GI Histology Lab 1

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**Lip**

**ORAL MUCOSA**
- Arrow shows labial salivary glands in the submucosa.

**VERMILLION**
transitional zone.

**SKIN**
Stratified Squamous epithelium, keratinized
- Arrow shows:
  - Hair follicles.
  - Also note the sebaceous glands & sweat glands.

**CORE**
stratified skeletal muscles
Orbicularis Oris
Notes about the Lip

• The vermilion border is red because the epithelium layer is thin and there are connective tissue papillae projecting into the epithelium, which are loaded with blood vessels and nerve endings.

• The vermilion border is a transitional zone of modified skin, so there are no hair follicles, sebaceous or sweat glands. This is why it is prone to dryness and chapping.

• The skeletal muscles which form the core of the lip can be recognized upon higher magnification since there would be flattened peripheral nuclei.
Tongue

Ventral surface of the tongue (non-keratinized stratified squamous epithelium) connected to floor of mouth by loose connective tissue.
- Short connective tissue papillae versus long on dorsum.

Dorsum of tongue (parakeratinized stratified squamous epithelium) showing the filiform papillae

Core of tongue striated muscle mostly showing intrinsic muscles
Tongue Section

Fungiform papillae

Filiform papillae
Filiform Papillae Sections

No Taste Buds.
Stratified squamous parakeratinized epithelium

Connective Tissue Papillae which projects into the epithelium and delivers blood supply, nerve supply and lymph vessels
Circumvallate Papillae

*Grooves/clefts around the papillae.*
- Medial surface of cleft has taste buds (lateral of papillae)
- Lateral side of cleft non-keratinized unlike the papillae itself which is para-keratinized since its on the dorsum of the tongue.

*Taste Buds on the lateral sides of the papillae.*

*Von Ebner’s Gland* (Serous gland) its duct opens in the bottom of cleft. ONLY PRESENT HERE.

*Parakeratinized (PARA-K)*

*Non-keratinized (NON-K)*

*Connective Tissue Papillae and striated muscle core*
Fungiform Papillae

Connective Tissue Papillae projecting into the fungiform papillae

The taste buds in this papillae are present on their upper part/dorsum.
Fungiform Papillae section 2
Gastatory cell - In the middle - Dark nucleus.

Stem Cell (near base)

Sustentacular supporting cell (on sides/lateral)
Lobe

Interlobular Duct (between lobes)

Lobule contains Intralobular ducts (inside lobule) which are of 2 types: Intercalated and striated
Parotid Gland Section 1

- Mostly serous secretions.
- Compound tubuloalveolar glands.
- Has intercalated and striated ducts.

Striated Ducts

Serous acini
Parotid Gland Section 2

- Serous acini
- Striated duct
Parotid Gland Section 3

Intercalated Duct
(number of cells around it less than 10, about 5-6)
Notes about the histology of the parotid gland

• Serous acini have the following features
  – Spherical nuclei near the base
  – Ill-defined boundaries between cells
  – Narrow lumen

• Intralobular (not interlobar) ducts (meaning inside a lobule) include the intercalated and striated ducts.
  – Intercalated ducts have 5-6 simple cuboidal cells around it.
  – Striated ducts have more than 10 simple cuboidal cells around it. The striated duct connects the smaller intercalated duct to the larger interlobular duct.
    • If we use an electron microscope, the reason why it is called a striated duct becomes evident as there are foldings of basement membrane and there are basal elongated mitochondria.

• All 3 pairs salivary glands are compounds tubuloalveolar glands.

• The cell in the acini are simple cuboidal, they then become stratified cuboidal (spherical), then stratified columnar (elongated) as we move distal.

• Pathway: Acinus to intercalated duct to striated duct to interlobular duct to interlobar duct. At the opening of the parotid duct in the oral cavity; the cells lining the duct are stratified squamous.
Submandibular Gland Section 1

- White: mucus acini.
- Dark purple: Serous acini.
- Faint purple/pink: Duct system

- Serous and mucus (mixed secretions)
- Compound tubuloalveolar glands.
- Complicated duct system.
- Many striated ducts, rare intercalated.
- Serous Demilune.
Submandibular Gland section 2

- Foamy white vacuolated appearance of Mucus acini.
- Serous acini
- Duct System: striated ducts (numerous)
- Nucleus of basket myoepithelial cell (squeezed under basement membrane)
- Serous Demilune
• Mucus Acini defining characteristics
  – Well-defined boundaries between cells.
  – Wide Lumen
  – Flattened basal nuclei
• Serous Demilune: the serous capping (purple) over the mucus acini (white).
Sublingual Gland Section 1

- Mostly mucus secretion.
- Non complicated duct system.
- Some striated ducts can be seen.
- Small amount of Serous Demilune but present.
Sublingual Gland Section 2
Transverse Section of Esophagus (upper part)

Type of muscle present is striated skeletal muscles, since this is the upper $\frac{1}{3}$.

Middle is mixed striated and smooth.

Lower is smooth muscle.

*Esophagus is posterior to trachea

Mucosa: Star shaped and closed lumen until deglutition of bolus

Submucosa

Muscularis Externae

Adventitia
Esophagus upper 1/3 section

Lining epithelium stratified squamous non-keratinized

2 organs with glands in submucosa are duodenum and esophagus
Esophagus Section

- Esophageal Gland Proper in submucosa
- Parasympathetic ganglion / Myenteric plexus
Esophagus Lower 1/3 just above the esophagogastric junction

- Esophageal gland proper in the submucosa.
- Myenteric / Auerbach’s plexus
- Lamina propria contains lymphoid aggregations that increase distally
- Smooth muscle since spindle shaped and nuclei central
Esophagus Lower 1/3 before cardia
Section 2
Gastro-esophageal Junction

- Note: Cardiac gland in lamina propria.
- Physiological sphincter not anatomical.

Changes:
1- Stratified squamous non-keratinized to simple columnar epithelium
2- Gland becomes in lamina propria

Gastric pits as we go distally into the stomach
Gastro-Esophageal Junction Section

Junction is a common site for cancer thus changes in epithelium are important.
Best of Luck!