



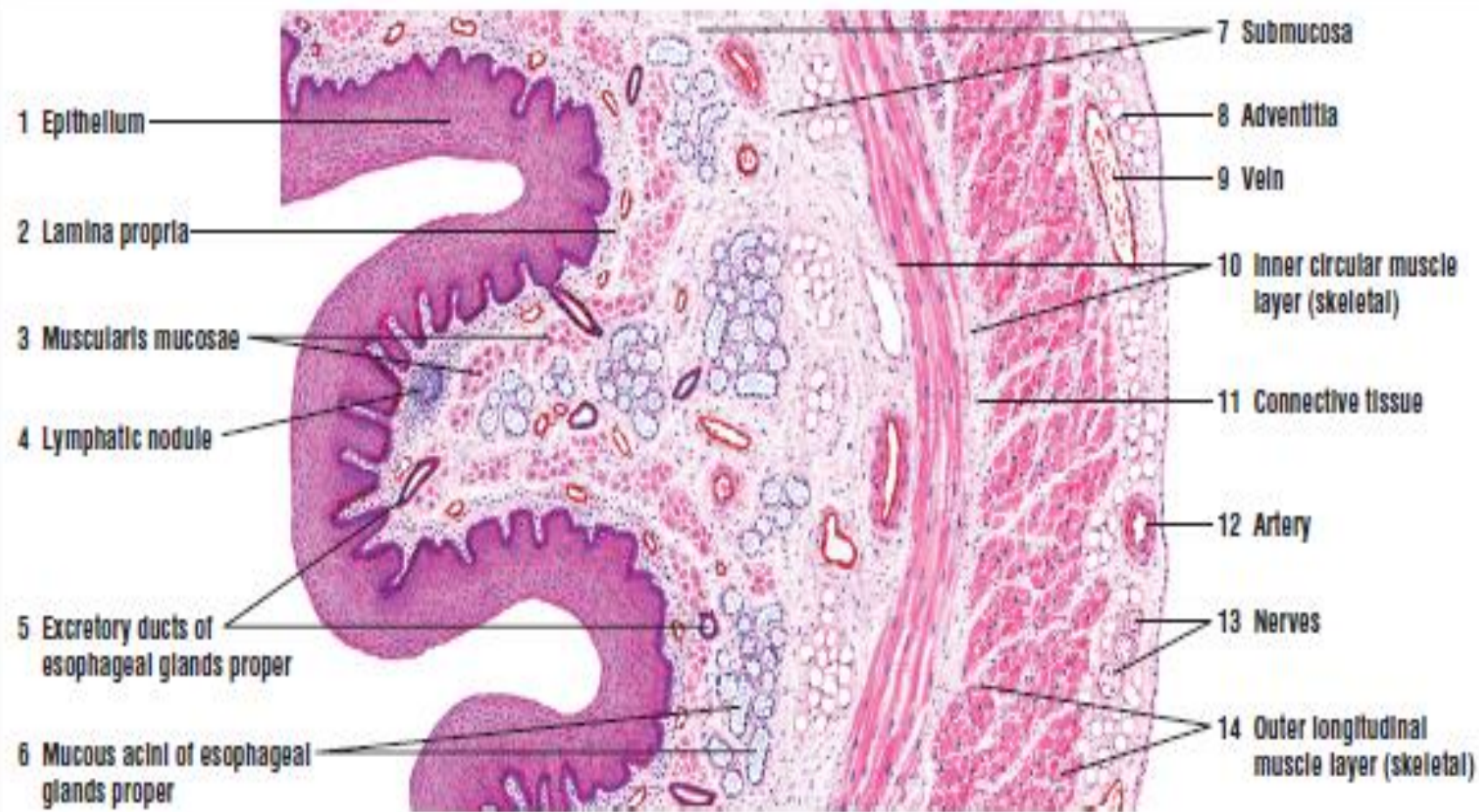
DIGESTIVE SYSTEM

ESOPHAGUS
STOMACH

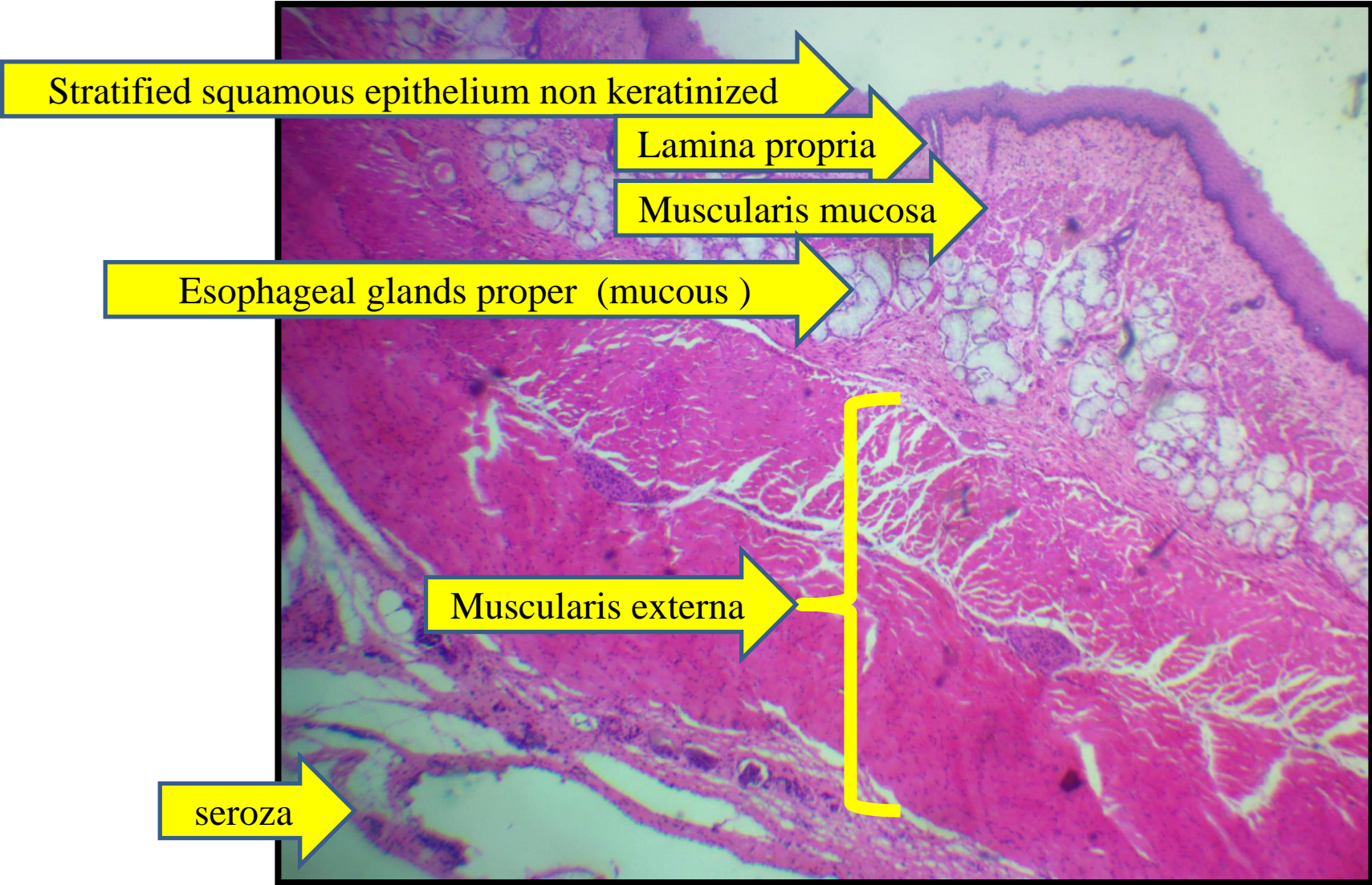
The esophagus

The **esophagus** is a short, muscular tube, about 25-cm long in adults, which transports swallowed material from the pharynx to the stomach.

- The esophageal **mucosa** has **nonkeratinized stratified squamous epithelium**. In the **lamina propria** of the region near the stomach are groups of glands the **esophageal cardiac glands** and glands found in (**submucosa**), These are produce mucous secretions to protect the **lower** esophagus from being damaged by reflux of acidic gastric juices from the stomach .
- The **submucosa** is one of the two regions of the digestive tract (the other is the **duodenum**) that houses glands in its submucosa. These glands are the mucus-producing **esophageal glands proper** . whose secretion facilitates the transport of foodstuffs and protects the mucosa .
- The **muscularis externa** consists of two layers of muscle: inner circular and outer longitudinal layers . Those in the **proximal** (upper) one-third are **skeletal**; those in the **middle** one-third are **skeletal** and **smooth**, whereas those in the **distal** (lower) one-third are **smooth** muscle.
- The **outermost layer** around the esophagus is the connective tissue **adventitia** with adipose tissue, nerve and blood vessels and **serosa** .



Upper esophagus (transverse section).



Stratified squamous epithelium non keratinized

Lamina propria

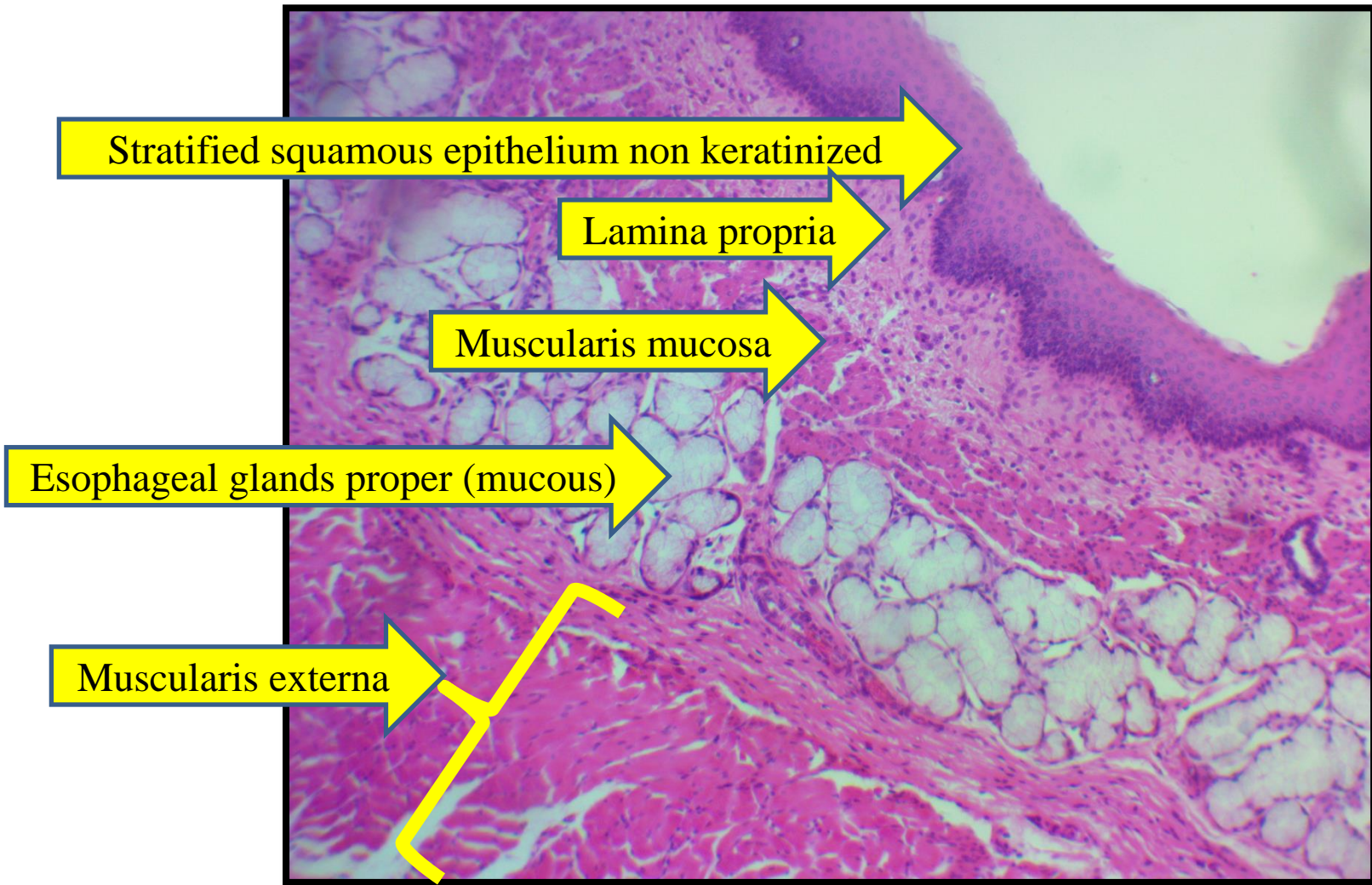
Muscularis mucosa

Esophageal glands proper (mucous)

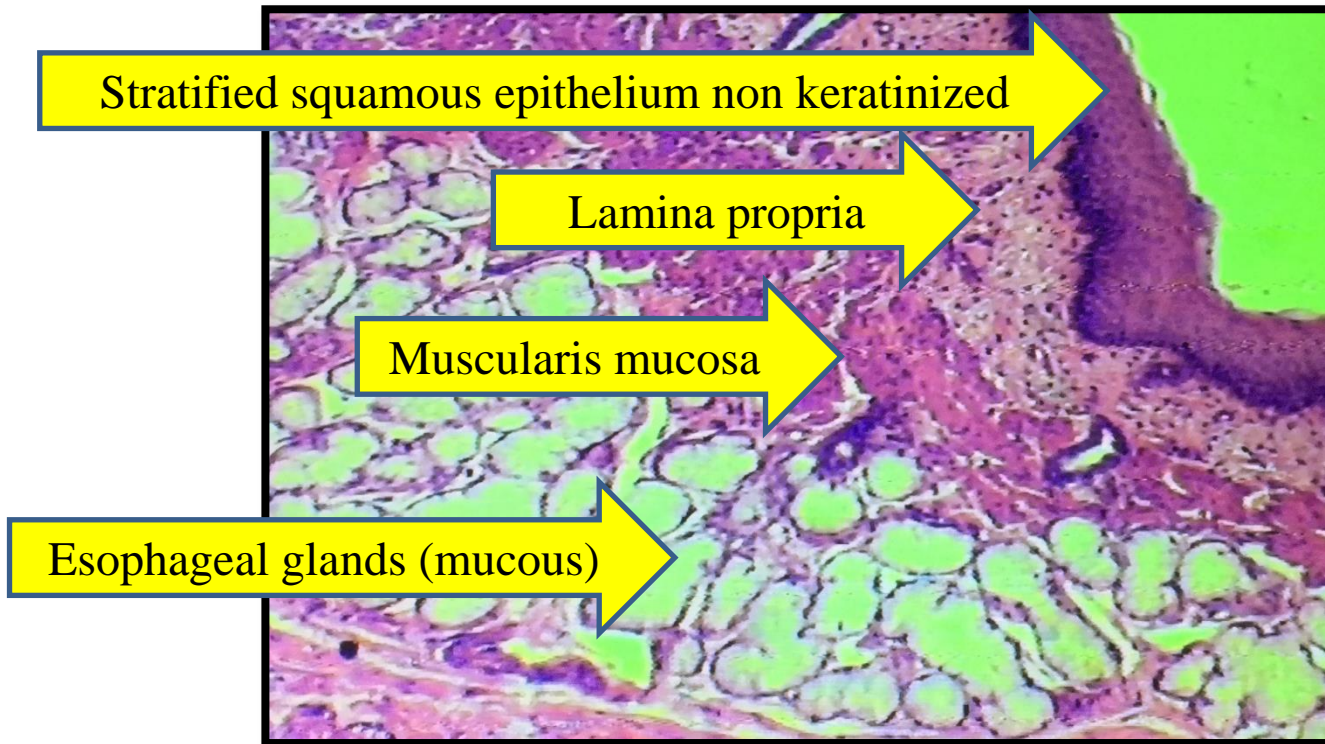
Muscularis externa

seroza

Esophagus



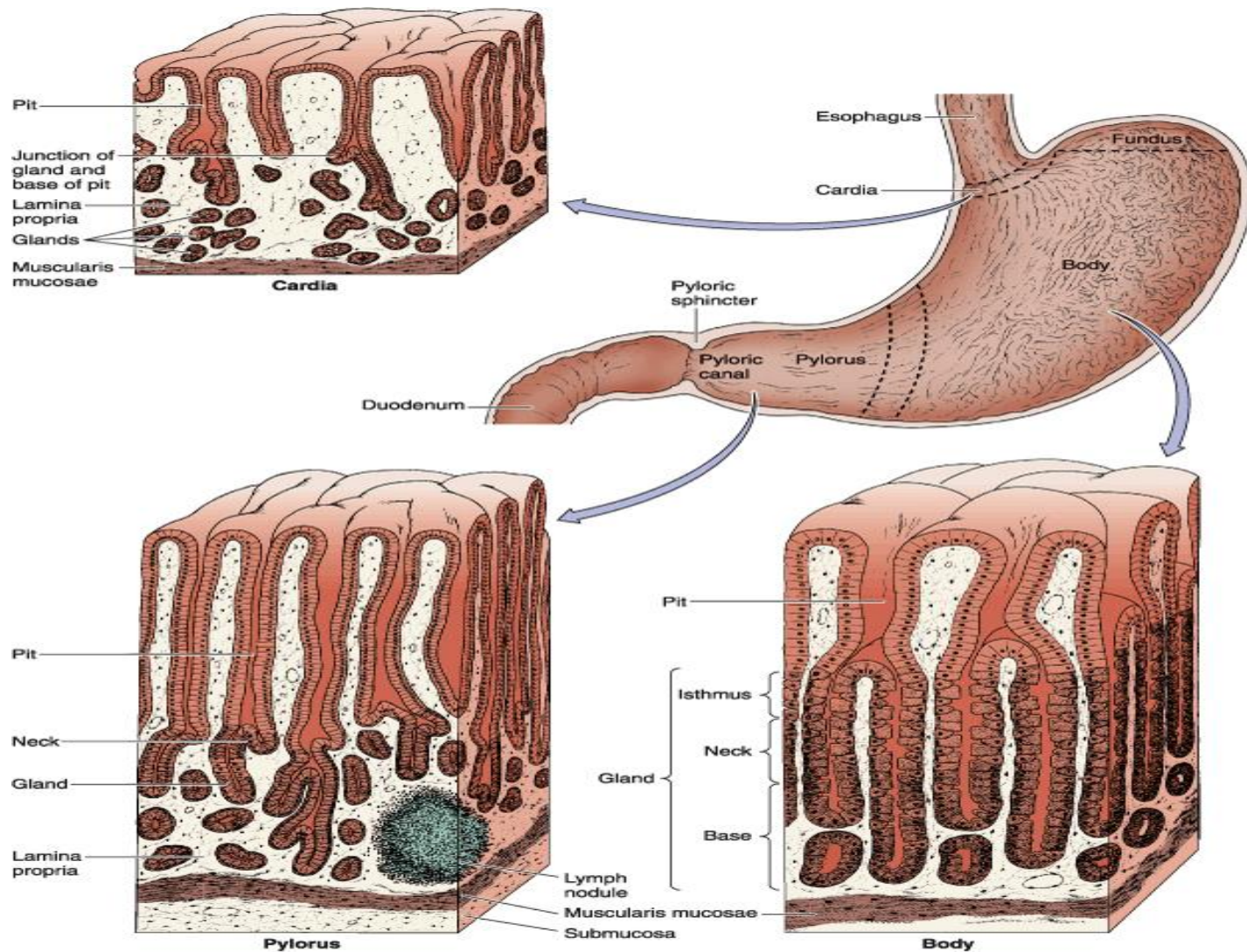
Esophagus



Esophagus

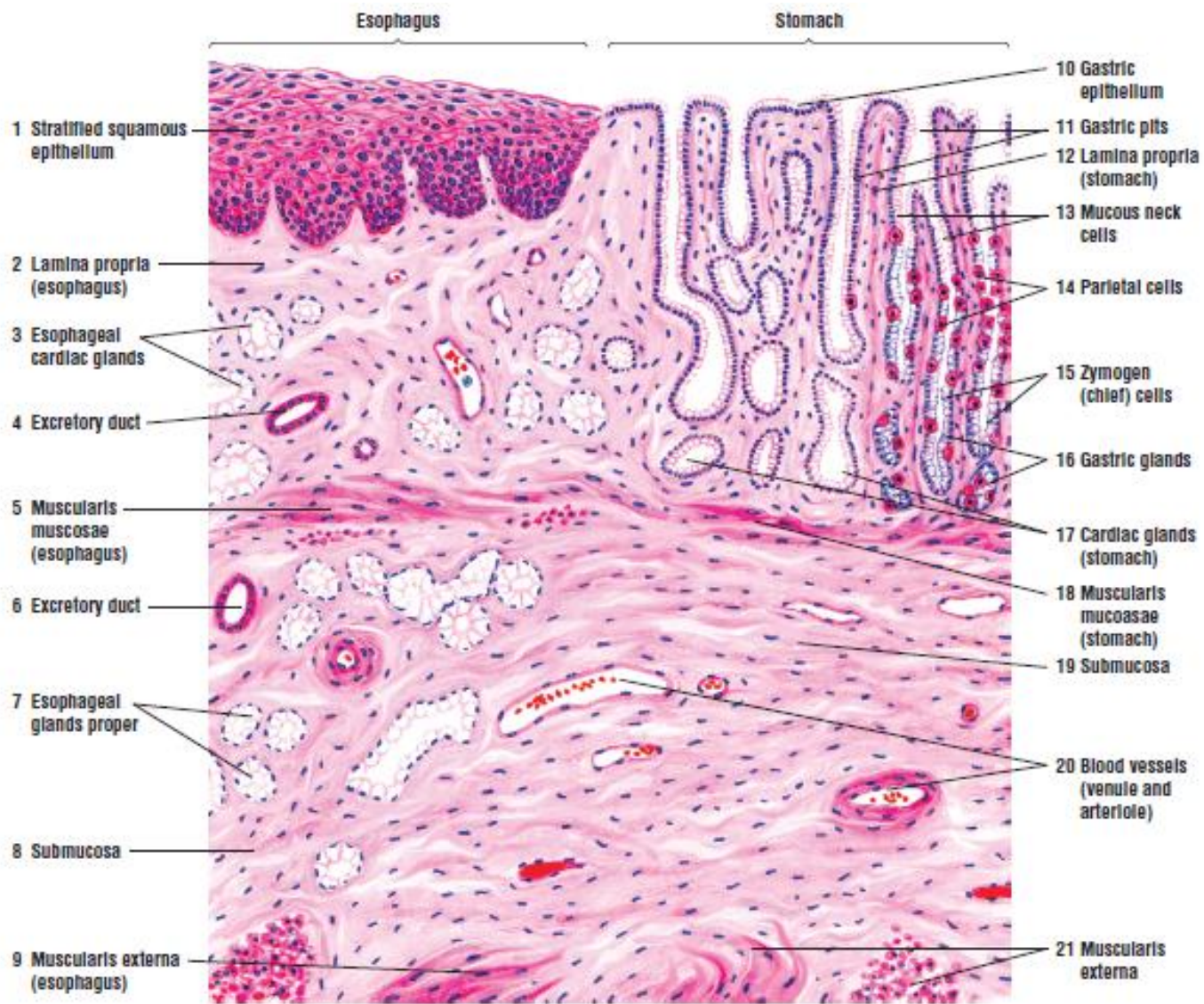
The Stomach:

- The stomach is a “J”-shaped sac (hollow) organ of the digestive tube, the stomach has only **three histologically** distinct regions.
- The **cardia**, the **fundus** and **body** and the **pylorus**.
- ❖ The inner surface of the stomach is lined by **simple columnar epithelium** composed mainly of **surface mucous** cells.
- ❖ The surface epithelium of the stomach is invaginated into the lamina propria to form **gastric pits**.
- ❖ These **pits** serve as ducts for the glands in the lamina propria, which **vary** from region to region in the stomach.
- ❖ The muscularis externa layer has **three** layers of muscle. An inner oblique layer, a middle circular and an external longitudinal layer.
- ❖ The outer layer of the stomach is covered by the **serosa**.



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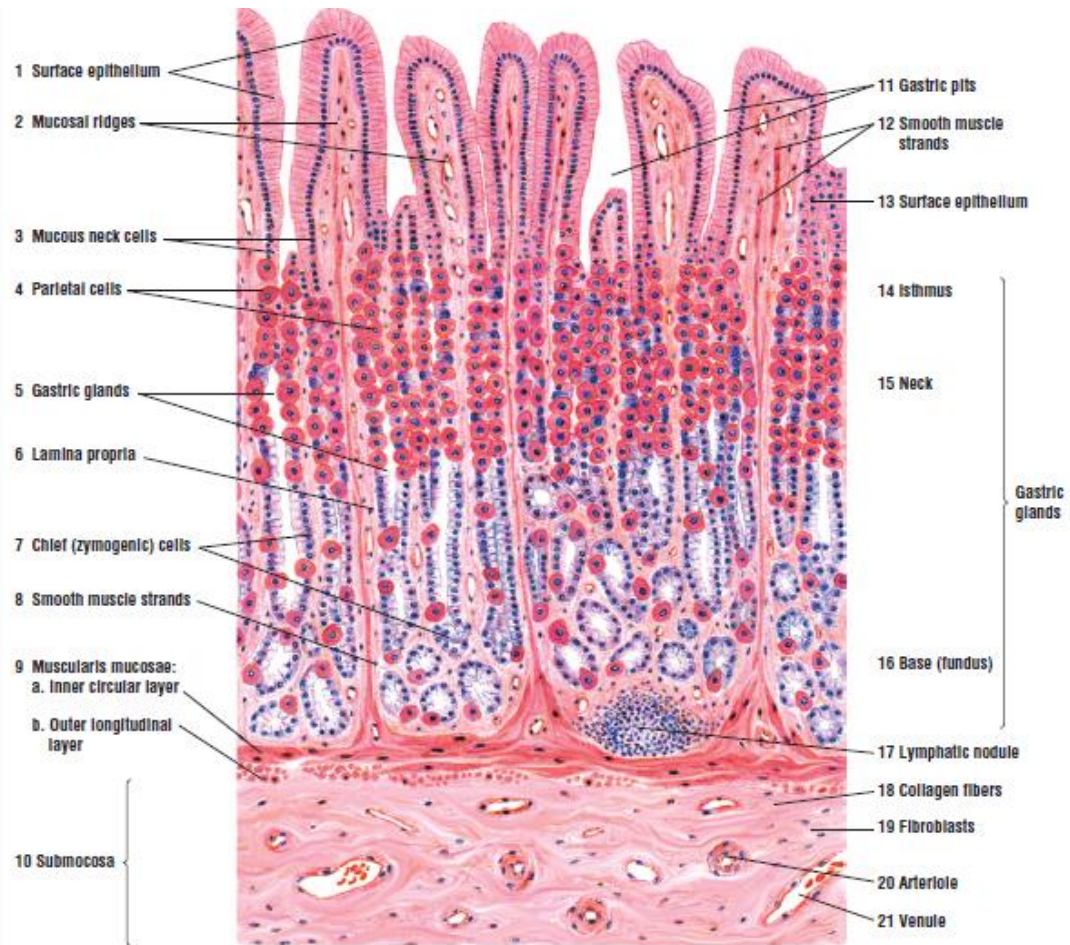
- ❑ **The cardiac region** connects to the lower esophagus at the **esophagogastric junction**, which is characterized by a change from the **non-keratinized stratified squamous** epithelium of the esophagus to the **simple columnar** epithelium of the stomach.
- The glands in the lamina propria of the cardia are called **cardiac glands** and are **branched tubular glands** with coiled secretory portions.
 - The **cardiac** gland contains mainly **mucus-secreting** cells, **enteroendocrine** cells, and, occasionally, **parietal** cells.
 - The mucus-secreting cells mainly produce **mucus** and **lysozymes**.
 - The mucus protects the stomach wall from acidic gastric juices; lysozymes destroy bacterial membranes, preventing bacterial infections .



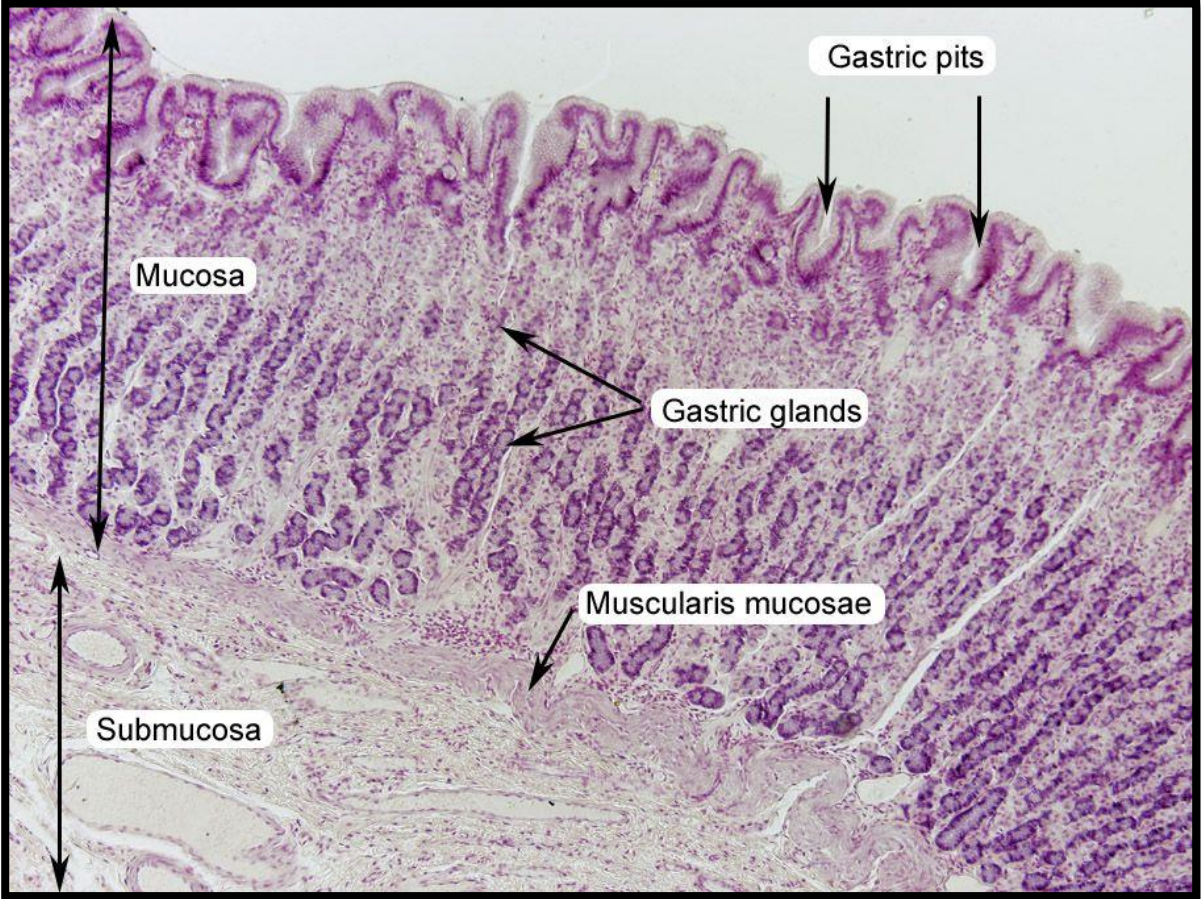
Esophageal-stomach junction.

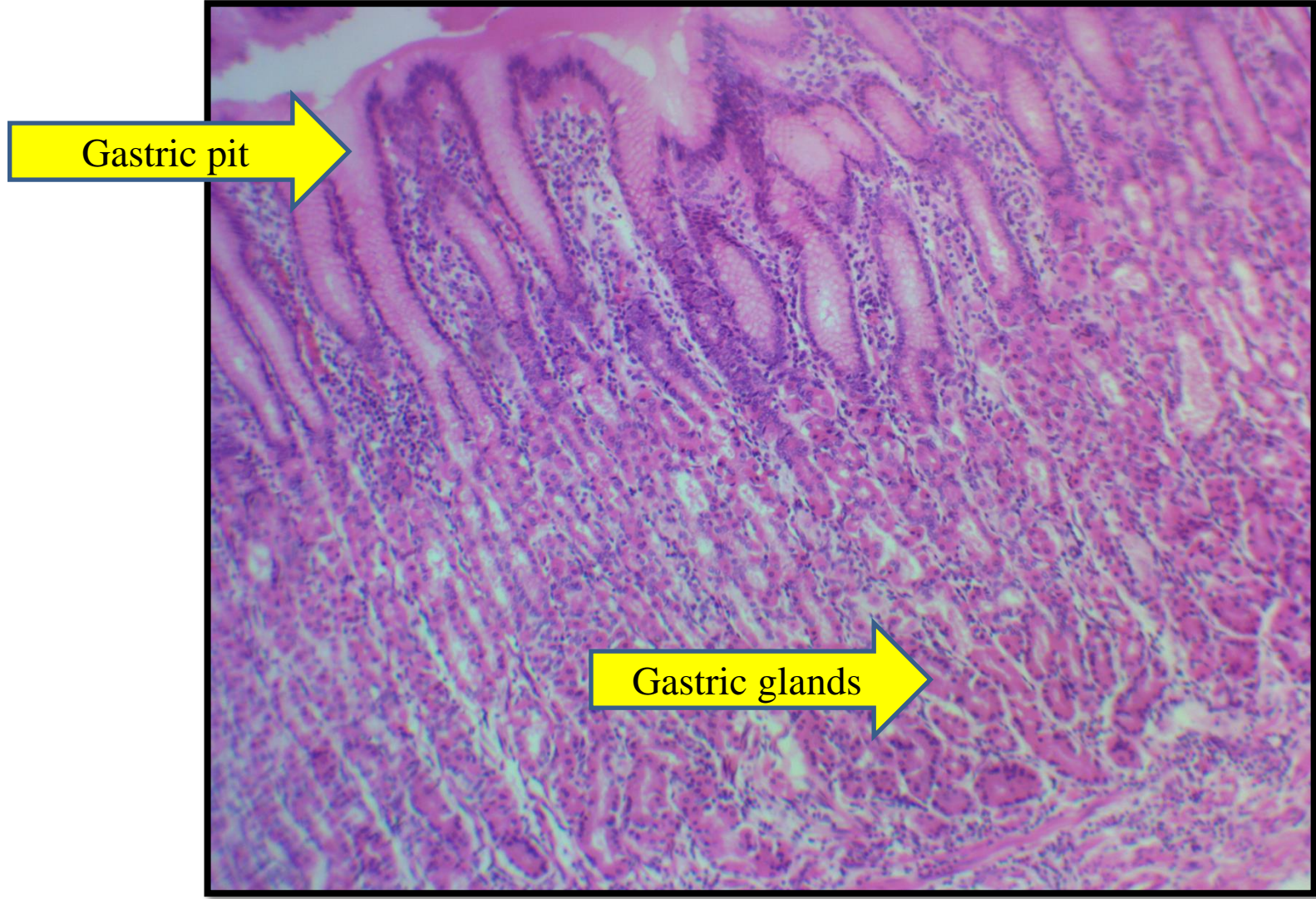
- ❑ **The fundic and body regions** form the largest portions of the stomach. Their mucosa has similar histological characteristics, including **short gastric pits** (are **not deep** and extend into the mucosa about **one fourth** of its thickness) and long branched tubular glands in the lamina propria.
- The glands are called **fundic or gastric glands** in both the fundus and the body regions.
- The gastric glands contain mainly **parietal** cells and **chief** cells, **mucous neck** cells, and **enteroendocrine** cells.

- **Parietal cells** (stain acidophilic - **pink**) are more numerous in the superior regions of the glands; these cells produce large quantities of **hydrochloric acid (HCL)**, creating an acidic environment to help digestion.
- **Chief (zymogenic) cells** are located in the more inferior regions of the glands; they secrete precursor enzymes such as **pepsinogen** , which is activated by (HCL) and becomes **pepsin**, and **lipase** .



Stomach: mucosa of the fundus and body (transverse section).

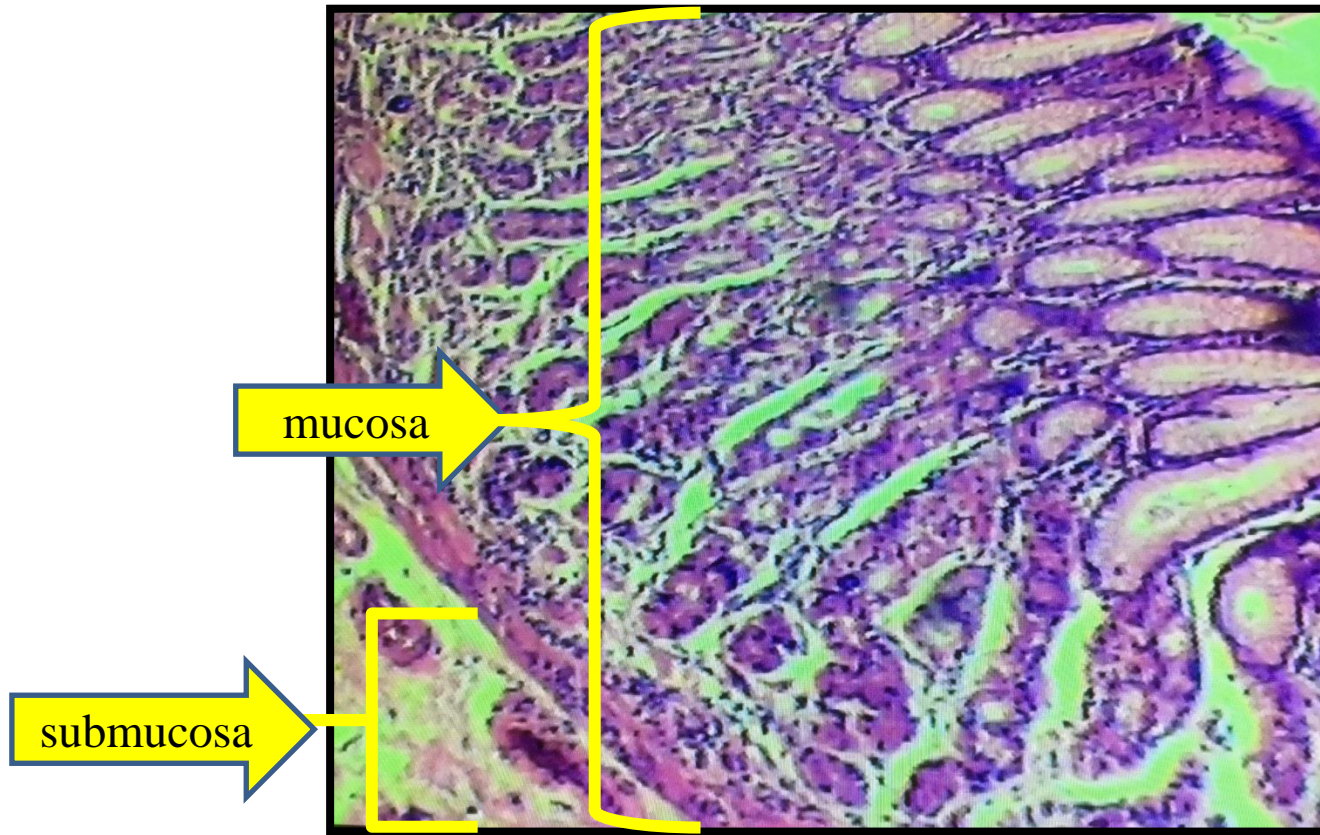




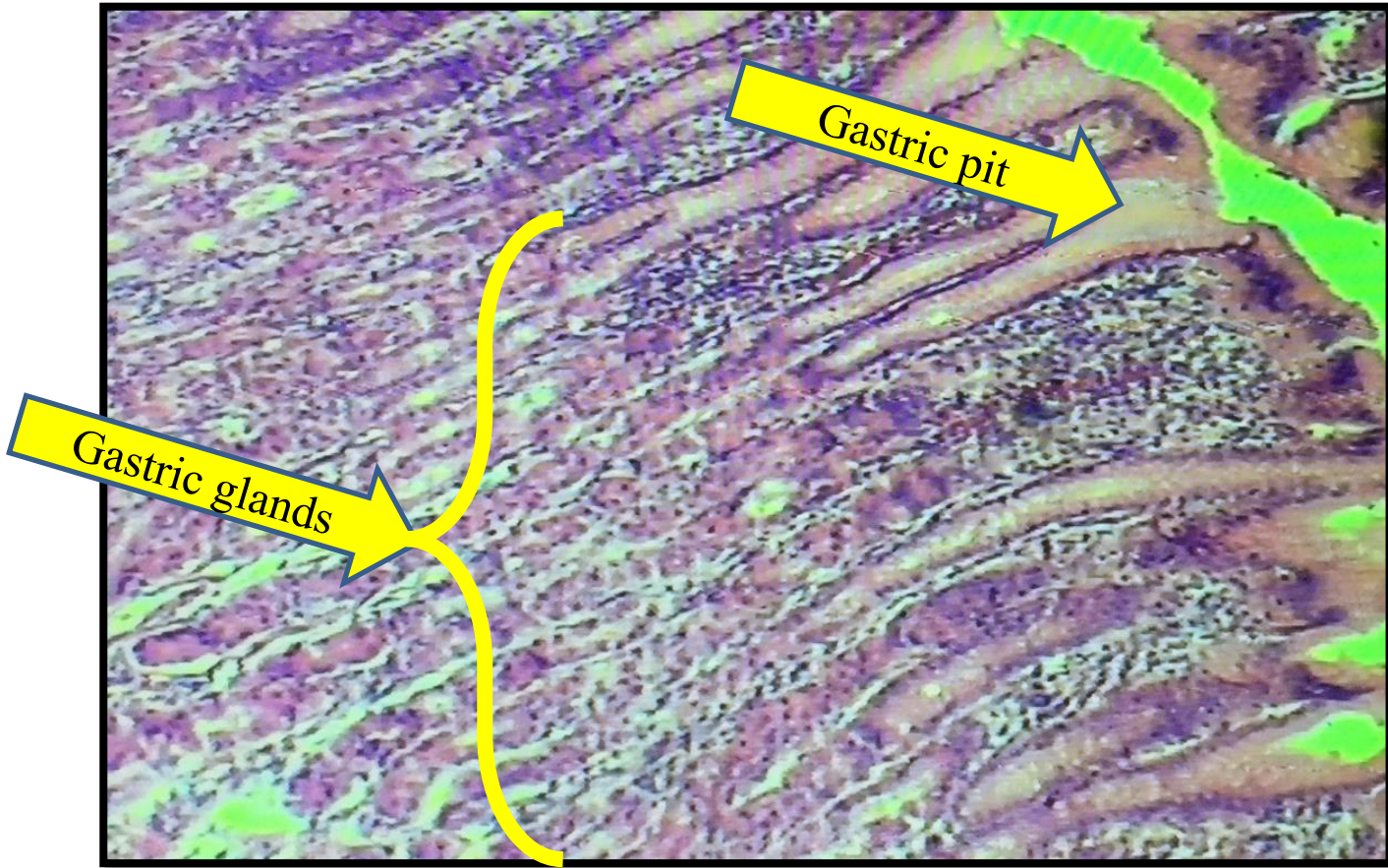
Gastric pit

Gastric glands

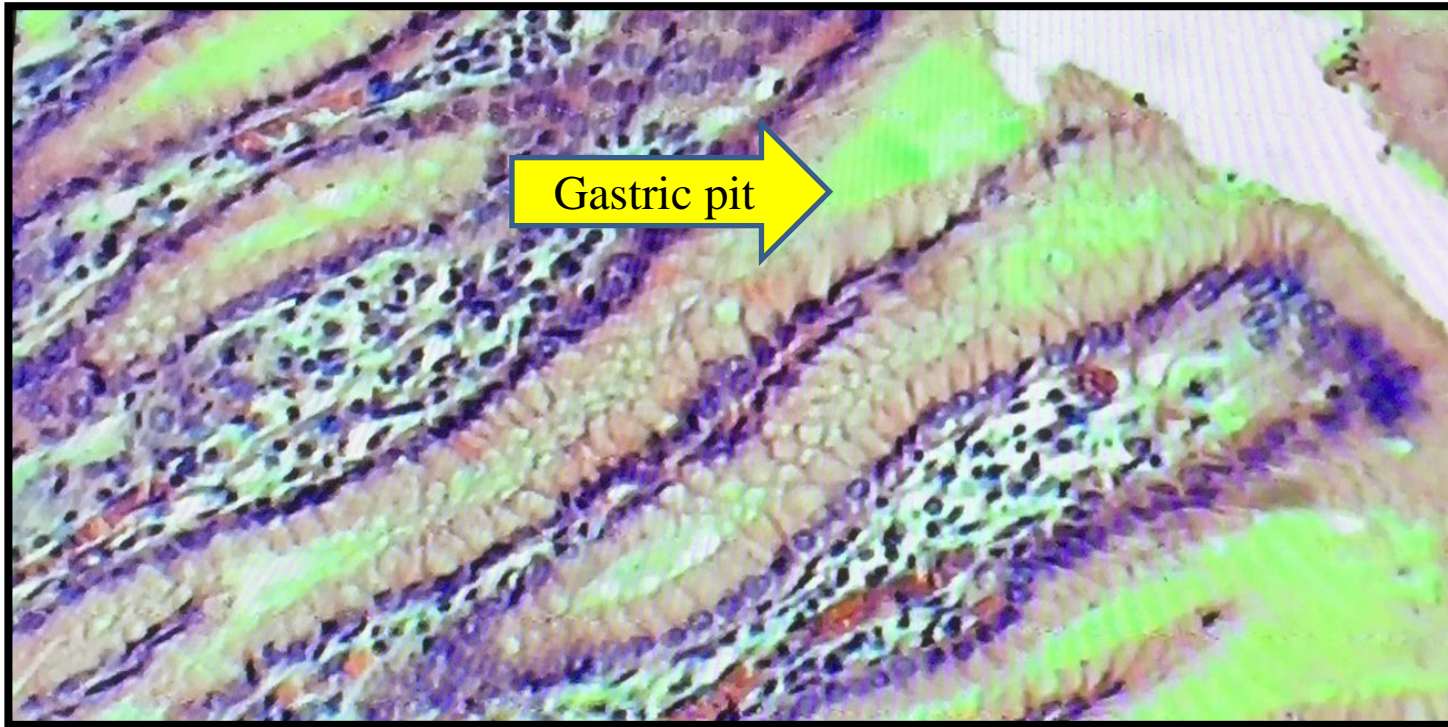
Stomach fundus region



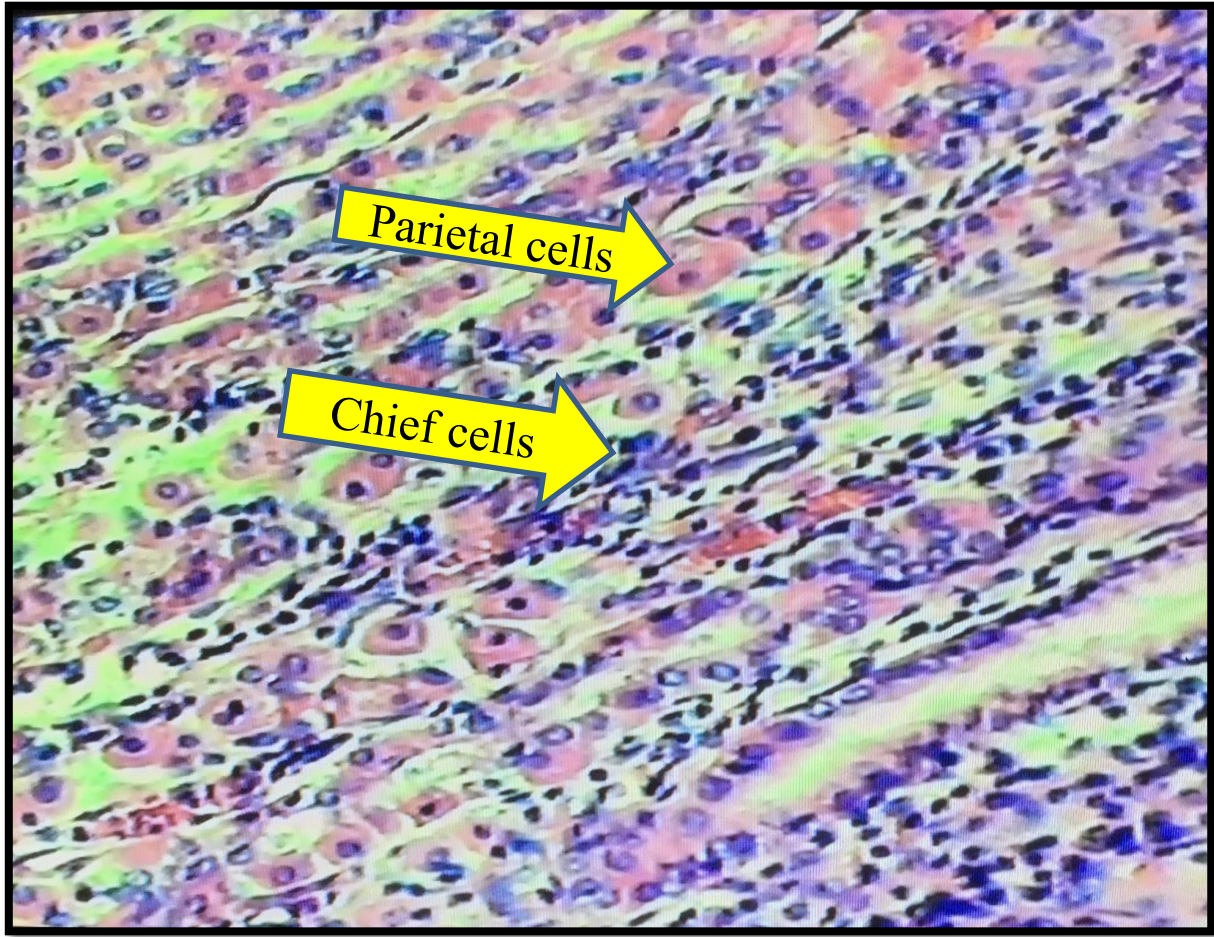
Stomach fundus region



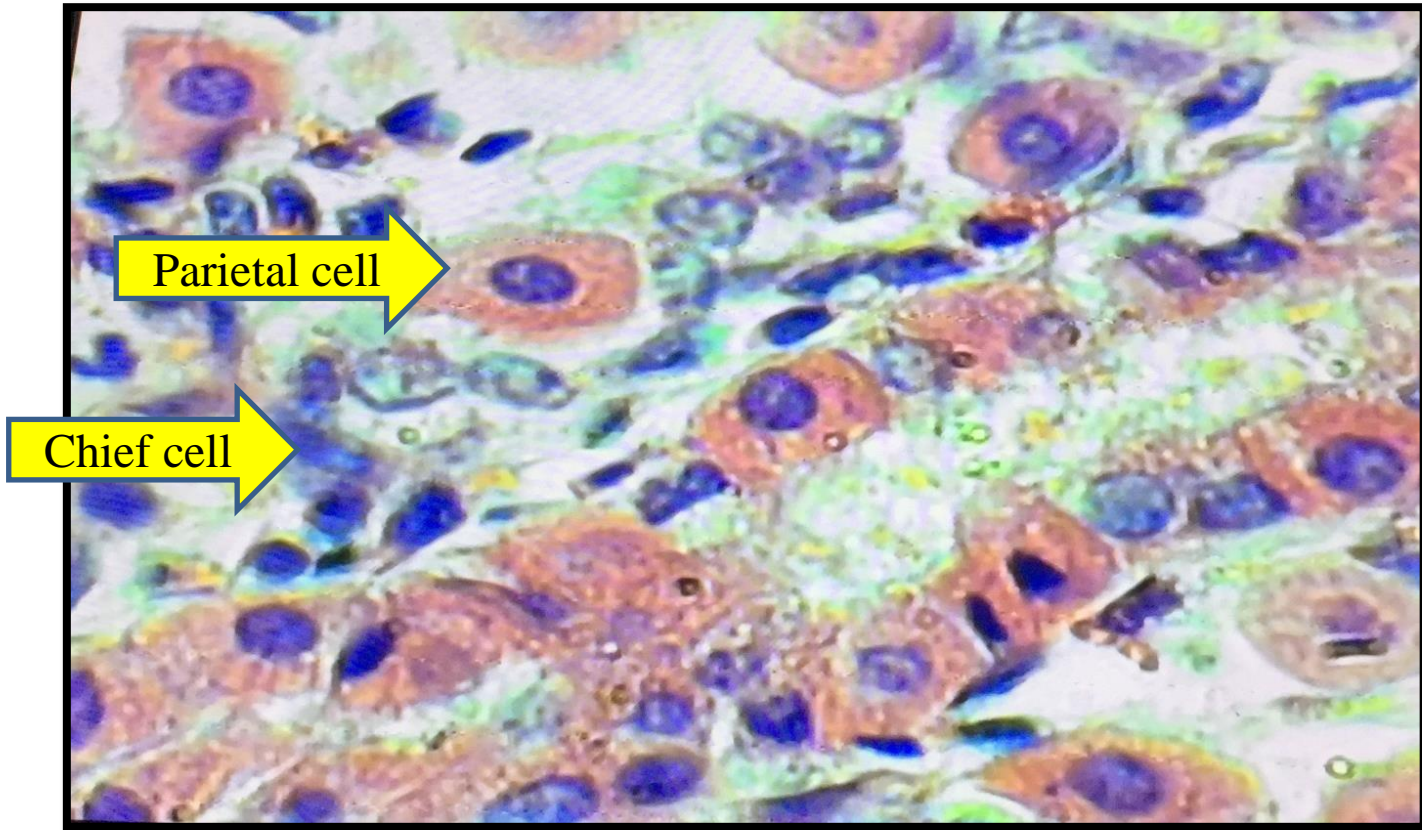
Stomach fundus region



Stomach fundus region

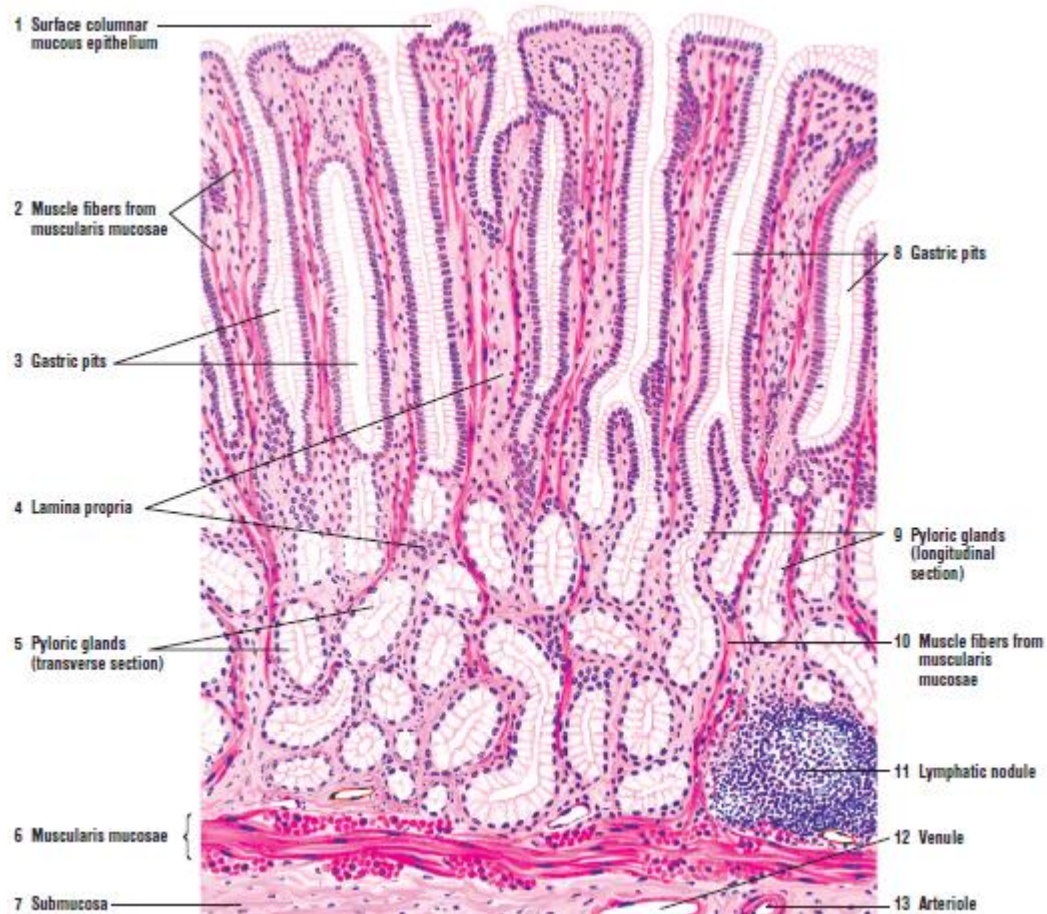


Stomach fundus region

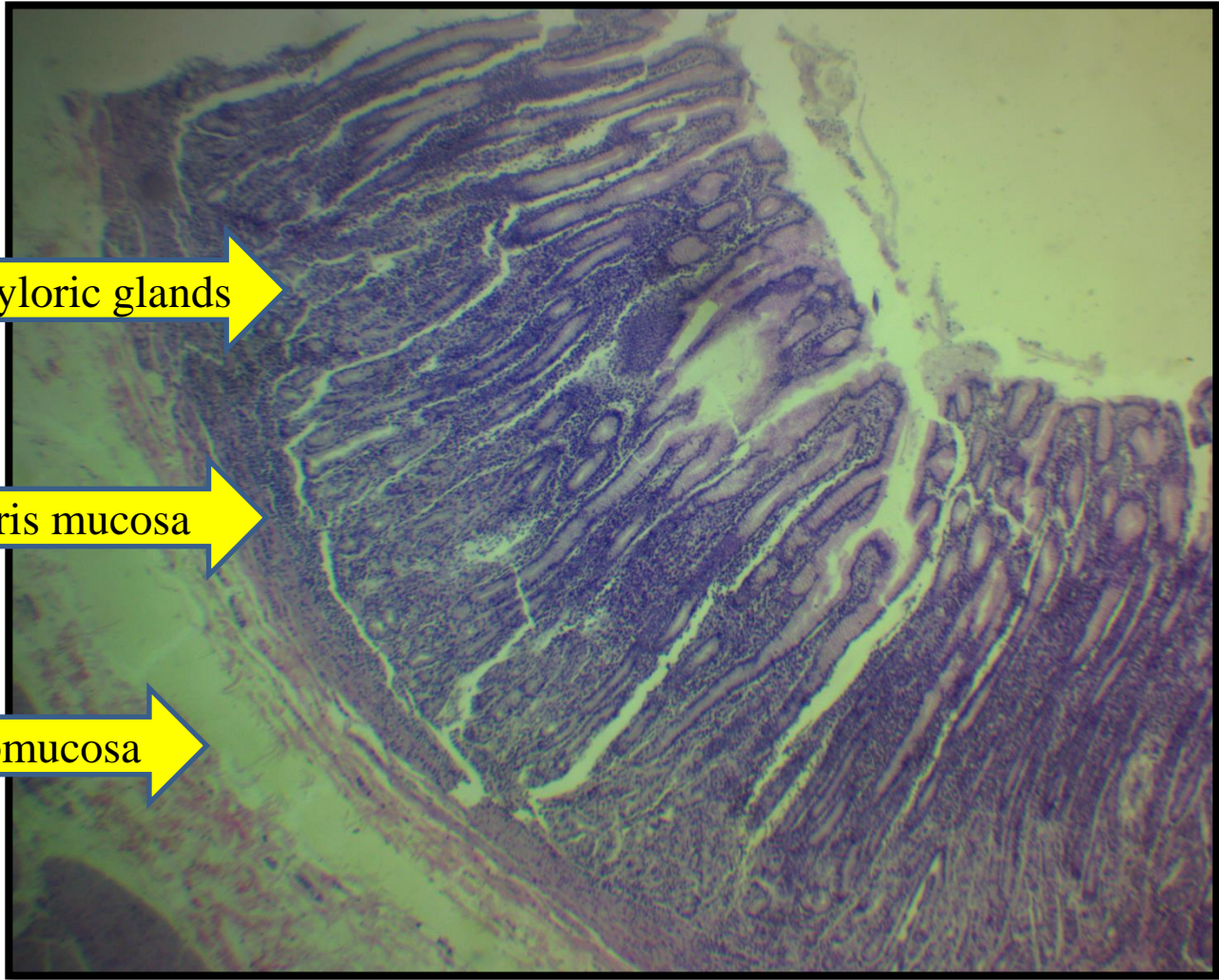


Stomach fundus region

- ❑ **The pyloric region** is the lower end of the stomach. Its mucosa is similar to that of the cardia, with **long gastric pits** (extend into the mucosa to about **one half or more** of its thickness) and short, coiled secretory portions.
- The glands in the lamina propria of the pylorus are called **pyloric glands** and contain primarily **mucus-secreting** cells and the **enteroendocrinen** cells, These enteroendocrine cells regulate gastric (HCL) secretion.



Pyloric region of the stomach.

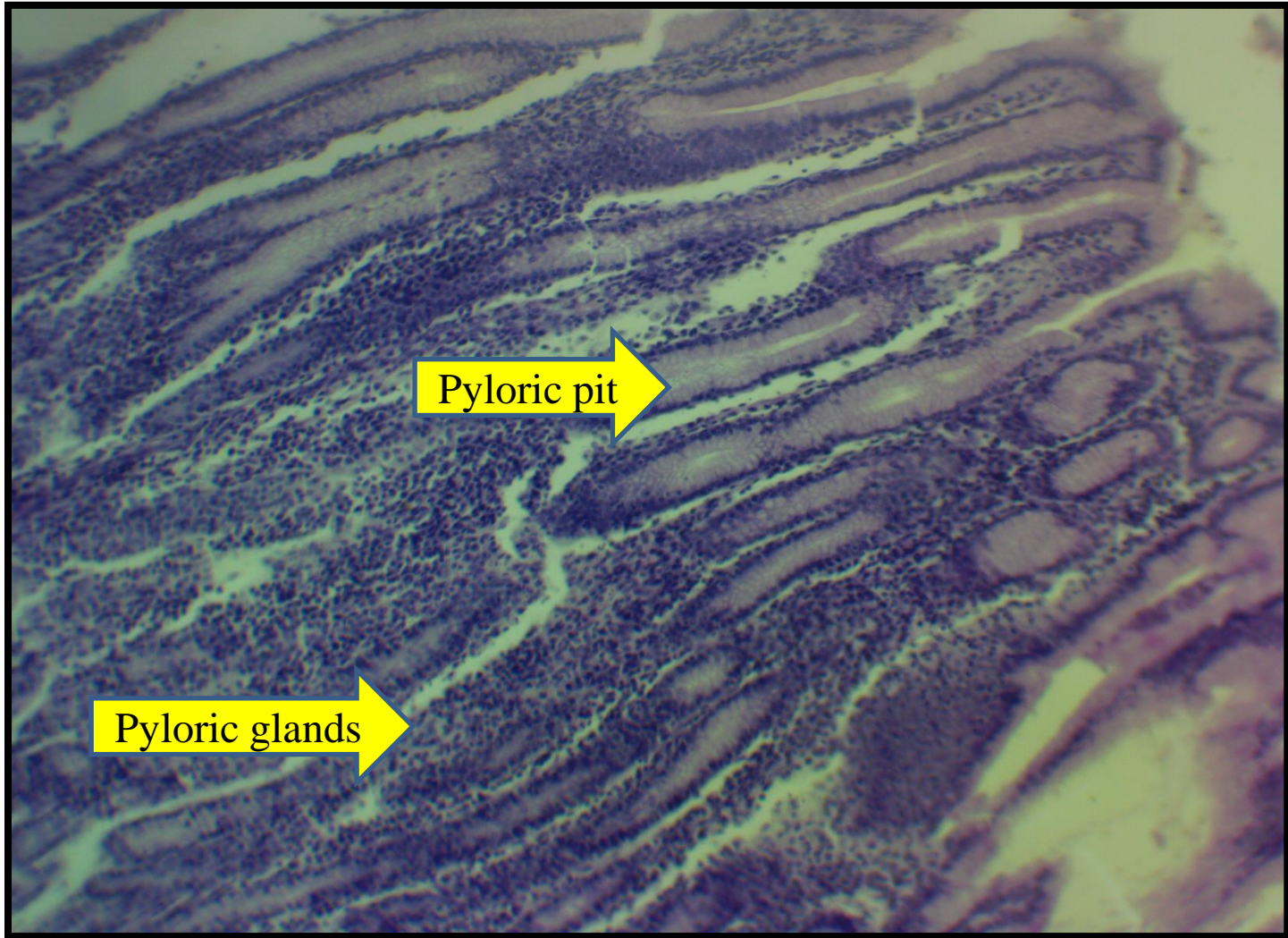


Pyloric glands

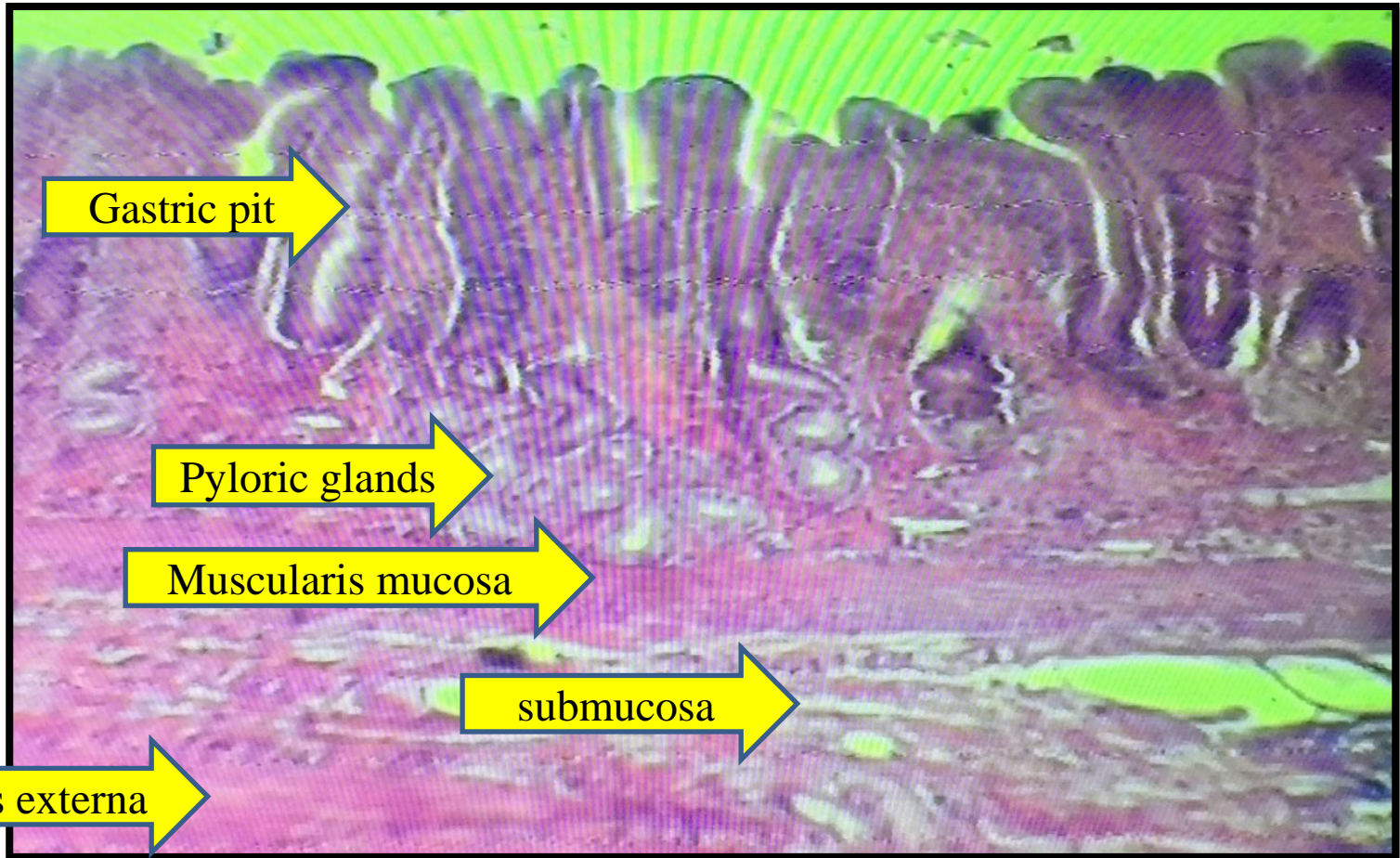
Muscularis mucosa

submucosa

Stomach pyloric region



Stomach pyloric region



Stomach pyloric region