



Chapter 3



Tissues in Action



Tissues work together in amazing ways to keep living things alive and thriving.



Observe



Think



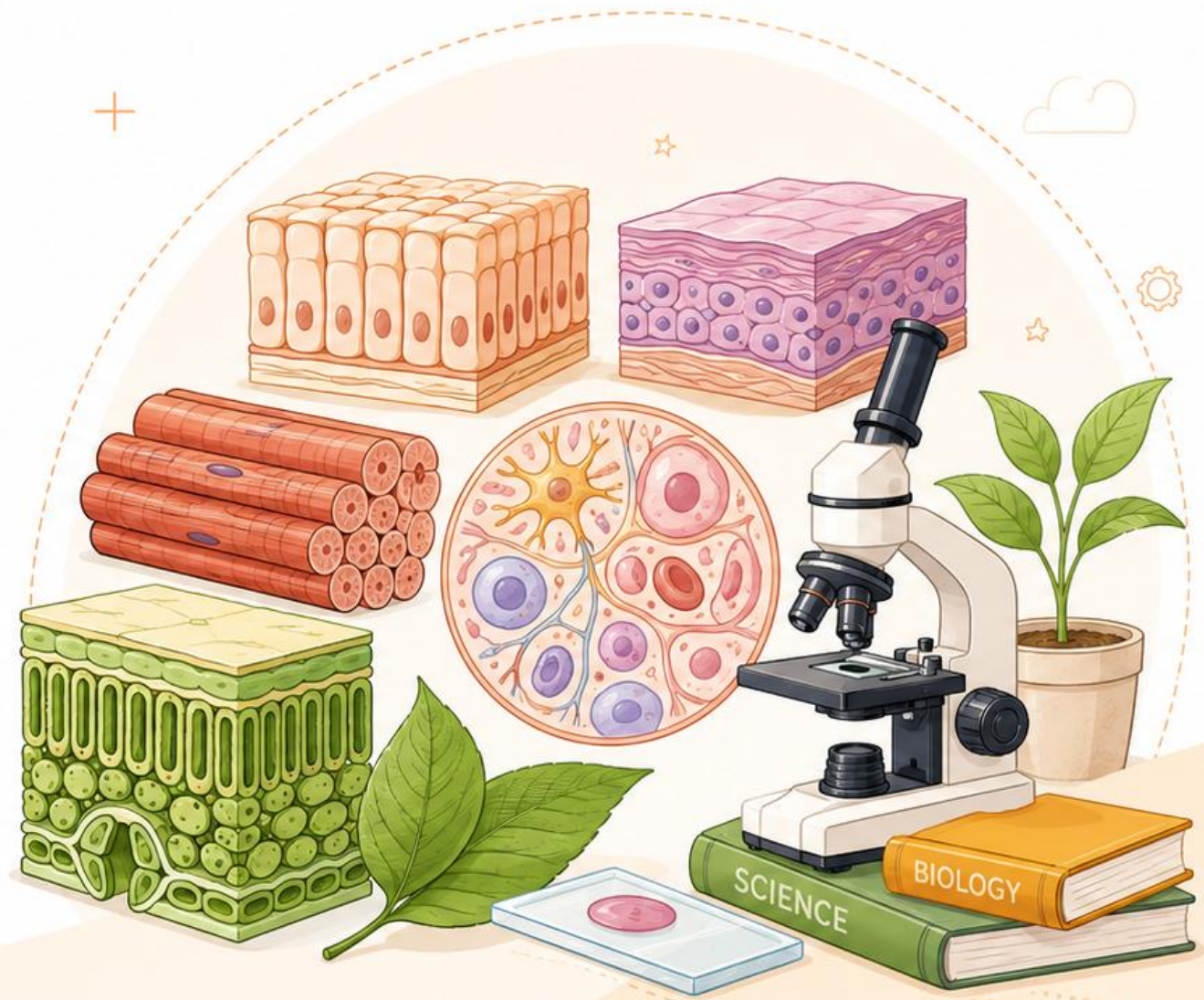
Experiment



Explore



Discover



TISSUES & DIVISION OF LABOUR

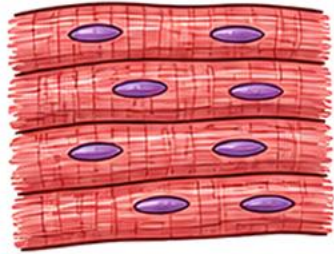
A tissue is a group of cells, similar in structure, that work together for a specific function.

LEVELS OF ORGANISATION

cell → tissue → organ → organ system → organism



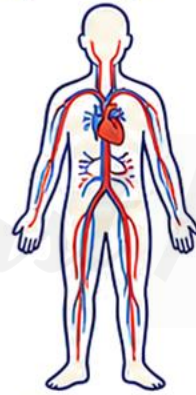
muscle cell



muscle tissue



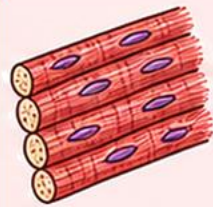
heart



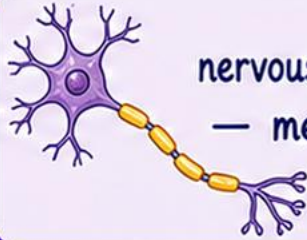
circulatory system



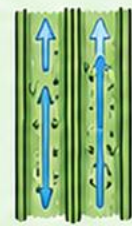
human



muscle tissue
— movement



nervous tissue
— messages



xylem
— water +
minerals



phloem
— food

WHY TISSUES?

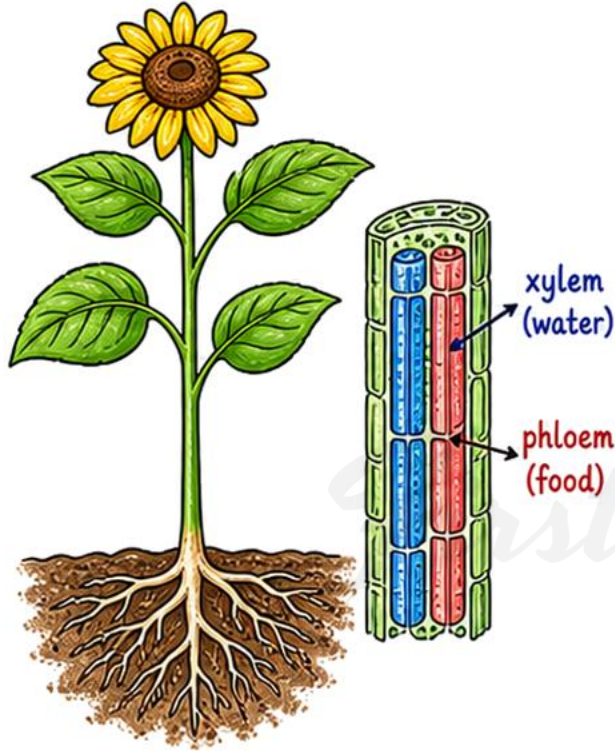
- An Amoeba is one cell; that cell performs every life function.
- In multicellular organisms, different cell groups do different jobs.
- This division of labour increases efficiency.
- It also makes complex life processes possible.

CELLS WORK TOGETHER → TISSUES BUILD THE BODY.

PLANT TISSUES vs ANIMAL TISSUES

PLANTS

- Most plants stay fixed in one place.
- Cell walls give rigidity and strength.
- Tissues support the body and make food by photosynthesis.
- Xylem and phloem transport materials.
- Growth is concentrated in meristems.

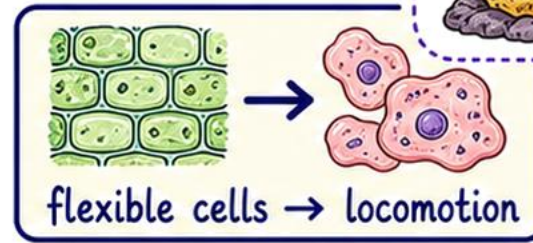
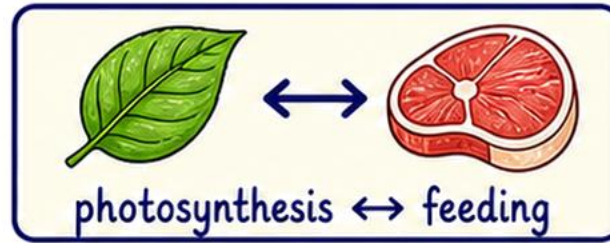
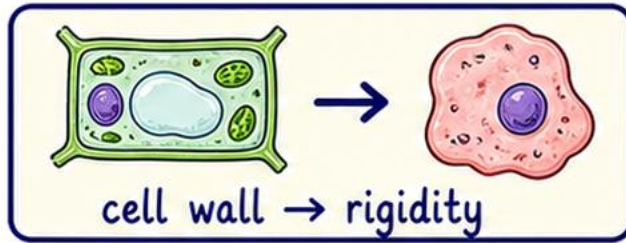


ANIMALS

- Most animals move from place to place.
- No rigid cell wall: cells can change shape more easily.
- Tissues digest food and coordinate movement.
- Blood transports materials.
- Growth is more widespread, especially when young.



Some animals, such as sponges, are immobile.

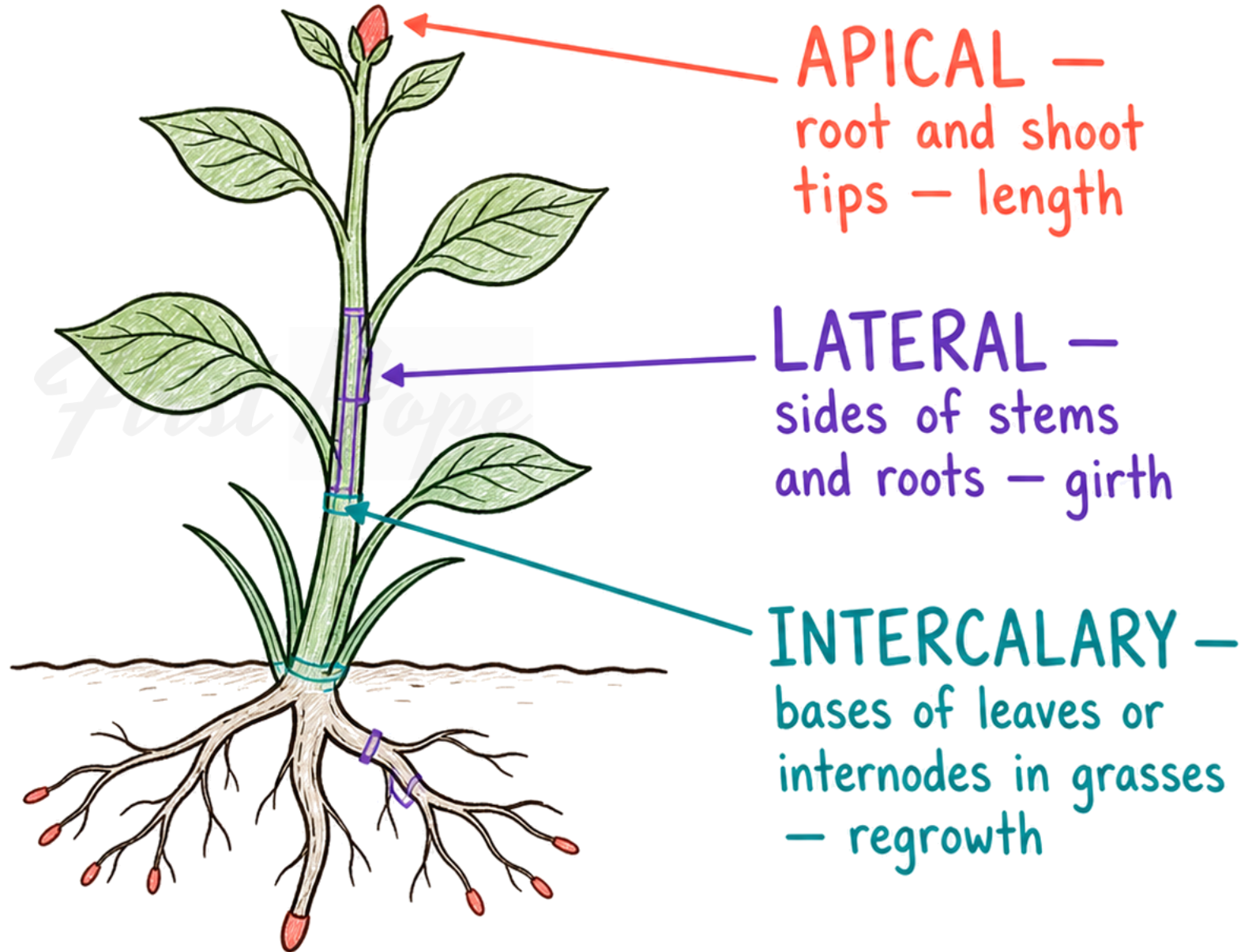


STRUCTURE FITS FUNCTION: different lives need different tissues.

PLANT GROWTH & MERISTEMS

Facts:

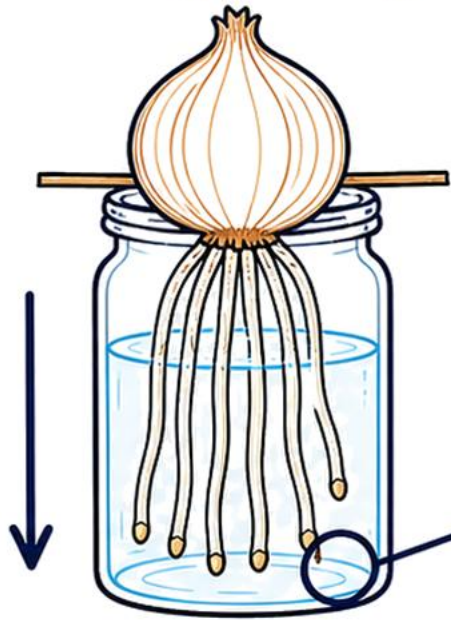
- Plants grow in length and girth.
- They can regrow after cutting or grazing.
- Growth happens in meristems.



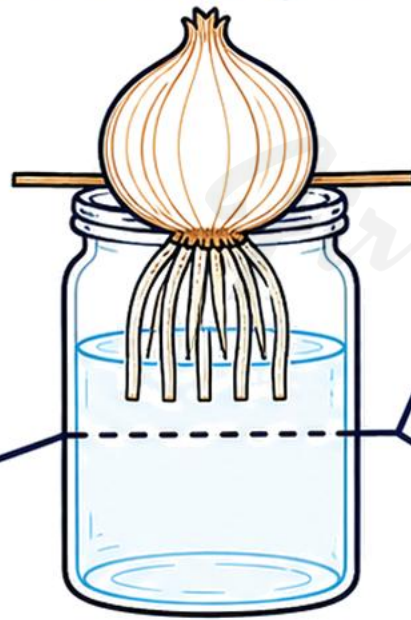
APICAL MERISTEM: ROOT GROWTH

ONION-ROOT EVIDENCE

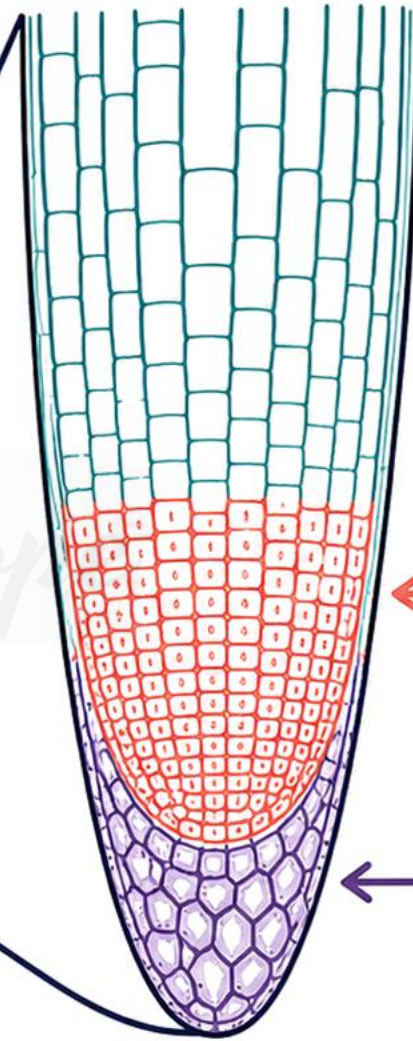
TIPS INTACT →
roots grow longer



TIPS CUT OFF →
roots stop growing



Cutting removes the apical meristem.



← ZONE OF
ELONGATION —
cells lengthen

← APICAL MERISTEM —
cells divide rapidly

← ROOT CAP —
protects the tip

ROOT LENGTH INCREASES = NEW CELLS + ELONGATION

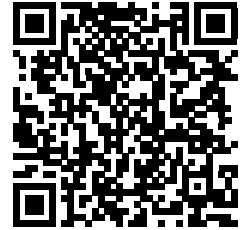


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