Histology lab.

Digestive system :

The digestive system consists of the digestive tract oral cavity, esophagus, stomach, small and large intestines, rectum, and anus" and its associated glands "salivary glands, liver, and pancreas".

Parts of digestive systems

1- THE ORAL CAVITY: the major structure of the oral cavity are lips ,teeth ,tongue ,oral mucosa .

The oral cavity is lined with a protective, stratified squamous epithelium, keratinized or nonkeratinized depending on the region. The keratin layer protects the oral mucosa from damage and is present mostly in the hard palate and gingiva (gum). Nonkeratinized squamous epithelium covers the soft palate, lips, cheeks, and the floor of the mouth.

Lips :The outer surface of each lip is covered with skin that contains hair follicles, sebaceous glands, and sweat glands.

The red free margin (vermilion) of the lip is covered with a modified skin which represents a transition zone from skin to mucous membrane(oral mucosa) . The connective tissue (c.t.) papillae of the dermis beneath it are numerous, high and vascular and as a result, the blood in their capillaries readily shows through the transparent epidermis to make the lips appear red.

The inner surface of the lip is lined by mucous membrane. The epithelium of this surface is thicker than the epidermis covering the outer surface of the lip and is of the stratified squamous non-keratinized type.

The tongue: Is a muscular organ located in oral cavity . In the core of it consist from con. tissue and interlacing bundles of skeletal muscles fibers. The distribution of this muscles allows for increased movement during chewing ,swallowing ,and speaking . The epithelium on the dorsal surface of the tongue is irregular and rough because elevation called papillae .this projections covered by stratified squamous epithelium that shows partial or incomplete keratinzation . The ventral surface is smooth .

Types of papillae

There are four types :

Filiform papillae :most numerous and smallest of it on the surface there are narrow and conical shaped .and they covered the entire dorsal surface of the tongue .

Fungiform p. : less numerous but larger broader and taller than filiform . Its shaped like mushroom and interspersed among filiform p.

Circumvallate p.: much larger than fungiform . 8 to 12 circumvallate located in the posterior region of the tongue .

Foliate p. : well developed in some animals but poorly developed in human.

Taste buds : located in the epithelium of the tongue (on the apical surfaces of fungiform papillae and on the lateral surfaces of circumvallate and foliate papillae). They are also present on the soft palate, pharynx. The taste buds are oval in shape, pale in staining (as compared to surrounding epithelium) .At the apical part, it opens in a very small/minute opening called ″Taste pore″ or ″Gustatory pore″. There are 50-100 cells in each bud. The following types of cells can be distinguished in the taste bud:

1- Supporting cells: Their function is supporting for taste buds. They are slender cells extending from the basal lamina to the taste pore where they have numerous microvilli. They are dark because they contain large number of fine filaments in the cytoplasm. Also they have granules in the apical part contain glycosaminoglycans.

2-Taste cells (gustatory cells): They are light because their cytoplasm contains few filaments. Also the cells have apical microvilli.

3-Undifferentiated basal cells: They are found in the base of the taste buds. They are probably the precursor of the other cells.

The major of salivary gland :

There are 3 of it : parotid , submandibular ,and sublingial

Located outside of the oral cavity and convey their secretion into the mouth via large exccretory ducts

Parotid glands are the largest, and located anterior and inferior to the external ear .

Submandibular g .:are small located inferior to the mandible in the floor of the mouth .

Sublingual g. :are the smallest and aggregates of smaller glands located infreior to the tongue

Salivary gland are composed of cellular secretory units called acini and numerous excretory ducts .

Types of Cells of salivary glands acini :

There are two types of cells :

- Serous cells are pyramidal in shapes . Their spherical or round nuclei and present secretory granules.
- mucous cells are similar in shape to serous cell except their cytoplasm completely filled with mucus (secretory product)
- Myoepithlial cells : flattened cells that surrounded both serous and mucous acini .sometimes called basket cell because they surround the acini with branches like basket

General structure of digestive tract:-

The digestive tract from the esophagus to the anus has certain common structural haracteristics. Its wall is composed of 4 principal layers, (starting from inside):-

1.The mucosa(mucous membrane):- this consists of :-

a)The lining epithelium:- the type of epithelium varies in the relation to the function of the part of the digestive tract. It could be protective, absorptive or secretory

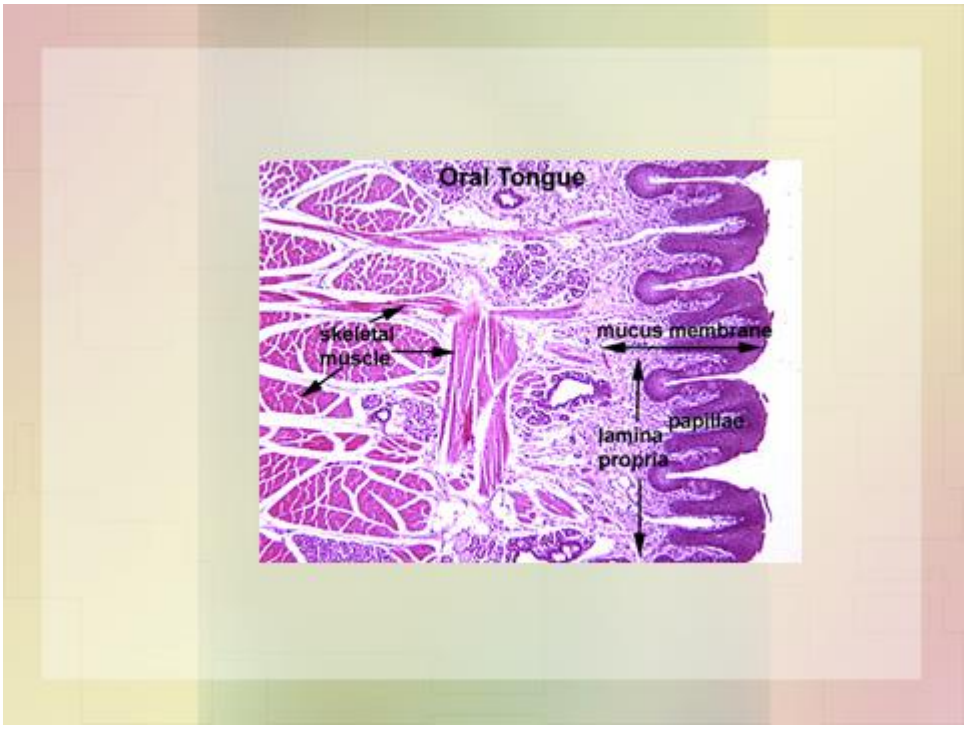
b) Lamina propria:- consists of loose c.t. rich in blood & lymph vessels & smooth m., may also contain lymph nodules & glands(gastric glands & intestinal glands.

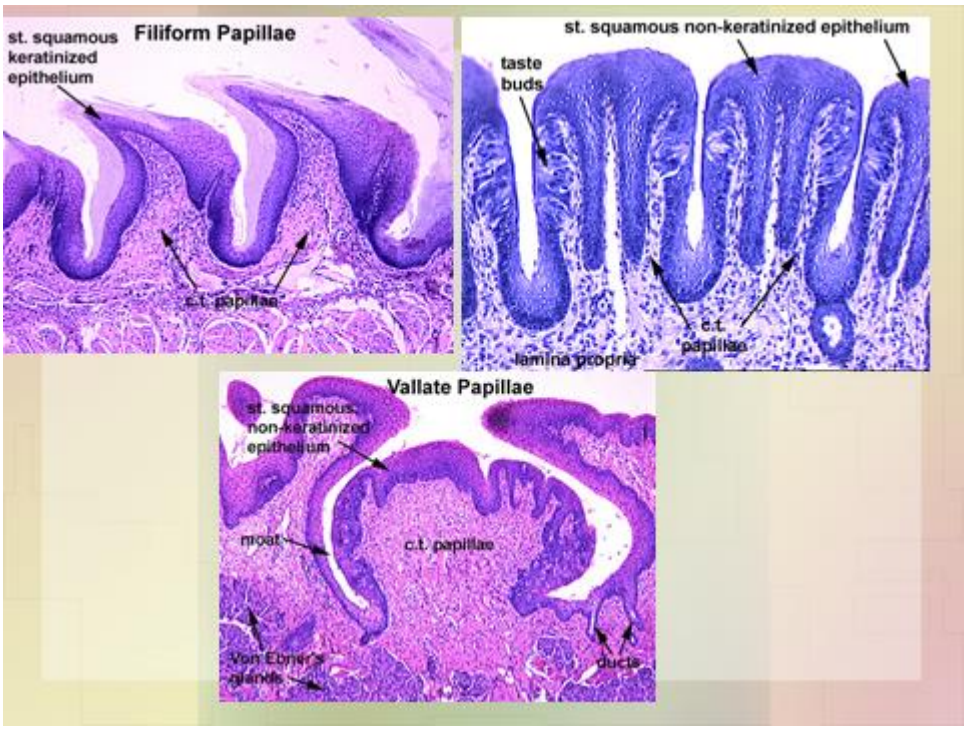
c) Muscularis mucosae:- consists of smooth m., usually arranged in 2 layers, an inner circular & an outer longitudinal. promotes the movement of the mucosa independent of other movements of the digestive tract, increasing its contact with the food.

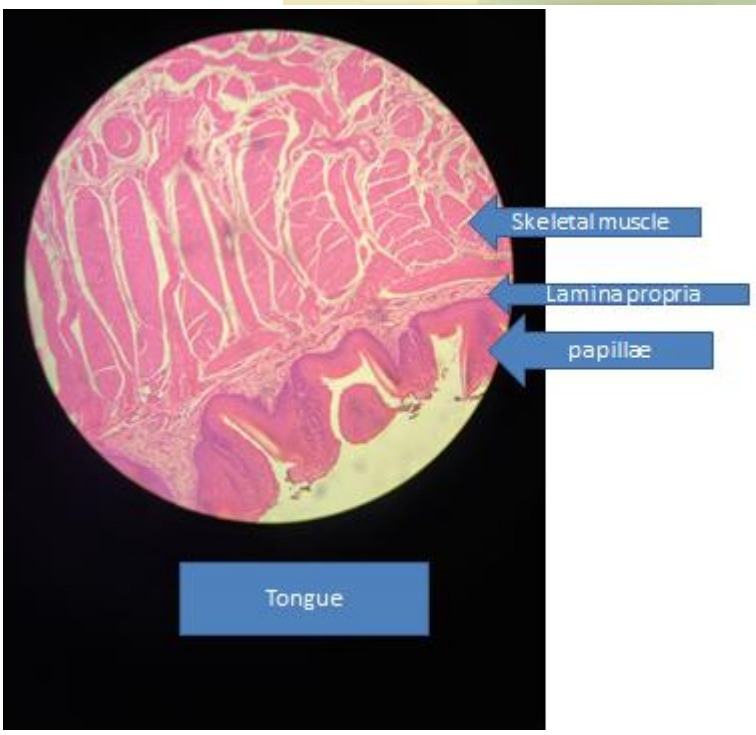
2. The submucosa:- consists of dense c.t. with many blood & lymph vessels. A plexus of nerve fibers with some ganglion cells are present in the submucosa. This is called Meissner's plexus (submucous nerve plexus). It may also contain glands (oesophageal & Brunner's gland) & lymphoid tissue.

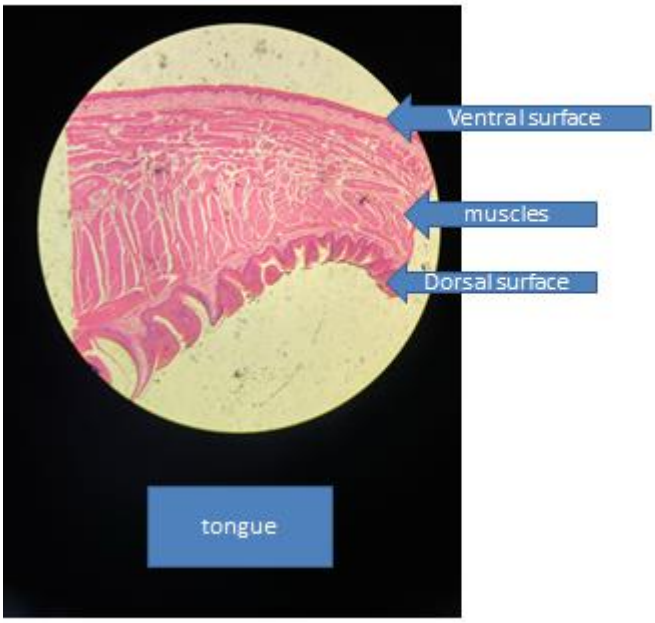
3.The muscularis externa:- this usually consists of an inner circular & an outer longitudinal layer of smooth m.

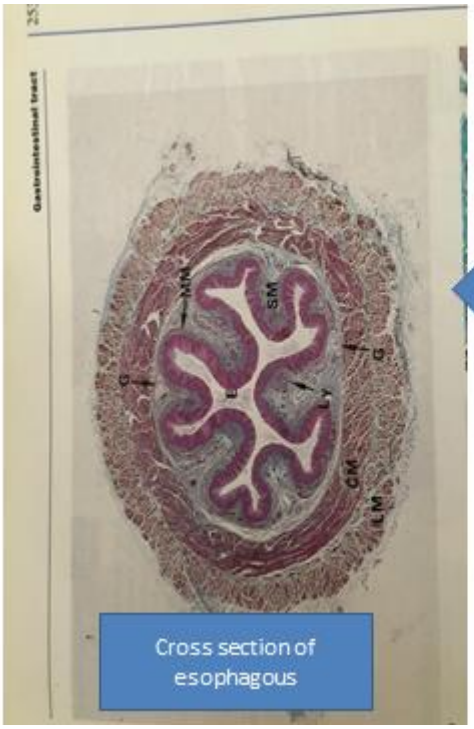
4.The serosa or adventitia:- consists of loose c.t. rich in blood & lymph vessels, covered in those portions of the tube by simple squamous epithelium (mesothelium). In other parts, the adventitia consists only of loose c.t .



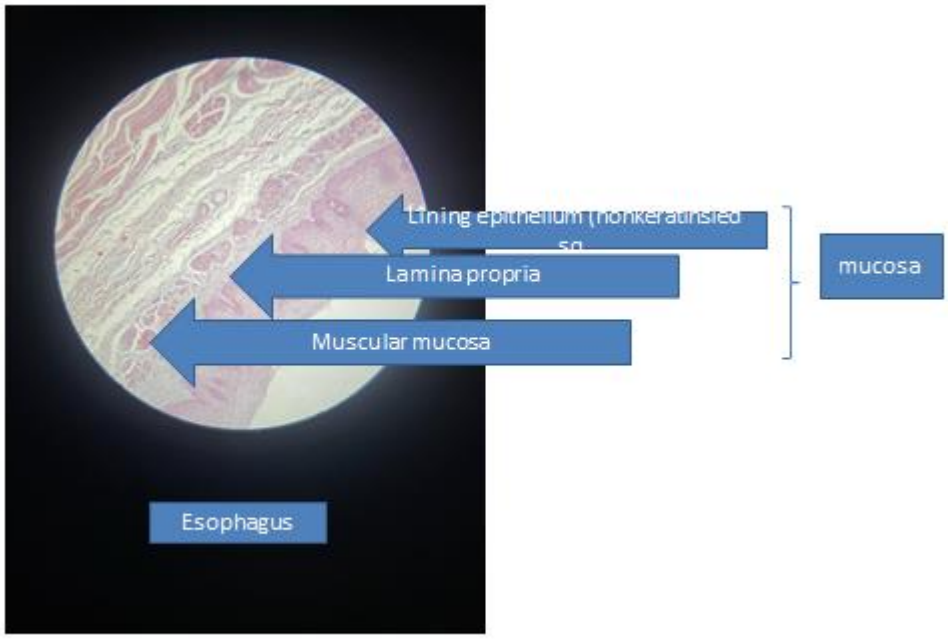

st. squamous keratinized epithelium
Filiform Papillae
c.t. papillae
st. squamous non-keratinized epithelium
taste buds
c.t. papillae
lamina propria
Vallate Papillae
st. squamous non-keratinized epithelium
moat
c.t. papillae
Von Ebner's glands
ducts

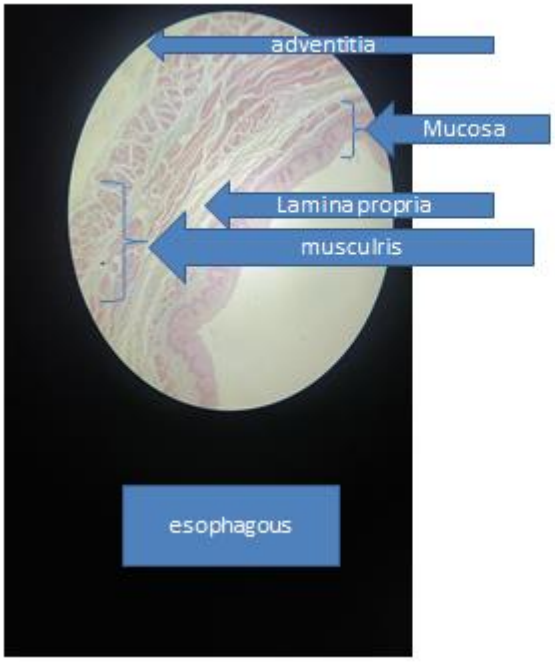

Skeletal muscle
Lamina propria
papillae
Tongue

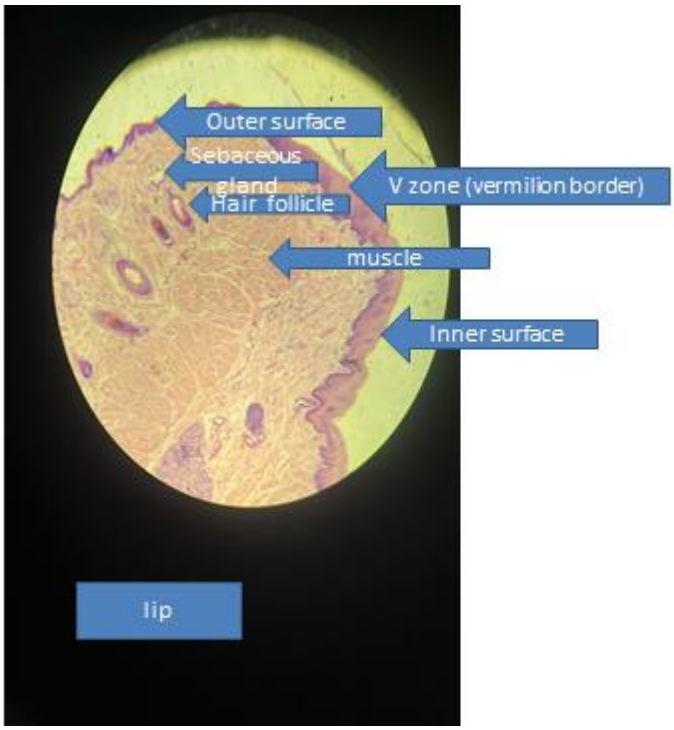


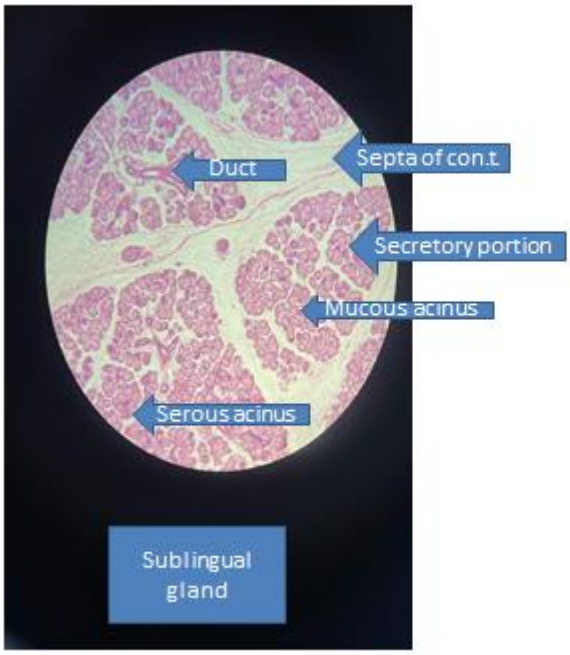


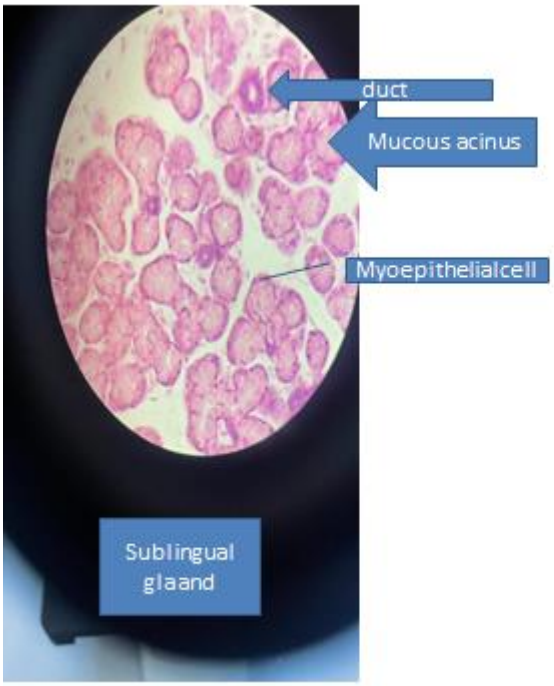
Ly:lymphoid tissue
MM:muscularis mucosa
SM:submucosa
CM,LM:cross and longitudinal muscle

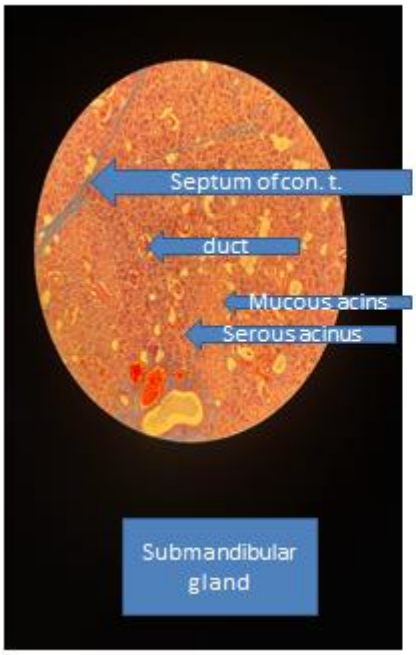

Lining epithelium (nonkeratinsied sq
Lamina propria
Muscular mucosa
mucosa
Esophagus

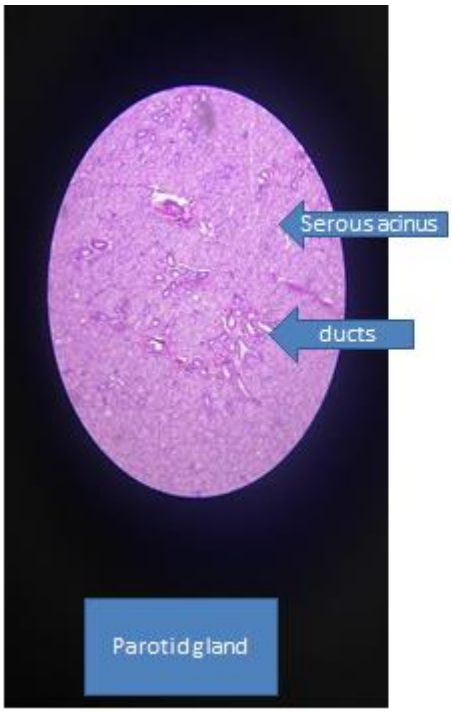

adventitia
Mucosa
Lamina propria
musculris
esophagous


Outer surface
Sebaceous gland
Hair follicle
V zone (vermilion border)
muscle
Inner surface
lip


Duct
Septa of con.t.
Secretory portion
Mucous acinus
Serous acinus
Sublingual gland


duct
Mucous acinus
Myoepithelialcell
Sublingual glaand


Septum ofcon. t.
duct
Mucous acins
Serous acinus
Submandibular gland


Serous acinus
ducts
Parotid gland