



DIGESTIVE SYSTEM
LIP
TONGUE

- ❑ The digestive system consists of the **digestive tract**—oral cavity, esophagus, stomach, small and large intestines, and anus—and its associated glands—salivary glands, liver, and pancreas.
- ❑ It consists of a hollow tube (highly modified in the oral cavity) of varying diameter, composed of a **mucosa, submucosa, muscularis externa, and serosa (or adventitia)**.
- ❑ **Function.** The digestive system secretes **enzymes** and **hormones** that function in ingestion, digestion, and absorption of nutrients and in the elimination of indigestible materials.

ORAL CAVITY

- Lined with stratified squamous epithelium for protection
- Food masticated here, and saliva lubricates food for swallowing.

Lips

The lip structure:

- The external surface
- The internal surface
- the vermilion margin (red margin)

- ❖ The lips are lined with a very thin skin covered by **a stratified squamous keratinized epithelium** ,and the outer surface of the lip contains hair follicles, sebaceous glands, and sweat glands.
- ❖ Blood vessels are close to the lip surface, imparting a red color to the lips.
- ❖ The lips also contain skeletal muscle called **orbicularis oris**.
- ❖ The internal surface of the lip lines by mucous membrane which is formed of **stratified squamous non-keratinized epithelium** and lamina propria formed of connective tissue
- ❖ Beneath the oral epithelium are found mucus-secreting **labial glands**.

Tongue

- Tongue is a muscular organ , its situated in the floor of the mouth.
- Consists of connective tissue and interlacing skeleton muscle fiber
- Function (taste , speech ,mastication , deglutition)
- Dorsal surface divided into anterior two thirds and posterior third by sulcus terminalis
- Dorsal surface covered by elevations called **Papillae** (Filiform, Fungiform ,Circumvallate and Foliate papillae).

Papillae are elevations of the oral epithelium and lamina propria that assume various forms and functions.

➤ **Filiform papillae** are most numerous, smallest, and **keratinized; lack** taste buds.

Filiform papillae have an elongated conical shape; they are quite numerous and are present over the entire surface of the tongue.

➤ **Fungiform papillae** are less numerous, larger, mushroom-like, and contain scattered taste buds on their upper surfaces, and are present mostly at the apex (tip) of the tongue, as well as at the sides.(are irregularly interspersed among the filiform papillae).

- **Circumvallate papillae** are largest, there are only about 10 to 14 of these papillae on most people, are in the back of the tongue, and are encircled by furrows. They are associated with ducts of serous glands (**Von Ebner's glands**) . Numerous taste buds located on the lateral sides of each papillae.
- **Posterior lingual glands** in the connective tissue open onto dorsal surface of tongue
- **Foliate papillae** are rudimentary in humans .

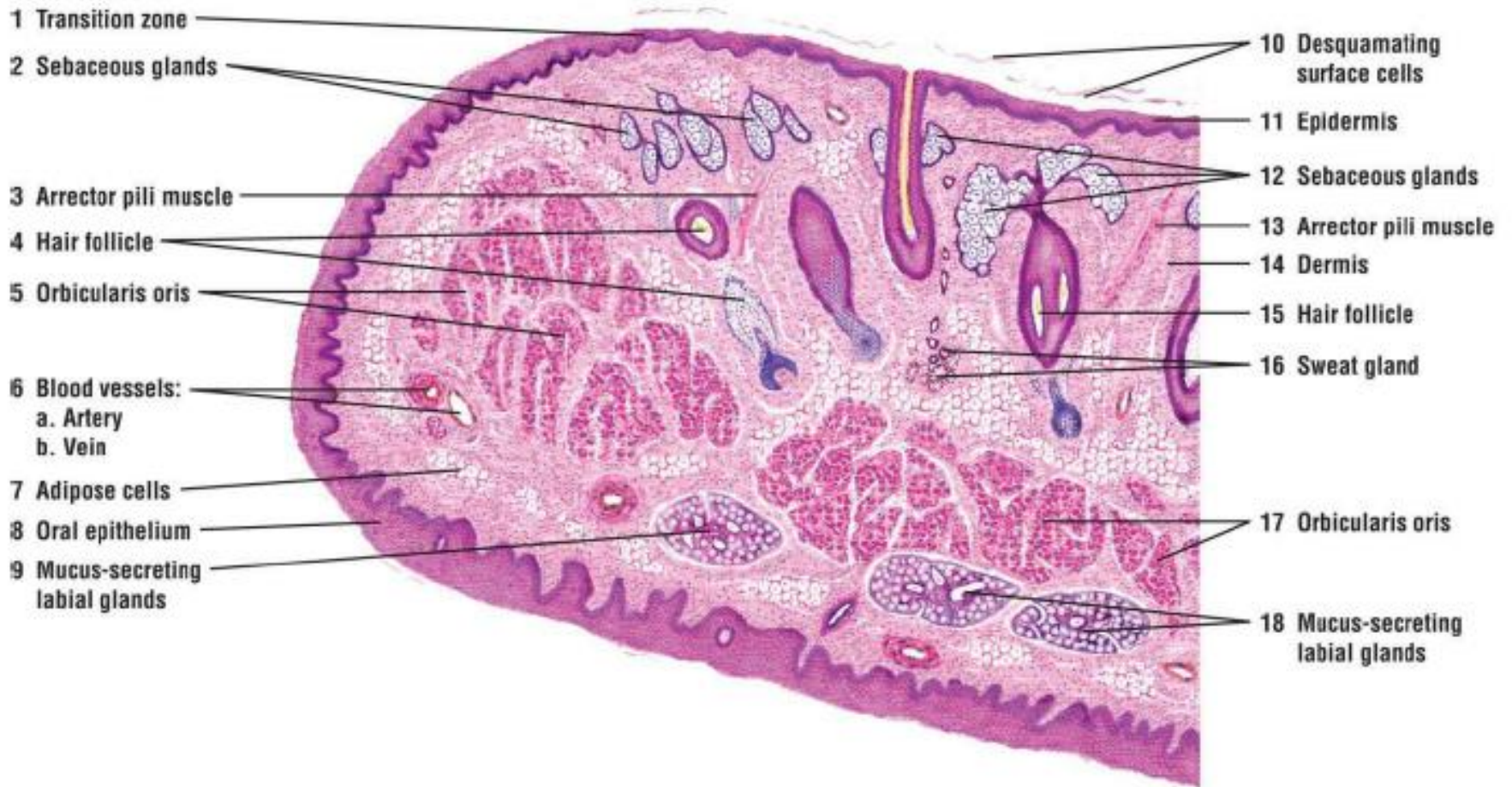
Taste Buds are located in foliate, fungiform, and circumvallate papillae; pharynx; palate; and epiglottis .

- They are distinguished from surrounding epithelium by their oval shapes and elongated cells (modified columnar) ,and exhibit taste pores and occupy thickness of epithelium; microvilli protrude through taste pore.
- Several types of cells are found in the taste buds

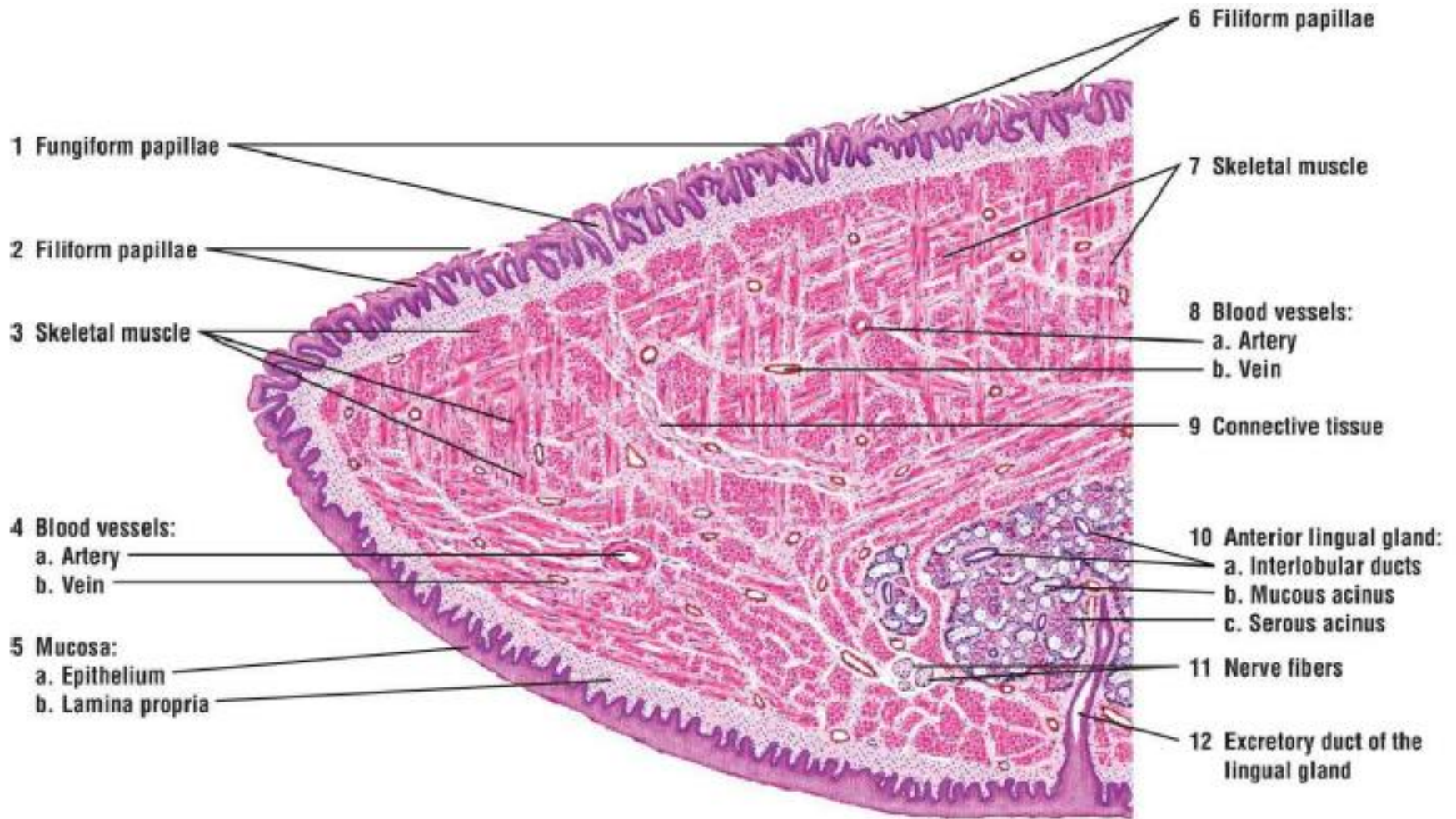
1- The **supporting or sustentacular cells** are elongated and exhibit a darker cytoplasm ,a slender, dark nucleus ,and are less numerous and are **not sensory**, and form an outer envelope for the bud. Some, however, are found in the interior of the bud between the gustatory cells.

2- The taste or gustatory cells, are occupy the central portion of the bud; exhibit a lighter cytoplasm and more oval lighter nucleus .

3- At the base of each taste buds are located the **basal cells** ,these cells are undifferentiated and serve as stem cells .



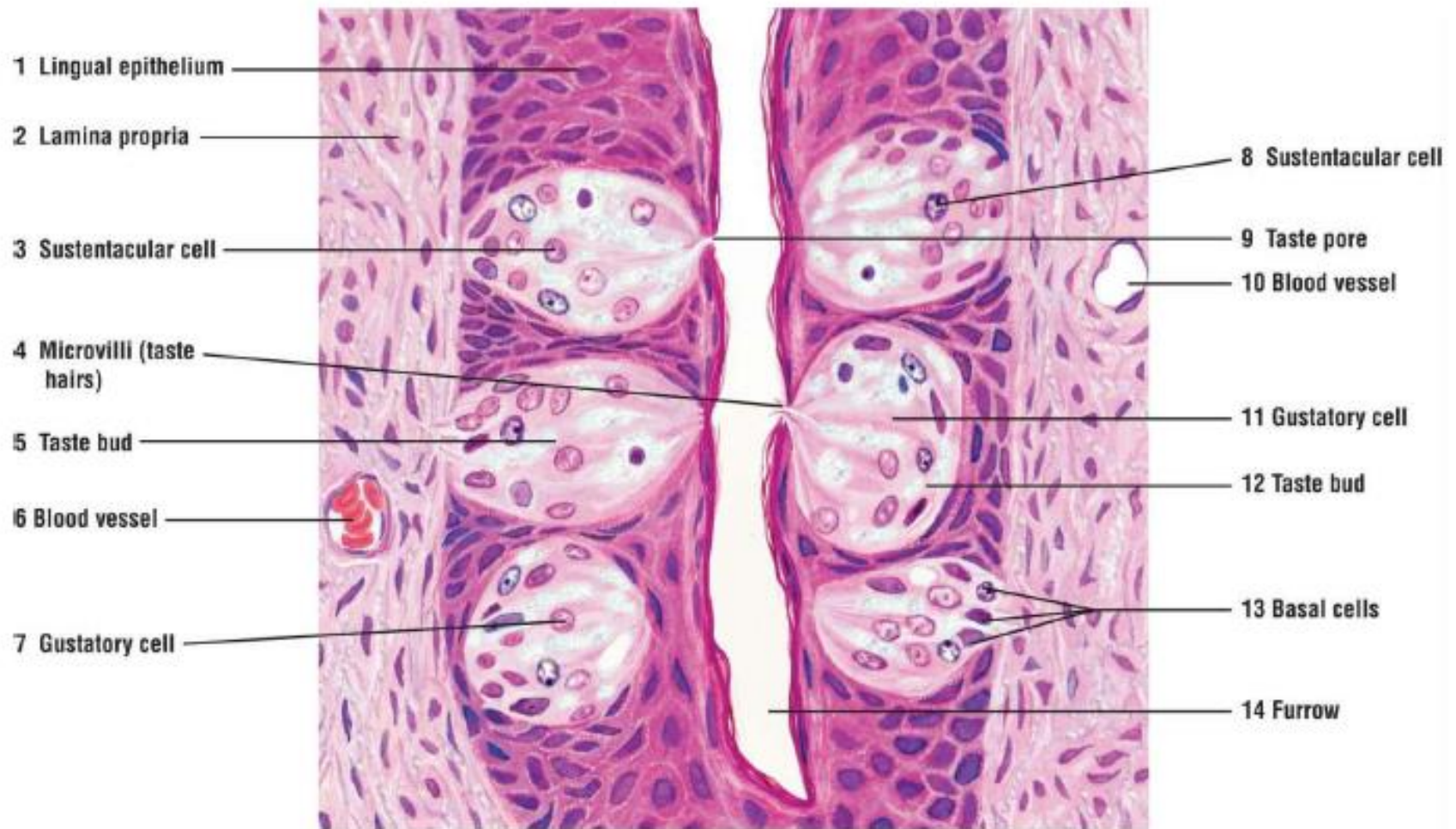
Lip (longitudinal section)



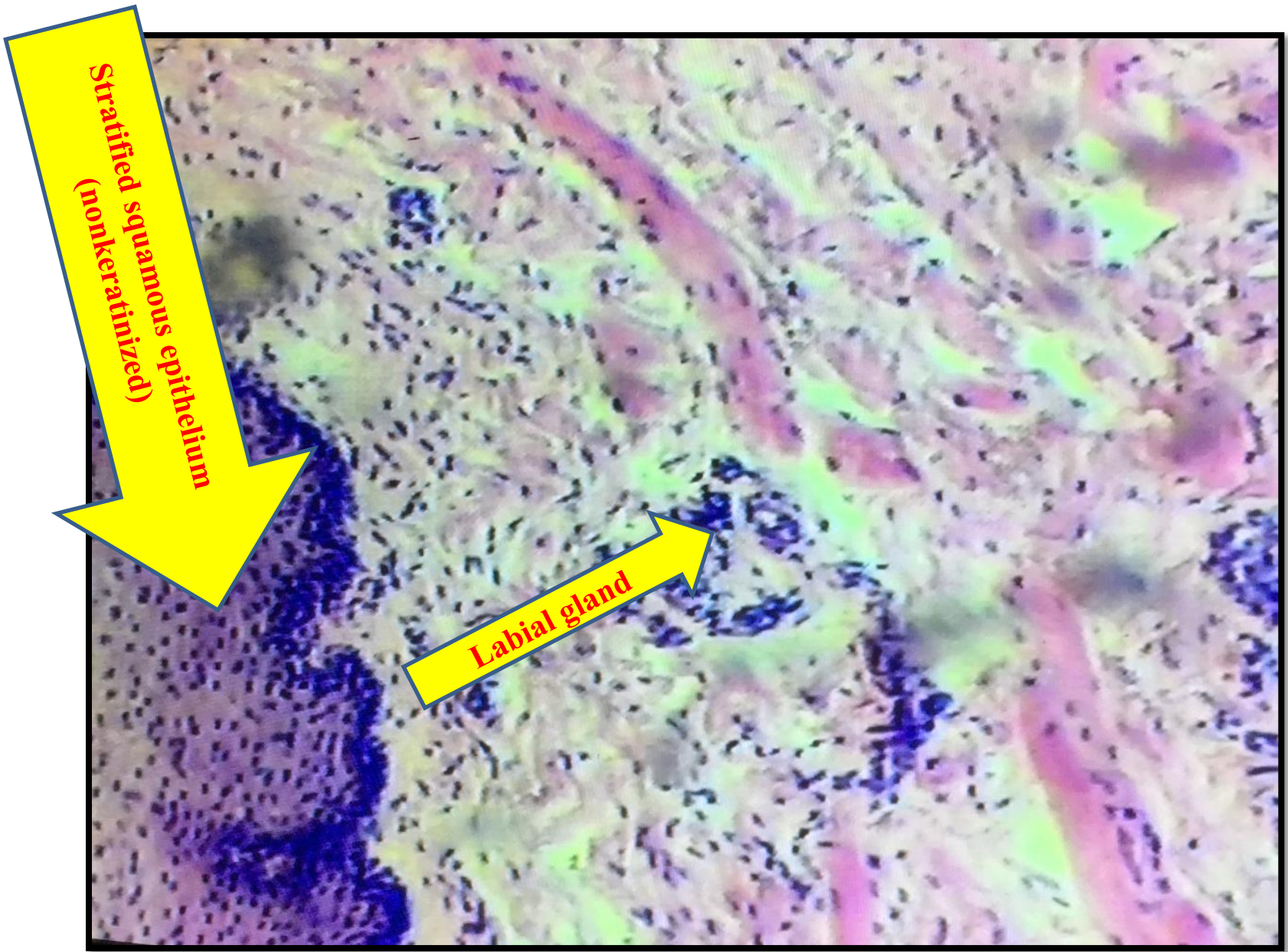
Anterior region of the tongue: apex (longitudinal section)



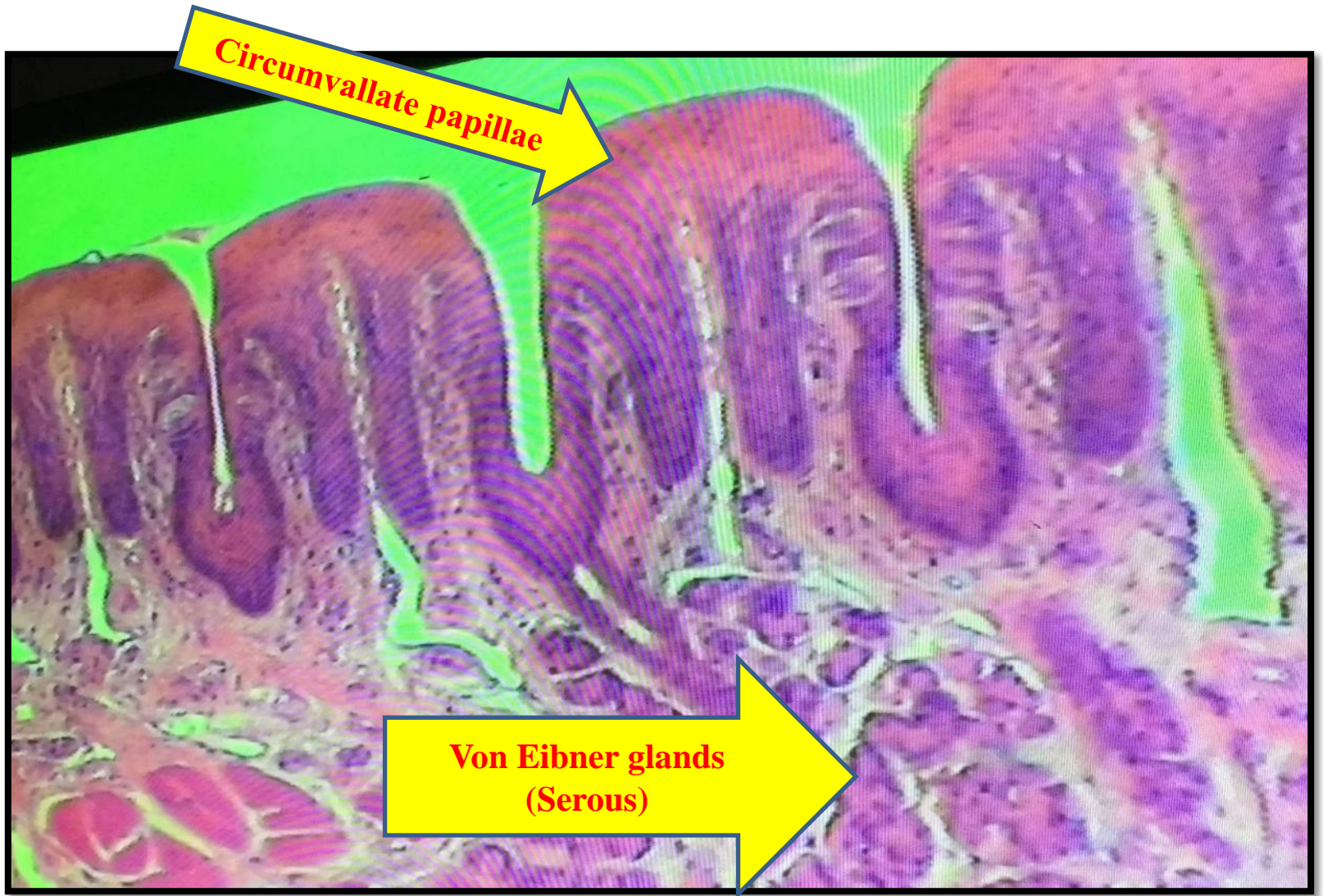
Tongue: circumvallate papilla (cross section)



Tongue: taste buds.



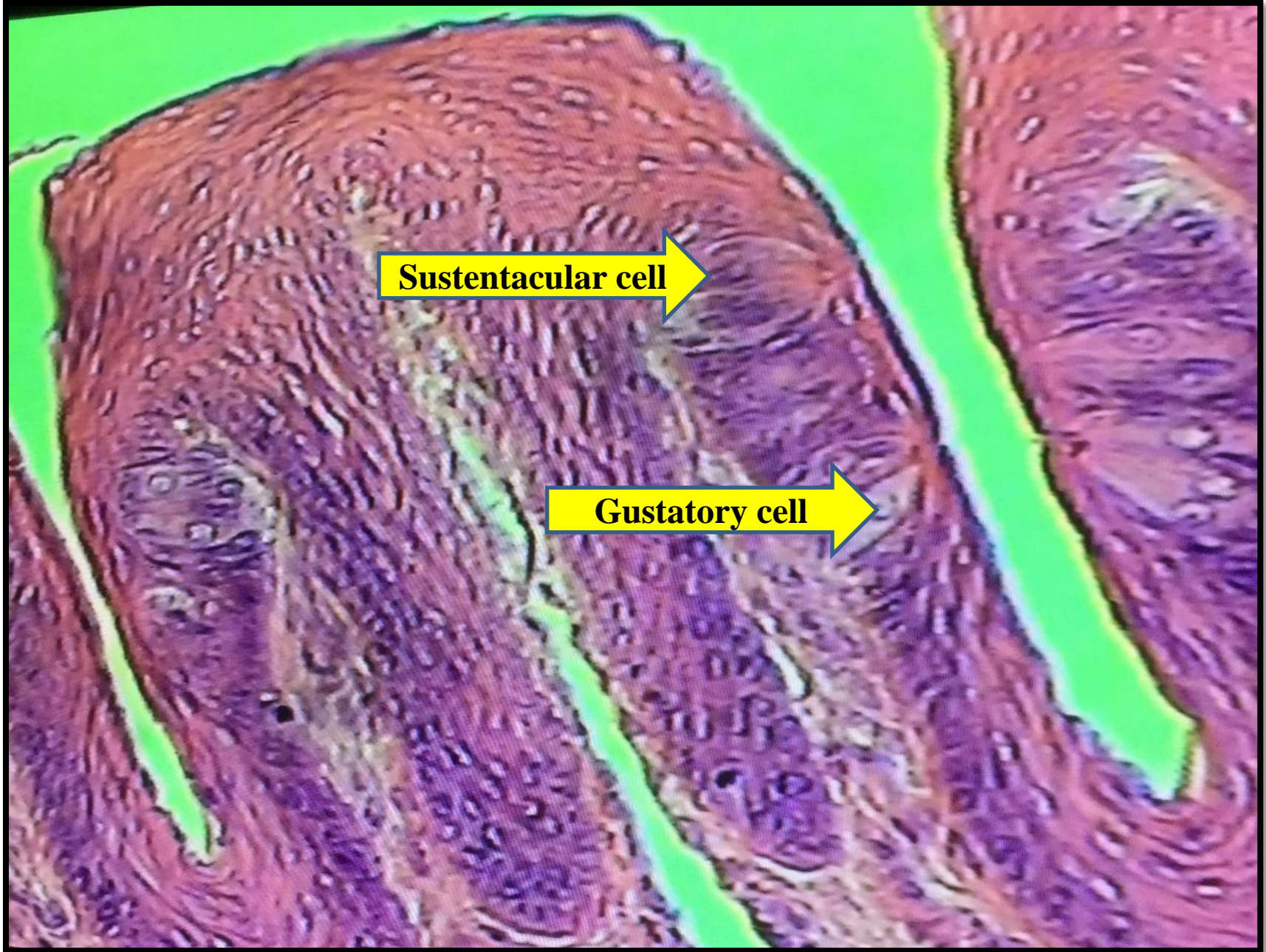
Lip (internal surface)



Circumvallate papillae

**Von Ebner glands
(Serous)**

Tongue



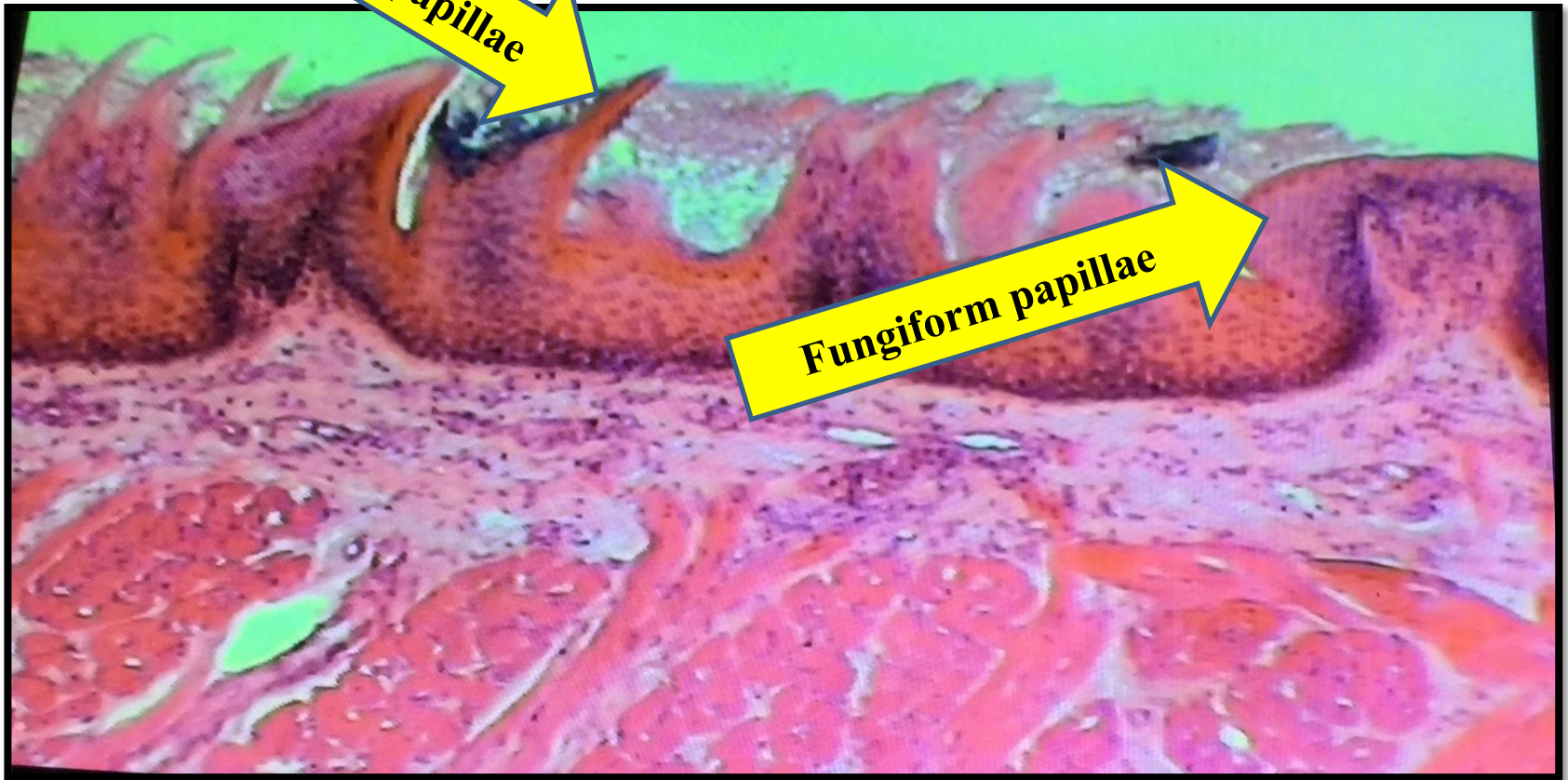
Sustentacular cell

Gustatory cell

Tongue



Tongue



Filiform papillae

Fungiform papillae

Tongue