



ORGAN TUMBUHAN TINGKAT TINGGI

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**PROGRAM STUDI FARMASI
STIKES NOTOKUSUMO
2023**

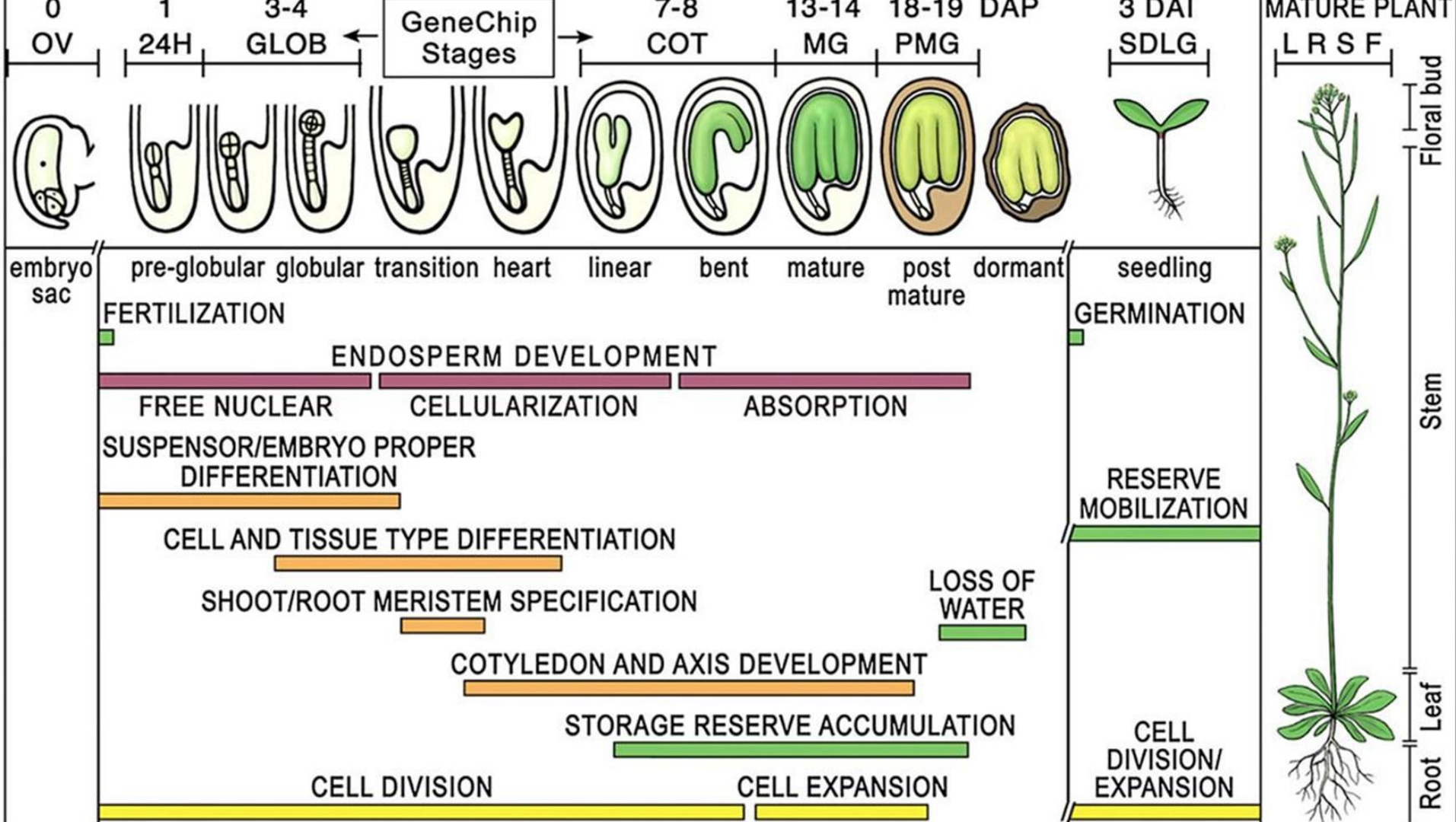


FASE PERKEMBANGAN TUMBUHAN

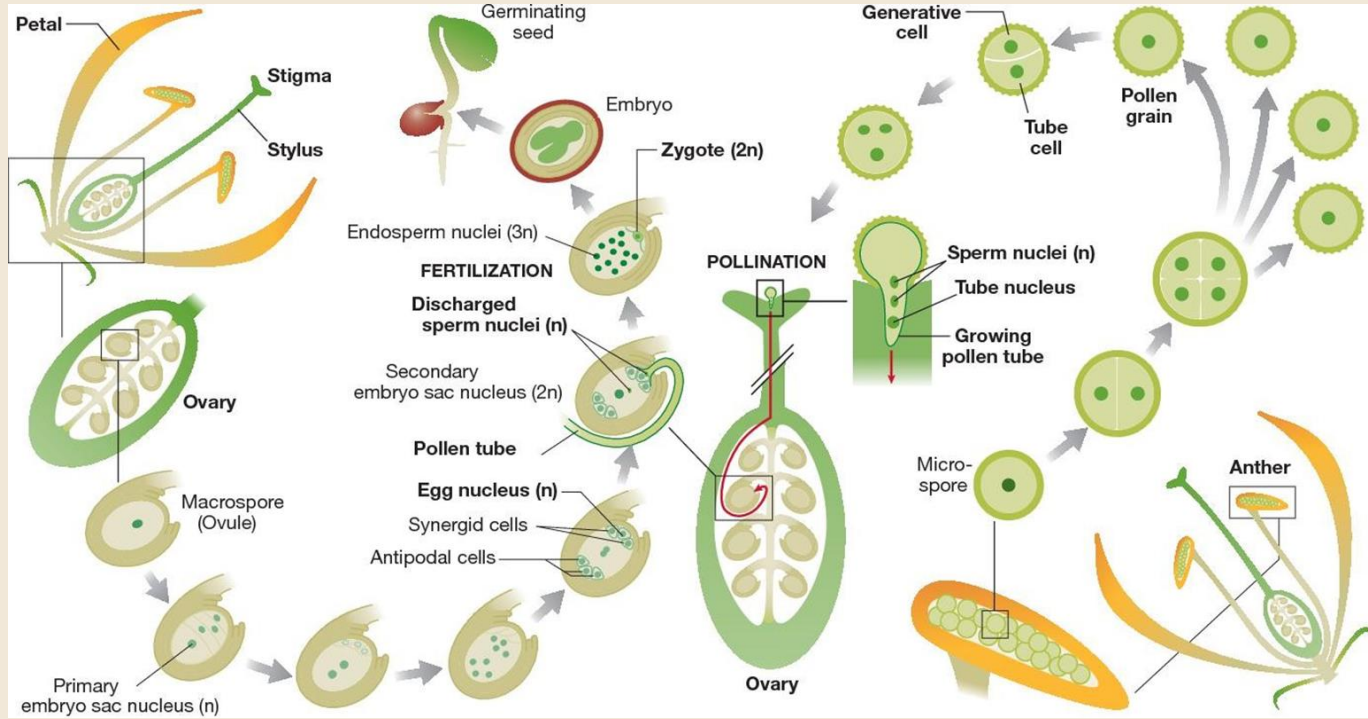
Pembentukan embrio

Diferensiasi sel

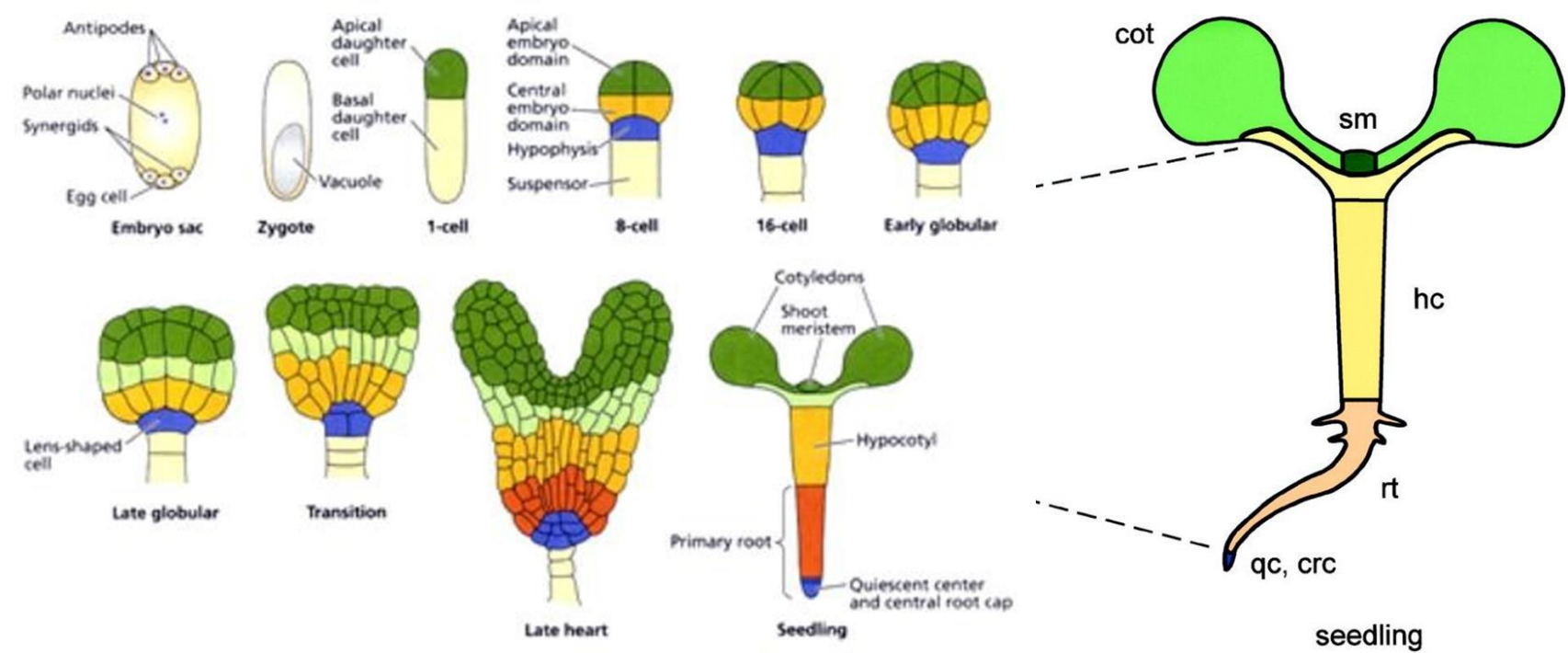
Struktur anatomi (dinding sel, organel,
jaringan)



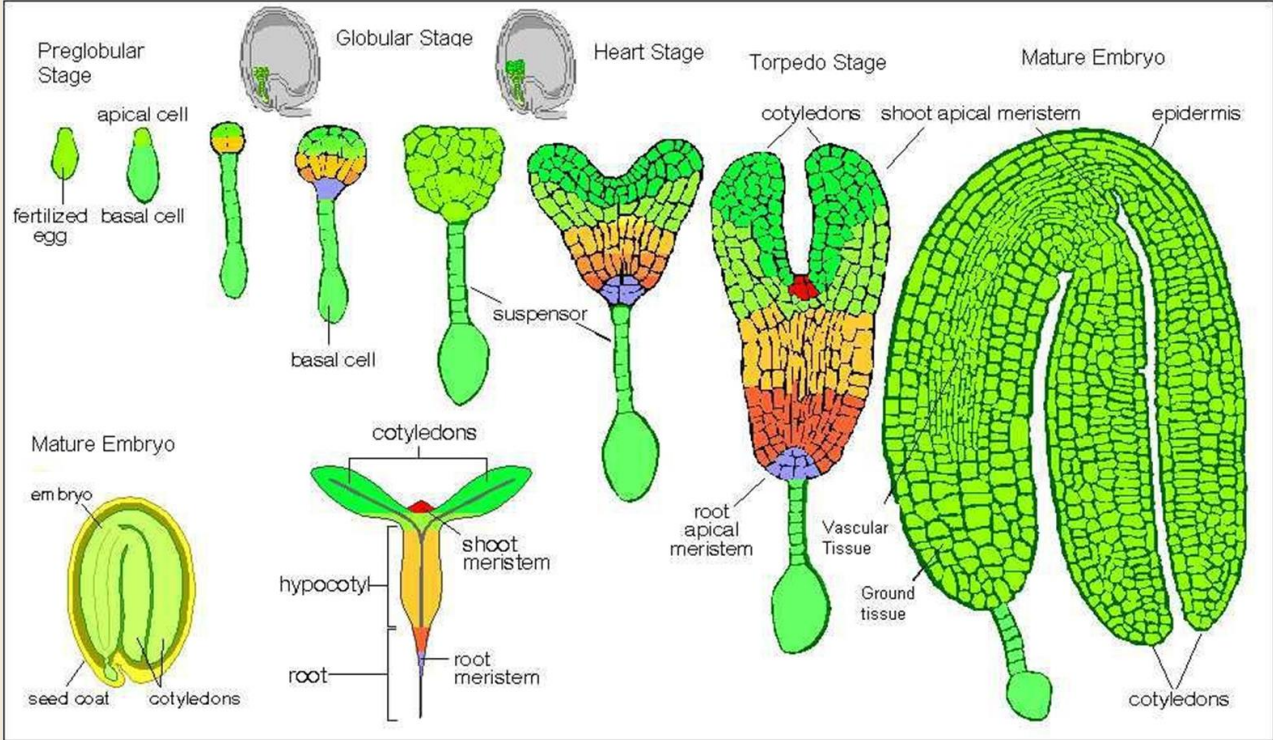
FERTILIZATION



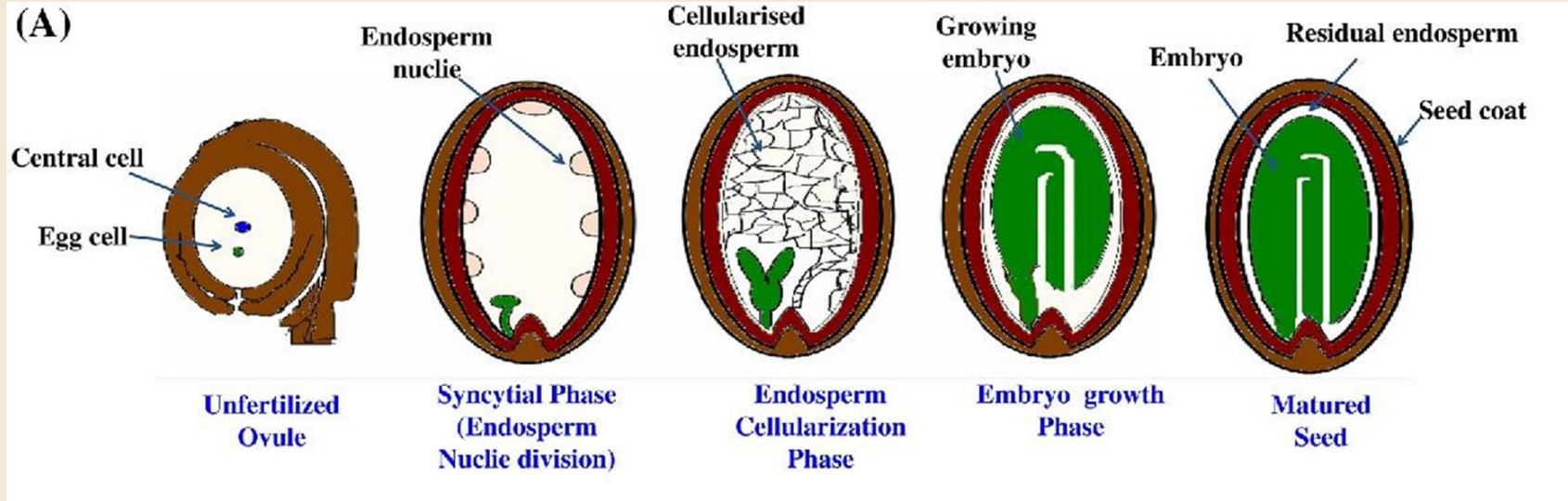
EMBRYOGENESIS



EMBRYOGENESIS



SEED MATURATION



GERMINATION

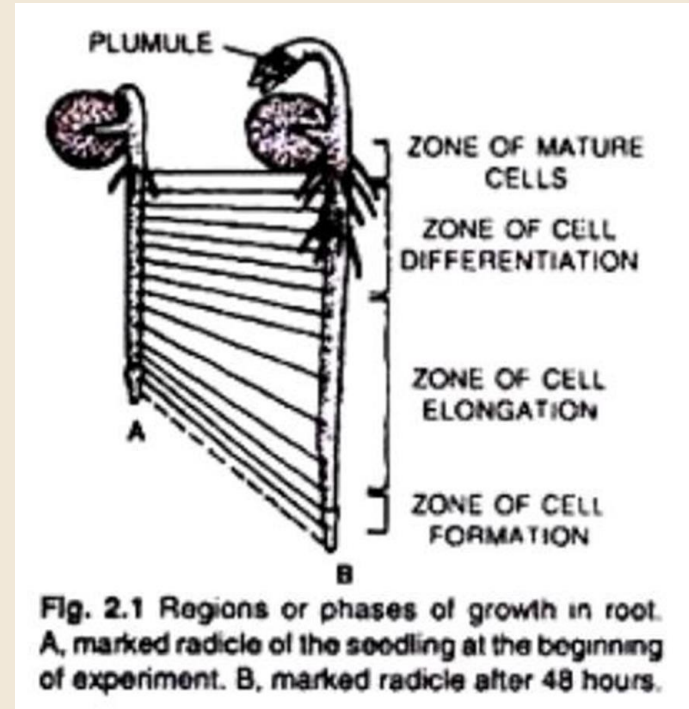
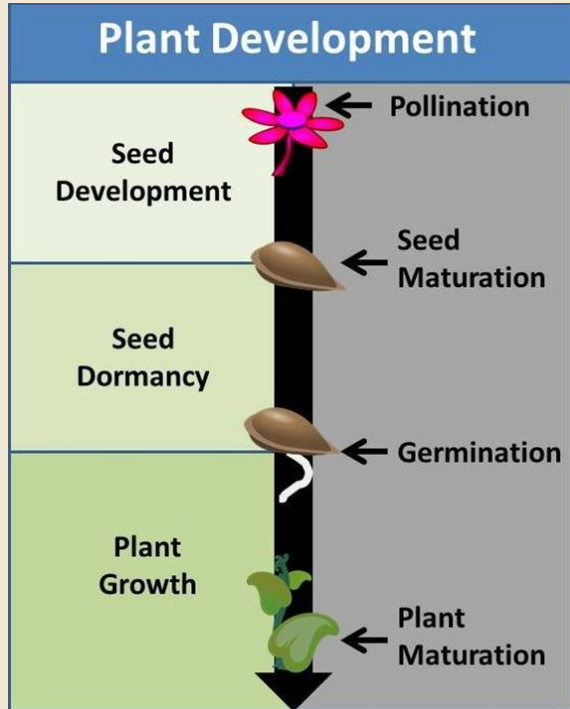


Fig. 2.1 Regions or phases of growth in root. A, marked radicle of the seedling at the beginning of experiment. B, marked radicle after 48 hours.

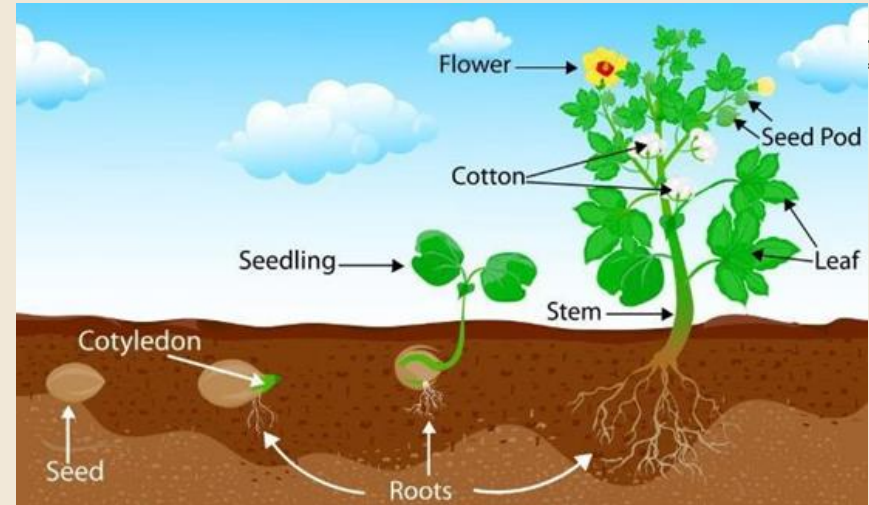
PLANT GROWTH

- **Growth**

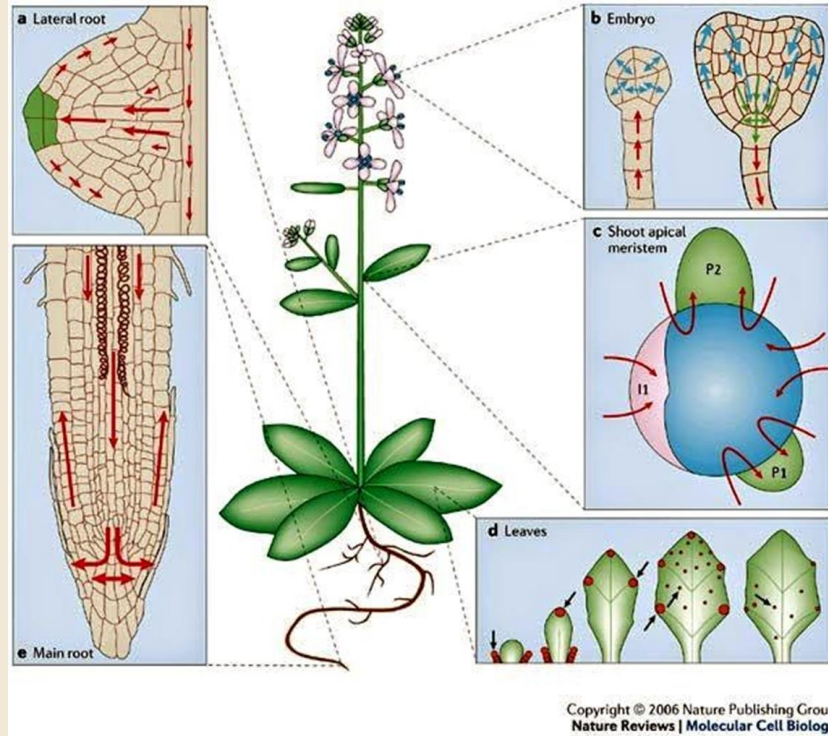
- Mitosis, proliferation
- Elongation
- Mass/volume/size increase

- **Development**

- Cell specification
- Cell differentiation
- Morphogenesis
- Organogenesis



PLANT GROWTH

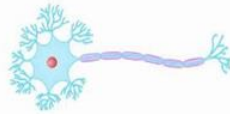


PLANT GROWTH

Differentiation & Elongation



In animal cells all growth occurs due to mitosis, followed by differentiation into specialised cells.



This occurs when young and at full size, further growth is for repair and replacement

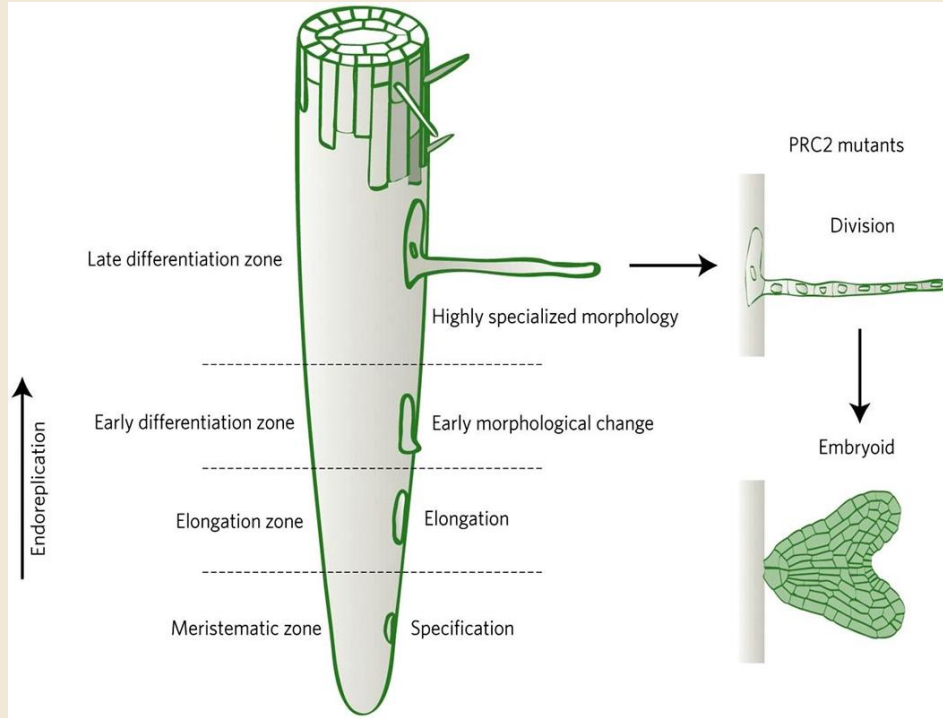


In plants, cell division and differentiation occurs in the growing tips of roots and shoots (meristems).



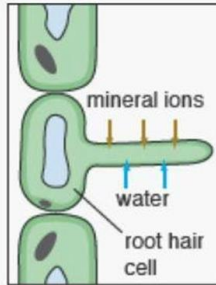
Growth in height is continuous and

PLANT GROWTH

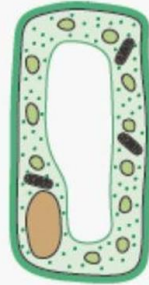


SPECIALIZATION - DIFFERENTIATION

- Cells change its structure or shape to carry a specific function.

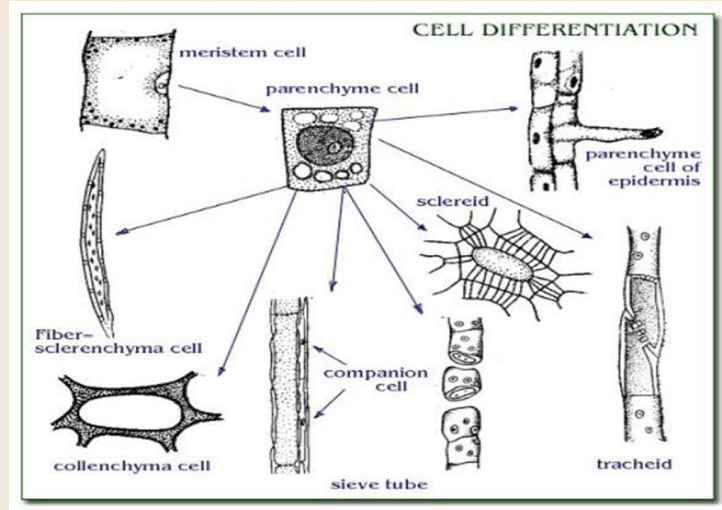


Root hair cell — large surface area to absorb water and minerals from the soil

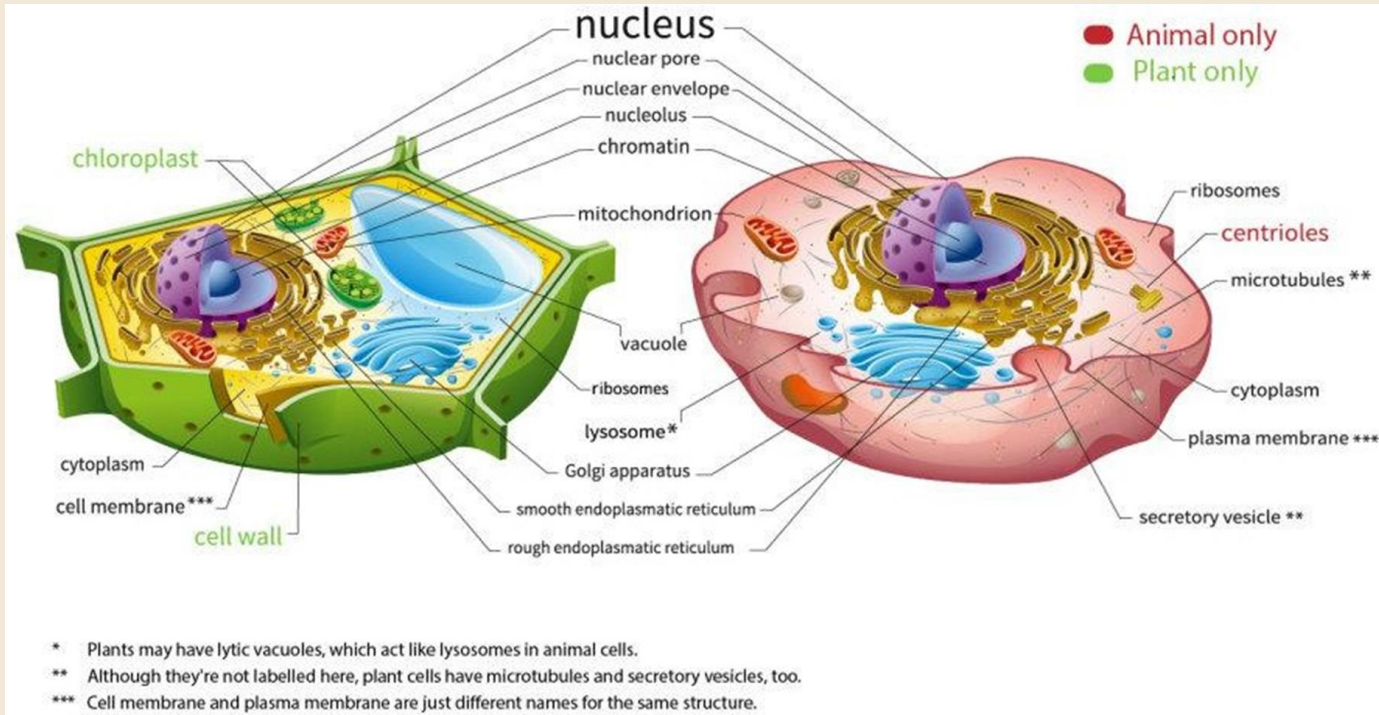


Palisade cell (from a leaf) — contains lots of chloroplasts for maximum photosynthesis

Examples of specialised plant cells

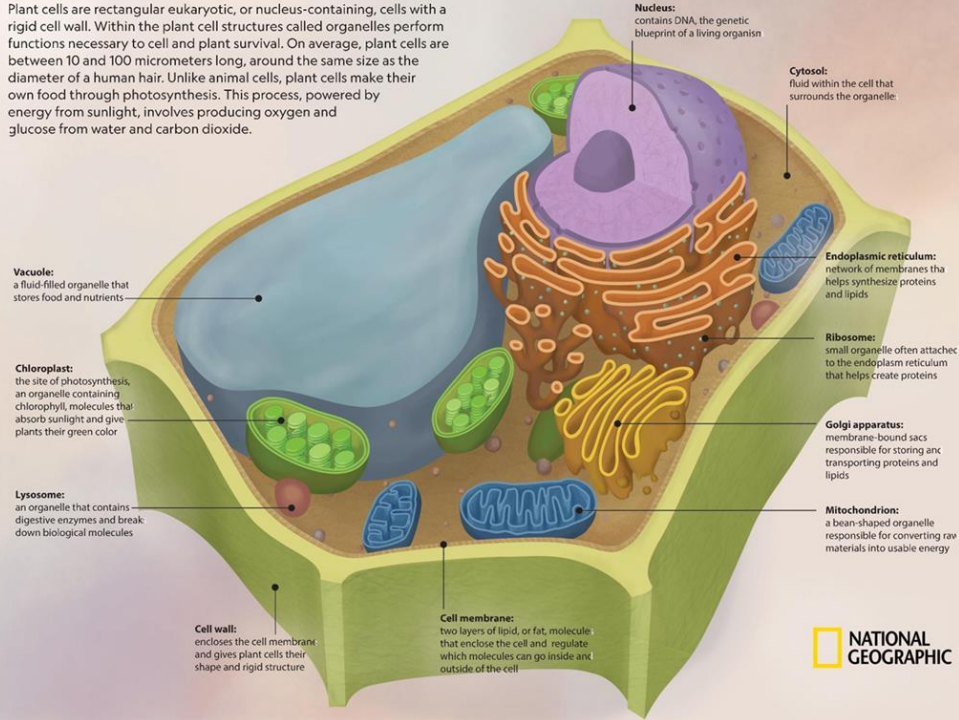


SEL TUMBUHAN VS SEL HEWAN

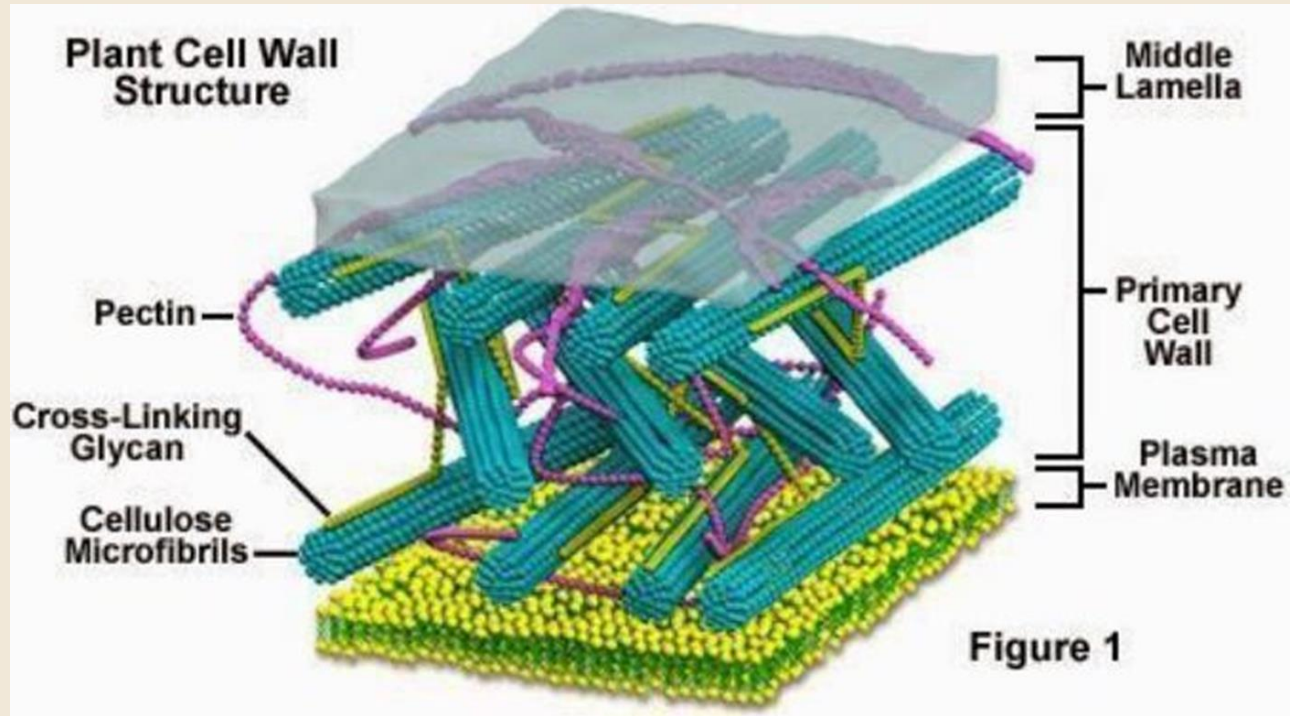


PLANT CELL

Plant cells are rectangular eukaryotic, or nucleus-containing, cells with a rigid cell wall. Within the plant cell structures called organelles perform functions necessary to cell and plant survival. On average, plant cells are between 10 and 100 micrometers long, around the same size as the diameter of a human hair. Unlike animal cells, plant cells make their own food through photosynthesis. This process, powered by energy from sunlight, involves producing oxygen and glucose from water and carbon dioxide.



STRUKTUR DINDING SEL TUMBUHAN





THANKS

Do you have any questions?

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