

# Oral mucosa



# Learning Objectives

- 1- Know the classification of oral mucous membrane.
- 2-Discuss the macroanatomy and microanatomy of the oral mucous membrane; regional variation and its significance.
- 3-Discuss the macroanatomy and microanatomy of dentogingival junction and the mode of epithelial attachment.
- 4- Evaluate the clinical aspects of oral mucous membran

# Definition

- It is the moist pink lining of the oral cavity.
- It is formed of 2 layers, the epithelium and lamina propria.



# Classification according to function

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graph TD; Root[Classification according to function] --> A[A. Masticatory]; Root --> B[B. Lining]; Root --> C[C. Specialized]; A --- A_desc[* Firm and immobile]; B --- B_desc[* Soft and pliable]; C --- C_desc[* Special]; A --- A_list["1. Gingiva<br/>2. Hard palate"]; B --- B_list["1. Labial & buccal mucosa<br/>2. Vestibule<br/>3. Alveolar mucosa<br/>4. Floor of the mouth<br/>5. Inferior surface of tongue<br/>6. Soft palate"]; C --- C_list["Dorsal surface of the tongue"];
```

## A. Masticatory

**\* Firm and immobile**

1. Gingiva
2. Hard palate

## B. Lining

**\* Soft and pliable**

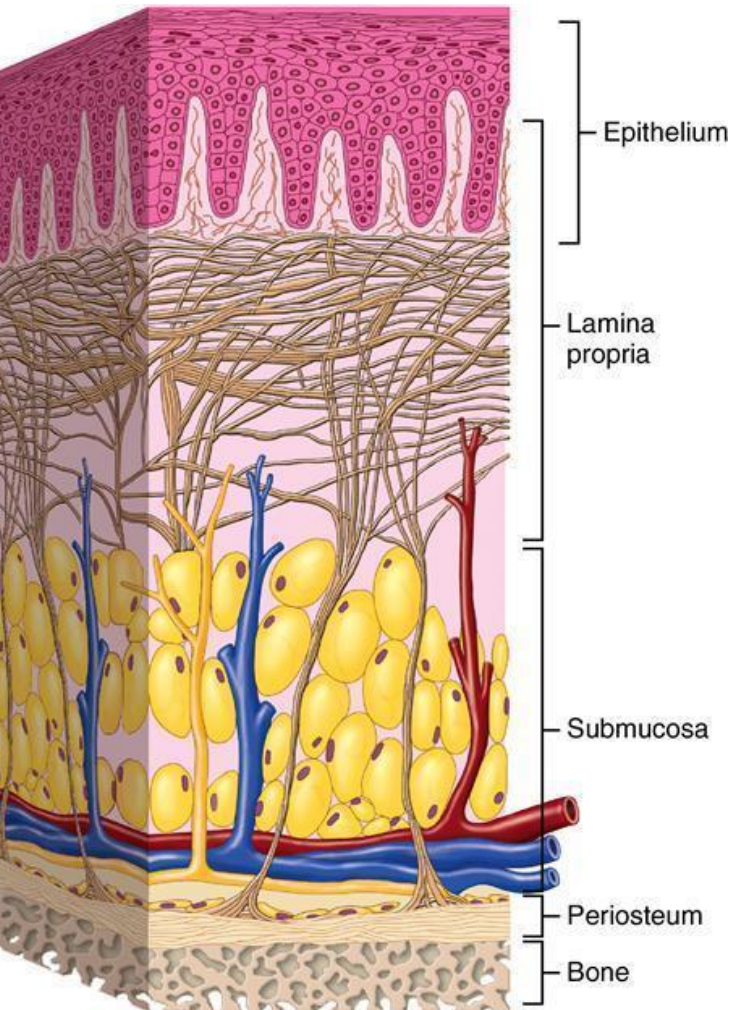
1. Labial & buccal mucosa
2. Vestibule
3. Alveolar mucosa
4. Floor of the mouth
5. Inferior surface of tongue
6. Soft palate

## C. Specialized

**\* Special**

Dorsal surface of the tongue

# Tissue layers



## 1. Epithelium



## 2. Lamina propria



## 3. Submucosa

*Separate oral mucosa from underlying tissue*

(fat cells, glands, BLvs & nerves)

**Found in:** -Lining mucosa

-Anterolateral &

-posterolateral part of hard palate



## 4. Bone, muscles

mucosa

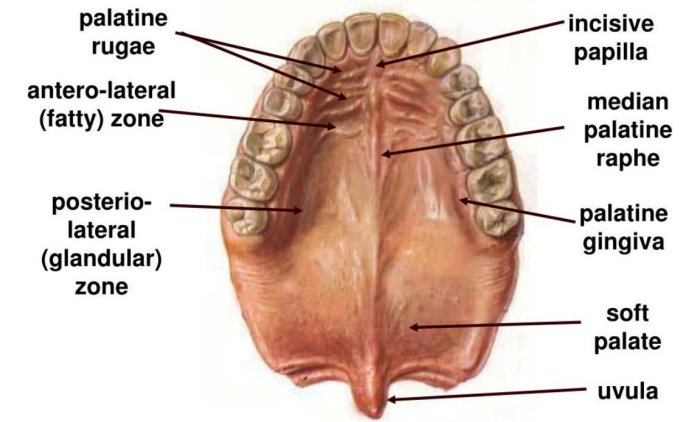
## No submucosa “**Mucoperiosteum**”

*Direct attachment of oral mucosa from underlying tissue*

-Gingiva

-Gingival part of hard palate

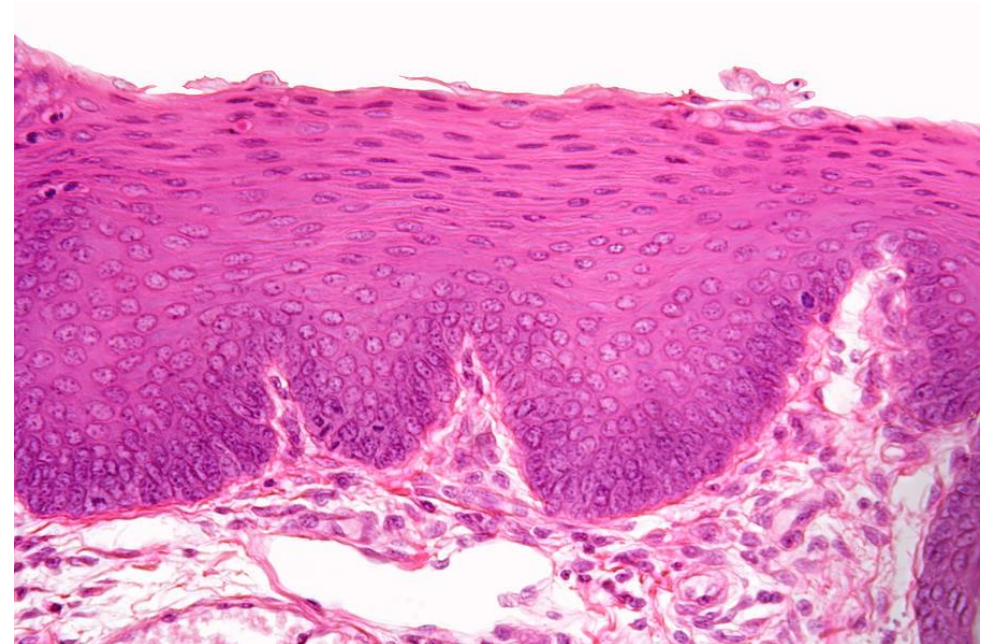
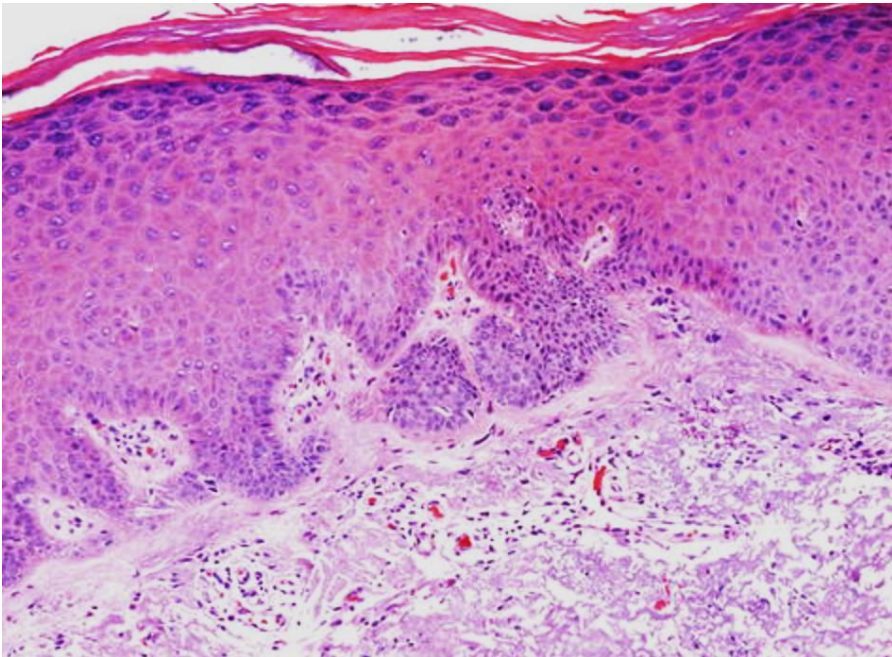
-Median raphe





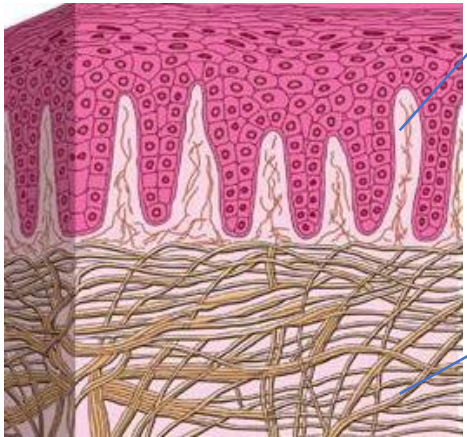
# 1. Oral epithelial

- Layers of tightly contact cells with little or no intercellular spaces.
- #• The epithelium is a **stratified squamous** type; it may be
- Types: A. **Keratinized**: -Inflexible  
-Tough
- B. **Non-keratinized**: -Flexible  
-Soft



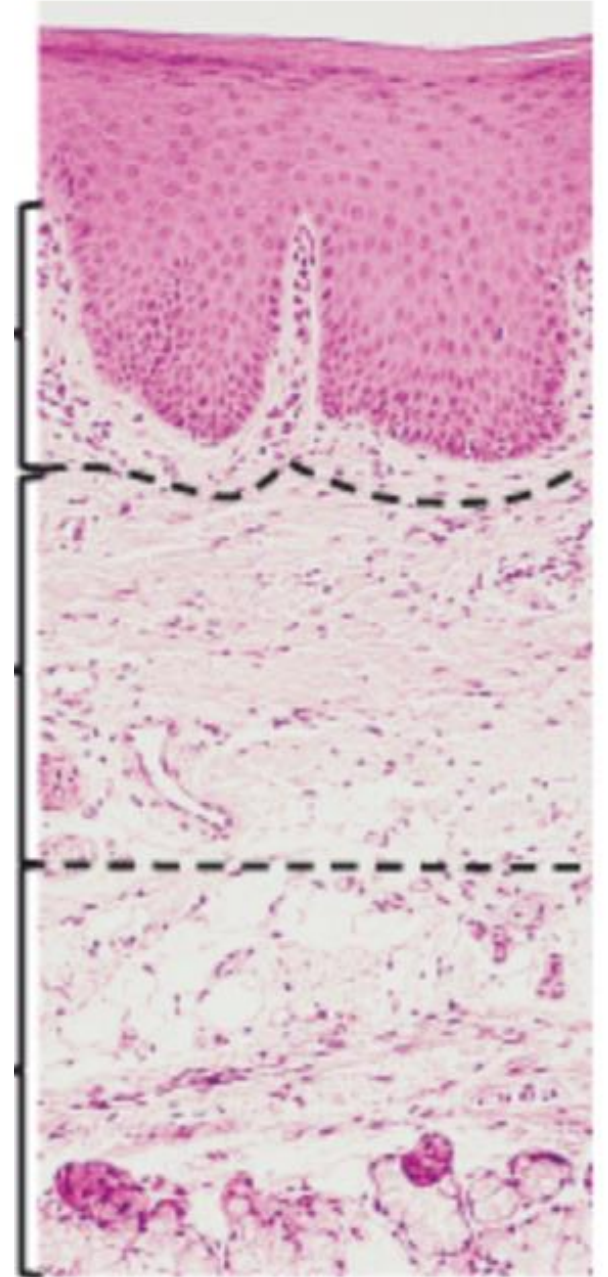
# 2. Lamina propria

- Connective tissue supporting oral epithelium
- Has 2 layers: 1. **Papillary layer:**
  - thin collagen fibers
  - loosely arranged
  - many blood capillaries



## 2. **Reticular layer:**

- net-like
- thick collagen bundles
- arranged parallel to surface





# A. Masticatory mucosa (keratinized)

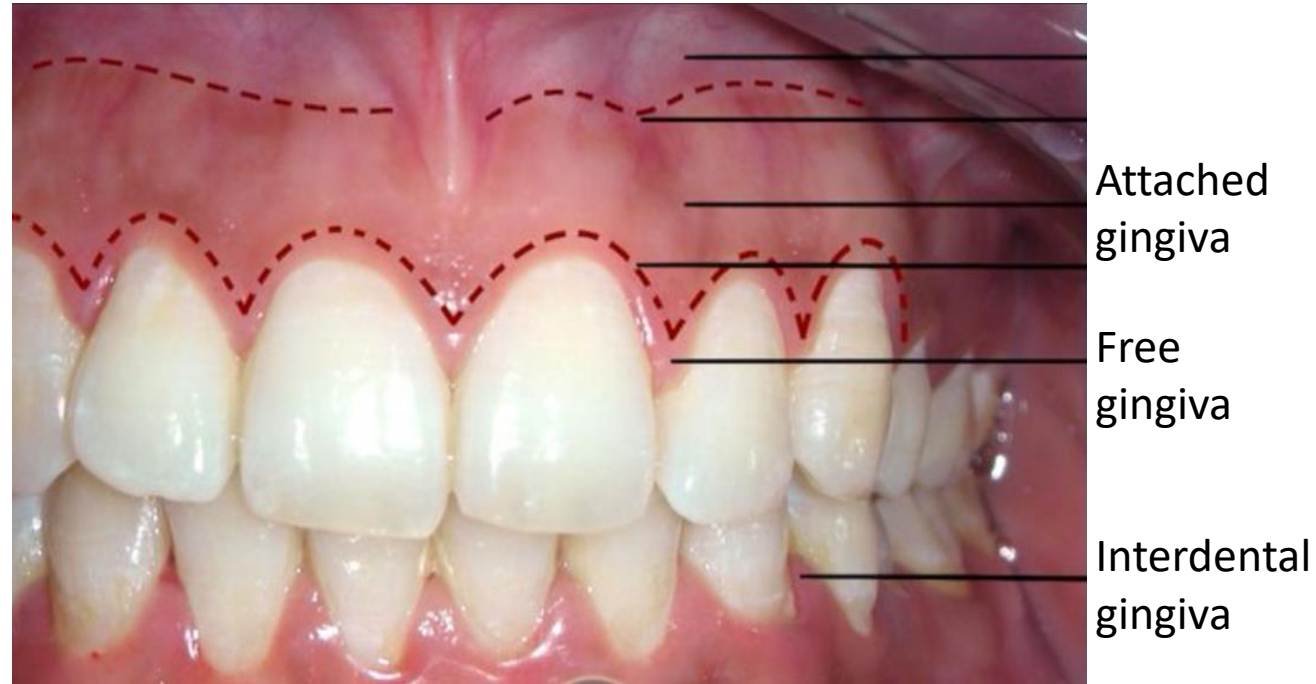
## • 1. Gingiva:

*Characteristics:-* firm & immobile

- pink (coral) in color
- mostly keratinized
- help in mastication
- turnover rate is 41-57 days

*Zones:-* - Free gingiva (0.5-2mm)

- Attached gingiva)
- Interdental gingiva (papilla)





# A. Masticatory mucosa

## 2. Hard palate:

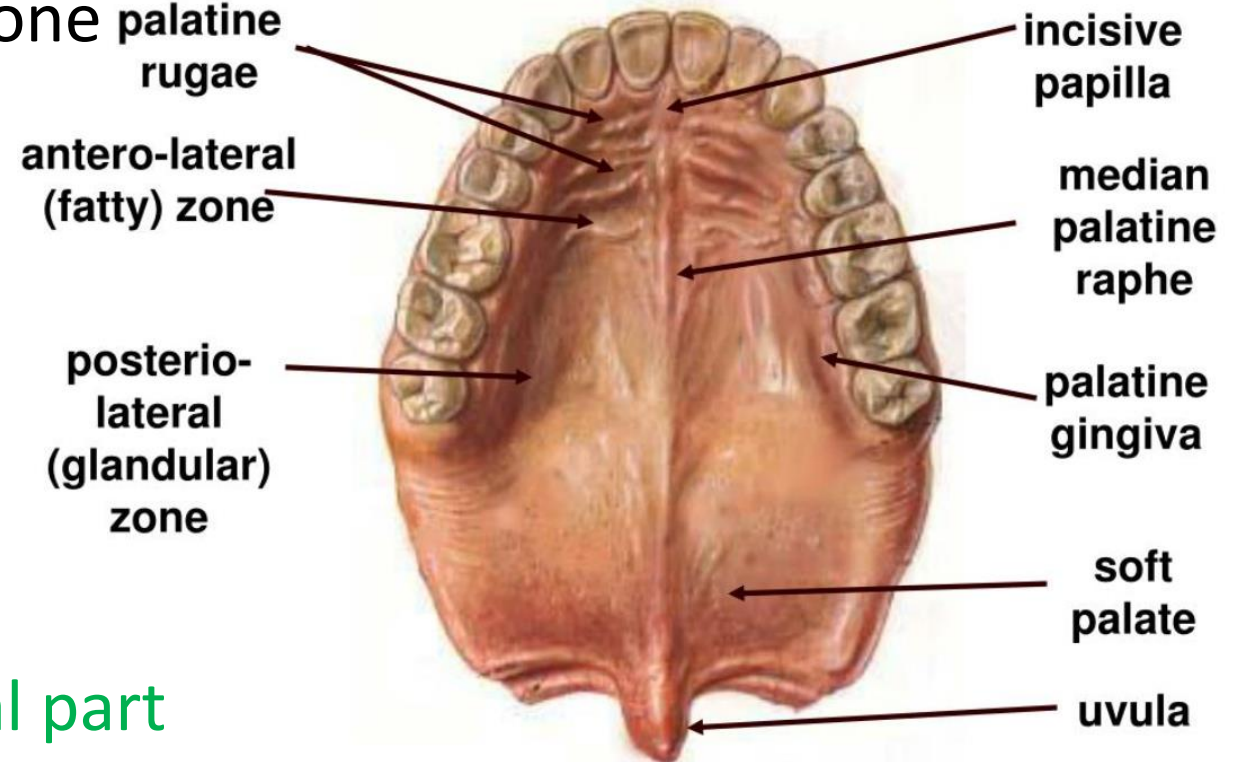
Part of oral mucosa that covers palatal bone

*Characteristics:-* firm & immobile

- pink (coral) in color
- mostly keratinized
- help in mastication

*Zones:-* Median palatine raphe & gingival part

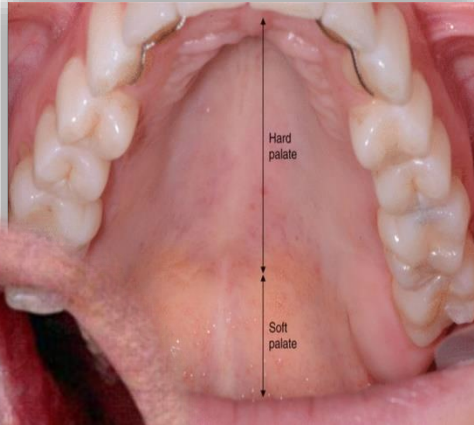
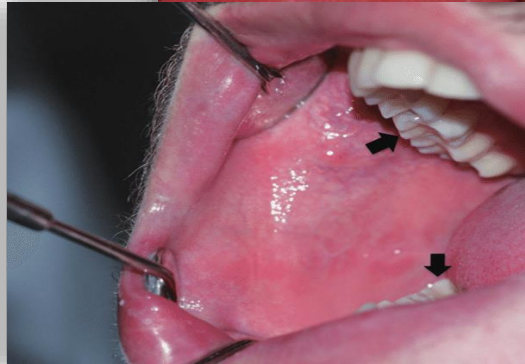
- Anterolateral part
- Posterolateral part



## B. Lining (non keratinized)

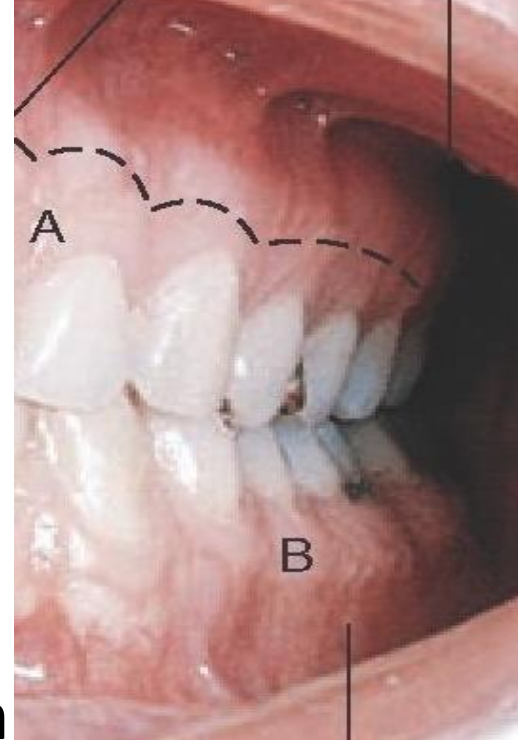
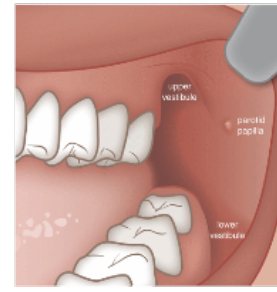
### Firmly attached

1. Labial and Buccal mucosa
2. Inferior surface of the tongue
3. Soft palate



### Loosely attached

1. Vestibule
2. Alveolar mucosa
3. Floor of the mouth



## C. Specialized mucosa

The mucosa of the dorsal surface of the tongue covered by masticatory mucosa

But

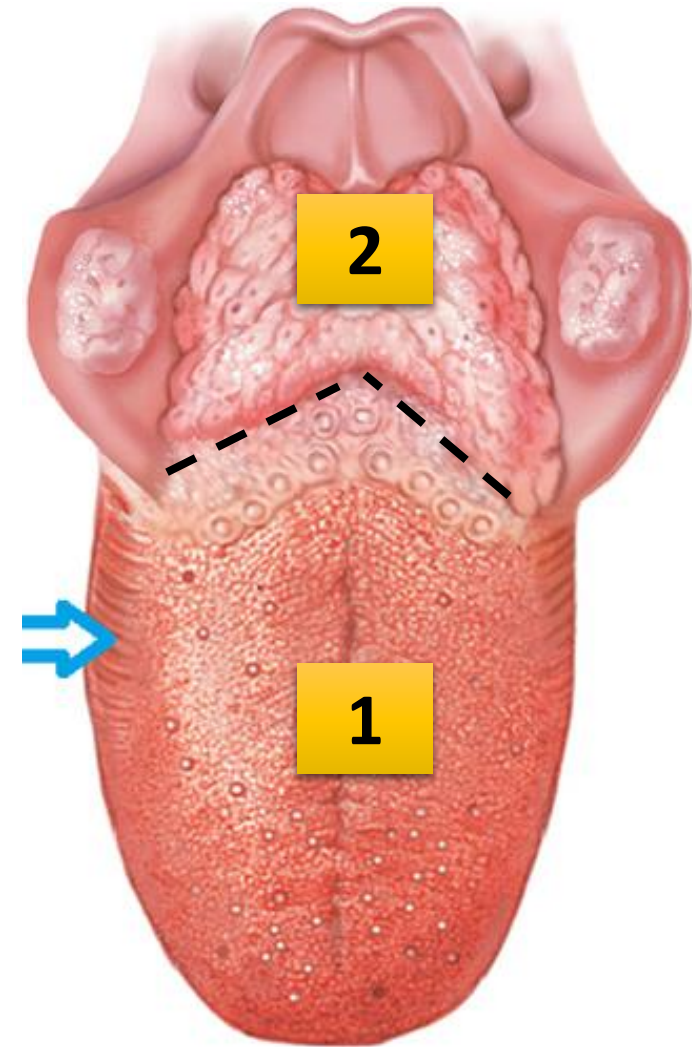
Highly extensible  
lining  
&  
has different types  
of **lingual papillae**.

# Embryologic origin of the tongue mucous membrane

❑ Composed of two parts, divided by the **V shaped groove, sulcus terminalis, or terminal groove.**

**1. The anterior two thirds (the body)(papillary)** from the ectoderm of the **first** pharyngeal arch. contains numerous papillae.

**2. The posterior one third (the base) (lymphatic)** from the endoderm of the **third** pharyngeal arch. contains extensive nodules of lymphoid tissue





# The dorsal surface of the tongue

Posterior third



Anterior two  
third

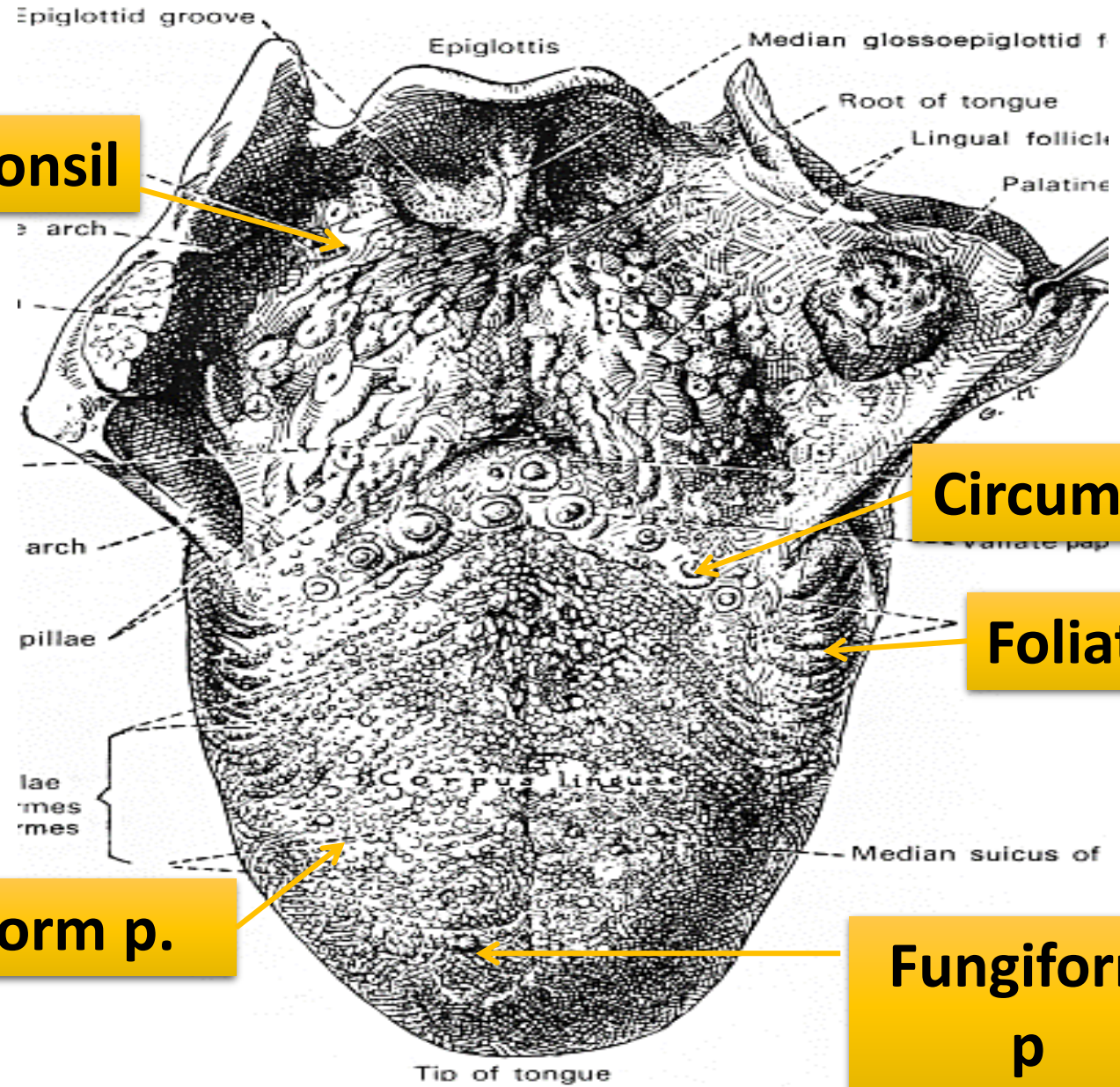
Lingual tonsil

Filiform p.

Circum vallate p.

Foliate p.

Fungiform  
p



# 1-Filiform papillae

- Numerous cone-shaped fine pointed papillae.
- About 2 to 3 mm high from the surface of the tongue.
- Arranged in **parallel rows** toward the midline.

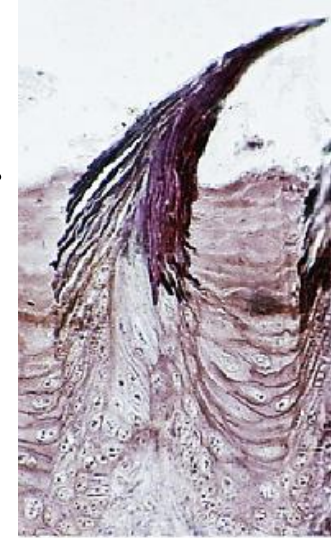
## ❑ **Histologically:**

The most numerous papillae

- 1- They have connective tissue core.
- 2- Covered by **keratinized stratified squamous epithelium**, thicker at their tips forming **tufts at the apex** of the papillae.
- 3- Do **not** contain taste buds.

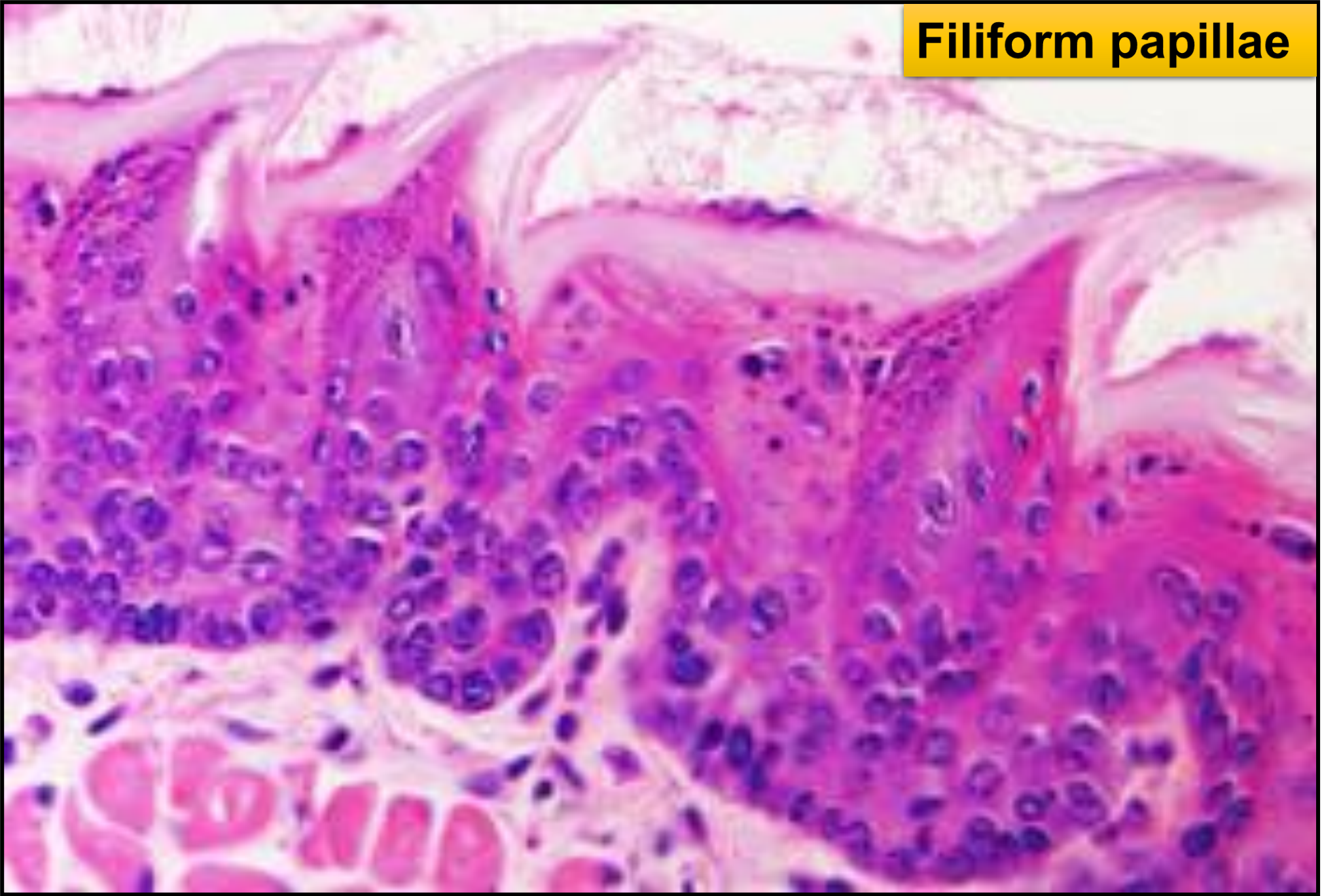
## ❑ **Function:**

- They have mechanical function.





**Filiform papillae**



## 2-Fungiform papillae

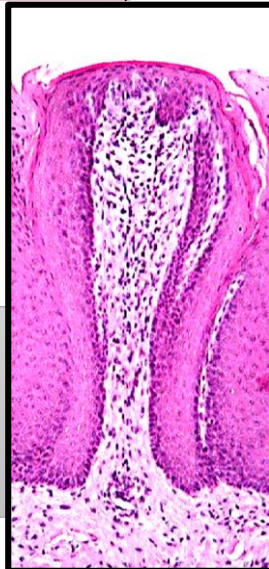
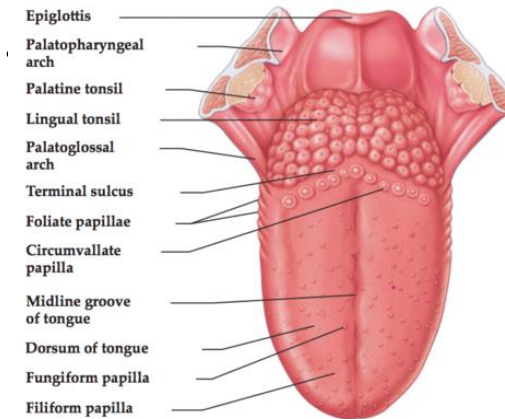
- **Round, reddish prominence (mushroom shaped)** interspersed between the filiform papillae and **protrude above** the surface of the tongue.
- They are **few but more numerous near the tongue tip**.

### Histological structure:

- 1- They have connective tissue core rich in capillaries.
- 2- Their superior surfaces are covered by thin nonkeratinized epithelium, but the lateral surfaces are covered by keratinized epithelium.
- 3- One to three taste buds are found only on their superior surfaces.

**Function:** Taste sensation.

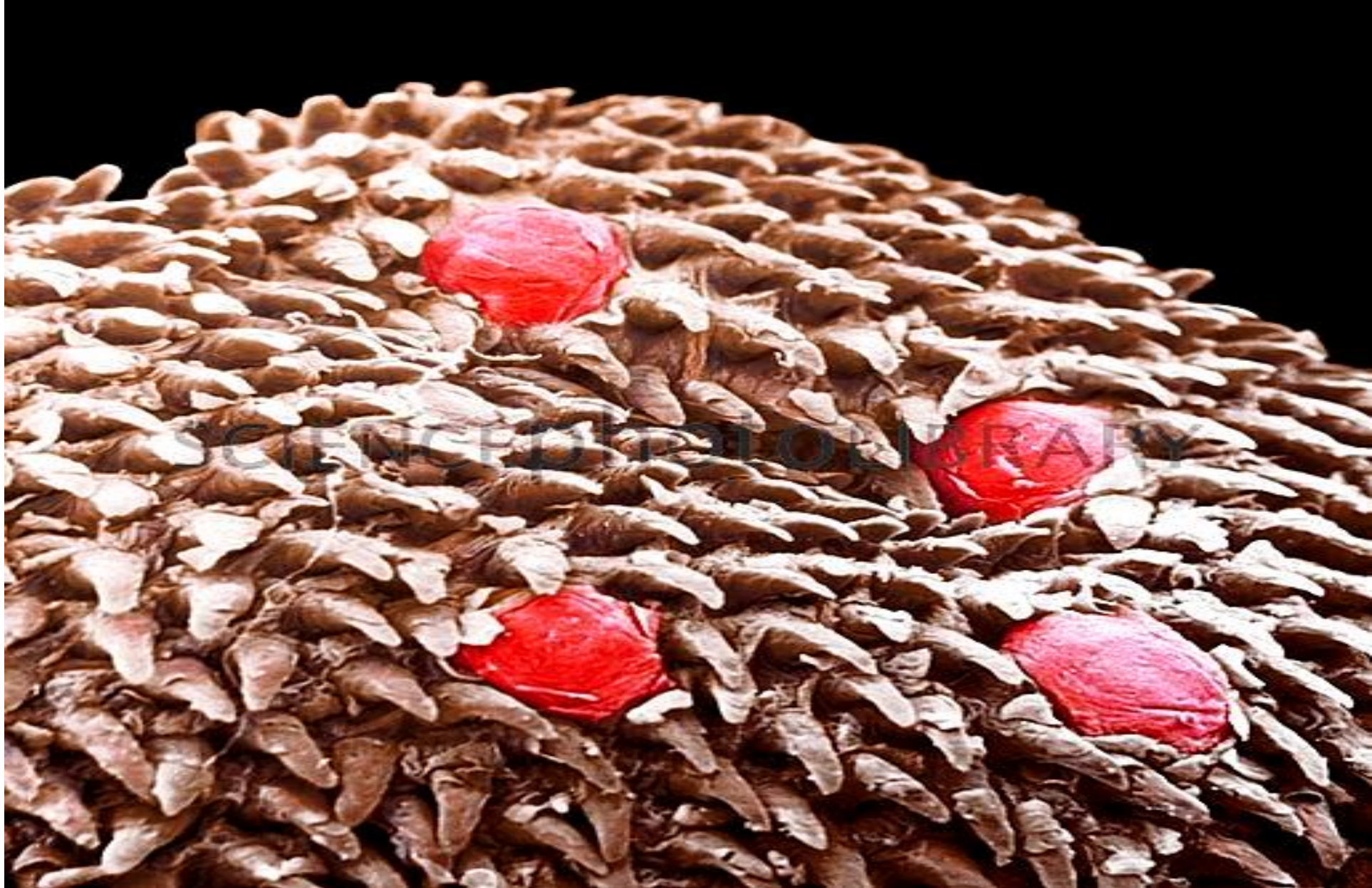
A rich capillary network visible through the relatively **thin nonkeratinized epithelium** = **reddish color**





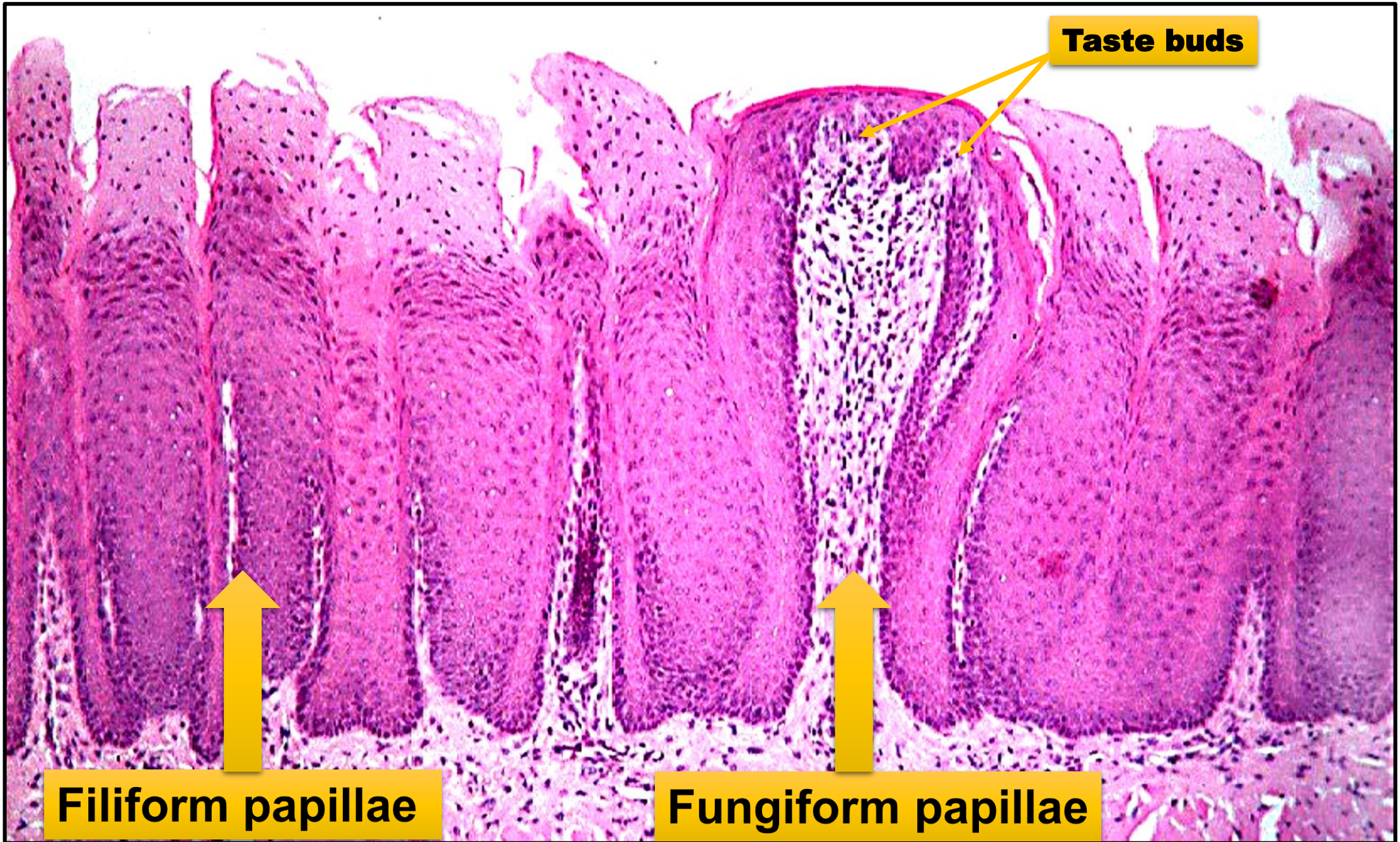






**SEM showing Fungiform and Filiform papillae**







### 3- Circumvallate (Vallate) papillae

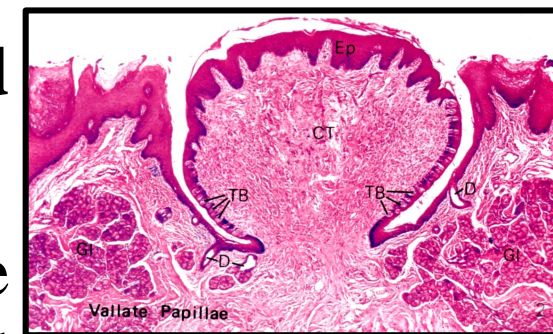
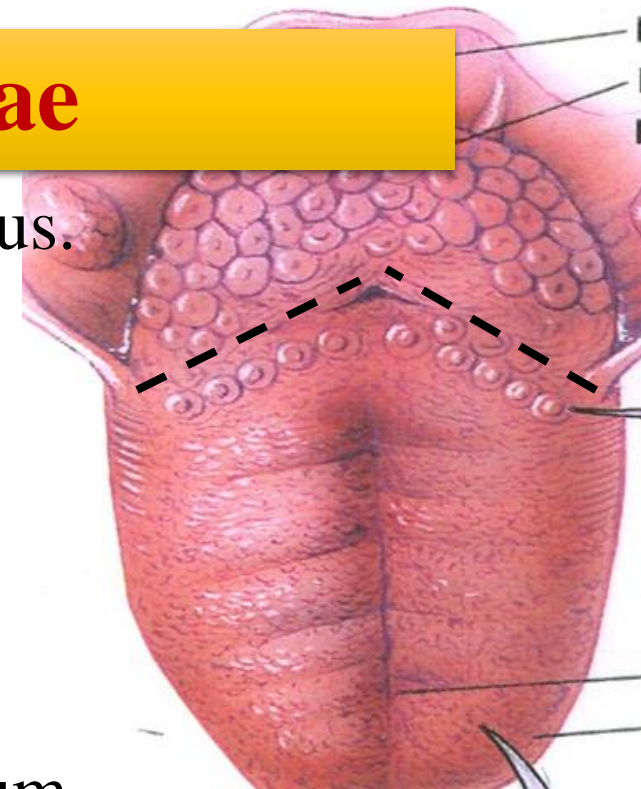
- From **8 to 10 papillae** in front of the V shaped terminal sulcus.
- They do **not protrude** above the tongue surface.
- Bounded by **deep circular furrow**, have **narrow base**.
- Their free surfaces show numerous **secondary papillae**.

- **Histological structure:**

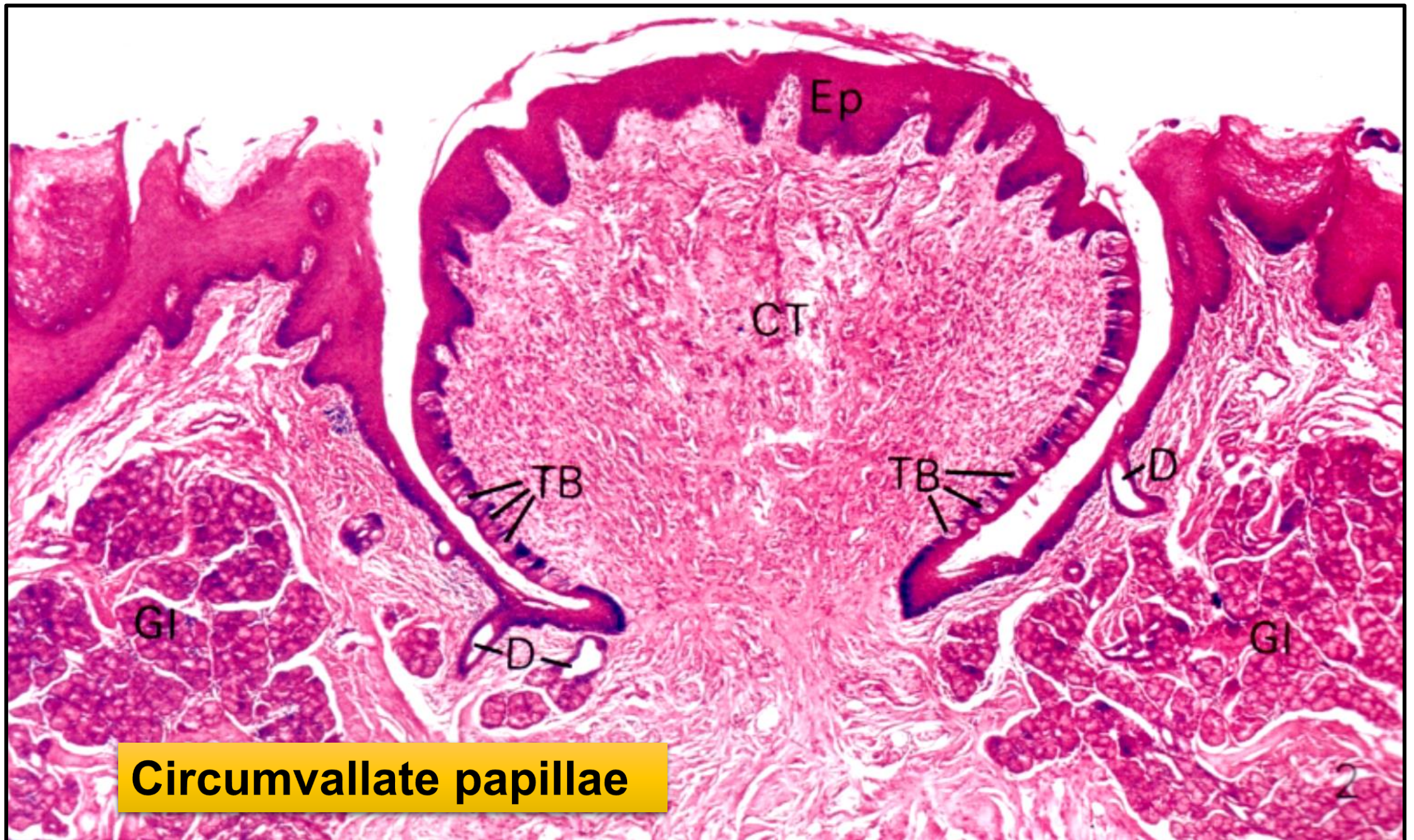
1- The **superior** surfaces are covered by **keratinized** epithelium.

2- Their **lateral** surfaces are covered by **nonkeratinized** epithelium that contains numerous taste buds.

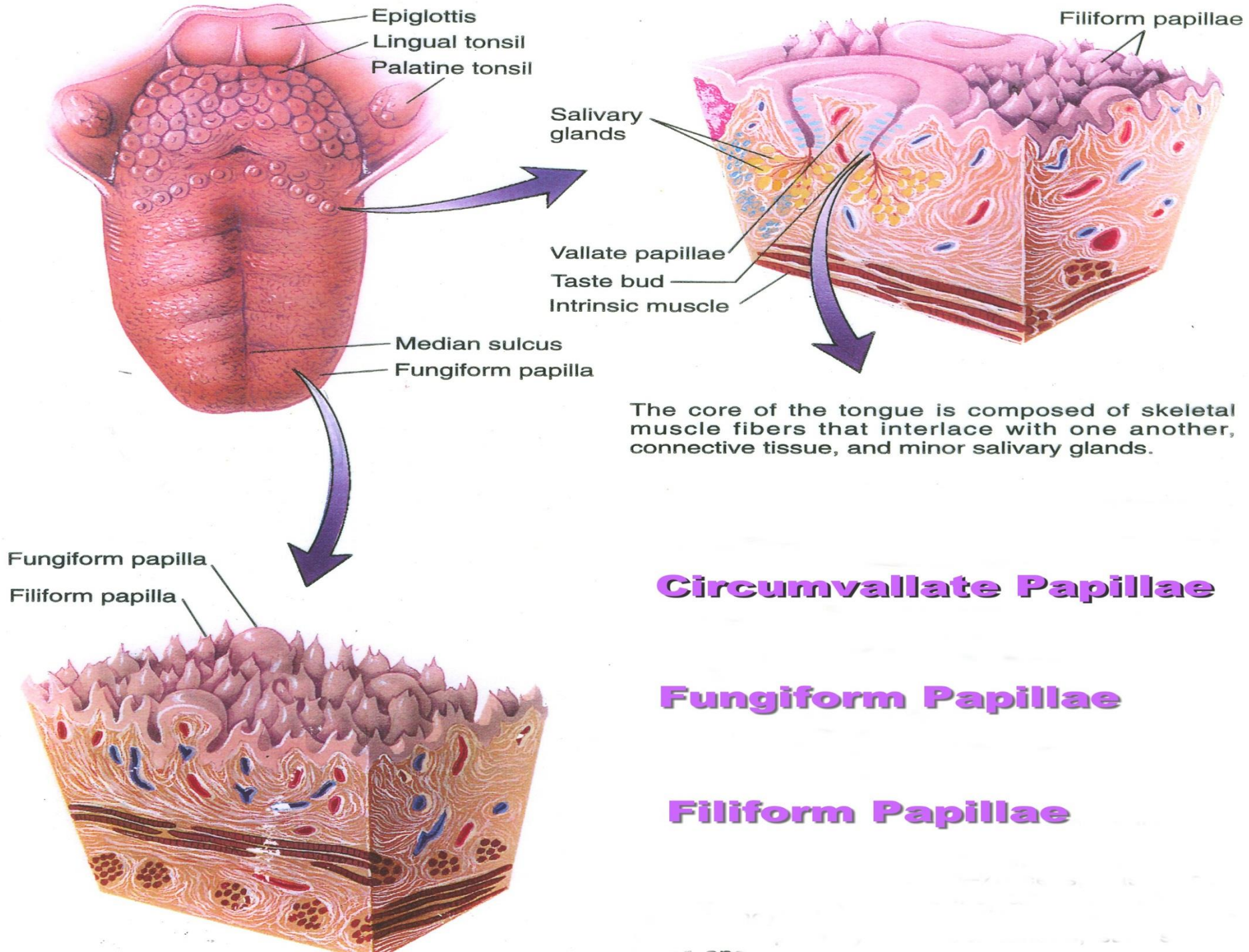
3- The duct of **Von Ebner's serous salivary gland** open into the **furrow**, they serve to **wash out** the soluble elements of food and it is the main source of **salivary Lipase**.











**Circumvallate Papillae**

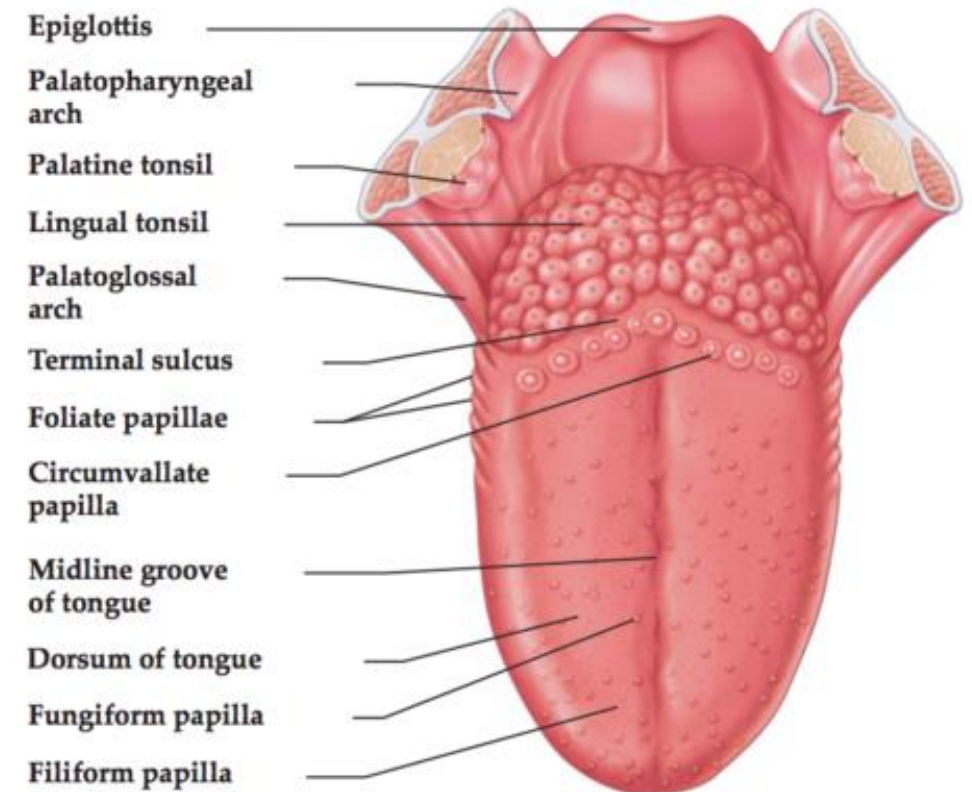
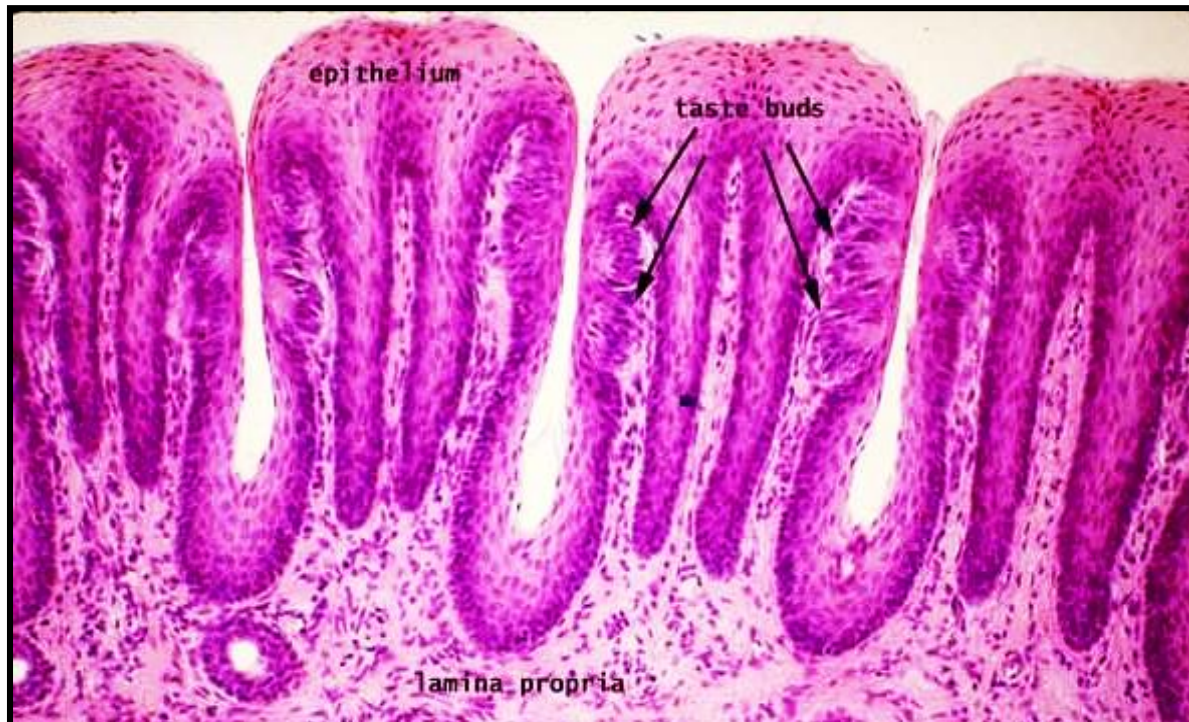
**Fungiform Papillae**

**Filiform Papillae**



## 4- Foliate papillae

- Present on the **lateral border of the posterior parts** of the tongue appearing as **parallel clefts**. They are **from 4 to 11 papillae**.
- They bound narrow folds of the mucous membrane and contain few taste buds on their lateral walls.

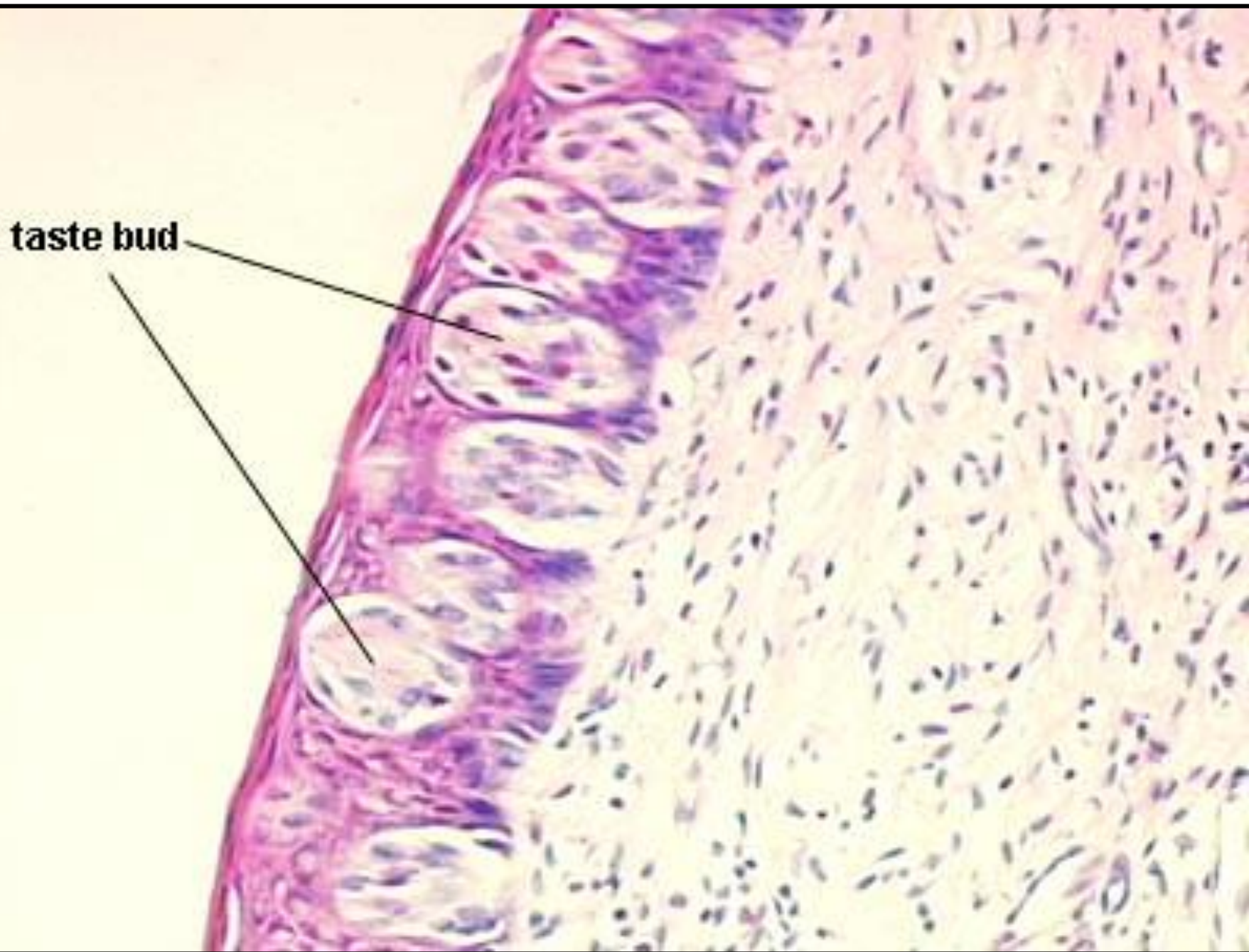


# Taste buds

- **Small ovoid or barrel shaped intraepithelial organ**
- Their outer surface is almost covered by a few flat epithelial cells around a small opening called **taste pore** (a taste bud may have more than one taste pore).
- They are generally associated with the papillae of the tongue-the **circumvallate, foliate, and fungiform** although some are distributed in the **soft palate, epiglottis, larynx, and pharynx**.







**taste bud**

Appear as pale  
structures between  
epithelium

# Taste buds contains two types of cells

**1- Supporting cells:** The outer ones, arranged like the staves of a barrel the inner ones are shorter and spindle shaped.

Lighter in color than sensory cells

**2- Neuroepithelial (Sensory) cells:**

- a) 10 to 12 arranged in between the supporting cells.
- b) Receptors of taste stimuli.
- c) Slender, dark staining cells that have finger like processes at their superficial end.
- d) A rich plexus of nerves found below the taste buds, some fibers enter the epithelium and end in contact with them.

**3- stem cells**





# Taste bud

