Jost van Dykes Preservation Society

OTEP

PRACTICAL EXERCISE
USING A MICROSCOPE TO LOOK AT PLANT AND ANIMAL CELLS
FEBRUARY 2009

Prepared for the Jost van Dyke Primary School by the Jost van Dykes Preservation Society as part of the OTEP funded project entitled "Jost van Dyke's Community-based Programme Advancing Environmental Protection and Sustainable Development"

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General Note:
The students of the Jost van Dyke Primary School enjoyed the "Living Things" practical exercise so much that Principal Martin of the Jost van Dyke Primary School invited Susan and Rosemary to have a follow up session. This exercise focuses on the using a microscope to look at cells. Students will investigate looking at both plant and animal cells.

Objectives:
1. To help students become more familiar with the use of a microscope.
2. To help students to better understand the difference between plant and animal cells.

Approach:
Students will be placed in groups of four. Each group will choose a group leader. As a group the students will use the microscope to identify a plant cell and an animal cell. Labeled drawings will be made of each type of cell.

Materials:
Microscope, razor or dissecting knife, Q-Tips, an unopened bottle of drinking water, pencil, paper, ruler, clean plastic container or petri dish, slide, slide cover glass.

Introduction and Review:
The cell is the basic unit of life. All living organisms are made up of cells. Some organisms are made up of only one cell. These organisms are referred to as being **uni-cellular**. The amoeba is an example of a **uni-cellular** organism.

Some organisms are made up of many cells and are referred to as **multi-cellular**. Humans are **multi-cellular**. In **multi-cellular** organisms, cells may be **differentiated** or **specialized**. This means that different cells, carry out different functions. For example, in humans beings, cells are

differentiated. For example, brain cells, nerve cells and muscle cells all look different under a microscope. While these cells all have the characteristics of animal cells, they also have special features that help them to carry out their function effectively.

Cells are microscopic and therefore cannot be seen with the naked eye. A microscope is an instrument that can be used to help us to magnify objects. Microscopes can make things appear bigger, sometimes hundreds or thousands of times bigger.

The type of microscope that school children use most often is known as the light microscope, because it uses light energy to help to make objects appear bigger. Some other more sophisticated types of microscope are the transmission electron microscope and the scanning electron microscope.

Light microscopes have several parts including the objective lens, eyepiece, arm, fine focus knob, stage, diaphragm, light, base.

Make a labeled diagram of your microscope here:

Labeled drawing of microscope

Note: Labeled diagrams and photographs of microscopes may be found at the following websites:
http://www.tutor.com.my/tutor/ppk/images/form1_sci_e12_a.gif
www.bestscopes.com/images/scopes/anatomy.jpg

Methods

Exercise 1 Looking at animal cells

1. Wash your mouth with clean water.
2. Take a clean Q-tip and rub it around in your cheek. If you are fortunate you should get some cheek cells on your Q Tip.
3. Place the Q-tip in a clean container and add a small quantity of water from the water bottle to make a solution.
4. Take a drop of this solution and place it on a slide, cover the slide with the small piece of glass provided (this protects the microscope from being damaged by your specimen (cheek cell sample)).
5. Adjust your microscope until you can identify a cheek (animal) cell.
6. Make a labeled drawing of your animal cell here.

Drawing on an animal cell

Exercise 2 Looking at plant cells

1. Take a sample of a plant (a leaf or stem)
2. Take a razor and very very carefully (and under the close supervision of an adult), slice off a very thin slice of the plant.
3. Place the slice of the plant under the microscope
4. Adjust the microscope until you can identify a plant cell.
5. Make a labeled drawing of your plant cell here.

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Labeled drawing of a plant cell

Note: Some microscopes come with prepared slides which may be used for this exercise instead of preparing your own slides.

To review your knowledge of plant and animal cells, complete the exercise below:

List three similarities between plant and animal cells (things that plant and animal cells have in common.)

1.
2.
3.

List three differences between plant and animal cells

1.
2.
3.

Reference:

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Elizabeth Tootill (1980)Letts Key Facts Dictionary of Biology Published by Charles Letts & Co. London, Edinburg, New York