



This project is supported by the GEF Small Grants Programme
<http://www.sgpbahamas.org/>

Plant Cell Lab

Cells are the building blocks of all living organisms! In all biology curricula, whether college or high school, you will find a lesson on these building blocks. At FRIENDS, we decided to incorporate a plant cell lesson into our Nature Trail and Green House visit for high school students. Using the microscopes we have available we decided to take a closer look at onion cells. You may have done this lab yourself during your education. Here is a refresher, in case you need it!

The purpose of this lab is to have students observe and identify plant cells and the parts of the cell using a compound microscope as outlined in the Bahamas Biology Curriculum (Dept. of Education, 2010) for grades 10-12, however many schools in Abaco do not have the necessary equipment. If you are located in Abaco and would like to visit our center to do a microscope lab, please contact us! (242-367-2721, info@friendsoftheenvironment.org)

Part I: Using a compound microscope

Materials: Onion, knife, compound microscope, glass slide, cover slip, and iodine (used for staining).

Procedure:

1. Have students cut a small piece of onion and peel the **inner** thin layer.
2. Place the thin layer on a clean and dried glass slide (make sure the onion layer is not folded or wrinkled)
3. Place a drop of iodine stain on your onion tissue.
4. Put the cover slip on the tissue and **gently** tap out any air bubbles.
5. Observe the cells under the microscope starting at 4x, 10x then 40x .

The students after observing the cells at each magnification are then required to draw and label the cells at each magnification.

Students are also encouraged to learn the function of each part of the cell if it is not known to them.

Part II: Using a dissecting microscope

Parts of a Flower

At FRIENDS we also have a few dissecting microscopes. Using our digital dissecting microscopes we were able to examine the parts of an Orange Geiger flower and display them on a computer screen for extra magnification. Students were able to see each part of the flower and pointed out the stigma, style, ovary, filament etc. One would be surprised how excited a student gets by not just seeing these things on paper but instead being up close and personal!

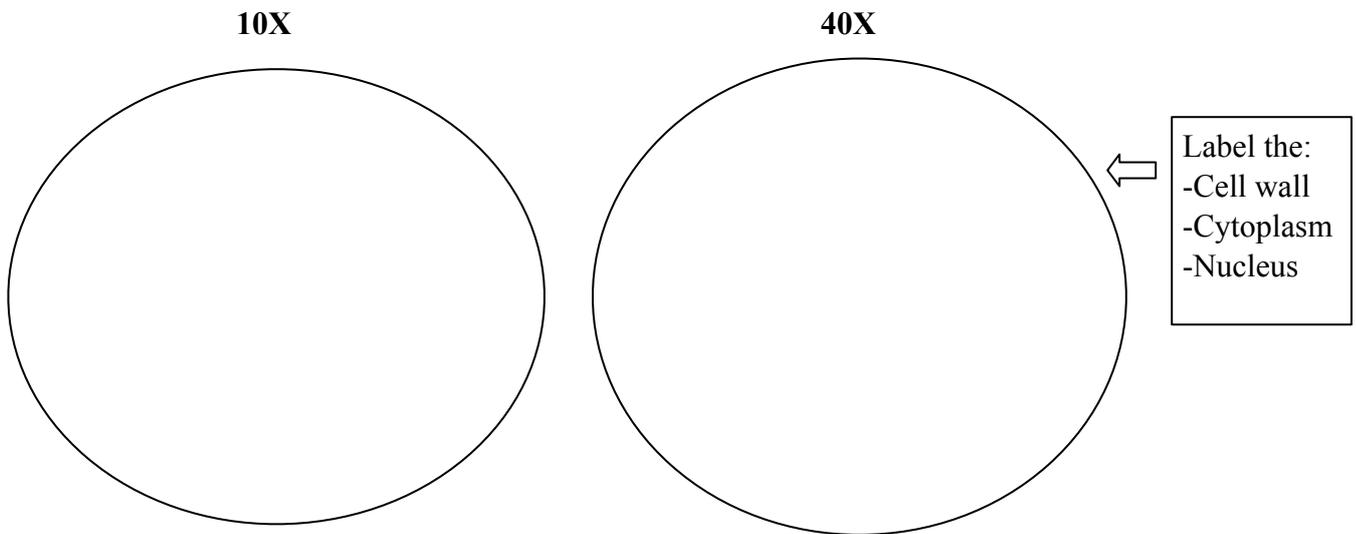
This is a great way to help students to connect their lessons with the environment around them.

Plant Lab Activity Sheet

Part I: Using a compound microscope to observe onion cells

1. Observe the cells under 4x, 10x, and 40x with the diaphragm wide open. Slowly reduce the light intensity by closing the diaphragm, and observe the image.

2. In the space provide below, **draw a group of 10 neighboring cells** at 10x. In one cell, label all the parts you see. Switch to high power at 40x. Can you see a whole cell? If you can, **draw one cell and label it below**. If not, go back to 10x and draw one cell and label it below.



3. Prepare a slide with the leaf sample you collected off the trail.

Questions:

1. What is the function of the nucleus?
2. Where is the nucleolus found and what does it produce?
3. Describe what ribosomes do in the cell?

Trail Fun



Sketch an interesting leaf:

List the animals you see on the Trail:

Lets stop and observe the Gumelemi Tree!

USES AND IMPORTANCE:

Gumelemi is commonly used throughout its range. The resin of the Burseraceae Family is known for its anti-inflammatory properties and is particularly used in The Bahamas as a treatment of Poison wood (*Metopium toxiferum*) as well as bee and wasp stings. Within The Bahamas it is also used medicinally to treat circulatory problems as well as in strengthening and aphrodisiac teas. The soft wood has been used to craft certain items such as toy boats. It is propagated as an ornamental and can be used to make living fence posts due to its ability to grow from cuttings of the trunks.

Describe this tree.

Is the Gumelemi deciduous (lose their leaves during winter) or coniferous (have cones, keep their leaves year round)?

List some Native plants on the trail: