



HANSRAJ MODEL SCHOOL

PUNJABI BAGH, NEW DELHI

CLASS - IX

SUBJECT - BIOLOGY

TOPIC - L-6, TISSUES
MODULE-1

CONTENTS

- TISSUE- DEFINITION
- SIGNIFICANCE OF TISSUES IN MULTICELLULAR ORGANISMS
- DIFFERENCES BETWEEN PLANT TISSUE AND ANIMAL TISSUE
- TYPES OF PLANT TISSUES (FLOW CHART)
- ACTIVITY TO SHOW THAT GROWTH OF PLANTS OCCURS ONLY IN CERTAIN SPECIFIC REGIONS DUE TO THE PRESENCE OF MERISTEMATIC TISSUES.
- MERISTEMATIC TISSUE- DEFINITION, TYPES, LOCATION AND FUNCTION.
- FEATURES OF MERISTEMATIC TISSUE

TISSUES

Multicellular organisms are made of millions of cells. Cells show division of labour and each cell performs a particular function efficiently. Such cells are grouped together and is called a tissue.

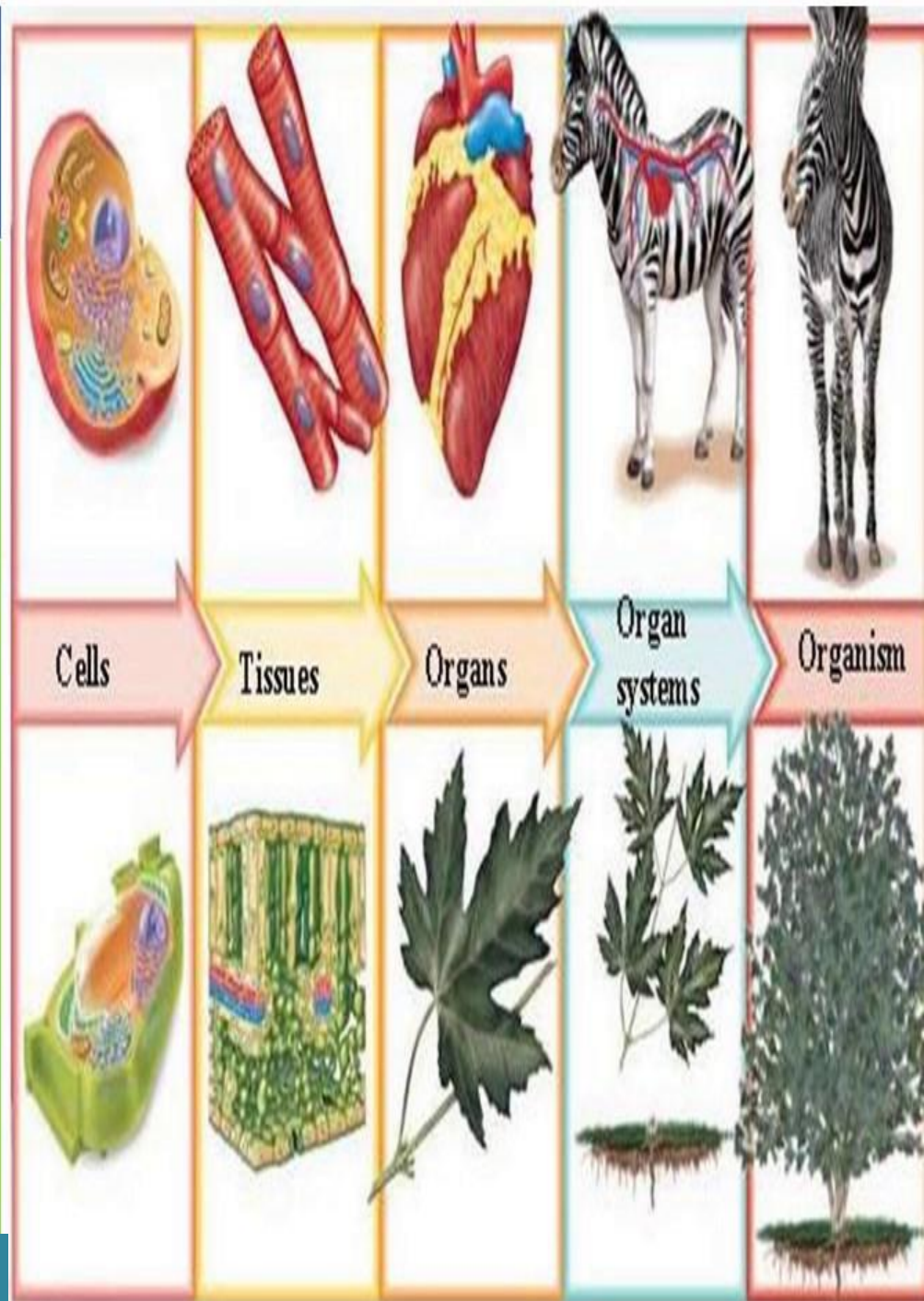
TISSUE—A group of cells that are similar in structure and work together to achieve a particular function forms a tissue.

SIGNIFICANCE OF TISSUES IN MULTICELLULAR ORGANISMS-

- ❑ Division of labour—In multicellular organisms a particular function is carried out by a cluster of cells i.e. Tissues, at a definite place in the body.
- ❑ To perform a function efficiently—This cluster of cells, called a tissue, is arranged and designed so as to give the highest possible efficiency of function .

e.g. Animal tissues- blood, muscle

Plant tissues- xylem, phloem



ARE PLANTS AND ANIMALS MADE OF SAME TYPES OF TISSUES?

ANIMAL TISSUE

- Animals are mobile in search of food, mates and shelter, so they consume more energy. Most of the tissues they contain are living.
- Cell growth in animals is more uniform. So there is no such demarcation of dividing and non-dividing regions in animals.
- Structural organisation of organs and organ systems is more specialised and complex.

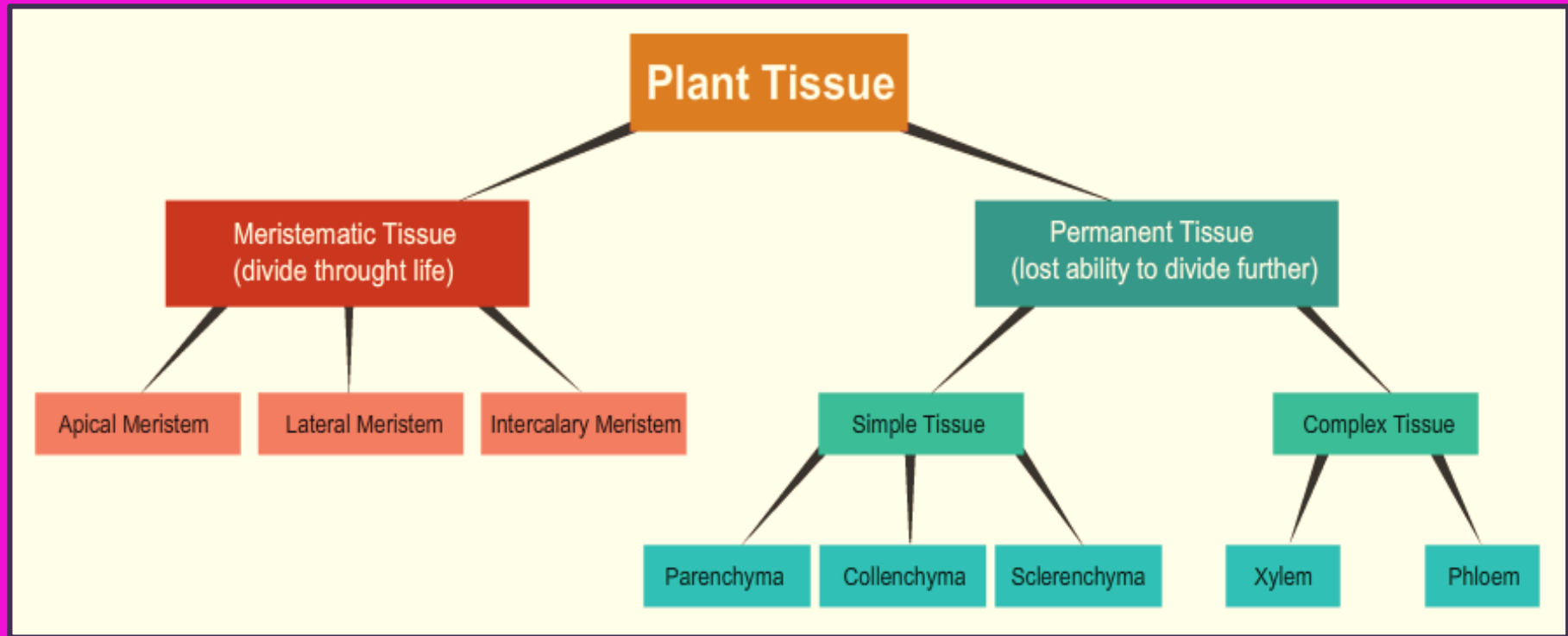
PLANT TISSUE

- Plants are stationary- they don't move. Since they have to be upright, they have a large quantity of supportive tissue which generally has dead cells.
- The growth in plants is limited to certain regions. There are some tissues, localised in certain regions that divide throughout their life.
- Structural organisation of organs is comparatively less complex.

TYPES OF PLANT TISSUES

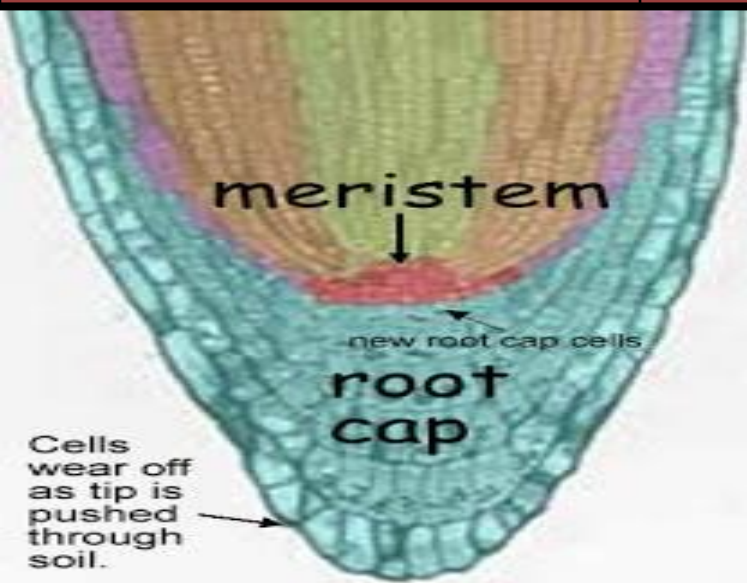
PLANT TISSUES ARE MAINLY OF TWO TYPES-

1. MERISTEMATIC TISSUE
2. PERMANENT TISSUE

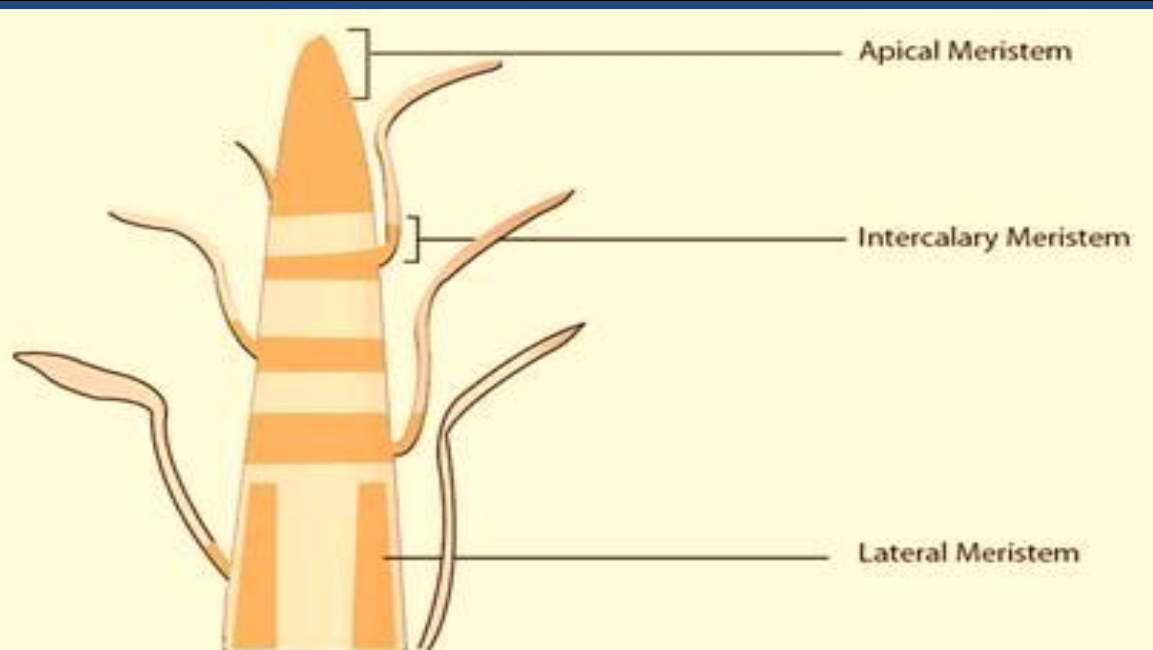


TYPES OF MERISTEMATIC TISSUES ON THE BASIS OF THEIR LOCATION

TYPE	LOCATION	FUNCTION
1. APICAL MERISTEM	ON GROWING TIPS OF STEMS AND ROOTS	INCREASES THE LENGTH OF THE STEM AND THE ROOT
2. INTERCALARY MERISTEM	AT THE BASE OF LEAVES (NODE)	INCREASES LENGTH BETWEEN NODES
3. LATERAL MERISTEM (CAMBIUM)	ON LATERAL SIDES OF STEM AND ROOT	INCREASES THE GIRTH OF THE STEM AND THE ROOT



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ACTIVITY-TO SHOW THAT GROWTH OF PLANTS OCCURS ONLY IN CERTAIN SPECIFIC REGIONS DUE TO THE PRESENCE OF MERISTEMATIC TISSUE

PROCEDURE

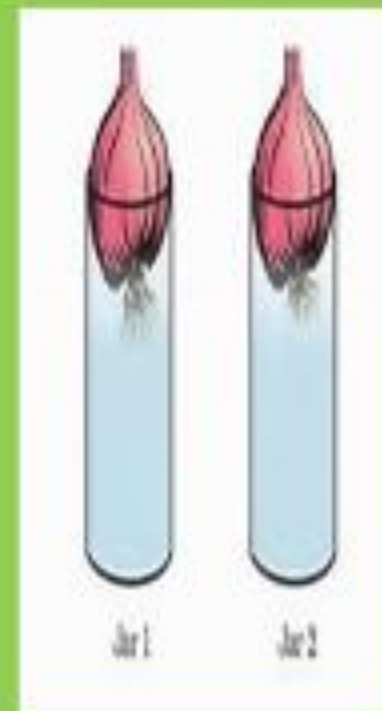
1. Take two glass jars and fill them with water.
2. Now, take two onion bulbs and place one on each jar as shown in the picture.
3. Observe the growth of roots in both the bulbs for a few days.
4. Measure the length of roots on day 1, 2 and 3.
5. On day 4, cut the root tips of the onion bulb in jar2 by about 1 cm.
6. After this observe the growth of roots in both the jars and measure their lengths each day for five more days and record the observations in a tabular form.

OBSERVATION

- Finally we observe that roots of jar 1 are longer than that of jar2.
- The root tips stop growing, in jar 2 after we cut them.

CONCLUSION- Meristematic tissue (dividing tissue) present at root tip is responsible for its growth.

ACTIVITY: 6.1



FEATURES OF MERISTEMATIC TISSUE

- Cells of meristematic tissue are very active.
- They have dense cytoplasm, thin cellulose walls and prominent nuclei.
- They lack vacuoles.