Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class Period: \_\_\_\_\_\_\_\_\_

Cell Biology

Introduction to Cells

*Read pages 151-152 to answer the following questions.*

1. All life forms on our planet are made of \_\_\_\_\_\_\_\_\_\_\_\_.

2. Microscope observations of organisms led to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. What is the name of the scientist who observed cells using a microscope for the first time? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. What year? \_\_\_\_\_\_\_\_\_\_\_\_

4. What was the total magnification of his microscope? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Which scientist discovered living organisms in pond water? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. What did he call these “tiny animals”? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. What total magnification did he use for this observation? \_\_\_\_\_\_\_\_\_\_\_\_\_

8. In 1838, Matthias Schleiden concluded that cells make up every part of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. In 1839, Theodor Schwann discovered that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are also made of cells.

10. In 1858, Rudolph Virchow proposed that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

11. List the three parts of the cell theory.

**Cell Theory**



*Video: Assignment Discovery: Cells (8 minutes)*

*Read page 153 and answer the following questions.*

1. A cell’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_ reflects the cell’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. There are at least \_\_\_\_\_\_\_\_\_ different types of cells.

3. The human body is made of about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells.

4. All substances that enter or leave a cell must pass through the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. Cell size is limited by a cell’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6. Cells with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ surface area-to-volume ratios can exchange substances more efficiently.

7. Larger cells have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that increase the surface area available for exchange.

*Balloon Demonstration*

*Read pages 154-155 and answer the following questions.*

1. All cells have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and

\_\_\_\_\_\_\_\_\_\_\_\_.

2. The cell’s outer boundary that acts as a barrier between the outside environment and the inside of the cell is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ includes this fluid (cytosol) and almost all of the structures suspended in the fluid.

4. The cellular structures where proteins are made are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. Genetic material called \_\_\_\_\_\_\_\_\_\_ provides the instructions for making proteins, regulates cellular activities, and enables cells to reproduce.

6. An organism that is a single prokaryotic cell is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

7. An example of an organism that is a prokaryote is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

8. An organism that is made of one or more than one eukaryotic cell is called a

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. Because of their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, eukaryotic cells can carry out more specialized functions than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells can.

10. In a eukaryotic cell, the DNA is housed in an internal compartment called a \_\_\_\_\_\_\_\_\_\_\_\_.

11. A structure that carries out specific activities inside of a eukaryotic cell is called an

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. Use the word bank provided to complete the Venn Diagram below.

Word Bank

**DNA 3.5 BYA ribosomes cell membrane**

**cytoplasm one cell multicellular 1.5 BYA**

**organelles**

*Read pages 157-163 and answer the following questions.*

|  |  |  |  |
| --- | --- | --- | --- |
| **CELL PART** | **FUNCTION IN THE CELL** | **SIMILAR TO…** | **EUKARYTOIC**  **/PROKARYOTIC?** |
| Nucleus | control center for the cell; contains DNA |  |  |
| Cell Membrane | outer surface of the cell; protects contents of cell; made of lipids |  |  |
| Cytoplasm | everything between the cell membrane and the nucleus |  |  |
| Ribosomes | where proteins are made |  |  |
| Mitochondria | where food is converted into energy for the cell; powerhouse |  |  |
| Chloroplast | where food is made (carbohydrates) |  |  |
| Endoplasmic Reticulum  (Smooth/Rough) | where materials go to be transported through the cell; highway system |  |  |
| Golgi Apparatus | packages and labels materials to be shipped to other parts of the cell or outside of the cell; post office |  |  |
| Lysosome | where waste is broken down before it is sent out of the cell |  |  |
| Vacuoles | where water, nutrients, and waste is stored until it can be used or sent out of the cell |  |  |
| Cell wall | provides strength and support for cells |  |  |
| Cilia | hair-like structure that helps cell with movement |  |  |
| Flagella | tail-like structure that helps cell with movement |  |  |

*Cell Parts Flash Cards*

12. Use the word bank provided to complete the Venn Diagram below.

Word Bank

nucleus vacuole ER cell wall

lysosome cytoplasm mitochondria cilia/flagella

ribosomes cell membrane chloroplast Golgi apparatus

*Animal & Plant Cell Coloring Sheets*

*Edible Cell Project*

From Cell to Organism

*Read pages 162-166 to answer the following questions.*

*Diversity in Cells*

1. There are over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ types organisms that live on earth.

2. Differences in cells help organisms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Prokaryotes are always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (meaning \_\_\_ cell) and \_\_\_\_\_\_\_\_\_\_\_ in size.

4. Eukaryotes are usually \_\_\_\_\_\_\_\_\_\_ and can be either \_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_.

5. Prokaryotes lack a \_\_\_\_\_\_\_\_\_\_\_\_ and membrane-bound \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6. List three differences between Prokaryotic and Eukaryotic cells

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Levels of Organization*

1. Plants and animals have many highly specialized cells that are arranged into \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. A \_\_\_\_\_\_\_\_\_\_ is a distinct group of cells that have similar \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are specialized structures that have specific \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. Various organs that carry out major body functions make up \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

*Body Types*

1. More than half of the \_\_\_\_\_\_\_\_\_ on Earth is composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms.

2. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organism is composed of many individual, permanently associated cells that coordinate their activities.

3. Cells that live as a connected group but do not depend on each other for survival are considered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. An example of a colonial organism is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that adheres to others after dividing.

5. Some \_\_\_\_\_\_\_\_\_, most \_\_\_\_\_\_\_\_\_ and all \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_ have a multicellular body.

6. Most multicellular organisms begin as a \_\_\_\_\_\_\_\_\_\_\_ cell.