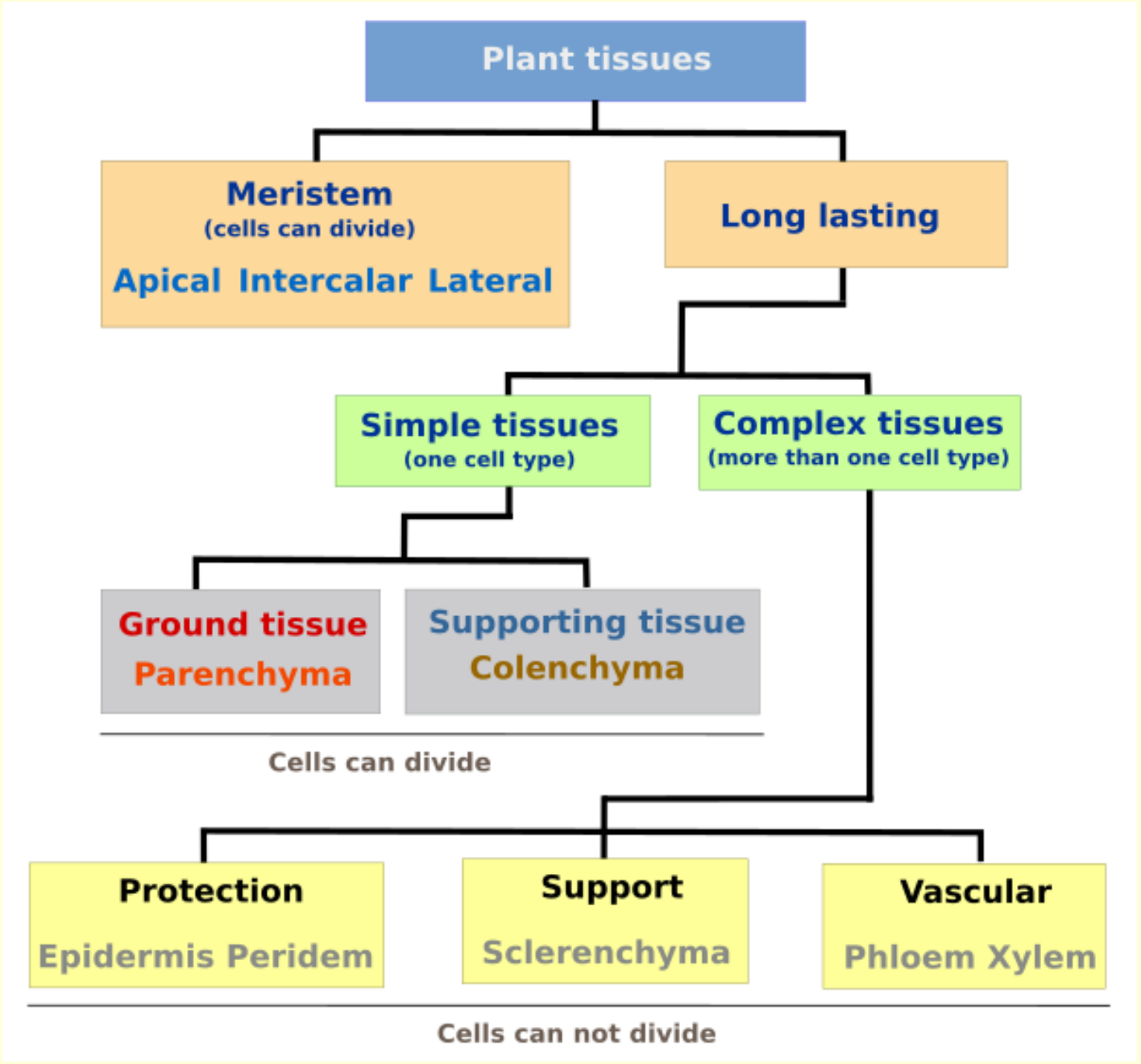
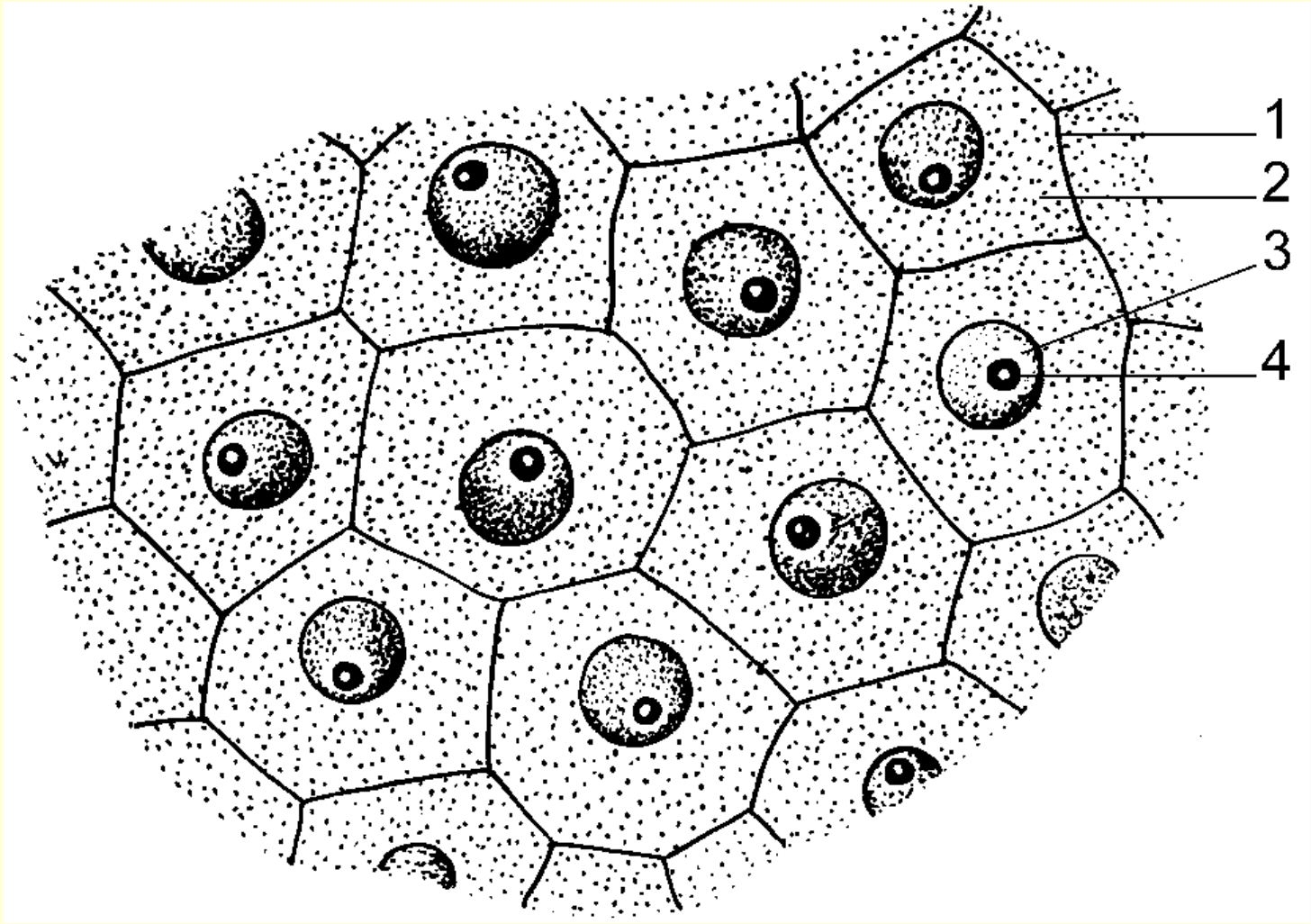
# Meristems, the process of plant cell division.


Plant tissues
Meristem
(cells can divide)
Apical Intercalar Lateral
Long lasting
Simple tissues
(one cell type)
Complex tissues
(more than one cell type)
Ground tissue
Parenchyma
Supporting tissue
Colenchyma
Cells can divide
Protection
Epidermis Peridem
Support
Sclerenchyma
Vascular
Phloem Xylem
Cells can not divide

Primary and secondary tissues are distinguished by origin.

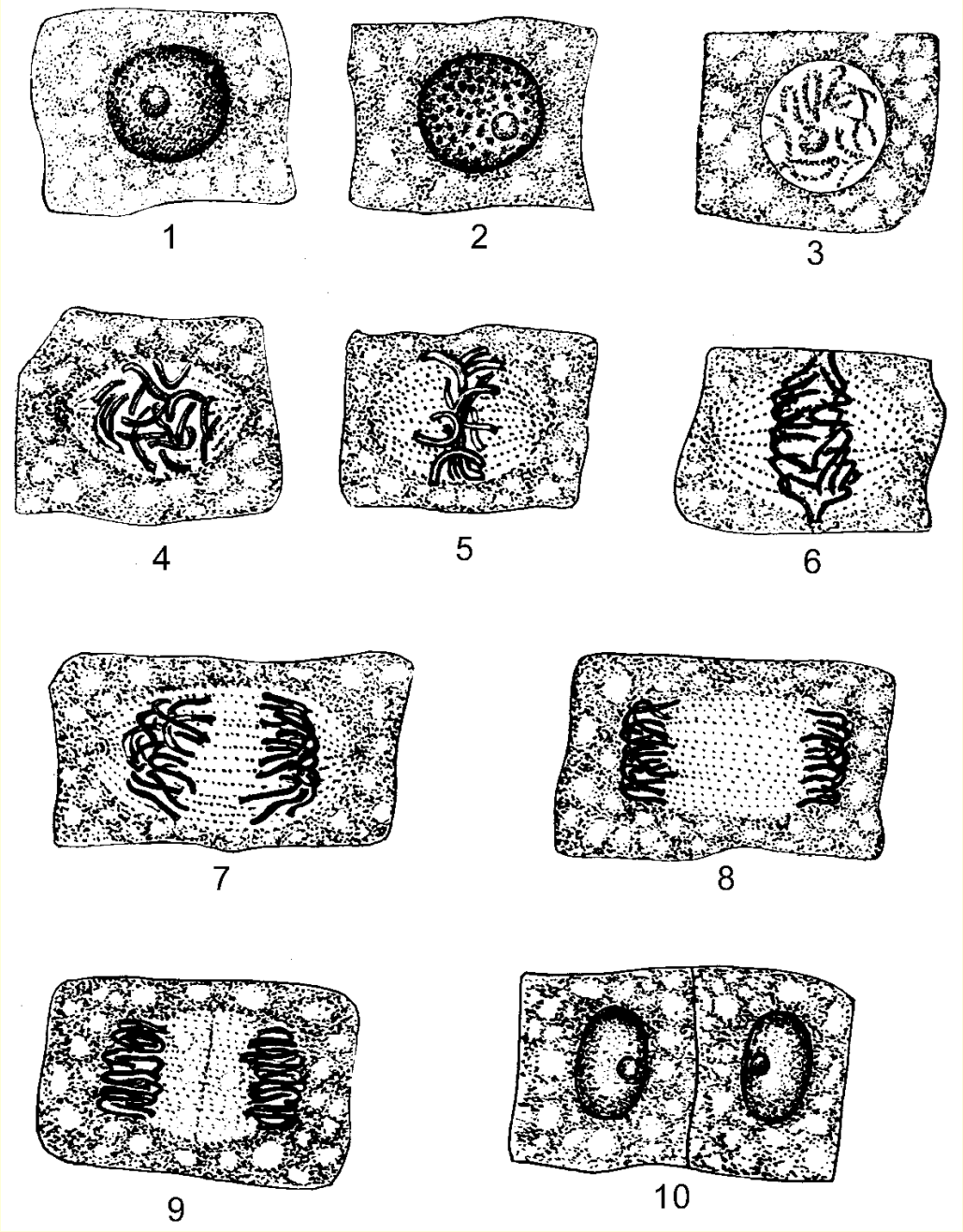
**Primary tissues** are formed by primary meristems, **secondary tissues** are formed by secondary meristems.

A **meristem** is a specialized tissue whose cells divide and give rise to new cells that form permanent tissues. Meristems ensure the growth of the plant in length and thickness, form new organs and tissues, provide the orientation of the plant in space, as well as wound healing.




**A section of the apical meristem of the elodea stem.**

1 – cell wall, 2 - cytoplasm, 3 - nucleus, 4 - nucleolus.




**Mitosis (karyokinesis)in the cells of the onion root.**

**1 - interphase,**

**2-4 - prophase,**

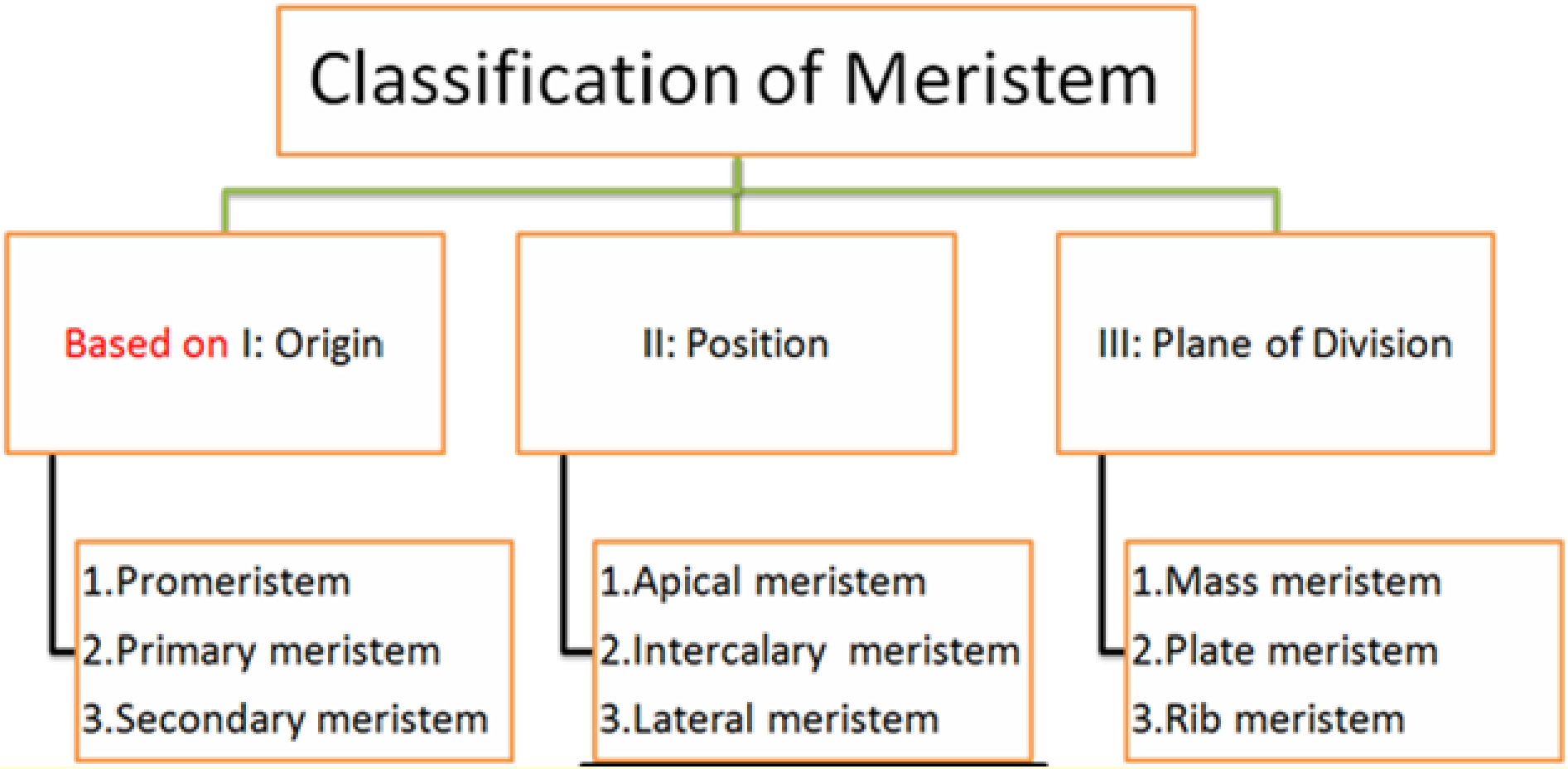
**5 - metaphase,**

**6-8 - anaphase,**

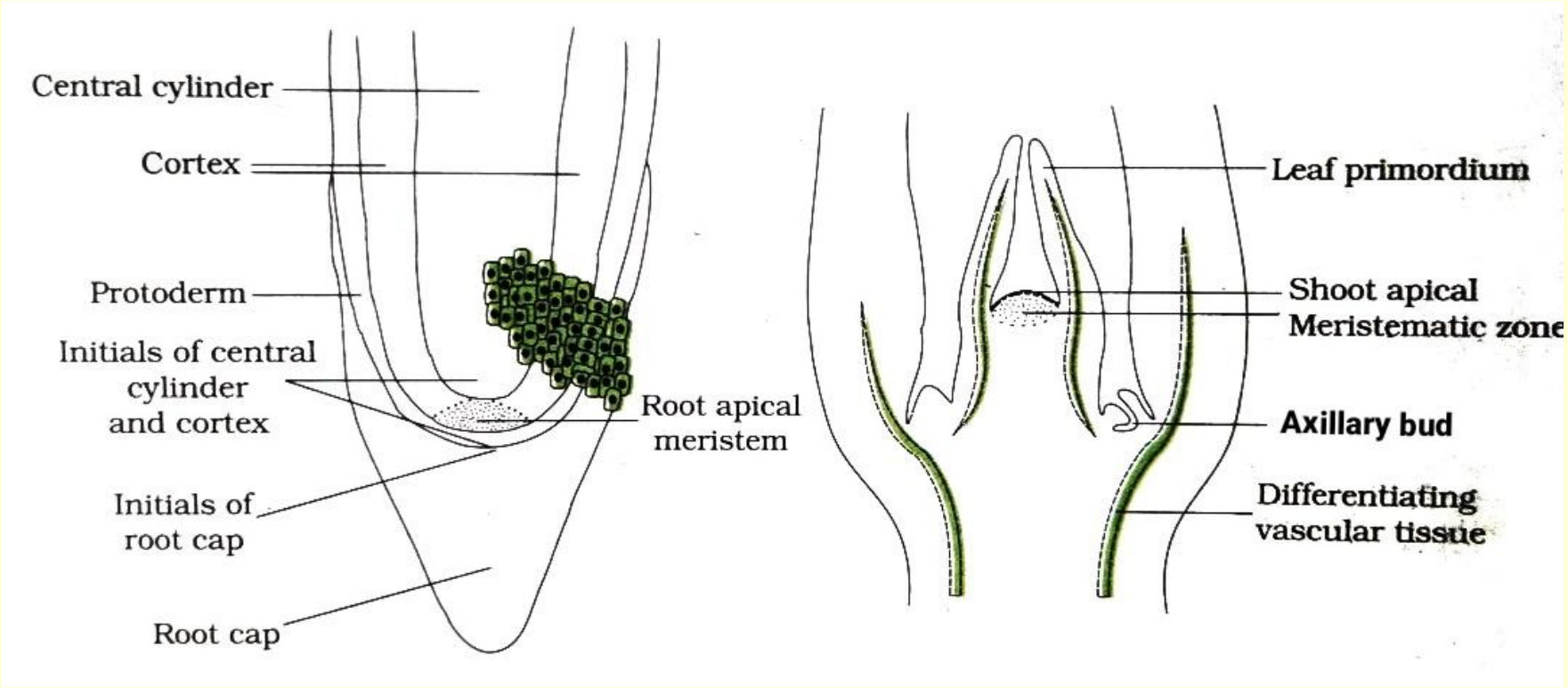
**9 - telophase,**

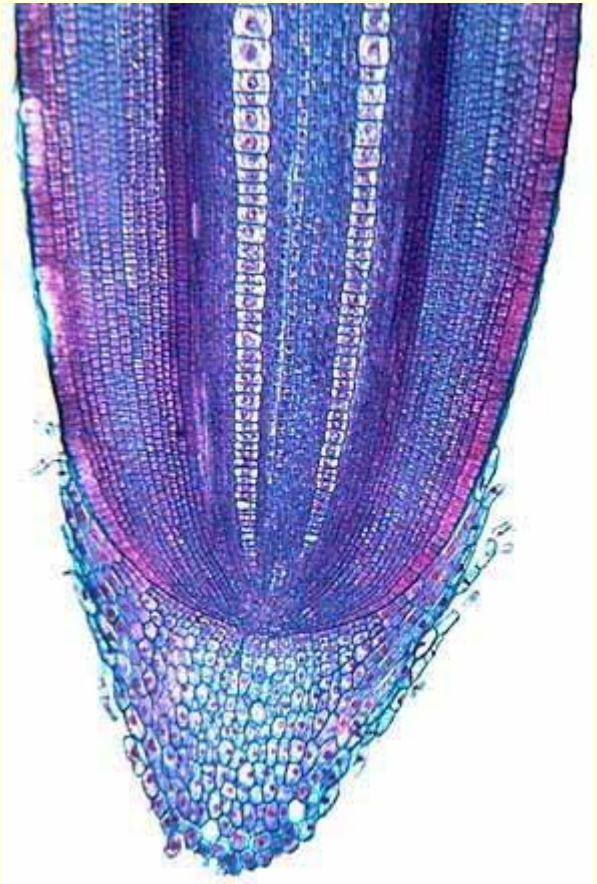
**10 - cytokinesis.**

https://elearning.volgmed.ru/mod/forum/view.php?id=176878

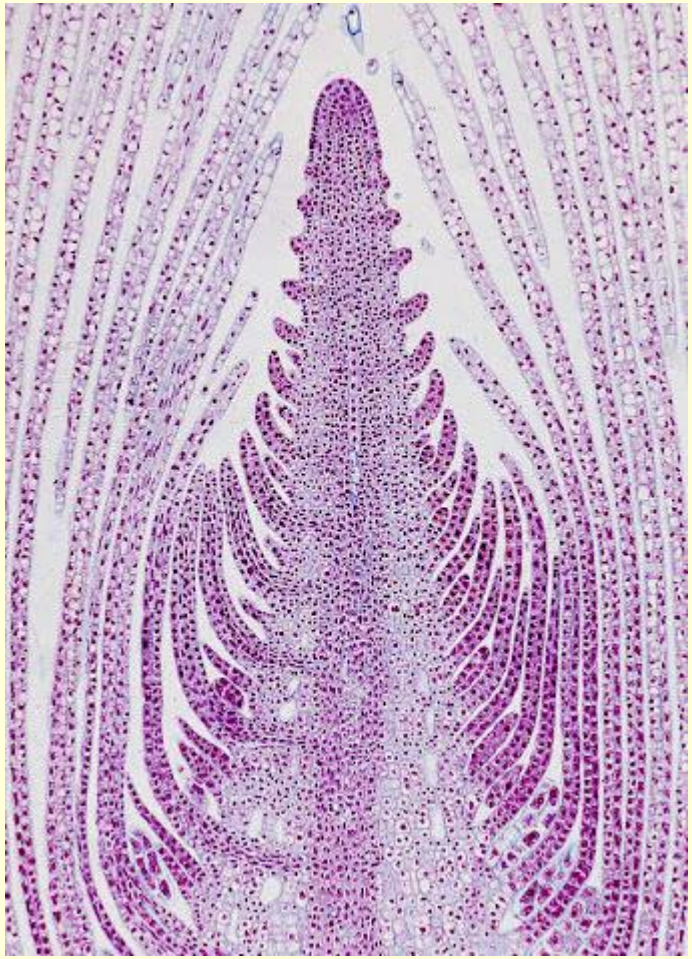

Classification of Meristem
Based on I: Origin
II: Position
III: Plane of Division
1.Promeristem
2.Primary meristem
3.Secondary meristem
1.Apical meristem
2.Intercalary meristem
3.Lateral meristem
1.Mass meristem
2.Plate meristem
3.Rib meristem

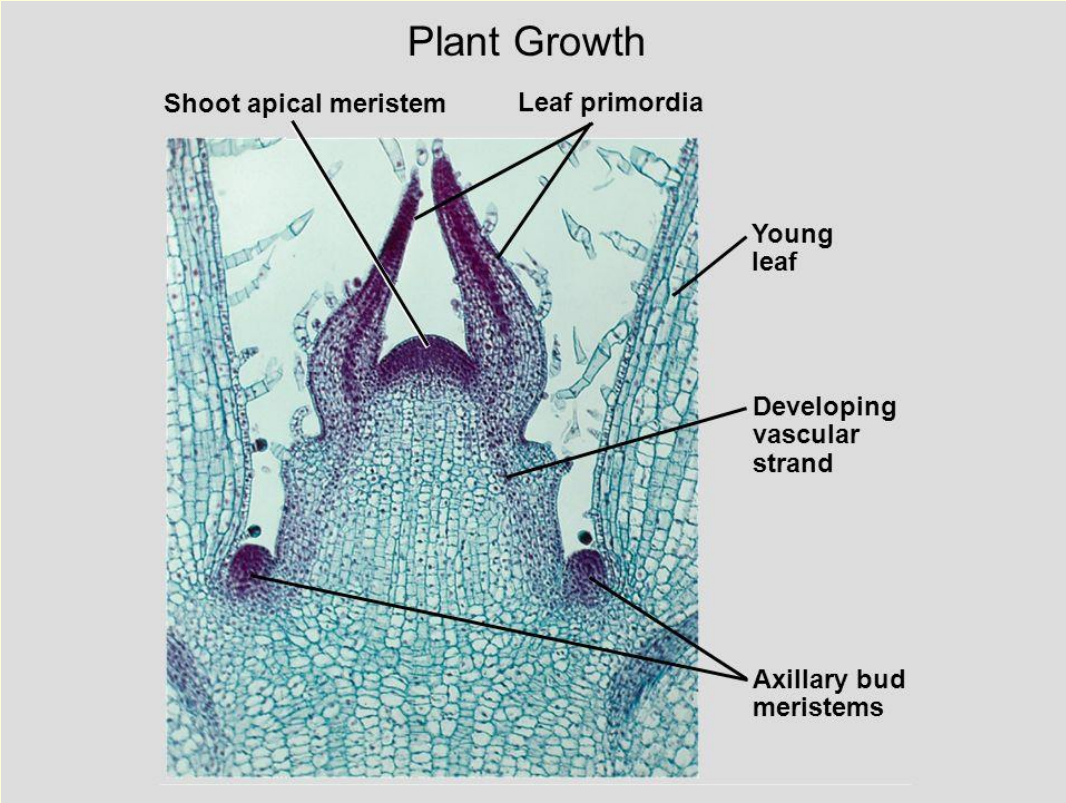
# Apical meristems of the stem and root.





Apical meristem of the root



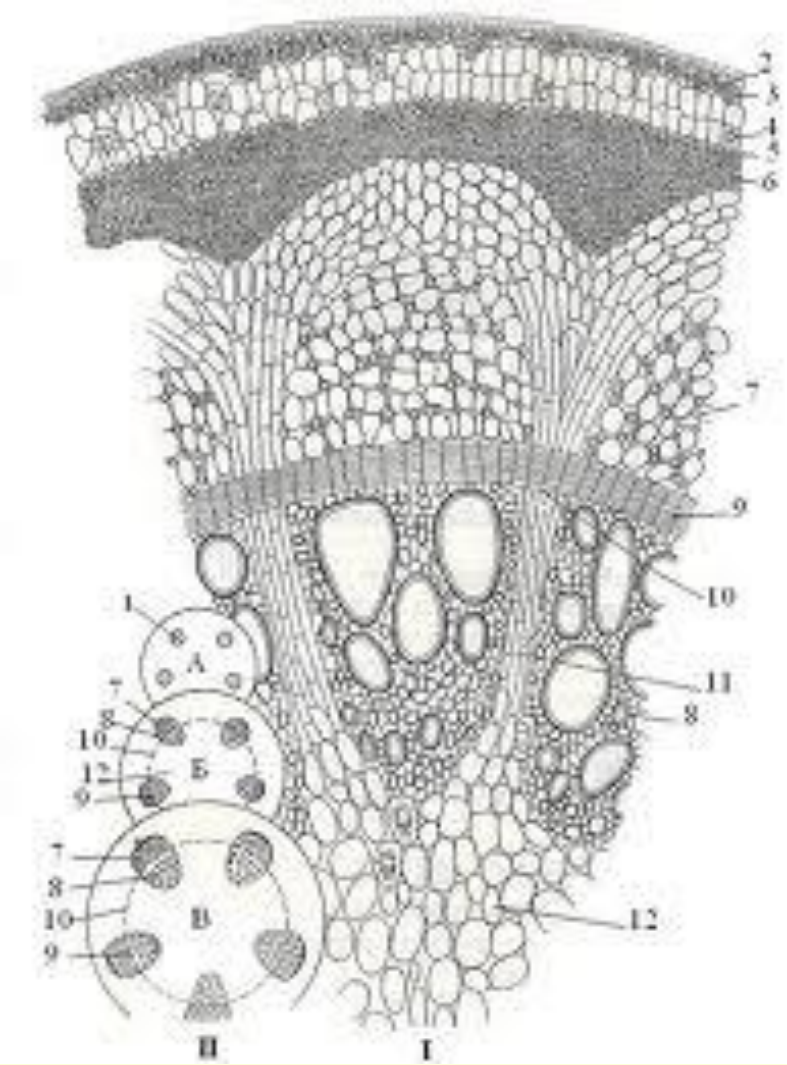



The apical bud of the elodea shoot

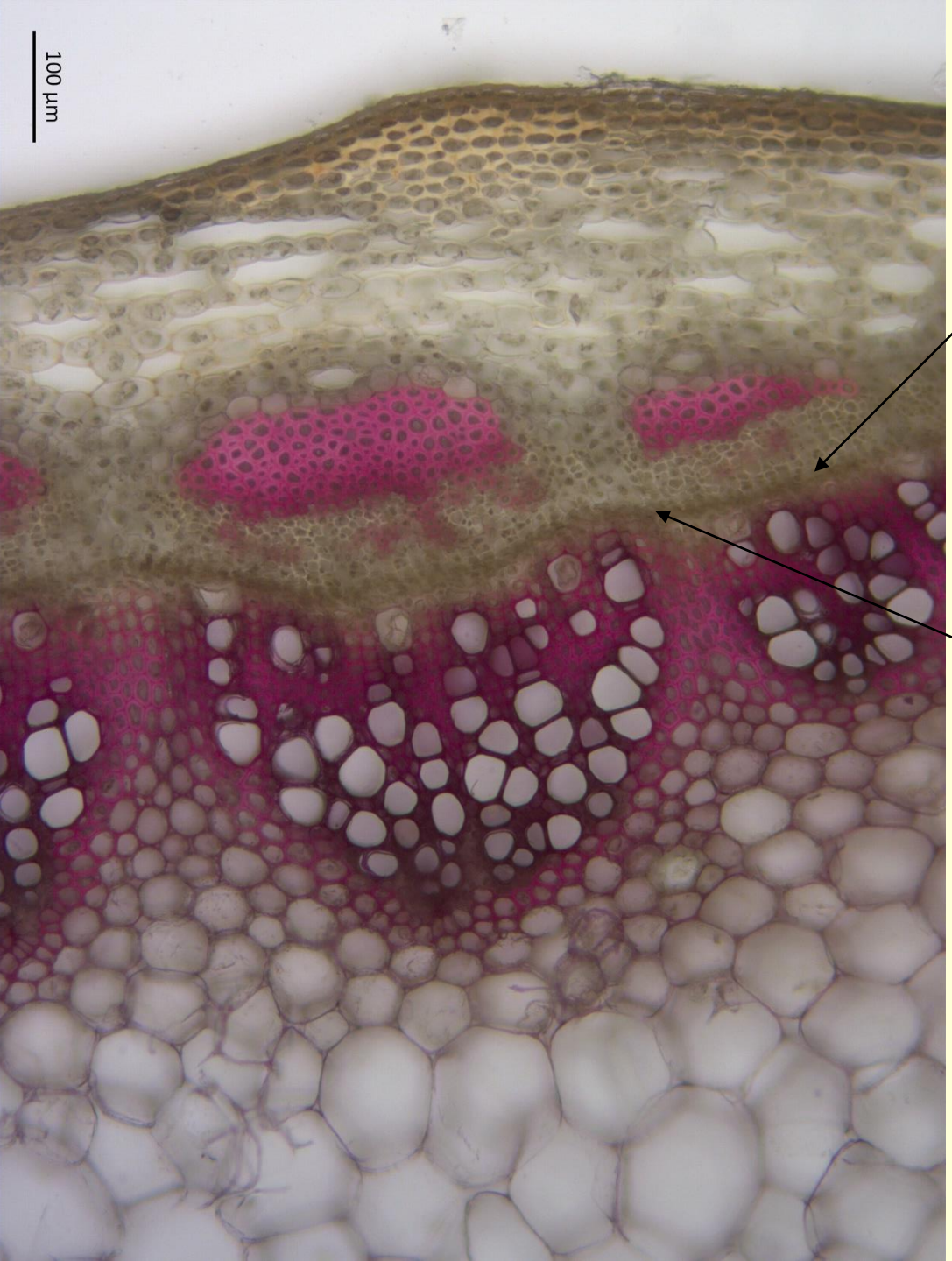
# The structure of the buds of woody plants

A – vegetative bud,

B - flower bud




The vascular cambium is formed in the central axial cylinder and provides a long-term growth of the axial organs of the plant in thickness, forming vascular tissues and tissues of the vascular (pith) rays.




The fascicular cambium

The interfascicular cambium