now expand upon this. Breeders and trainers need to educate new owners about early socializing in the new home before the pup is old enough (completed the DHLPP puppy vaccines) to begin Puppy Kindergarten. All the hard work you do to get pups off to a good start could be set back if the owners do not continue it.

What about temperament testing? Puppies in most service organizations are temperament tested several times. A single temperament test at say seven weeks of age is not a good indicator of the pup’s final outcome. A pup that tests on the lower end of what you desire on one day, may test higher a few days later as he gains more confidence and is worked with. A pup that seems fine one day may exhibit apprehension the next. Pups that consistently exhibit fear and do not recover well when exposed to new things are pups to worry about. These pups may become problems (such as fear aggressive). Pups that score very high on tests and show no fear and actually want to seek out new things may be too much for the average dog owner. These are pups that are sometimes referred to as having high work drives. In terriers, the term “game” may be applied. These pups may be dominant and very self-assured to the point of trying to be boss in the house if they feel the owners are not up to the job. Frequent temperament testing of pups can help you determine what pups are best in what homes or for what events. A lower key dog may not do well in Agility whereas an overly outgoing pup may be too much for the owner who wants a dog to take to nursing homes. A pup that is very shy and even

fearful may be a problem later on if placed in the wrong home. And to the extreme, some dogs with serious genetic predispositions to either end of the temperament scale may never be able to safely function in society. Through frequent temperament testing, the environment can be adapted to work with each pup and bring out its best to give the new home a solid basis to work with.

What about temperament growth? It has been said that temperament development occurs only during puppy hood. Yes and no. The early stages of growth and development can give the basis for later temperament. This is why early socializing and training from puppy through adult hood is important. However, there have been cases of dogs that have gone through years of trauma and neglect rebounding and becoming superb companions and even working dogs. Obviously, these dogs have something else going on. If temperament was all nature and development stopped as the dog entered adulthood, then these dogs would theoretically never be able to be successfully rehomed. On the other hand, dogs who have had great homes, well socialized and trained positively, yet are still nervous wrecks even as adults and with extensive work may have something else going on here. Maybe it's those genes?

Temperament is a combination of nature and nurture. Each parent contributes 50% of its genetic material. Until the genetics behind temperament are identified and isolated, the best assurance for a good background is to breed the best dogs from the best dogs. Give a solid foundation to the line. From there, the nurture half of the equation will play a larger factor. Ultimately, we make dogs what they are.

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