

Practical work 2 : Plant tissues

1. INTRODUCTION

- Meristematic tissues

A **meristem** is a biological tissue composed of undifferentiated cells that form a growth zone where cell division (mitosis) takes place. There are two types of meristem: primary and secondary.

Primary meristems are responsible for plant growth in the form of stems, leaves or roots. The cells of primary meristems, located at the ends of stems and roots, are small, isodiametric, the nucleus is spherical, voluminous and very rich in chromatin, the vacuoles are numerous and very small and the plastids are undifferentiated (proplastids).

The secondary meristems are responsible for the increase in diameter of the organs of certain plants, such as the stem.

- Epidermis

In botany, the **epidermis** is the superficial plant tissue that forms a continuous protective layer on the surface of the above-ground parts of a plant while the below structures are primary (young stem, **leaf**, flower, etc.). This layer is generally transparent (these cells do not have chloroplasts) and covered by a waxy cuticle to limit water loss when it is too hot. This cuticle is therefore thicker in xerophytes. It is sometimes thinner on the lower epidermis than on the upper epidermis.

- Parenchyma reserve

Parenchyma is an unspecialised plant tissue with thin cell walls and is sometimes referred to as filler tissue. Reserve parenchyma is a chloroplast-free tissue found in underground organs (roots, stems, seeds). Reserves can be of different types, e.g. carbohydrate, lipid, protein. Starch is one of the most common storage carbohydrates and is stored in amyloplasts (starch granules).

2. OBJECTIVE

Identification of the cauline and root meristematic tissues, the covering tissues and the reserve parenchymal tissues.

3. MATERIALS

Light microscope, microscope slide and cover glass, fine tweezers, scalpel, adhesive tape, potato, one olive leaf. A drawing board with examples of root and cauline meristems.

4. MANIPULATION

- a. Observe on plate (n°1) : Examples of longitudinal sections of cauline and root meristems.
- b. On the inside of the olive leaf, apply the tape and apply a little pressure to get the maximum of the upper layer, remove the tape from the leaf and put it on a microscope slide for observation.
- c. Cut off a part of a potato, take a very thin layer and put it on a microscope slide, cover it with a cover glass and observe under the microscope.

5. WORK REQUIRED

For the different manipulations : Observe, draw carefully and label your drawings.

RESULTS

1. Root meristem of garlic

Elongation zone

Meristematic zone

Cap cells

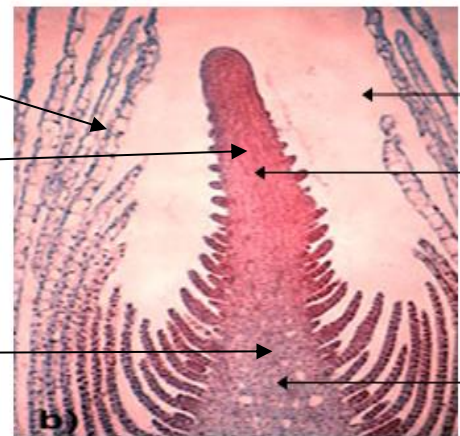


2. *Elodea* stem meristem

Starting leaf

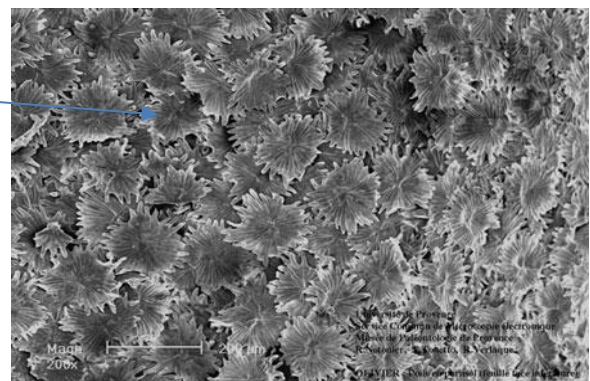
Meristematic zone

Elongation zone



3. Olive tree covering tissus

Multicellular bristle



4. Reserve tissue for potatoes (reserve parenchyma)

