

Plant Anatomy.

①

पाद्यों के Internal structure and Organization की study

Two greek words - up-temnein-to cut

Another branch where study of tissues (अंतों का अध्ययन) histology या भौतिकी कहलाता है।

Angiosperms & Gymnosperms plants have a more complex organization where there is division of labour.

विभिन्न प्रकार के कार्यों के लिए विशेष प्रकार की कोशिकाएँ होती हैं।

These group of cells have the same structure, work (function) and origin. These group of cells are called tissue.

Classification of tissues - अंतों का वर्गीकरण

- ① Meristematic tissues
विभज्योत्पत्तिकी अंतक
- ② स्थायी अंतक / permanent tissues.

Definition - Meristematic cells have the ability to divide continuously. They occur at growing points mainly the root apex and the shoot apex. - leaves & flowers are actually ^{develop} form the shoots or are modified shoots.

Main characteristic of meristematic cells -

1) Continuous mitotic division, cell wall - thin, soft and of cellulose, secondary wall absent, cells are compactly arranged, without intercellular space.

समसूत्री विभाजन, कोशिका भित्ति कोमल, पतली एवं सेल्यूलोज से निर्मित, द्वितियक कोशिका भित्ति का अभाव

② food or ergastic (अजैव पदार्थों का)

संचयन या storage नहीं होता. But

they are concerned with active metabolism (उपापचय) Mitochondria

are more, ~~Chloroplasts~~ are plastids

are less - लवको का अभाव - and if

they occur they are in Proplastid

प्राक्लवक अवस्था में होते हैं।

(2)

Nucleus is well organized, clear & big
केंद्रक - बड़ा, सुस्पष्ट एवं सुगठित होता है।

Cytoplasm is - thick, vacuole is lacking
जीवद्रव्य सघन रिक्तिकाओं का अभाव

3) विभज्योत्तकों का वर्गीकरण (Classification of meristem)

→ Based on four criteria -

i) Origin of and development -

उत्पत्ति व तथा परिवर्तन

ii) विभाजन का तल (Plane of Division)

iii) पादप शरीर में उनकी स्थिति
(Position in plant body)

iv) कार्य (Functions).

on origin and development. 3 types

Promeristem - also called primordia/
embryonic / Eumeristem.

Occurs at shoot & root apex.

in radicle and plumule during
embryo growth → मूलानुद्गार → शीतानुद्गार

First they give rise to primary meristem
and then to secondary meristem.

i) Primary meristem - makes the primary axis. by division forms epidermis, primary xylem phloem.

Apical meristem - eg.

ii) Secondary meristem - living cells after getting permanent (2-21/21) ~~A~~ do not divide but retain the ability to divide. If required they can divide and form secondary tissues.

The cambium in the heart of dicot and interfascicular cambium in stem and cork cambium - (Q. to answer), to fill injured tissues.

Based on plane of Division

Periclinal - परिन्त || ||

Anticlinal - अपन्त 



Transverse - अनुप्रस्थ

longitudinal - अनुदैर्घ्य

Oblique - तिर्यक

Three types

3

• Mass/Block meristem (संक्षेप)

Divides in all planes. resulting in ~~mass~~ irregular cell group of cells like endosperm. - अणुमय

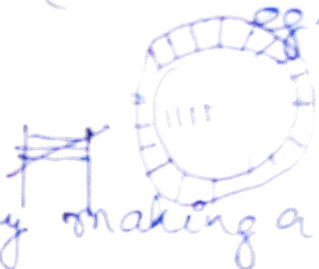
• Plate meristem - divides anticlinally



दो बराबर की पंक्तियों के समकोण पर विभाजन) - epidermis (वर्तमानत्व)

• Row/File meristem -

divides longitudinally making a row of cells



eg. cortex & pith (दोनों में विभाजन)

BASED ON POSITION IN PLANT BODY

Axial Meristem - eg. promeristem and primary meristem

Intercalary meristem - part of axial meristem but due to growth ~~remains~~ ^{becomes} detached from it and after sometime converts to permanent tissues.
eg. meristem at nodes of stem -

Lateral meristem - divides periclinally
|| ' || Cambium → produces.

Secondary tissues and secondary growth, increases the diameter.

4. BASED ON FUNCTIONS

- Protoderm - The outermost layer of apical meristem is called protoderm which after repeated divisions forms epidermal tissue system (अपिक्लमर्स्टम)
- Procambium - cells are long, thin which forms the initials of vascular tissue system occurs between protoderm and Ground meristem in the
- Ground meristem - cells are thin walled, soft and Isodiametric. present in many layers. Divisions produce - Hypodermis, Cortex and Pith which together are called ground tissue system.