

# Human Body: Digestion – Pathway and Enzymes

Fill in the blanks below with the following words. Use each word only once.

steroids            glycogen            sucrose            polysaccharides            glycerol            3  
triglycerides            20            monosaccharides            digestion            fructose            fatty acid chains  
carbohydrates            proteins            glucose            lipids            amino acids            disaccharides

\_\_\_\_\_ is the process of breaking down food into nutrients that can be absorbed and used by your body. Three major macromolecules that we digest are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_. All macromolecules must be broken down into their smaller components in order to be absorbed.

The simplest carbohydrates are \_\_\_\_\_, single sugar molecules. \_\_\_\_\_ and \_\_\_\_\_ need to be broken down into monosaccharides before they can be absorbed. For example, \_\_\_\_\_ (table sugar) is a disaccharide that's broken down into \_\_\_\_\_ and \_\_\_\_\_. Starch, \_\_\_\_\_, and cellulose all are polysaccharides. Carbohydrates are used for energy, energy storage, and in structural components of cells.

Lipids are macromolecules composed of \_\_\_\_\_ and \_\_\_\_\_. Fats, typically referred to as \_\_\_\_\_, are a group of lipids composed of a glycerol molecule attached to \_\_\_\_\_ fatty acid chains. Other lipids found in the body include phospholipids and \_\_\_\_\_. Lipids are used in energy storage, cellular membrane construction, and cell signaling.

Proteins are polymers of \_\_\_\_\_. The same \_\_\_\_\_ amino acids make up all proteins, but their shapes and functions vary. There are enzymatic proteins that catalyze reactions, structural proteins that provide support, storage proteins, transport proteins, and many more.

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Fill in the blanks below with the following words. Use each word only once.

bolus            protein            liver            polypeptides            enzymes            mastication  
chemical            stomach            chymotrypsin            pancreatic amylase            large intestine            peristalsis  
chyme            gall bladder            pepsin            mechanical            pancreas            acids  
lipase            amylase            small intestine            rectum            hydrochloric            trypsin

There are 2 major kinds of digestion. \_\_\_\_\_ digestion involves the physical breakdown of food, and \_\_\_\_\_ digestion involves the further breakdown of that food into soluble nutrients using \_\_\_\_\_ and \_\_\_\_\_. When food enters the mouth, mechanical digestion begins with \_\_\_\_\_ (chewing). Chemical digestion also begins in the mouth when saliva mixes with food. \_\_\_\_\_ is a salivary enzyme that breaks down starches.

After being chewed and swallowed, the mass of partially digested food, called the \_\_\_\_\_, enters the esophagus. By the action of \_\_\_\_\_, a series of involuntary muscle relaxations and contractions, it travels through the esophagus to the \_\_\_\_\_. Here, chemical digestion of \_\_\_\_\_ begins. Gastric juice containing the enzyme \_\_\_\_\_ and \_\_\_\_\_ acid breaks down proteins into \_\_\_\_\_.

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Peristalsis continues along the stomach wall until liquid \_\_\_\_\_ is formed. As the liquid enters the small intestine, it mixes with enzymes from the \_\_\_\_\_ and bile produced by the \_\_\_\_\_. The pancreatic enzymes \_\_\_\_\_ and \_\_\_\_\_ further hydrolyze proteins. Starches in the small intestine are broken down by \_\_\_\_\_, which has the same function as salivary amylase.

Bile that was temporarily stored in the \_\_\_\_\_ emulsifies lipids. To complete digestion, pancreatic \_\_\_\_\_ acts on the lipids to produce glycerides and free fatty acids. The majority of nutrients can now be absorbed by the \_\_\_\_\_. Leftover material is passed through the \_\_\_\_\_. As water is absorbed, solid stool forms. The stool is emptied into the \_\_\_\_\_ and then eliminated from the body as waste.

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## Related Kit

Delve further into the roles that enzymes play in digestion with [Carolina BioKits®: Digestion](#).

# Human Body: Digestion – Pathway and Enzymes **Key**

Fill in the blanks below with the following words. Use each word only once.

steroids	glycogen	sucrose	polysaccharides	glycerol	3
triglycerides	20	monosaccharides	digestion	fructose	fatty acid chains
carbohydrates	proteins	glucose	lipids	amino acids	disaccharides

**Digestion** is the process of breaking down food into nutrients that can be absorbed and used by your body. Three major macromolecules that we digest are **carbohydrates**, **proteins**, and **lipids**. All macromolecules must be broken down into their smaller components in order to be absorbed.

The simplest carbohydrates are **monosaccharides**, single sugar molecules. **Polysaccharides** and **disaccharides** need to be broken down into monosaccharides before they can be absorbed. For example, **sucrose** (table sugar) is a disaccharide that's broken down into **glucose** and **fructose**. Starch, **glycogen**, and cellulose all are polysaccharides. Carbohydrates are used for energy, energy storage, and in structural components of cells.

Lipids are macromolecules composed of **glycerol** and **fatty acid chains**. Fats, typically referred to as **triglycerides**, are a group of lipids composed of a glycerol molecule attached to **3** fatty acid chains. Other lipids found in the body include phospholipids and **steroids**. Lipids are used in energy storage, cellular membrane construction, and cell signaling.

Proteins are polymers of **amino acids**. The same **20** amino acids make up all proteins, but their shapes and functions vary. There are enzymatic proteins that catalyze reactions, structural proteins that provide support, storage proteins, transport proteins, and many more.

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Fill in the blanks below with the following words. Use each word only once.

bolus	protein	liver	polypeptides	enzymes	mastication
chemical	stomach	chymotrypsin	pancreatic amylase	large intestine	peristalsis
chyme	gall bladder	pepsin	mechanical	pancreas	acids
lipase	amylase	small intestine	rectum	hydrochloric	trypsin

There are 2 major kinds of digestion. **Mechanical** digestion involves the physical breakdown of food, and **chemical** digestion involves the further breakdown of that food into soluble nutrients using **enzymes** and **acids**. When food enters the mouth, mechanical digestion begins with **mastication** (chewing). Chemical digestion also begins in the mouth when saliva mixes with food. **Amylase** is a salivary enzyme that breaks down starches.

After being chewed and swallowed, the mass of partially digested food, called the **bolus**, enters the esophagus. By the action of **peristalsis**, a series of involuntary muscle relaxations and contractions, it travels through the esophagus to the **stomach**. Here, chemical digestion of **protein** begins. Gastric juice containing the enzyme **pepsin** and **hydrochloric** acid breaks down proteins into **polypeptides**.

# Human Body: Digestion — Pathway and Enzymes **Key**

Peristalsis continues along the stomach wall until liquid chyme is formed. As the liquid enters the small intestine, it mixes with enzymes from the pancreas and bile produced by the liver. The pancreatic enzymes trypsin and chymotrypsin further hydrolyze proteins. Starches in the small intestine are broken down by pancreatic amylase, which has the same function as salivary amylase.

Bile that was temporarily stored in the gall bladder emulsifies lipids. To complete digestion, pancreatic lipase acts on the lipids to produce glycerides and free fatty acids. The majority of nutrients can now be absorbed by the small intestine. Leftover material is passed through the large intestine. As water is absorbed, solid stool forms. The stool is emptied into the rectum and then eliminated from the body as waste.

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