

LABORATORY SAFETY INSTRUCTIONS

In general, handling and conducting experiments in the laboratory requires the use of chemicals that can be toxic, flammable, or explosive. During the performance of this work, serious accidents can be the result of a simple error or negligence.

At the laboratory level, anyone who does not follow safety rules is at significant risk with frightening results for themselves and their colleagues. To avoid any risk, students should follow the teacher's advice and basic safety instructions.

Dress and behaviour in the laboratory:

- Wearing a **gown** is **mandatory** in the laboratory:
 - Gowns should be made of durable cotton fabric;
 - They should be long enough to protect the legs, with long sleeves;
 - It is advisable to wear closed-toe shoes that cover the entire foot.
- **Long hair should be tied back** during the lab session.
- During the practical sessions, it is **strictly forbidden** to:
 - Eating, drinking, chewing Schwingum and smoking;
 - Talk on the phone or listen to music with a hand-kit;
 - Take photos (off-topic) during the lab session.

Before leaving the lab:

- Turn off microscope lamps, unplug sockets, and carefully store the various instruments in their places.
- Clean the benches, tidy up the chairs and drop off the lab report.
- Wash hands at the end of each session.

Recommendations and preparation of TP reports

It is imperative to:

- Avoid delays, so as not to disturb or interrupt the lab session;
- The practical work can be carried out in pairs or trinomials depending on the number of students present and the instruments necessary for the practical work, **but the report must be individual** ;
- At the beginning of each session, the student must carefully read the work to be done;
- During all practical sessions, the student must have the following drawing materials: white A4 sheets of paper without grids, HB graphite pencil, ruler, eraser, paper clip or engraver;
- The drawing must be in black pencil, no color, no pens;
- In general, the drawing must represent the image produced by the observation tool, which in most cases is the microscope (enlarge the image while preserving its proportions and arrangement);
- The magnification used must be mentioned in each drawing;
- The full legend must be mentioned in each drawing, written in a legible, orderly manner, and written on one side only with parallel arrows;
- The title must be complete and includes all keywords (organ, section, scientific name and common name of the plant).

The TP report includes the 1st sheet "the cover page", plus the sheets of drawings. It should be written in the form shown in the following figure, and not double-sided:

Surname and First name
Group / Sub-Group
Benchtop No.

Date

TP N° ...:

Title of TP

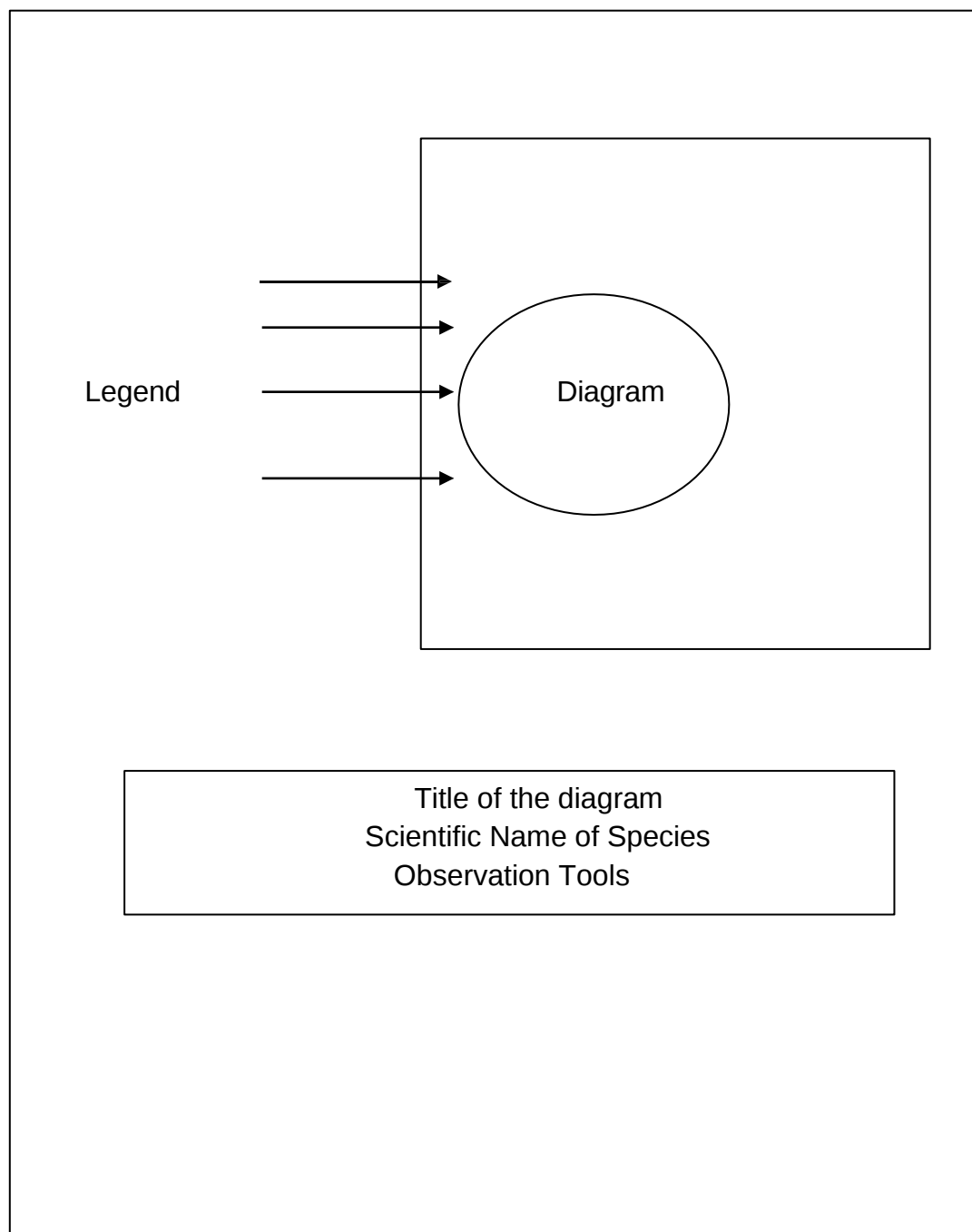
Note

Observation

Tasks :



Shape of the cover page



Practical work 1 : The plant cell

1. Introduction :

The cell Plant characterized by the Presence of three major cytological features:

a. Pectocellulosic wall: This is a plant cell wall, it ensures the maintenance and defines the size and shape of the plant cell. It is mainly composed of pectins, hemicellulose and cellulose. It is involved in the regulation of relationships with other cells and with the outside world. It comprises, from the outside to the inside: the middle lamella common to the contiguous cell, the primary wall and then the secondary wall.

b. Vacuole: Vacuoles are specific to the plant cell and are compartments bounded by a membrane called a tonoplast. The vacuole does not have a particular shape or size, and its structure varies according to the needs of the cell. They allow the storage of water, ions, sugars, nitrogen derivatives and degradation products.

c. Plastids: Plastids are cellular organelles bounded by two membranes. They all derive from protoplasts and are:

- Amyloplasts that lack pigment and accumulate starch (a storage substance)
- Chloroplasts absorb solar energy and are able to convert this light energy into chemical energy through photosynthetic reaction
- Chromoplasts accumulate carotenoid pigments that give certain organs their yellow, orange or red color.

2. Objective of the TP:

Knowledge and demonstration of the peculiarities of plant cells (pectocellulosic wall, vacuole, chromoplasts and chloroplasts).

3. Materials and reagents used:

Light microscope, slide and coverslip, onion, tomato, pepper, green leaf (Elodea or other), fine tweezers, scalpel, distilled water and neutral red.

4. Manipulations :

- Place a fragment of the inner epidermis of the onion scale on the blade. Add one to two drops of neutral red, cover with a strip and move on to observation.

- Put a very thin layer of the epidermis (upper side) of the pepper on a blade and add 1 to 2 drops of the distilled water, cover with a strip, and proceed to observe.

- Put a very young green leaf of Elodea (or other) between the slide and the coverslip and pass it under a microscope.

- Place a smear scraped with the soft tomato jelly on a slide, cover with a strip and gently crush the sample so that the cells are well distributed (not overlapped), making it easier to observe the cells.

5. Work required:

For the 3 manipulations: Observe, draw carefully and caption your observations.

RESULTS

1- Onion cells observed under the microscope:

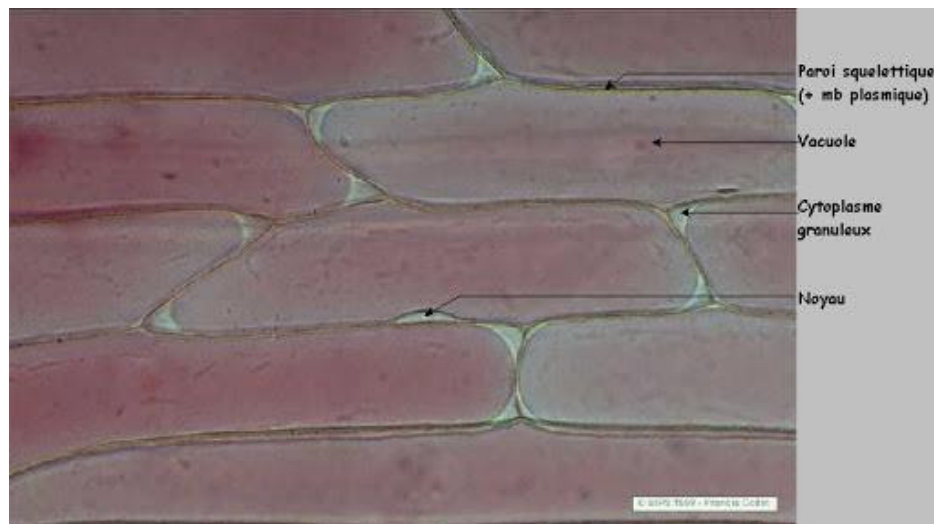


Diagram 1. Onion epidermis cells observed with a Binocular Optical Microscope, Gr.10X

2- Pepper cells observed under the microscope:

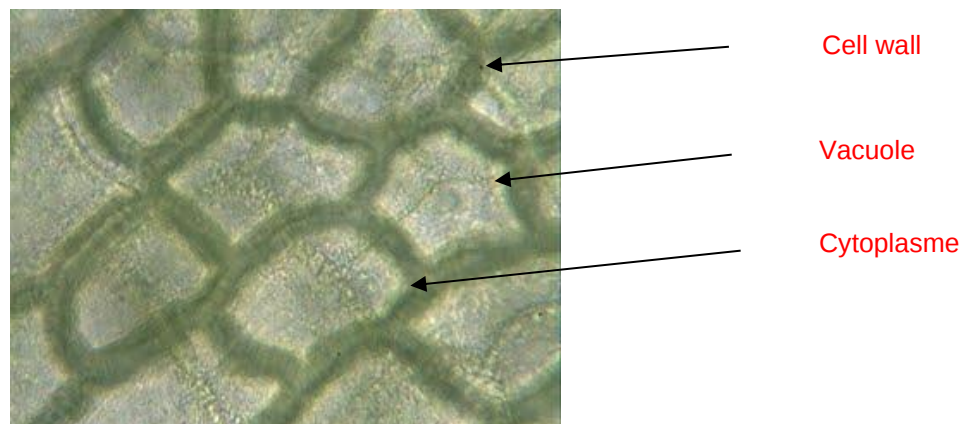


Diagram 2. Pepper epidermis cells observed by Binocular Optical Microscope, Gr.10X

3- Elodea cells observed under the microscope :

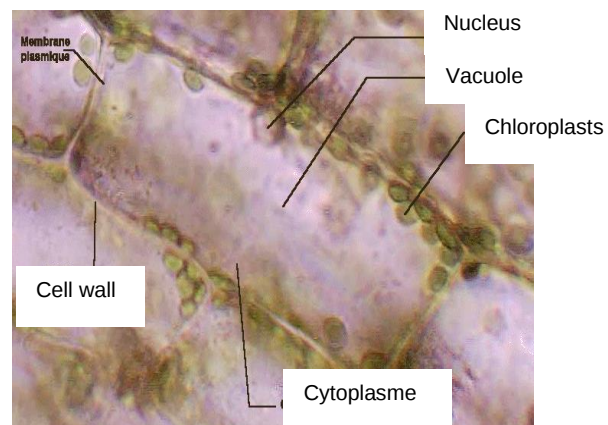


Diagram 3. Elodea leaf cells observed by Binocular Optical Microscope, Gr.40X

3- Tomato cells

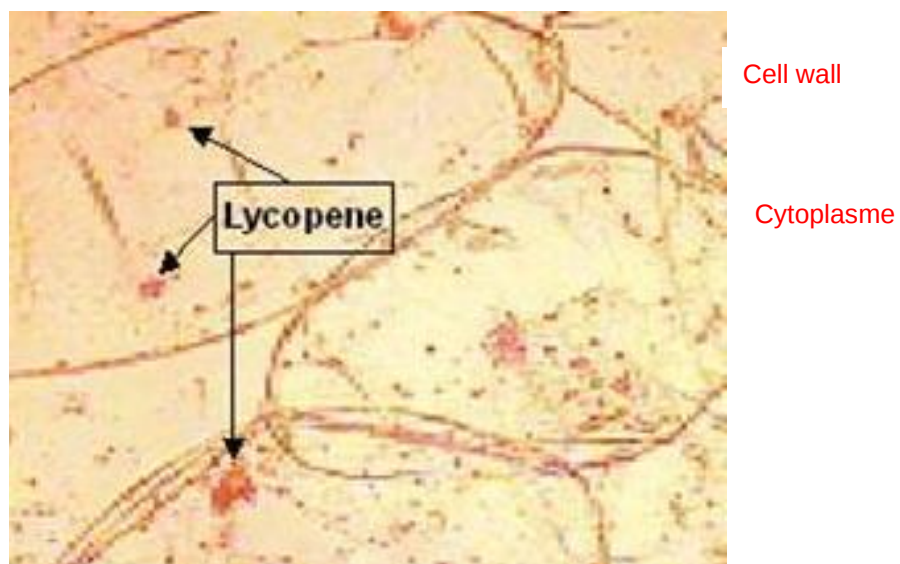


Diagram 4. Tomato cells observed by Binocular Optical Microscope, Gr.40X