

## UGANDA MARTYRS' HIGH SCHOOL-LUBAGA

### S.1 BIOLOGY/Mr. Nyanzi Stephen

#### **Note to the parent:**

\*S.1 is under the new curriculum, and in this type of curriculum, the teacher's interaction with the learner is more or less a must, for the progress of the lesson. Additionally, the lesson is largely occupied by learner's activities, guided and supervised by the teacher. The teachers' assessment is ongoing during the lesson, and even goes beyond what the learners' write, to include the behavioral performance or the interactions of the learners, which also includes the skills of manipulation for practical subjects like Biology. For instance, part of this particular work necessitated use of a microscope.

\*Considering the above challenge, this work has been skillfully compiled to ensure that learning still takes place from home, hoping to concretize it when school resumes.

## **CELLS:**

### ***Have you ever wondered what organisms are made of?***

- Imagine if a house was carefully dismantled. What would you see piled up as the smallest components that were joined to construct the house?  
⇒ You will notice that they were the bricks/blocks that were joined several times in different ways to form a house.
- Likewise, organisms are made up of tiny building blocks of life that are called **cells.**
- **Each cell carries out life processes. So, it is the smallest unit of life, or the smallest unit of organisms in which life processes take place.**

## **Animal and Plant Cells**

### **Activity 1: Observing cells**

- Cells are too tiny to be seen by unaided/naked eye.

**Task/Question:** Explain how learners and other scientists can be able to see cells clearly.

### **Activity 2: Viewing an animal cell**

⇒ An egg is an example of an animal cell. Cells are very tiny, and cannot be seen by our naked eyes. We can use a bird's egg (without the shell) to learn about the general structure of an animal cell.

#### **Key question**

What is found inside an animal cell?

#### **What you need**

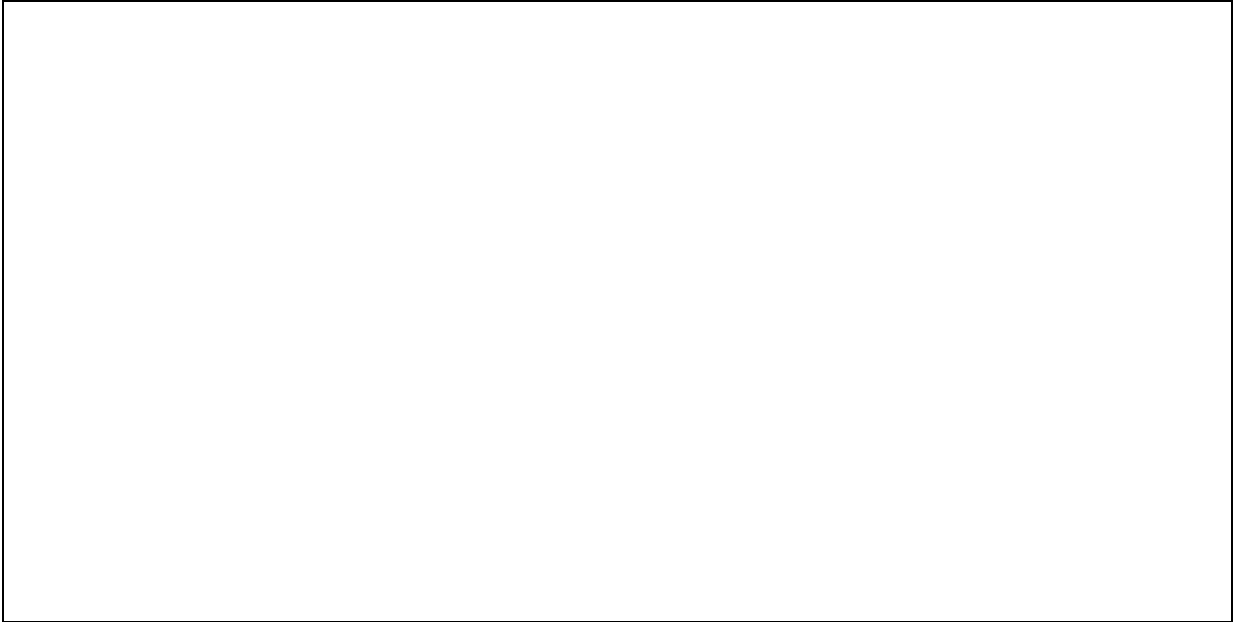
- i) Raw egg (not boiled) without a shell in a clear shallow container
- ii) Pen /pencil

#### **Activity:**

- i) Observe the raw egg in a dish. Identify the different layers.
- ii) How many layers (regions) are you able to distinguish?
- iii) What is the relative position of the layers you have seen?
- iv) Record the information from (i) to (ii) above in the table below. You will use it later in this activity.

<b>Aspect of cell</b>	<b>Characteristics of the cell</b>
Number of layers	
Size of layers	
Position of layers	

- The central part of the animal cell is called the nucleus. The fluid part surrounding the nucleus is called the cytoplasm. The outer boundary surrounding the cytoplasm is the cell membrane.
- **Task:** Draw and label the parts of the animal cell you have viewed under the microscope (Alternatively use the internet)



### **Functions of the Parts**

- Cell membrane:** This is a thin, outer layer surrounding the contents of the cell. It allows some substances to go in and some to come out of the cell.
- Cytoplasm** is a mucus-like liquid in the cell. This is where some of the life processes take place.
- Nucleus** is the “brain” of the cell. It controls all the chemical activities that take place in a cell. This is because of the presence of genes that carry instructions and information on how the activities should occur.

### **Activity 3: Viewing a plant cell**

- Although plant cells have several structures in common with animal cells, there are also some differences.

**Do you know what is found inside a plant cell?**

**What you need**

- i) Prepared slides of a plant cell

- ii) Microscope
- iii) Notebook
- iv) Pen /pencil

**What to do**

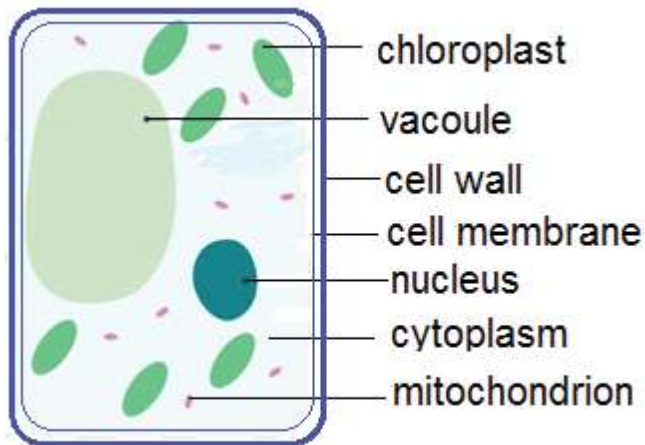
- i) Observe the prepared slide of a plant cell. (Ask the teacher to help you view the cell under a microscope).

Prepared slide as seen from microscope:



- ii) **Task:** Draw only ONE plant cell you have viewed under the microscope and label its parts. The outer polygon-shaped layer is called the cell wall. The green round-shaped structures scattered in the cytoplasm are called chloroplasts.

iii) Some parts of the plant cell may not be seen easily. The diagram below shows the parts of a plant cell.



**Plant cell**

### **Function of the Parts**

The functions of the cell membrane, nucleus and cytoplasm are the same as those in the animal cell.

- i) **Cell wall:** This provides support to the plant cell. This is because it is made up of a tough material called cellulose.
- ii) **Chloroplast:** This is where plants make their own food through the process of photosynthesis. Chloroplasts are green in colour because they contain a substance known as chlorophyll which traps sunlight energy needed for photosynthesis.
- iii) **Vacuole:** This is a storage area that may contain air, water, food and waste materials.

### **Task:**

State 3 similarities and 3 differences between animal and plant cells

## **SPECIALIZED CELLS:**

- Most of the cells in the body of an organism carryout general functions like respiration, growth, excretion, nutrition and reproduction, which are actually the life processes.
- However, some cells are modified in structure to perform specific functions.






▪ **Task/ Question:** *What name is given to such cells? How can we define those cells?*

### **Activity 4: Relating the structure of specialized cells to their function**

**Instructions:** You are provided with four sets of information, namely

- Set One:** *Drawing of specialized cells*
- Set two:** *Features/ structure of a specialized cell*
- Set three:** *Function of a particular specialized cell*
- Set four:** *Name of the cell*

For each type of cell, connect an item from each of the set, to come out with a meaningful information concerning a specialized cell: **See table below**

<b>Set One:</b> <i>Drawing of specialized cells</i>		<b>Set two:</b> <i>Features/structure of a specialized cell</i>
<b>Cell 1:</b> 	<b>Cell 2:</b> 	<ul style="list-style-type: none"> <li>i) Has a tail</li> <li>ii) Can change its shape</li> <li>iii) Has a regular shape with many chloroplasts</li> <li>iv) It is narrow and long providing a large surface area</li> <li>v) Flat biconcave shape and no nucleus</li> </ul>
<b>Cell 3:</b> 	<b>Cell 4:</b> 	
<b>Cell 5:</b> 		
<b>Set three:</b> <i>Function of a particular specialized cell</i>		<b>Set four:</b> <i>Name of the cell</i>
<ul style="list-style-type: none"> <li>i) To trap much sunlight to enable the cell carryout photosynthesis.</li> <li>ii) To penetrate soil and absorb water and mineral salts.</li> <li>iii) To provide a large surface area to absorb and carry oxygen from the lungs to respiring cells.</li> <li>iv) To engulf foreign particles and destroy them in order to defend the body.</li> <li>v) To propel/swim to the egg cell and fertilize it.</li> </ul>		<ul style="list-style-type: none"> <li>i) Sperm cell</li> <li>ii) Palisade cell</li> <li>iii) Red blood cell</li> <li>iv) Root hair cell</li> <li>v) White blood cell</li> </ul>

**Task:** Besides the cells given above, name any 2 plant cells and 2 animal cells. State the role of each of them.

**END**