<table>
<thead>
<tr>
<th><strong>ABSORPTION AS RELATED TO DIGESTION</strong></th>
<th>• The process by which nutrient molecules pass through the wall of your digestive system into your blood.</th>
</tr>
</thead>
</table>
| **3 FUNCTIONS OF DIGESTION** | • Breaks down food into molecules the body can use  
• Then, they are absorbed into the blood and carried throughout the body (circulatory)  
• Lastly, wastes are eliminated |
| **TWO TYPES OF DIGESTION** | • Mechanical: physically broken down  
  Bite (teeth) and chewing.  
• Chemical: chemically breaks food into smaller parts. |
| **SALIVA** | • Moistens food into a slippery mass allowing it to travel down the Esophagus.  
• 3 glands- under tongue and behind jaw  
• Produce saliva  
• 99% water and contains enzymes (**Salivary Amylase**)  
• Salivary Amylase breaks starch into sugar called maltose. |
| **ENZYME** | • Protein that speeds up chemical reactions  
• Chemical digestion  
• Different enzymes break down different types of foods. (Starches, proteins, fats, etc.) |
| **ESOPHAGUS** | • Muscular tube that connects the mouth to the stomach  
• Carries **Bolus** (a ball of food that has been chewed and is ready to be swallowed) to the stomach |
| **EPIGLOTTIS** | • Seals off the **trachea** while food is being swallowed. |
| **ULVA** | • A flap of gum like tissue that covers the nasal opening. |
| **PERISTALSIS** | • Involuntary waves of the esophagus contracting to push the food to the stomach.  
  • These contractions are called peristaltic waves. |
| **STOMACH** | • Muscular located in the abdomen that contains Gastric Juices.  
  • Gastric Juices contain **enzymes pepsin and rennin**, which breaks down proteins.  
  • Juice also contains **hydrochloric acid** that combines with pepsin to break down proteins and kill microorganisms in the food.  
  • Stomach works until the food becomes a thin soupy liquid called **chyme**. |
| **MUCUS** | • A substance that coats and protects the lining of your stomach from the digestive juices. |
| SMALL INTESTINE | • 1 inch thick and about 20-25 feet long  
• Most of the absorption of nutrients takes place in the small intestine.  
• **Duodenum** most important part of the small intestine. Located at the start of the intestine.  
• The chemical activities in the Duodenum are from secretions and enzymes from the liver, pancreas and the small intestine. |
| LIVER | • Large and heavy  
• Produces chemicals that play a role in many of the body’s processes.  
• Breaks down medicines and other substances and eliminates nitrogen for the body.  
• Produces **bile** for digestion. |
| BILE | • A substance that aids in the digestion of fats.  
• Produced in the liver. |
| GALLBLADDER | • Bile is produced in the Liver, stored in the gallbladder and then through tubes into the Duodenum. |
| PANCREAS | • An endocrine gland and a gland that produces secretions  
• Produces pancreatic juice that enters the duodenum through the pancreatic duct.  
• Enzymes in this juice breakdown starch, carbohydrates, proteins and fat.  
• **Inlets of Langerhans: secretes the hormone insulin.**  
• Insulin is an internal secretion, passes from the gland cell right into the bloodstream, helping the body to use sugar. |
| **FIBER** | • Does not breakdown in the digestive system. It thickens the liquid material in the intestine allowing peristalsis to move more easily. |
| **VILLI** *(VILLUS SINGULAR)* | • Fingerlike projections in the small intestine.  
• Increase surface area, enabling the digested food to move faster.  
• Blood vessels running through the center of each villus allow the molecules to pass into the blood. |
| **LARGE INTESTINE** | • Last section of the digestive system.  
• 5 feet long, 3 times the width of small  
• Contains bacteria that feed on the material passing through.  
• Make certain vitamins, K  
• Material coming contains water and undigested food such as fiber.  
• Water is absorbed into the blood stream and the rest is readied for elimination. |
| **RECTUM** | • Short tube at the end of the large intestine.  
• Waste material is compressed into a solid form here. |
| **ANUS** | • A muscular opening at the end of the rectum. |
## Digestive System Enzymes and Secretions Chart

<table>
<thead>
<tr>
<th>Source of Enzyme or Secretion</th>
<th>Enzyme or Secretion</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouth</td>
<td>Salivary Amylase (enzyme)</td>
<td>Breaks down starches into sugar</td>
</tr>
<tr>
<td>Stomach</td>
<td>Pepsin (enzyme)</td>
<td>Breaks down proteins into shorter chains of amino acids.</td>
</tr>
<tr>
<td></td>
<td>Rennin (enzyme)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydrochloric Acid (Secretion)</td>
<td>Provides an acid environment for pepsin; kills bacteria</td>
</tr>
<tr>
<td>Pancreas</td>
<td>Amylase (enzyme)</td>
<td>Continues the breakdown of starch</td>
</tr>
<tr>
<td></td>
<td>Trypsin (enzyme)</td>
<td>Continues the breakdown of proteins</td>
</tr>
<tr>
<td></td>
<td>Lipase (enzyme)</td>
<td>Breaks down fats</td>
</tr>
<tr>
<td>Liver</td>
<td>Bile (secretion)</td>
<td>Breaks down fats</td>
</tr>
<tr>
<td>Small Intestine</td>
<td>Peptidase (enzyme)</td>
<td>Continues the breakdown of proteins</td>
</tr>
<tr>
<td></td>
<td>Maltase (enzyme)</td>
<td>Converts remaining sugars into glucose.</td>
</tr>
</tbody>
</table>