Unit 1: Introduction to tissue

Lesson 3 : *Microscope-Key*

Activity 1 (10'): Overview of microscope

A microscope is an instrument used to see objects that are too small to be seen by naked eye.

The most familiar type of microscope is the optical, or light microscope, in which glass lenses are used to form the image. Optical microscopes can be simple, consisting of a single lens, or compound, consisting of several optical components in line.

By using microscopes scientists were able to discover the existence of bacteria and parasites, study the structure of cells, and observe the smallest parts of plants, animals, and fungi. Nowadays, the microscope is still a commonly used tool to diagnosis illness in hospitals.

In pairs answer these questions by looking at the following diagram:

a) Why are microscopes important?
   Microscope are important because biology mainly deals with the study of cells (and their contents), genes, and all organisms. Without the microscope, biology would not have been so developed and many diseases would still have no cure.
b) What is the light microscope used for?
   A microscope is an instrument used to see objects that are too small to be seen by the naked eye
c) What is the range of objects that you can see with the light microscope?
   Objects as long as a millimetre and as small as 0.2 micrometres
d) what is the range of objects that you can see with the electron microscope?
   Objects as small as an atom (from 10 µm to about one ten-millionth of a millimetre or 1 angstrom or 10^{-10} m)
e) Which type of microscope is used to observe tissue?
   Light microscope

Activity 2 (20'): Parts of the microscope

Activity 2 (20'): Light microscope

Students work as individuals or in pairs, depending on the number of microscopes available

Step 1 (10') The teacher explains the different parts of the microscope and the students have to take notes.

Step 2 (10') Match the part of the microscope with its explanation/function

Part of the microscope	Explanation/Function
a. Light source	1. The bottom part of the microscope
b. Stage	2. Moves the stage slightly to help you "fine" tune your view
c. Cover slip	3. Part on the side of a microscope that is used to support it when it is carried
d. Eyepiece	4. Holds the objective lenses.
e. Nosepiece	5. Moves the stage up and down
f. Stage clip	6. Part of the microscope that supports the slide
g. Slide	7. Allows you to view the image. Contains the ocular lens.
h. Arm	8. Small piece that is used on a slide
i. Coarse adjustment knob	9. Small glass plate on which specimen are paced for viewing
j. Fine adjustment knob	10. Sends light up the specimen.
k. Stage controls	11. This is used to hold a slide in place on the stage
l. Base	12. These knobs move the slide left or right, up and down

a10 - b6 -c8-d7-e4 –f11-g9-h3-i5-j7-k12-l1

Activity 3 (20') Students in action

The students will observe plant cells by following these steps:

Teacher instructions:

Before starting make sure that the stage is all the way down and start the observation by using the 4X objective lens

1. Place the slide on the stage gently and move the stage clips over top of the slide to hold it into place
2. By looking to the eyepiece move the stage upward, using the coarse adjustment knob until the image becomes clear
3. Adjust the light intensity for the greatest amount of light
4. Using the stage controls move the microscope slide around until the sample is in the center of the field of view
5. Using the fine adjustment knob focus on the image
6. To magnify the image rotate the nosepiece to the 10X objective lens (Do not touch the coarse adjustment knob)
7. You might need to readjust the sample into focus and/or readjust the light intensity.
8. Repeat steps 6 and 7 with the other objective lenses

Assessment

Grade	Explanation
10-9	Excellent behaviour and autonomous work using their own note-taking
8	Good behaviour and autonomous work
7	Good behaviour with some teacher suggestions
6	Sufficient behaviour and many teacher suggestions

5	Bad behaviour