

## DOG BEHAVIOR

Dogs rely very heavily on their senses to give them an accurate impression of the world around them, but whereas, in terms of its behavior, the wolf is a generalist, dog breeds have tended to become more specialized. This is often reflected by their anatomy. As an example, hounds can be broadly divided into groups, based largely on their hunting technique.

Sighthounds, such as the Greyhound and Borzoi, rely on their keen vision to detect their quarry. As a result, they have a relatively narrow nose, but their eyes are set in a relatively forward position on their face. This gives them a wide field of vision—equivalent to 270 degrees, out of a maximum of 360 degrees—whereas the equivalent figure for broad-faced dogs such as Boxers is just 200 degrees. We humans can see little more than 100 degrees around our heads. Scenthounds such as the Bloodhound, on the other hand, have a much broader nose than sighthounds. This increases their ability to detect scent molecules, while their area of the brain where smells register, called the rhinecephalon, is relatively large. Bloodhounds are able to detect tiny traces of scent molecules, which can be sufficient to allow them to follow a trail made days before.

One of the interesting things about dogs is the way that male dogs are able to sense when a bitch is in heat and ready to mate in the neighborhood. This is the result of special chemical messengers known as pheromones that are released into the atmosphere by the bitch, and can be detected by male dogs. These scent particles are inhaled through the mouth, and impinge here on a structure called Jacobson's organ, which is located in the roof of the mouth. The dog's sense of smell is not consistent throughout its life, however, since in puppies this sense is poorly developed. It is also affected by hunger—perhaps unsurprisingly it tends to diminish after a meal.

As hunters, dogs also possess binocular vision, which enables them to gain a very clear impression of the position of objects, including prey, directly in front of them. The image from each eye overlaps to a degree in the central area of their field of vision, and the brain computes the exact position of a ball (or indeed prey) in front of the dog, so it can time its leap with great accuracy to catch the object, being certain as to where it is.

The sight of dogs is such that they may not have such a clear image of the world around them during the daytime as we do, but they possess much better nighttime vision. This is because of the arrangement of special cells on the retina at the back of each eye where the image forms. Dogs have a preponderance of rod cells here, rather than cones. As a result, they can see under conditions that would appear completely dark to our eyes, although the downside is that their color vision is not as good. Furthermore, there is a reflective layer at the back of the dog's retina, called the tapetum lucidum, which reflects light back through this structure, triggering the cells again and thereby increasing the impact of the available light.

Dogs are social animals by nature, particularly those that have grown up together, reflecting the natural pack structure of their Grey Wolf ancestor. They will enjoy playing together, although one individual is always likely to be more dominant.  
*(Marc Henrie)*



## TOP DOGS

The hearing of dogs is also generally vastly superior to our own, although occasionally deafness may be associated with a certain coat color in a particular breed, such as white Boxers. It can be surprisingly difficult to test a dog's hearing. If you clap your hands near its ears in search of a reaction, for example, your dog may respond simply because it notices the resulting air current rather than the sound. But overall, a dog that is deaf appears unresponsive, failing even to acknowledge your presence when called, particularly when you are out of sight.

Normally, however, dogs are able to hear a much wider range of sounds than we can, thanks to their more sensitive hearing. This is partly a reflection of their hunting abilities, since it enables them to detect the calls of rodents that are inaudible to our ears. They are also able to detect the sound made by special dog whistles, which appear silent to us. Our upper hearing frequency is about 20,000 hertz, whereas dog whistles have a frequency of 30,000 hertz, which is well within the dog's hearing range, which extends up to 100,000 hertz, although this will fall back somewhat as the dog grows older.

Scent plays an important part in dog behavior, with urine being used as a scent marker. The reason that male dogs start lifting their leg to urinate after they mature is that this reinforces their territorial claims. The urine itself is deposited in prominent places, at a height that corresponds roughly to that of a dog's nose, so that it will be unavoidable to other dogs passing this spot. This is similar to the way in which wild dogs mark their territories.

When dogs meet directly for the first time, they are likely to be wary of each other, with their body language coming into play. They will approach each other face to face, sniffing cautiously, and gradually move round to smell the ano-genital region. The key moment, however, is when one dog looks away, because this indicates that it is not challenging the other dog, which may then display more dominant behavior.

Most encounters pass off peacefully, and dogs that meet each other regularly when out for walks can strike up close bonds, often playing together in a friendly way. Just occasionally, however, things do not go so well, particularly if both dogs are young males and neither is keen to back down. They are likely to start growling with increasing menace at each other. The hackles, forming the area of fur running down the back, will be raised as both dogs try to look bigger and more intimidating to their would-be rival. The lips are drawn back revealing the teeth, as a further warning, giving one of the dogs a final opportunity to give way.

It is after this point that fighting is likely. Usually what happens is that after a brief encounter the weaker dog runs off with its tail between its legs, pursued for a short distance by the victor. Provided that the dogs are not confined, the risk of serious injury resulting from a fight is relatively slight, but blood may still be spilt. Neutering a dog that is persistently aggressive is likely to lessen its instinct to fight, by lowering the circulating level of the male hormone testosterone in its blood, but up to this point it is advisable to fit the dog with a muzzle when going out for a walk together.



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Far Left: Dogs are very adaptable, often living happily in the company of a range of other pets, particularly if they have grown up in a multi-pet household. Cats usually prove to have more dominant natures, even if they are smaller, but dogs are often very affectionate towards their feline companions. (Marc Henrie)

Left: Being such social animals, dogs seek the attention of their owners and like to be petted. A bitch is able to recognize her offspring by scent, which plays a very significant role in canine communication from an early stage in life. (Marc Henrie)

