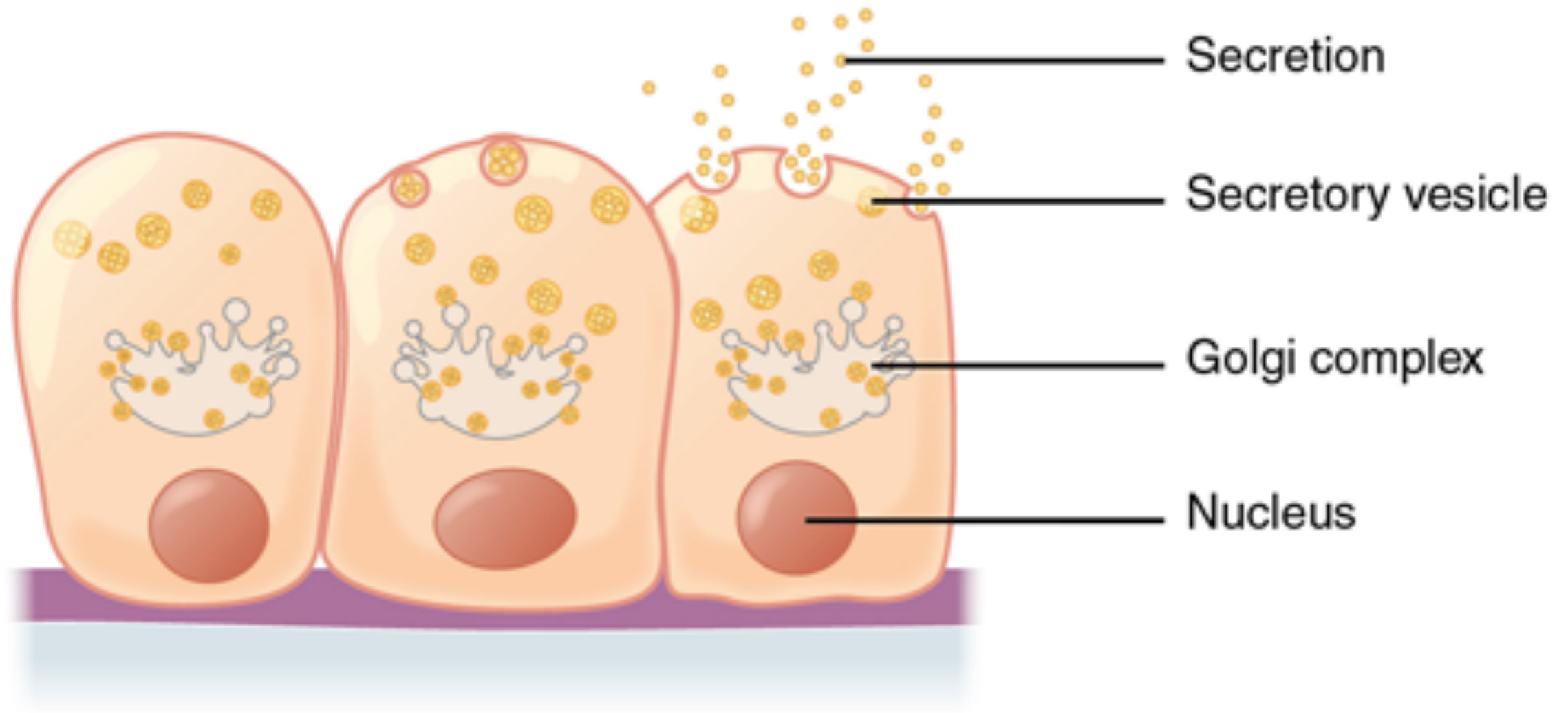


# Digestion D.2

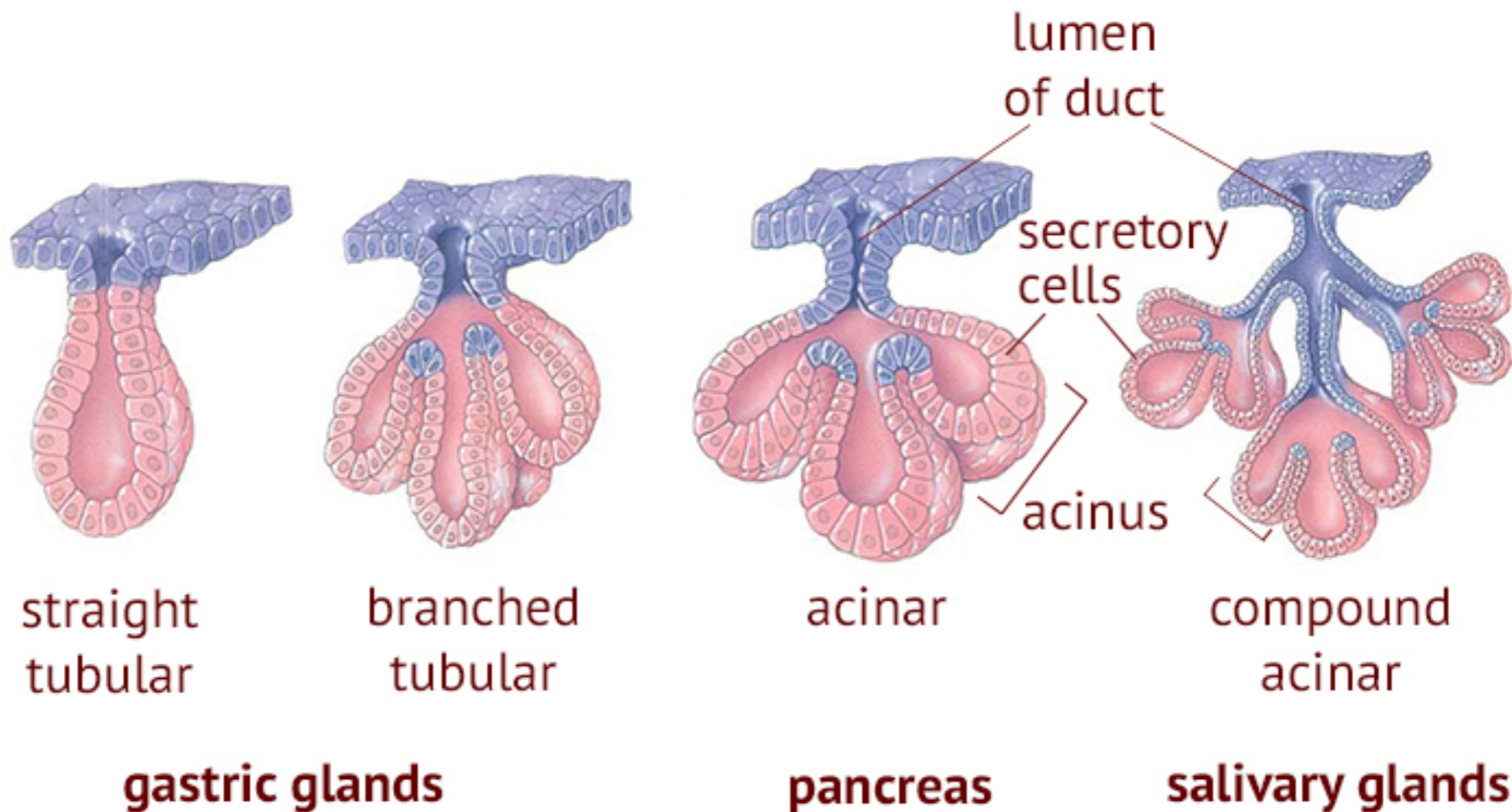
## Exocrine glands of digestion



- **What are exocrine glands?**

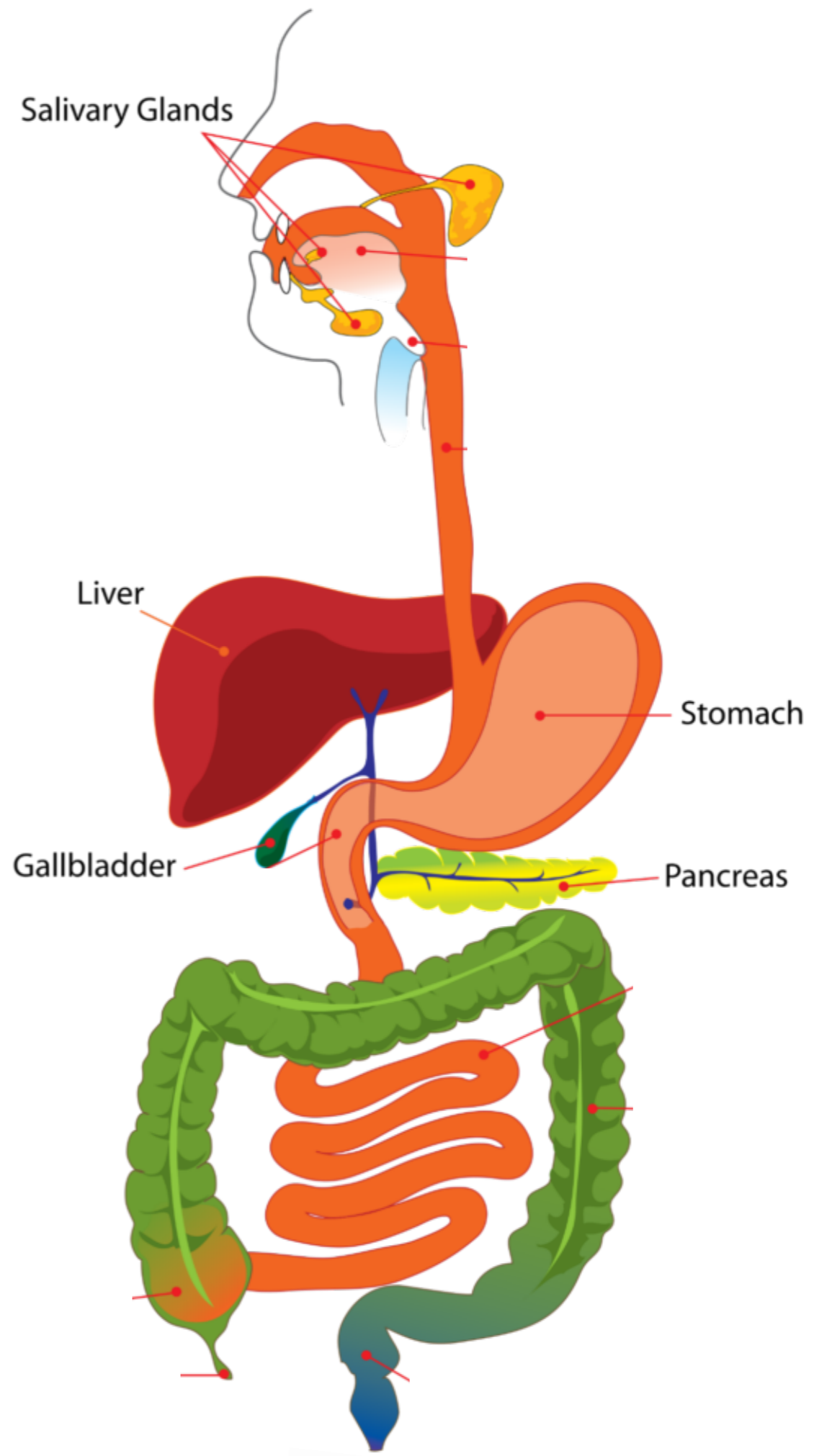
**Exocrine glands** are organs that secrete substances onto an epithelial surface by way of a duct.

Ex. sweat , saliva, milk, tears , sebaceous , and mucous, digestive enzymes .



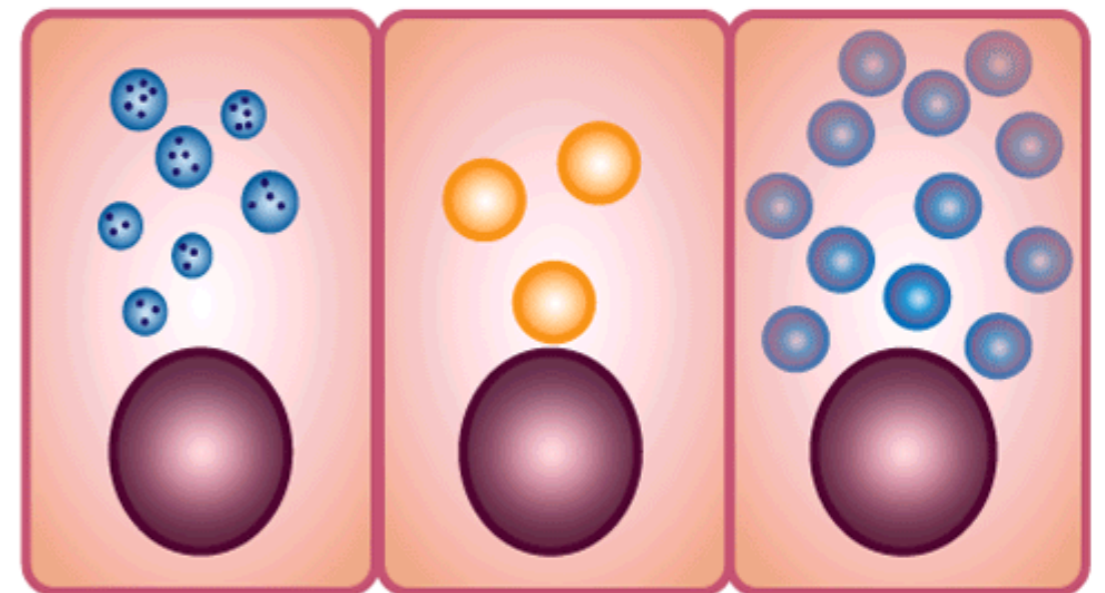
# Exocrine Glands of Digestion

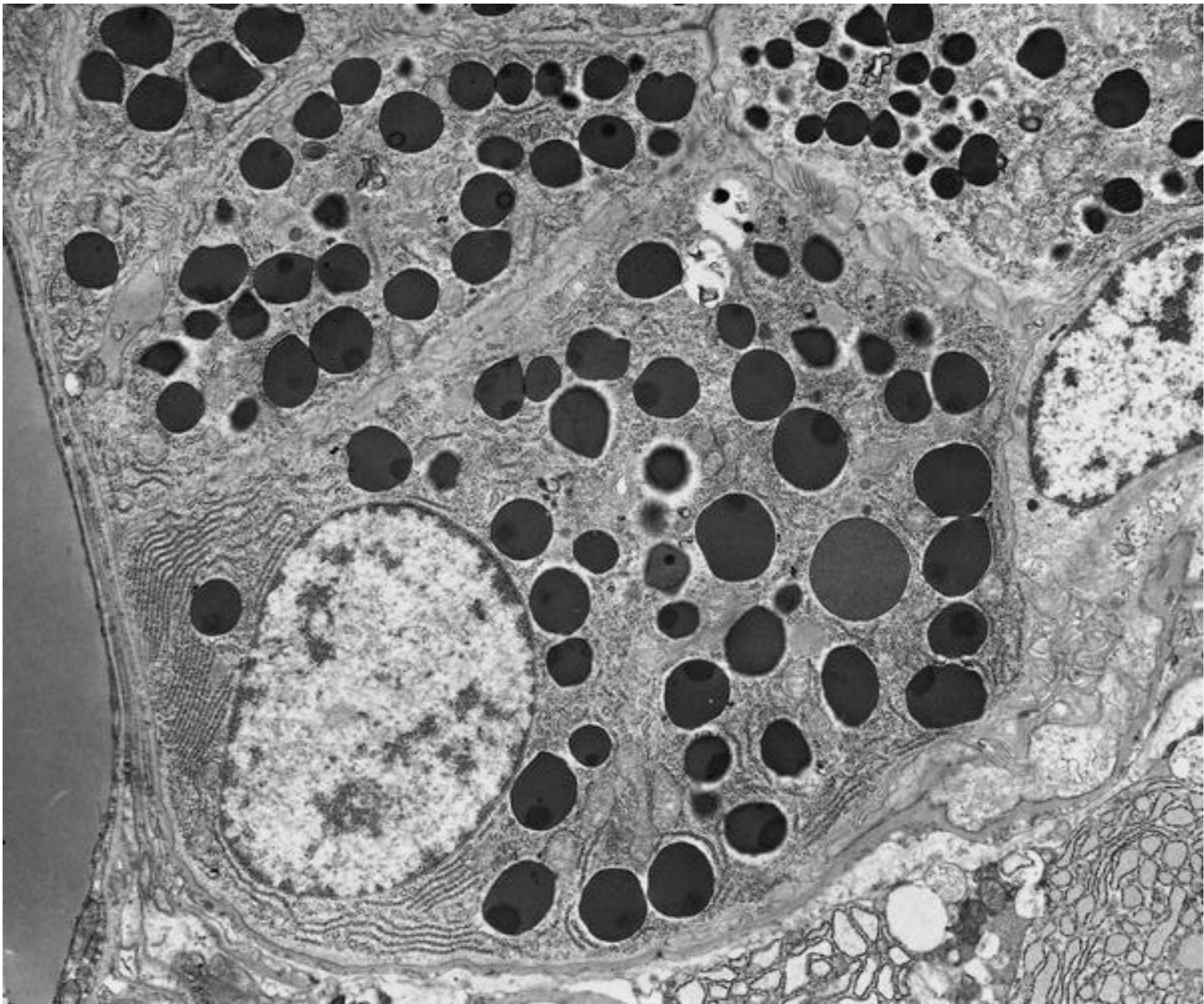
- Pancrease
- Salivary gland
- stomach
- Liver

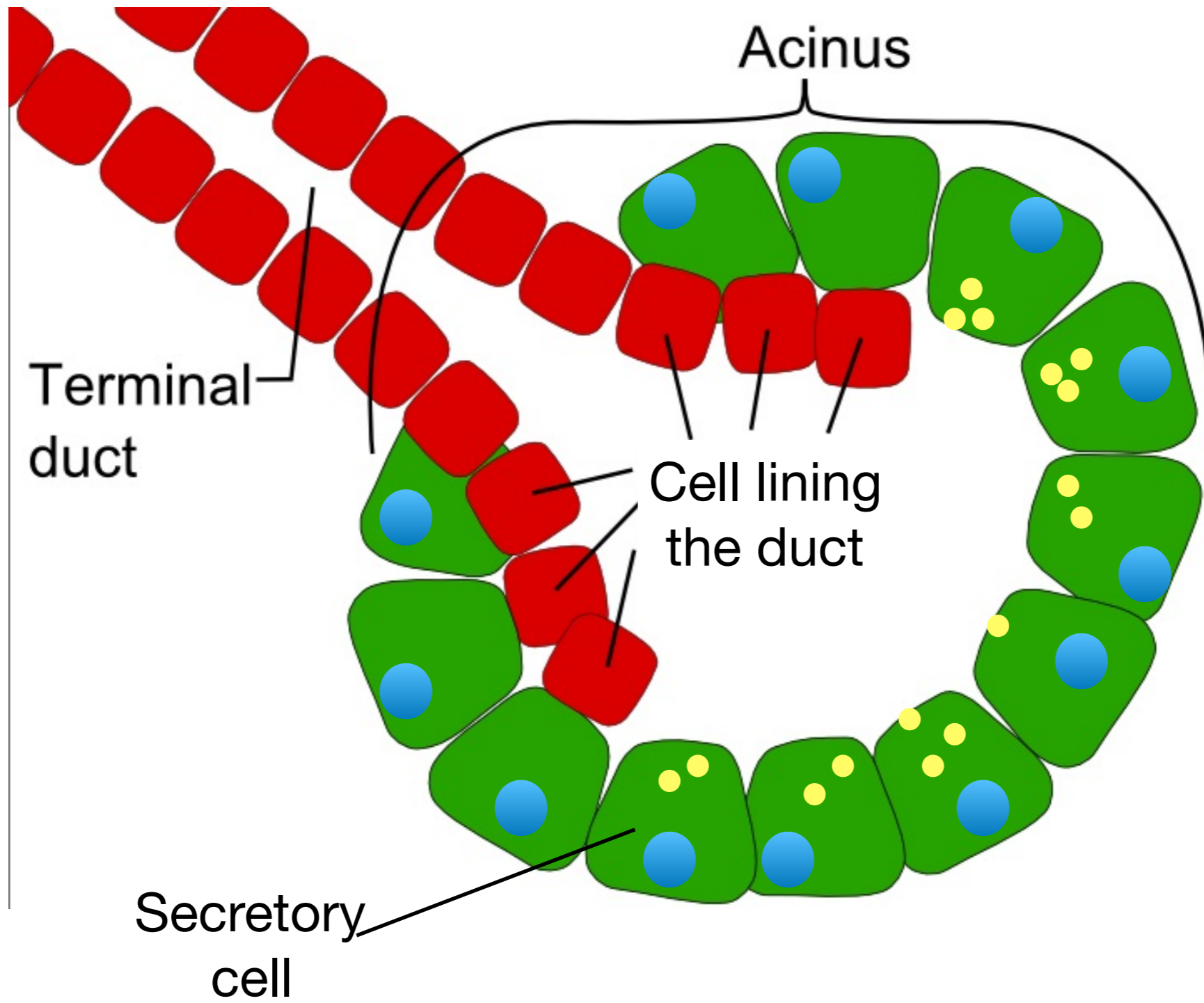


# Exocrine Glands of Digestion

- secrete directly into the alimentary canal (digestive tube).
- ‘Exo’ meaning out or outer, these secrete to the outside of the body
- contain secretory cells that make products or secretions of the gland
  - Stomach- chief cells/parietal - pepsin/HCl
- secretory cells have numerous vesicles and mitochondria to generate energy for enzyme synthesis

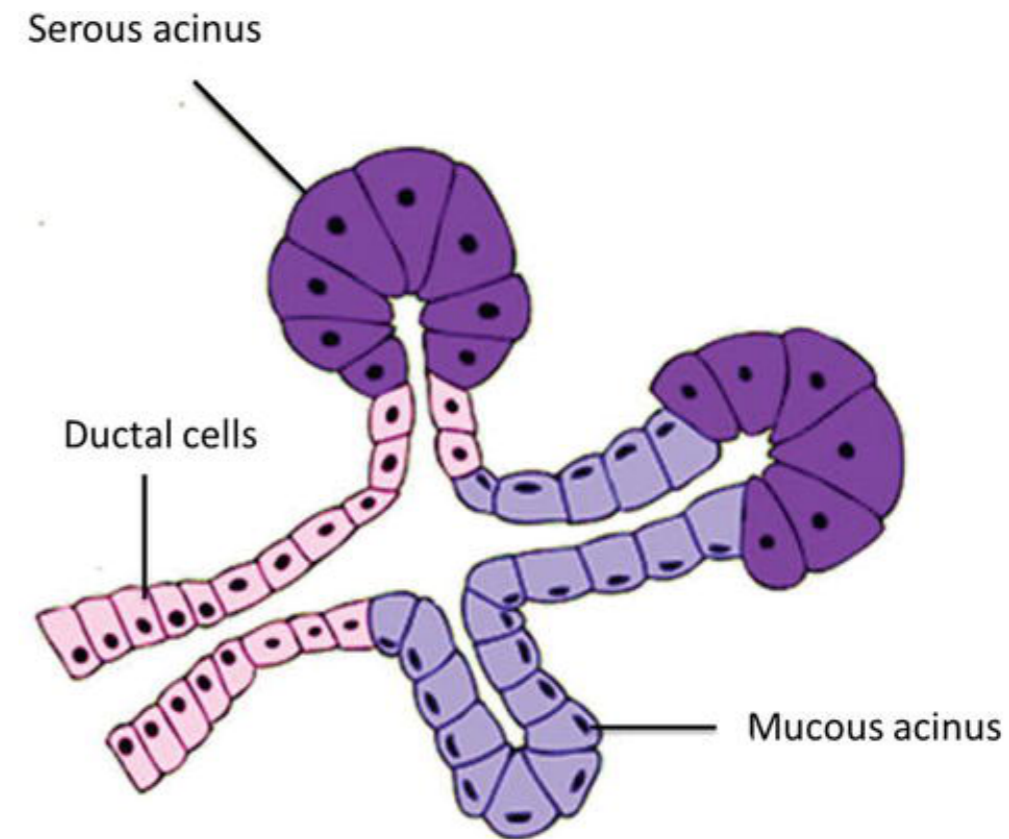
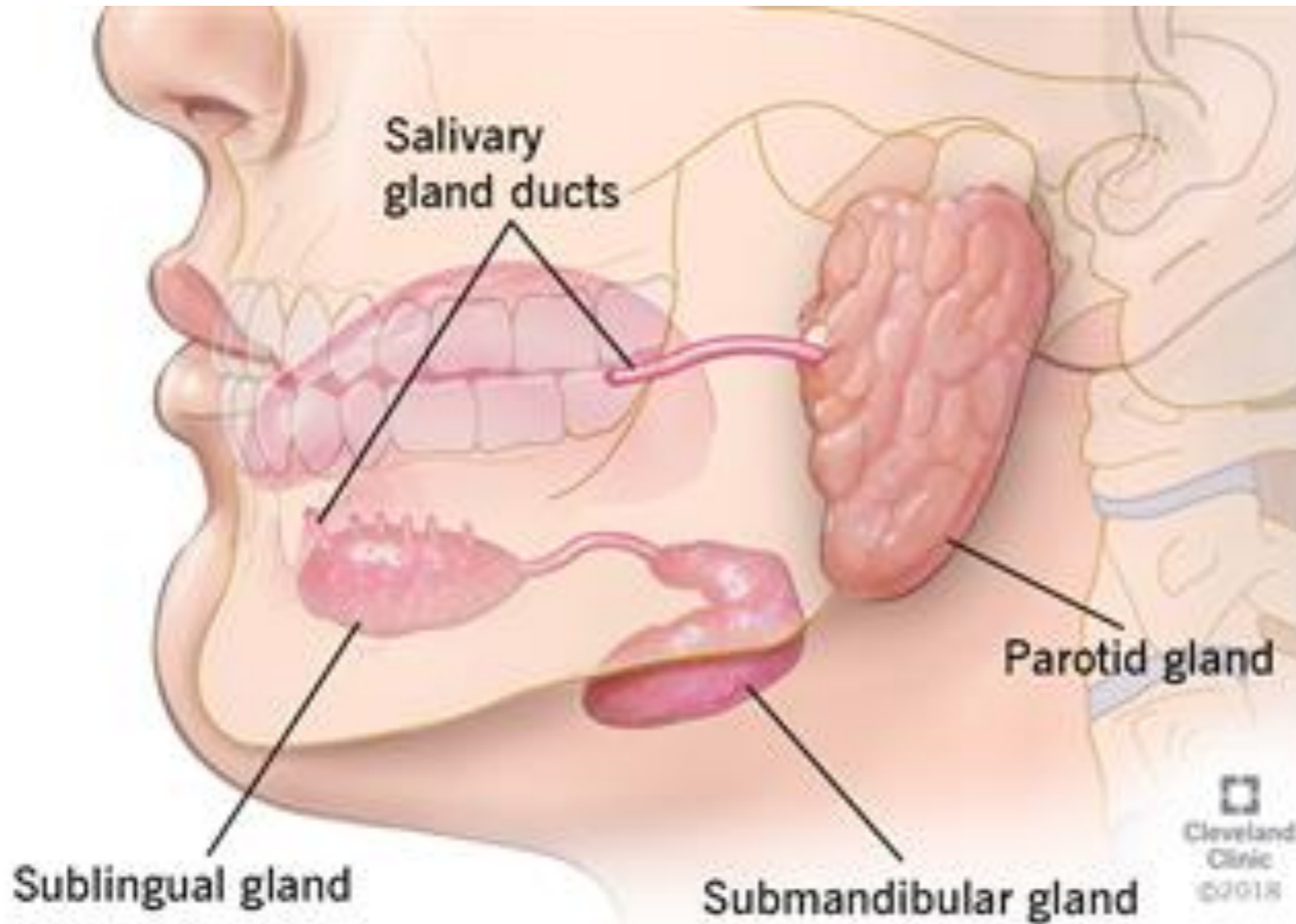






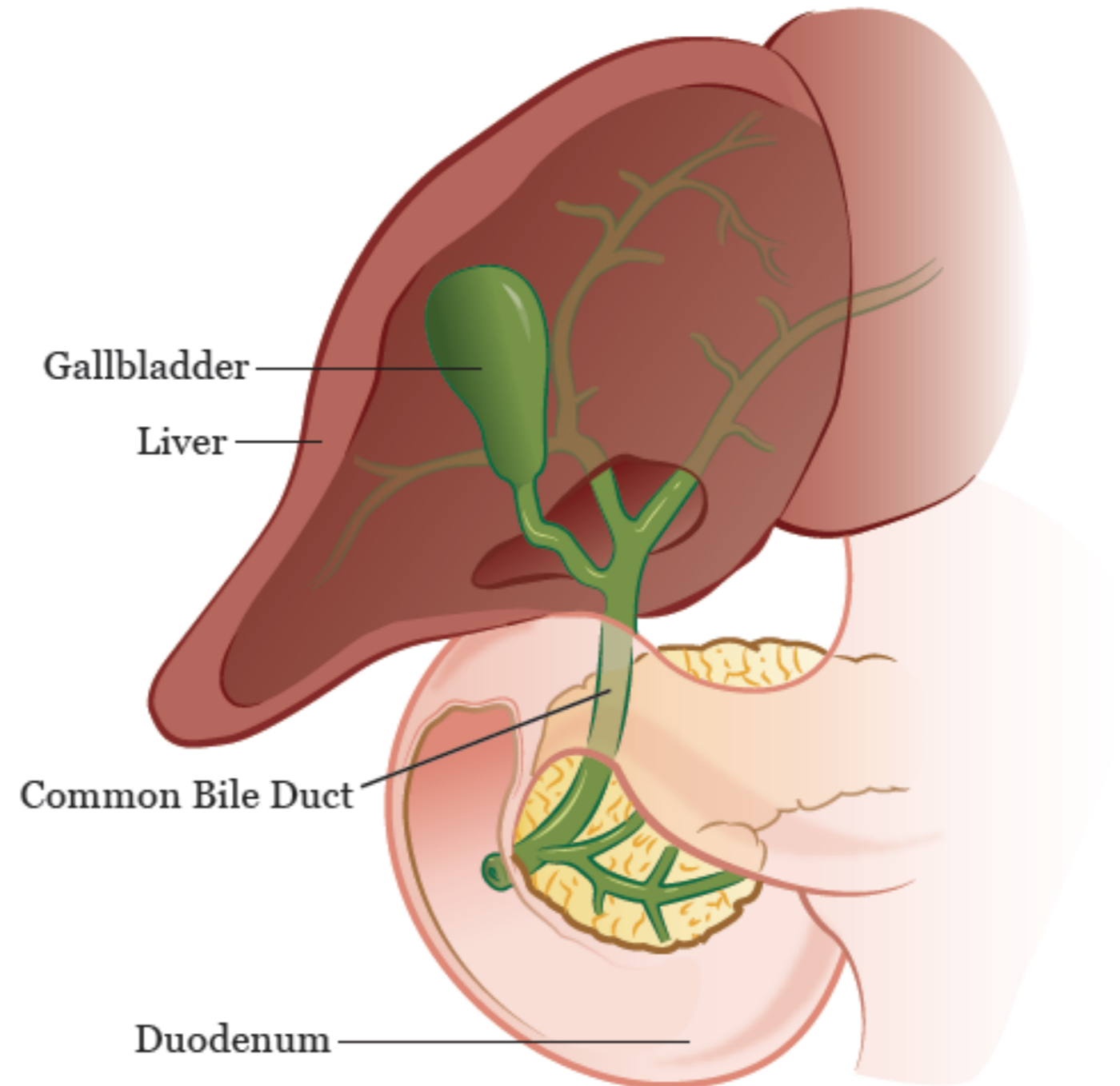
# Salivary Glands

- secretes water, electrolytes, mucus, amylase
- moistens lubricates and starts the digestion of starch



## Liver (via gallbladder)

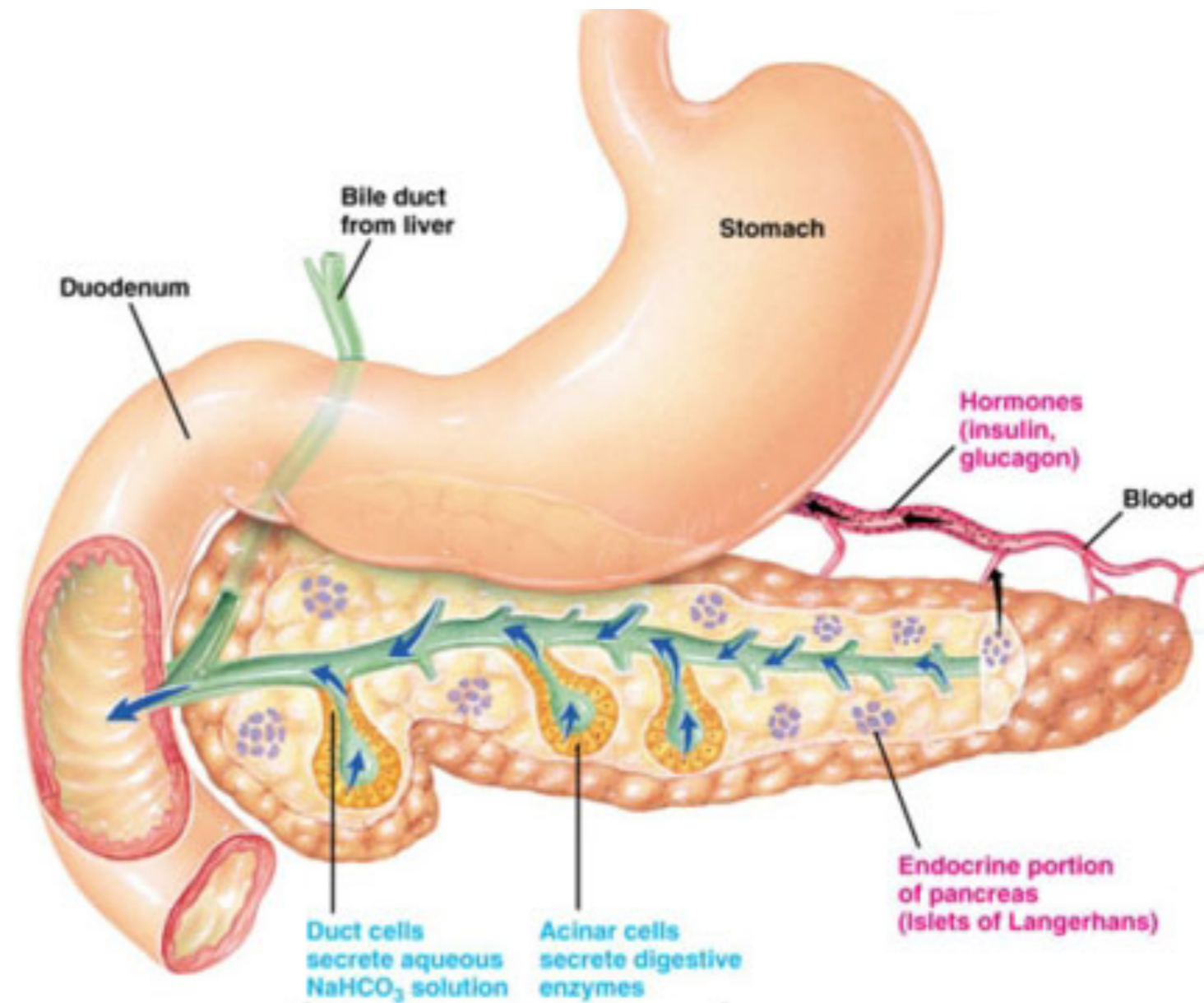
- Produces bile
- a chemical agent that emulsify fats (see demo) which increases surface area for fat digestion by enzymes





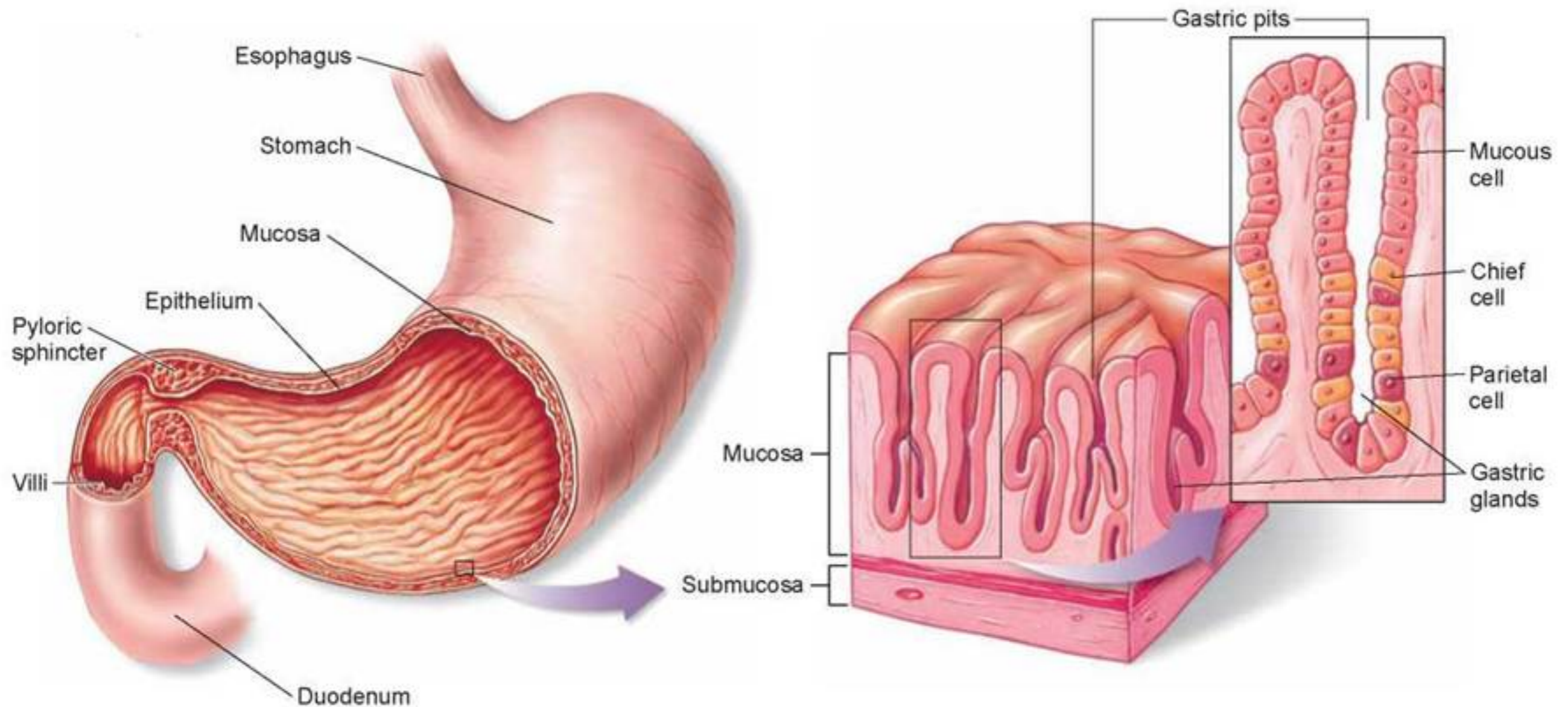
# Pancreas

- Produces enzymes
  - lipase
  - amylase
  - proteases



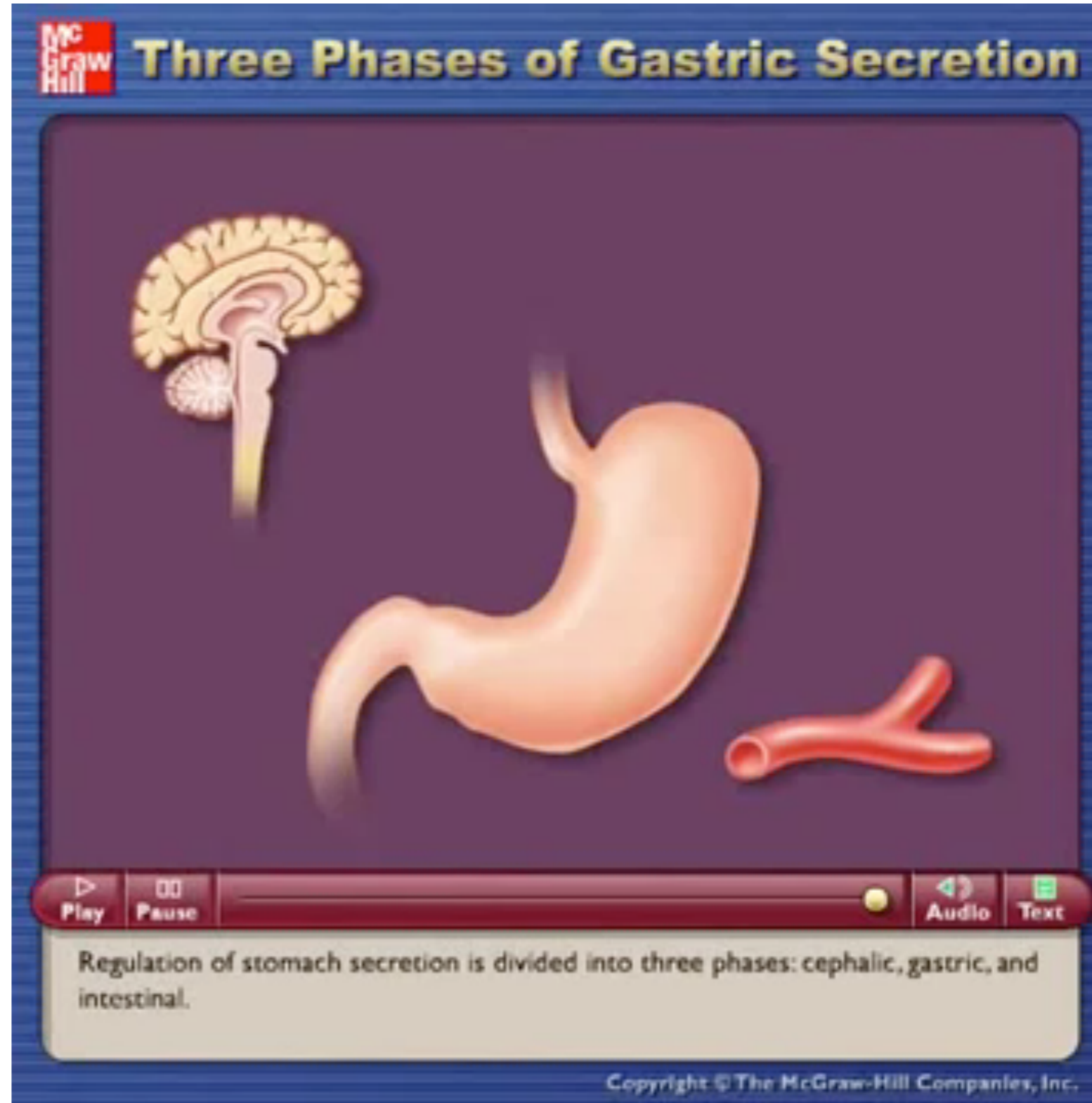
# Stomach

- Produces enzymes
  - pepsin/rennin
  - mucus
  - HCl
  - water



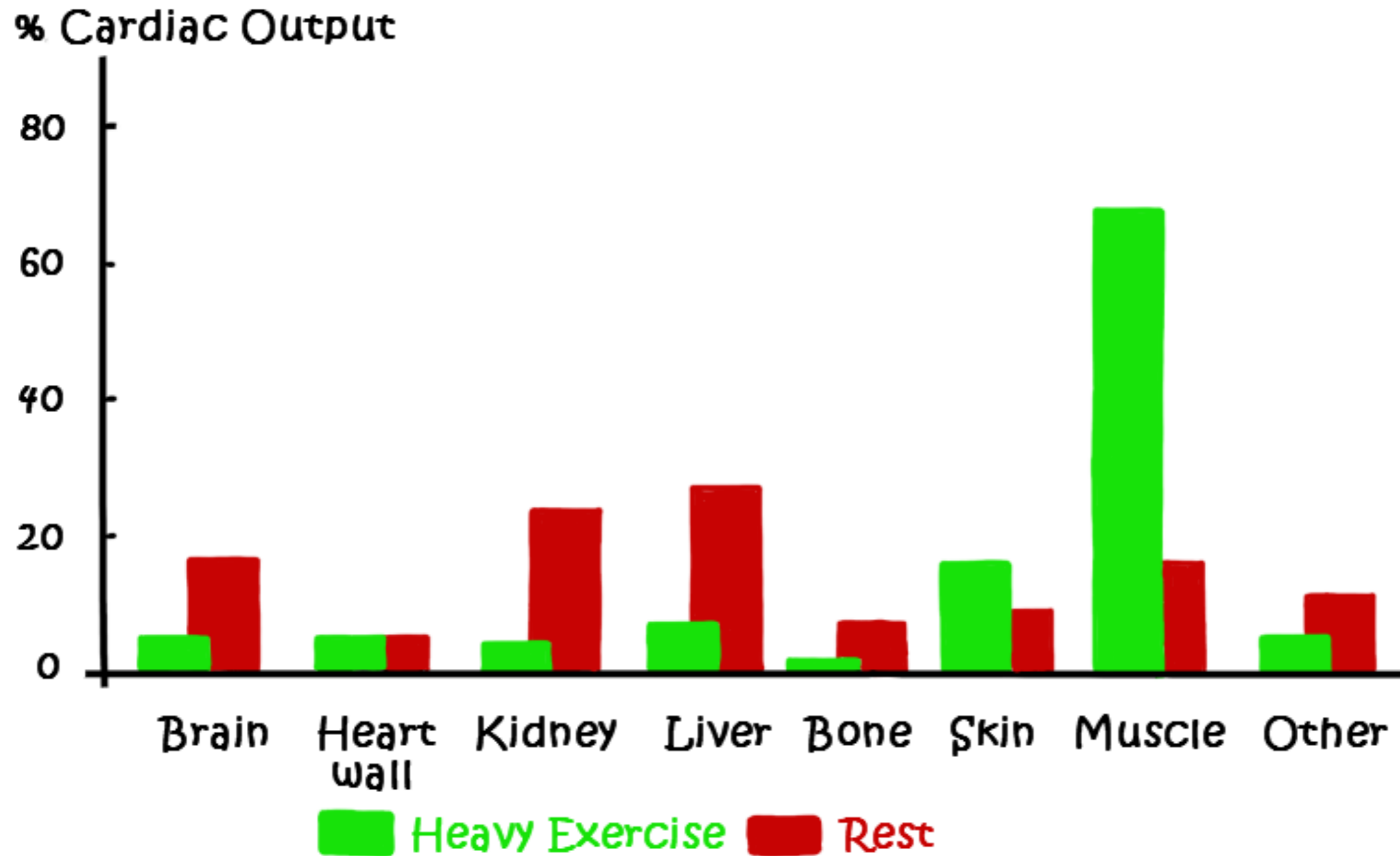
## Digestion is Regulated by Nerves and Hormones

- smells and taste triggers the **Medulla oblongata**
- message via **vagus nerve** to stimulate stomach to release gastric juice
- if proteins present or the stomach is stretched, impulses to medulla cause it to stimulate the stomach closest to the duodenum to release **gastrin** hormone to stimulate the chief and parietal cells to secrete more
- once chyme leaves the stomach, hormones (**secretin** and **somatostatin**) and inhibit gastrin production



# Digestion is Regulated by Nerves and Hormones

Distribution of blood flow at rest and during maximal exercise.



\* Adapted from <http://btc.montana.edu/olympics/physiology/pb01.html>

- Complete the Data based question on page 674
- Watch the video on weekly about ...
  - Ulcers
    - original beliefs and causes
    - know causes and symptoms
    - how it is successfully treated
  - Make brief summary on heart burn/esophageal acid reflux
    - symptoms/site of the problem
    - causes
    - how it is successfully treated