

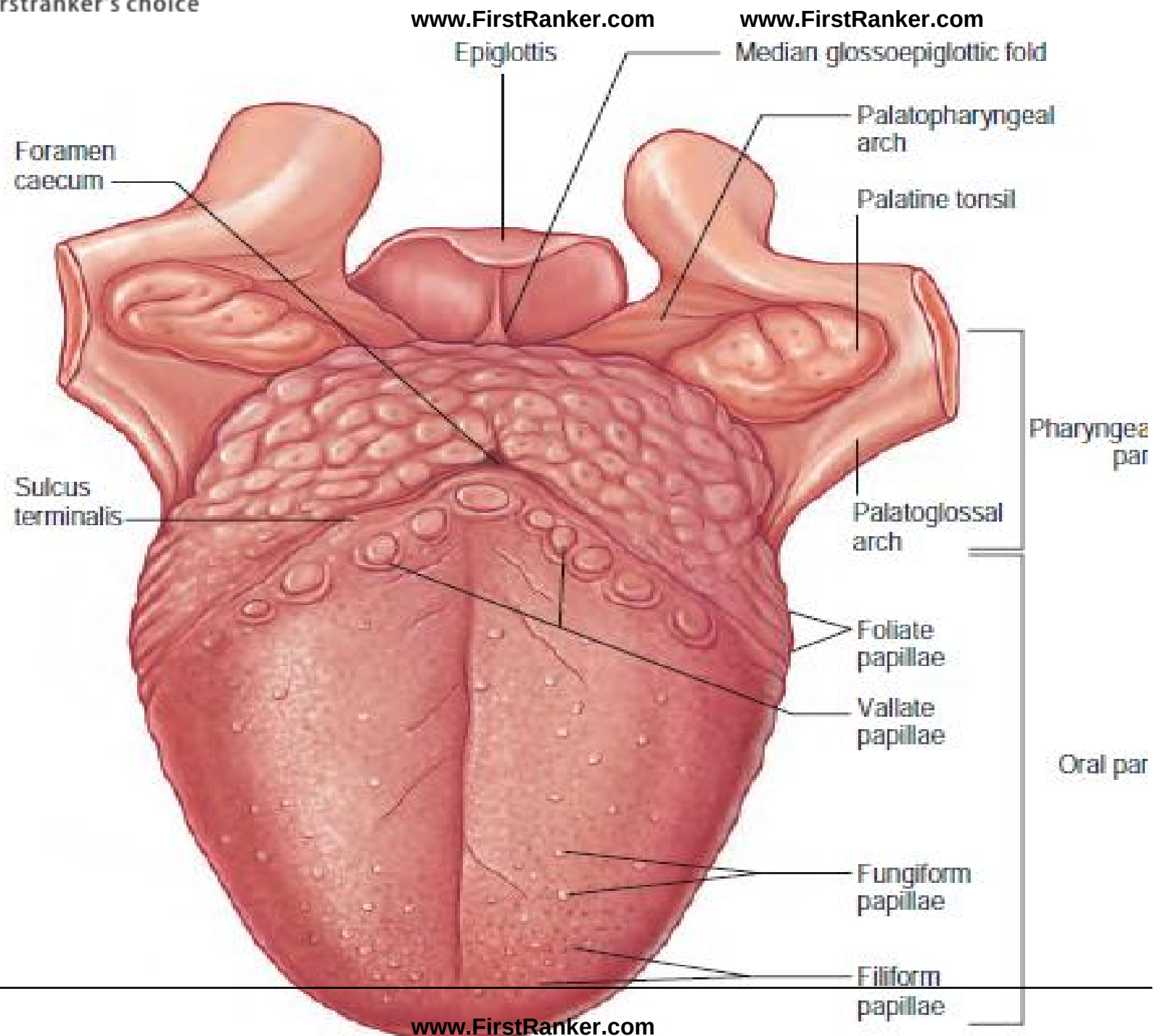
DIGESTIVE SYSTEM I

INTRODUCTION

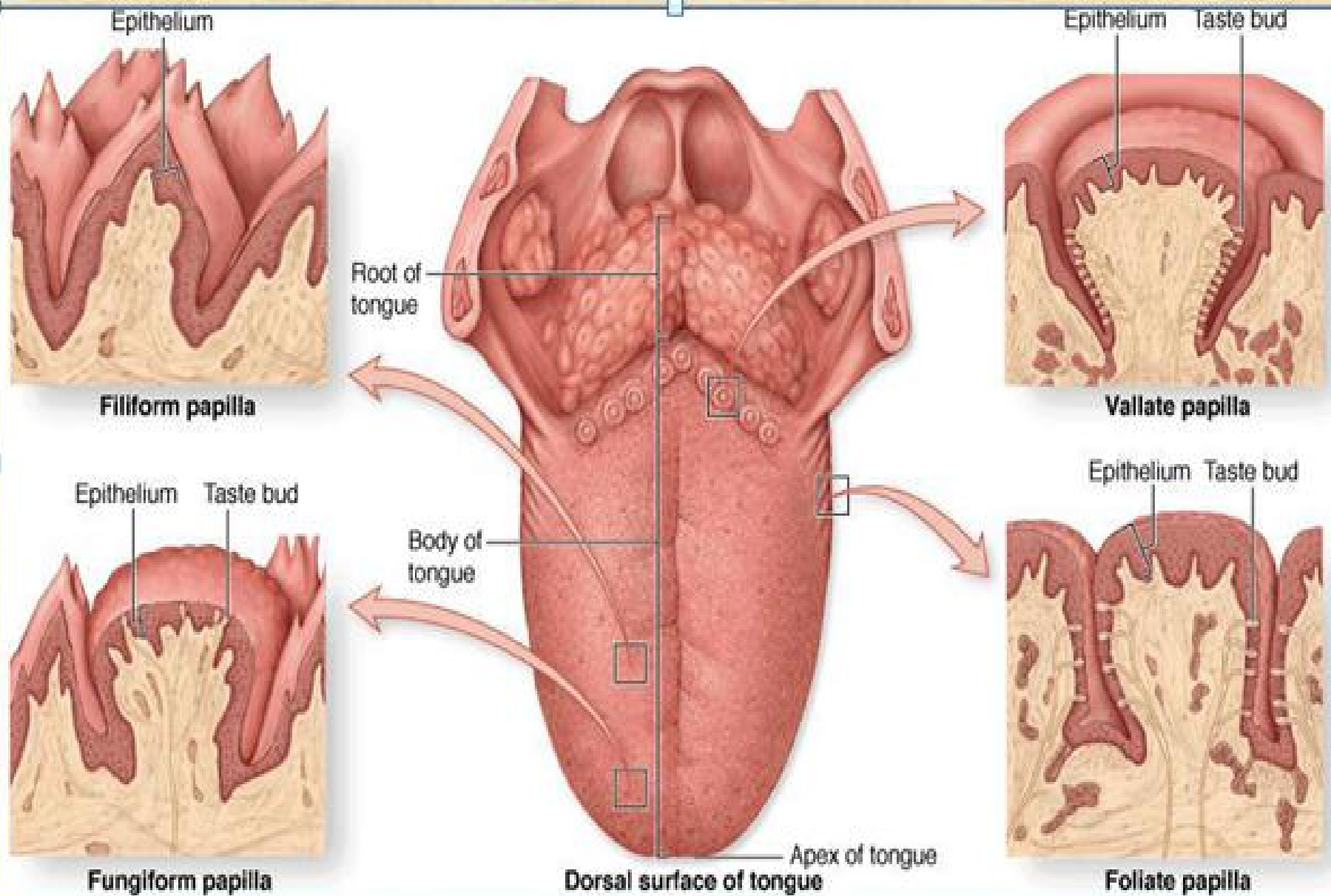
- ***CONSISTS OF TWO GROUPS OF ORGANS***
- ***1)GIT or alimentary tract***—extend from oral cavity to anal canal.
- ***2)Accessory digestive organs***—these are teeth, tongue, salivary glands, liver, gall bladder and pancrease.

TONGUE

- Accessory digestive organ.
- Composed of skeletal muscle covered with mucous membrane.
- Lining mucosa *stratified squamous epithelium* and lamina propria.
- An inverted V-shaped grooved (*sulcus terminalis*) divide dorsal aspect of tongue into anterior 2/3 and posterior 1/3.
- Dorsal aspect of root of tongue contains *lingual tonsil*.



- **LINGUAL PAPILLAE**
- The anterior 2/3 of dorsal surface is covered with specialization of epithelium called *lingual papillae*.
- Are projection of lamina propria
- Covered with *stratified squamous epithelium* which *may be keratinized*.
- **FOUR TYPES—**
 - i) Filiform
 - ii) Fungiform
 - iii) Circumvallate
 - iv) Foliate
- **FOLIATE PAPILLAE ARE NOT WELL DEVELOPED IN HUMAN**



- ***FILIFORM PAPILLAE***
 - Cone-shaped
 - Most numerous
 - Anterior 2/3 of the tongue.
 - Tips are keratinized
 - *No taste Buds*
-
- ***FUNGIFORM PAPILLAE***
 - Mushroom shaped
 - Less numerous
 - Found distributed among the filiform papillae
 - *Has taste buds*

- **CIRCUMVALLATE PAPILLAE**

- 8 – 16 papillae located (on a v-shaped line) just anterior to the sulcus terminalis.
- Large circular papillae
- Serous acini (called *Von Ebner's glands*) open into the groove to dissolve food particles, so help tasting
- Has taste buds

- ***TASTE BUDS***
- *Neurosensory epithelial* structure embedded in the surface epithelium of tongue.
- Also presents in the **epiglottis, soft palate** and **oropharynx**.
- Onion-shaped structures in the epithelium of lingual papillae e.g. fungiform and circumvallate papillae.
- Their apical ends has opening called *taste pore*

Stratified squamous
epithelium of tongue surface

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Taste pore

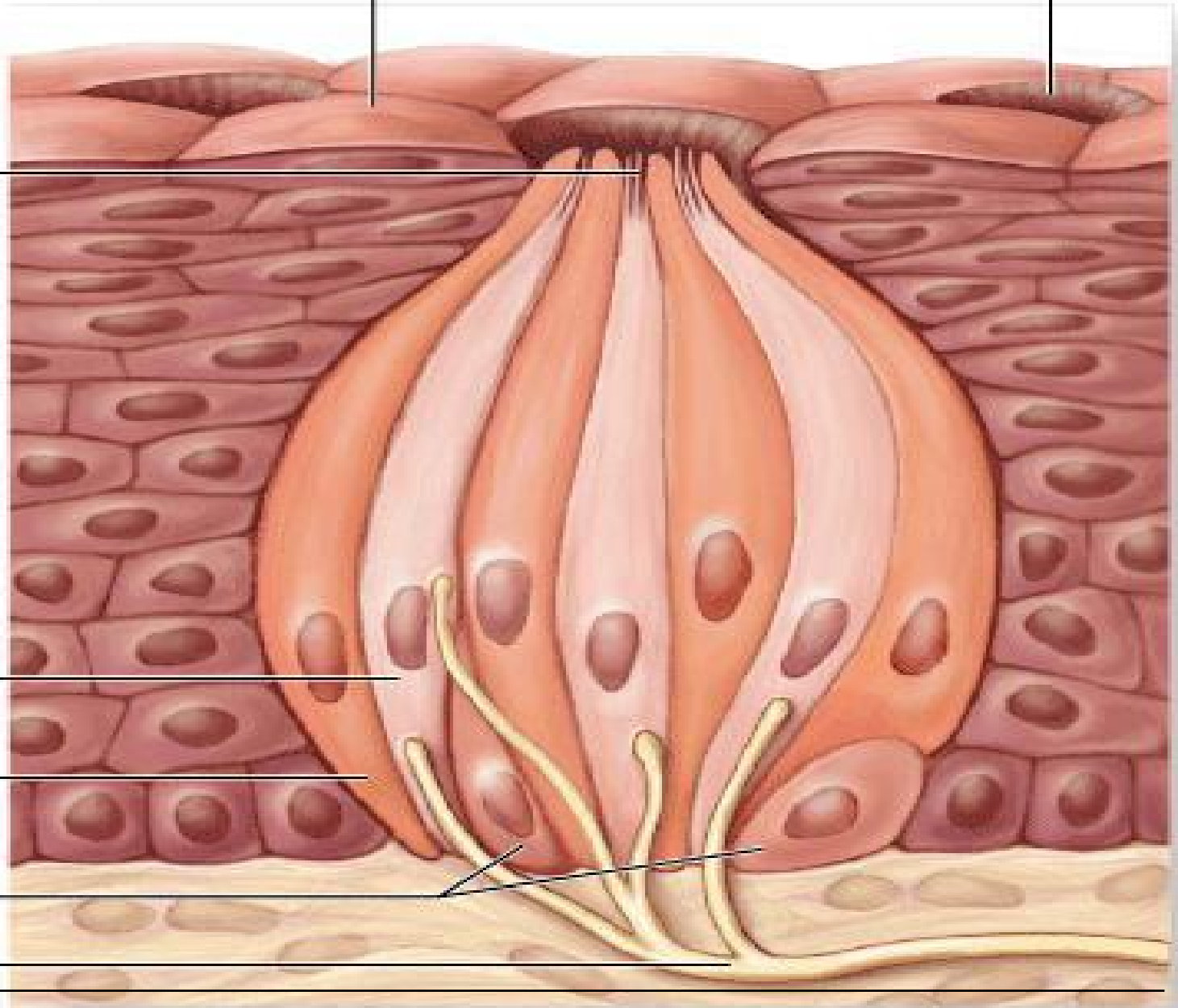
Gustatory
microvilli

Gustatory
cell

Supporting
cell

Basal cells

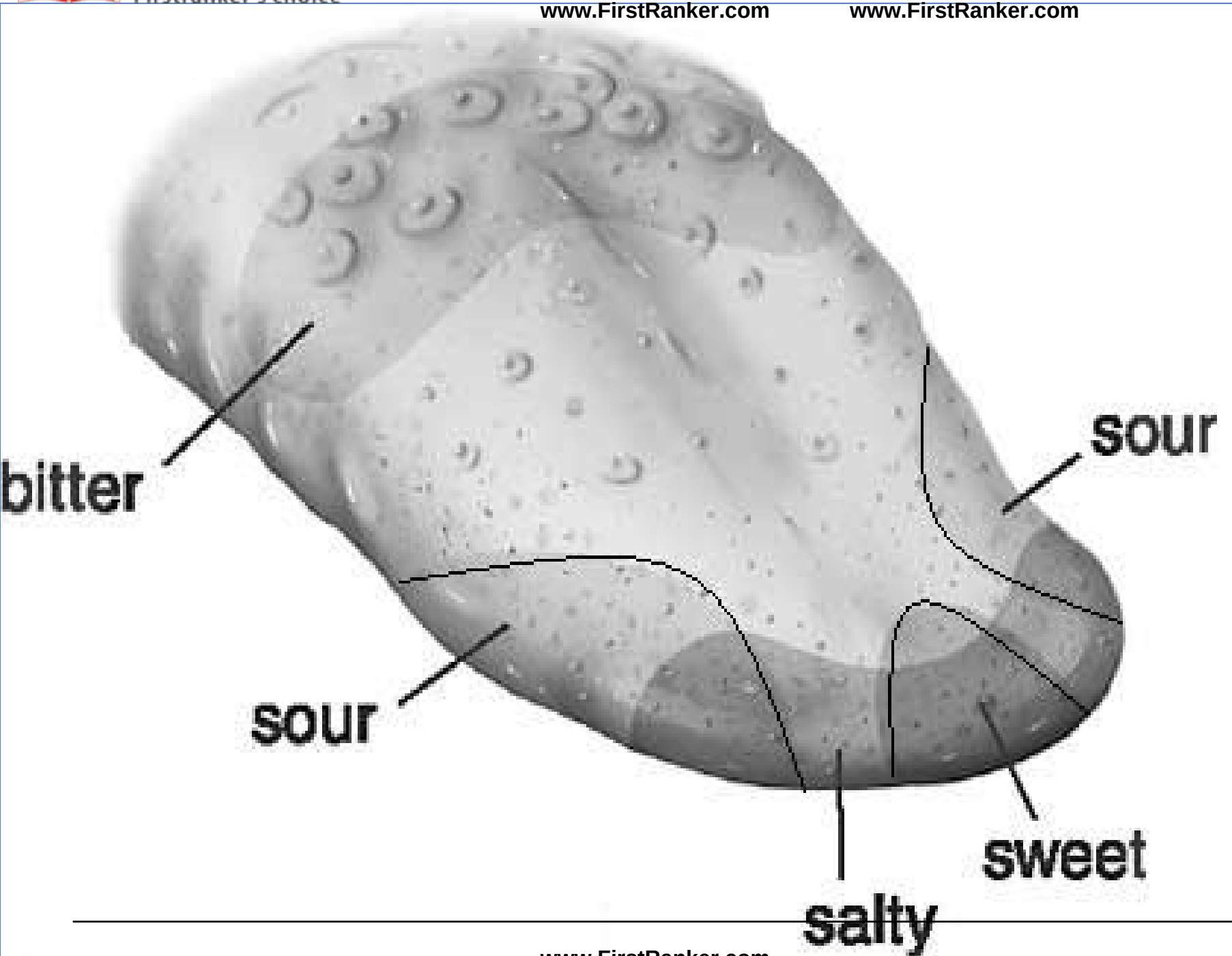
Sensory
nerve



a

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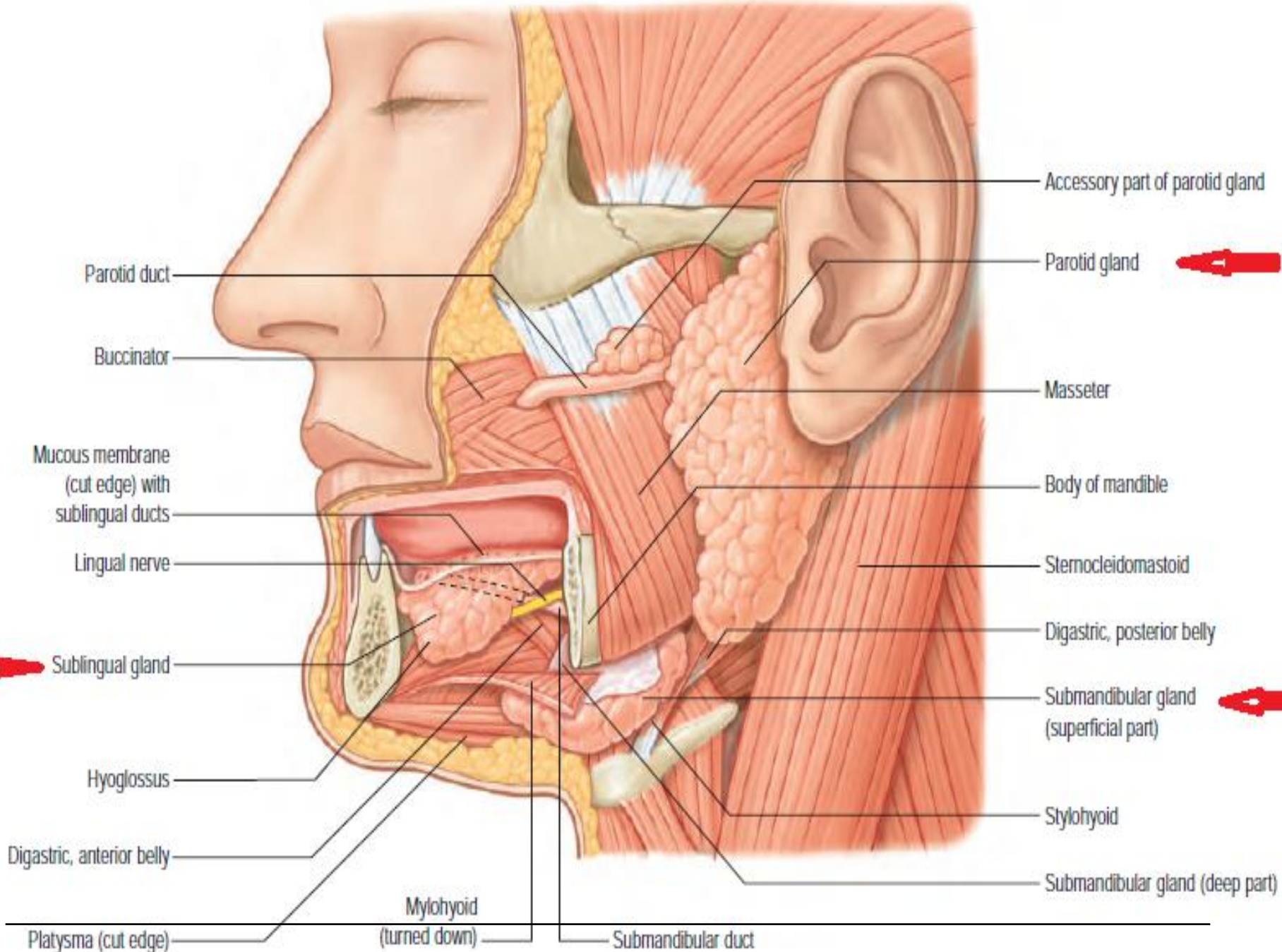
- ***CELLS IN THE TASTE BUDS—Three types***
- *i)Neuroepithelial or receptor cells*
- *ii)Supporting cells*
- *iii)Basal or stem cells*
- stimulation of the taste cells leads to the stimulation of gustatory nerve fibers and receiving sweet, salty, bitter, and sour sensations.



- ***Muscles of the tongue***
- The core of the tongue striated muscle.
- Muscles fibres arranged in **transverse**, **longitudinal** and **vertical** bundles.
- In between the muscle bundle loose connective tissue, adipose tissue and lingual gland are present.



SALIVARY GLANDS



- *Major glands*

- Lie completely outside the alimentary tract & connected to it by an excretory duct.
- Compound alveolar or tubuloalveolar in type.
- Parotid
- Submandibular
- sublingual.

- *Minor glands*

- Small salivary glands situated in the mucous membrane of:
 - Lip (labial)
 - Cheeks (buccal)
 - Soft palate (palatine)
 - Tongue (lingual)

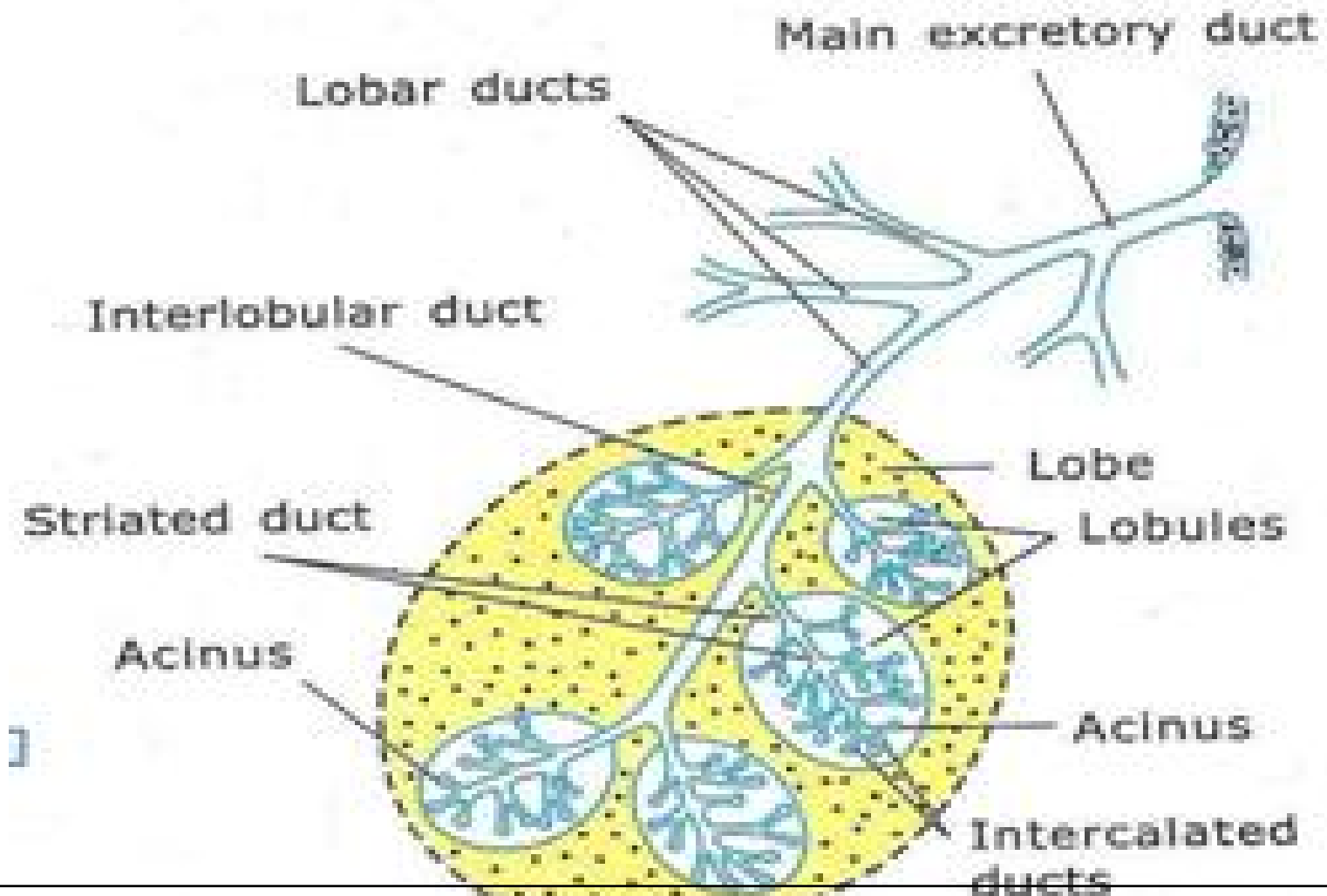
Functions of Salivary glands

- Secrete saliva composed of water, mucus, proteins, salts, salivary amylase (ptyalin), immunoglobulins (IgA) & lactoperoxidase.
- Serves to moisten food.
- Lubricates & moistens oral mucosa and lip.
- Initiates the digestion of carbohydrates.

Basic organization

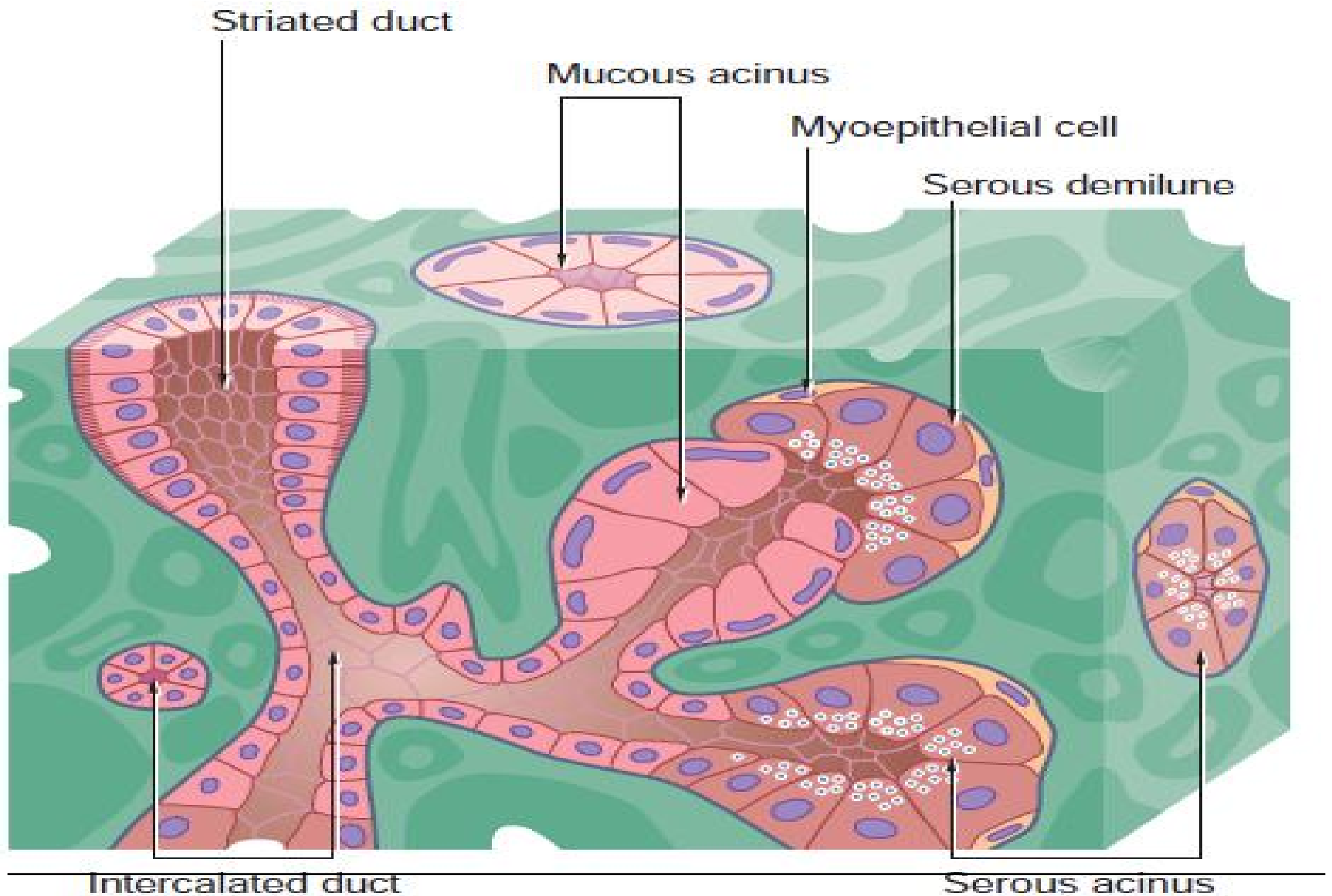
- ***Consists of two components:--***
 - i) Connective tissue component
 - ii) Parenchymal components (duct and acini)
- Connective tissue capsule surrounded parotid and submandibular gland.
- Septa divides gland into lobes and lobule.
- Septa forms a medium through which nerves, blood vessels and ducts passes.

Duct system



- ***Lining epithelium of duct system—***
- Intercalated—Cuboidal
- Striated—Columnar
- Interlobular—Pseudostratified columnar
- Main excretory duct—Stratified cuboidal

Acinar system



PAROTID GLAND

- Largest salivary gland.
- Well defined capsule.
- Secretory acini—*Purely serous*.
- Has abundant *myoepithelial (basket) cells*.
- Ducts—Interlobular in connective tissue septa
- Intralobular duct in between acini
- Adipose tissue present between acini and smaller duct.

Parotid gland

SUBMANDIBULAR GLAND

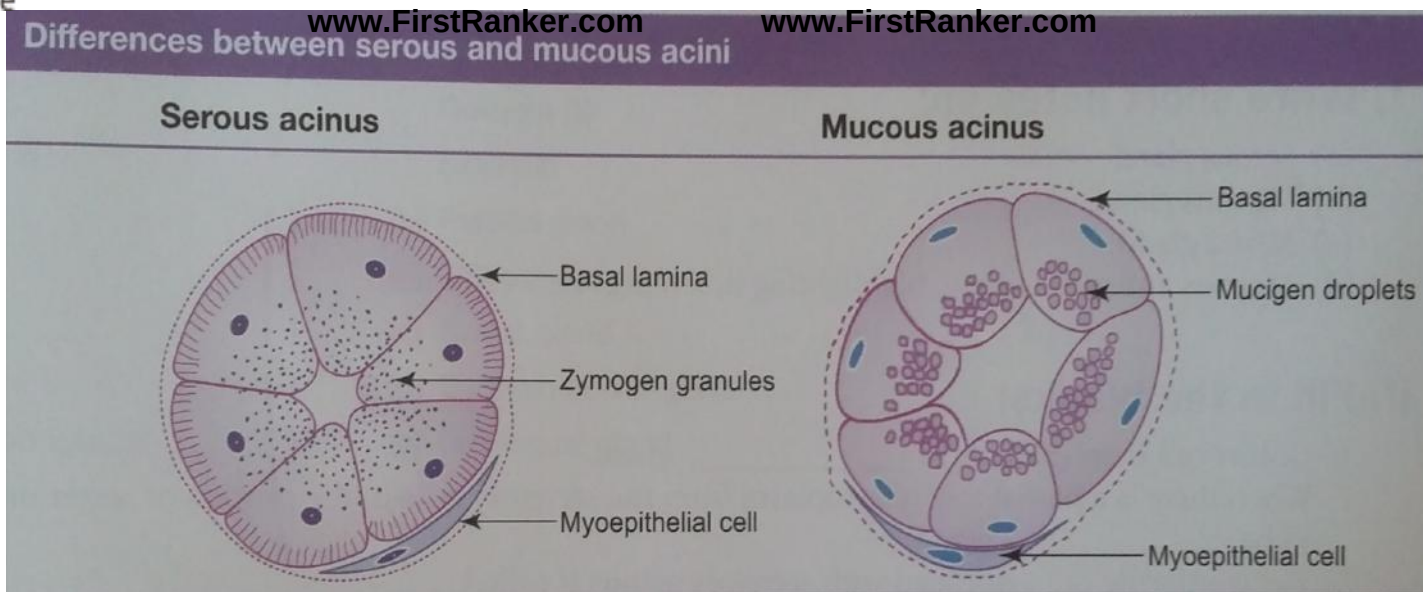
- *Mixed gland*
- Well defined capsule and septa.
- Secretory acini—both *serous* and *mucous*.
- Serous acini are more sometimes
- Mucous acini are capped by a layer of serous cells called *serous demilunes*.
- Ducts—same

Submandibular gland

SUBLINGUAL GLAND

- *Mixed* salivary gland.
 - No definite capsule.
 - Septa divides gland into lobules.
 - Secretory acini— *predominantly mucous acini*.
 - Duct—intercalated and striated duct *rarely seen*
-

Sublingual gland



	SEROUS	MUCOUS
SIZE OF SECRETORY END PIECE	<i>SMALL</i>	<i>LARGE</i>
SIZE OF LUMEN	<i>SMALL</i>	<i>LARGE</i>
SECRETION	<i>THIN WATERY</i>	<i>THIC VISCOUS</i>
NATURE OF SECRETORY GRANULES	<i>ZYMOGEN GRANULES</i>	<i>MUCINOGEN DROPLETS</i>
NUCLEUS	<i>ROUND, CENTRAL</i>	<i>FLAT , PERIPHERAL</i>
FUNCTION	<i>ENZYME ACTION</i>	<i>PROTECTION & LUBRICATION</i>
EXAMPLE	<i>PAROTD GLAND</i>	<i>SUBLINGUAL GLAND</i>