

Dog Sense-Ability

How your dog's five senses shape his world.

Joan Capuzzi Giresi, VMD

Taste What people call taste buds are really microscopic nests of cells located on the surface of the tongue and, in small numbers, on the soft palate and rear of the mouth. When food is dissolved in saliva, the taste receptors send messages to the brain via the lingual and glossopharyngeal nerves.

As in humans, your dog's main taste sensations are sweetness, sourness, and saltiness. While sour substances are discerned over his entire tongue, sweetness and saltiness are perceived only in the front two-thirds of the tongue. **Sight** Your dog's eyes serve his predatory existence. Thus, his eyes are set forward (compare them to the lateral-set eyes of prey animals like cows and horses), providing adequate depth perception for the chase. The dog's depth perception and ability to focus on objects at varying distances are, however, inferior to ours. For your dog, field depth gives way to field breadth. The average dog has a visual field of about 240 degrees (vs. 180 degrees in people and 200 degrees in cats), and therefore greater peripheral vision than we do ... the better to scan the horizon rapidly. Visual field may vary by breed, as some Shih Tzu, for instance have more wide-set eyes and perhaps slightly better peripheral vision. The canine retina refreshes more rapidly than does the human retina, lending dogs superb ability to perceive moving objects. To understand this high "flicker" rate, consider television. To your dog, the rapidly changing images on the screen which appear fluid to us probably look choppy.

Dogs do come in second to humans in the ability to see shapes and details. They average 20:75 vision, which means your dog sees at a distance of 20 feet what a person with normal vision sees from a distance of 75 feet. It's okay, though rare is the dog that must see the blackboard or thread a needle. **Color vision?** Dogs have fewer color-sensitive cone photoreceptors, specialized cells responsible for defining color and detail in daylight, than we do. Consequently, they likely are green-red colorblind. Their world is probably tinted in blues, yellows, and shades of gray. What your dog lacks in acuity and color vision, he makes up for once the lights go out. Because the canine retina is comprised of mainly rod photoreceptors, which function well in dim light, he has good night vision and can probably differentiate shades of gray finely. His other nocturnal adaptation is a specialized layer of tissue called the tapetum lucidum, located behind the retina. This luminescent layer which causes the greenish "eye shine" that shows up in the low light and also in photographs of our dogs helps the dog assimilate depleted amounts of light by reflecting it back on the retina a second time.