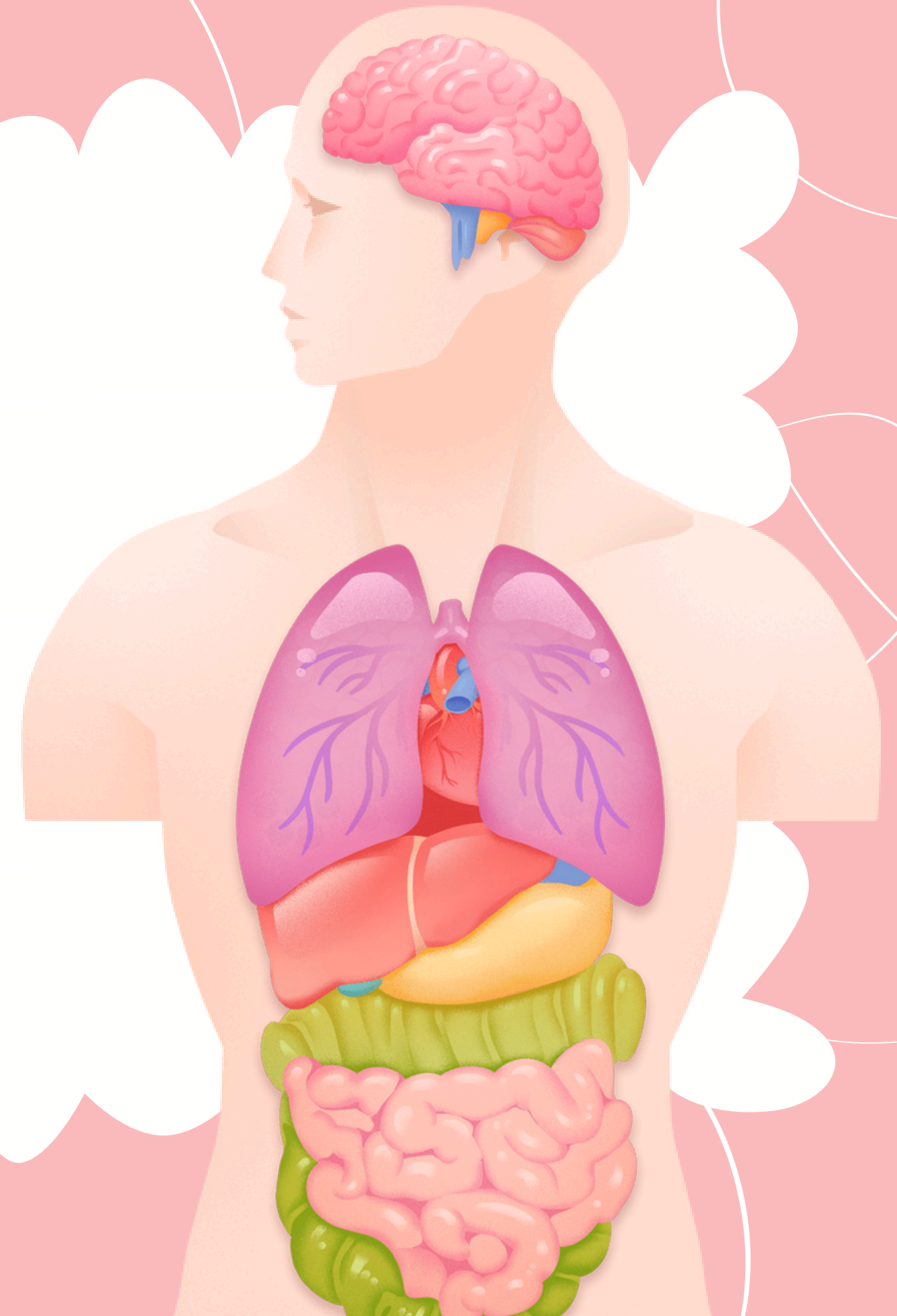




LIFE PROCESSES





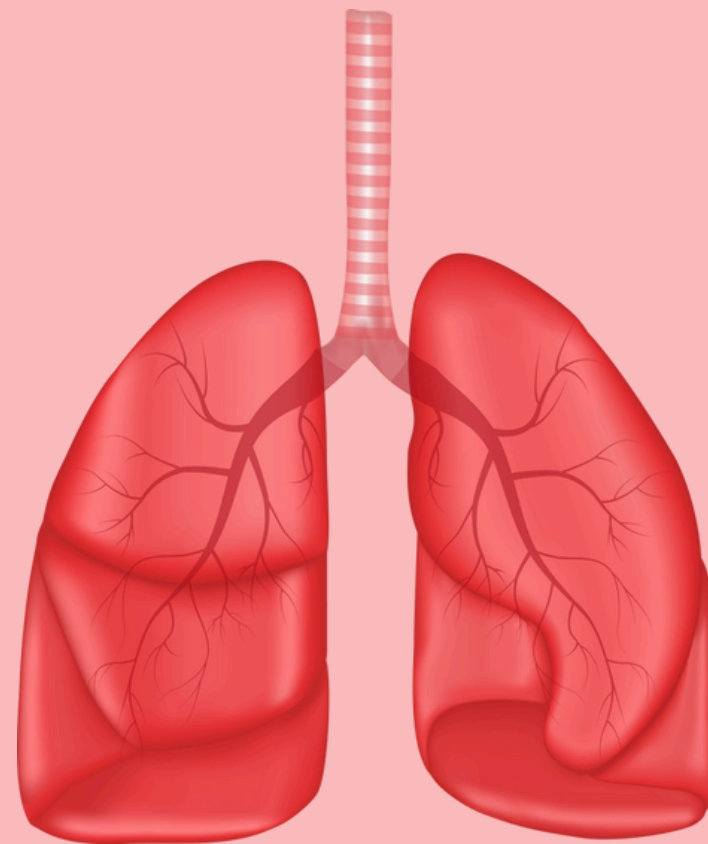
Life Process

**The basic functions performed
by living organisms
to maintain their life on this
earth are called life processes**

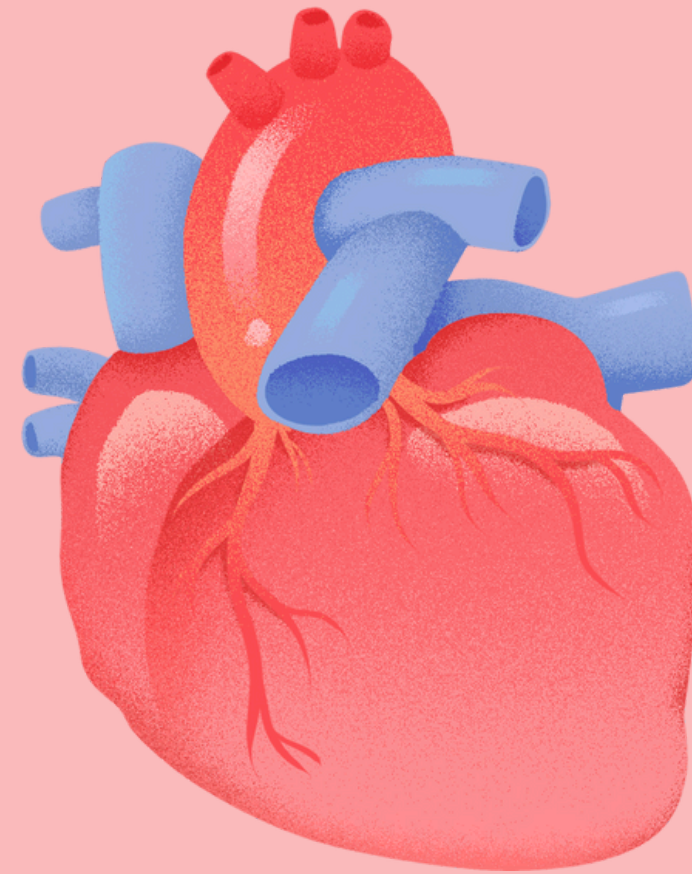
Nutrition



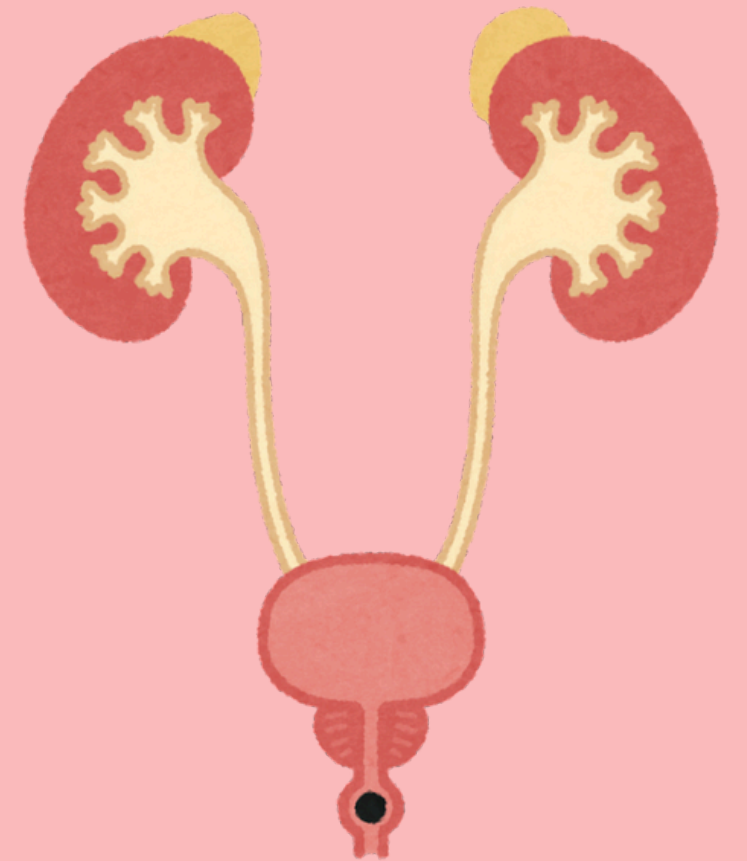
Respiration



Transportation



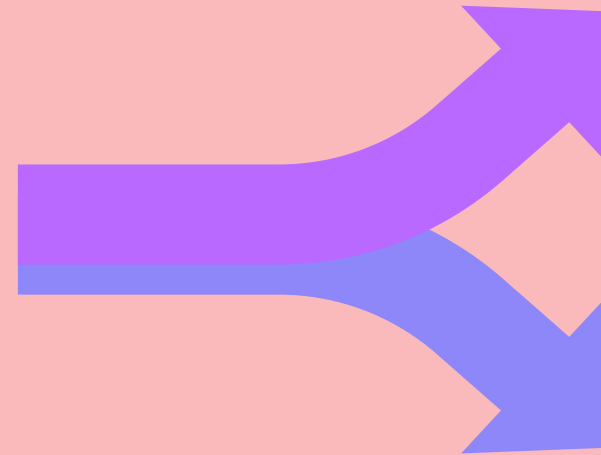
Excretion



Nutrition

Autotrophic Nutrition

**The process of
taking in food
and converting it
into energy and
other vital
nutrients
required for life**



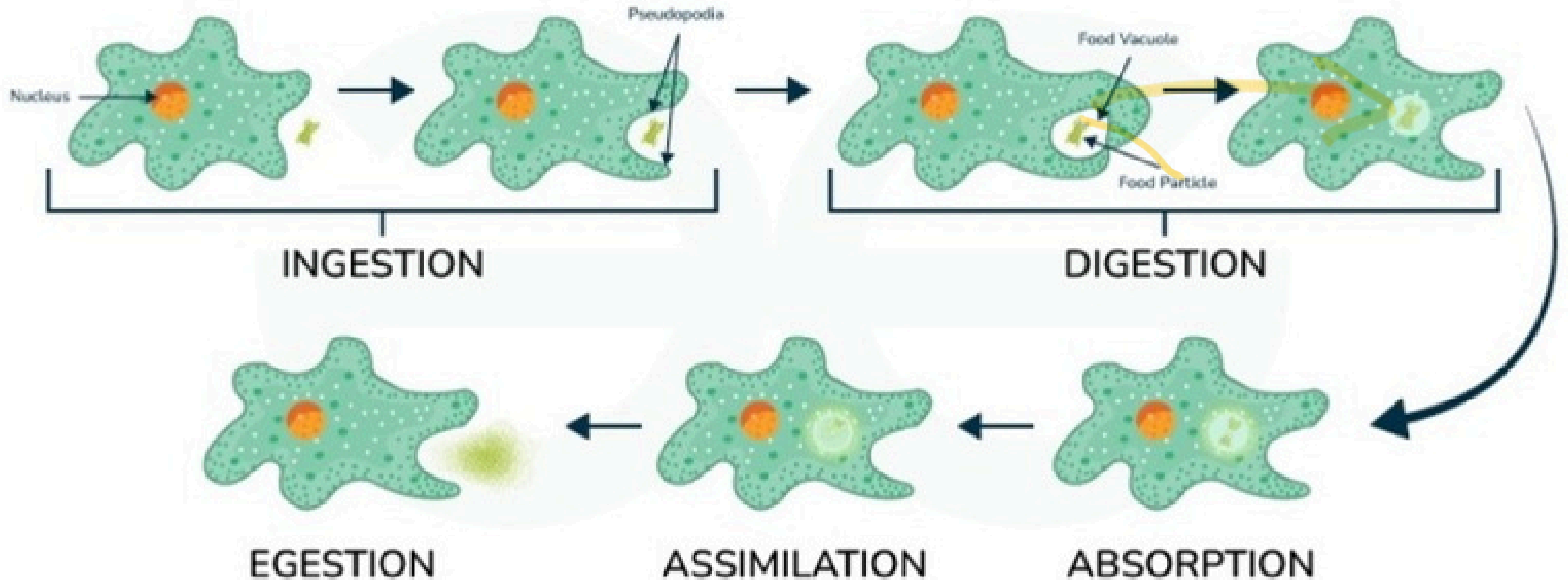
Heterotrophic Nutrition

Holozoic

Saprophytic

Parasitic

Nutrition in Amoeba



Nutrition in plants

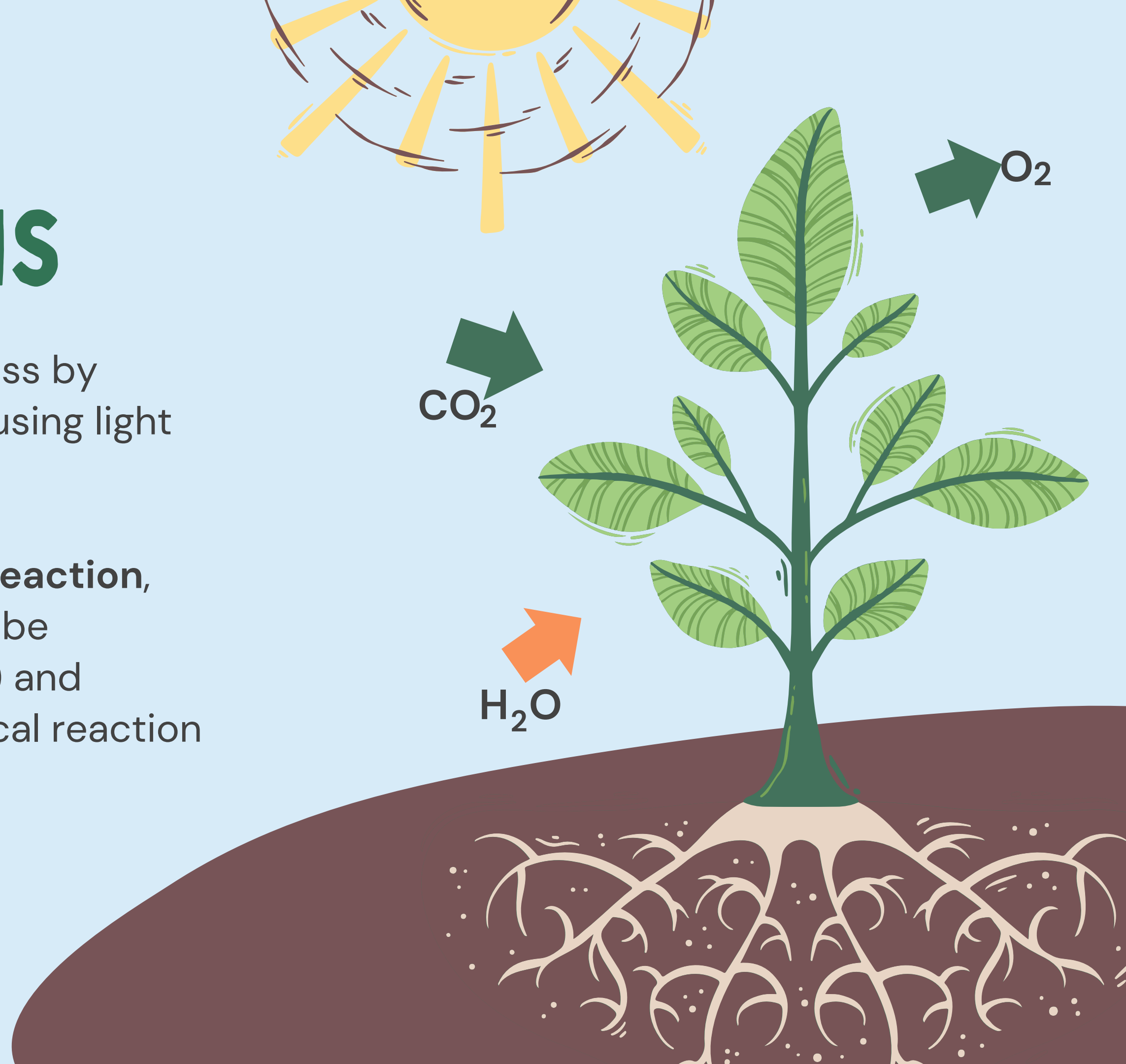
The process behind plants producing their own food and oxygen.



PHOTOSYNTHESIS

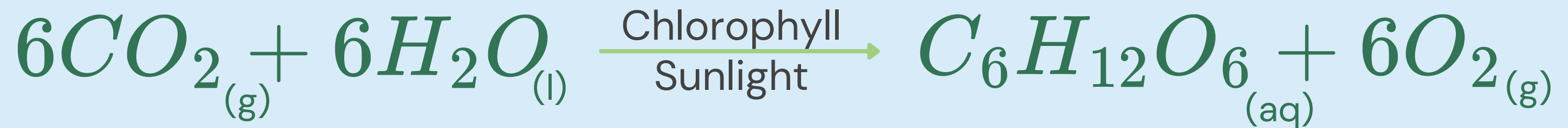
Photosynthesis is a chemical process by which plants create carbohydrates using light energy.

Photosynthesis is an **endothermic reaction**, which means that light energy must be absorbed, together with water (H_2O) and carbon dioxide (CO_2), for the chemical reaction to take place.



PHOTOSYNTHESIS

In the process of photosynthesis, the absorbed light energy converts carbon dioxide and water into **glucose**, with oxygen released as a by-product.

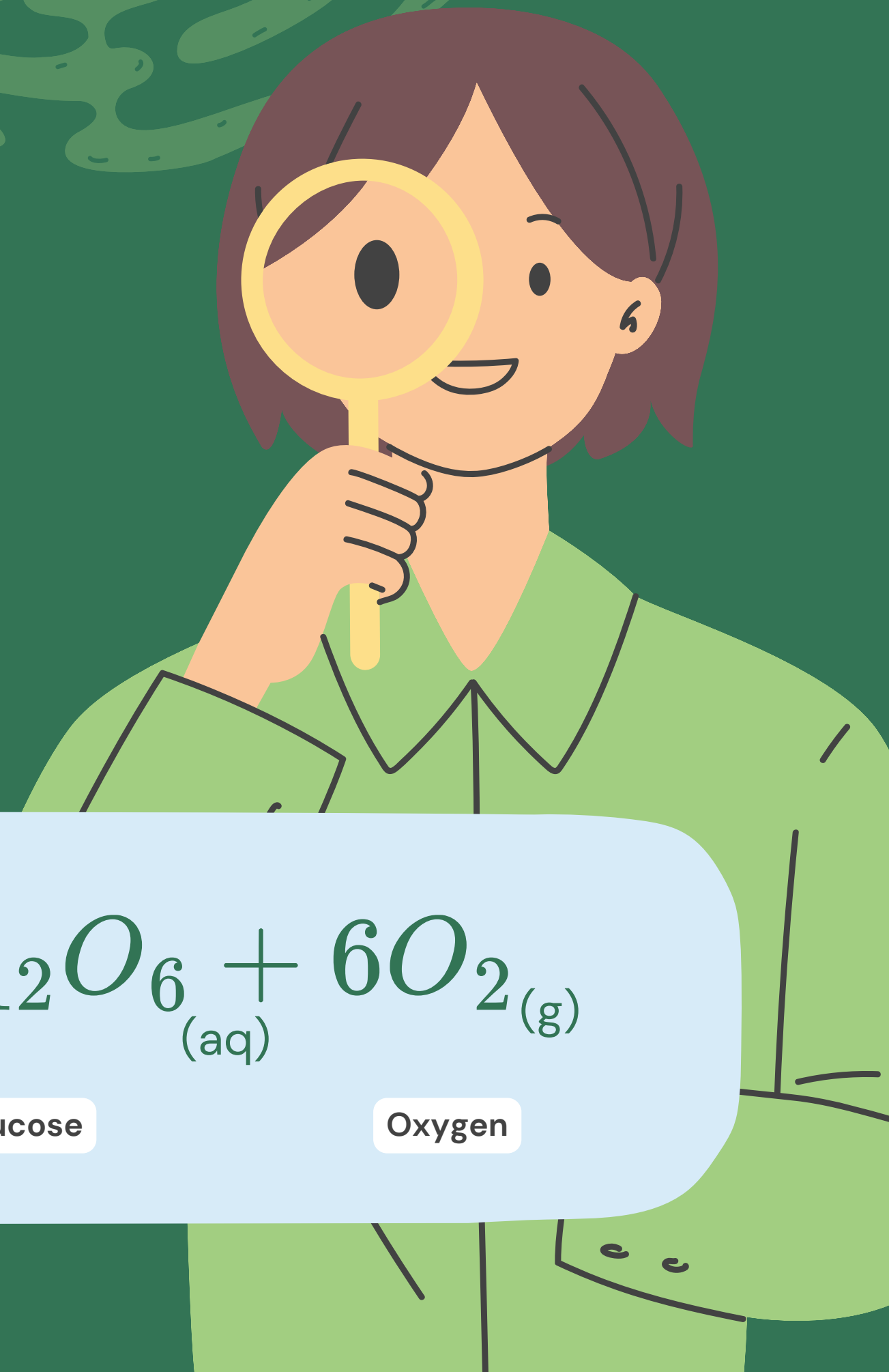


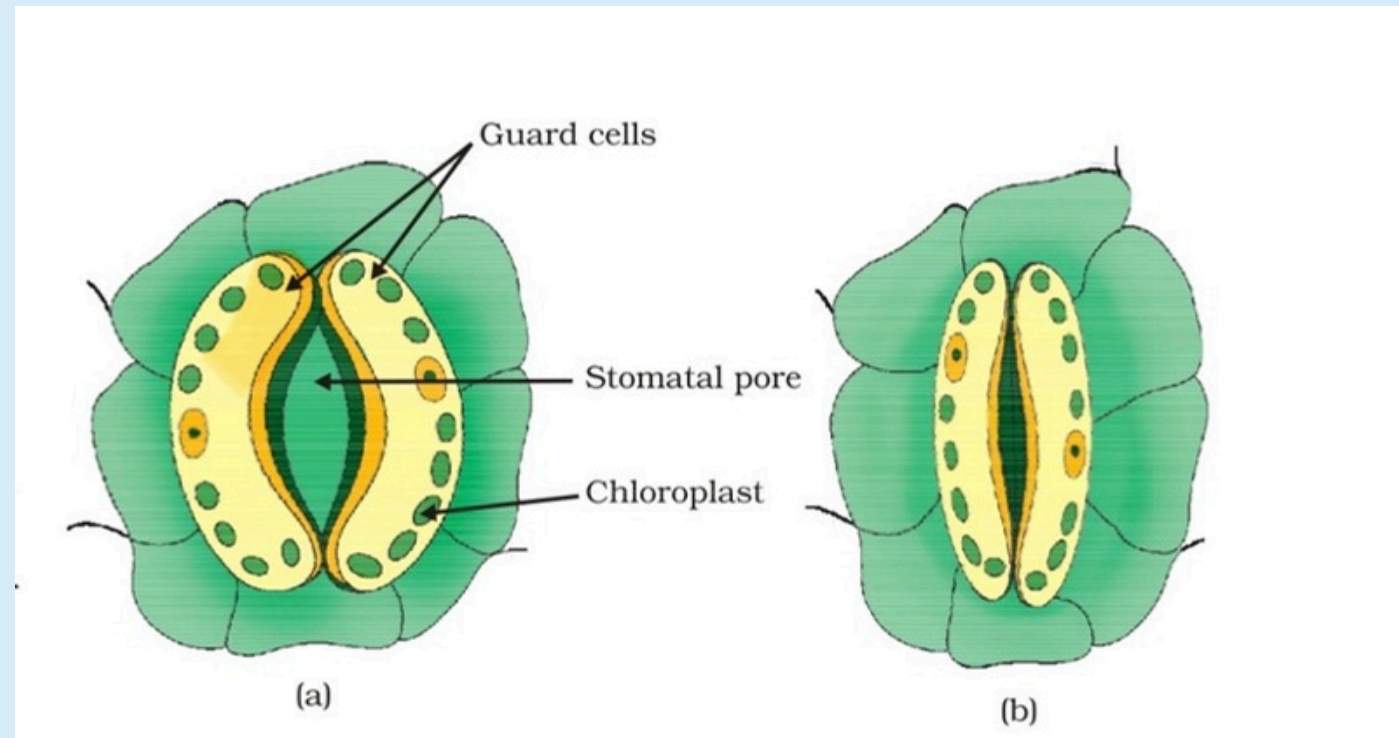
Carbon Dioxide

Water

Glucose

Oxygen





Energy source

Glucose is broken down for respiration, and other cellular activities.

Energy Storage

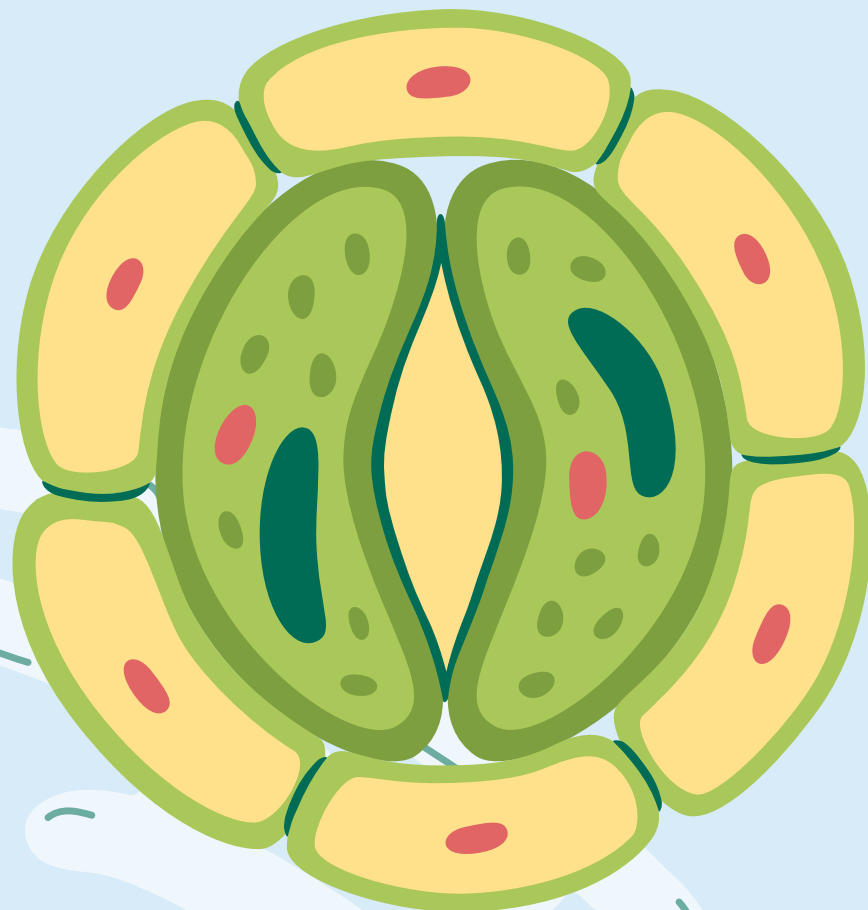
Glucose can be used to form starch for energy storage.

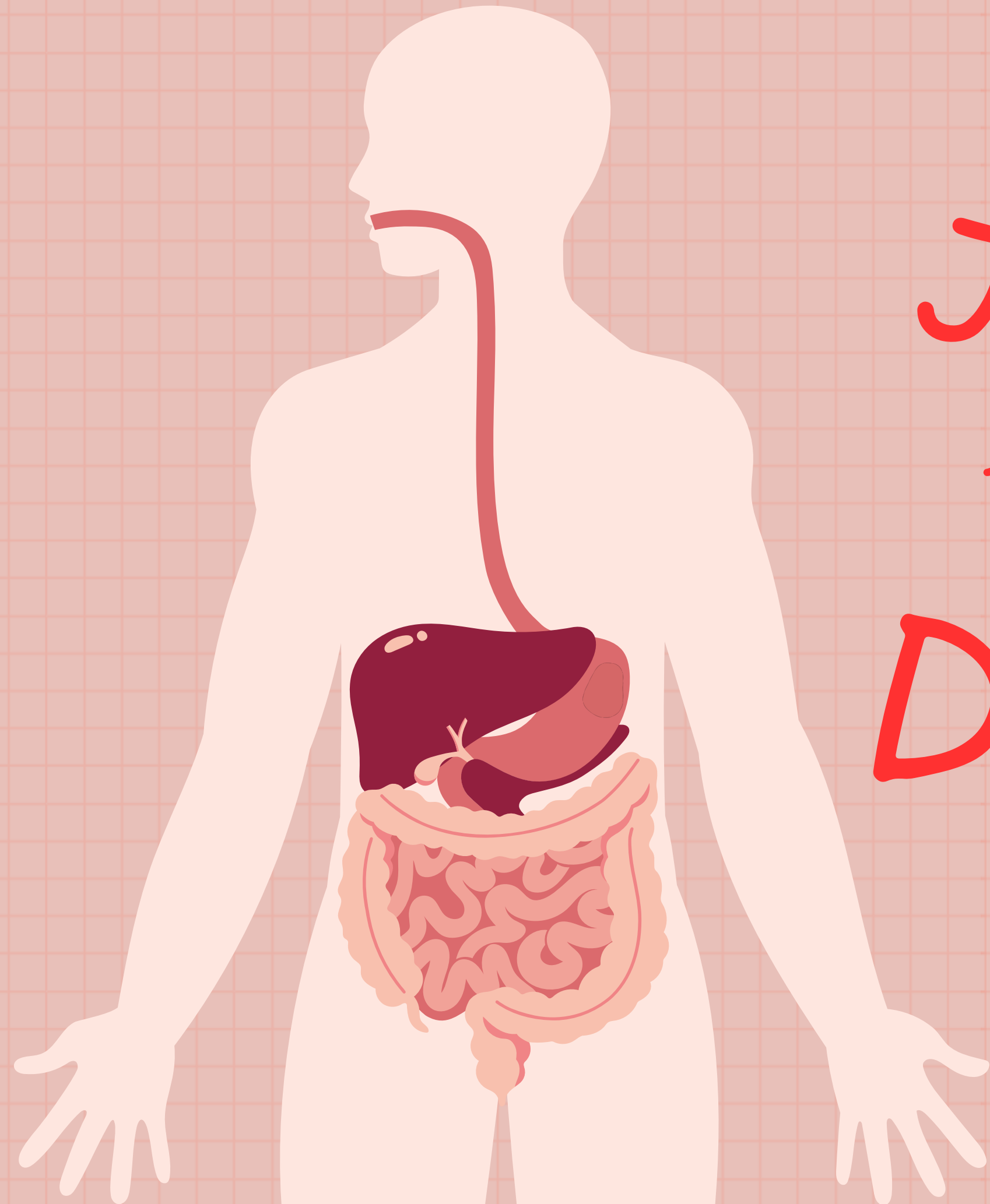
Formation of Complex Carbohydrates

Glucose can be used to form complex carbohydrates like cellulose which is used to build the plant's cell wall.

Synthesis of other compounds

Glucose is used to synthesise complex organic molecules like carbohydrates, proteins and lipids.





Journey through the DIGESTIVE SYSTEM

Organs in the digestive system help the body break down and absorb food.

MOUTH

①

Turns food into small pieces with the help of the teeth and saliva.



ESOPHAGUS

②

Carries food from the mouth to the stomach.





Liver
Produces bile, breaks down fat, and removes toxins

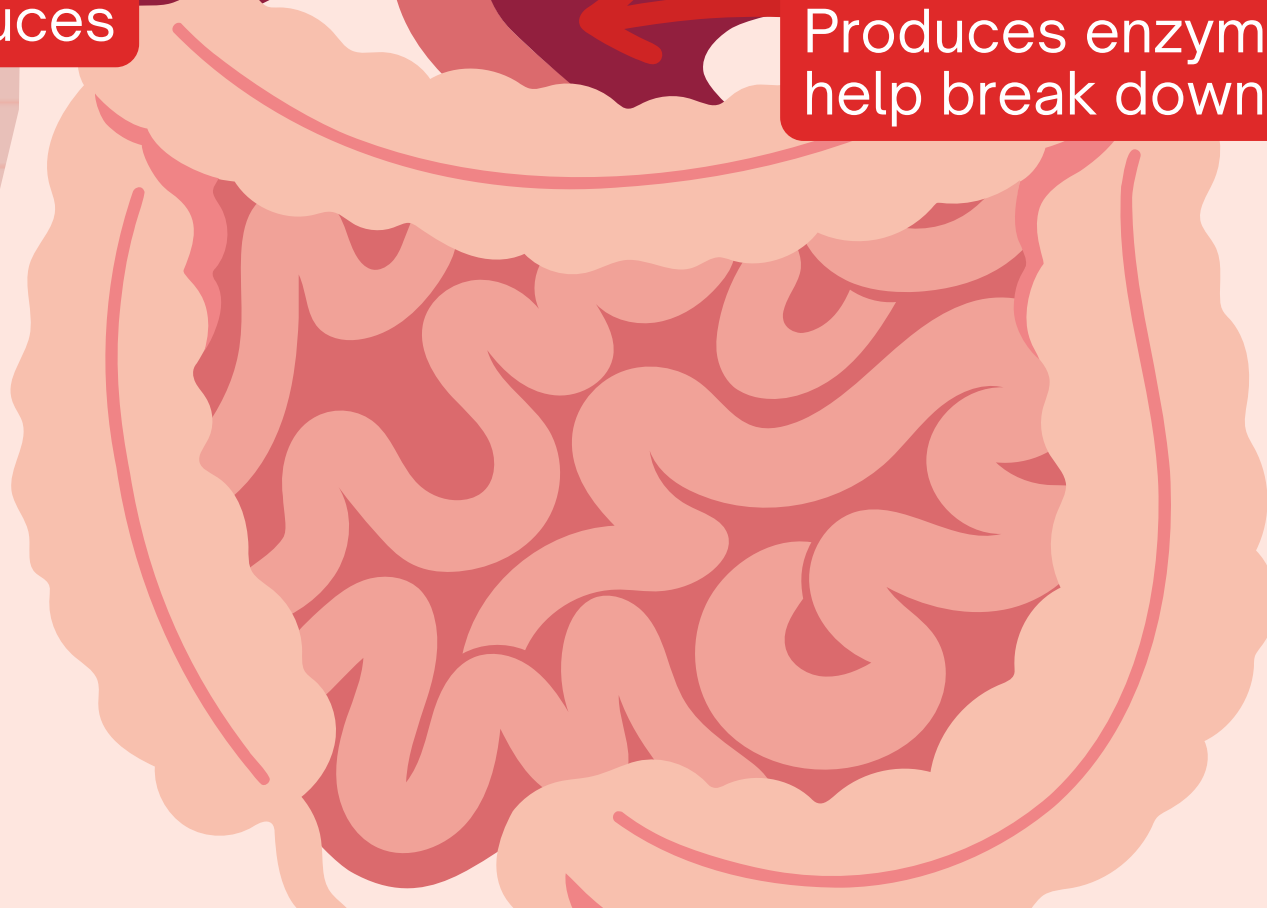
Gallbladder
Stores the bile the liver produces

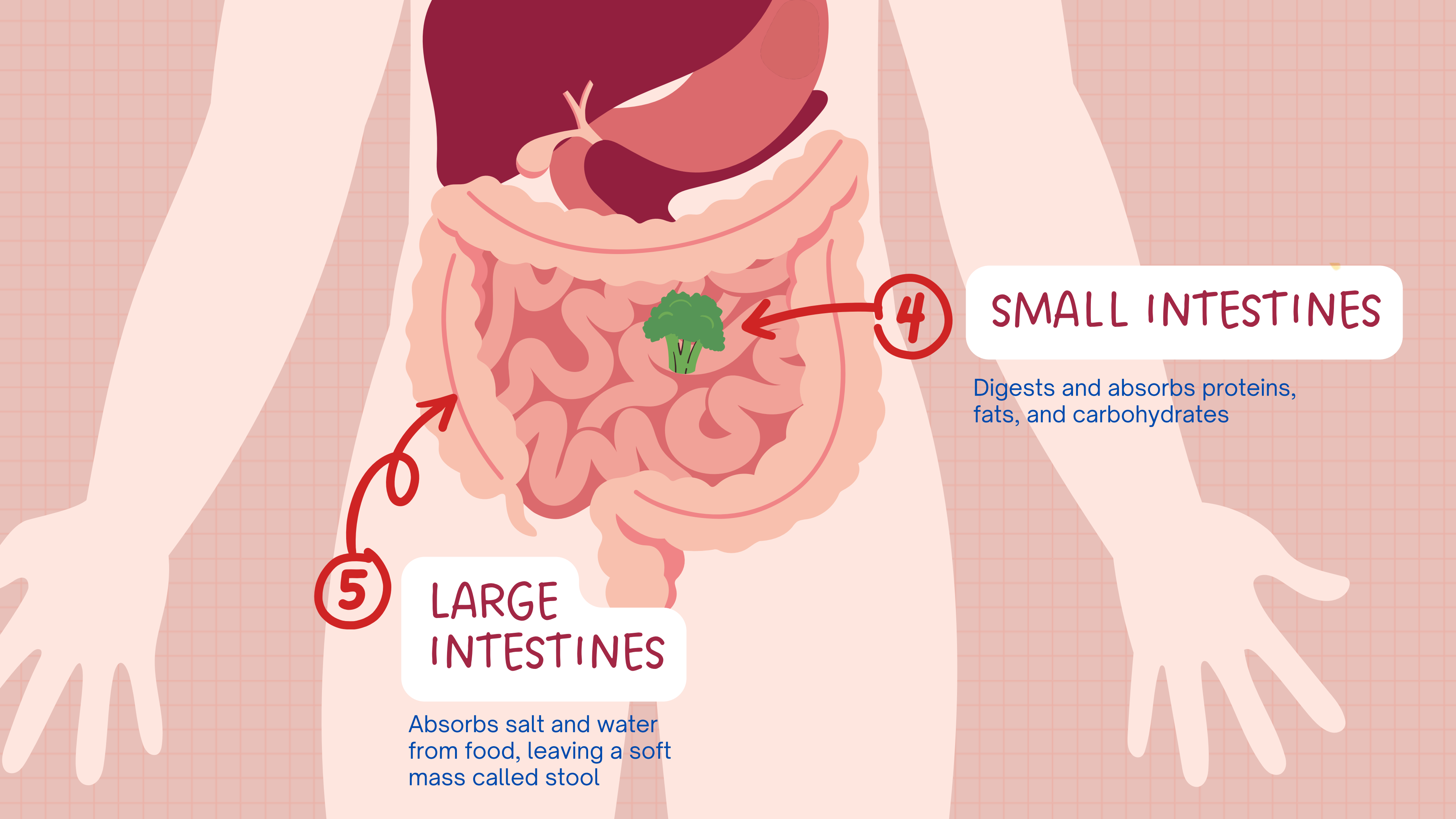
Pancreas
Produces enzymes that help break down food

3

STOMACH

Churns and mixes food with gastric juice





SMALL INTESTINES

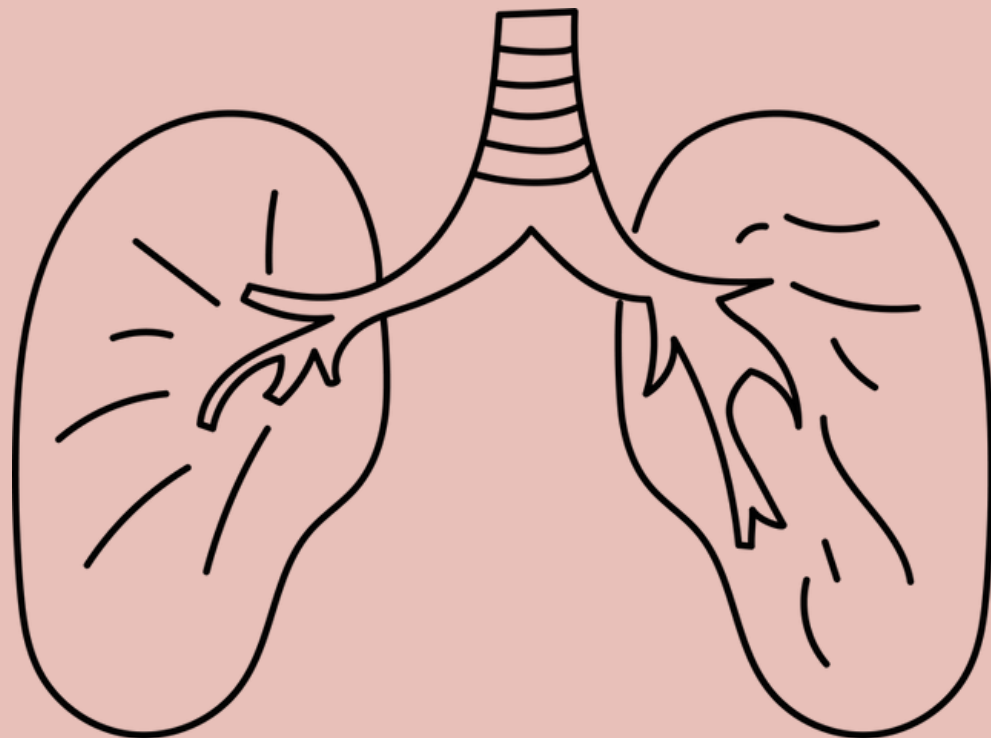
Digests and absorbs proteins, fats, and carbohydrates

LARGE INTESTINES

Absorbs salt and water from food, leaving a soft mass called stool

Respiration

Respiration is the process by which food is burnt in the cells (mitochondria) of the body with the help of oxygen to release energy. Energy is stored in the cells in the form of ATP molecules.



Respiration

Aerobic Respiration

Location: Cytoplasm and mitochondria

Stages: Glycolysis
Link Reaction
The Krebs Cycle
Oxidative Phosphorylation

Oxidation of Glucose: Complete

Total ATP Produced: High (~36 ATP)

Products: CO_2 , H_2O

Anaerobic Respiration

Location: Cytoplasm

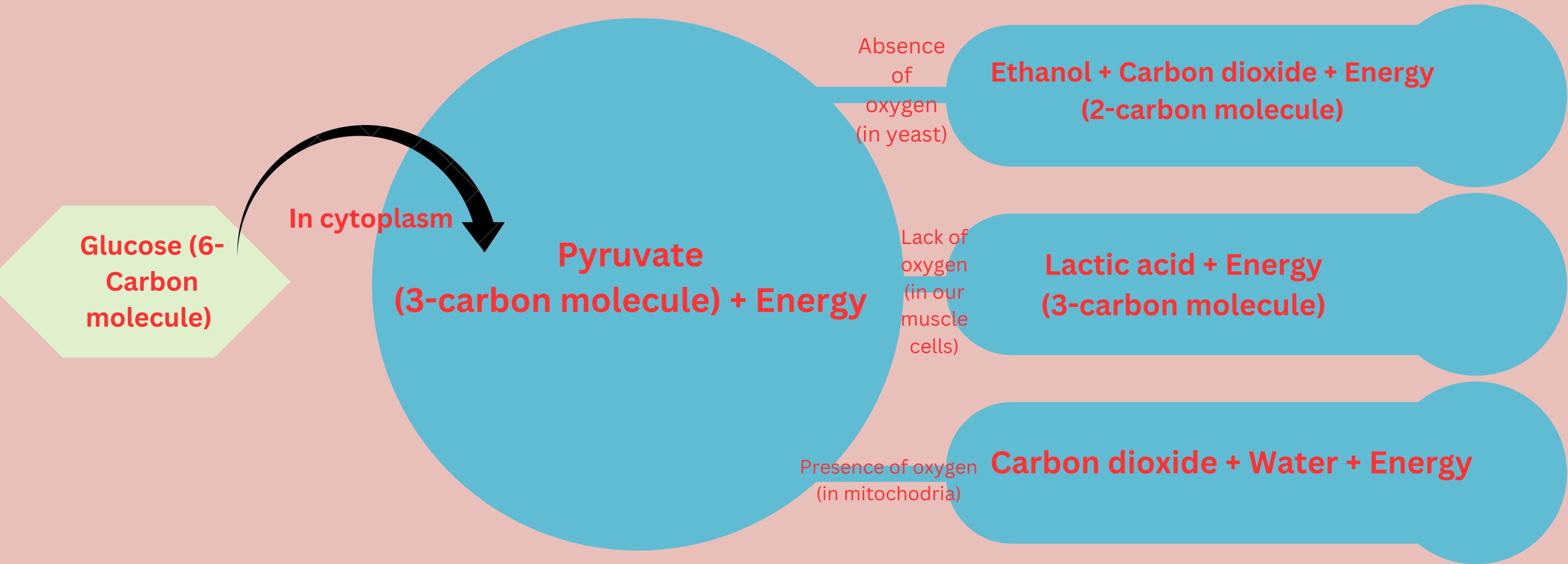
Stages: Glycolysis
Fermentation

Oxidation of Glucose: Incomplete

Total ATP Produced: Low (2 ATP)

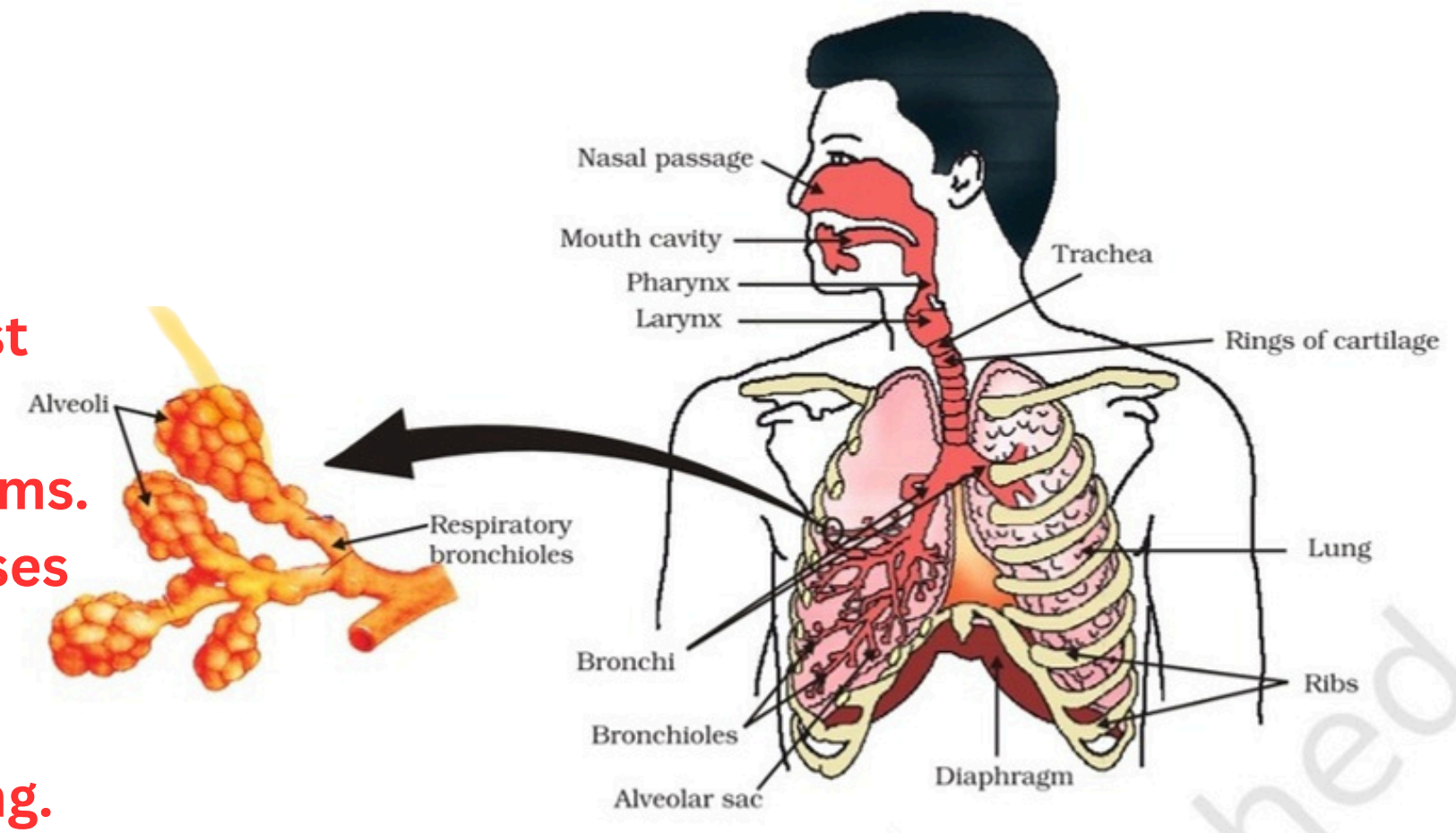
Products: Yeast: CO_2 , ethanol
Mammals: Lactate

Breakdown of Glucose



RESPIRATION IN HUMANS:

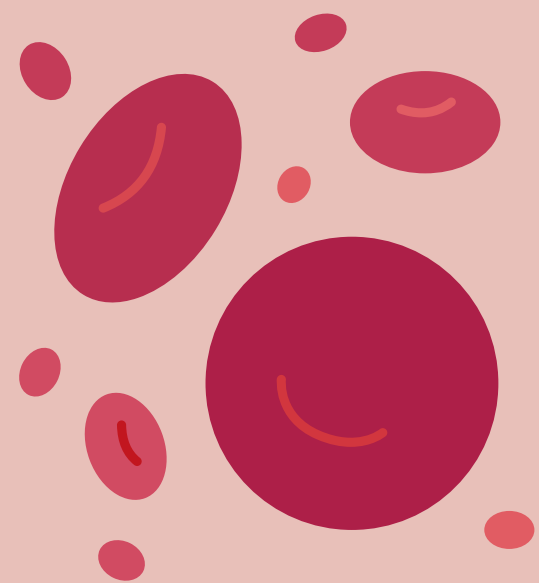
- Nostrils:** Air enters the body through the nostrils.
- Nasal Cavity:** Air is filtered, warmed, and moistened; hairs and moist surfaces remove tiny dirt particles
- Pharynx:** Junction for passage of digestive and respiratory systems.
- Larynx:** Contains vocal cords; produces sound when air passes over them.
- Trachea:** Windpipe channeling air to the lungs.
- Bronchus:** Trachea divides into two bronchi, each leading to a lung.
- Bronchioles:** Smaller branches of bronchi within the lungs.
- Alveolus:** Air sacs where gas exchange occurs; blood capillaries take up oxygen and expel carbon dioxide
- Blood:** Carries oxygen to body cells and collects carbon dioxide from them.



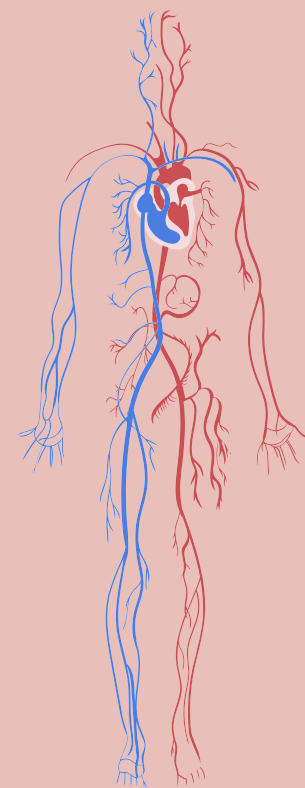
TRANSPORTATION

Movement of water, minerals, nutrients, etc. from one part of the body to other

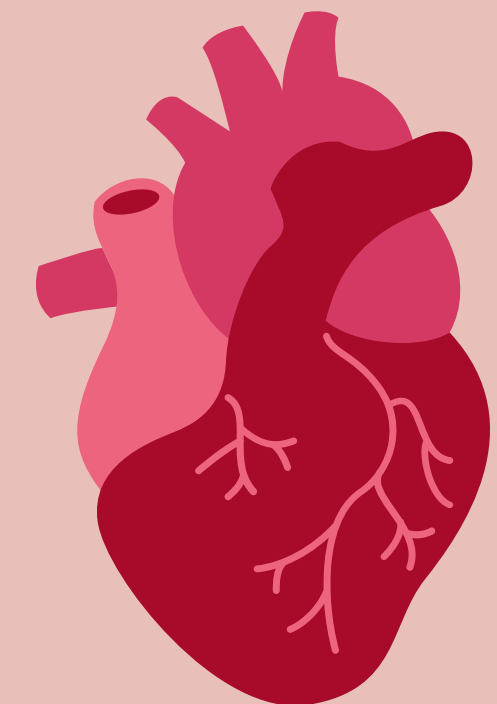
Blood



**Blood
vessels**



Heart



Blood

Blood is a fluid connective tissue that consists of plasma, blood cells and platelets.

Blood cells

Plasma

Platelets

Red Blood Cells

Contain haemoglobin to transport oxygen and carbon dioxide. (red in color)

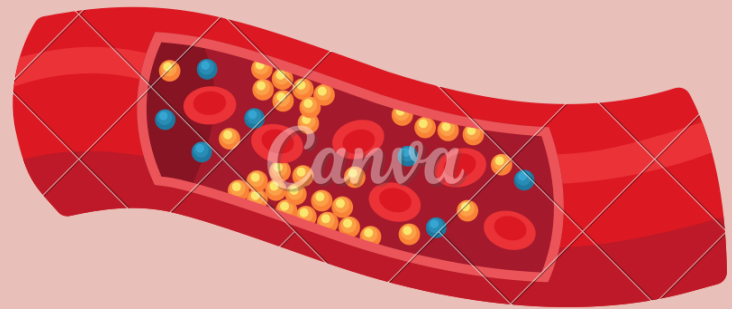
White Blood Cells

Provides Immunity, produce antibodies against disease causing microbes

Fluid medium carrying nutrients, waste products, and other substances. (pale yellowish in color)

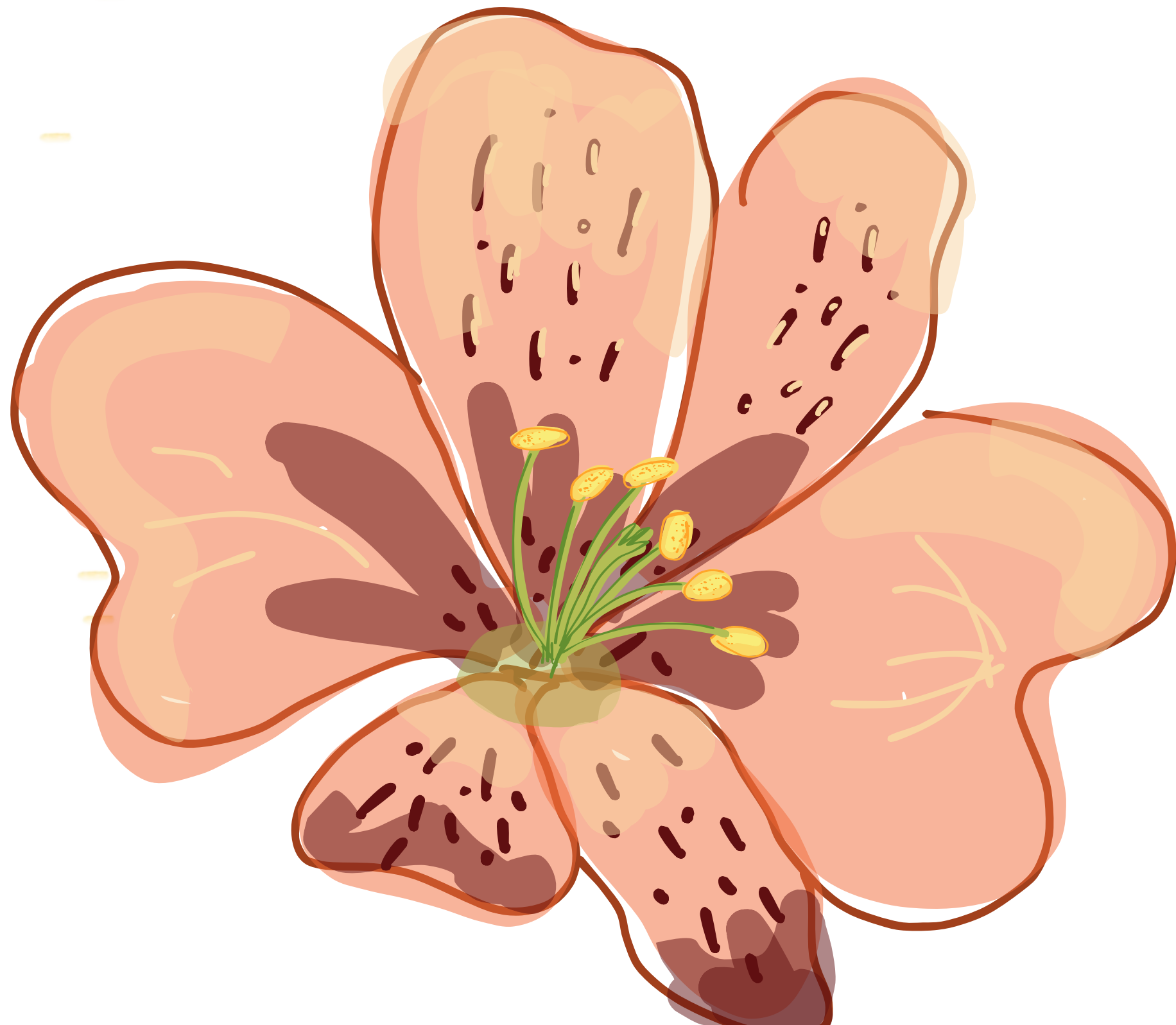
Help in blood clotting to prevent leaks and maintain pressure

Blood vessels



Feature	Arteries	Veins	Capillaries
Direction of Blood	Away from the heart	Towards the heart	Link arteries and veins
Pressure	High	Low	Medium
Oxygen	Oxygenated blood	Deoxygenated blood	Both
Valves	Absent	Present	Absent
Walls	Thick and elastic	Thin	Extremely thin
Function	Carries oxygen and nutrients	Returns blood to heart	Exchange O ₂ and nutrients with cells
Role	Distributes blood pumped by heart	Carries carbon dioxide and other waste	Picks up CO ₂ and waste from cells

Transportation in plant



Plants absorb raw materials like nutrition, phosphorus, minerals from the soil through roots.

**Water
Transport
in Xylem**

**Food Transport in
Phloem
(Translocation)**

Xylem

Conducts water and minerals from roots to leaves.

Transport is unidirectional.
Composed of mainly dead elements.

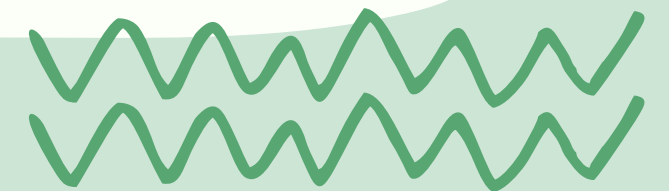
Has four types of cells: Tracheids, Vessels, Xylem parenchyma, and Xylem fibers.



Phloem

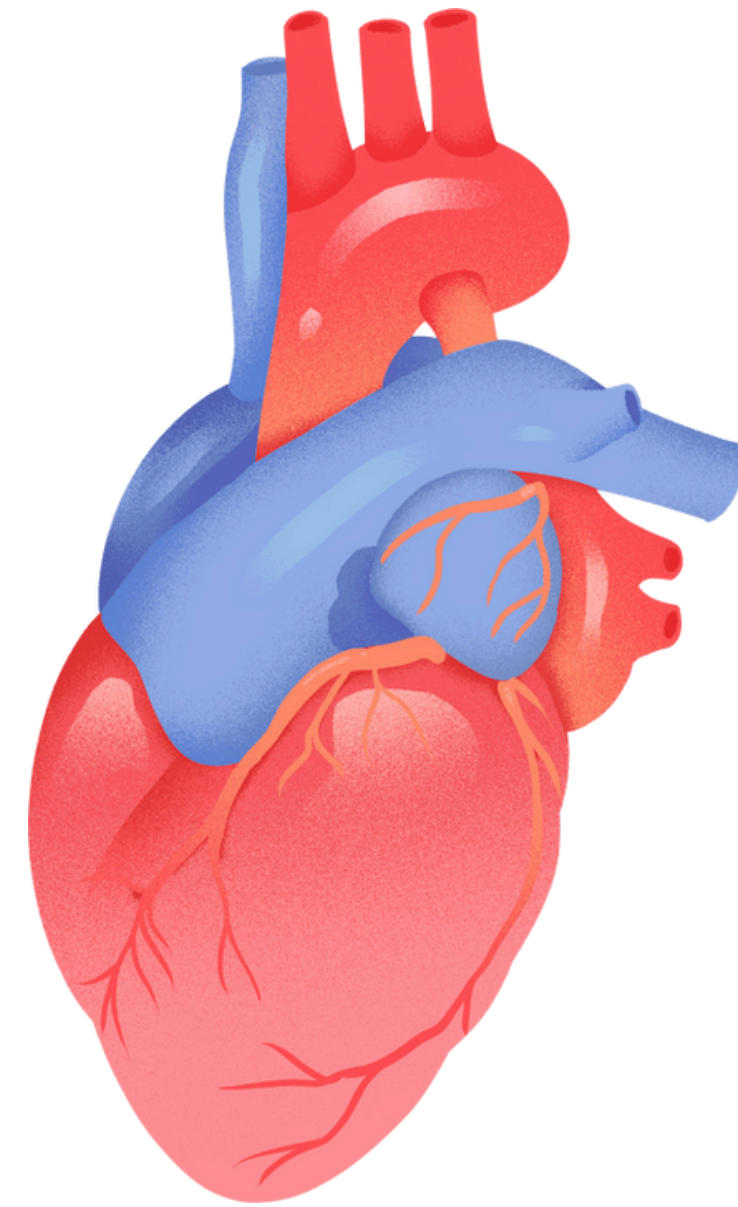
Conducts food from leaves to all parts of the plant. Transport is bidirectional.

Composed of mainly living elements. Has four types of cells: Phloem fibers, Companion cells, Sieve tubes, and Phloem parenchyma.

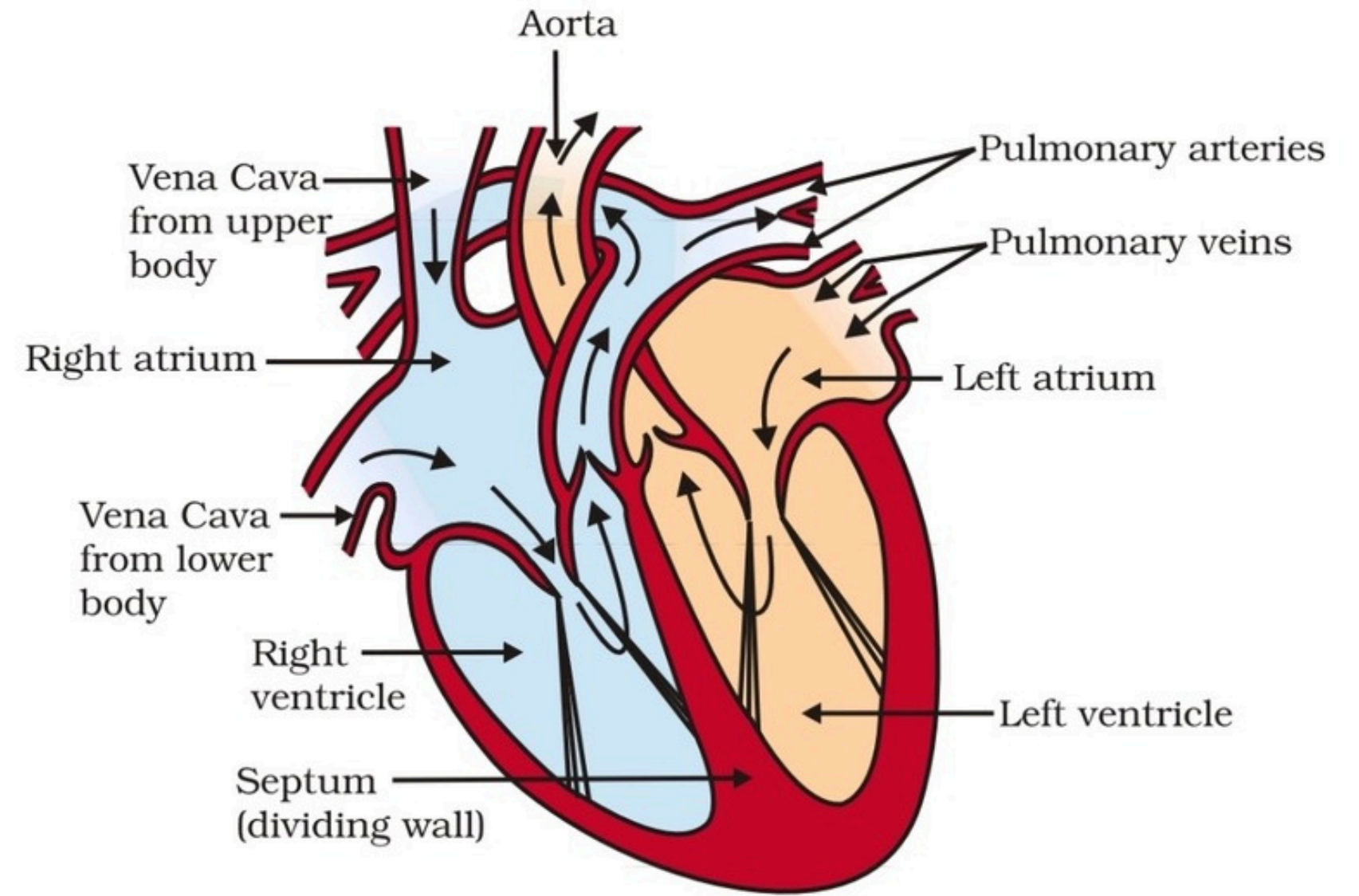
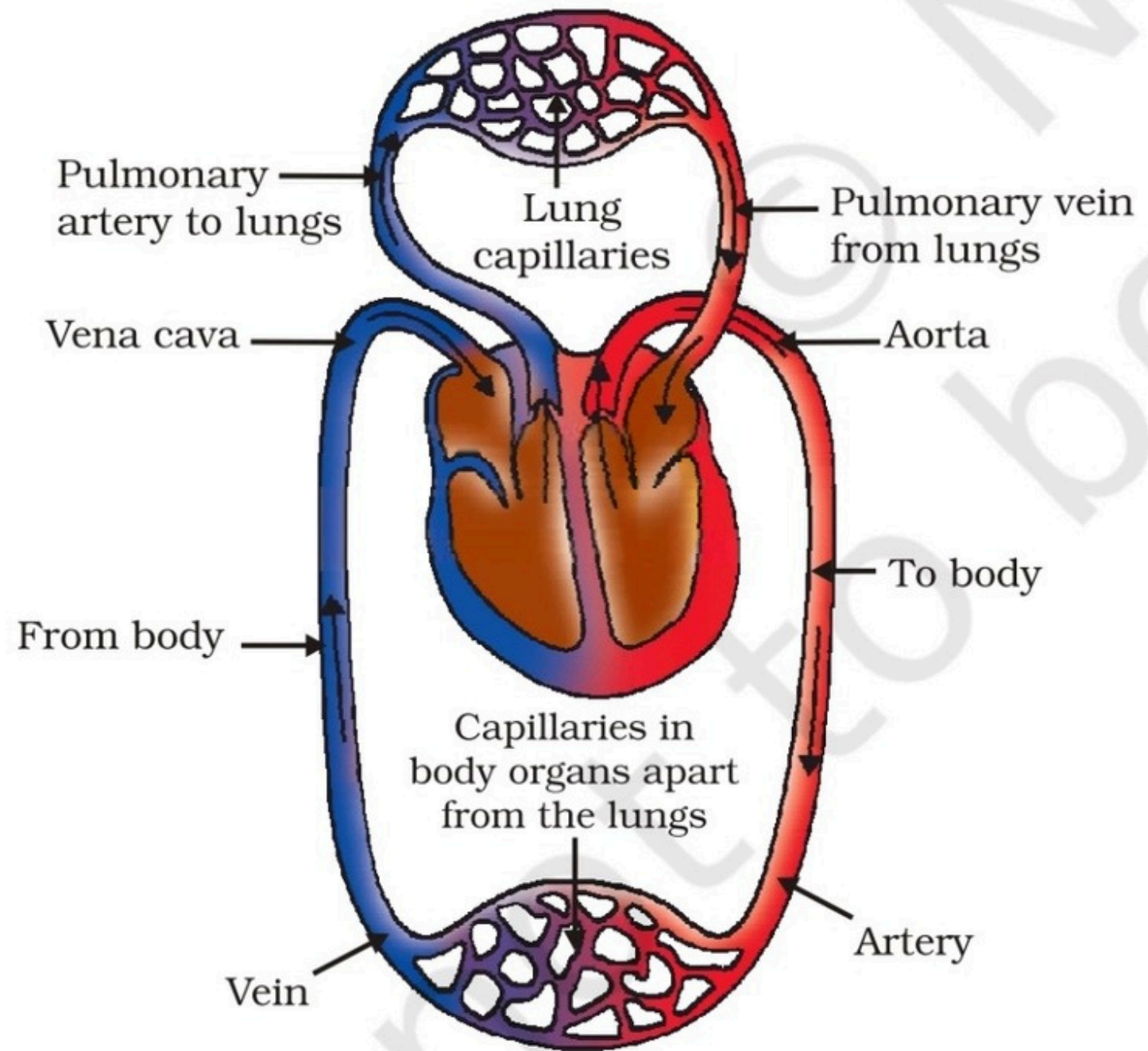


Transportation in Human

Heart - Muscular organ, Located in chest cavity, as big as fist. It is a blood pumping organ that pumps oxygenated and deoxygenated blood to and from the lungs and the rest of the body.



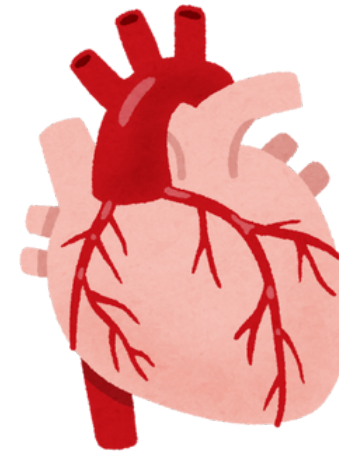
Heart important diagram



Chambers in heart - To prevent mixing of oxygenated and deoxygenated blood. More oxygen will be supplied to body organs in better way. Highly efficient supply of oxygen to the body. More respiration leading to more energy production.

ATRIUM

From the upper chambers. Two types~ Right atrium and left atrium. Consists of thin wall. Collects blood and supply it to the ventricles. Consist of SA node and pacemaker cells.



Double Circulation

VENTRICLE

From the lower chambers. Two types ~ right ventricle and left ventricle . Consist of thick wall. Push blood throughout the body. Consists of punkinje fibres.

Excretion in Human Being

Location: Abdomen, one on either side of the backbone.

Function: Filter waste products from the blood to produce urine. The basic filtration units in the kidneys are nephrons, which consist of a cluster of thin-walled blood capillaries associated with a cup-shaped end of a tube that collects the filtered urine. Nephrons selectively reabsorb useful substances like glucose, amino acids, salts, and water as the urine flows along the tube.

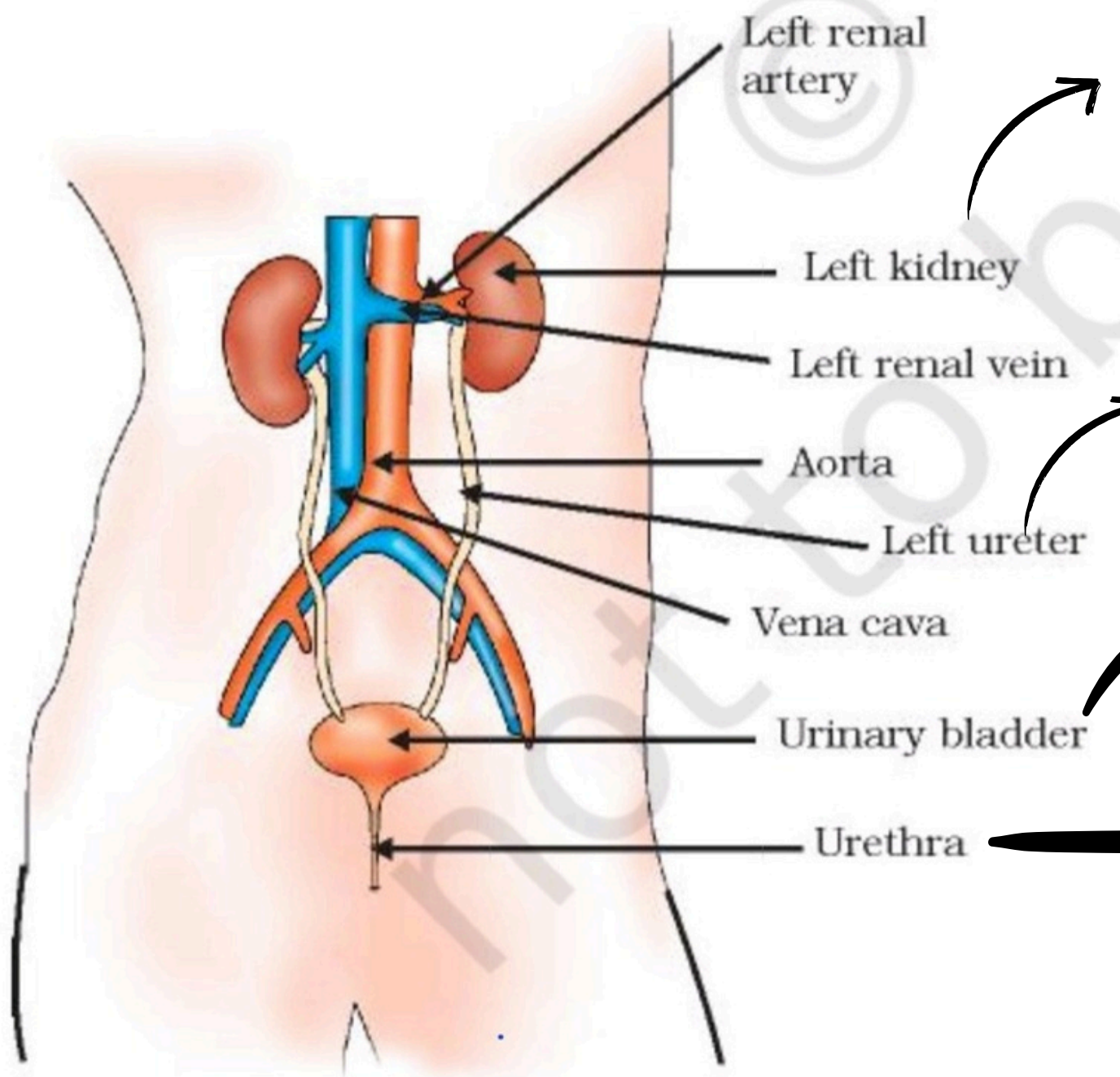
Location: Tubes connecting the kidneys to the urinary bladder.

Function: Transport urine from the kidneys to the urinary bladder.

Location: Pelvic region. **Function:** Stores urine until it is ready to be expelled from the body. The bladder is muscular and under nervous control, allowing us to control the urge to urinate.

Location: Tube leading from the urinary bladder to the outside of the body.

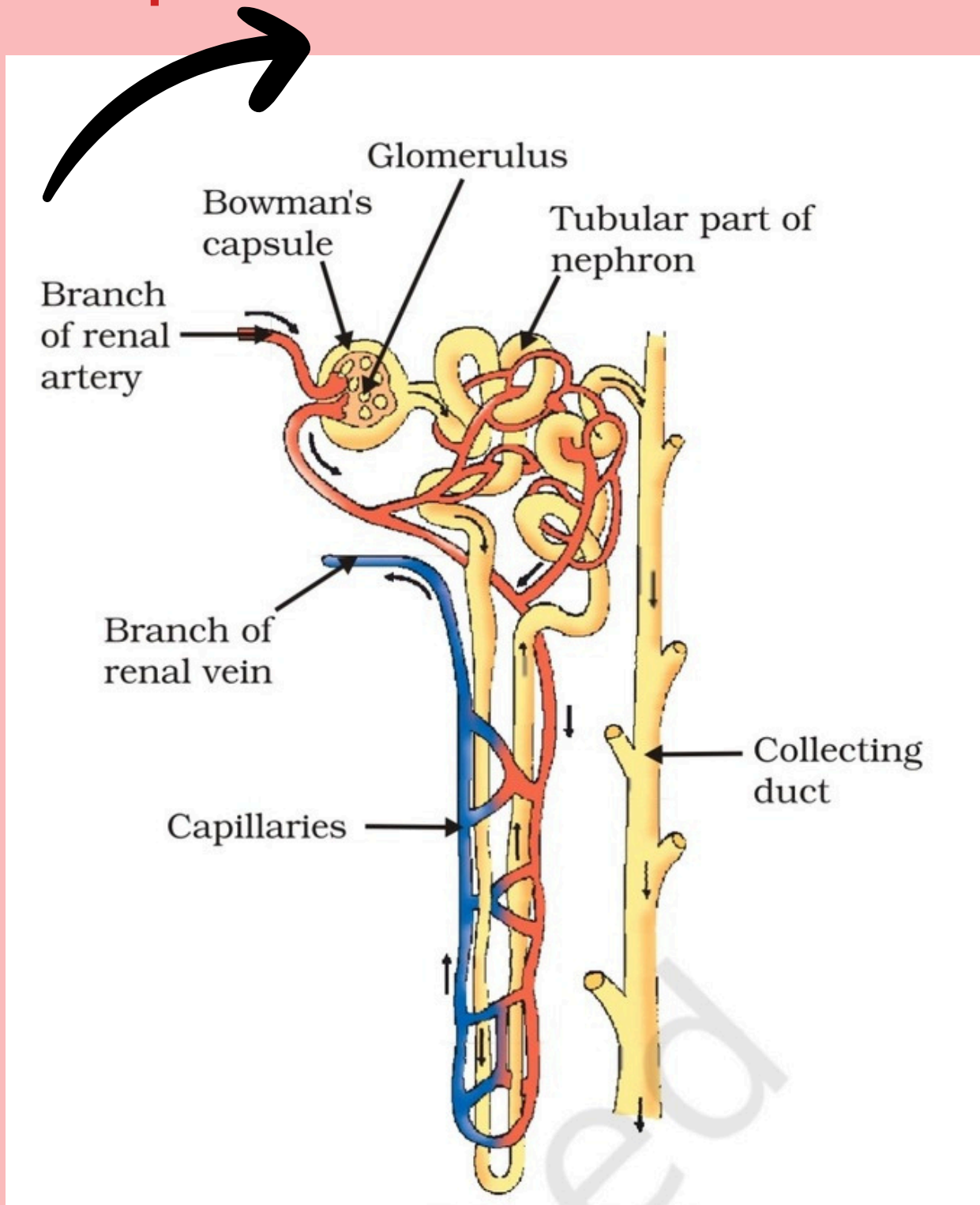
Function: Allows urine to be excreted from the body



Excretion in Human Beings

Structural & functional unit of kidney/excretion system.

Responsible for filtration of blood. There are millions of nephron in each kidney.



Glomerular Filtration: Blood enters the kidneys, and in the nephrons, nitrogenous wastes, glucose, water, amino acids, and excess salts are filtered out. This initial filtrate enters the Bowman's capsule of each nephron.

Selective Reabsorption: As the filtrate moves through the nephron, useful substances such as glucose, amino acids, salts, and a significant amount of water are reabsorbed back into the blood by the capillaries surrounding the nephron.

Tubular Secretion: Urea, additional water, and excess salts are secreted into the tubule, which then opens into the collecting duct. The urine then flows from the collecting ducts into the ureters.

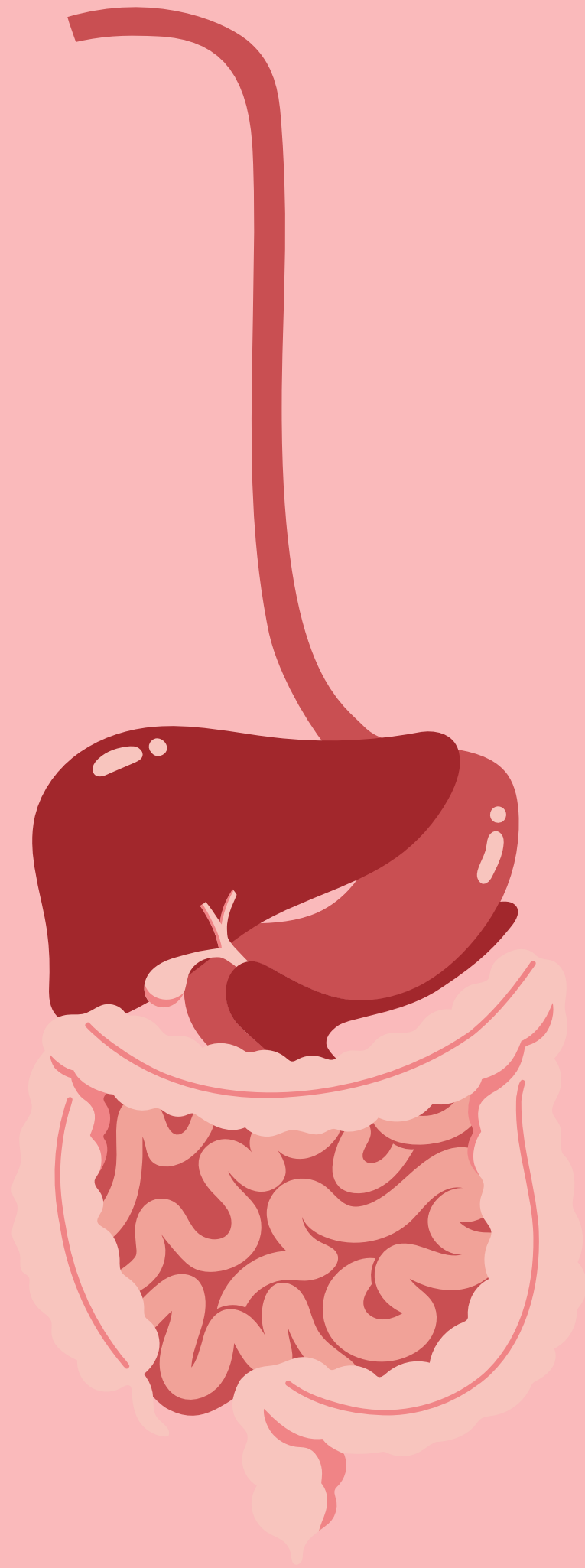
Excretion in Human Beings

Urine Formation: After filtration and reabsorption, the remaining fluid is urine, containing waste products and extra water.

Transport: Urine travels from the kidneys through the ureters to the urinary bladder.

Storage: Urine is stored in the urinary bladder until it becomes full.

Excretion: When the bladder is full, the nervous system triggers the urge to urinate, and urine is released from the bladder through the urethra and out of the body





Excretion in plants

OXYGEN AS A WASTE PRODUCT: OXYGEN, PRODUCED DURING PHOTOSYNTHESIS, IS CONSIDERED A WASTE PRODUCT AND IS RELEASED THROUGH THE PROCESS OF TRANSPIRATION. **DEALING WITH GASES:** PLANTS MANAGE EXCESS OXYGEN AND CARBON DIOXIDE THROUGH STOMATA DURING GAS EXCHANGE.

TRANSPIRATION: EXCESS WATER IS REMOVED BY TRANSPIRATION THROUGH STOMATA IN LEAVES.

DEAD TISSUES AND LEAF SHEDDING: PLANTS USE DEAD CELLS AND SHED LEAVES TO ELIMINATE WASTE. WASTE

PRODUCTS ARE OFTEN STORED IN PARTS OF THE PLANT THAT WILL BE DISCARDED.

CELLULAR VACUOLES: MANY WASTE PRODUCTS ARE STORED IN THE VACUOLES OF PLANT CELLS.

STORAGE IN LEAVES: SOME WASTE PRODUCTS ARE STORED IN LEAVES THAT EVENTUALLY FALL OFF THE PLANT.

RESINS AND GUMS: OLD XYLEM STORES WASTE PRODUCTS IN THE FORM OF RESINS AND GUMS.

EXCRETION INTO SOIL: PLANTS CAN ALSO EXCRETE SOME WASTE SUBSTANCES DIRECTLY INTO THE SOIL AROUND THEIR ROOTS.



Thanks for Watching

Please Like, Comment and Subscribe