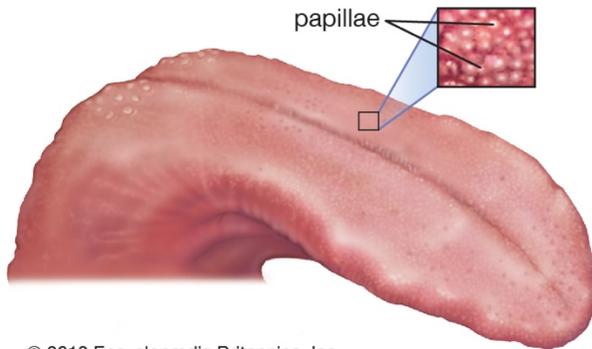
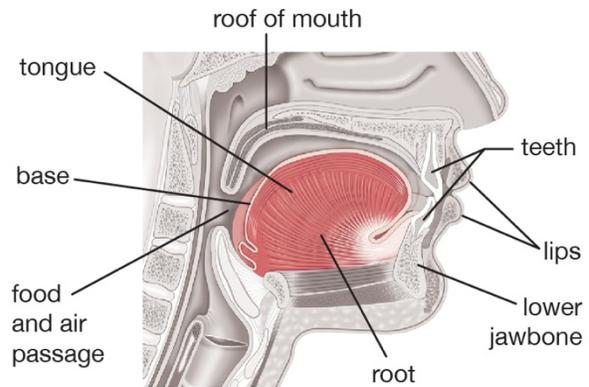


Tongue

The human tongue



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An organ of both speech and digestion in humans, the tongue is composed mostly of muscle cells interspersed with glands, sensory cells, and fatty tissue. The tongue moves food around in the mouth during chewing, and it helps to moisten food with saliva. During swallowing the tongue contracts and pushes food backward toward the pharynx; hence, the tongue is a part of the digestive system. The tongue is also an organ of speech. By touching or not touching the teeth, the roof of the mouth, and the soft palate, it helps in the formation of sounds.

In some animals—frogs, for example—the tongue is long and adapted to capturing insect prey. The tongues of certain reptiles function primarily as sensory organs, whereas cats and some other mammals use their tongues for grooming and cleaning.

A mucous membrane, or mucosa, covers the tongue. The top surface, or dorsum, contains many tiny projections of the mucosa called papillae. They contain taste buds sensitive to food flavors and serous glands that secrete some of the fluids in saliva. Saliva keeps the mouth moist and helps lubricate food particles. The base, or upper rear portion of the tongue, has no papillae, but serous and mucus-secreting glands are present. The under, or inferior, surface leads from the tip of the tongue to the floor of the mouth. Its mucous membrane is smooth, lacks papillae, and is purple in color from the many blood vessels present in it. The root, the remainder of the underside that lies on the floor of the mouth, contains bundles of nerves, arteries, and muscles that branch to other regions of the tongue.

Nerves leading from the tongue are stimulated by taste buds that react with chemicals in moistened food. The brain interprets these nervous impulses as sensations of taste. There are five basic taste sensations—salty, sweet, bitter, sour,

and umami—which are associated with receptor cells throughout the dorsum. On average, the human tongue has 2,000–8,000 taste buds. Each taste bud in turn has between 50 and 150 taste receptor cells. Thus the human tongue may have hundreds of thousands of receptor cells. The total number of taste buds varies widely by individual. For example, in a square inch on the tip of the tongue, some people may have only a few taste buds, whereas others may have more than one thousand. This variability contributes to differences in the taste sensations experienced by different people. Taste sensations produced within an individual taste bud also vary, since each taste bud may contain a mix of receptor cells that respond to different types of chemicals in food. As a result, the sensation of the five tastes is diverse not only within a single taste bud but also throughout the surface of the tongue. The total flavor of a food comes from the combination of taste, smell, touch, texture or consistency, and temperature sensations.

The tongue is subject to a variety of disorders. These include such ailments as cancer, fungus infection, leukoplakia (white patches), congenital defects, and other conditions.

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