

# HOW ENZYMES WORK

- See internet search handout.

Organ	Enzyme	Digestive Action
<b>Salivary glands</b>	Salivary Amylase	Begins carbohydrate digestion by breaking down starch and glycogen to disaccharides
<b>Stomach</b>	Pepsin	Begins protein digestion
	Gastric lipase	Begins butterfat digestion
<b>Pancreas</b>	Pancreatic amylase	Breaks down starch and glycogen into disaccharides
	Pancreatic lipase	Breaks down fats into fatty acids and glycerol
	Trypsin, chymotrypsin	Breaks down proteins or partially digested proteins into peptides
	Carboxypeptidase	Breaks down peptides into amino acids
	Nucleases	Breaks down nucleic acids into nucleotides
<b>Small Intestine</b>	Peptidase	Breaks down peptides into amino acids
	Sucrase, maltase, lactase	Breaks down disaccharides into monosaccharides
	Intestinal lipase	Breaks down fats into fatty acids and glycerol

# LOCATIONS OF CHEMICAL DIGESTION

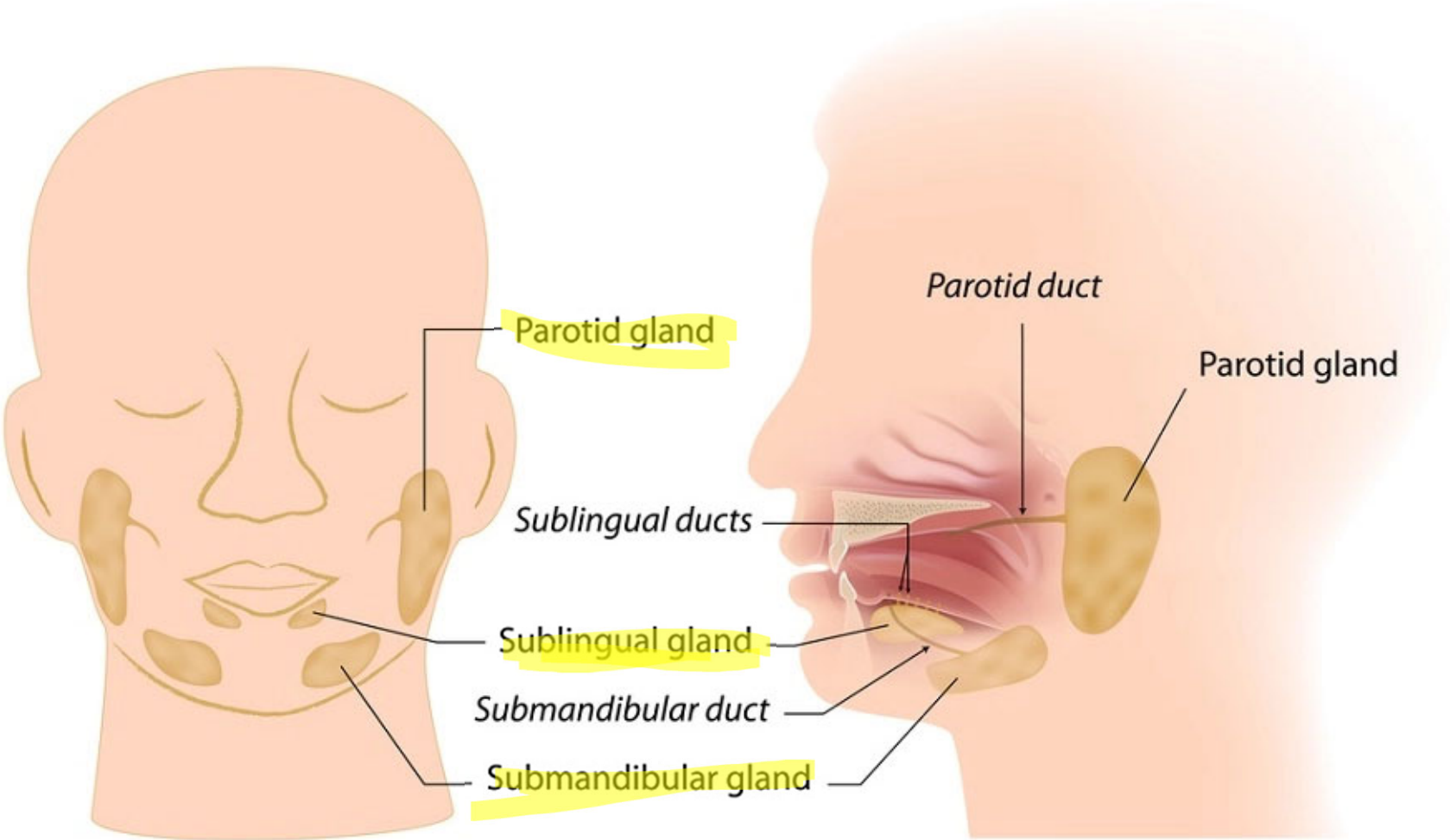
## I. Mouth

Secretions: **saliva**

- Saliva is produced in the **salivary glands** and is secreted into **the mouth**. *connected by ducts*
- Contains **salivary amylase** which breaks down starch into **disaccharides**.

*\*important to know all 3 glands!*

# The Salivary Glands



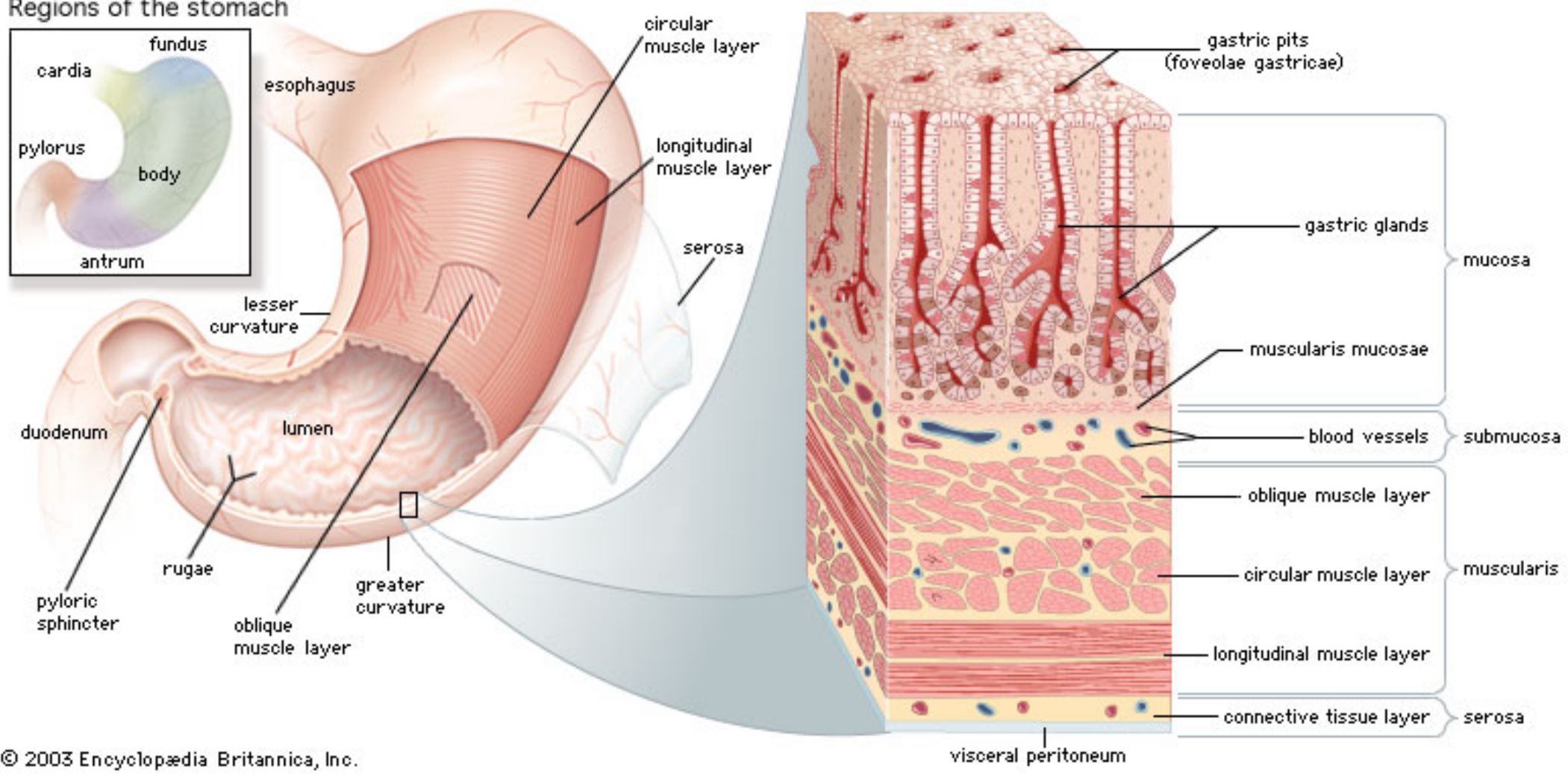
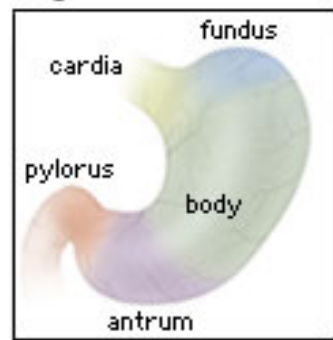
# LOCATIONS OF CHEMICAL DIGESTION

## 2. Stomach

### Secretions:

- **pepsin** is secreted by mucous cells and chief cells to break down proteins.
- **Gastric lipase** is secreted by epithelial cells to break down fats.
- **Hydrochloric acid (HCl)** is secreted by parietal cells.
- **Mucous** is secreted by epithelial cells to protect the stomach from the HCl.

# Regions of the stomach



# LOCATIONS OF CHEMICAL DIGESTION

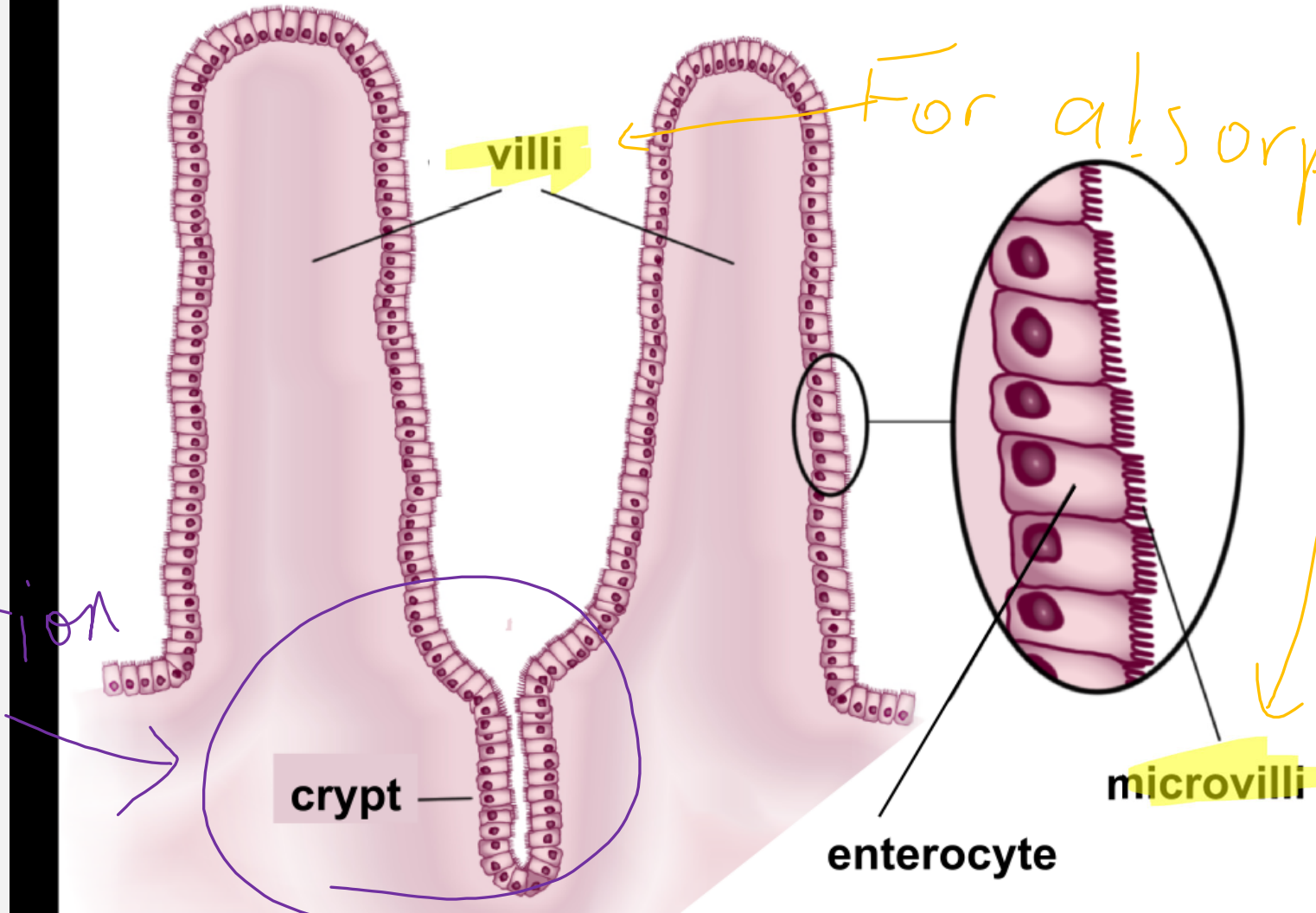
## 3. Small Intestine

Secretions: occur by a variety of epithelial cells

- **Peptidase** breaks down peptides into amino acids
- **Sucrase, maltase, lactase** breaks down disaccharides into monosaccharides
- **Intestinal lipase** breaks down fats into fatty acids and glycerol

**lumen of small intestine**

site of secretion



For absorption

**microvilli**

**enterocyte**

**crypt**

**villi**



# LOCATIONS OF CHEMICAL DIGESTION

## 3. Small Intestine (from pancreas)

### Secretions:

- **Pancreatic amylase** breaks down starch into disaccharides.
- **Pancreatic lipase** breaks down fats into fatty acids and glycerol.
- **Trypsin, chymotrypsin** breaks down proteins into peptides.
- **Carboxypeptidase** breaks down peptides into amino acids.
- **Nucleases** breaks down nucleic acids into nucleotides.

