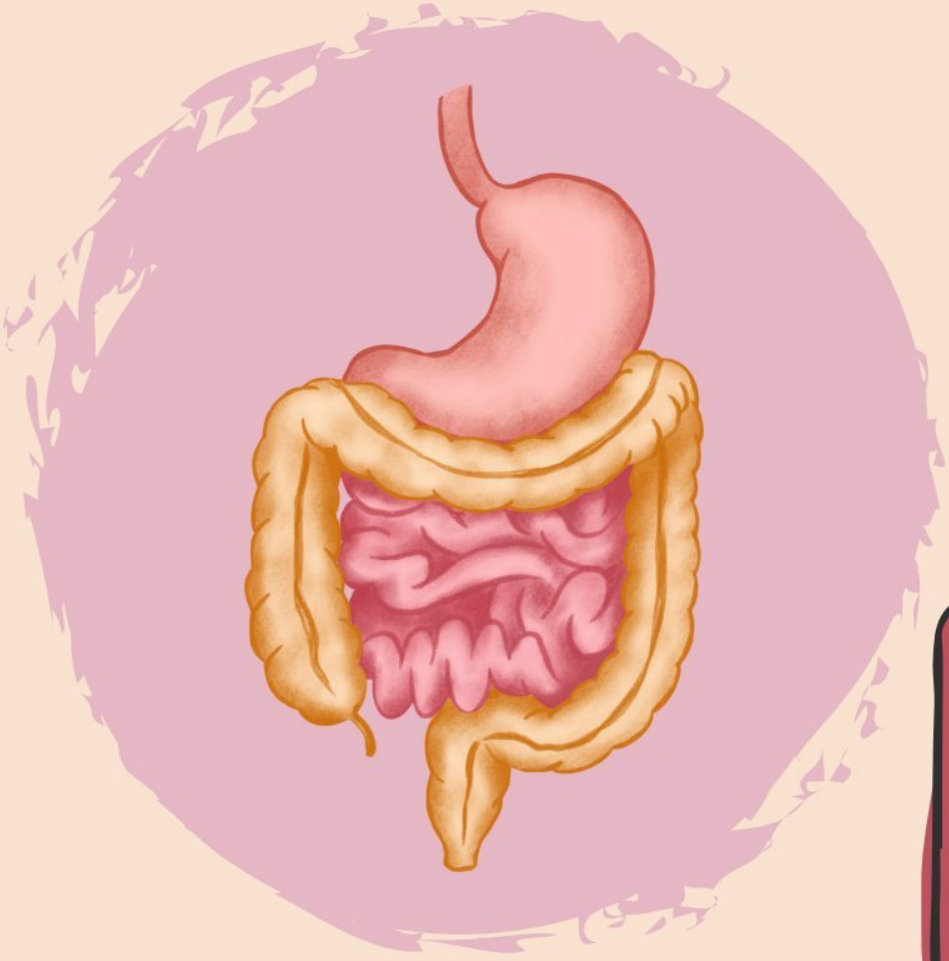
Level (3) - Semester (5)

HISTOLOGY



SCAN ME

GIT - Lecture (3)

Digestive & Salivary Glands

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DIGESTIVE & SALIVARY GLANDS

1) DIGESTIVE GLANDS

☑ **Digestive glands deliver secretions into the digestive canal**

TYPES

❶ **INTRAMURAL GLANDS:**

- **Located in the wall of the gastrointestinal tract.**
- **Include:**

Gland	Site
Esophageal glands	Submucosa of the esophagus
Gastric glands	Mucosa of the stomach
Intestinal crypts	Mucosa of the small & large intestine
Brunner's glands	Submucosa of the duodenum

❷ **EXTRAMURAL GLANDS:**

- **Present outside the wall of the gastrointestinal tract**
- **Connected to it by ducts transporting secretions to the lumen.**
- **Include:**

Gland	Site
Salivary glands	Connected to the oral cavity
Pancreas	Connected to the duodenum
Liver	Connected to the duodenum

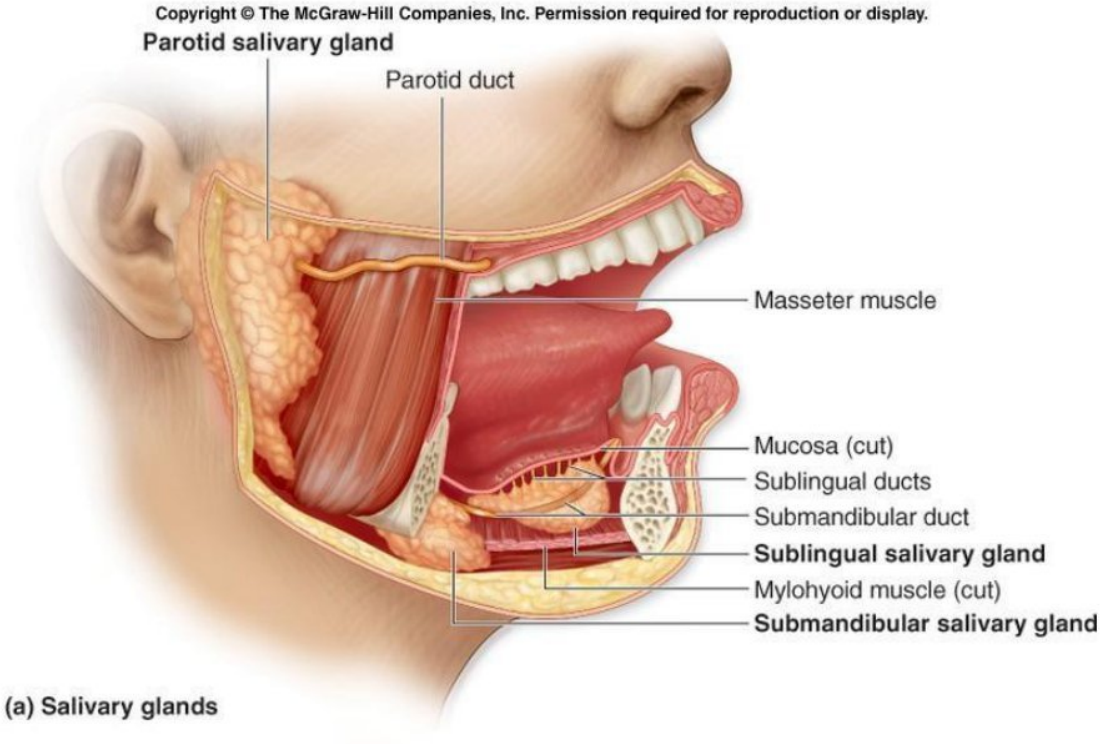
2) SALIVARY GLANDS

TYPES

	Main salivary glands	Accessory salivary glands
INCLUDE	a) Parotid glands b) Submandibular glands c) Sublingual glands	a) Buccal glands b) Labial glands c) Palatine glands d) Lingual glands

FUNCTIONS OF THE SALIVA

① **Lubricates & moistens** the mouth cavity & **cleans it** from food debris.
② **Moistens** the **ingested food.**
③ **Buffers** the **acidity** of **mouth cavity.**
④ **Contains IgA** which **protect against microorganisms.**
⑤ **Salivary amylase** changes **starch** into **maltose.**



(a) Salivary glands

General Structure Of The Main Salivary Glands

1 STROMA

☑ **Formed of supporting connective tissue elements which carry:**

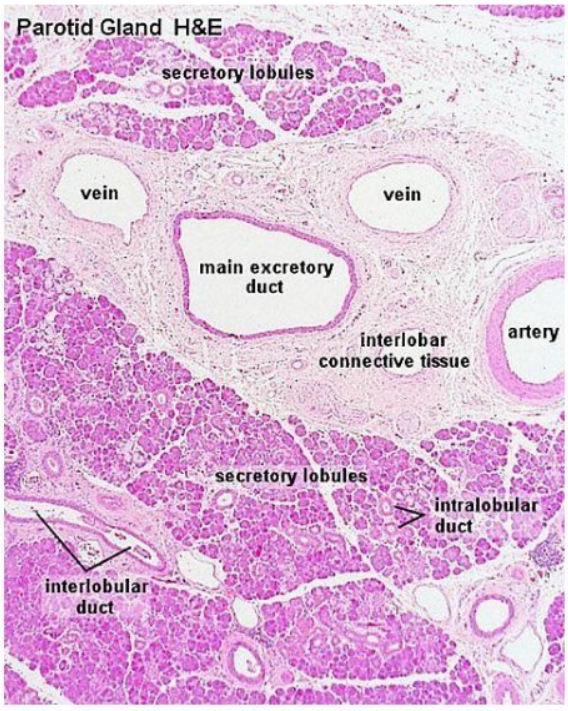
1) The duct system
2) Blood vessels
3) Lymphatics
4) Nerves.

☑ **Parts:**

Capsule	▪ Formed of **dense fibrous connective tissue** rich in **collagen fibers.**
Trabeculae (septa)	▪ **Connective tissue septa** arising from the **inner surface** of the **capsule** ▪ **They are of two types:**

	Site
Interlobar septa	Between the lobes
Interlobular septa	Between the lobules

Reticular network	▪ **Delicate network** of **reticular fibers** arising from **the trabeculae** to **support** the **parenchyma inside** the **lobules.**



II PARENCHYMA

Definition

- **The epithelial elements representing the functioning parts of the gland.**

☑ **Formed of:**

1) **Secretory portions:** Salivary acini.
2) **Transport system:** Branching ducts.

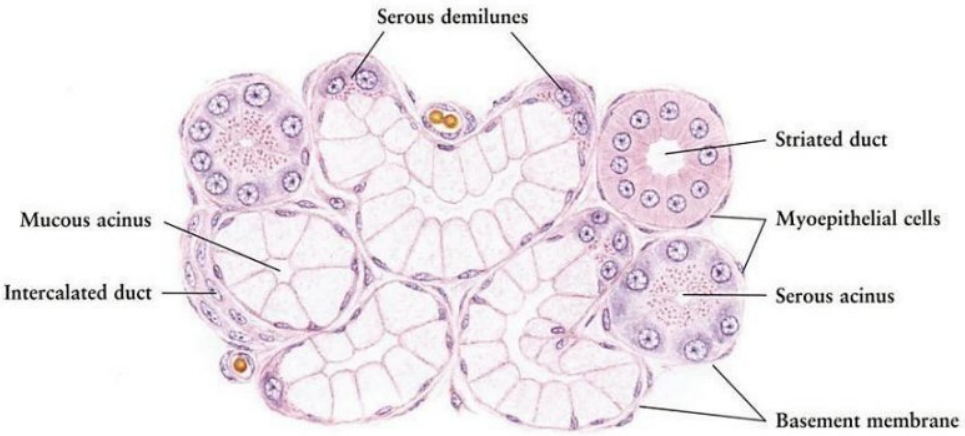
A SALIVARY ACINI

☑ **Structure:**

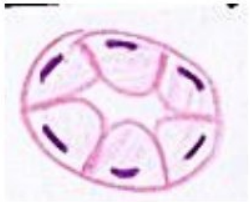
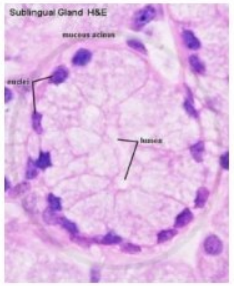
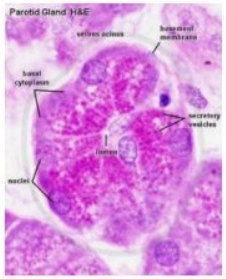
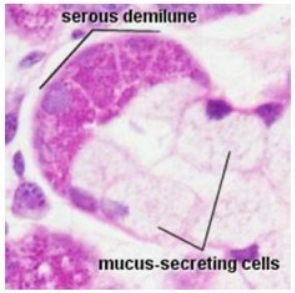
- **Formed of:** Group of secretory cells which surround a central lumen leading to the duct system.
- **Surrounded by:** Basement membrane.
- **Between the cells & basement membrane:** There are branching myoepithelial cells grasping the acinus like the hand (basket cell).
  - Their contraction squeezes the secretions into the ducts.

☑ **Types of salivary acini "According to the nature of secretion":**

1) Mucous acinus
2) Serous acinus
3) Mixed acinus

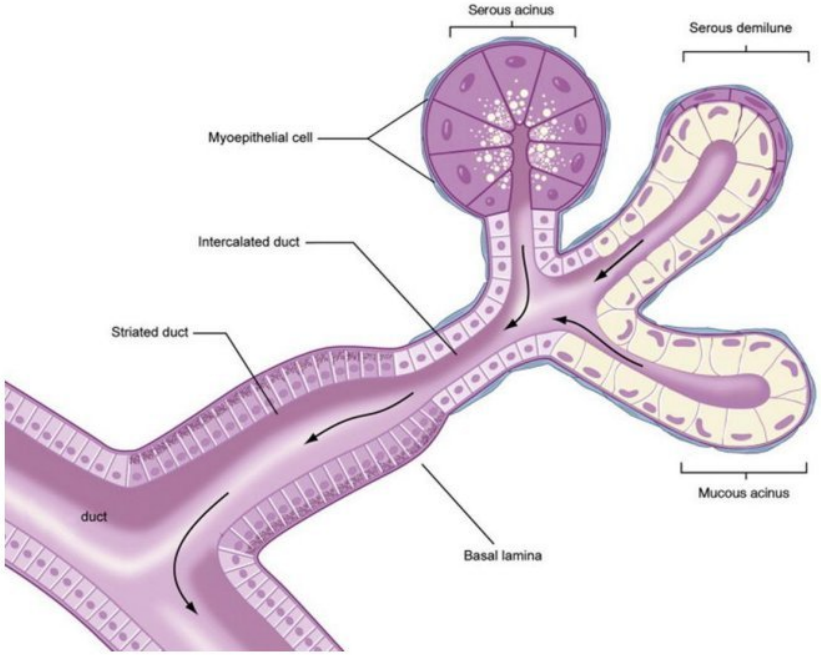


Types of Salivary Acini

		1) Mucous acinus	2) Serous acinus	3) Mixed acinus
Staining		▪ Light in staining	▪ **Dark** in staining	▪ **Mainly a mucous** Capped by a group of serous cells known as crescent of Gianuzzi or serous demilune.
Lumen		▪ Wide lumen	▪ Narrow lumen	--
Secretory cells	LM	▪ **Shape:** Cuboidal ▪ **Nuclei:** Basal & Flat ▪ **Cytoplasm:** Pale foamy	▪ **Shape:** Pyramidal ▪ **Nuclei:** Rounded central ▪ **Cytoplasm:** Deep basophilic ▪ **Apical** acidophilic zymogen **granules.**	--
Basket cells		▪ Surrounded by numerous basket cells	▪ Surrounded by less numerous basket cells	--
Figure		 	 	 

B DUCT SYSTEM

	Intercalary ducts	Intralobular (striated) ducts	Interlobular ducts	Interlobar ducts	Main duct
CHARACTERS	▪ **Arise from:** Lumen of the acinus.	▪ The **continuation** of the **intercalary duct inside** the **lobules.** ▪ They **actively reabsorb Na from saliva** & **add K & HCO_3** to saliva , **Thus making saliva Hypotonic**	▪ Pass in the **interlobular septa**	▪ Pass in the **interlobar septa**	▪ Leave the gland to **open** in the **mouth cavity**
DRAIN SECRETIONS	**Into Intralobular ducts.**	---	**From Intralobular ducts.**	**From interlobular ducts.**	**From interlobar ducts.**
EPITHELIUM	▪ **Simple flattened** epithelial cells.	▪ **Type:** Simple cubical epithelial cells ▪ **Nucleus:** Rounded central nuclei ▪ **Cytoplasm:** Granular acidophilic. ▪ **Apex:** Irregular border	▪ **Simple columnar** epithelium	**Smaller branches** ▪ **Pseudostratified columnar** epithelium. **Larger branches** ▪ **Stratified columnar** epithelium.	**Near gland** ▪ **Stratified columnar** epithelium. **Near mouth** ▪ **Stratified squamous** epithelium.



Specific Features of Different Salivary Glands

		Parotid	Submandibular (Submaxillary)	Sublingual
Stroma	Capsule	**Thick** with **fat cells**	**Thick** with **some fat cells.**	**Thin**
	Trabeculae			**Well developed** with **no fat cel**
Parenchyma	The acini	**Pure serous.**	**Mainly serous** with some mucous & mixed ones.	**Mainly mucous** with some mixed & serous ones.
	Intralobular ducts	**Less numerous**	**Numerous** (highly branched).	**Less numerous** (less branched).

PANCREAS

GENERAL FEATURES

☑ **Finely lobulated gland.**

☑ **Site:** Present retroperitonealy at the level of 2, 3 lumbar vertebrae.

☑ **Relations:**

- Its head is in contact with the middle part of the duodenum
- Its tail reaches the spleen.

GENERAL STRUCTURE

☑ **It performs both exocrine & endocrine functions.**

☑ **The two functions are performed by two separate parenchyma.**

THE EXOCRINE PANCREAS

☑ The **exocrine part** of pancreas is formed of **stroma & parenchyma.**

I STROMA

☑ **Is delicate & formed of:**

a) Capsule

b) Septa

c) Reticular connective tissue

II PARENCHYMA

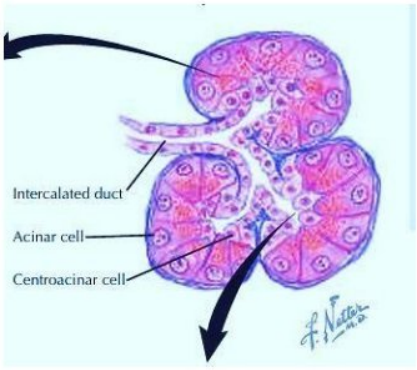
☑ **Formed of two parts:**

1) Pancreatic acini.

2) Duct system.

A Pancreatic Acini

Shape	▪ Irregular
Size	▪ Irregular



The Lining Cells of Pancreatic Acini

LM	Shape	▪ **Pyramidal** in shape
	Nuclei (shape + site)	▪ **Rounded** nuclei ▪ **Near** the base
	Cytoplasm – Basal	▪ Shows **basal basophilia & striations** (rER – mitochondria)
	Cytoplasm – Apical	▪ **Apical** acidophilic zymogen **granules**

Functions of the Exocrine Pancreas

① **Share in the digestion of:** Carbohydrates – Lipids – Proteins – Nucleoproteins – Phospholipids.

② The **bicarbonate content** of the pancreatic juice **neutralizes the acidic contents** coming from the **stomach** to the **duodenum.**

B DUCT SYSTEM

The duct system is less branched and formed of:

	Intercalary ducts	Intralobular ducts	Interlobular ducts	Main duct	Accessory ducts
CHARACTERS	---	Very short "Rarely seen in sections"	---	Long	Shorter
				Runs along the pancreas from tail to head	Lies in the head
				Receives interlobular ducts along its course	
				The two ducts **unite & exit from the head** to join **the common bile duct.**	
LINING EPITHELIUM	Flat cells	Low cubical epithelium	Simple cubical epithelium	Simple columnar epithelium **Near the duodenum** They acquire some goblet cells.