Digestion (FHP)

Define or explain the following terms:

Alimentary canal

Exocrine gland

Secrete

Gastric Juice

Enzyme

Give some *examples of enzymes* and *their functions* released from the following glands:

Salivary Glands

Stomach Wall

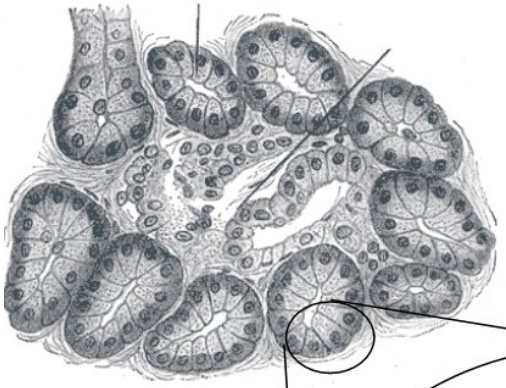
Pancreas

Small Intestine Wall

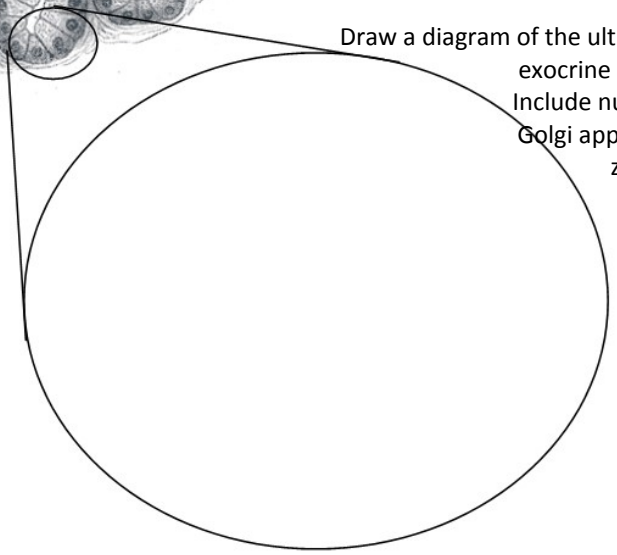
Compare the contents of saliva, gastric juice and pancreatic juice:

	pH	Contents
Saliva		
Gastric Juice		
Pancreatic Juice		

Label the diagram of a pancreatic duct to show the features of an exocrine gland. Include secretory cells, acini and ducts.



Draw a diagram of the ultrastructure of a single exocrine cell, as seen in a TEM. Include nucleus, microvilli, RER, Golgi apparatus, mitochondria, zymogen particles and tight junctions



Distinguish between *exocrine* and *endocrine glands*.

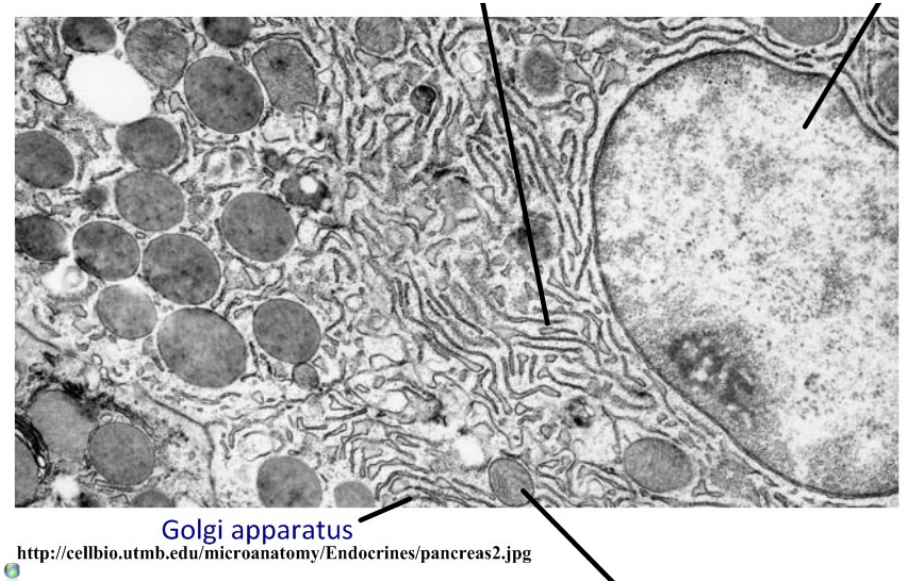
Give some examples of exocrine glands used in digestion.

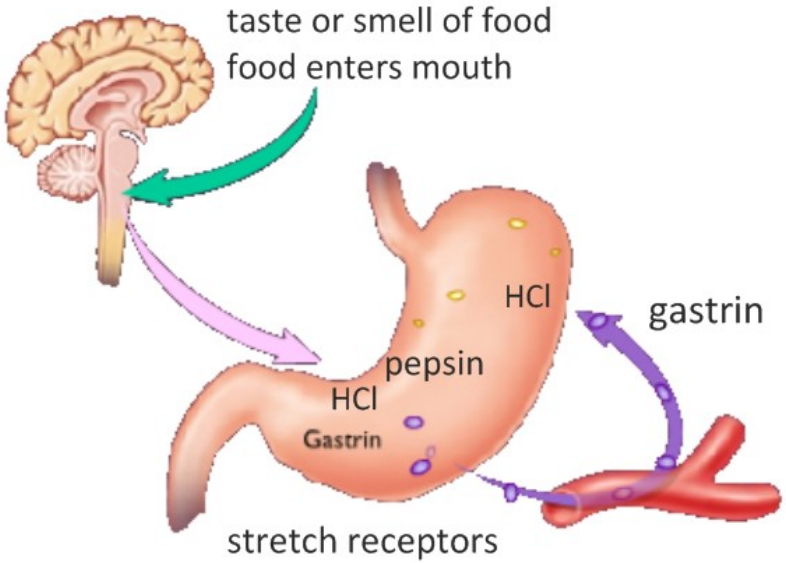
Give some examples of exocrine glands used in other processes.

Control of secretion of digestive juices

Label the diagram below to explain the control of secretion of gastric juices. Which steps are nervous and which are hormonal?

Label the organelles in this TEM image of a pancreatic exocrine cell.
What is the role of each one in the productions and excretion of enzymes?





What is the stimulus to inhibit the release of gastric secretions?

What are pepsin and trypsin?	**Activation of pepsin:**	**Activation of trypsin:**
Why are they not released directly as active enzymes?		
What are the *inactive precursors* of pepsin and trypsin?		
In the space, draw diagrams to show how pepsin and trypsin are activated.		

Immobilized enzymes, lipid digestion and ulcers

Where are membrane-bound enzymes found?

What are the advantages of membrane-bound enzymes in digestion?

Draw and a label a simple diagram to outline the use of maltase as an enzyme:

What is cellulose?

Why can't cellulose be digested by humans?

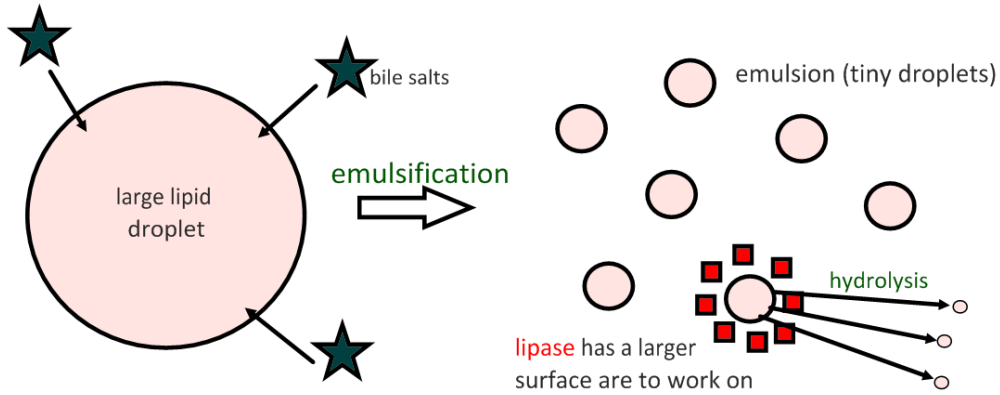
How has the ruminant stomach adapted to cellulose digestion?

What are the advantages of a diet high in cellulose (fibre) to humans?

Digestion of lipids presents a challenge to the body.
What are the problems associated with lipid digestion and absorption?

- hydrophobic properties
- solubility

Annotate the diagram below to explain how bile salts and lipases solve the problem of lipid digestion:



What is a *stomach ulcer*?

How do gastric acid and the bacterium *Heliobacter pylori* lead to stomach ulcers?

How is the discovery of *H. pylori* an example of a paradigm shift in Biology?