

TRANSPORT IN PLANTS AND ANIMALS - Form 2 Biology Notes

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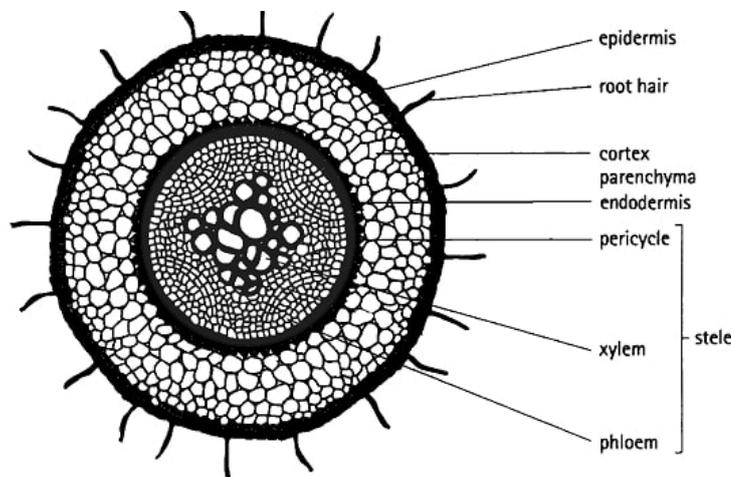
[Introduction](#)

- Transport is the movement of substances within an organism.
- All living cells require oxygen and food for various metabolic processes.
- These substances must be transported to the cells.
- Metabolic processes in the cells produce excretory products which should be eliminated before they accumulate.
- The excretory products should be transported to sites of excretion.
- Organisms like amoeba are unicellular.
- They have a large surface area to volume ratio.
- The body is in contact with the environment.
- Diffusion is adequate to transport substances across the cell membrane and within the organism.
- Large multi-cellular organisms have complex structure where cells are far from each other hence diffusion alone cannot meet the demand for supply and removal of substances.
- Therefore an elaborate transport system is necessary.

Transport in Plants

- Simple plants such as mosses and liverworts lack specialized transport system.
- Higher plants have specialized transport systems known as the vascular bundle.
- Xylem transports water and mineral salts.
- Phloem transports dissolved food substances like sugars.

Internal Structure of Roots and Root Hairs



- The main functions of roots are ;
 - Anchorage
 - absorption.
 - storage
 - gaseous exchange.
- The outermost layer in a root is the **piliferous** layer.
- This is a special epidermis of young roots whose cells give rise to root hairs.
- Root hairs are microscopic outgrowths of epidermal cells.
- They are found just behind the root tip,
- They are one cell thick for efficient absorption of substances.
- They are numerous and elongated providing a large surface area for absorption of water and mineral salts.
- Root hairs penetrate the soil and make close contact with it.
- Below the piliferous layer is the **cortex**.
- This is made up of loosely packed, thin walled parenchyma cells.
- Water molecules pass through this tissue to reach the vascular bundles.
- In some young plant stems, cortex cells contain chloroplasts.
- The **endodermis** (starch sheath) is a single layer of cells with starch grains.
- The endodermis has a casparian strip which has an impervious deposit controlling the entry of water and mineral salts into xylem vessels.
- **Pericycle** forms a layer next to the endodermis.
- Next to the pericycle is the **vascular tissue**.
- In the Dicotyledonous root, xylem forms a star shape in the centre, with phloem in between the arms.
- It has no pith. In monocotyledonous root, xylem alternates with phloem and there is a pith in the centre.