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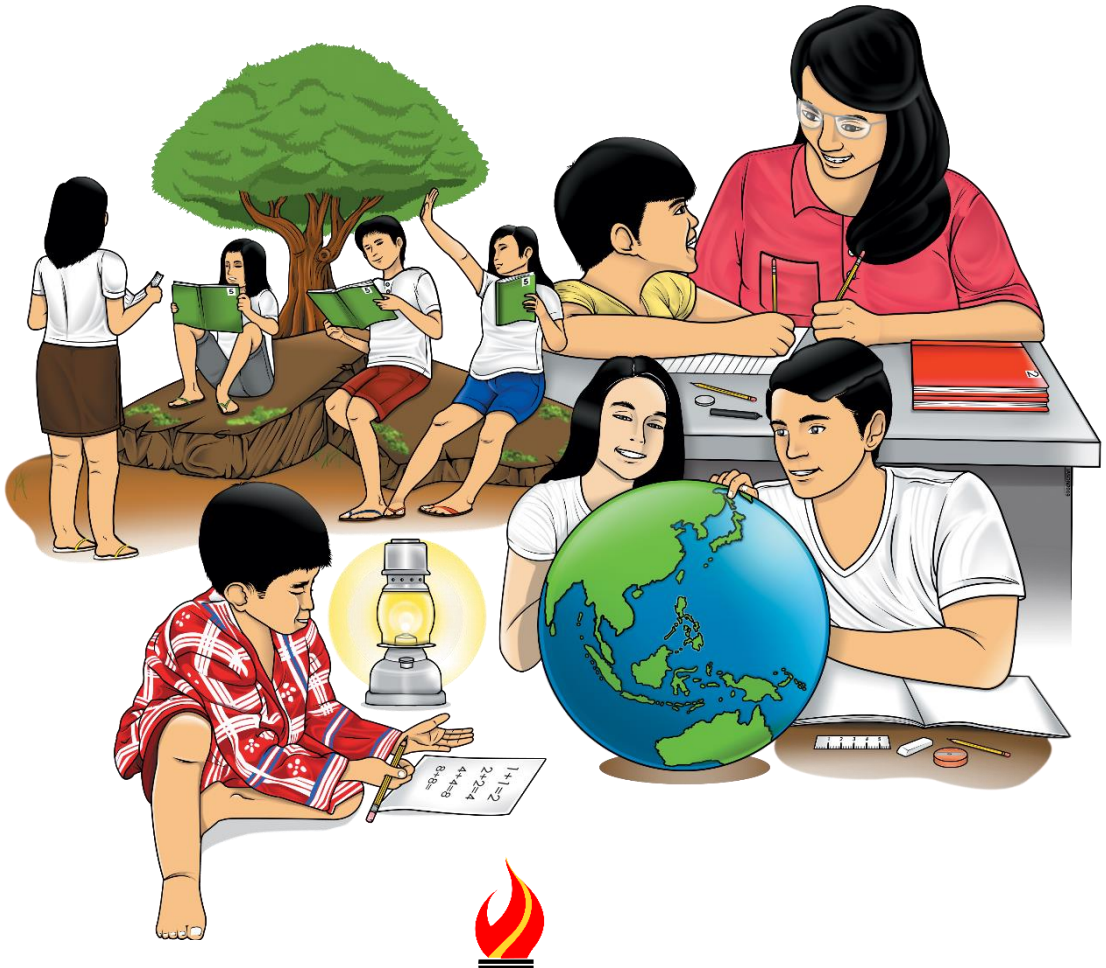
DEPARTMENT OF EDUCATION

Science

Quarter 2 – Module 5:
You and Me-
from Cells too Tiny



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Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

Lesson 1 Cell Discovery and Theory

Most Essential Learning Competency:

Explain why the cell is considered the basic structural and functional unit of all organisms.

The module is divided into two lessons, namely:

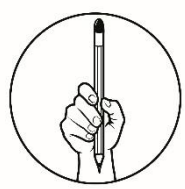
1. Lesson 1 – Cell Discovery and Theory
2. Lesson 2 – Cell Types, Structures and Functions

After going through this module, you are expected to:

1. Familiarize the history, theory, types, structures and functions of a cell;
2. Draw a typical cell and label its basic parts; and
3. Explain why a cell is considered as basic structural and functional unit of life.

What I Need to Know

This module was designed and written with you in mind. It is here to help you master the You and Me-from Cells too tiny. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course.



What I Know

Directions: Choose the letter of the best answer from the given choices. Write the chosen letter on a separate sheet of paper.

1. What is a cell?
   A. A number
   B. An animal
   C. An imagination
   D. A microscopic structure

2. When was the cell first discovered?
   A. 1655
   B. 1665
   C. 1675
   D. 1685

3. Who was the Biologist who discovered the cell?
   A. Anton Van Leeuwenhoek
   B. Theodore Schwann
   C. Matthias Schleiden
   D. Robert Hooke

4. Who among the following scientists below is **NOT** a proponent of the cell theory?
   A. Matthias Schleiden
   B. Theodore Schwann
   C. Rudolph Virchow
   D. Robert Hooke

5. Which of the following comprises a greater portion in a cell?
   A. DNA
   B. RNA
   C. Water
   D. Protein

6. Biologists arrived to a conclusion that formulated the cell theory. Which among the statements below are parts of the cell theory?

I. All living things are made up of cells. II. All living cells come from pre-existing cells. III. All plants and animals are composed of cells. IV. Cells are the basic structural and functional unit of all organisms.

A. I and II only
B. I and III only
C. I, II and IV only
D. II, III and IV only

7. How were cells discovered? Arrange the following statements in its correct order.

I. It was observed that the piece of cork was composed of many tiny compartments. II. A thin slice of cork was examined under microscope. III. These tiny compartments were named cells. IV. The cells observed were non-living.

A. I-II-III-IV
B. I-IV-III-II
C. III-II-I-IV
D. II-I-III-IV

8. Read the statements within the box. Which of the choices below correctly describes them?

I-	In 1664, Leeuwenhoek discovered cells.
II-	Hooke first discovered cells.

A. All statements are TRUE.
B. All statements are FALSE.
C. II is TRUE while I is FALSE.
D. I is TRUE but while II is FALSE.

9. The discovery of a cell brought scientific developments in performing experiments. What statement do you think best explains the idea?

I. Leeuwenhoek discovered red blood cells and sperms. II. Biologists conducted experiments and discovered living things are composed of cells.

A. I only
B. II only
C. I and II
D. Neither I nor II

10. Cells are considered as structural and functional unit of life. Do plants and animals have the same type cell?
    A. Yes, human and animals have the same type of cells.
    B. No, human and animals cells are different in terms of shape.
    C. Yes, all organisms are composed of cells, thus they have the same type too.
    D. No, human and animals cells are different in shape, size, structures and functions.

What's In

In the previous module you were able to describe the different levels of structural organization making up an organism. With that, you learned that each organism started from the very basic level known as the **Cell**. It can be noted that when cells are grouped together they form tissues. The tissues in turn will form the organs and further form the organ systems in a body. Hence, when organ systems interconnect with each other, they compose the organism.

In a biosphere, organisms interact with their environment. This can determine their survival, growth, development and mortality rate. This lesson will help you dig deeper on the importance of the basic unit of life which makes up You and Me. it is our goal to let you explore what is in a cell in our new lesson. Are you ready?

What's New

Let your excitement for the new lesson come out. Here, you will be provided with activities that will enlighten you how scientists were able to discover and unravel the mystery of the unseen world of the cell. Find out what they discovered a long time ago and how it all happened. Let's get started!

The Timeline of Cell Discovery

1665	**Robert Hooke** was the first person who used the term **cells** to refer to the tiny structures found in organisms. He observed a piece of cork with the use of a microscope which he himself had made. There he observed boxlike compartments in the cork. Hooke thought they looked like the small rooms or cells of old monasteries. He then called these structures in cork as cells. What Hooke really saw were the outer boundaries of the cells. They looked like empty boxes because the cells were dead. He did not study further on the cell content.
1674	**Anton Van Leeuwenhoek** who was a Dutch lens maker, was credited with making the first microscope. He was the first person to have observed microscopic organisms. He discovered **protozoa** and saw **bacteria** some 9 years later.
1838	**Mathias J. Schleiden** was the German botanist who worked on various plants. He concluded that all plants are composed of cells.
1839	**Theodor Schwann** was a German **zoologist** (someone who studies various animals). He theorized that all animals are composed of cells.
1858	**Rudolf Virchow** who was a German physician, discovered that cells increased in number by dividing and forming new cells. He expounded his famous conclusion: *omni cellula e cellula* which means cells come from pre-existing cells.

The Cell Theory Summary

-All living things are composed of cells.
-Cells are the basic units of structure and function in living things.
-All cells come from pre-existing cells.

Directions: Read and answer what is being asked. Write your answer on a separate sheet of paper.

A. Arrange the events in chronological order as **I, II, III, IV and V** with **I** as the oldest and **V** as the latest event.

_____1. Tiny chambers that look like empty compartments were called cells.
_____2. A scientist concluded that cells come from pre-existing cells.
_____3. Microorganisms like bacteria and protozoa were seen under a microscope.

_____4. Schwann studied the animal cells.
_____5. A German scientist studied plant cells.

B. Identify the scientist being described in each. Select your answers from the box.

Anton Van Leeuwenhoek	Jan Evangelista Purkinje	Robert Hooke
Matthias Schleiden	Robert Brown	Rudolf Virchow
Theodor Schwann,		

_____1. He concluded that all plants are composed of cells.
_____2. He theorized that all animals are composed of cells.
_____3. The person who discovered the cells.
_____4. He stated that all living cells come from pre-existing cells.
_____5. The first person who observed microscopic organisms.

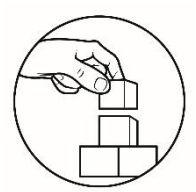
What is It

Cells are considered as the basic structural and functional units of life. Why? Definitely because cells are the building blocks of organisms. Life processes happen in cells. All organisms are composed of cells. Without cells there would be no life forms in this planet. The number of cells vary depending on the size of an organism. As you have learned from your previous module, life begins with a cell. The larger the body of an organism, the greater number of cells are present. Likewise, the smaller the body of an organism, the least number of cells are expected. The number of cells in elephants is a hundred times more than that of humans.

There are multicellular and unicellular organisms. Organisms with only one cell are **unicellular** such as paramecium, euglena and coccus. Organisms with millions of cells are **multicellular** like animals, plants, fungi and protists. Cells are basically composed of ***water, proteins, RNA, DNA*** and several **organelles** (different structures in a cell). Water is considered as the largest component.

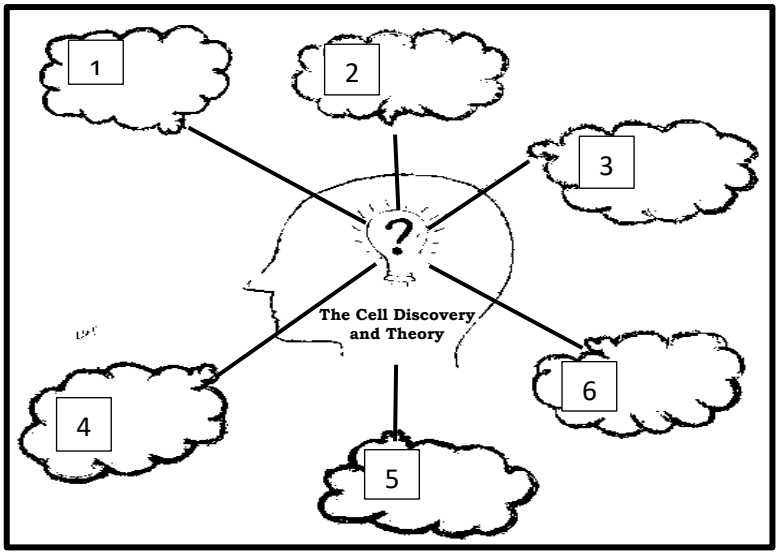
We should be thankful to our scientists for their contributions to the discovery and study of cells. What they discovered greatly improved technological advancement.

Guide Questions:
1. What is considered as the building block of nature? _____
2. Are all cells multicellular? Support your answer. _____
3. Give an example of unicellular organism. _____
4. Differentiate a unicellular organism from a multicellular organism. _____
5. Can there be tissues, organs and systems without cells? Support your answer.



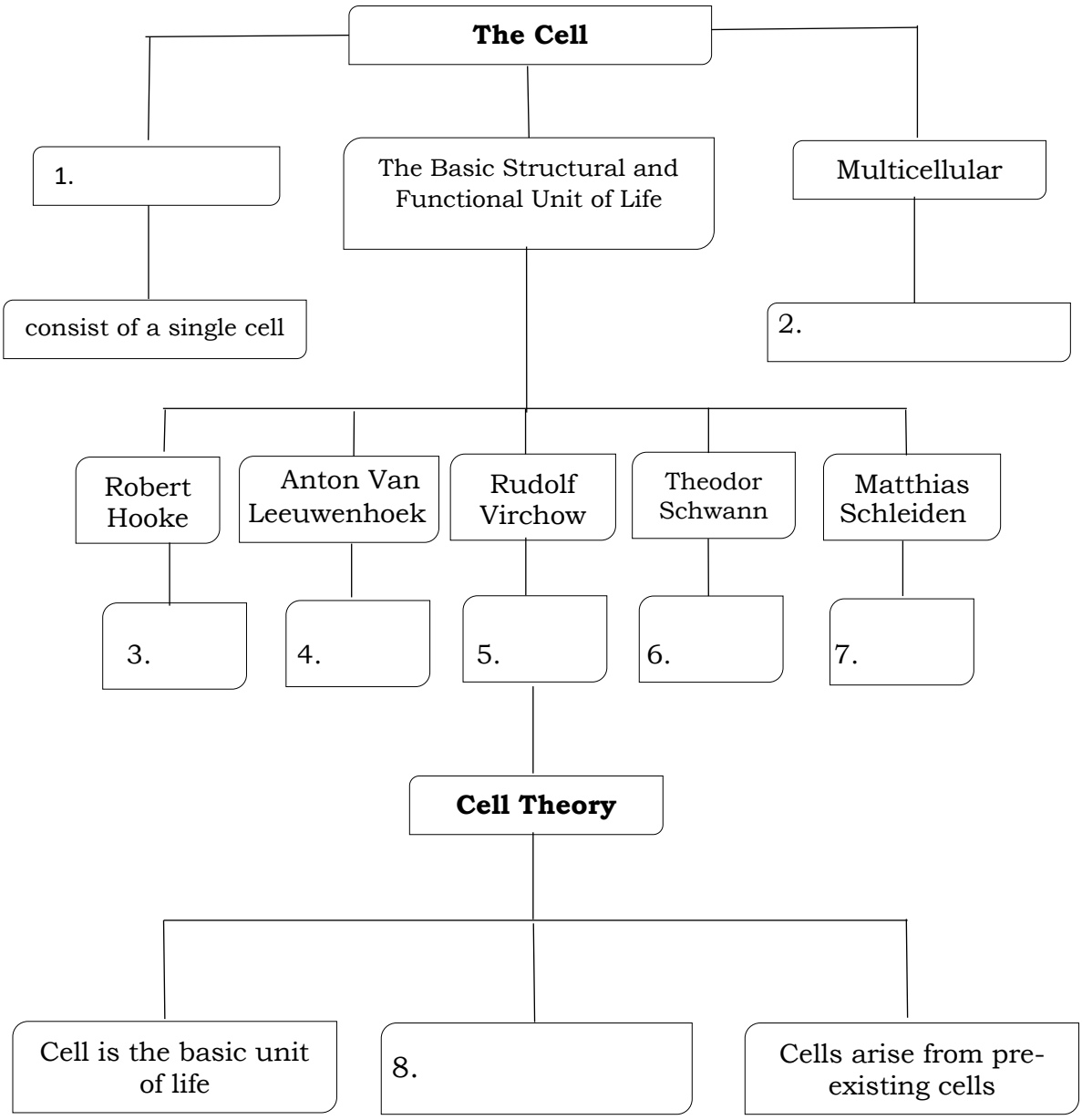
What's More

From the preceding activities, you gained important information about the cell, its history and related theory. At this point, you need to complete a MIND MAP showing the important phrases about your lesson. Copy the format below and supply the empty shapes with phrases to create a big picture of the concepts about the lesson. Do it in a separate sheet of bond paper.



What I Have Learned

Directions: Complete the diagram by supplying the boxes left blank with correct word, statement, phrase and name of a person to complete the idea. Do it on a activity sheet provided.



What I Can Do

You have shown confidence in the different activities. To further show me your mastery of the lesson, you need to do another task.

You can write an essay about the Cell using the format as shown below in a separate sheet. Take your time!

Cells are _____
_____.

They are important because _____
_____
_____
_____
_____.

_____
_____
_____
_____
_____.

RUBRIC				
Category	**4**	**3**	**2**	**1**
Accuracy & Content	All of the ideas are correct. Completely relates to and expands the ideas based on the lesson.	Most of the ideas are correct. Related ideas cover what we have on the lesson.	Some of the ideas are correct. Somewhat related ideas, but does not add to what we have on the lesson	None of the ideas are correct. Ideas are not related to what we have on the lesson.
Spelling & Grammar	All spelling and grammar are correct.	Most of the words and grammar are spelled correctly.	Some of the words are spelled correctly and some grammars are correct.	Spelling and grammar errors are frequent.

Assessment

Directions: Choose the letter corresponding to the answer. Write your answer on a separate sheet of paper.

1. What is known as the building blocks of life?
   A. Cell
   B. Organ
   C. Organ systems
   D. Tissue

2. How do you call an organism with only one cell?
   A. Cellula
   B. Dominant
   C. Multicellular
   D. Unicellular

3. How are organisms with many cells termed?
   A. cellular
   B. multicellular
   C. organizational
   D. unicellular

4. In what particular year were cells first discovered?
   A. 1655
   B. 1665
   C. 1675
   D. 1685

5. Who theorized that "All cells come from pre-existing cells."?
   A. Matthias Schleiden
   B. Theodor Schwann
   C. Rudolf Virchow
   D. Robert Hooke

6. Who among the scientists below did **NOT** study cells?
   A. Dmitri Mendeleev
   B. Rudolph Virchow
   C. Matthias Schleiden
   D. Theodore Schwann

7. Who concluded that all animals are composed of cells?
   A. Robert Hooke
   B. Rudolph Virchow
   C. Theodore Schwann
   D. Matthias Schleiden

8. Which of the following is the contribution of Anton Van Leeuwenhoek in the study of cell?

A. He studied single-celled organisms.
B. He observed red blood cells.
C. Neither A nor B
D. Both A and B

9. Which of the following substances is **NOT** a component of cells?

A. DNA
B. Mineral
C. RNA
D. Water

Modified **TRUE** or **FALSE**: Read the statement carefully. Write TRUE if the underlined word is correct. Write False if the underlined word is incorrect and replace with the correct term.

10. In 1838, a scientist proclaimed that all living things come from pre-existing cells.
11. In 1859 it was concluded that all animals are composed of cells.

12. All living things are composed of one or more cells.

13. Cells were discovered by Rudolph Virchow in 1665.

14. Is the Cell Theory still acceptable and significant today? How?

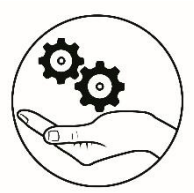
I. No, because cell theory is not based on further investigation.
II. No, because this theory are just hypothesis made by scientist.
III. Yes, because living cell are come from pre-existing cells produced trough cell division.
IV. Yes, because this theory states that all living things such as plants and animals are made up of cells.

A. I and II only
B. III and IV only
C. I, III and IV only
D. II, III and IV only

15. How will you consider a cell as structural and functional units of life?

I. Cells are found in all organisms.
II. Cells are the basic units of plants and animals.
III. Cells are the building blocks of life responsible for all life processes.
IV. Cells are the smallest units of life where all living things are composed of.

A. I and II only
B. III and IV only
C. I, III and IV only
D. II, III and IV only

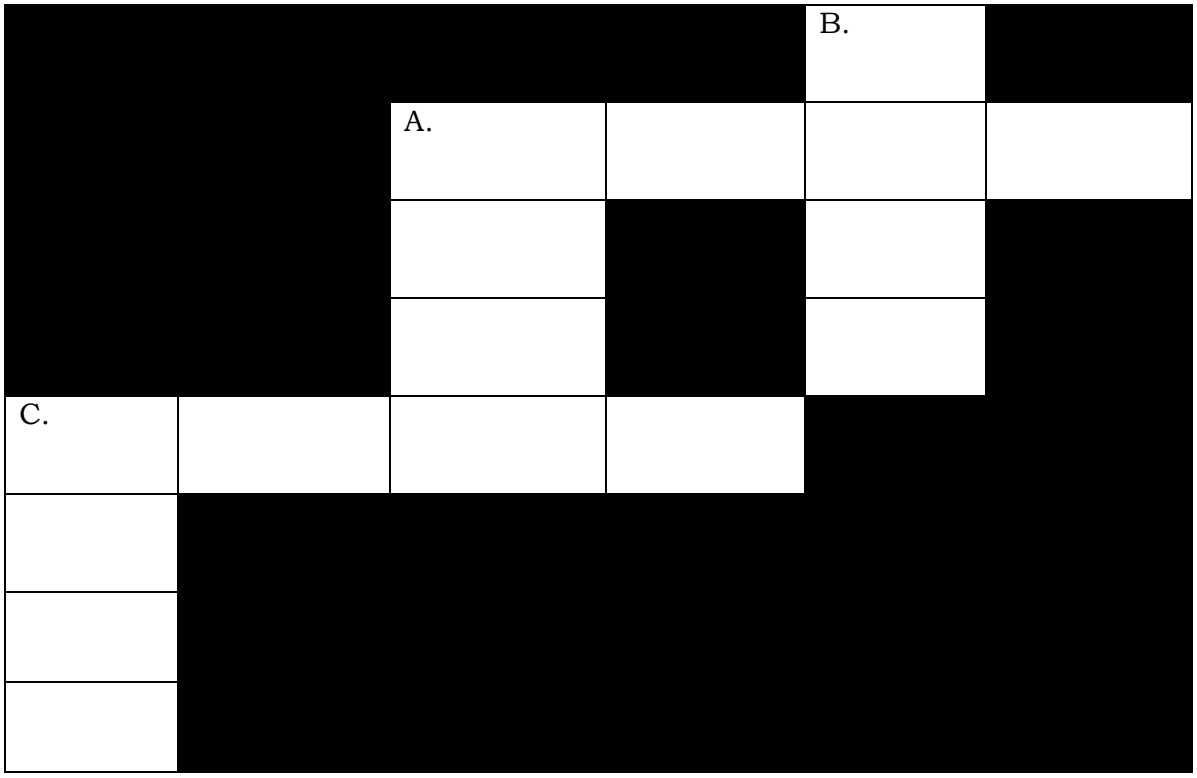


Additional Activities

Crossword Puzzle.

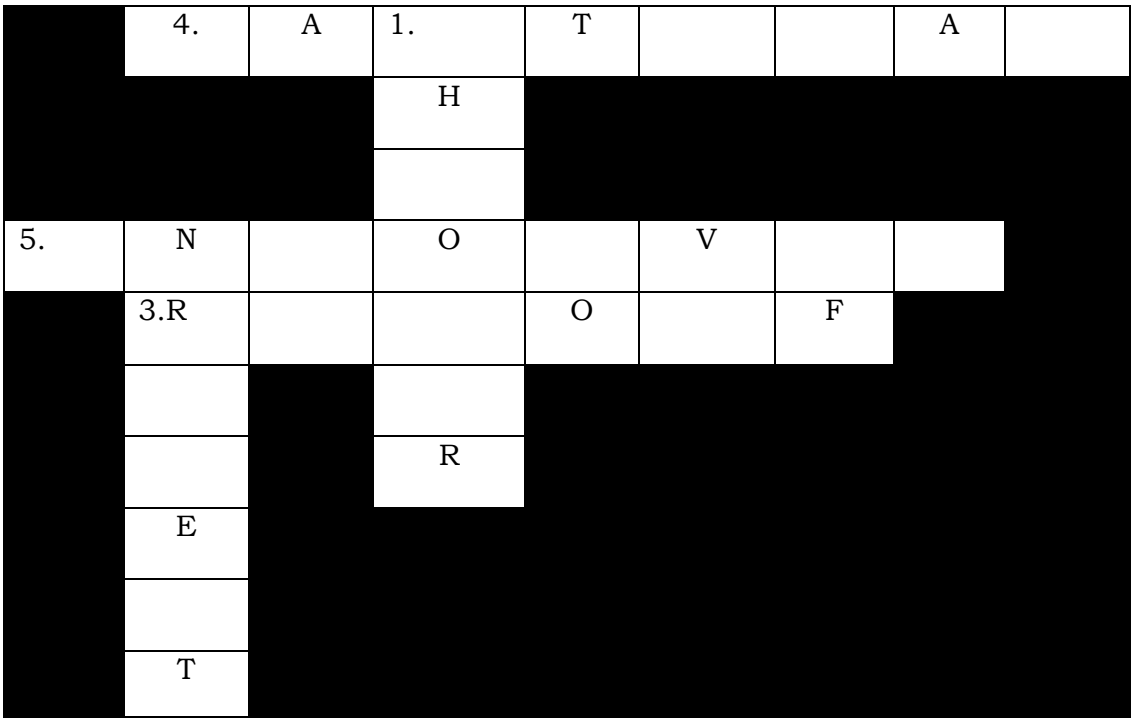
A. Identify the **YEAR** being described in each statement below. Supply the blank boxes with numbers to complete the year of each of the events took place.

Vertical	Horizontal
A. The year plants were discovered to be composed of cells. B. Red blood cells and sperms were first observed. C. When animals are composed of cells was concluded.	A. Cells were first discovered. C. When cells were come from pre-existing cells was theorized.

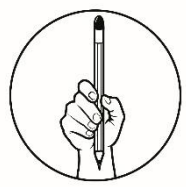


B. Identify the FIRST NAME of the scientist being described in each statement below. Supply the missing boxes with LETTERS.

Vertical	Horizontal
1. He theorized that all animals are composed of cells. 3. He discovered the cells.	3. He stated that all living cells come from pre-existing cells. 4. He concluded that all plants are composed of cells. 5. He first observed microorganisms



Lesson 2 Cell Types, Structures and Functions



What I Know

Directions: Choose the letter that corresponds to the best answer. Write your answers in a separate sheet of paper.

1. There are how many primary types of cells?
   A. 1
   B. 2
   C. 3
   D. 4

2. Which of the following organelles is **NOT** a basic part of a cell?
   A. Endoplasmic reticulum
   B. Cell membrane
   C. Cytoplasm
   D. Nucleus

3. Which types of cells contain nucleus and other membrane-bound organelles?
   A. Animal cells
   B. Autocratic cells
   C. Eukaryotic cells
   D. Prokaryotic cellls

4. What type of cells lack defined nucleus but contain nucleoid in them?
   A. Plant Cells
   B. Animal Cells
   C. Eukaryotic Cells
   D. Prokaryotic Cells

5. The nucleus plays vital role in the processes taking place inside the cell. Which of the following roles does it perform?

I.	It controls all the activities of other cell parts.
II.	Converts energy in food to a form usable to cell
III.	They are involved in the manufacture of proteins.
IV.	Allows the entry and exit of substances inside the cell.

A. I only
B. I and III only
C. I, II and III only
D. I, III and IV only

6. Plasma membrane work is one important part of the cell. Which of the following statements shows the functions of plasma membrane?

I.	It blocks some substance to pass through it.
II.	It is involved in the manufacture of proteins.
III.	It permits some substances to pass through it.
IV.	It controls all the activities of the other cell parts.

A. II only
B. III only
C. I, II and III only
D. I, III and IV only

7. What main part of a cell is consisting of a jelly-like substance where all the other parts of the cell are embedded?
A. Plasma membrane
B. Cytoplasm
C. Cell wall
D. Nucleus

8. Which organelle is **NOT** considered as a main part of the cell?
A. Nucleus
B. Cytoplasm
C. Golgi body
D. Plasma membrane

9. What type of cell is present in humans?
A. Plant Cells
B. Monocular Cells
C. Eukaryotic Cells
D. Prokaryotic Cells

10. In your science class you investigated a cell. You found out that this cell is eukaryotic. What is your first criterion in identifying the type of the cell?
    A. Absence of nucleus
    B. Presence of nucleus
    C. Absence of Plasma membrane
    D. Presence of Plasma membrane

11. Which of the following is the function of the cell membrane?
    A. To control reproduction in the cell.
    B. To give the cell shape and support.
    C. To control what enters and leaves the cell.
    D. To control activities in the cell.

12. Athena observed a prepared slide of a bacterium under the microscope. She concluded that the cell is prokaryotic. What do you think was her basis?
    A. Absence of nucleus
    B. Presence of nucleus
    C. Absence of Plasma membrane
    D. Presence of Plasma membrane

13. Some bacteria are helpful but some are not. What will happen to you if you eat food with *Escherichia coli* bacteria?

I. Your appetite will increase.
II. Your immune system will boost.
III. You will experience stomach-ache.
IV. Your body will experience diarrhea

    A. I and II only
    B. II and III only
    C. I and III only
    D. III and IV only

14. What makes multicellular organisms eukaryotic?

I. Their cells have cell wall.
II. Their cells contain flagella.
III. Their cells have distinct nucleus.
IV. Their cells contain membrane-bound organelles.

    A. I and II only
    B. II and III only
    C. I and III only
    D. III and IV only

15. Nucleus is the brain of the cell. Do nucleus also influenced other cell parts to function as well?
    A. Yes, because brain controls everything.
    B. No, because each parts of the cell has its own nucleus.
    C. Yes, because it manage all the activities inside the cell.
    D. No, because parts of the cell are working independently.

What's In

In the previous lesson, you were able to trace cell history and cell theory. Can you name the scientists who made great contributions for the discovery of the cell? In the theory presented, which one is the most unbelievable for you? Our basic knowledge of cells will help us understand its importance. It will usher us into finding out more about the cells as we are about to explore deeper on the cell types, structures and functions. Let's journey together!

What's New

In the next activity you need to read a short story carefully. Note important details for you to answer the questions that follow.

"Cromwell's Journey"

by: Maria Vanissa M. Tayong

Cromwell is a Grade 7 student who enrolled in a public high school. He was still very young when his mother noticed that he is fond of reading books. They're not just any other book- they're Science books!

Since then, his parents were very supportive of his hobby. One night, he started reading a book entitled *Biology*. He remembered the assignment given by his teacher. He took down notes to answer the questions : What are the types of cells? How do they differ? Then, he sat back, relaxed and went on reading. He looked at the colorful figures of cells classified as **eukaryotic** and **prokaryotic**. He closely searched for their differences. He noticed that **Eukaryotic cells** have distinct nucleus enclosed by a membrane. "**Eukaryotes** are multicellular" he exclaimed. He learned that plants, animals, and protists are eukaryotes. "I am eukaryotic, " he told himself. He wondered how **Prokaryotic cells** can survive as a unicellular organism even without well-defined membrane and nucleus. He looked and compared the eukaryotic from the prokaryotic cells. While drinking some water he started illustrating *Escherichia coli* and cyanobacteria to easily remember the examples of prokaryotic cells. It was 8 o'clock in the evening as he continued reading the next topic.

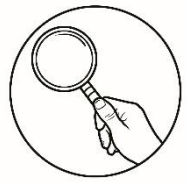
"What's this?," he whispered... Cells have three basic parts which are the cytoplasm, nucleus and plasma membrane. He found out that the **cytoplasm** is a jelly-like substance where all other cell parts are located. The **nucleus** can be seen easily as it is located at the center and controls the activities of the other parts of the cell. **Plasma membrane** encloses the cell separating the inside contents from its outside environment. Suddenly, his mother called him so he stopped reading and went to sleep.

The next day he became very excited in going to school. Though he prepared a lot before his Science class started, he can't help but feel anxious. When his favorite subject started, he felt a little bit nervous but confident enough to interact with his teacher and classmates. You know what? His teacher was amazed of his comprehensive and factual ideas. Claps filled the air after his turn in class. This made him more eager to do advance readings.

Cromwell's day became much fuller when his crush said *hi* and congratulated him after their class. When he got home, he told his mother of what happened during that day.

That night at home, while Cromwell's mom was cooking, she listened and asked him questions like a teacher. "What are the functions of cells?" she said as she acted like the strictest lady in town. Then, the two of them laughed aloud together. " I know some of this but I'm not that sure," he replied. Then they sat together, and Cromwell started reading. "Generally, cells carry out all life processes and secrete certain substances during and after a cellular activity. Therefore our cells produce energy, provide structure and support and allow the transport of substances.", he embarked. "Very good my child, because you do good towards your studies, I'll give you a food treat by Saturday!"

Q: Are you amazed of Cromwell's journey? What attitude towards learning did he show?



What is It

How much have you learned today? Let's find out if you can answer the questions that follow. Rewrite and answer them in a separate sheet.

1. What are the primary types of cells?

A. _____ B. _____

2. What are the differences between the two types of cell? Fill in the columns as required.

Types of Cells		
Characteristic/description		
Term that describe organisms with this type of cells		
Examples		

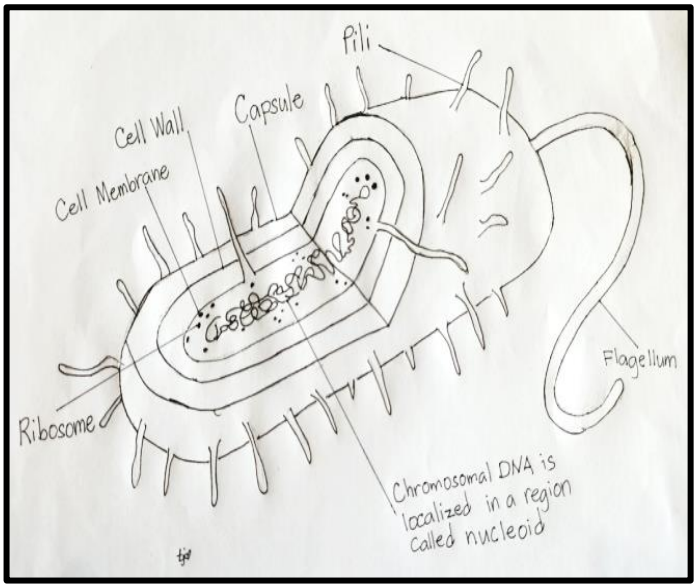
3. Give the main parts of the cell and their functions. Copy and complete the template below.

Basic Parts of Cells	Functions

4. Cells are the building blocks of life which carry very important functions. Enumerate the general functions of cells.

1. _____
2. _____
3. _____

Cells vary in size, shape and function but there are parts and characteristics common to all of them. You have learned in lesson 1 that all organisms are made up of cells. However, you needed to explore more about its types, parts and functions as building blocks of life. The "journey of Cromwell" helped you to find answers to your questions. Look at the figures below and spot the differences.



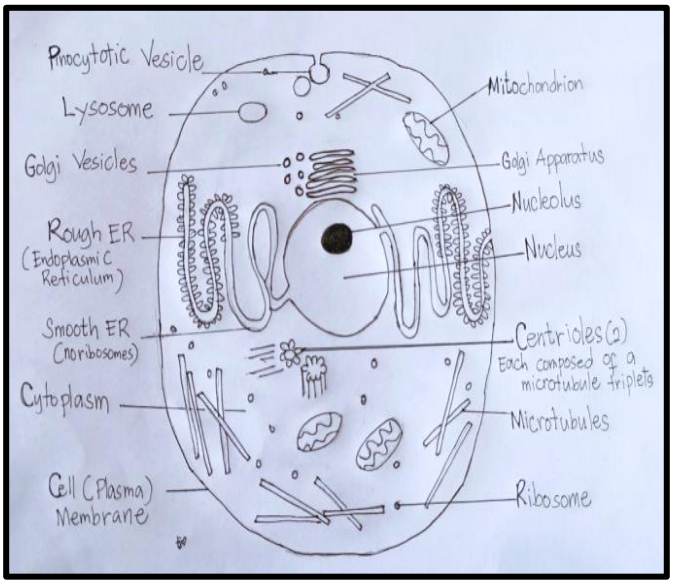


Figure 1. A prokaryotic Cell Figure 2. A eukaryotic cell (animal cell)

Have you noticed that there are many other parts of the cell? You have already learned them from the previous module. The figures above will give you a total picture of a cell. To let you see the basic parts of the cell take a look at the next figure.

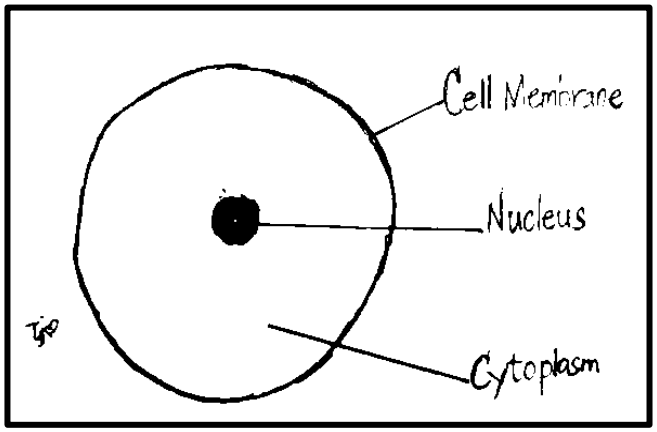


Figure 3. Basic parts of a cell

What's More

Directions: Match the description in Column A with the organisms or organelles in Column B. Write the letter of the correct answer in a separate sheet of paper.

Column A	Column B
___1. A cell part that is distinct and located at the center. It controls the activities of the other parts of the cell.	A. Cell Wall
___2. These are jelly-like substances where all other cell parts are located.	B. Cytoplasm
___3. It encloses the cell and separates what is inside from its outside environment	C. Eukaryotes
___4. A type of cell that lacks a defined nucleus, but has a region called the nucleoid.	D. Eukaryotic Cell
___5. A type of cell with nucleus and other membrane-bound organelles.	E. Nucleus
___6. They are multicellular organisms like plants with membrane-bound organelles.	F. Nucleoid
___7. They are unicellular organisms like coccus and euglena	G. Plasma Membrane
	H. Prokaryotes
	I. Prokaryotic Cell

What I Have Learned

Directions: Read the paragraph below and identify the correct word from the box that fits in the given sentences. Write your answer on a separate sheet. Select your answers from the word pool below.

Cell wall	Cytoplasm Nucleoid	Eukaryotes	
Eukaryotic Cell	Plasma Membrane	Prokaryotic Cell	Nucleus Prokaryotes
produce energy	provide support and structure	Transport of substances	

In your science class, your teacher asked you to identify the cells in the pictures posted on the board. You observed that Picture 1 has no defined nucleus and you labeled it as (1) _____. For Picture 2 the nucleus is very visible then this type of a cell is (2) _____. Your teacher continued to deliver her lesson. She presented that a cell has three basic parts.

The (3) _____,encloses the cell and separates the inside organelles from the outside. she explained. Your classmate said that (4) _____are jelly-like substances where all other cell parts are located. You raised your hand and told the class that (5)_____ the most easily seen part because it controls the activities of other parts of the cell. Xione added that multicellular organisms whose cells have nucleus are called (6)_____. On the other hand, Ysah continued to discuss that a unicellular organism whose cell has no defined nucleus but has a nucleoid region is called (7) _____.

Finally your teacher emphasized that cells are the building blocks of life and are considered as basic structural and functional unit of life. Because basically they perform all life processes that enable all organisms to grow and develop. Among the general functions of cells are: (8) _____, (9) _____ and (10)_____.

What I Can Do

You are doing great! This time you have to draw and label simple cell showing its three basic parts. After which, write a short description on the functions of these basic parts. Do it in a separate sheet. Note: You can use crayons and other materials to make your output more creative and colorful

RUBRIC			
	8pts.	5 pts.	5 pts.
A. Drawing Technique and Understanding of Concepts	Drawing shows good technique and understanding of clear concept	Drawing shows some technique and understanding of concept is not so clear.	Drawing lacks technique and understanding of concept is vague.
B. Craftsmanship	Drawing is neat and shows very little evidence of marks, rips, tears, or folds. A few erasure lines showing.	Drawing is somewhat messy and shows marks, rips, tears, or folds. A few erasure lines showing.	Drawing is messy and shows marks, rips, tears, or folds. Many erasure lines showing.
C. Creativity	Art work reflects originality.	Art work shows some evidence of originality.	Art work shows little or no evidence of original thought.

Assessment

Directions: Choose the letter of the correct answer from the given choices. Write the chosen letter on a separate sheet of paper.

1. What type of cells do humans have?
   A. Stationary
   B. Eukaryotic
   C. Prokaryotic
   D. Both A and B
2. E. Coli is a bacterium responsible in speeding digestion. In which type of cell do they belong?
   A. Animal
   B. Eukaryotic
   C. Plant
   D. Prokaryotic

3. Which of the following is a cell that has **NO** defined nucleus but has a nucleoid region?
   A. Plant cell
   B. Animal cell
   C. Eukaryotic cell
   D. Prokaryotic cell
4. Which of the following cells have **NO** nucleus and other membrane-bound organelles?
   A. Prokaryotic cell
   B. Eukaryotic cell
   C. Both A and B
   D. Plant cell
5. Which among the following organelles make up a prokaryote?
   A. Nucleus
   B. Nucleoid
   C. Cell wall
   D. Cytoplasm
6. What cellular organelle is present in a eukaryote that distinguishes it from a prokaryote?
   A. Nucleus
   B. Nucleoid
   C. Cell wall
   D. Cytoplasm
7. Which of the following is **NOT** a basic part of the cell?
   A. Cytosol
   B. Nucleus
   C. Cytoplasm
   D. Plasma membrane
8. What part of the cell controls the activity of the other parts?
   A. Nucleus
   B. Cell wall
   C. Ribosomes
   D. Plasma membrane
9. What basic part of the cell encloses it and separates the inside parts from the outside?
   A. Nucleus
   B. Cell wall
   C. Cytoplasm
   D. Plasma membrane
10. Read the statement carefully.

I. Chloroplast is the green pigment of plants. II. Chromoplast is the colored pigment of plants

   A. Statements I and II are TRUE.
   B. Statements I and II are FALSE.
   C. Statement I is FALSE while statement II is TRUE.
   D. Statement I is TRUE while statement II is FALSE.

11. Read the statement carefully.

I. All multicellular organisms like plants and animals are eukaryotes. II All prokaryotes like archaea and bacteria are unicellular

A. Statements I and II are TRUE.
B. Statements I and II are FALSE.
C. Statement I is FALSE while statement II is TRUE.
D. Statement I is TRUE while statement II is FAL

12. Which of the following is the function of the cell membrane?

A. To control reproduction in the cell.
B. To give the cell shape and support.
C. To control what enters and leaves the cell.
D. To control activities in the cell.

13. Which of the following items is correctly paired?

I. Animal : Eukaryote II. Archaea : Prokaryote III. Eukaryote : Unicellular IV. Prokaryote : Unicellular

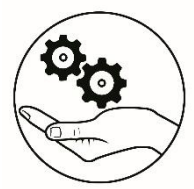
A. I and II only
B. I, II and III only
C. I, II and IV only
D. I, III and IV only

14. Upon entering a museum, you were amazed of the displayed enlarged portrait of the different cells. The most colorful portrait caught your attention and your teacher said that it was a eukaryote. Where does this part found inside the cell?

A. Cytoplasm, mitochondria, plasma membrane
B. Cytoplasm, nucleus, plasma membrane
C. Cytoplasm, plasma membrane, vacuole
D. Cytoplasm, nucleoid, plasmid

15. Your teacher conducted an oral recitation test. She required you to explain why cells are considered as the basic structural and functional unit of life. How would you response to her? Which of the following statements that follows will support your answer?

A. Cells provide support and structure, produce energy and transport substances in and out of the cell.
B. Cells provide support and structure and produce energy.
C. Cells are the fundamental units of life processes.
D. Cells need nourishment to grow.



Additional Activities

Great job! You made it. To complete this module, you will make a **3D foldable story book** that will showcase the differences between eukaryotic cells from prokaryotic cells and vice versa. Please include examples. You can use recyclable, indigenous materials that are present only in your home or community. Do it yourself uniquely!

Rubrics	10 pts	5 pts	3 pts
A. Important Events	The summary includes the most important events from the story.	The summary includes two important events from the story.	The summary includes one important with unnecessary events from the story.
B. Paraphrasing	Paraphrasing is used smoothly and accurate.	Paraphrasing is used accurately.	Paraphrasing is with accuracy but doesn't sound completely smooth.
C. Story Elements	The elements of the story are completely used.	Two elements of the story are completely used.	One element of the story is used.
D. Word Choice	The story is clearly written with words are used to express ideas.	The story is written with words are used to express ideas.	The story is with undesirable words are used to express ideas.

Answer Key

Lesson 1

What is It

1. Cells
2. No, because cells are classified as unicellular and multicellular.
3. Any of these: euglena, paramecium, cocos
4. Unicellular are single-celled organisms while multicellular are organisms with million of cells.
5. None, because life begins with a cell.

What's New

1. I
2. V
3. II
4. IV
5. III

B.

1. Matthias Schleiden
2. Theodor Schwann
3. Robert Hooke
4. Rudolf Virchow
5. Anton Van Leeuwenhoek

What I Know

1. D
2. B
3. D
4. D
5. C
6. C
7. C
8. C
9. C
10. D

Assessment

1. A
2. D
3. B
4. B
5. C
6. A
7. C
8. C
9. B
10. False-
1858
11. False-
1839
12. True
13. False-
Robert Hooke
14. B
15. D

What I have Learned

1. Unicellular
2. Consists of millions of cells.
3. He discovered the cells.
4. He first observed microorganisms under microscope.
5. He concluded that cells are come from pre-existing cells.
6. He stated that all animals are composed of cells.
7. He theorized that all plants are composed of cells.
8. All living things are composed of cells.

What's More

(In any order)

1. The cells was discovered by Robert Hooke
2. The cells were discovered in 1665.
3. Microorganisms were first observed in 1674.
4. Cells are the basic units of life.
5. All living things are composed of cells.
6. All cells are come from pre-existing cells.

Additional Activities

A

Vertical
A. 1838
B. 1674
C. 1839

Horizontal
A. 1665
C. 1858

B

Vertical
1. Theodor
2. Robert

Horizontal
2. Rudolf
3. Matthias
4. Anton Van

Lesson 2

What I Know

1. B
2. A
3. C
4. D
5. A
6. B
7. B
8. C
9. C
10. B
11. C
12. A
13. D
14. D
15. C

What's More

1. E
2. B
3. G
4. I
5. D
6. C
7. H

What's I have Learned

1. Prokaryotic cell
2. Eukaryotic cell
3. Plasma membrane
4. Cytoplasm
5. Nucleus
6. Eukaryotes
7. Prokaryotes
8. Produce energy
9. Provide structure and support.
10. Allow transport of substances.

Assessment

1. B
2. D
3. D
4. A
5. B
6. A
7. A
8. A
9. D
10. D
11. A
12. C
13. C
14. B
15. A

What is It

1. A. Unicellular
   B. Multicellular

2.

Unicellular -single-celled organisms -prokaryotes Euglena, paramecium, cocos	Multicellular - millions of cells -Eukaryotes -plants, animals, fungi, protists

3.

Cytoplasm Nucleus Plasma membrane	-These are jelly-like substances where all other cell parts are located - A cell part that is distinct and located at the center. It controls the activities of the other parts of the cell. It encloses the cell and separates what is inside from its outside environment.

4. 1. Produce energy
   2.Provide structure and support.
   3.Allow transport of substances.

References

Asunsion, Alvie J., Catalan, Maria Helen D.H., Catris, Letecia V. 2017. Science Learner Material 7. Pasig City. Department of Education.

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