10 Must-Know Biology Diagrams

Learn & Grow with Ritika

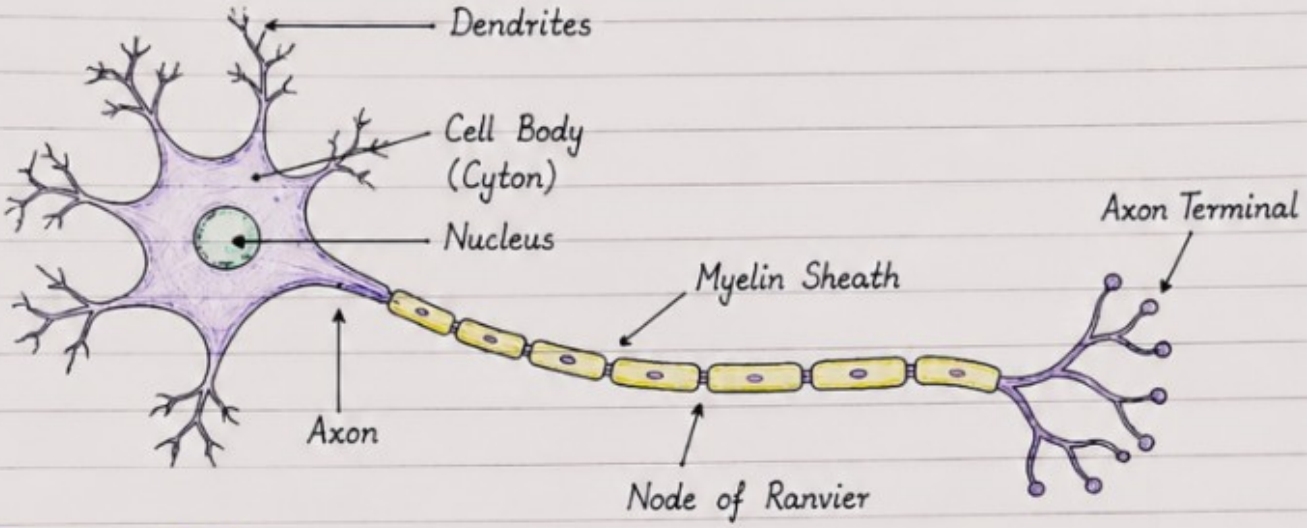
CBSE & ICSE Class 9-12 · Free study resource

1. Neuron

Page No.:
Date:

Neuron

A neuron is the structural and functional unit of the nervous system.



Structure of Neuron :

1. Dendrites – Receive impulse from receptors or other neurons.
2. Cell Body (Cyton) – Contains nucleus and controls all activities.
3. Axon – Long fiber that carries impulses away from cell body.
4. Myelin Sheath – Fatty covering that insulates the axon and increases the speed of impulse.
5. Node of Ranvier – Small gaps in myelin sheath that help in fast transmission.
6. Axon Terminal – End branches that transmit impulses to the next neuron or effector.

Transmission of Nerve Impulse :

Nerve impulse travels in one direction : Dendrites → Cell Body → Axon → Axon Terminal.

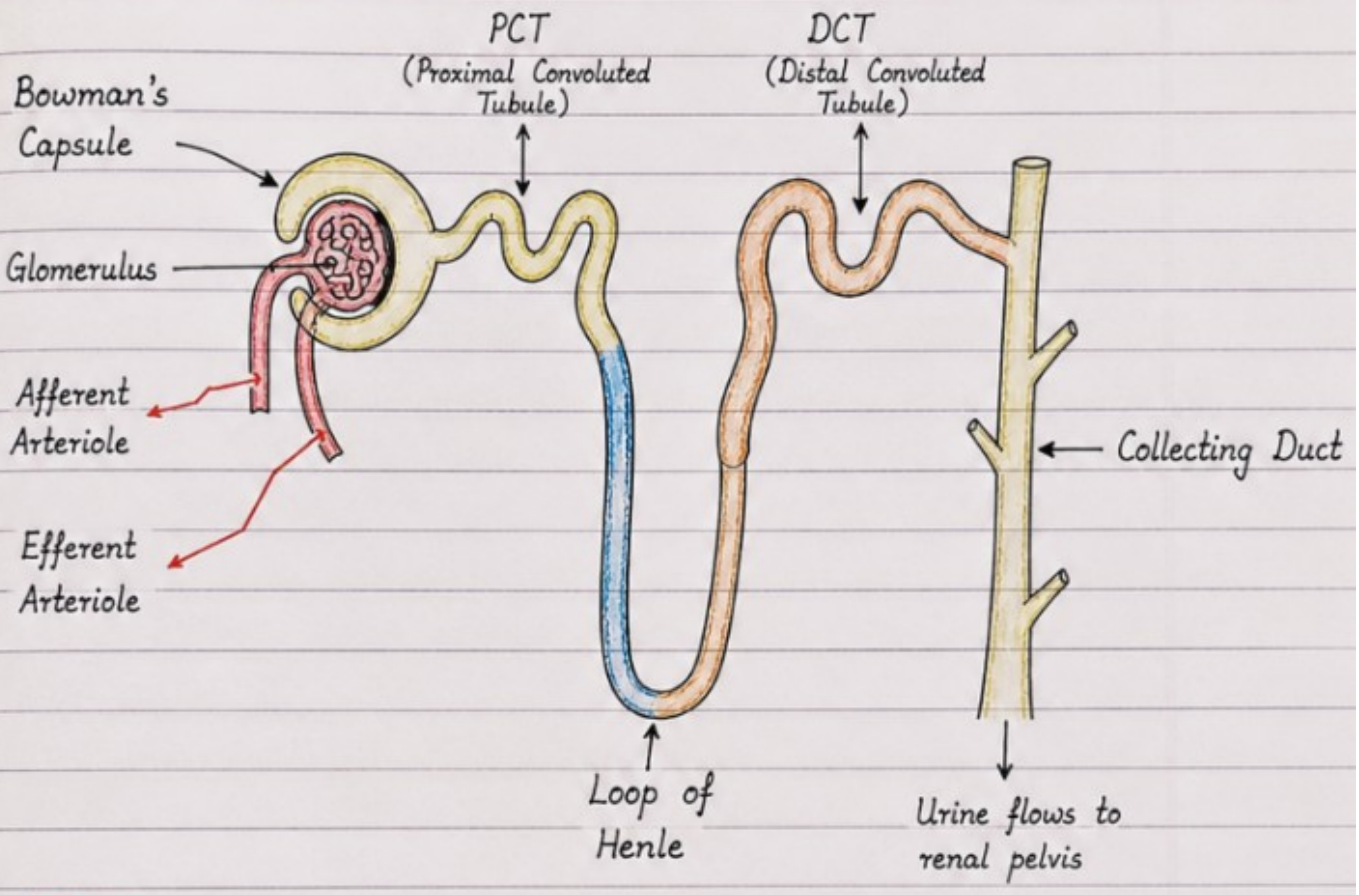
1. When a stimulus is received, an electrical impulse is generated.
2. Impulse travels through dendrites to the cell body.
3. From the cell body, it travels along the axon.
4. At the axon terminal, chemical substances (neurotransmitters) are released.
5. These chemicals cross the synapse and start a new impulse in the next neuron or reach the effector (muscle/gland).

★ Neurons work together to transmit messages and control all the functions of the body. ★

2. Structure of Nephron

Structure of Nephron

Page No.: 23
Date: 23/05



1. **Filtration :**

→ Blood enters the glomerulus through afferent arteriole. Due to high blood pressure, water and small solutes (urea, salts, glucose, etc.) are filtered into Bowman's capsule.

2. **Reabsorption :**

→ Useful substances like glucose, amino acids, salts and most of the water are reabsorbed into the blood capillaries around PCT, Loop of Henle and DCT.

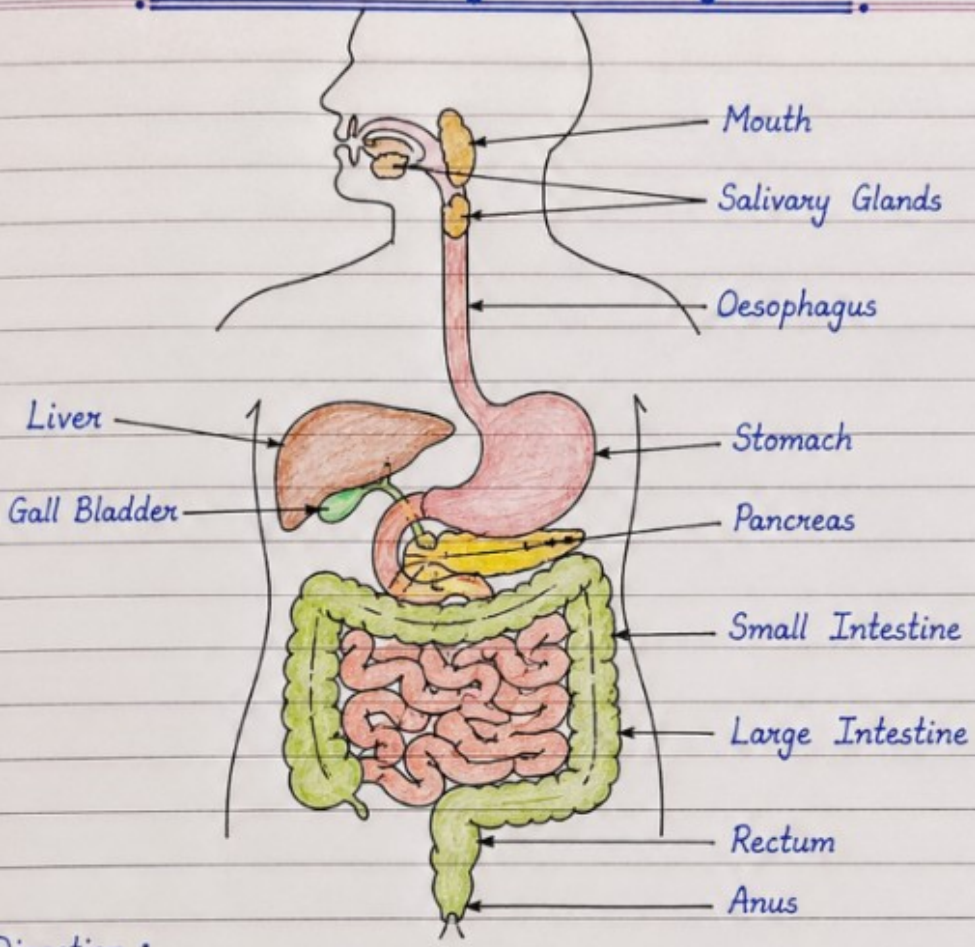
3. **Urine Formation :**

→ After reabsorption, the remaining waste products like urea, excess salts and water form urine. Urine collects in collecting duct and flows to renal pelvis → ureter → urinary bladder → urethra.

Thus, the nephron performs three main functions – filtration, reabsorption and urine formation. ☆

3. Human Digestive System

Human Digestive System



Digestion :

1. The process of breaking down of complex food into simple and soluble substances is called digestion.
2. It begins in the mouth where saliva moistens food and the enzyme salivary amylase starts the digestion of starch.
3. The food then passes through oesophagus into the stomach.
4. In the stomach, gastric juice (HCl and pepsin) digests proteins.
5. Partially digested food enters the small intestine. Bile from liver and enzymes from pancreas complete the digestion of carbohydrates, proteins and fats.

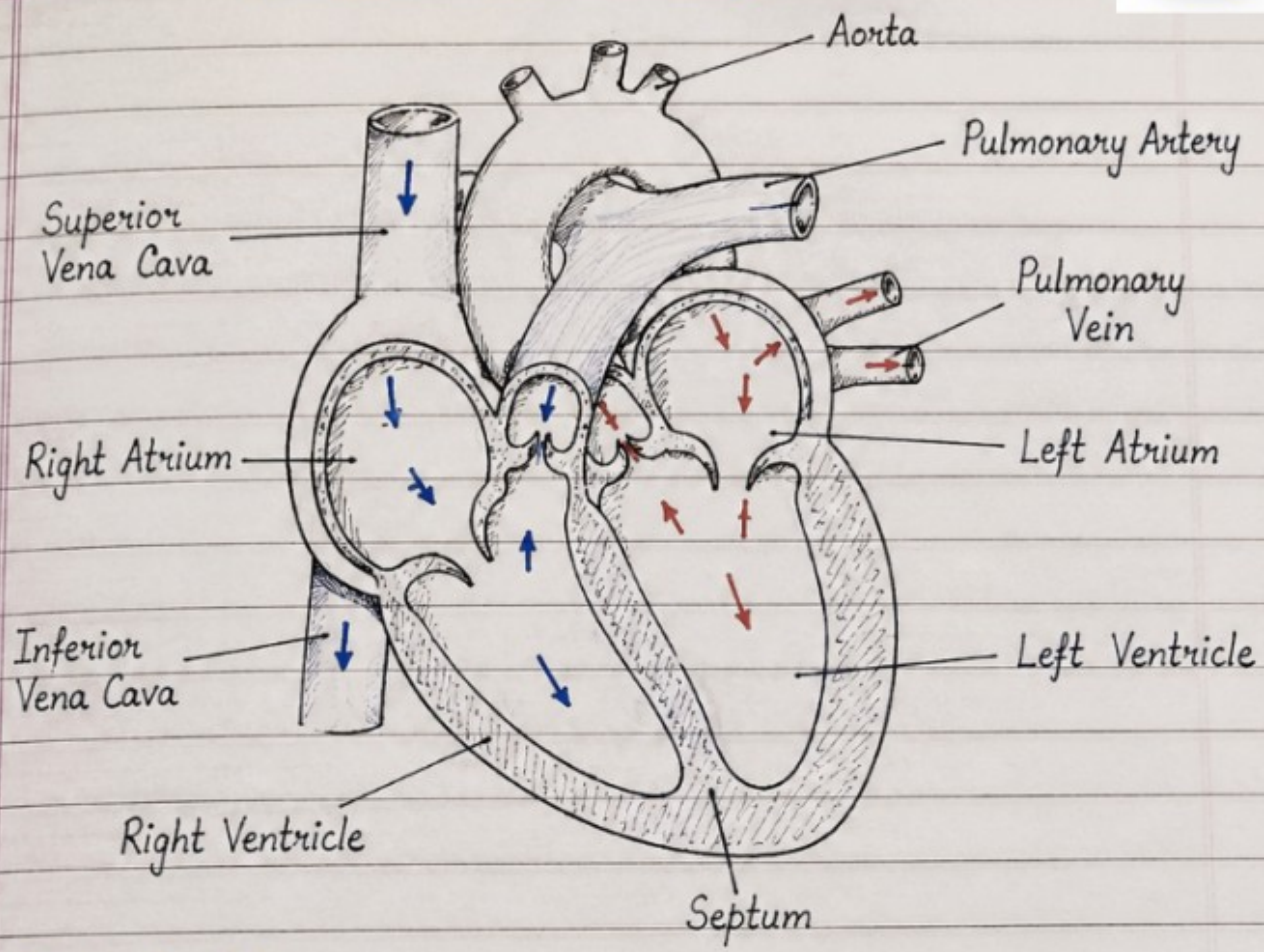
Absorption :

1. Absorption of digested food takes place mainly in the small intestine.
2. Nutrients pass through the villi of the intestinal wall into the blood capillaries.
3. Water and some salts are absorbed in the large intestine.
4. The undigested food is stored in the rectum and egested out through anus.

Thus, the digestive system helps in digestion, absorption and assimilation of food for energy, growth and repair of the body. ★

4. Human Heart

Human Heart



Double Circulation :

1. Blood passes through the heart twice during one complete cycle.
2. It consists of pulmonary circulation and systemic circulation.
3. Deoxygenated blood goes from heart to lungs and oxygenated blood comes back to the heart.
4. Oxygenated blood is then pumped by the heart to all parts of the body.

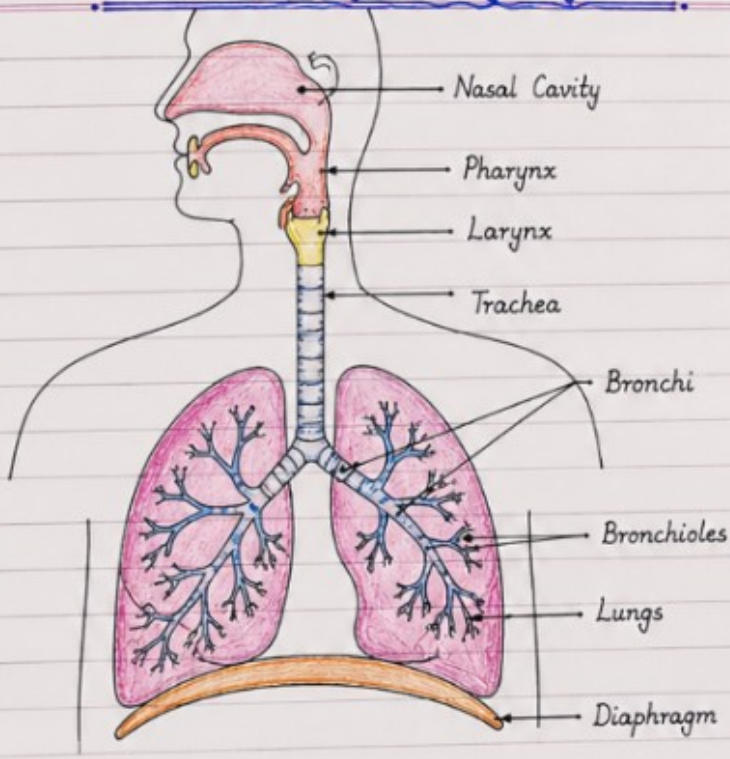
Function of Heart :

1. The heart pumps blood throughout the body.
2. It supplies oxygen and nutrients to all body cells.
3. It removes carbon dioxide and other wastes from the body.
4. It maintains blood pressure and ensures continuous blood flow.
5. The heart works involuntarily and never tires.

5. Respiratory System & Stomata

Human Respiratory System

Page No.: 25
Date: 23/05/



Notes :

- We take in air rich in oxygen through the nasal cavity.
- The air passes through pharynx, larynx and trachea.
- Trachea divides into two bronchi which enter the lungs.
- Inside the lungs, bronchi divide into bronchioles which end in tiny air sacs called alveoli.
- Oxygen from the air diffuses into the blood in alveoli and carbon dioxide from the blood diffuses into the air sacs to be exhaled out.

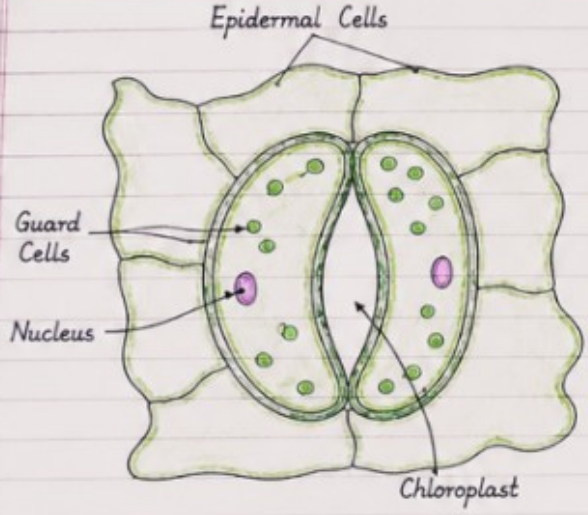
Breathing :

- Inhalation : Diaphragm contracts and moves downward. Rib muscles contract and ribs move upward and outward. Volume of chest cavity increases and air rushes in.
- Exhalation : Diaphragm relaxes and moves upward. Rib muscles relax and ribs move downward and inward. Volume of chest cavity decreases and air is expelled out.

Gas Exchange :
In the alveoli, oxygen diffuses into the capillaries and carbon dioxide diffuses from blood into the alveoli. This process is called gas exchange.

Stomata

Page No.: 32
Date: 24/05/24



- **Structure :**
  Stomata are tiny pores present mainly on the lower surface of leaves. Each stoma has two guard cells containing chloroplasts and a nucleus. The pore between guard cells is called stomatal pore.
- **Functions :**
  1. Transpiration : Water vapour from inside the leaf diffuses out through stomata.
  2. Gaseous Exchange : Carbon dioxide enters the leaf for photosynthesis and oxygen comes out.

Note : The opening and closing of stomata is controlled by the guard cells due to change in their turgidity. ★