You ARE What You Eat!

**Objective:** To learn the structure and function of the Digestive System

**Challenge:**
Place the following in order according to the path that food takes through your body:

- STOMACH
- LARGE INTESTINE
- RECTUM
- ESOPHAGUS
- ANUS
- MOUTH
- SMALL INTESTINE
FUNCTION: The digestive system breaks food down into small molecules that are absorbed into the bloodstream

1. Mechanical digestion: PHYSICAL process: food is chewed, mixed and churned.

2. Chemical digestion: CHEMICAL process: food is turned into a mushy substance using stomach acid, bile, saliva, & other enzymes (proteins that speed up chemical reactions)
ORGANS OF THE DIGESTIVE SYSTEM

1. **Accessory Organs**: food **DOES NOT** pass through. Includes tongue, teeth, salivary glands, liver, gallbladder, & pancreas.

2. **Digestive tract**: food **DOES** pass through. Includes mouth, esophagus, stomach, small & large intestine, rectum & anus.
Digestion begins NOW!

1. **Mouth**: tongue, teeth, & saliva change food into soft mass called **bolus**

*Amylase is in saliva*
2. **Esophagus**: muscular tube moves food to **stomach** using **peristalsis** (muscle contractions)
3. **Stomach**: muscular sac that turns food into a thin, watery liquid called **chyme**
   a. **Mechanical** digestion by **peristalsis**
   b. **Chemical** digestion by **digestive juices/enzymes**
4. **Small Intestine**: long tube (small diameter) that functions in **chemical digestion** and **nutrient absorption**...
Because the small intestine is lined with **villi** (finger-like projections) surface area is increased, allowing better absorption.
LET’S COMPARE...

If the small intestine were a simple smooth tube without folds and villi, the surface area would be the inside of the tube as seen below.
The gathering of the intestinal wall into folds lined with villi increases the surface area tremendously – imagine that the folds are a string and you are pulling on the end with the arrow. It would unravel to a length much greater than that of the smooth tube. **In fact, it’s surface area is comparable to a tennis court!**
• **Accessory Organs of Small Intestine:**

  a. **Liver**: large red-brown organ that makes **bile**

  b. **Gallbladder**: stores bile which is released into the S.I. and helps break down **fat**

  c. **Pancreas**: makes digestive **enzymes** & **insulin** which **regulates blood sugar**
5. **Large intestine**: absorbs **water** from undigested chime.
   a. Chyme can be in L.I. as long as **three days**.

b. **Appendix**: sac attached to the L.I. that is now known to provide immune support in the body.

6. **Rectum & anus**: control release of **solid waste** *(feces)* from body