

# EXPERIMENT 1.1

## PREPARING YOUR OWN SLIDES OF ANIMAL AND PLANT TISSUE

Cells are considered the basic unit of living organisms because they perform all of the processes we call life. All organisms are made of cell. Eukaryotic cells are structurally more complex than prokaryotic cells, they contain membrane bound nuclei and other membranous and nonmembranous organelles. In addition, eukaryotic cells are classified in animal cells and plant cells.

### Objectives:

- Prepare a wet mount to view your own animal and plant tissue cells.
- Understand the differences between animal and plant cells with light microscope.
- Examine a cell's structure and determine whether it is from plant or animal.

### Lab Skills:

- Slide preparation
- Cell drawing
- Calculation of magnification

- Cover slips
- Blunt, sterile toothpicks
- Mounted needle
- Tweezers
- Scalpel and chopping block
- Iodine stain
- Methylene blue stain
- Blotting paper

### Equipment:

- Microscopes
- Blank slides

### Instructions for part A: Viewing cheek cells:

1. **Wear surgical gloves** for this lab.
2. Set up your microscopes correctly, in a calm area of the lab.
3. Place a slide and cover-slip on a piece of blotting paper.
4. Gently, rub the inside of your mouth using the cotton bud.
5. Move this end in a circle in the centre of the blank slide.
6. Add one or two drops of methylene blue stain.
7. Place a cover-slip to one side of the stain, with one edge touching the slide.
8. Using the other end of the cotton bud, gently lower the coverslip until it covers the stained area.
9. Use blotting paper to remove excess stain.

**10. Dispose of the cotton bud in the ziplock bag provided.**

- Using a microscope, make a drawing of two or three cheek cells under medium power of the objective lens. Label nuclei, cytoplasm, cell membrane.
- Given that the field of view for medium power is 1.2mm, estimate the size of one cheek cell ( estimated size = 1.2mm / number that appear to fit across field of view).
- Calculate the magnification of your drawing (magnification = drawing size / actual size).
- Deposit slide in beaker of alcohol solution afterwards.**

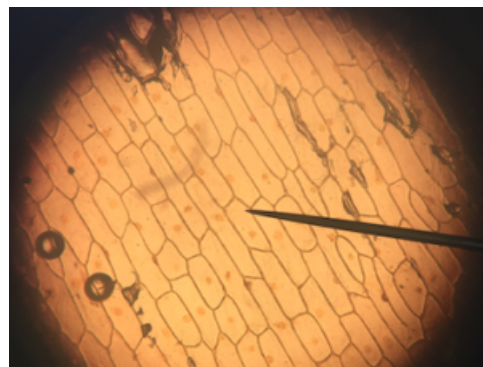
**Instructions for part B: Viewing Onion Cells**

- Set up your microscopes correctly, in a calm area of the lab.
- Place a slide and cover slip on a piece of blotting paper.
- Using a scalpel and chopping board, cut a small square piece of onion tissue about 2cm wide and one cm thick.
- Using the tweezers, carefully peel away one single layer of onion tissue (it helps to grip the edge of the layer first, and then pull outwards).
- Place the single layer of onion tissue on the slide, trying not to fold it.
- Add two or three drops of iodine stain.
- Place a cover slip to one side of the stain, with one edge touching the slide.
- Using a mounted needle, gently lower the coverslip until it covers the stained area.
- Using a microscope, make a drawing of two or three onion cells under medium power of the objective lens. Label nuclei, cytoplasm, cell wall, plasma membrane and starch grain. It may be possible to view vacuole (as a clear space in the centre).
- Given that the field of view for medium power is 1.2mm, estimate the size of one onion cell ( estimated size = 1.2mm / number that appear to fit across field of view) See Table 1 for all field of view diameters.
- Calculate the magnification of your drawing (magnification = drawing size / actual size).

**Table 1: Diameters of respective field of view of the objective lens**

Objective lens	Diameter of field of view (mm)
Low power	3.5
Medium power	1.2
High power	0.35

**Figure1 : Field of view for cheek cells (left), and onion cells (right).**



## Assessment: Biological drawings

You are expected to turn in two biological drawings, completed to the best of your ability with full details as you have learned in the formative practice exercises on microscope skills.

You will be graded summatively according to the IB grade level descriptors.