ORGAN TUMBUHAN TINGKAT TINGGI

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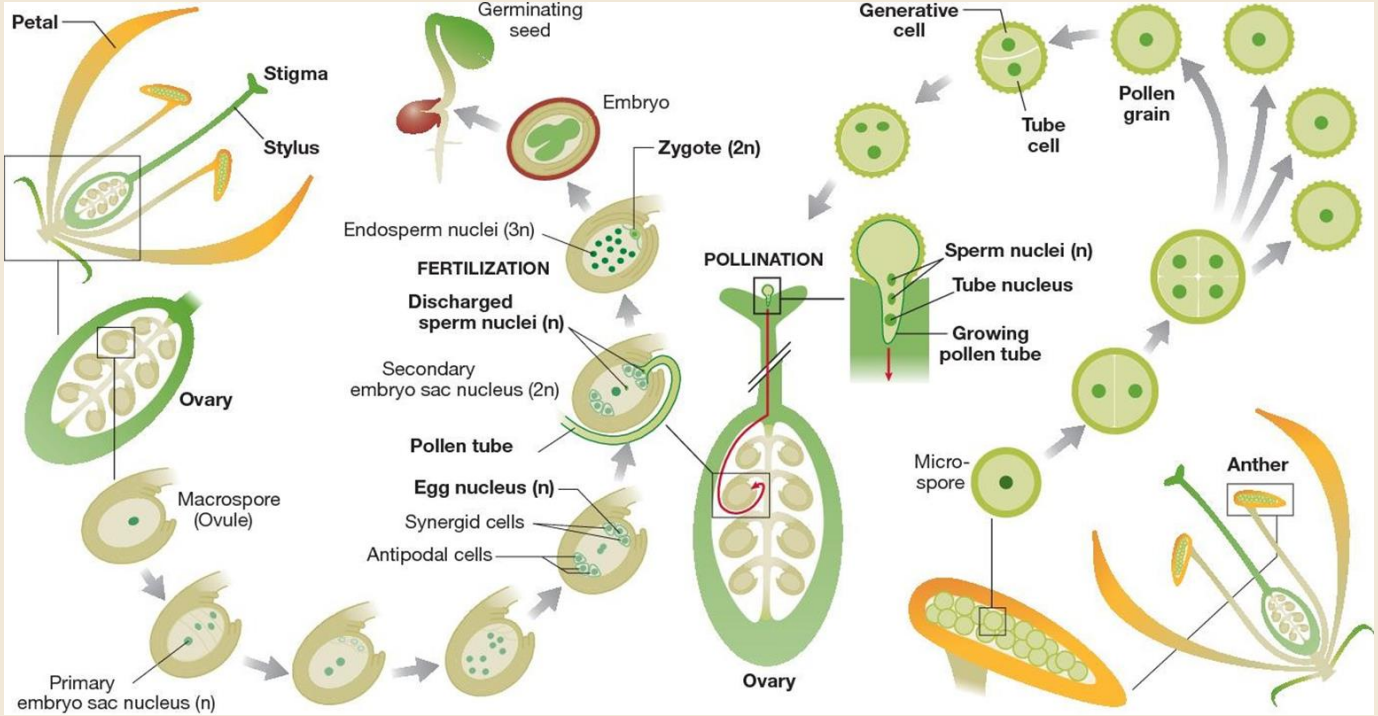
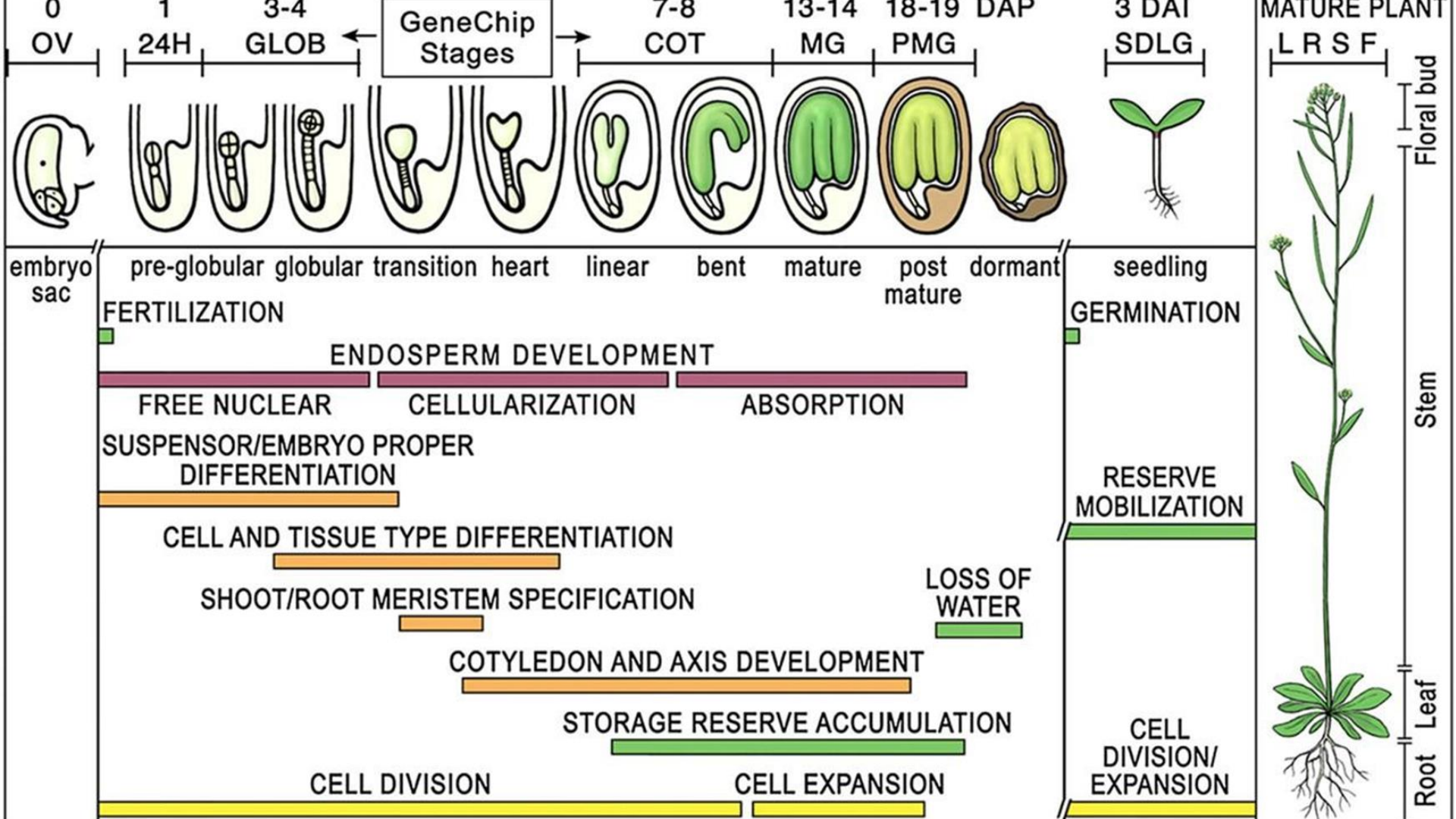
PROGRAM STUDI FARMASI
STIKES NOTOKUSUMO
2024

FASE PERKEMBANGAN TUMBUHAN

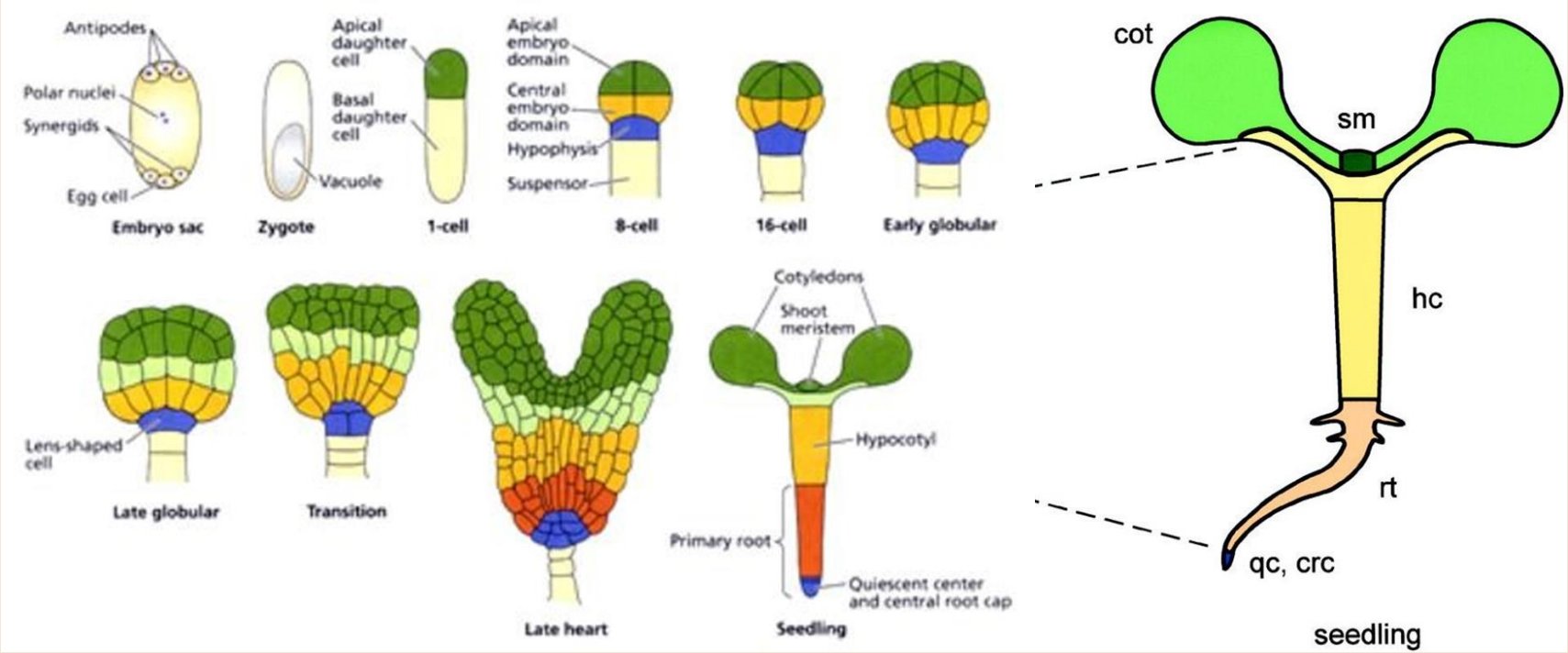
- Pembentukan embrio
- Diferensiasi sel
- Struktur anatomi (dinding sel, organel, jaringan)

FERTILIZATION

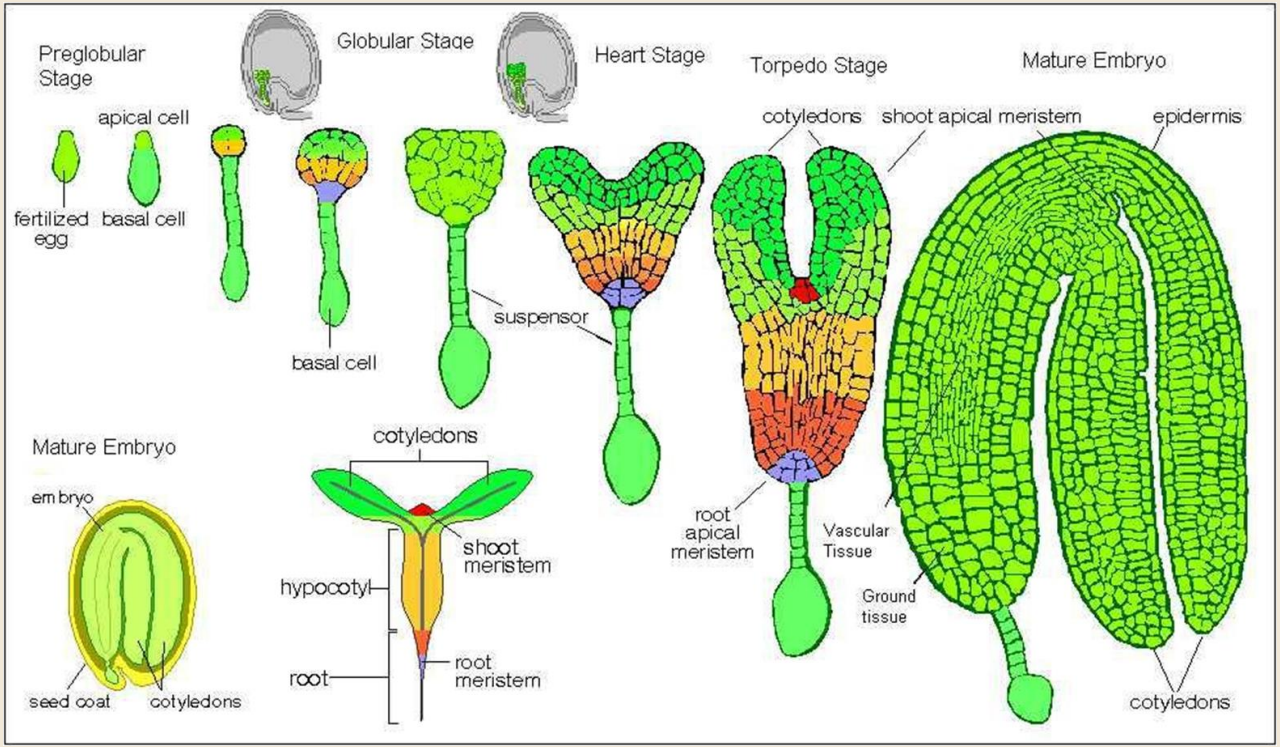



0
OV
1
24H
3-4
GLOB
GeneChip
Stages
7-8
COT
13-14
MG
18-19
PMG
DAP
3 DAI
SDLG
MATURE PLANT
L R S F
embryo sac
pre-globular
globular
transition
heart
linear
bent
mature
post mature
dormant
seedling
FERTILIZATION
GERMINATION
ENDOSPERM DEVELOPMENT
FREE NUCLEAR
CELLULARIZATION
ABSORPTION
SUSPENSOR/EMBRYO PROPER DIFFERENTIATION
RESERVE MOBILIZATION
CELL AND TISSUE TYPE DIFFERENTIATION
LOSS OF WATER
SHOOT/ROOT MERISTEM SPECIFICATION
COTYLEDON AND AXIS DEVELOPMENT
STORAGE RESERVE ACCUMULATION
CELL DIVISION/ EXPANSION
CELL DIVISION
CELL EXPANSION
Floral bud
Stem
Leaf
Root

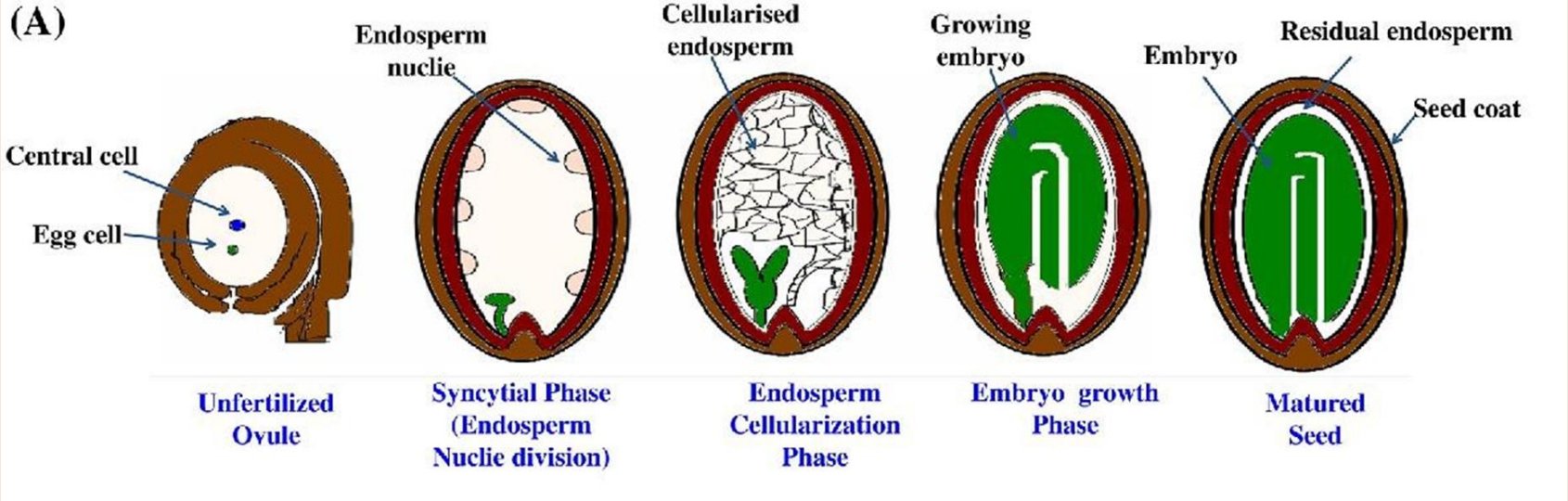
EMBRIOGENESIS



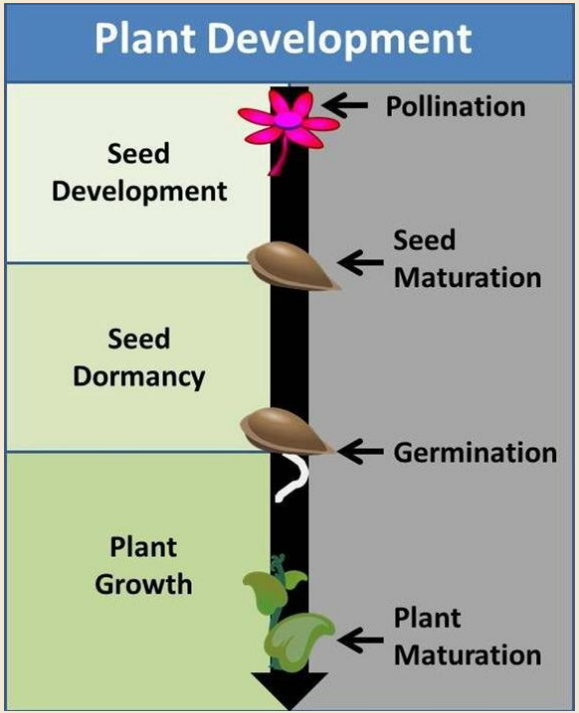
EMBRIOGENESIS



SEED MATURATION



GERMINATION



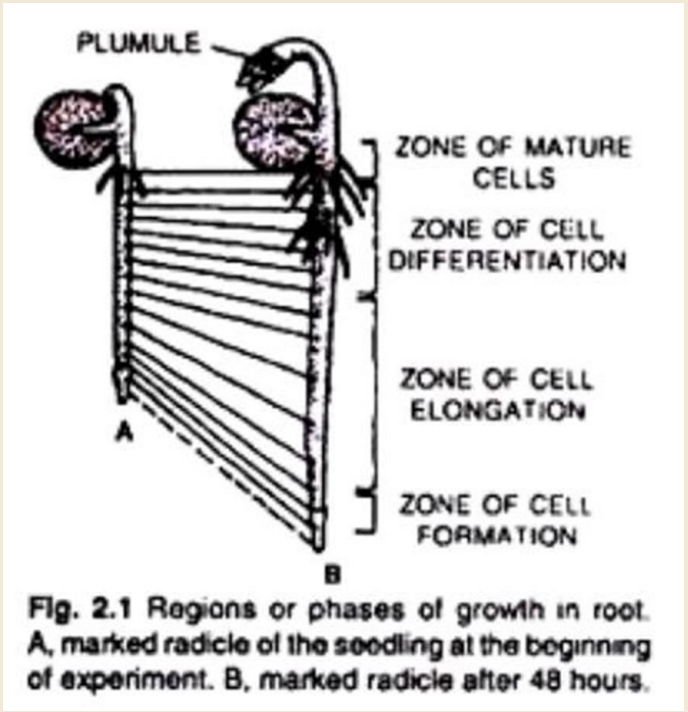
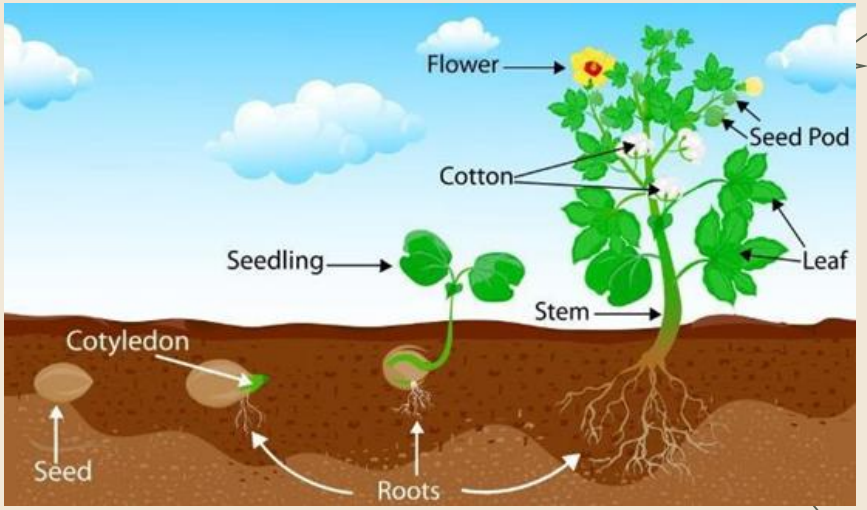


Fig. 2.1 Regions or phases of growth in root. A, marked radicle of the seedling at the beginning of experiment. B, marked radicle after 48 hours.

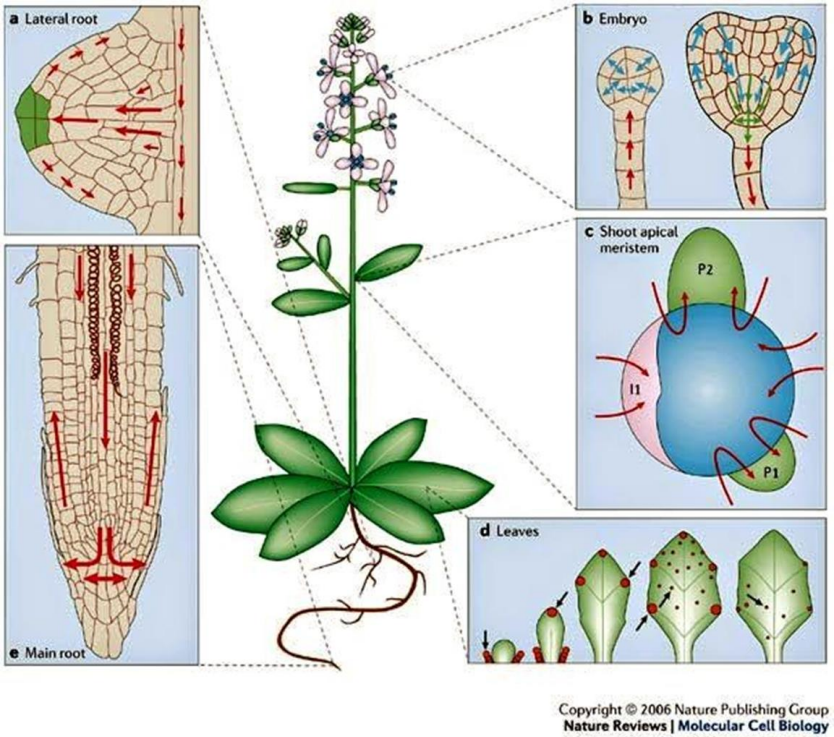
PLANT GROWTH

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

- **Development**
  - Cell specification
  - Cell differentiation
  - Morphogenesis
  - Organogenesis



PLANT GOWTH


a Lateral root
b Embryo
c Shoot apical meristem
P2
I1
P1
d Leaves
e Main root
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PLANT GROWTH

Differentiation & Elongation

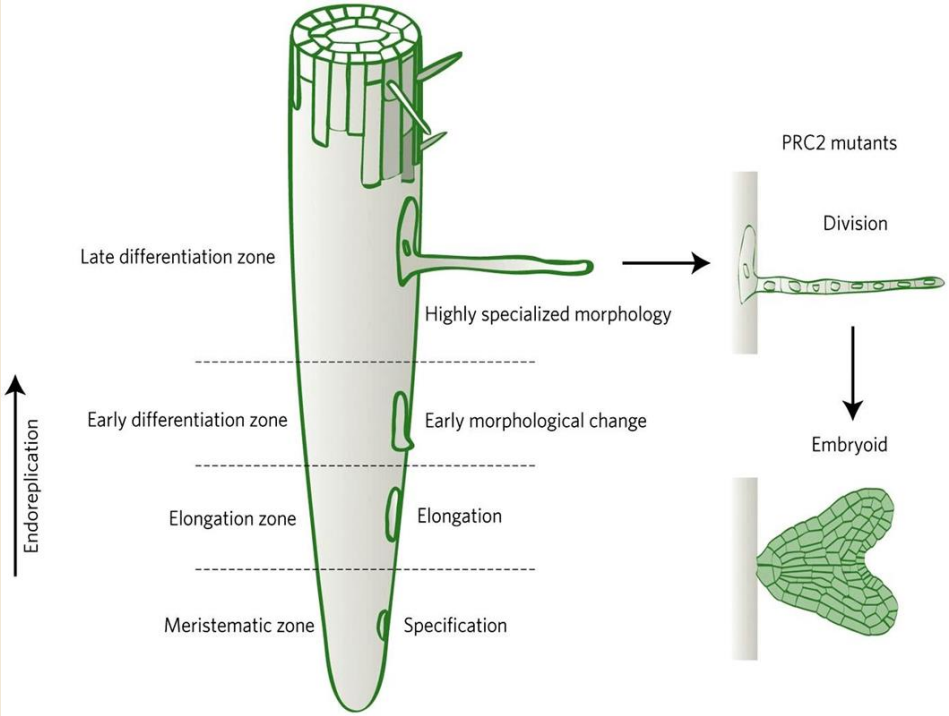
In animal cells all growth occurs due to mitosis, followed by differentiation into specialised cells.

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).

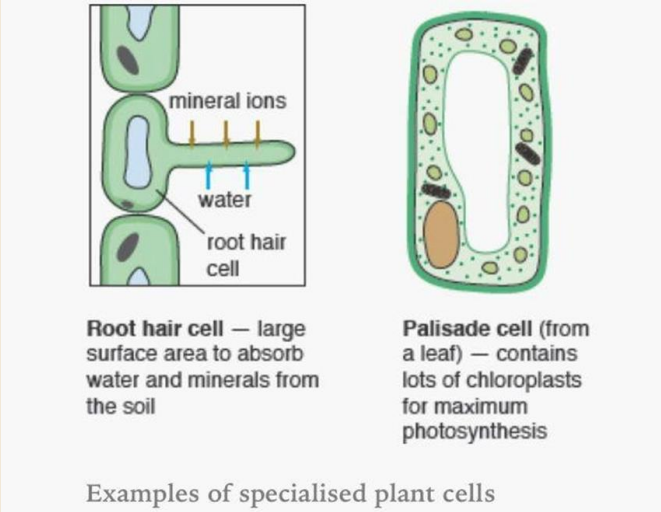
Growth in height is continuo u s a n di

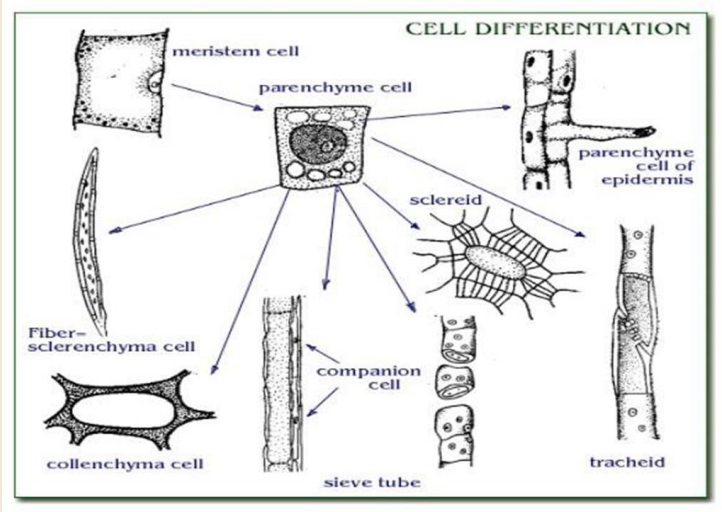
PLANT GROWTH



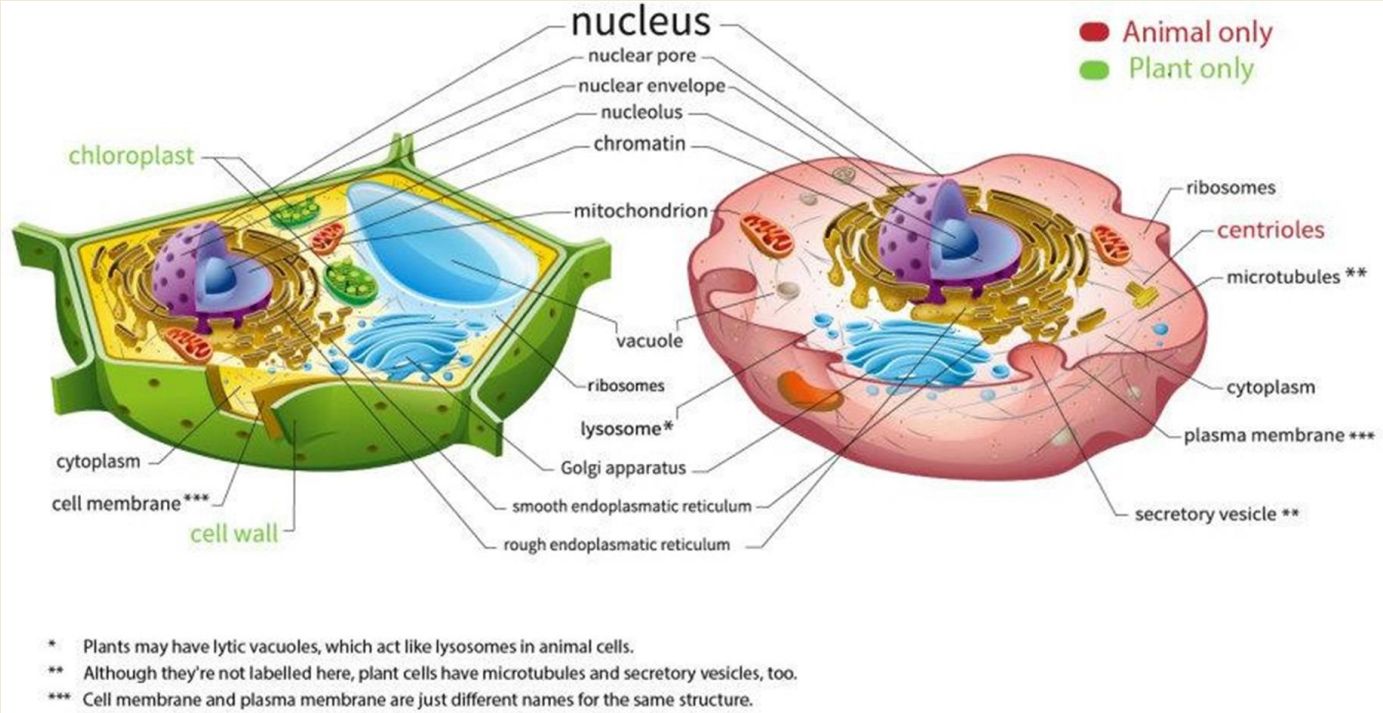
SPECIALIZATION - DIFFERENTIATION

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



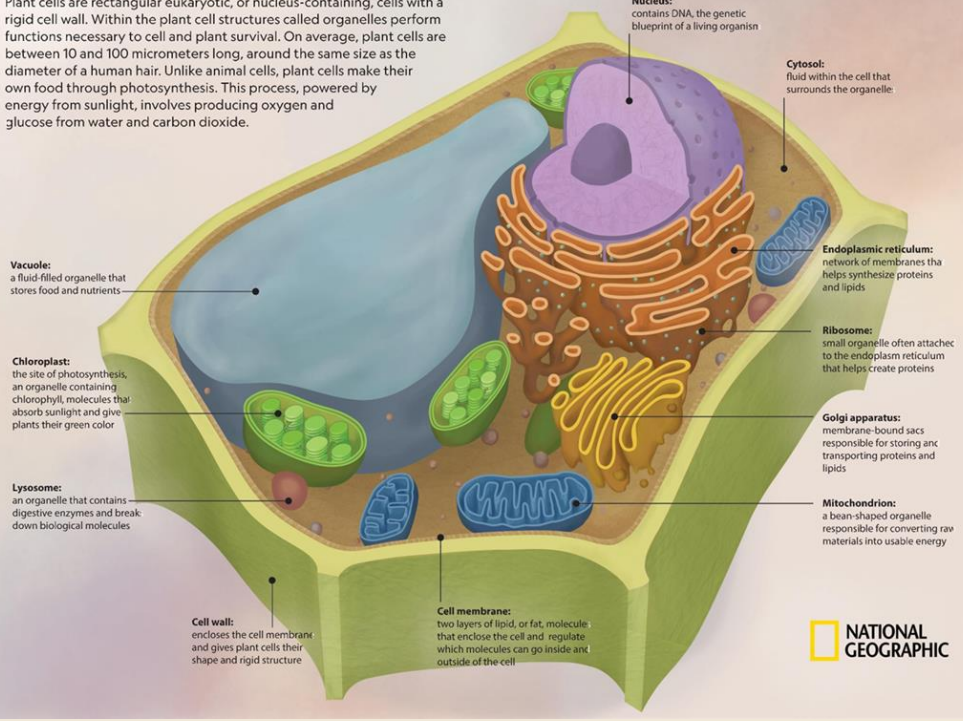


SEL TUMBUHN VS SEL HEWAN



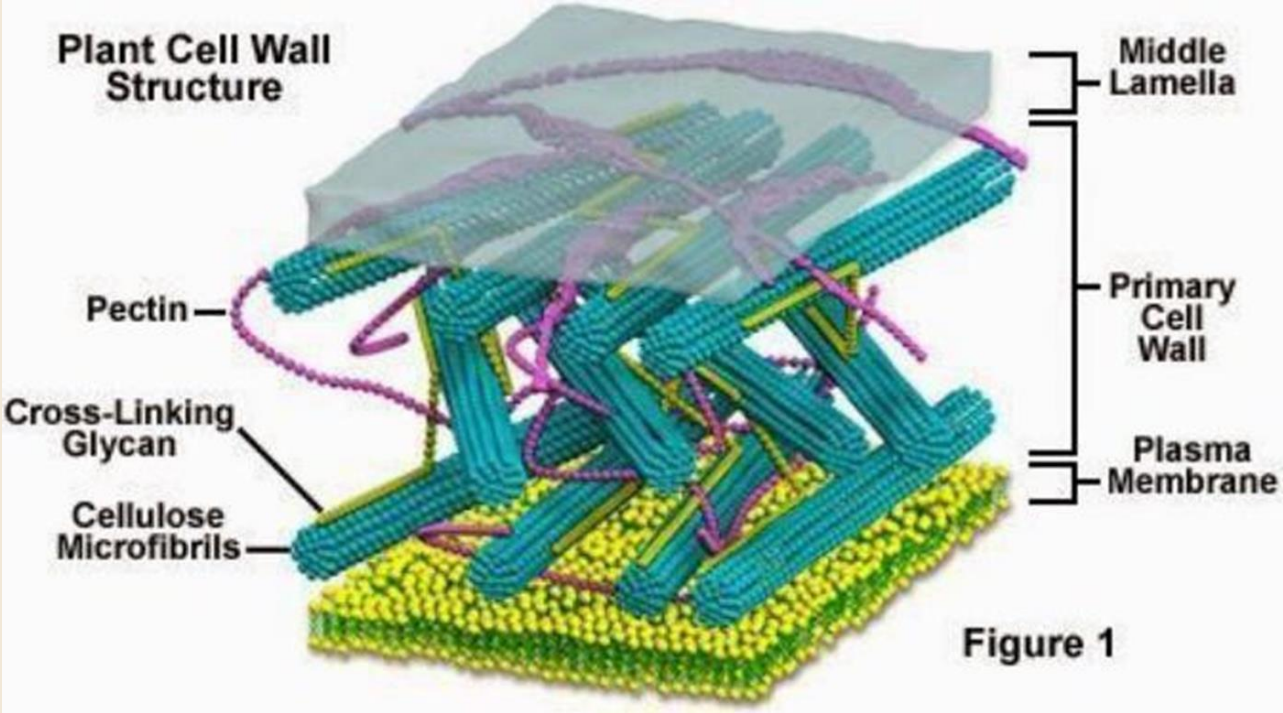
PLANT CELL

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.



NATIONAL GEOGRAPHIC

STRUKTUR DINDING SEL TUMBUHAN



THANKS

Do you have any questions?