



The Digestive System

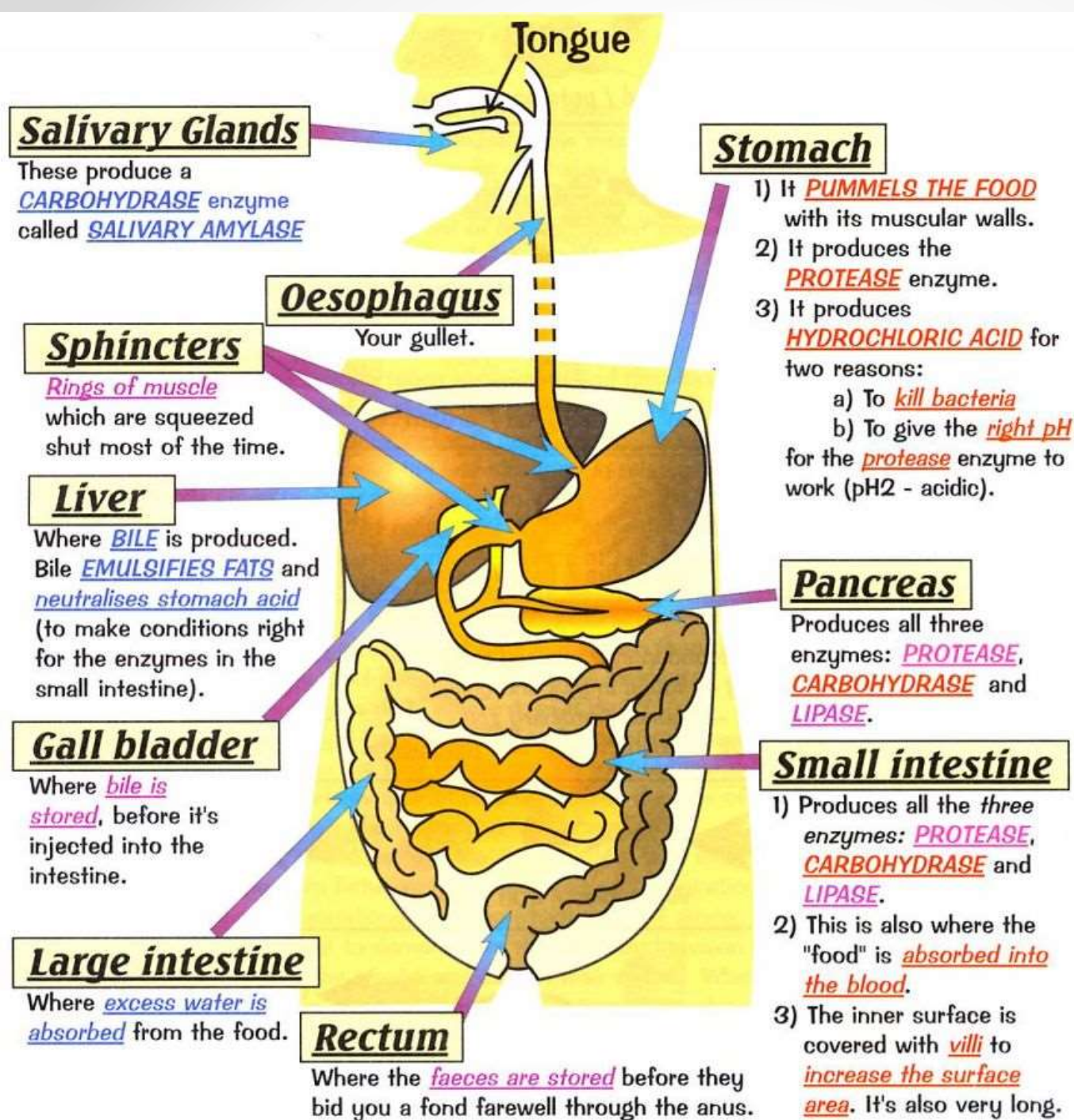
How do the accessory organs help with the digestion of food and protection of your intestines?

Photo Credit:

science.nationalgeographic.com

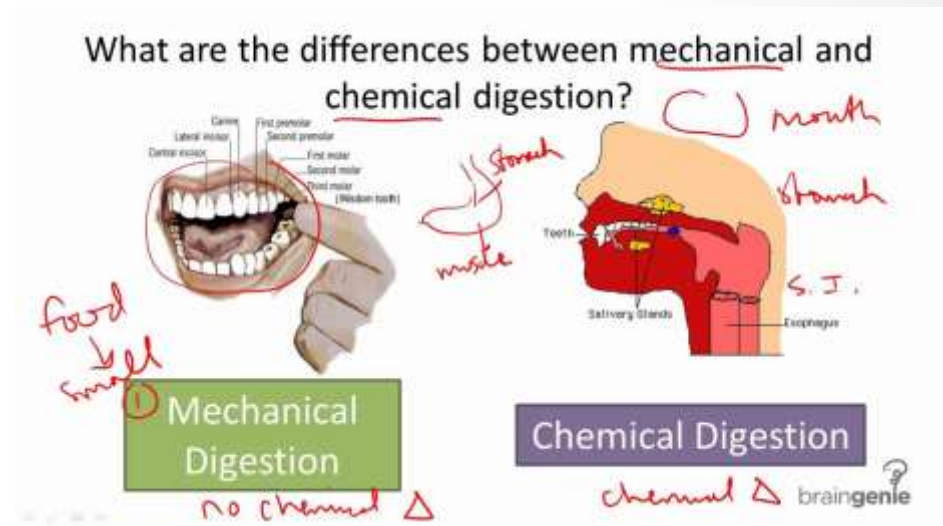
The Big Picture

Study this figure well; we can almost stop right here with the notes!



Two Types of Digestion

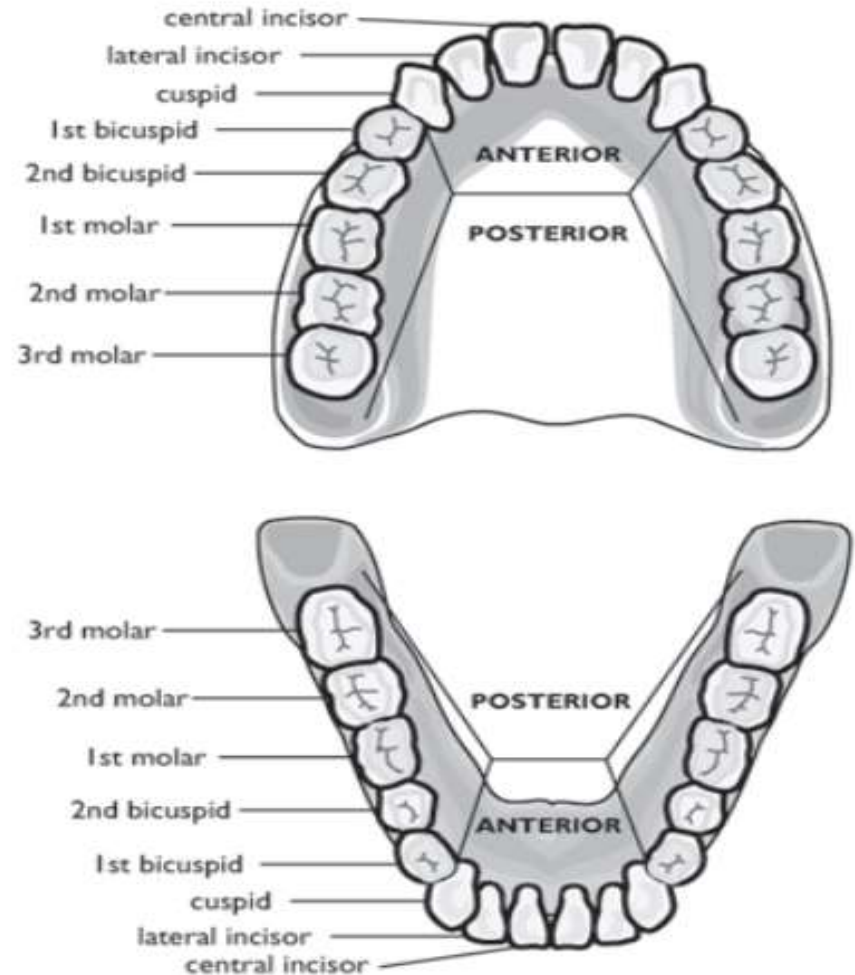
- Mechanical – think ripping, churning – think teeth and stomach
- Chemical – think enzymes and chemical reactions – think mouth (starch), stomach (acid), and small intestine



Teeth

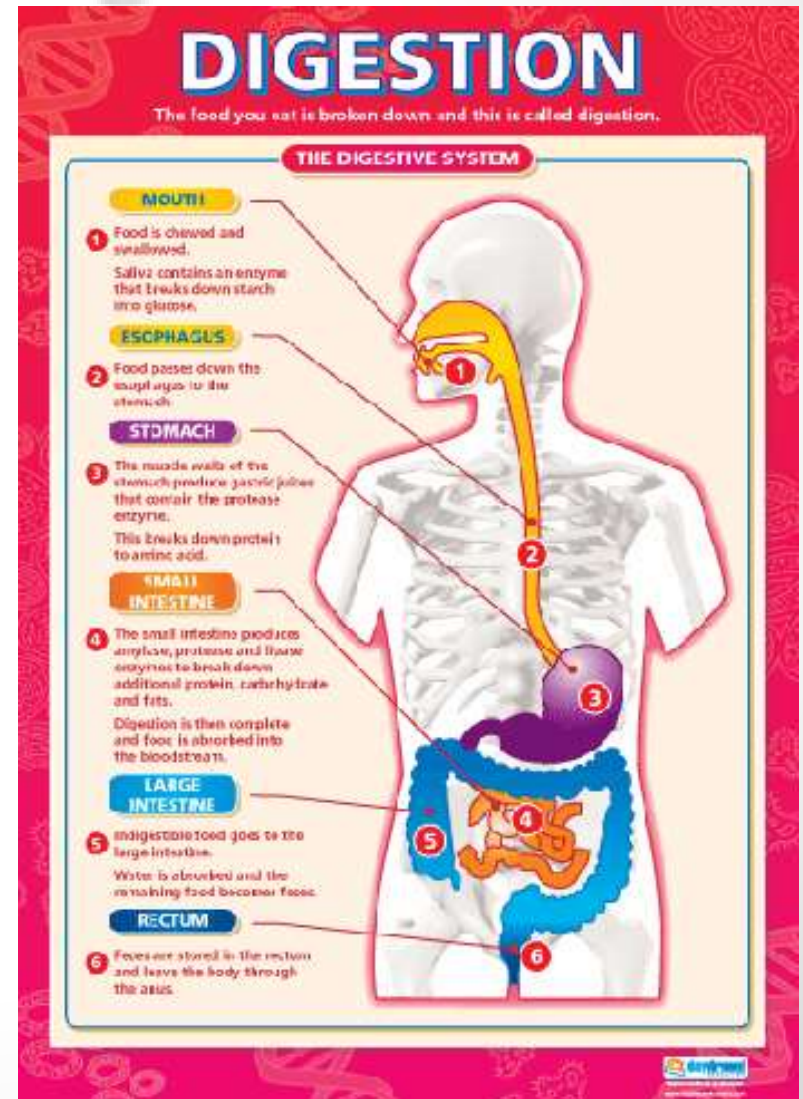
- We use teeth to **masticate** (chew) our food
- We usually have **two sets** throughout life – baby teeth and permanent teeth

Figure 6 – Names of the anterior and posterior teeth.



Chemical Digestion

- Mouth : **salivary amylase** - starch
- Stomach : **Pepsin** and **HCl** – protein
- Pancreas : **trypsin** – protein
- Small Intestine: **trypsin** (& other pancreatic enzymes) – protein. **Bile** & **lipase** – fat

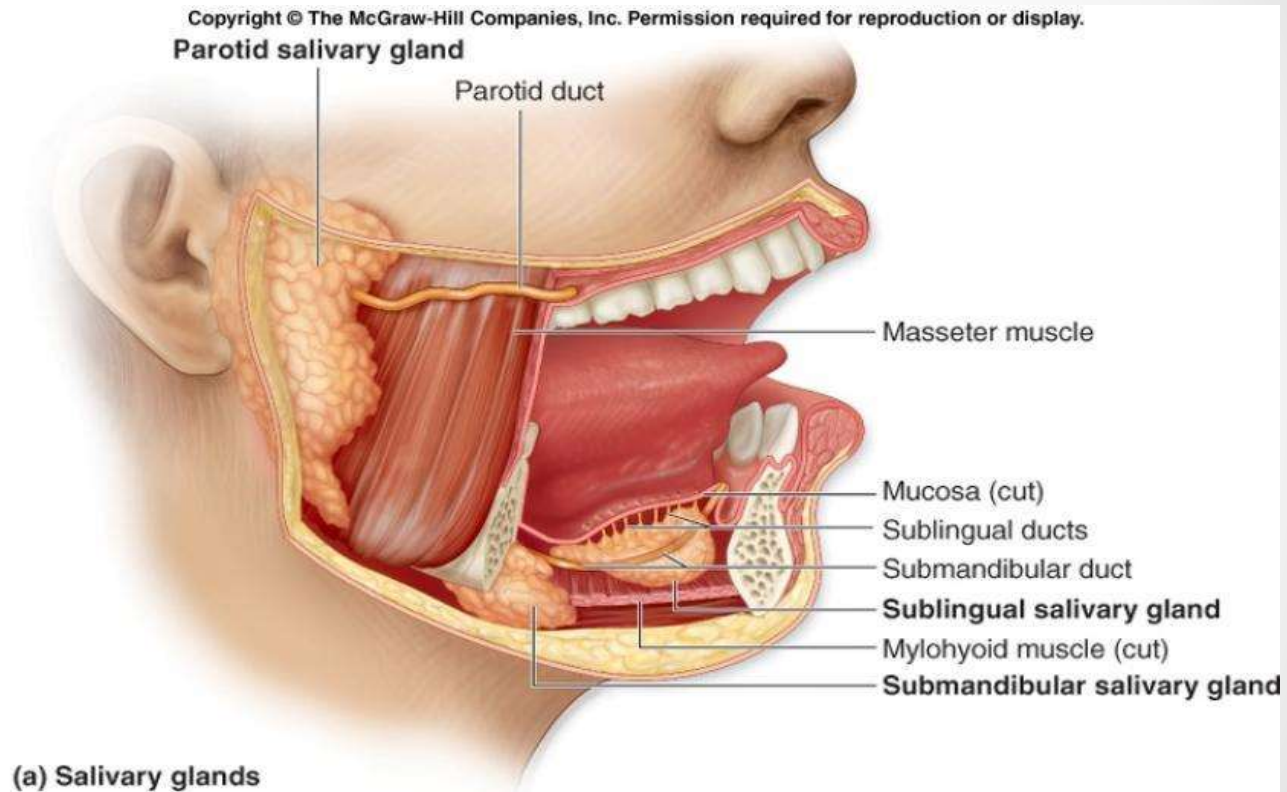


Salivary Glands

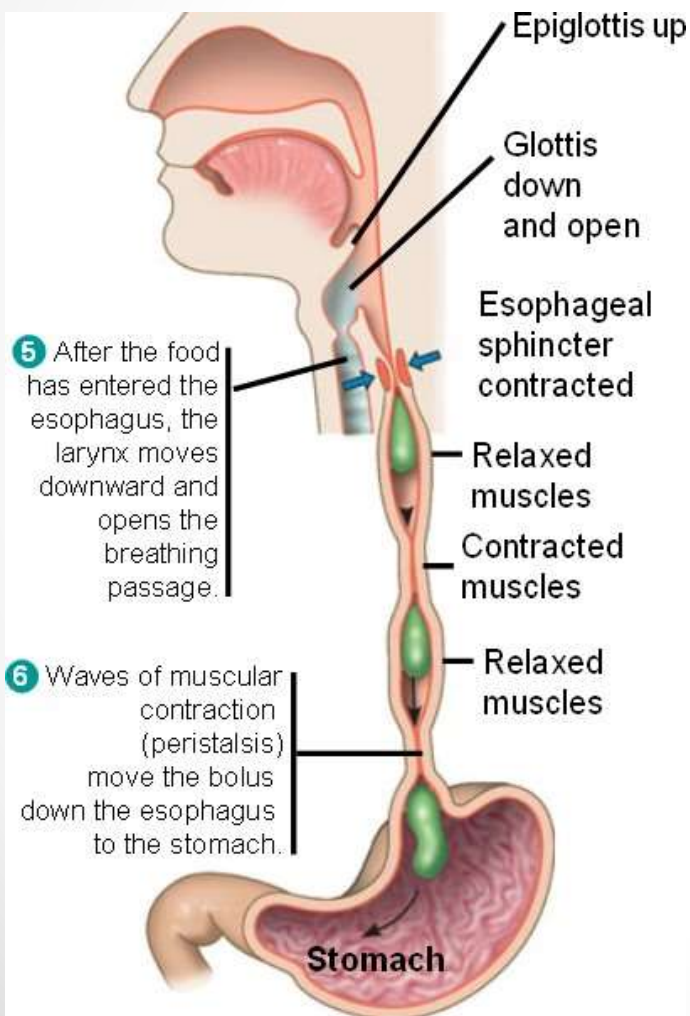
We have 3 pairs of salivary glands

1. Parotid
2. Submandibular
3. Sublingual

- produce saliva
 - enzyme **salivary amylase**
 - initiates **starch digestion**

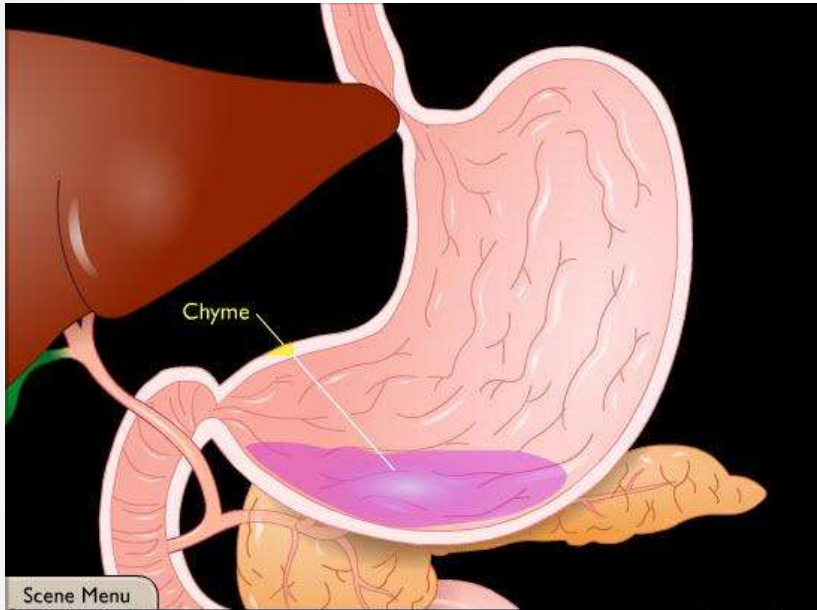


Peristalsis



- You can swallow food while “standing” on your head
- This is thanks to **peristalsis**
 - involuntary waves of contraction/relaxation of your alimentary canal
- Guess what happens when peristalsis goes backwards?

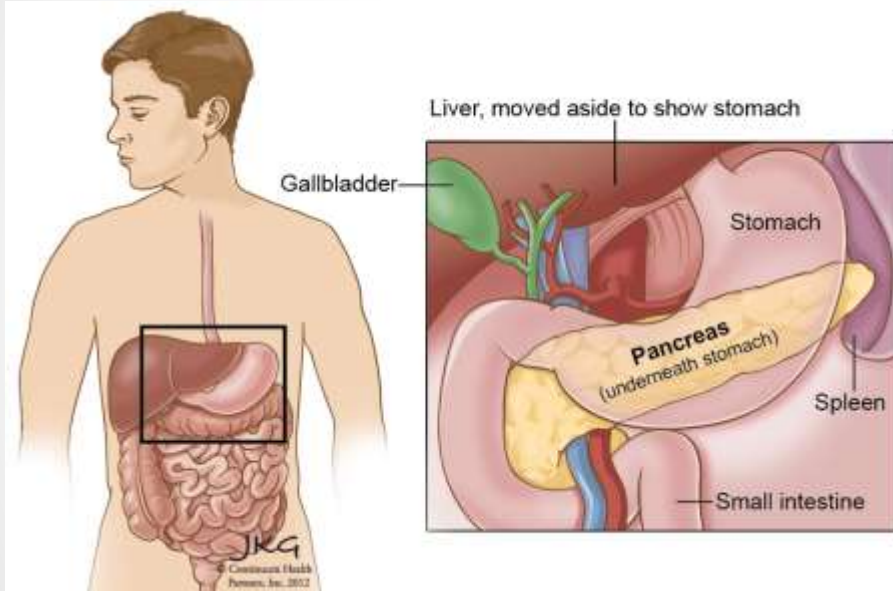
A Look at Chyme



Chyme is what we call partly digested food as it leaves the stomach; it's full of good stuff...yum!

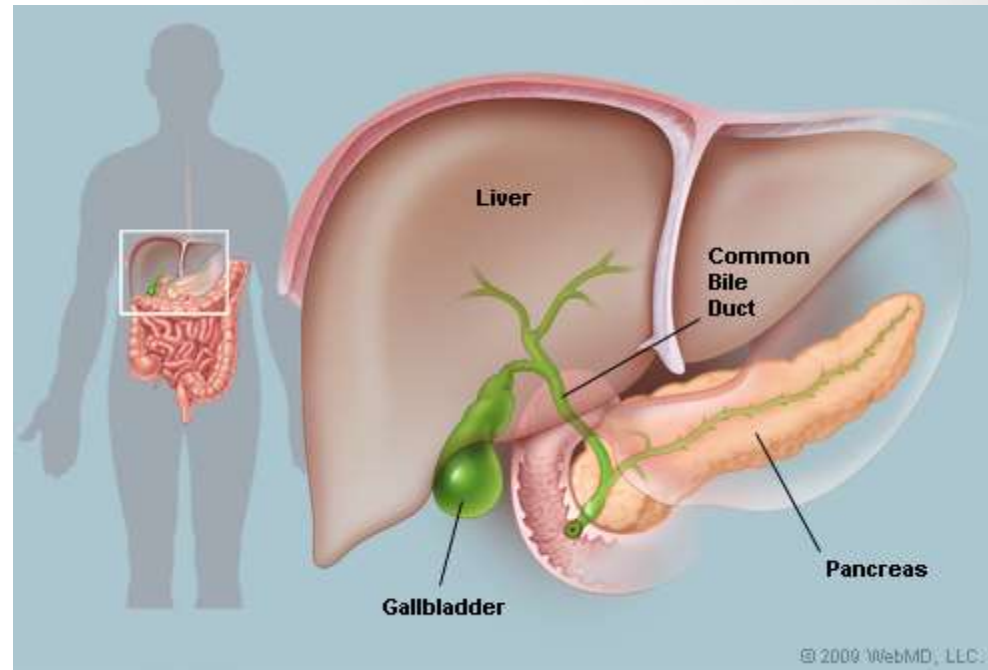
Pancreas

- Produces **enzymes** that breaks down chyme
- Its solutions are secreted into the duodenum and **neutralize** the stomach acid
- The pancreas also has an endocrine function
 - remember insulin and glucagon?



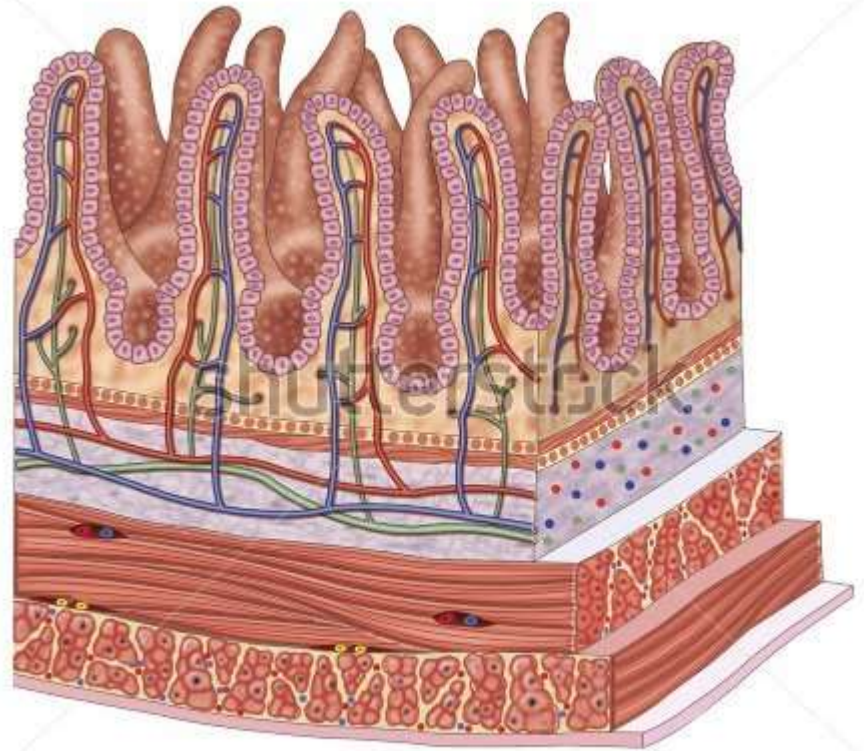
Liver & Gall Bladder

- The **liver** is the largest gland in the body – it has many roles in metabolism but in digestion it produces
 - **Bile** – a yellow to green solution that emulsifies fat (breaks big fat globs into little globs)
 - Bile is stored in the **gall bladder**



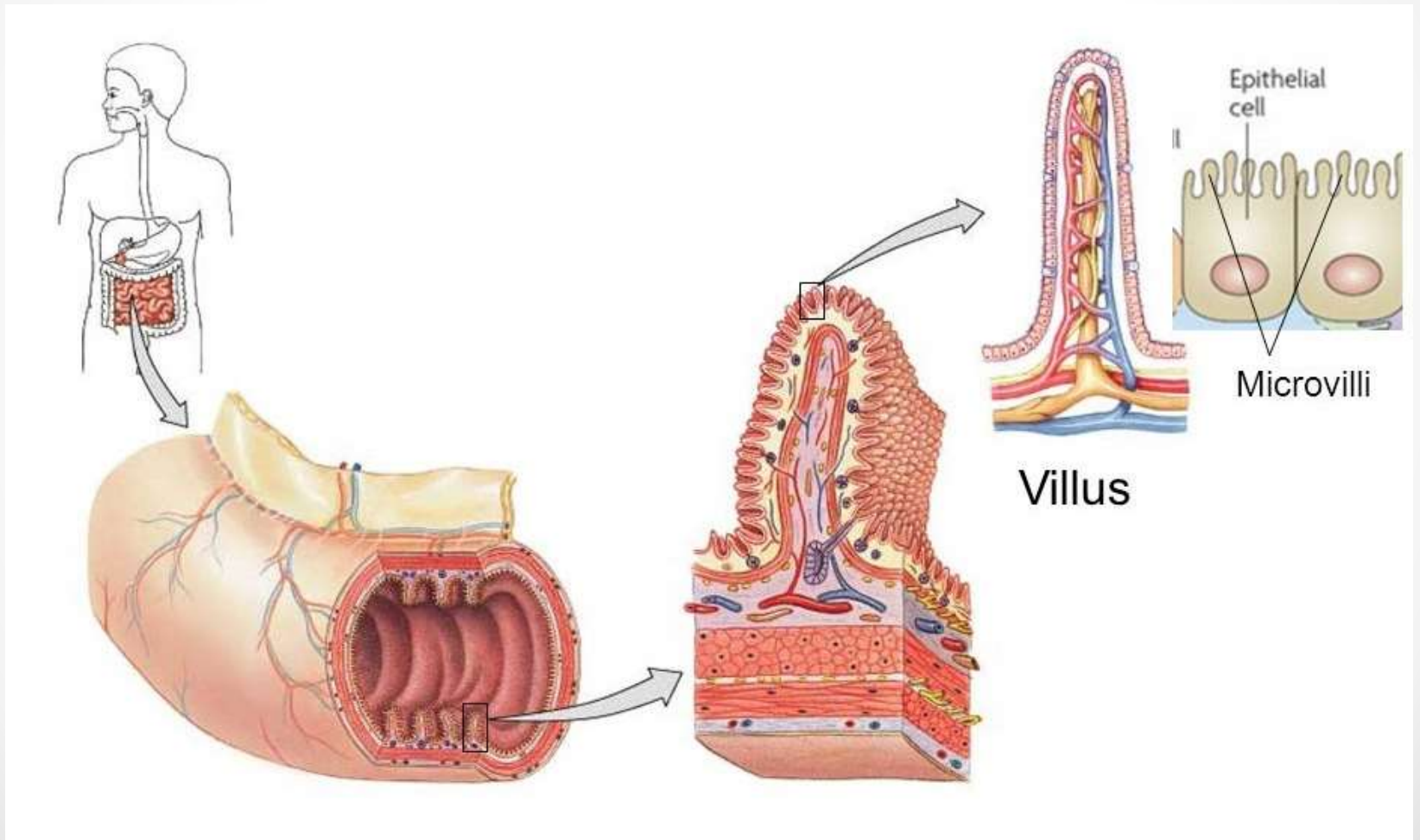
Absorption

- Now that food is broken down to molecular size, it needs to be sent to the blood stream
- The major site for absorption is the **small intestine**
- The **villi** are loaded with capillaries and that's where the action happens

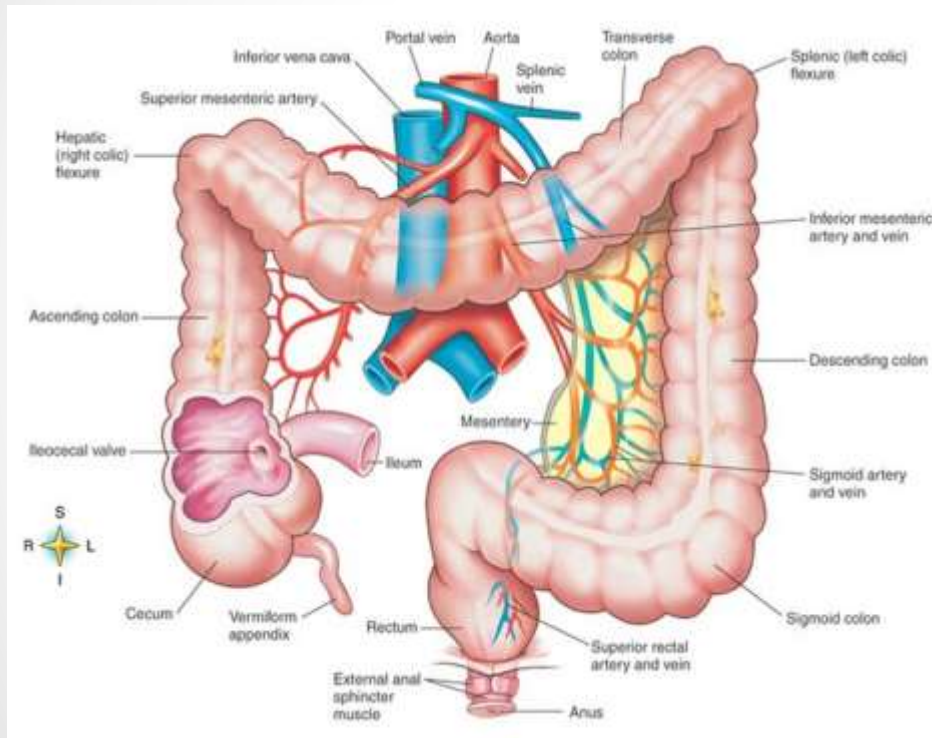


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Absorption



Elimination



- The **large intestine** is the player here
- **No** enzymes but a lot of symbiotic **bacteria**, which make vitamin K and some B for us
- Water is **absorbed** here to produce the end product – **feces**
- What you see here is what you ate hours ago!

A Word on Farts

- Also called flatus
- Produced by large intestine bacteria breaking down what little nutrients are left
- Mostly CO₂, methane, and hydrogen sulfide
- About 500 ml/day
- Certain foods cause more gas production; carbohydrate-rich foods like beans, certain green vegetables

