DEPARTMENT OF BOTANY
BY : DR RANJANA
D.B. COLLEGE, JAYNAGAR
ASSISTANT PROFESSOR (GUEST)
LALIT NARAYAN MITHILA UNIVERSITY, DARBHANGA (BIHAR)

LECTURE NO. : 01

DATE - 14th JULY, 2020

HONOUR'S PART - II

GROUP A - ANATOMY

MERISTEM : STRUCTURE AND CLASSIFICATION

The Tissue is a group of cells of more or less alike shape and size, having same origin, same method of development and same function.

Meristem or meristematic tissue are the group of cells that retain the power of division. The cells are thin walled, isodiametric without intercellular spaces and have dense cytoplasm with large nucleus.

CLASSIFICATION OF MERISTEMS ARE :

A. Based on Origin -

(i) Promeristem : It is the earliest embryonic condition consisting of young initials and their derivatives.

(ii) Primary meristem - It is composed of cells, which are direct descendants of embryonic cells, located chiefly at the tips of stem, roots and appendages. These build up the primary body of the plants.

(iii) Secondary meristem - Primary meristems gradually differentiate into permanent tissues. Some living permanent cells regain the power of cell division and constitute the secondary meristem e.g. inter fascicular

cambium and cork cambium (phellogen). They contribute to the secondary increase in the thickness of plant body.

B. Based on position -

(i) Apical meristem - It occurs at the apices of stem and roots of vascular plants and contributes to the growth in length of the axis. Many pteridophytes like ferns and horse-tails however, possess single Apical cell.

(ii) Intercalary meristem - These are the portions of Apical meristems, which are separated from the apex during the growth of axis and remain intercalated between permanent cells e.g. internodes of grasses and base of the leaves. They give rise to primary permanent tissues.

(iii) Lateral meristem - These occur laterally in the axis, parallel to the sides of the organs and are composed of initials, which divide periclinally (tangentially) and are responsible for increase in thickness e.g. fascicular (vascular) cambium and the cork-cambium.

C. Based on function -

(i) Protoderm - Gives rise to epidermis.

(ii) Procambium - Develops into primary vascular tissues (vascular bundles).

(iii) Ground meristem - Develops into fundamental or ground tissue including cortex, endodermis, pericycle pith and pith rays.

D. Based on planes of division -

(i) Mass meristem - Cells divide in all planes e.g. development of young embryo, endosperm, spores and sperms.

(ii) Rfb meristem - Cells divide anticlinally to the long Axis producing longitudinal files or rows of cells (hence also called file or row meristems) e.g. development of cortex and pith.

(iii) Plate meristem - Cells divide only anticlinally but in two planes e.g. uniseriate epidermis and flat blade of the leaf.