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Q.1) THE ANATOMY OF THE TONGUE

The tongue is a muscular organ in the mouth. The tongue is covered with moist, pink tissue called mucosa. Tiny bumps called papillae give the tongue its rough texture. Thousands of taste buds cover the surfaces of the papillae. Taste buds are collections of nerve-like cells that connect to nerves running into the brain.

The tongue is anchored to the mouth by webs of tough tissue and mucosa. The tether holding down the front of the tongue is called the frenum. In the back of the mouth, the tongue is anchored into the hyoid bone. The tongue is vital for chewing and swallowing food, as well as for speech.

The four common tastes are sweet, sour, bitter, and salty. A fifth taste, called umami, results from tasting glutamate (present in MSG). The tongue has many nerves that help detect and transmit taste signals to the brain. Because of this, all parts of the tongue can detect these four common tastes; the commonly described “taste map” of the tongue doesn’t really exist.

Top of Form

Bottom of Form

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APPLIED ANATOMY

* [Thrush](https://www.webmd.com/oral-health/guide/dental-health-thrush) (candidiasis): *Candida albicans* (a yeast) grows over the surface of the mouth and tongue. Thrush can occur in almost anyone, but it occurs more often in people taking steroids or with suppressed immune systems, the very young, and the elderly.
* [Oral cancer](https://www.webmd.com/oral-health/guide/oral-cancer): A growth or ulcer appears on the tongue and grows steadily. Oral cancer is more common in people who smoke and/or drink alcohol heavily.
* Macroglossia (big tongue): This can be broken down into various categories based on the cause. These include congenital, inflammatory, traumatic, cancerous, and metabolic causes. Thyroid disease, lymphangiomas, and congenital abnormalities are among some of the causes of an enlarged tongue.
* [Geographic tongue](https://www.webmd.com/oral-health/tongue-problem-basics-sore-or-discolored-tongue-and-tongue-bumps): Ridges and colored spots migrate over the surface of the tongue, periodically changing its appearance. Geographic tongue is a harmless condition.
* [Burning mouth/burning tongue syndrome](https://www.webmd.com/oral-health/burning-mouth-syndrome-mefref): a relatively common problem. The tongue feels burned or scalded, or strange tastes or sensations develop. Apparently harmless, burning mouth syndrome may be caused by a mild nerve problem.
* Atrophic glossitis (bald tongue): The tongue loses its bumpy texture, becoming smooth. Sometimes this is due to anemia or a B vitamin deficiency.

Question 2. Write an essay on the air sinuses.

**Paranasal sinuses** are a group of four paired [air-filled spaces](https://en.m.wikipedia.org/wiki/Skeletal_pneumaticity) that surround the [nasal cavity](https://en.m.wikipedia.org/wiki/Nasal_cavity). [maxillary sinuses](https://en.m.wikipedia.org/wiki/Maxillary_sinus) are located under the [eyes](https://en.m.wikipedia.org/wiki/Human_eye); the [frontal sinuses](https://en.m.wikipedia.org/wiki/Frontal_sinus) are above the eyes; the[ethmoidal sinuses](https://en.m.wikipedia.org/wiki/Ethmoid_sinus) are between the eyes and the [sphenoidal sinuses](https://en.m.wikipedia.org/wiki/Sphenoidal_sinus) are behind the eyes. The[sinuses](https://en.m.wikipedia.org/wiki/Sinus_(anatomy)) are named for the [facial bones](https://en.m.wikipedia.org/wiki/Facial_skeleton) in which they are located.

## Structure.

Humans possess four paired paranasal sinuses, divided into subgroups that are named according to the [bones](https://en.m.wikipedia.org/wiki/Bone) within which the sinuses lie:

* The [maxillary sinuses](https://en.m.wikipedia.org/wiki/Maxillary_sinus), the largest of the paranasal sinuses, are under the [eyes](https://en.m.wikipedia.org/wiki/Human_eye), in the maxillary bones (open in the back of the[semilunar hiatus](https://en.m.wikipedia.org/wiki/Semilunar_hiatus) of the nose). They are innervated by the [trigeminal nerve](https://en.m.wikipedia.org/wiki/Trigeminal_nerve)
* The [frontal sinuses](https://en.m.wikipedia.org/wiki/Frontal_sinus), superior to the eyes, in the [frontal bone](https://en.m.wikipedia.org/wiki/Frontal_bone), which forms the hard part of the [forehead](https://en.m.wikipedia.org/wiki/Forehead). They are also innervated by the [trigeminal nerve](https://en.m.wikipedia.org/wiki/Trigeminal_nerve)
* The [ethmoidal sinuses](https://en.m.wikipedia.org/wiki/Ethmoid_sinus), which are formed from several discrete air cells within the[ethmoid bone](https://en.m.wikipedia.org/wiki/Ethmoid_bone) between the [nose](https://en.m.wikipedia.org/wiki/Human_nose) and the eyes. They are innervated by the [ethmoidal nerves](https://en.m.wikipedia.org/wiki/Ethmoidal_nerves), which branch from the [nasociliary nerve](https://en.m.wikipedia.org/wiki/Nasociliary_nerve" \o "Nasociliary nerve) of the [trigeminal nerve](https://en.m.wikipedia.org/wiki/Trigeminal_nerve)
* The [sphenoidal sinuses](https://en.m.wikipedia.org/wiki/Sphenoidal_sinus), in the [sphenoid bone](https://en.m.wikipedia.org/wiki/Sphenoid_bone). They are innervated by the trigeminal nerve

The paranasal air sinuses are lined with[respiratory epithelium](https://en.m.wikipedia.org/wiki/Respiratory_epithelium) (ciliated pseudostratified columnar epithelium).

### Development of the air sinuses.

Paranasal sinuses form developmentally through excavation of bone by air-filled sacs ([pneumatic diverticula](https://en.m.wikipedia.org/wiki/Skeletal_pneumaticity)) from the [nasal cavity](https://en.m.wikipedia.org/wiki/Nasal_cavity). This process begins prenatally (intrauterine life), and it continues through the course of an organism's lifetime.

The results of experimental studies suggest that the natural ventilation rate of a sinus with a single [sinus ostium](https://en.m.wikipedia.org/wiki/Sinus_ostium) (opening) is extremely slow. Such limited ventilation may be protective for the sinus, as it would help prevent drying of its mucosal surface and maintain a near-sterile environment with high [carbon dioxide](https://en.m.wikipedia.org/wiki/Carbon_dioxide) concentrations and minimal [pathogen](https://en.m.wikipedia.org/wiki/Pathogen) access. Thus composition of gas content in the maxillary sinus is similar to [venous blood](https://en.m.wikipedia.org/wiki/Venous_blood), with high carbon dioxide and lower [oxygen](https://en.m.wikipedia.org/wiki/Oxygen) levels compared to breathing air.

At birth only the [maxillary sinus](https://en.m.wikipedia.org/wiki/Maxillary_sinus) and the [ethmoid sinus](https://en.m.wikipedia.org/wiki/Ethmoid_sinus) are developed but not yet pneumatized; only by the age of seven they are fully aerated. The [sphenoid sinus](https://en.m.wikipedia.org/wiki/Sphenoid_sinus) appears at the age of three, and the [frontal sinuses](https://en.m.wikipedia.org/wiki/Frontal_sinus) first appear at the age of six, and fully develop during adulthood.

## Clinical Anatomy

### Inflammation

The paranasal sinuses are joined to the [nasal cavity](https://en.m.wikipedia.org/wiki/Nasal_cavity) via small orifices called [ostia](https://en.m.wikipedia.org/wiki/Sinus_ostium). These become blocked easily by allergic inflammation, or by swelling in the nasal lining that occurs with a [cold](https://en.m.wikipedia.org/wiki/Common_cold). If this happens, normal drainage of [mucus](https://en.m.wikipedia.org/wiki/Mucus) within the sinuses is disrupted, and [sinusitis](https://en.m.wikipedia.org/wiki/Sinusitis) may occur. Because the maxillary posterior teeth are close to the maxillary sinus, this can also cause clinical problems if any disease processes are present, such as an infection in any of these teeth. These clinical problems can include secondary sinusitis, the inflammation of the sinuses from another source such as an infection of the adjacent teeth.

These conditions may be treated with drugs such as [decongestants](https://en.m.wikipedia.org/wiki/Decongestant), which cause vasoconstriction in the sinuses; reducing inflammation; by traditional techniques of [nasal irrigation](https://en.m.wikipedia.org/wiki/Nasal_irrigation); or by [corticosteroid](https://en.m.wikipedia.org/wiki/Corticosteroid).

### Cancer.

Malignancies of the paranasal sinuses comprise approximately 0.2% of all malignancies. About 80% of these malignancies arise in the maxillary sinus. Men are much more often affected than women. They most often occur in the age group between 40 and 70 years. [Carcinomas](https://en.m.wikipedia.org/wiki/Carcinoma) are more frequent than [sarcomas](https://en.m.wikipedia.org/wiki/Sarcoma). Metastases are rare. [Tumours](https://en.m.wikipedia.org/wiki/Neoplasm" \o "Neoplasm) of the sphenoid and frontal sinuses are extremely rare.