

## Histological lab

### Digestive system :

**Esophagus** : is a strong muscular tube which conveys food to the stomach .in the relaxed state the esophagus mucosa is deeply folded . the lumen of the esophagus is lined by a thick protective stratified squamous epithelium . the underlying lamina propria is quite narrow and contains scattered lymphoid aggregates . the underlying muscularis mucosa is found . The submucosa is relatively loose with many elastic fibers and small seromucous gland .Muscularis is thick and inner circular and outer longitudinal layer of smooth muscle . the first part of swallowing is under voluntary control skeletal muscle predominate in the muscularis of the upper third of the esophagus .

**Stomach** : Is an expanded hollow organ situated between esophagus and small intestine .Consist of cardia ,fundus (dom shape ) ,body or corpus and pylorus .At the junction of esophageal – stomach is a transition from the stratified squamous to simple columnar epithelium of the stomach .The luminal surface of the stomach have numerous tiny openings called gastric pits formed by the luminal epithelium that invaginates the underlying con. Tissue lamina propria of the mucosa .

gastric glands are a tubular located below the luminal epi. And opening into gastric pits to deliver their secretion into the stomachal lumen.Submucosa is after lamina propria and composed of loose con. Tissue and containing blood vessels and nerves . muscularis externa is thick Muscular wall and composed from three muscle and outer layer of the stomach is serosa .the mucosa have different types of cell and deep gastric glands that produce gastric secretion or juice for digestion . Longitudinal folds of mucosa are temporary and disappear when the stomach is distended with fluid and solid material .

### The structure of glands in the body of stomach :

The mucosa of the fundus and body of the stomach consist of straight tubular glands which synthesis and secrete gastric juice .the gastric pits occupy about one –quarter of the thickness of the gastric mucosa and each has between one and seven gastric glands opening into it . The gastric glands contain a mixed population of cells :

-Surface mucous cells: cover the luminal surface of the stomach and line the gastric pits . These cells have short surface microvilli and secrete protective bicarbonate ions directly into the deeper layers of the surface mucous .

-Neck mucous cells : are squeezed between the parietal cells in the neck and base of the gastric glands . These cells have larger secretory granules and more polyribosome than surface mucous cells .

-Parietal or oxyntic cells :are distributed along the length of the glands but tend to be most numerous in the isthmus of the glands . These large rounded cells have an extensive eosinophilic (oxyntic ) cytoplasm and a centrally located nucleus . And secrete gastric acid as well as intrinsic factor which is necessary for the absorption of vitamin B12 in the terminal ileum .

-Chief ,peptic or zymogenic cells :are located towards the bases of gastric glands . Peptic cells are recognised by their condensed , basally located nuclei reflects their large content of ribosome . These are the pepsin – secreting cells .

-Neuroendocrine cells : part of diffuse neuroendocrine system . Are also found in the base of the gastric glands . They secrete serotonin and other hormones .

-Stem cells: are found in the neck of the gastric glands . These undifferentiated cells divide continuously to replace worn out epithelial cells of all types . These cells are not easily identified in the section .

**Small intestine** is a long , convoluted tube about 5to 7 m. Divided into three parts duodenum , jejunum and ileum . The main function of it is the digestion of gastric contents and absorption of nutrients into blood capillaries and lymphatic lacteals .

### **Surface modification of small :intestine for absorption**

Plicae circulares :a permanent spiral folds or elevation of mucosa and it is prominent in the proximal portion of the small intestine , where most absorption takes place , they decrease in prominent toward the ileum .

Villi : fingerlike projection of lamina propria of the mucosa that extend into lumen they covered by simple columnar ep. And the core of each villus contains lymphatic capillary (lacteal ) and blood capillaries .and it is storouse of immune cell (plasma cell ,lymphocytes , mast cell , eosinophils ).

Smooth muscle fibers : from muscularis mucosa extends into the core of individual villi and it responsible for their movment . This action increase the contects of the villi with the digested food products in the intestine .

Microvilli: are cytoplasmic extentions that cover the apices of the intestinal absorption cells . They are visible under light microscope as a striated (brush ) border . Coated with glycoprotein which contain brush border enzyme as lactase , peptidase , sucrose lipase which important in digestive.

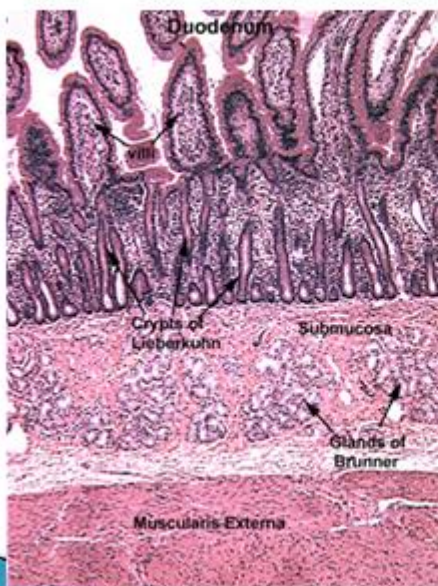
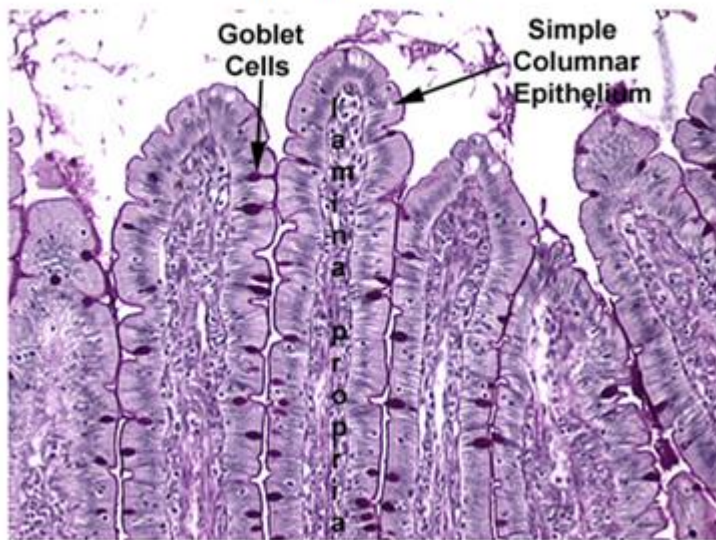
### **Regional differences in the small intestine :**

Duodenum : is the shortest segment and the villi are broad , tall and numerous ,with fewer goblet cell branched duodenal glands (buunners ) with mucus secreting cell characterize this region .

Jejunum: shorter narrower and fewer villi than the duodenum and more goblet cell .

Ileum : contains few villi that are narrow and short and more goblet cell ,lymphatic nodules are large and numerous to form peyer s patches .

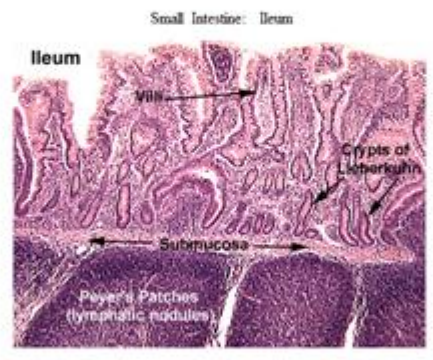
Small Intestine: Villi



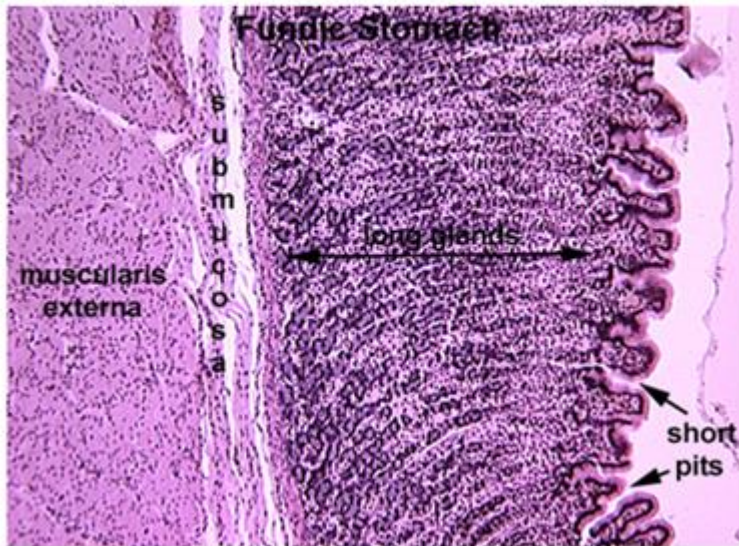
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Stomach: Fundic Stomach



Stomach: Pyloric Stomach

