HL Biology Digestion Notes

Ingest Form

- Protein
- Carbohydrate
  (starch = 100,000's of Glucose Molecules)
- Lipid
  (smaller than typical protein/starch, but still has high molecular weight)
- Nucleic Acids
  (sound in meats/plants; very large)

Absorbed Form (After Digestion)

- Individual Amino Acids or Dipeptides
- Monosaccharides
- 2 Ind. Monosaccharides
- Many Ind. Monosaccharides
- 1 Glycerol + 3 Fatty Acids
- 1000's of Ind. Nucleotides

How They Are Broken Up

Protein → Protease Enzymes → **Individual Amino Acids or Dipeptides**

Carbohydrates → Amylase →
- **Monosaccharides**
- **2 Ind. Monosaccharides**
- **Many Ind. Monosaccharides**

Lipids* → Bile (Emulsifies) → **Chunks of Lipids** → Lipase → **1 Glycerol + 3 Fatty Acids**

Nucleic Acids → Nuclease Enzymes → **1000's of Individual Nucleotides**

**Note: Because Lipids sre made of fat and oil, they are not water-soluble. Therefore they need ot be emulsified (broken up into smaller "chunks 'o Lipid") so that the lipase can break them down into 1 Glycerol and 3 Fatty Acids.*

Parts of the Alimentary Canal (in order)

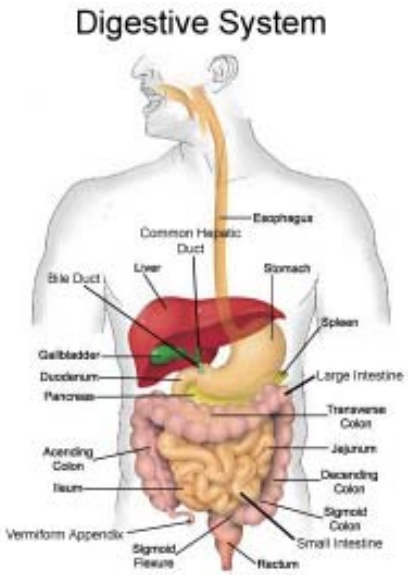
- Mouth
- Pharynx
- Esophogus
- Stomach
- **Small Intestine**
  - Duodenum
  - Jejunum
  - Ilium
- **Large Intestine**
  - Cecum
  - Ascending Colon
  - Transverse Colon
  - Descending Colon
  - Sigmoid Colon
  - Rectum
  - Anus

Here E. Coli creates an environment conducive to Water Absorption and creates Vitamin K

Accessory Organs For Digestion

- Salivary Glands
  Exocrine Gland*
  - -Ducts to Mouth/Pharynx
- Pancreas
  Exocrine Secretions:* → To Duodenum
  - -Pancreatic Lipase
  - -Pancreatic Amylase
  - -Tripsin

  Endocrine Systems
  - -Insulin
  - -Glucagon
- Liver
  Exocrine System
  - -Makes Bile
    (Sent to Duodenum via Common Bile Dict, excess stored in Gallbladder)



***Endocrine Glands** are ductless and separate into Capillaries;*
***Exocrine Glands** are ducted to specific locations.*

Secretions

•**Saliva** from three pairs of Salivary Glands, Amylase added in

•Stomach produces **Gastric Juice**

-Pepsinogin⟶**Pepsin** (Protease)
(Zymogen Form - Inactive)

-**Hydrochloric Acid** (Nonselective Hydrolyzing Agent)

-**Mucus**

•Pancreas Sends Three Secretions to Duodenum

-**Pancreatic Lipase**

-**Pancreatic Amylase**

-Tripsinogen⟶**Tripsin**
(Zymogen Form)

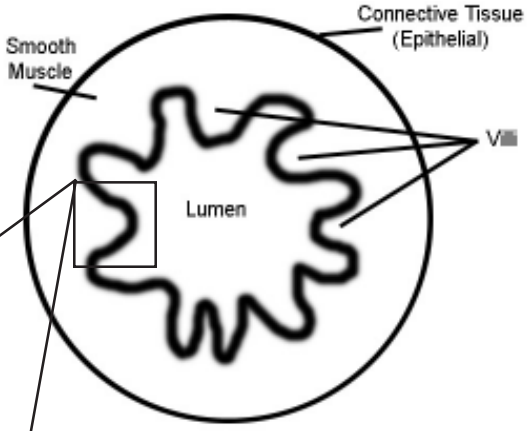
-Pancreas also produces Sodium Bicarbonate, which is not an enzyme

•The Liver, while it has many functions, produces **Bile**
(Not an enzyme, but emulsifies Lipids)

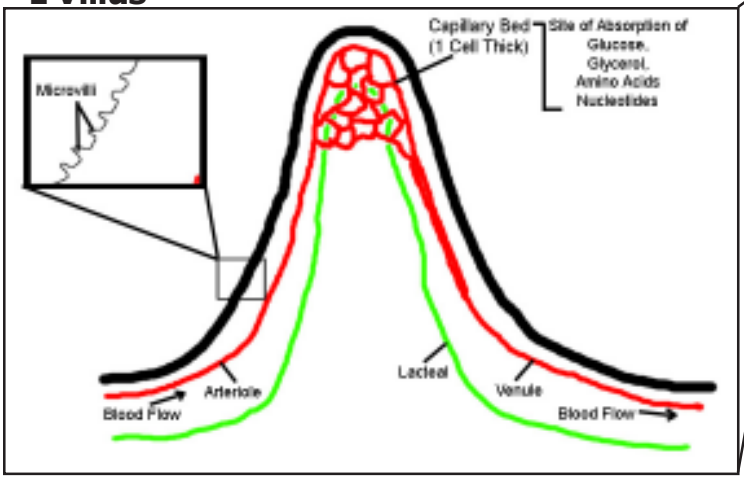
Absorption

•As food is propelled with peristalsis through the alimentary canal, its nutrients are absorbed into the blood stream via capillaries (mostly in the Jejunum and Ilium of the Small Intestine):

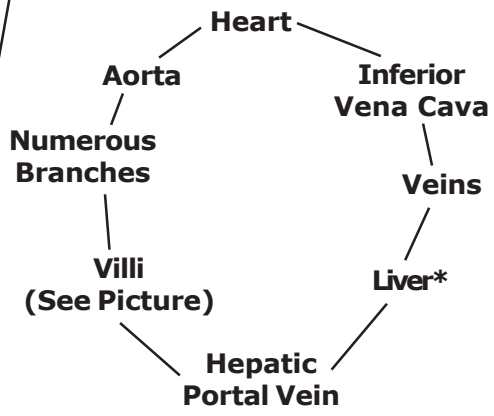
A (Pathetic) Side View of the Small Intestine

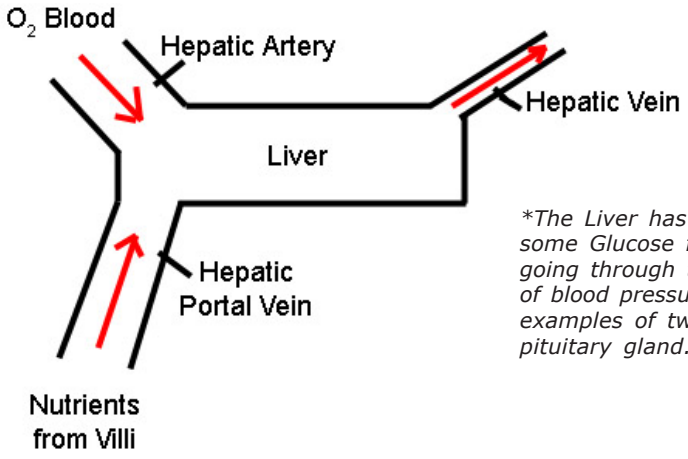


1 Villus



Blood Flow





**The Liver has a second Capillary Bed. This bed removes some Glucose from food and stores Glycogen. The blood going through this second Capillary Bed has a significant loss of blood pressure. Refer to the image to the left. Other examples of two capillary systems are the kidney and pituitary gland.*

Sorry about the poor diagrams, but I also have a Spanish test to study for - no time for anything better.