Report

Course VB: Digestive 2023

Lesson Digestive Histology 2 (stomach & pancreas)

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Stomach

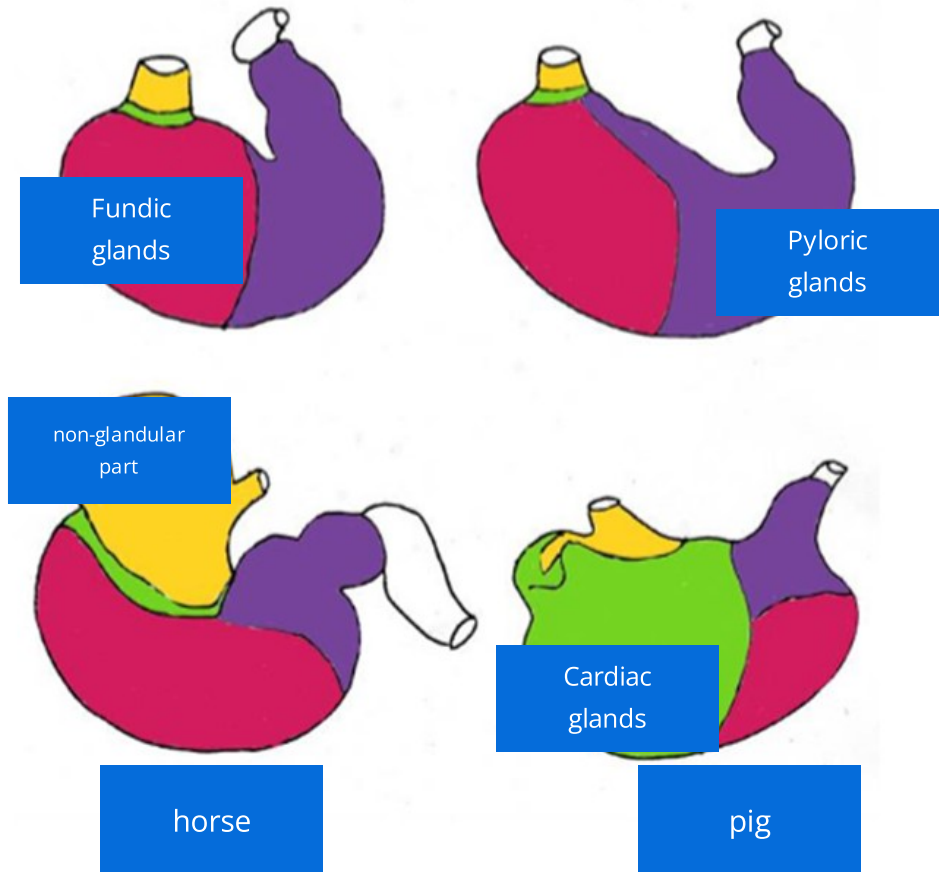
Match the regions of the stomach to the glandular and non-glandular regions on the left. Then match the gland distribution to the correct species on the right.

non-glandular part

Cardiac glands

Fundic glands

Pyloric glands



dog

cat

pig

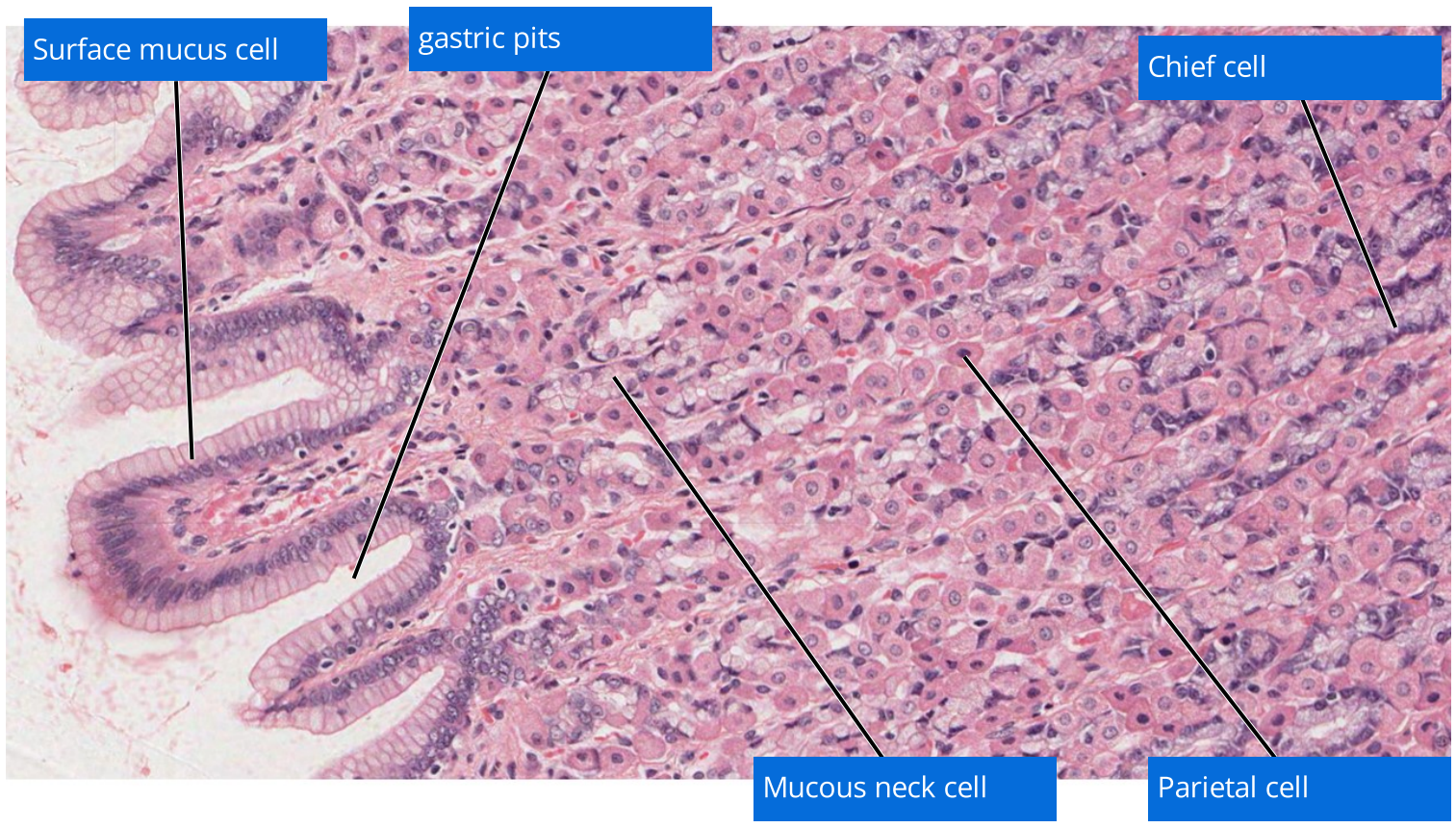
horse

Describe the histological characteristics of the different stomach regions.

Structure	non-glandular region	fundic gland region	pyloric gland region
Mucosa (gastric pits)	None	Short	Long
Surface eptihelium	cornified stratified squamous	simple columnar epithelium (cells secret mucus and bicarbonate ions)	simple columnar
Glands	None	Simple cuboidal	Short branched coiled
Types of cells in glands	N/A	Chief, Parietal, Mucous neck	Mucous secreting
Muscularis mucosae	isolated fasicles	thin layer	thin layer
Submucosa	blood vessels + nerves, no glands	blood vessels + nerves, no glands	blood vessels + nerves, no glands
Muscularis externa	outer longitudinal, middle circular, internal oblique	outer longitudinal, middle circular, internal oblique	outer longitudinal, middle circular, internal oblique
Serosa	simple squamous mesothelium	simple squamous mesothelium	simple squamous mesothelium

Label the cells/ structures found in this section of the fundic region of a dog stomach.

Parietal cell
Chief cell
Mucous neck cell
Surface mucus cell
gastric pits



Match the functions on the left to the cell types in the fundic region on the right.

secrets mucus and bicarbonate	secrets mucus that protects glands from auto-digestion → Surface mucus cell
secrets mucus that protects glands from auto-digestion	secrets pepsinogen to help with digestion of proteins → Chief cell
secrets pepsinogen to help with digestion of proteins	secrets hydrochloric acid and intrinsic factor → Parietal cell
secrets hydrochloric acid and intrinsic factor	secrets mucus and bicarbonate → Mucous neck cell

List three key histological differences between the fundic and the pyloric gland region of the monogastric stomach.

Chief cells, Parietal cells, Mucous neck cells all in fundic. Deeper gastric pits in pyloric. Just mucous glands in pyloric. Gland region shorter and glands more coiled in pyloric.

Pancreas

What is the function of the pancreatic acini?

- (●) They secrete digestive enzymes
- ( ) They secrete insulin and glucagon
- ( ) They store fat

What is the alternative name for the centro-acinar cells and what is their function?

Ductal cells and they secrete sodium bicarbonate

Drawing on your understanding of cell function and the H&E stain, explain the biphasic staining (basal basophilia and apical eosinophilia) of the exocrine acini in the pancreas.

Apical because that is where the proteins are contained so it stains eosinophilic and basal appears basophilic because there is protein creation which involves the presence of DNA.

Can the following structures be found in the pancreas or the salivary gland?

striated ducts

centro-acinar cells

intercalated ducts

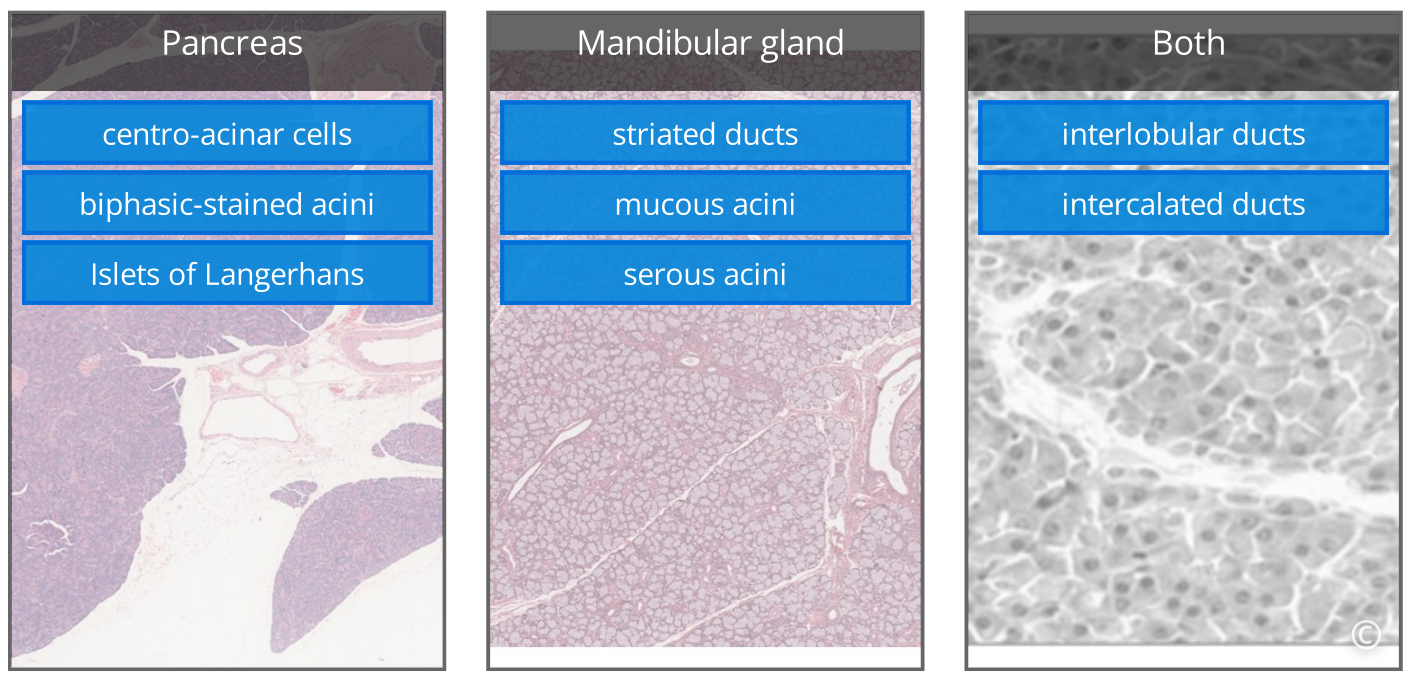
interlobular ducts

biphasic-stained acini

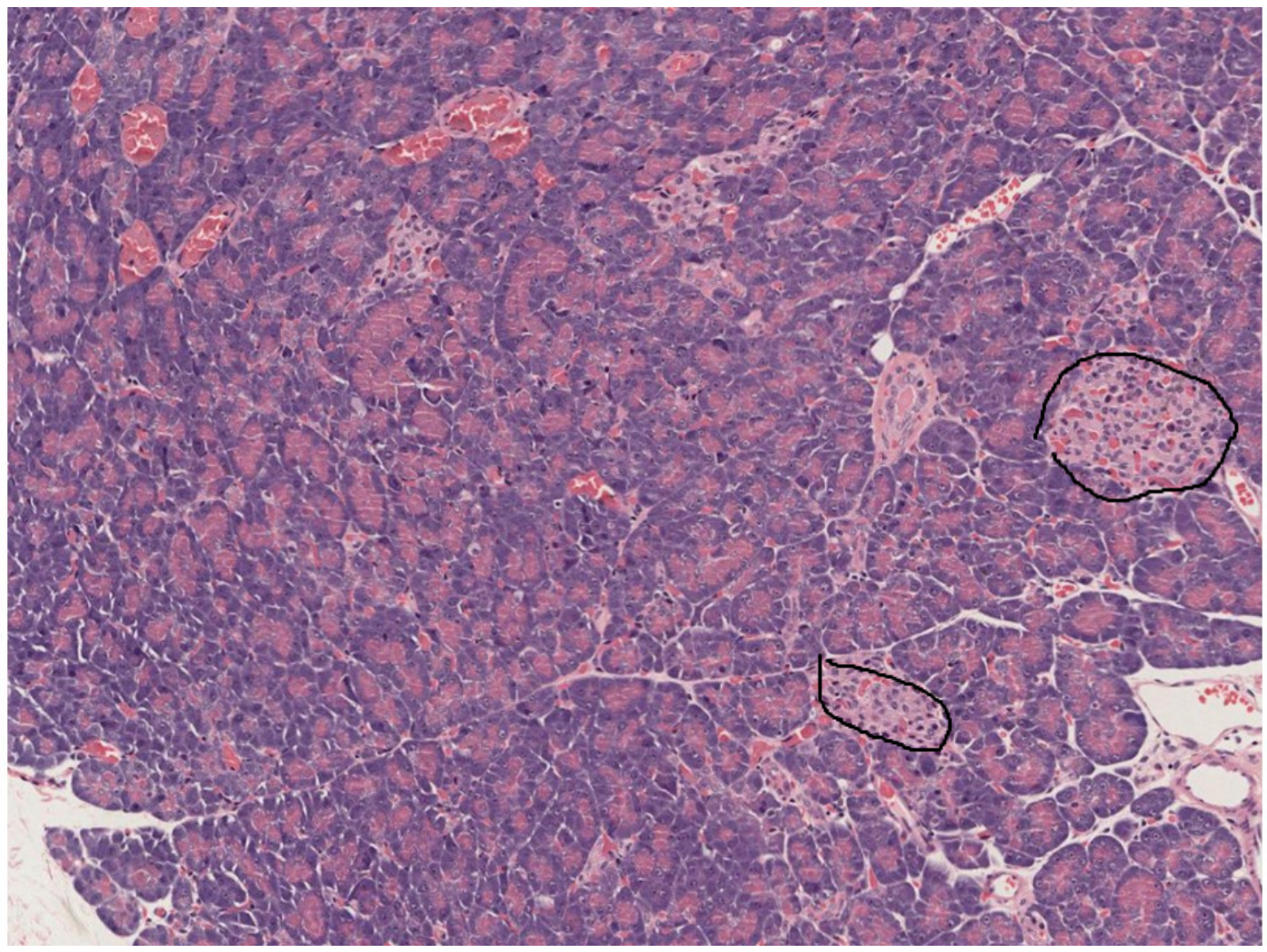
mucous acini

serous acini

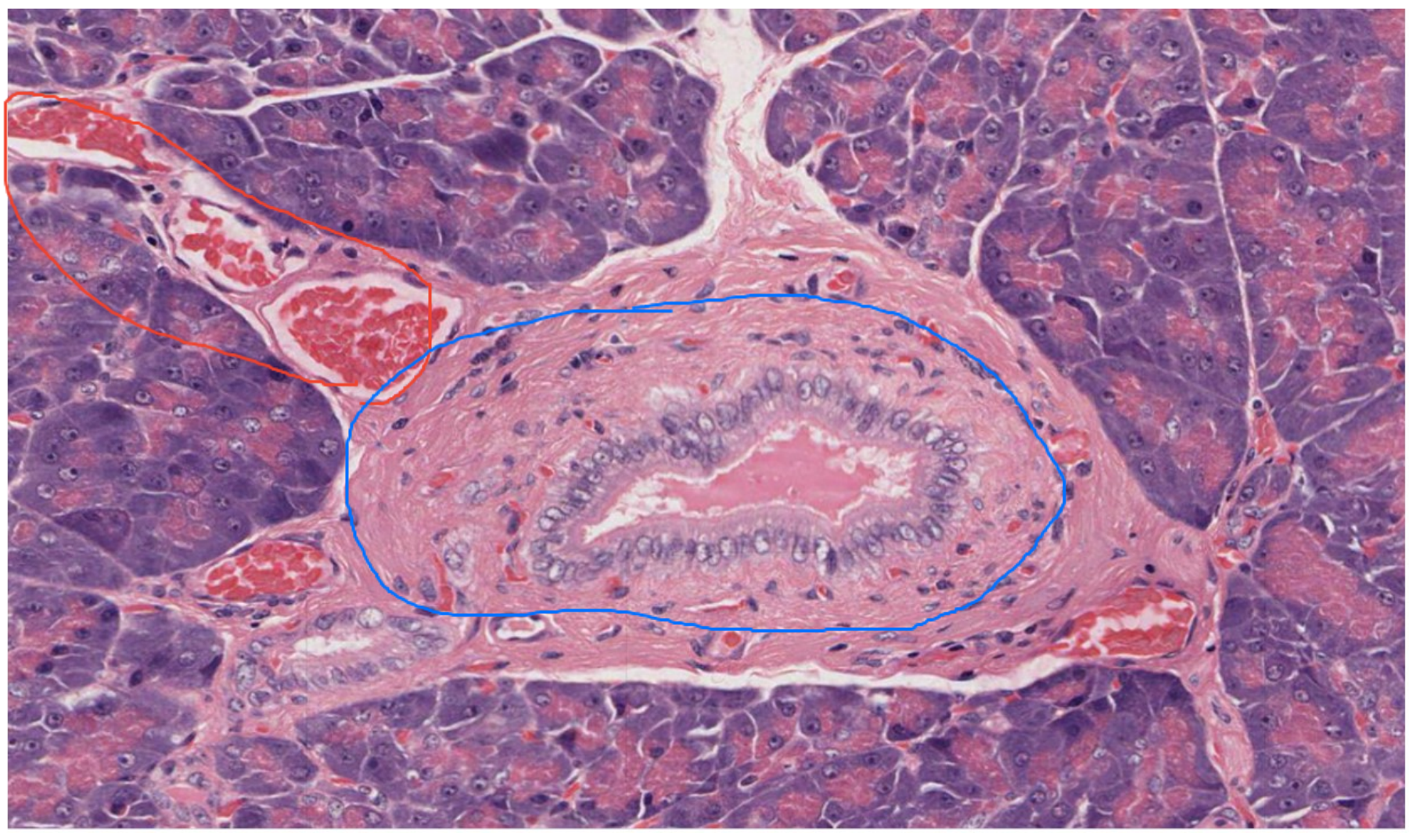
Islets of Langerhans



Identify a pancreatic islet (islet of Langerhans) on the histological image of the pancreas.



In this section, identify the duct by circling it in blue and the blood vessels in red.



What type of duct are you most likely seeing in the image above? What features help you identify it?

Interlobular duct due to the size, also has low columnar epithelium and is surrounded by connective tissue.

Review and integration

Identify the portion of the stomach in Figure 1.

- Non-glandular region
- Fundic gland region
- Pyloric gland region

Identify the portion of the stomach in Figure 2.

- Non-glandular region
- Fundic gland region
- Pyloric gland region

Identify the portion of the stomach in Figure 3.

- Non-glandular region
- Fundic gland region
- Pyloric gland region

Identify the tissue of the pancreas outlined in blue in Figure 4.

- Exocrine acinus
- Endocrine unit
- Intercalated duct
- Interlobular duct

Identify the cell the white arrow is pointing towards in Figure 5.

- HCL- secreting parietal cell of the fundic stomach
- Mucus-secreting epithelial cell of the pyloric stomach
- Insulin-producing B-cell of the pancreas
- NaHCO3-secreting centro-acinar cell of the pancreas

What is the difference between accessory organs like the pancreas and digestive organs like the stomach?

The stomach has a much denser layer of mucous and coverage and is where digestion occurs rather than accessory organs that store the content for digestion but don't actually perform it.

Are the following organs digestive or accessory organs?

Oesophagus
Large intestine
Mandibular gland
Oral cavity
Pancreas
Stomach

Accessory organ	Digestive tract organ
Mandibular gland	Oesophagus
Pancreas	Large intestine
	Oral cavity
	Stomach

In the stomach, which is the name of the outermost layer of the digestive tract wall?

- Serosa
- Mesentery
- Omentum
- Adventitia

Compare the cells found in the gastric gland of the stomach.

More commonly found at the base of gland

More commonly found near the middle of gland

Secrete hydrochloric acid

Secrete intrinsic factor

Secrete lipases

Secrete pepsinogen

Chief cells	Parietal cells
More commonly found at the base of gland	More commonly found near the middle of gland
Secrete lipases	Secrete hydrochloric acid
Secrete pepsinogen	Secrete intrinsic factor