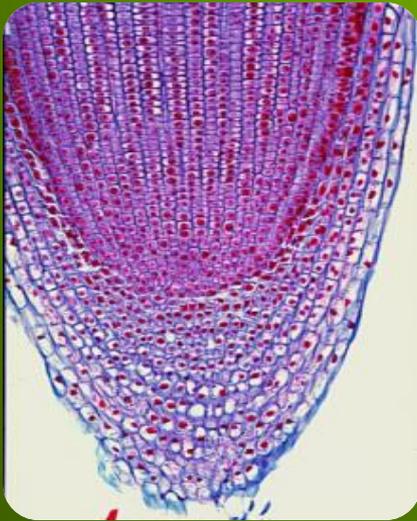


# **NUTAN MAHAVIDYALYA SAILU, DIST. PARBHANI**

## **UNIT-I MERISTEMATIC TISSUE**

### **MERISTEM AND CLASSIFICATION OF MERISTEM**



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**Plant Anatomy**- The study of internal structure of various parts of plant

or

The cellular details and different internal structure of the plants are studied in a separate branch of botany called plant anatomy



## Meristem or Meristematic tissue

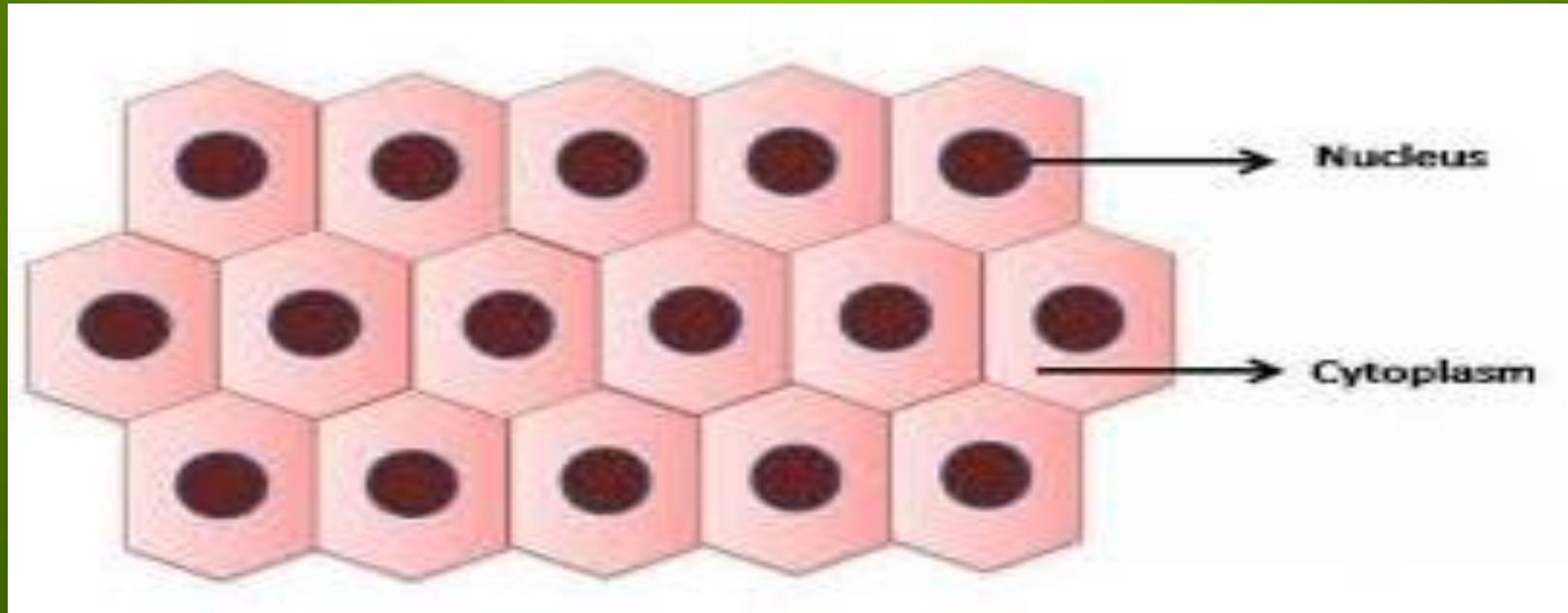
### Defination of Meristem

A group of cells which remains in a continues state of division or they retain their power of division is called as meristematic tissue

Or

A tissue which consist of dividing cells or the cells having power of division is called as meristmatic tissue

# Meristem



# Characteristics of Meristematic Tissue

The top of the slide features a decorative border with a white background and a light blue curved line. Several pink tulips with green leaves are scattered across this border, appearing to grow from the top edge of the green background.

The characteristics of meristematic tissue are as follows:

- ❑ The cells are small in size, isodiametric, oval or polygonal in shape.
- ❑ All cells are arranged compactly without intercellular spaces between them
- ❑ They possess a single, large and prominent nucleus
- ❑ They are dense cytoplasm with a large nucleus
- ❑ They are without any vacuoles but in few cases they are with minute vacuoles distributed in the cytoplasm



- ❑ they possess ability to divide continuously
- ❑ The cell wall is elastic and made up of cellulose
- ❑ They do not store food.
- ❑ They exhibit a very high metabolic activity
- ❑ The meristematic tissues heal the wounds of an injured plant.
- ❑ The cells of the meristematic tissue are young and immature.

# Classification of Meristem

**Based on** I: Origin

1. Promeristem
2. Primary meristem
3. Secondary meristem

II: Position

1. Apical meristem
2. Intercalary meristem
3. Lateral meristem

III: Plane of Division

1. Mass meristem
2. Plate meristem
3. Rib meristem

A decorative header featuring a row of pink tulips with green leaves, set against a white background. The tulips are arranged in a slightly curved line across the top of the slide.

# Classification of meristematic tissue on the basis of origin and development

Promeristem

The earliest and youngest meristematic tissue.

It originates from the embryo.

The primary meristem arises from the promeristem.

It is found in the root and the shoot tips.

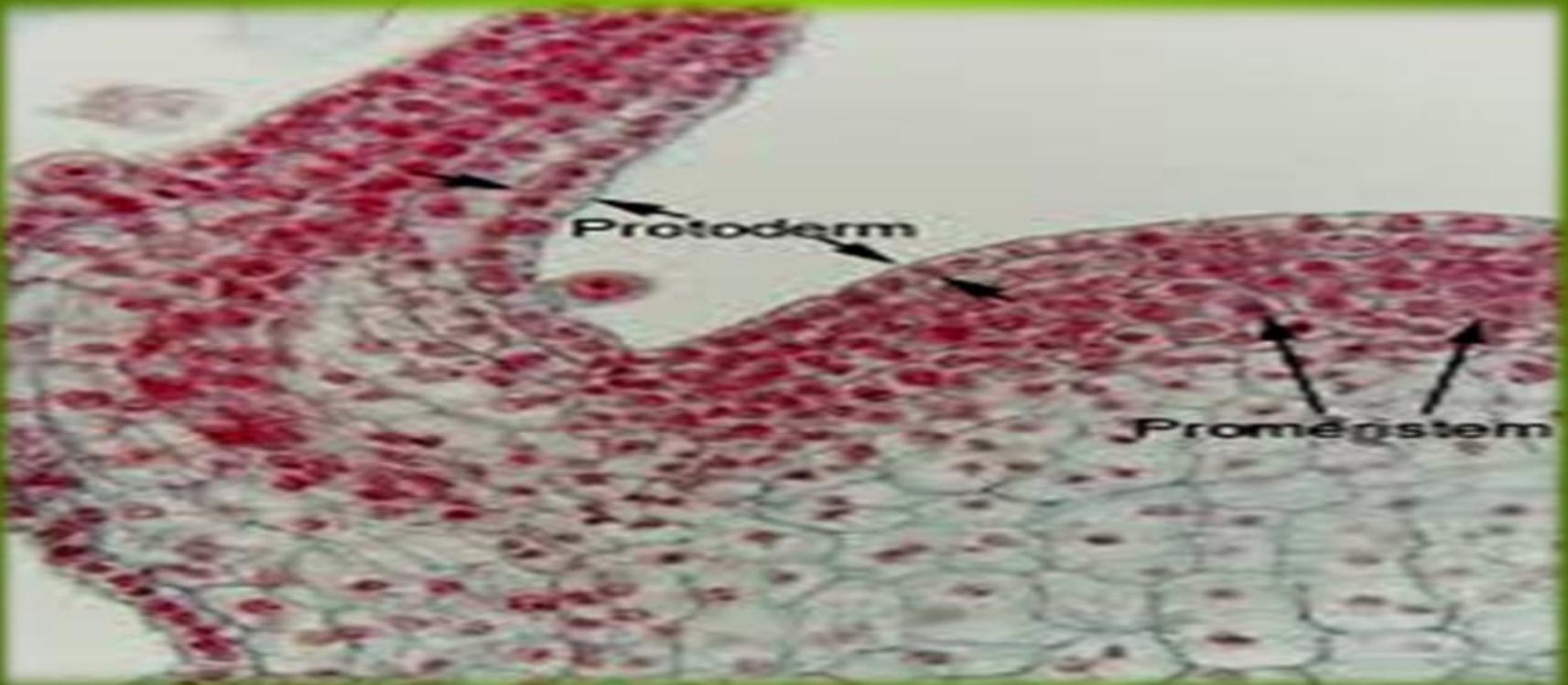


## Primary Meristem

It arises from the promeristem.

Cells divide actively.

It is present below the promeristem and forms the permanent tissue. Ex apical meristem





## Secondary Meristem

It originates from the primary meristem.

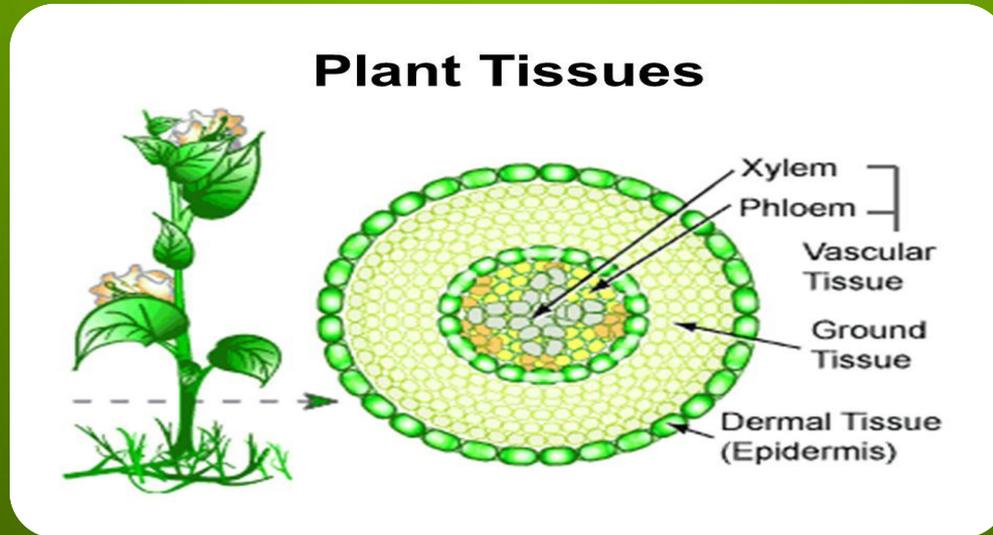
The permanent tissue forms from the secondary meristem.

Ex cork cambium

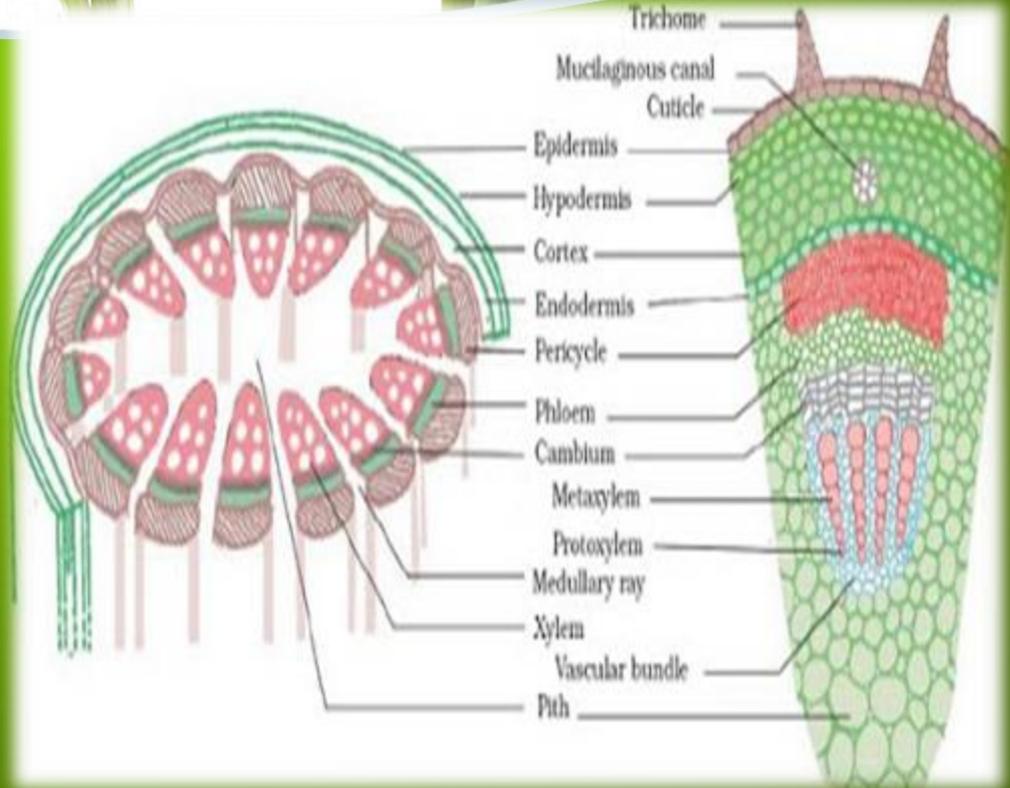
## b) classification based on function

On the basis of functions meristems are divided into following three types

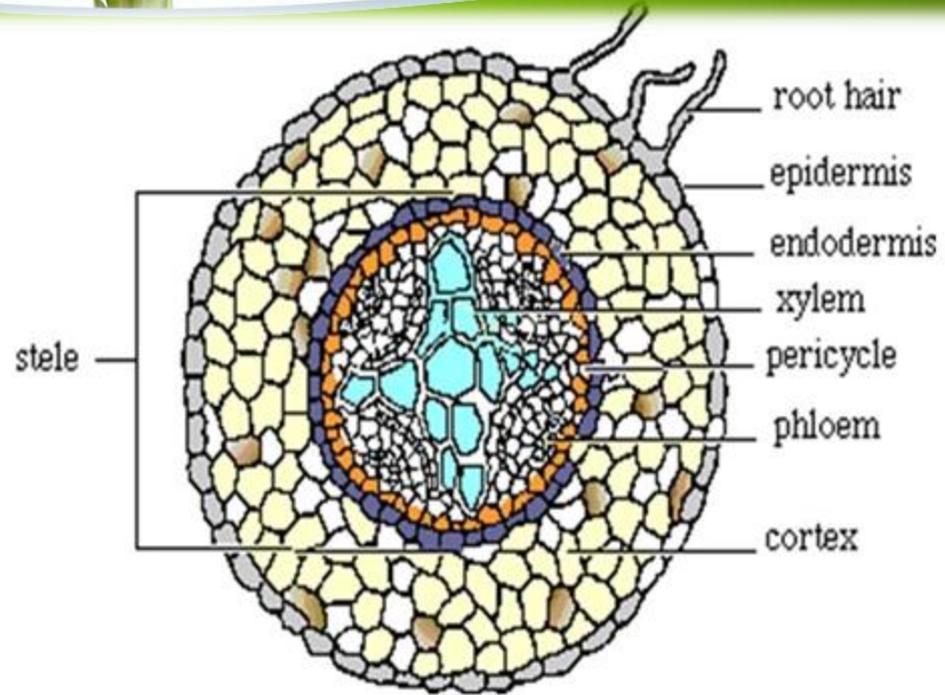
1-Protoderm- It is the outermost layer of young growing region which gives rise to epidermis in developing organs.



2-Procambium- The cells of young growing region which give rise to primary vascular tissues by their elongation and differentiation are called procambium



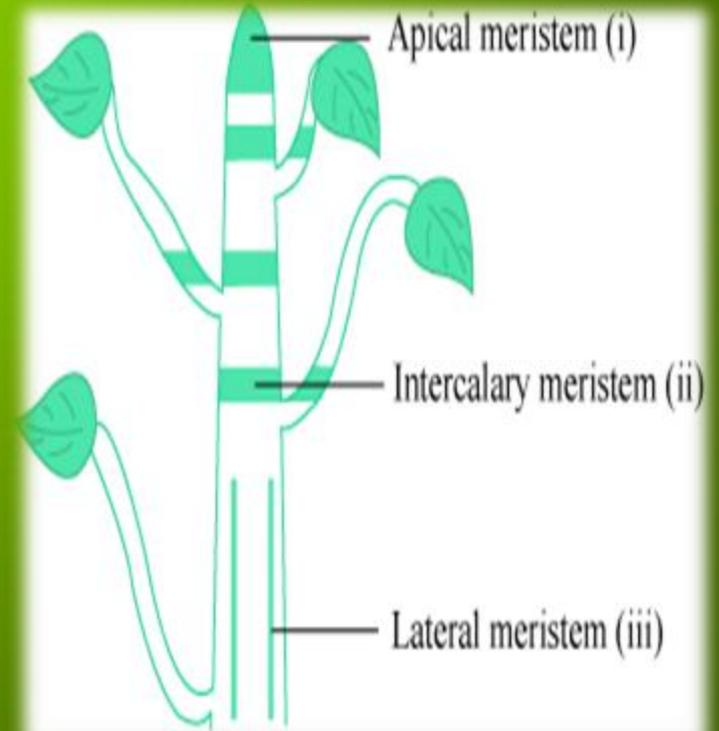
3-Ground meristem-  
The portion of young growing region which gives rise to hypodermis, cortex, endodermis, pericycle, medullary rays and pith is called ground meristem. All such parts together constitute the ground tissue system in a plant.



## c) classification based on Position

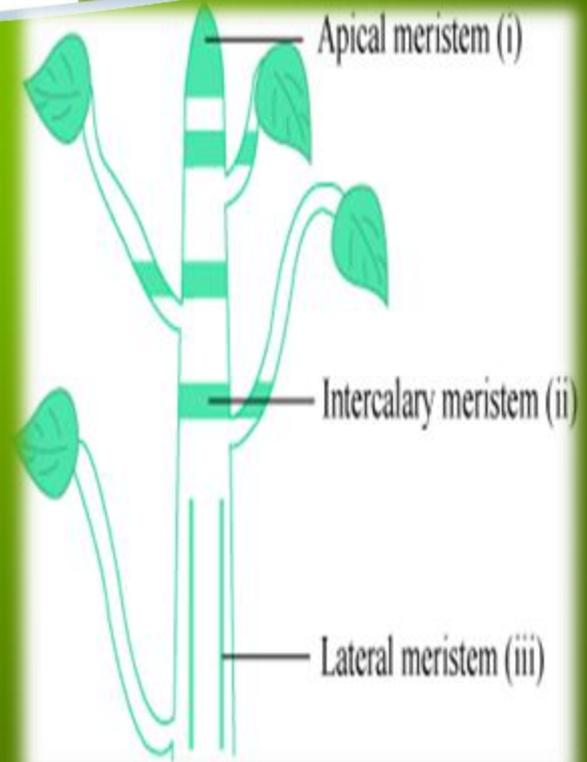
According to the position of the meristematic tissues in the plant body they are classified as apical meristem, intercalary meristem and lateral meristem.

1-Apical meristem- The meristem present at the apices of the plant body is called as apical meristem. It is also called as growing point or growing tip. They are responsible for increase in linear growth of the plant body. The activity of apical meristem adds new cells continuously and results growth in length of the plant body. The root and shoot apices are the examples of apical meristem.



## 2-Intercalalry Meristem-

these meristems are present between masses of permanent tissues. The meristem present at the base of internodes just near the nodal region of the shoot is called intercalary meristem. The acivity of intercalary meristem adds new cells continuously and results growth in length of the internodes. It is prominently found in monocotyledons. They originate form apical meristems and are short lived.



3- Lateral meristem- These meristems are arranged parallel to longitudinal axis of the plant in stem and branches. It is composed of initials which divide mainly in one plane and increase the diameter and girth of stem and branches. Cork cambium and vascular cambium are the examples of lateral meristem

