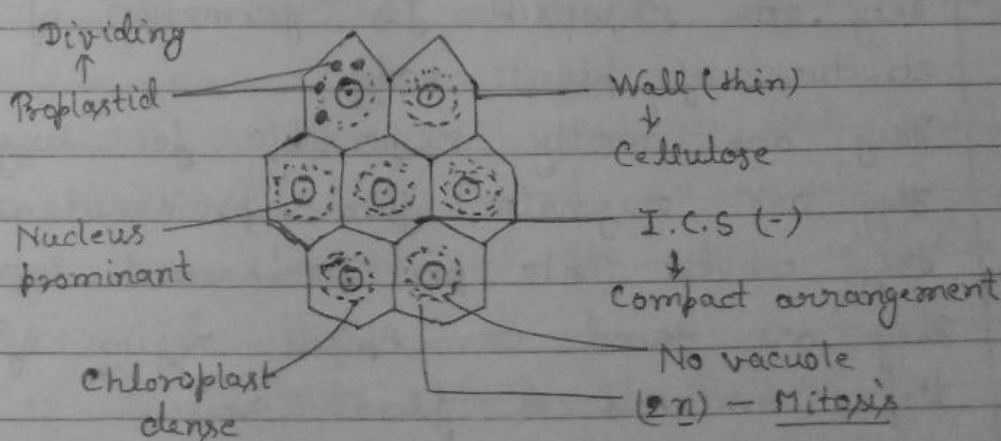


MERISTEM

Characters of Meristem :-

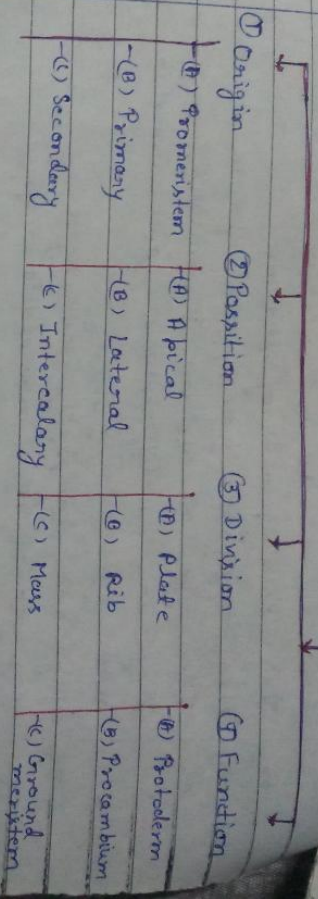
- ⇒ They have power of division.
- ⇒ They originate from zygote ($2n$)
- ⇒ The type of division is mitosis.
- They are undifferentiated and immature growth of cells.
- They are compactly arranged.
- They don't have intercellular space.
- Their wall is thin.
- They are characterized by deposition of cellulose.
- Cytoplasm is dense, nucleus is prominent.
- Best material to observe the different stages of mitotic cell division.
- Vacuoles are usually absent.
- They have a metabolic activity.
- The plastids are in proplastid stage.
- All meristems convert into permanent tissue.
- The spaces of the meristem are variable, may be rectangular, square, hexagonal.
- They are responsible for the length as well as thickness.
- Process of secondary growth is due to meristematic tissue.
- Healing of wound is also due to meristem.



Dia. showing gr. of meristem

Types of meristem :-

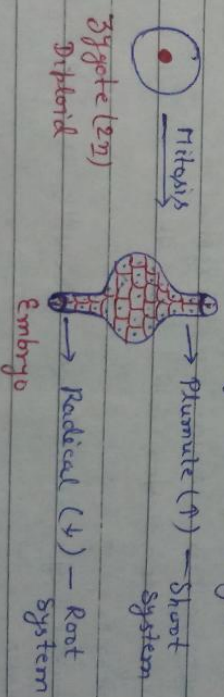
It divided into 4 basis.



On the Basis of Origin

Promeristem :-

- This is called first formed meristem.
- It is also called primordial meristem.
- They always originates from zygote.
- They convert into primary meristem.
- Usually they are found within apical region of plumule & nodal of an embryo.



[B] Primary Meristem :-

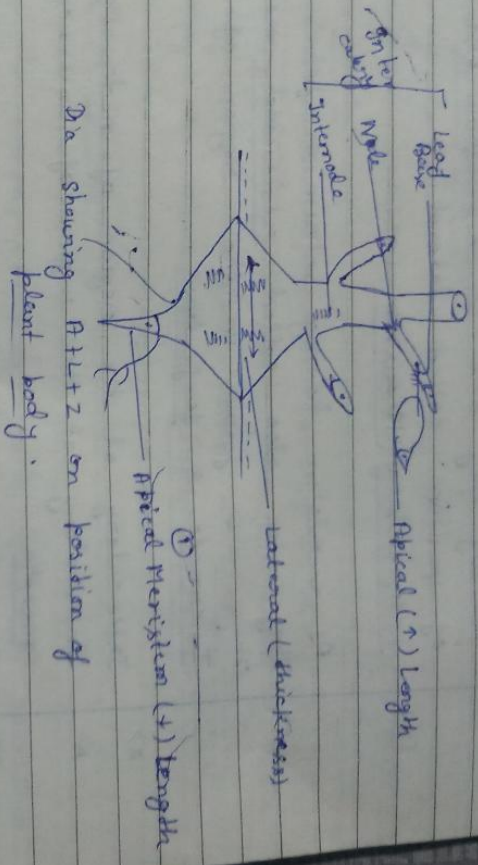
- They are responsible for formation of primary structure of plant body.
- They are mostly responsible for length.
- They are originates from promeristem.
- They convert into pri-permanent tissue.
- They are found in - Apical region of root, stem, leaf branches & floral axis.

[C1]

Secondary Meristem :-

- Originates from peripermanent tissue.
- They convert into sec. permanent tissue.
- They are responsible for the process of sec. growth.
- Their position is always lateral.
- Healing of wound is also due to example of secondary meristem.

On the basis of Position :-



[1]

Apical Meristem :-

- They are present at the apical region of plant body. Shown called apical meristem.
- They are responsible for the length of the plant body.
- They are actually peripermanent but considering the position it is named as apical.
- They are formed at the apex of - Root, stem branch & leaf.
- They have more power of division than intercalary but less power of division than lateral meristem.

[21]

Lateral Meristem :-

- They occupy lateral position in plant body.
- They are responsible for increasing thickness i.e. c.
- They have maximum power of division.
- They are found both in root & stem.
- Healing of wound is also due to lateral meristem.
- Actually they are sec. meristem but on the basis of position called lateral.

[37]

Intercalary Meristem :-

A meristem having minimum power of division. They are also called restricted meristem. They are found in the region of Node, Internode & leaf base.

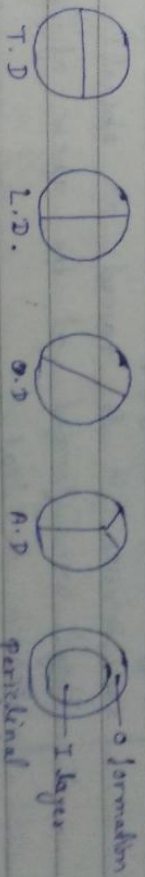
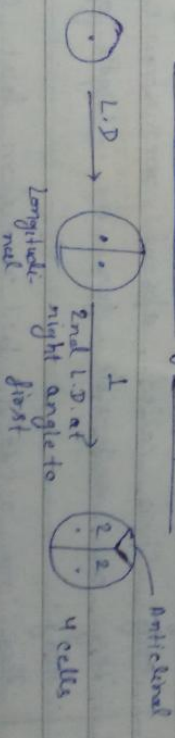
a)

Intercalary at the region of node - eg - grasses
 Intercalary at the region of Internode - eg - menheta.

b)

Intercalary at the region of leaf bases - eg - Pinus needle

On the basis of division



grass meristem

(i) Rib meristem :-

- Anticlinal in one plane in only direction of rib meristem.
- Cells are produce Row.
- They are responsible for formation of single layered epidermis, Endodermis & pericycle.
- They are called Row, & file meristem.

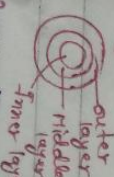
(ii) Plate meristem :-

- When anticlinal division takes place in both plant.
- Cells are produce on both side.
- They are responsible for formation of plate organ of the plant body i.e. leaf-lamina.
- They are also called planck meristem.

(iii) Mass Meristem :-

As the name indicate such type of meristem can divide in all possible plane.

The nature of division may be - longitudinal, Transverse, oblic, Anticlinal & Periclinal.

- Fig - 
- (a) Presence of such meristem can be marked in early development of an embryo.
 - (b) Early development of an endosperm.

On the basis of junction :-

- Meristem are very much particular regarding their junction.
- They are responsible for all the internal organization.

Diagram the ~~parts~~ of Pteridophyte

- of the plant body. considering their specific function they are divided into three types -

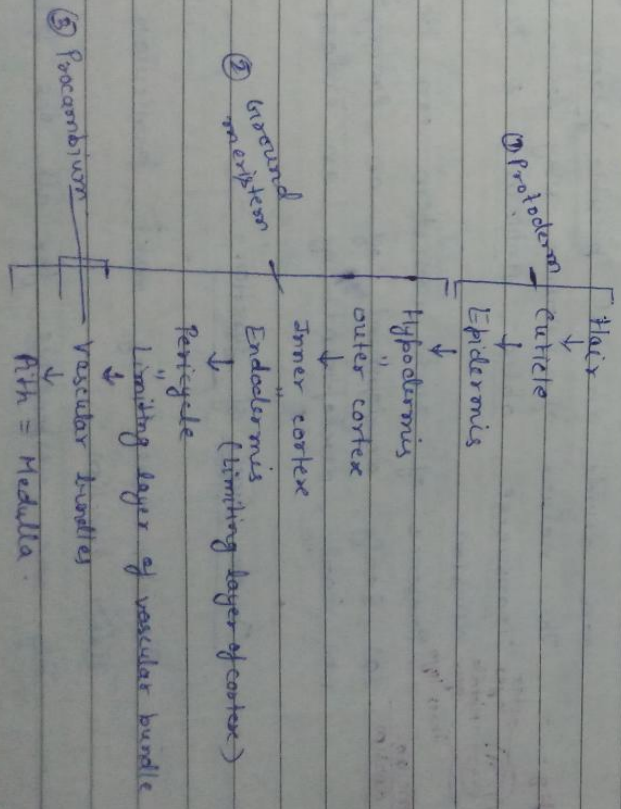
[21] Protoderm → Such type of meristem is responsible for formation of epidermal tissue system means they can form - hair, cuticle, epidermis of root, stem & leaf either dicot or monocot.

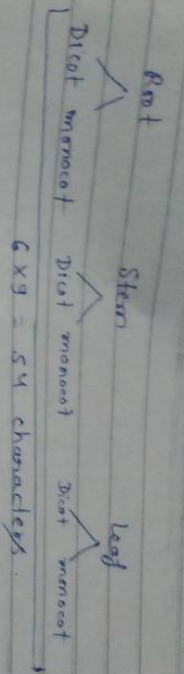


epidermis
V.B.

[22] Ground meristem → They are specific for forming - hypodermis, inner cortex, endodermis, pericycle, and pith of dicot & monocot in root, stem & leaf.

[23] Procambium → It is responsible only for formation of V.B. either radial, open, closed, conjoint & collateral of root, stem & leaf. The different junction of meristem is given below in -





Conclusion :- Concluding remark regarding the meristem & their diff. aspects are quite clear from the data given above. We can easily imagine that how meristem are responsible for participation in diff. permanent tissue as well as they participate in sec. growth to increase the thickness.

The main hence lies in the respect that - either it is monocot or dicot root, stem or leaf. Particular activity of meristem are so much specific that whole internal organisation is possible by meristem. Scientist are still working to know the detail of meristematic activities in other plant like gymno, pteridophyta etc.

Reference :-

① The anatomy of Angiospermic plant by "Esau" anatomical detail of Angiospermic plant by "Madoff" & "Chalk".

