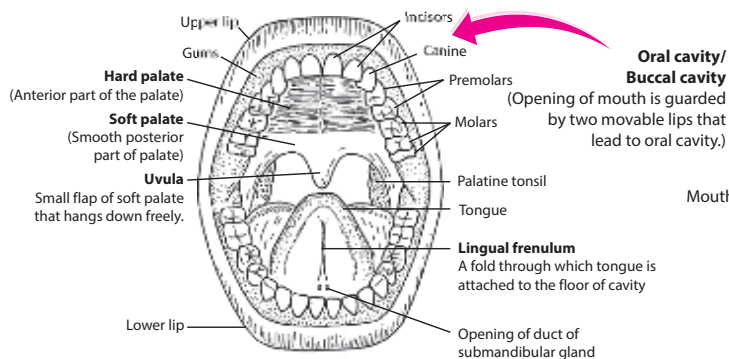


CONCEPT MAP

HUMAN DIGESTIVE SYSTEM

Humans show holozoic nutrition wherein they feed by ingesting complex organic matter. They have a specialised digestive system. The organic matter is subsequently digested and absorbed in this system. The human digestive system includes a long tube like gastrointestinal (GI) tract or alimentary canal (approximately 9 m in adults) and digestive glands. The GI tract runs through the body from mouth to anus. Each region of this tract is specialised to carry out particular steps in digestion and allow movements of its contents.



Oral cavity/ Buccal cavity
(Opening of mouth is guarded by two movable lips that lead to oral cavity.)

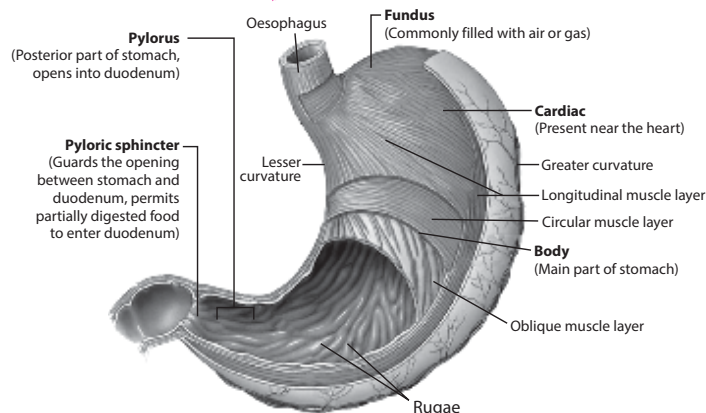
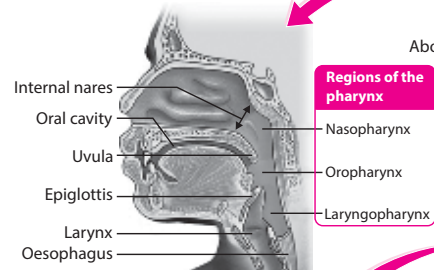
Mouth

Pharynx
A common passageway for solid food, liquids and air. It is divisible into 3 parts.

Oesophagus
About 25 cm, narrow, thick walled muscular tube leading from pharynx to the stomach (transfers food).

Gall bladder
Pear shaped, sac like structure, attached to posterior surface of the liver. It stores bile secreted by the liver.

Stomach
J-shaped organ, comprises of two curvatures. It has four parts.



Parotid gland- Located near the ears and are largest of the three glands. Duct opens into the oral cavity near upper second molars.

Sublingual gland - They are located beneath the tongue and are smallest of three glands. Their ducts (**ducts of Rivinus**) open into the floor of oral cavity.

Submandibular glands - They are located at angles of lower jaw, medium sized. Their ducts (**Wharton's duct**) open into oral cavity near lower central incisors.

Salivary glands
Discharge their secretion into the oral cavity. Secrete salivary amylase and mucus.

Liver
Largest gland of the body, lies in the upper right side of abdominal cavity just below the diaphragm. Divided into two main lobes which are further subdivided into **lobules**, the functional unit of liver.

Pancreas
Soft, lobulated, greyish-pink gland, located posterior to the stomach in the abdominal cavity. It comprises of both exocrine and endocrine cells.

Spleen

Colon
Possess three longitudinal bands called **taeniae coli** and small pouches called **haustra**. It contains microbial flora.

Caecum- Pouch like structure, about 6 cm long and leads to colon.

Sigmoid colon
Rectum - Short muscular tube, comprising last 20 cm of gut and terminates in 2 cm long anal canal.

Appendix- Outgrowth of caecum, slightly coiled blind tube and vestigial in humans. Its wall contains prominent lymphoid tissue.

Anus
Opening of anal canal, guarded by internal anal sphincter and external anal sphincter.

Ileum (means roll or coil)
It is the longest part of small intestine (approximately 3.5 m), with a diameter of 3.5 cm. Along the ileum, clusters of nodules called **Peyer's patches** are present.

Jejunum (means empty)
Thick walled, vascular, middle of small intestine, about 2.5 m long with a diameter of 4 cm.

Duodenum
C-shaped, thin walled, shortest and widest part of small intestine. Numerous special submucosal glands-**Brunner's gland** are present in which empty thin ducts into the **crypts of Lieberkuhn**. They also show numerous finger like projections called **villi** that increase the absorptive surface considerably.

Large intestine
Large in diameter than small intestine. It is about 1.5 m long and divisible into three parts.

Islet of Langerhans (Endocrine part)

DIGESTIVE GLANDS

Central vein
(Located at centre of each lobule, drains blood from lobules and merge to form hepatic vein that empties into vena cava.)

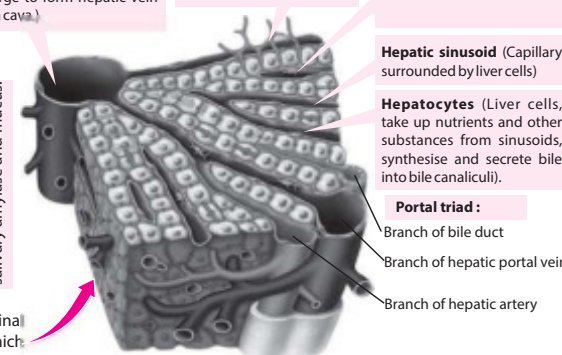
Bile canaliculi
(Network of tubular spaces between liver cells)

Kupffer cell (Phagocyte)
lie along the endothelium of sinusoids at intervals

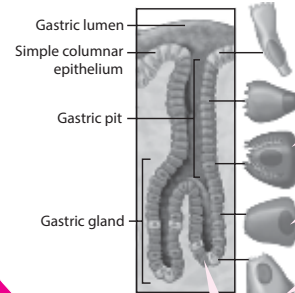
Hepatic sinusoid (Capillary surrounded by liver cells)

Hepatocytes (Liver cells, take up nutrients and other substances from sinusoids, synthesise and secrete bile into bile canaliculi).

Portal triad:
Branch of bile duct
Branch of hepatic portal vein
Branch of hepatic artery



Gastric glands



Mucous or Goblet cells (Present throughout the epithelium and secrete mucus)

Parietal or Oxyntic cell (Lies against the basement membrane and secretes hydrochloric acid and Castle's intrinsic factor)

Chief cell or peptic cell (Secretes pepsinogen and small amount of gastric amylase and gastric lipase)

G-cell or gastrin cell (Secretes and stores hormone gastrin)

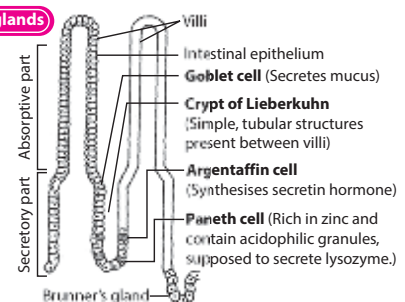
Argentaffin cells (Produce and secrete serotonin, somatostatin and histamine)

Alpha cell (Secretes glucagon hormone)
Beta cell (Secretes insulin hormone)
Delta cell (Secretes somatostatin hormone)

Pancreatic acini (Rounded lobules, secrete alkaline pancreatic juice)

F cell or Pancreatic polypeptide cell (Secretes pancreatic polypeptide that inhibits the release of pancreatic juice)

Intestinal glands



Small intestine
Small in diameter but longest part of the alimentary canal, usually 5-6.25 m long. Length varies according to the height of individual and not with weight. Possesses prominent circular folds of mucous membrane-**plcae circulares** or **valves of Kerckring**.