NUTRITION

- Chapter 4 – Lessons 4

HOW YOUR BODY DIGESTS FOOD

Digestion begins in your **mouth**.

digestion The process by which the body breaks down food into smaller pieces that can be absorbed by the blood and sent to each cell in your body

It takes the body from **16** to **24** hours to digest food and remove waste products.

HOW YOUR BODY DIGESTS FOOD

Food is processed in your body by the digestive system.

digestive system The group of organs that work together to break down foods into substances that your cells can use

As food is digested, **chemical energy** in the food is released.

WHERE DOES DIGESTION BEGIN?

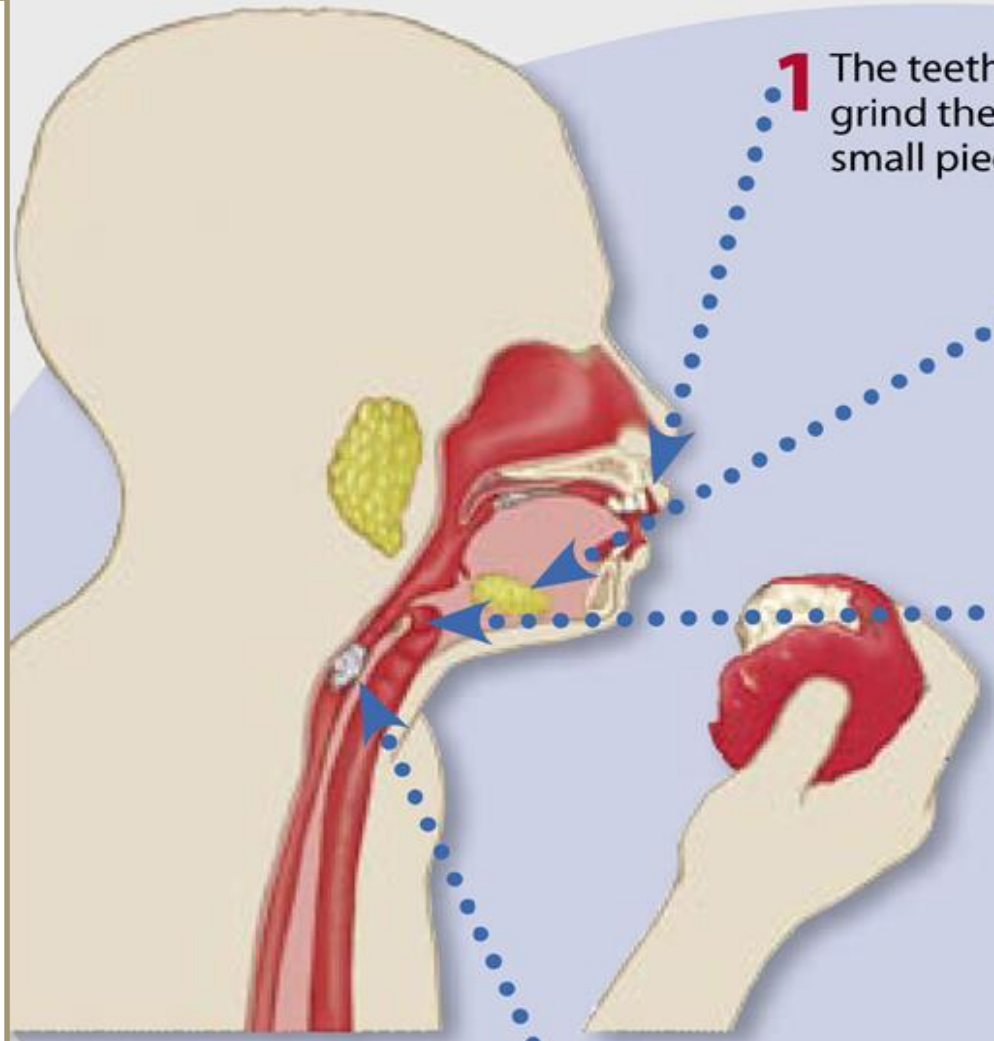
When you crush food with your **teeth**, **saliva** mixes with the food. **Amylase**, an enzyme in saliva, begins breaking down **carbohydrates** in the food.

saliva A digestive juice produced by the salivary glands in your mouth

Saliva also moistens and softens the food in your mouth, making it easier to **swallow**.

enzyme A substance that aids in the body's chemical reactions

Where Does Digestion Begin?



1 The teeth tear and grind the food into small pieces.

2 The salivary glands produce saliva. Enzymes in the saliva begin the chemical breakdown of carbohydrates, converting the starches to sugar. The saliva also moistens and softens food.

3 Before you swallow, your air passages are open. Getting food into these passages could cause you to choke. Therefore, when you swallow, a flap of skin called the epiglottis (e·puh·GLAH·tuhs) closes off the trachea to keep food from entering it. The trachea (TRAY·kee·uh), or windpipe, is the passageway through which air gets to your lungs. At the same time, the uvula (YOO·vyuh·luh) closes off the airway to the nose.

4 Once the food is swallowed, it enters the esophagus (i·SAH·fuh·guhs), a long muscular tube that connects the mouth to the stomach.

YOUR DIGESTIVE ORGANS

After you swallow, food moves into your **esophagus**, then into your **stomach**, then into the **small intestines**.

Esophagus:

The esophagus **contracts** and **relaxes** repeatedly to move the food to the stomach.

YOUR DIGESTIVE ORGANS

Stomach:

- The **strong muscles** of the stomach churn the food.
- The food gets mixed with **gastric juice**, which is made of acid and other enzymes. The food is churned into a thick, creamy mixture and may remain in the stomach for up to **four hours**.

YOUR DIGESTIVE ORGANS

- **Small intestines:**
  - Enzymes from the **liver**, the **pancreas**, and **glands** in the small intestine itself combine with the food mixture.
  - **Villi**, finger-like projections in the wall of the small intestines, take in nutrients from the food.
  - **Capillaries** inside the villi draw nutrients into the bloodstream.
  - Blood carries the **nutrients** throughout the body.

small intestines A coiled tube from 20 to 23 feet long, in which about 90 percent of digestion takes place

YOUR DIGESTIVE ORGANS

The **liver** and **pancreas** are two important **organs** in the digestive system.

liver A digestive gland that secretes a substance called bile, which helps to digest fats

In addition, the liver also helps control the level of **sugar** in the blood, breaks down harmful substances such as **alcohol**, and stores some **vitamins**.

pancreas A gland that helps the small intestine by producing pancreatic juice, a blend of enzymes that breaks down proteins, carbohydrates, and fats

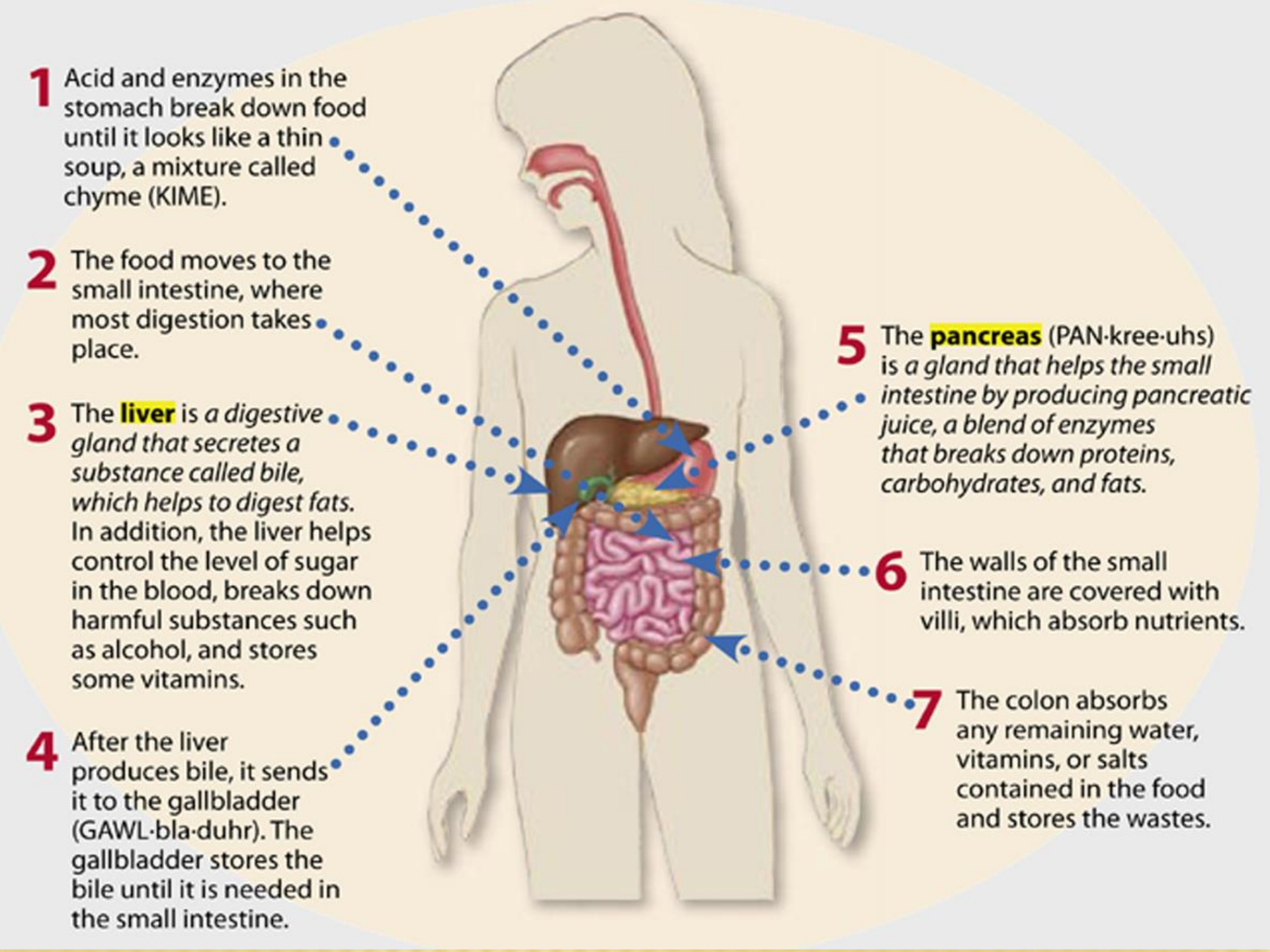
YOUR DIGESTIVE ORGANS

The **colon** is the last stop for solid food the body can't digest.

Most of the **water** is returned to the body. The rest is waste material.

colon A tube five to six feet in length that plays a part in both digestion and excretion

Any **water**, **vitamins**, **minerals**, and **salts** left in the food mixture are **absorbed** by the colon.


1 Acid and enzymes in the stomach break down food until it looks like a thin soup, a mixture called chyme (KIME).
2 The food moves to the small intestine, where most digestion takes place.
3 The liver is a digestive gland that secretes a substance called bile, which helps to digest fats. In addition, the liver helps control the level of sugar in the blood, breaks down harmful substances such as alcohol, and stores some vitamins.
4 After the liver produces bile, it sends it to the gallbladder (GAWL·bla·duhr). The gallbladder stores the bile until it is needed in the small intestine.
5 The pancreas (PAN·kree·uhs) is a gland that helps the small intestine by producing pancreatic juice, a blend of enzymes that breaks down proteins, carbohydrates, and fats.
6 The walls of the small intestine are covered with villi, which absorb nutrients.
7 The colon absorbs any remaining water, vitamins, or salts contained in the food and stores the wastes.

REMOVING WASTES

Excretion is a process of the **excretory system**.

excretion The process the body uses to get rid of waste

excretory system The group of organs that work together to remove wastes

The main organs of the excretory system are the **kidneys**, **bladder**, and **colon**. Your **skin** and **lungs** also remove waste from your body.

The excretory system also controls the **body's water levels**.

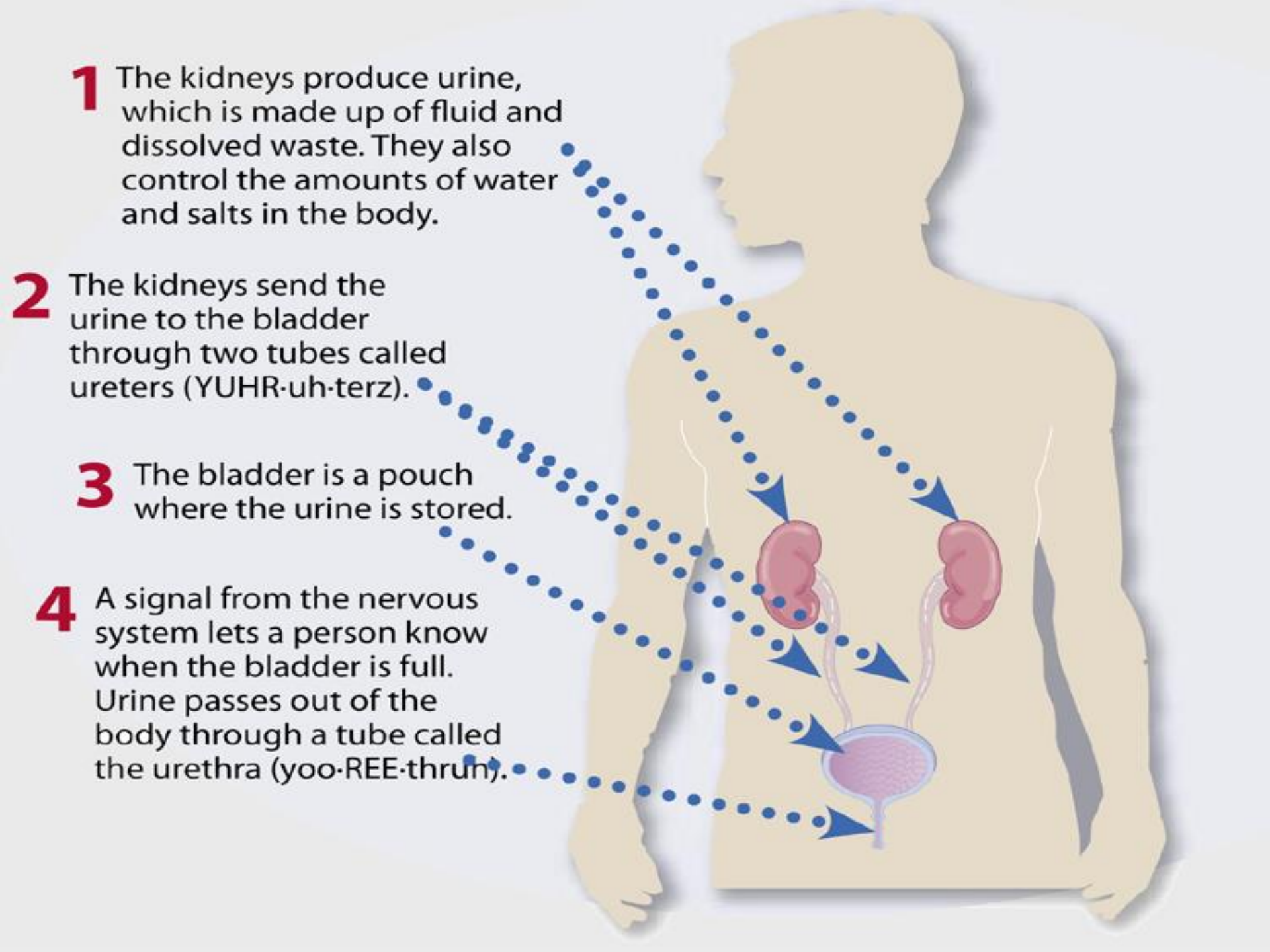
REMOVING WASTES

The **kidneys** help in the **production** of **red blood cells** and the regulation of blood pressure.

kidneys Organs that remove waste material, including salts, from the blood

Liquid wastes are removed through the body in the form of **urine**, which contains mostly **water** and **salts**.

The **bladder stores** urine until it is ready to be passed out of the body.


1 The kidneys produce urine, which is made up of fluid and dissolved waste. They also control the amounts of water and salts in the body.
2 The kidneys send the urine to the bladder through two tubes called ureters (YUHR·uh·terz).
3 The bladder is a pouch where the urine is stored.
4 A signal from the nervous system lets a person know when the bladder is full. Urine passes out of the body through a tube called the urethra (yoo·REE·thruh).

REMOVING WASTES

Your body's solid wastes are called **feces**, which are stored in the **colon** until that organ becomes full.

Strong muscles in the wall of the colon begin to **contract**, which is a signal that the colon must be emptied.

CARING FOR YOUR DIGESTIVE AND EXCRETORY SYSTEMS

Tips for Caring for Your Digestive and Excretory Systems

Eat a balanced diet with low-fat, high-fiber foods	Drink plenty of water.
Brush your teeth at least twice a day, floss, and get dental checkups twice a year.	Get regular physical activity.

- Eat meals on a **consistent schedule** to help food move through your body at a steady pace.
- Some 60 to 70 percent of your body is **water**. Water helps the digestive and excretory system work properly.