

## TP 01. Observation of plastids

Plastids are intracellular organelles found exclusively in plant cells. They contain, depending on the case, substances such as chlorophyll, carotene, or starch, etc. We can distinguish three main types: **chloroplasts**, **chromoplasts**, and **amyloplasts**.

### I. Chloroplasts

Chloroplasts are organelles of plant cells that contain chlorophyll. For microscopic observation of chloroplasts, green pepper (*Capsicum annuum*) are used.

#### 1. Materials

- Microscope
- Slides and cover slips
- Fine forceps
- Scalpel blade
- Green pepper (*Capsicum annuum*)

#### 2. Slide preparation

Using fine forceps, make a thin section of the outer layer of the green pepper and place it between a slide and a cover slip in a drop of water.

#### 3. Observation

Observe under the microscope using the **10×** and **40×** objectives.

### II. Chromoplasts

Chromoplasts are cellular organelles that contain carotenoid pigments (yellow, red, or orange pigments). Tomatoes, yellow peppers, and carrots are rich in chromoplasts.

#### 1. Materials

- Microscope
- Slides and cover slips
- Fine forceps
- Scalpel blade
- Tomato (*Solanum lycopersicum*)

#### 2. Slide preparation

Take a small piece of tomato and gently scrape the pulp with a scalpel. Place a drop of water on a slide, then spread the collected material in it. Cover with a cover slip, avoiding the formation of air bubbles.

### **3. Observation**

Observe under the microscope using the **10×** and **40×** objectives.

### **III. Amyloplasts**

Amyloplasts are colorless plastids specialized in starch storage. They are found mainly in storage organs such as potato tubers or seeds.

#### **1. Materials**

- Microscope
- Slides and cover slips
- Fine forceps
- Scalpel blade
- Lugol's iodine solution (starch indicator)
- Potato (*Solanum tuberosum*)

#### **2. Slide preparation**

Using a scalpel, take a small piece of potato and gently scrape the inner tissue. Place a drop of water on a slide, add the collected material, cover with a cover slip while avoiding air bubbles.

#### **3. Observation without staining**

Observe under the microscope using the **10×** and **40×** objectives.

You will notice small, round or oval-shaped starch granules that appear like droplets of water.

#### **4. Observation with staining**

Prepare a new slide then add one drop of Lugol's solution.

The amyloplasts become blue-violet in color, which is a characteristic reaction.

#### **Assignment to be completed**

Draw all your observations and describe the appearance of the cells as well as the different organelles observed.