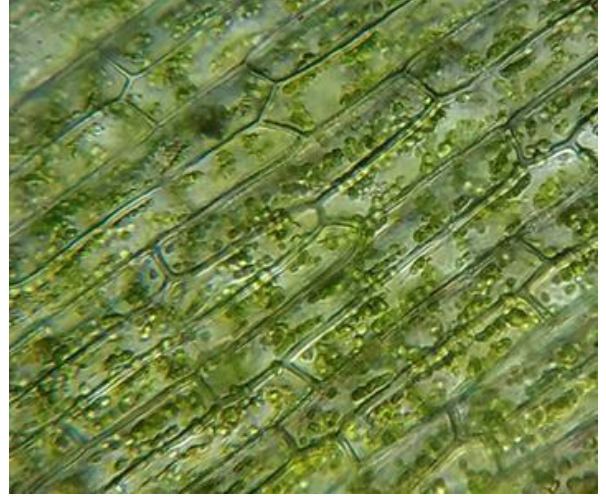


## TP 1 : plastids

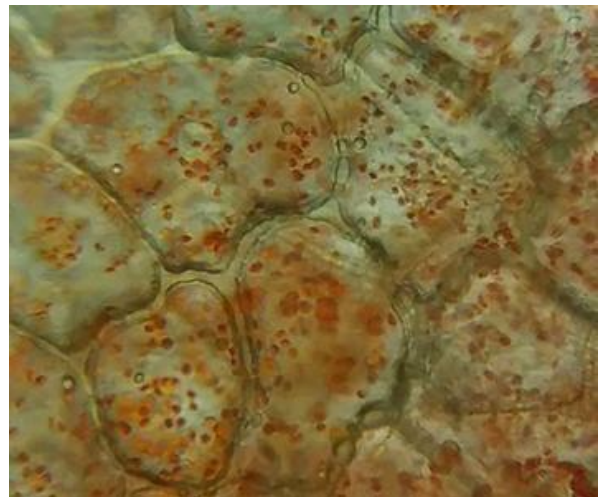
Plastids In most plant cells structures called plastids are found. They are found in the cytoplasmic matrix of plant cells only. These structures are generally spherical or ovoid in shape and they are clearly visible in living cells. 3 types of plastids found in plant cells:

**Chloroplasts** : Chloroplasts are probably the most important among the plastids since they are directly involved in photosynthesis. They are usually situated near the surface of the cell and occur in those parts that receive sufficient light, e.g. the palisade cells of leaves. The green colour of chloroplasts is caused by the green pigment chlorophyll.



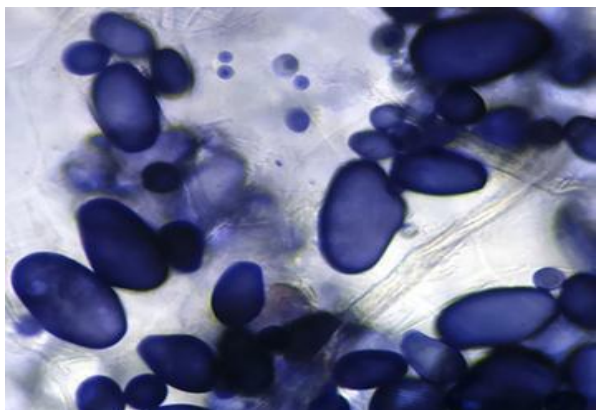
**Figure 1:** A micrograph of chloroplasts within plant cells

**Chromoplasts** : Chromoplasts are red, yellow or orange in colour and are found in petals of flowers and in fruit. Their colour is due to two pigments, carotene and xanthophyll. Functions the primary function in the cells of flowers is to attract agents of pollination, and in fruit to attract agents of dispersal.



**Figure 2:** A micrograph of chromoplasts within plant cells

**Leucoplasts** : Leucoplasts are colourless plastids and occur in plant cells not exposed to light, such as roots and seeds. They are colourless due the absent of pigments. Functions leucoplasts are the centers of starch grain formation; they are also involved in the synthesis of oils and proteins.



**Figure 3:** A micrograph of leucoplasts within plant cells

## Learning Objectives

After completing the lab, the student will be able to:

- Prepare wet mounts of green pepper slices and observe chloroplasts.
- Prepare wet mounts of tomato slices and observe chromoplasts.
- Prepare wet mounts of potato slices and observe before and after staining with iodine.

**Materials:** Green pepper - tomato –potato -Microscope - Scalpel -Slide -Cover Slip - Tweezers

### ❖ Chloroplasts

#### • Experimental procedures

1. Use a razor blade and shave a very thin (almost translucent) slice of green pepper onto a slide and prepare a wet mount of it.
2. Place a fragment of green pepper on a microscope slide, add a drop of water and a cover slip.
3. Look at the fragment down a microscope and see if you can identify the small green chloroplasts.
4. Remove air bubbles by pressing on the preparation.
5. Observe under an optical microscope at magnifications of x4, x10, x40.
6. Draw the microscopic observation.

### ❖ Chromoplasts

#### • Experimental procedures

1. Select a plant which has a very thin leaf such as tomato .
2. Place a fragment of tomato on a microscope slide, add a drop of water and a cover slip.
3. Look at the tomato a microscope and see if you can identify the small red chromoplast.
4. Remove air bubbles by pressing on the preparation.
5. Observe under an optical microscope at magnifications of x4, x10, x40.
6. Draw the microscopic observation.

### ❖ Leucoplasts

Potatoes are stems full of starch that is stored within the cells in colorless plastids called amyloplasts.

#### • Experimental procedures

1. Cut a very thin wedge-shaped sliver of potato.
2. Place it on a microscope slide.
3. Add a drop of iodine on top of the slice of potato.
4. Place a coverslip on top.
5. Observe the potato slice under the microscope.
6. Iodine stains starch a purple or blue-black color.
7. Observe under an optical microscope at magnifications of x4, x10, x40.
8. Draw the microscopic observation.

**NB:** If you have difficulty seeing the chromoplasts, look at the cells at the edge where the slide is very thin.