

**CELLS: THE BASIC UNITS OF LIFE****VOCABULARY LIST**

**Cell** The smallest biological unit capable of carrying out all of the fundamental activities of life. The basic unit of structure and function of any living thing.

**Cell Membrane** The thin, flexible layer that surrounds a cell and which controls all that enters and leaves the cell.

**Cell Wall** In plant and bacterial cells, the outermost non-living cellulose layer that surrounds the entire cell, including the cell membrane.

**Centriole** In animal cells, a structure outside the nucleus that organizes the spindle fibers during cell reproduction.

**Centrosome** Another name for the centriole.

**Chlorophyll** A green pigment found in the chloroplasts of plant cells that is essential for photosynthesis.

**Chloroplasts** The chlorophyll-containing organelles found in the cytoplasm of plant and algae cells.

**Chromatin** The coils of DNA and protein that condense to form chromosomes. Chromatin can be thought of as chromosomes with no distinct shape.

**Chromosomes** Distinct wormlike cell structures formed from chromatin during cell reproduction.

**Contractile Vacuoles** Large sacs found in the cells of certain protozoans that remove the water that has accumulated inside the cell by pumping it to the outside of the cell.

**Cilia** Hairlike structures found on the outside of certain cells. The protozoans called ciliates use cilia to propel themselves through the water in which they live.

**Cytoplasm** That part of a cell's protoplasm that lies outside of its nucleus.

**Deoxyribonucleic Acid (DNA)** A large and very complex biochemical that stores the information needed to construct proteins and that carries the genetic information about an organism.

**DNA** The abbreviation for deoxyribonucleic acid.

**Endoplasmic Reticulum** The intricate system of tubes leading from the nuclear membrane into the cytoplasm that is involved in transporting proteins.

**Enzyme** A special class of proteins that control the rates of biochemical reactions.

**Flagellum** A long, whiplike cell structure used to propel sperm cells as well as the cells of the protozoans known as flagellates.

**Food Vacuoles** The sacs where food particles are digested that are found in the cytoplasm of protozoan cells.

**Gene** The basic unit of heredity, made up of a specific region on a DNA molecule. Also a specific region of a DNA molecule that holds the code for one specific protein.

**Golgi Apparatus** A subcellular organelle involved in packaging proteins for export from the cell.

*(Continued on Blackline Master 2)*

**CELLS: THE BASIC UNITS OF LIFE****VOCABULARY LIST**  
(Continued from Blackline Master 1)

**Lysosomes** In animal cells, the organelles where large food molecules are broken down into smaller, more useful, food molecules.

**Microtubules** Tiny tubules inside the cell that form the cell's internal "cytoskeleton" and that help rearrange structures inside the cell.

**Mitochondria** The organelles known as the "power houses of the cell" where the stored energy of food is made available for use within the cell.

**Multicellular** A word used to describe organisms made up of many cells.

**Nuclear Membrane** A layer inside the cell that surrounds the nucleus and contains many tiny pores.

**Nucleus** A large structure within the cell that contains chromatin, the nucleolus, and is surrounded by a nuclear membrane.

**Nucleolus** The "little nucleus" found inside the nucleus which is made up of RNA and protein.

**Organelle** A tiny cell structure; a miniature organ. Ribosomes, mitochondria, and chloroplasts are all organelles.

**Phagocytosis** A method by which cells take in food by surrounding and engulfing it. Amebae and white blood cells take in food by this method.

**Photosynthesis** The process by which plant cells make food and oxygen from water, carbon dioxide, and sunlight.

**Plasma Membrane** Another name for the cell membrane.

**Plasmalemma** Another name for the cell membrane.

**Protein** A class of biochemicals made up of amino acids that can be important in building and repairing cells or in controlling chemical reactions inside the cell.

**Protoplasm** All the living materials inside a cell.

**Ribonucleic Acid (RNA)** A class of nucleic acids that can be used either in reading the genetic information on the DNA or in guiding the process of making proteins.

**Ribosomes** The organelles where proteins are assembled.

**RNA** The abbreviation for ribonucleic acid.

**Spindle Fibers** Microtubules visible during cell division that are involved in separating chromosomes into two separate identical groups.

**Tissue** Layers of closely related cells that work together to perform a specific function, such as muscle tissue, liver tissue, nervous tissue, etc.

**Unicellular** An organism composed of just one cell.

**CELLS: THE BASIC UNITS OF LIFE**  
**A TYPICAL ANIMAL CELL**



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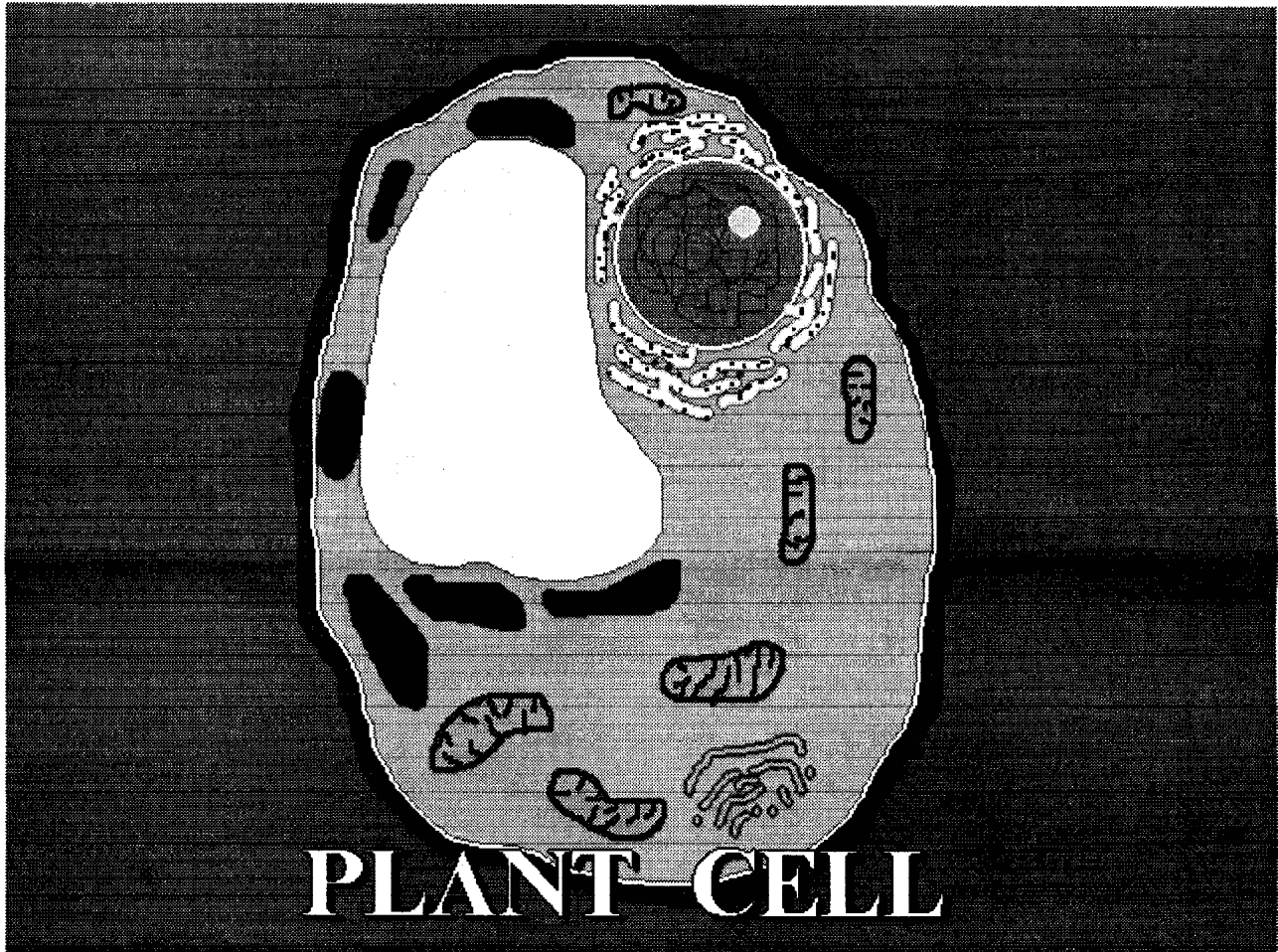
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**CELLS: THE BASIC UNITS OF LIFE**  
**CLOSE-UP OF A TYPICAL ANIMAL CELL**



**CELLS: THE BASIC UNITS OF LIFE**  
**A TYPICAL PLANT CELL**

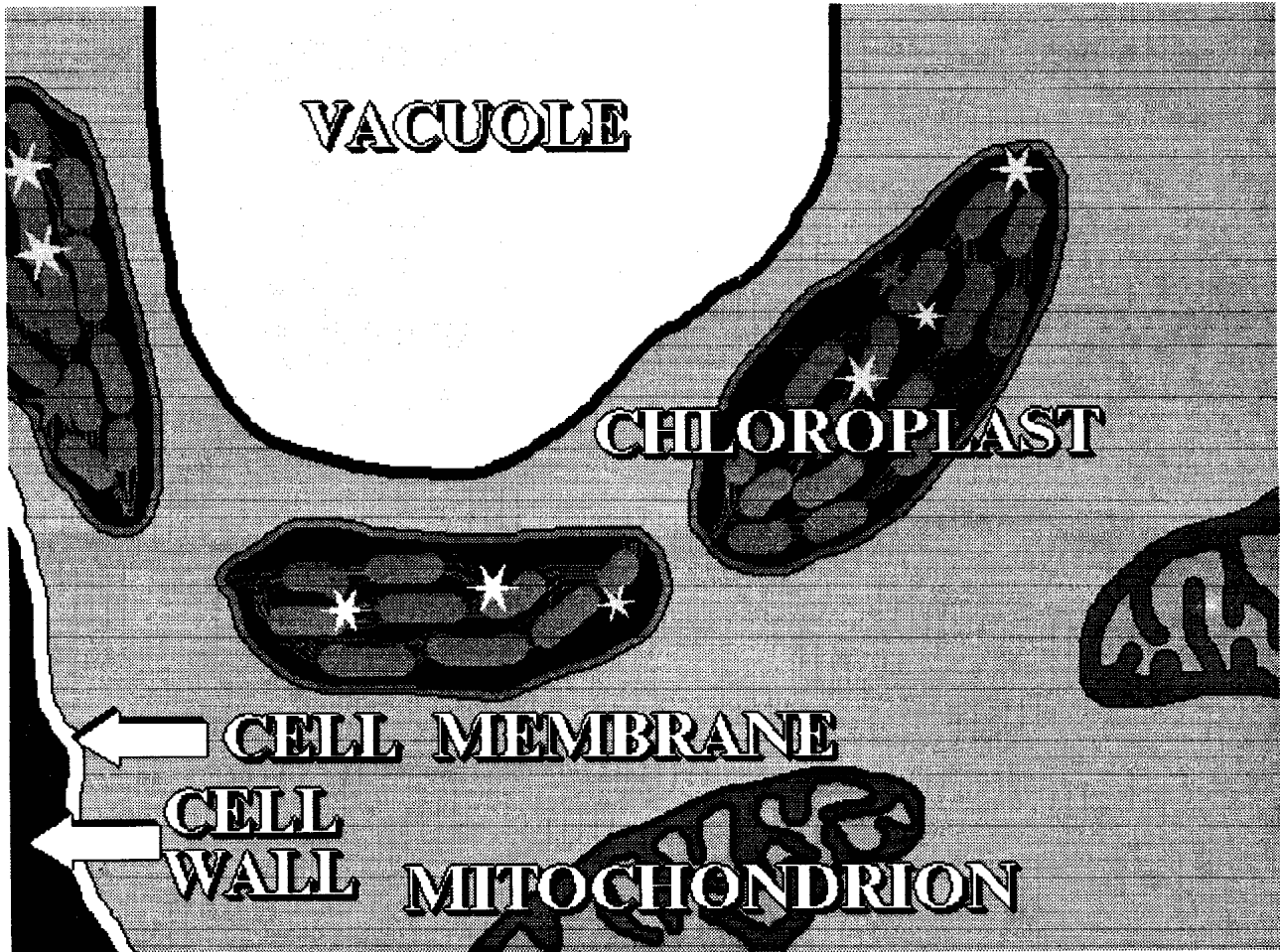


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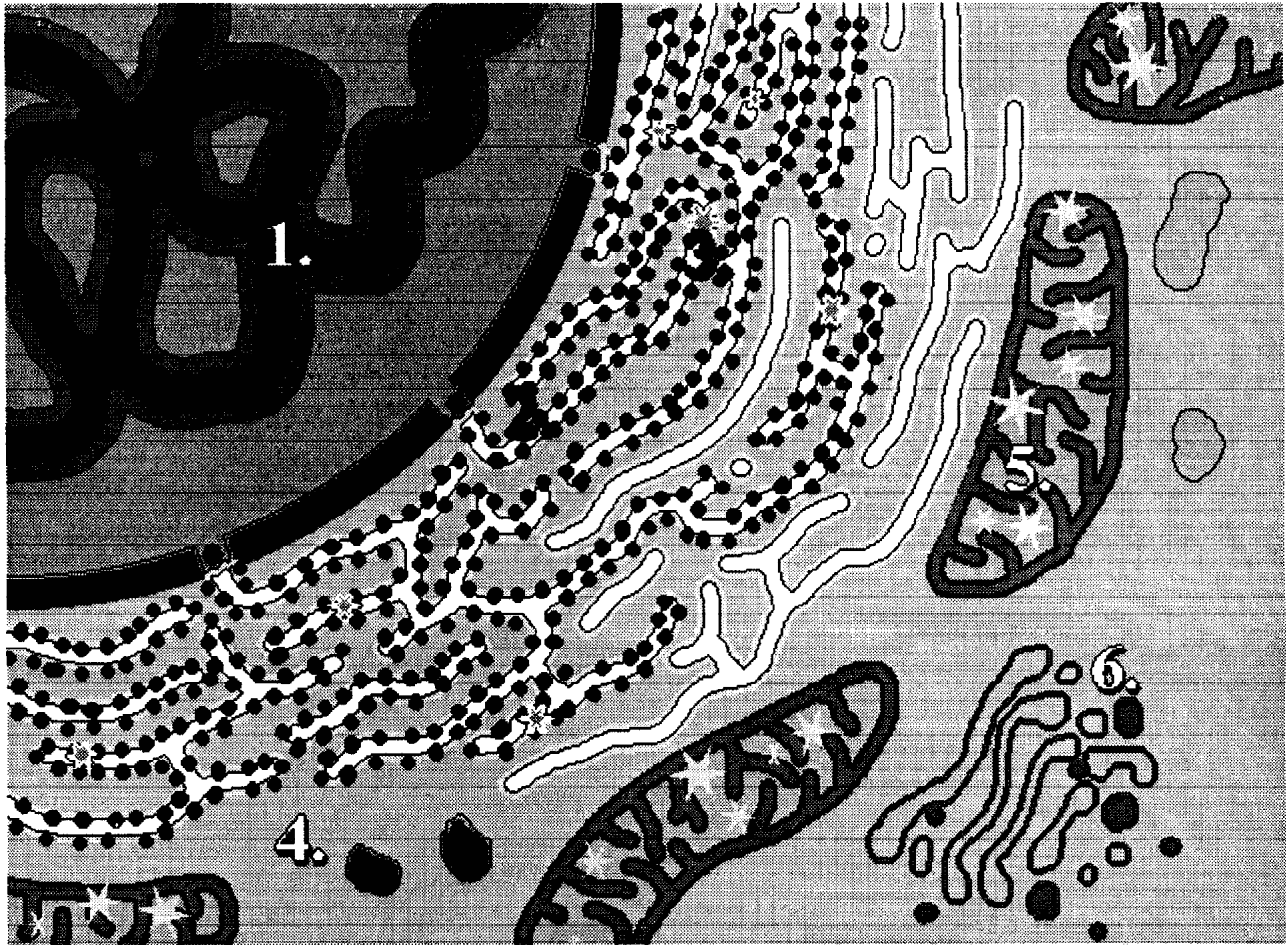
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**CELLS: THE BASIC UNITS OF LIFE**  
**CLOSE-UP OF A TYPICAL PLANT CELL**



# CELLS: THE BASIC UNITS OF LIFE

## PATHWAYS WITHIN THE CELL



1. Chromatin contains DNA instructions for proteins.

2. Proteins are made on ribosomes.

3. Proteins and protein information travel in the Endoplasmic Reticulum.

4. Enzyme proteins digest food chemicals in the lysosomes.

5. Food chemicals are converted into energy in the mitochondria.

6. Cell products, such as some proteins, are packaged for export outside the cell by the Golgi Apparatus.

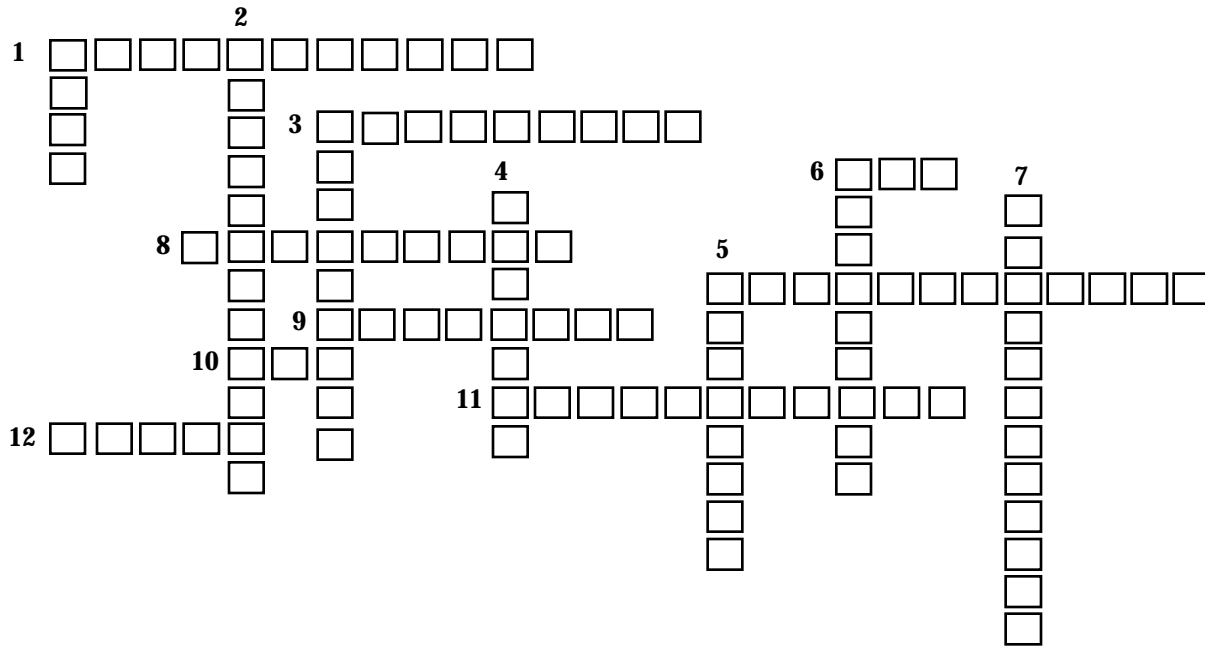
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# CELLS: THE BASIC UNITS OF LIFE

## CROSSWORD PUZZLE



### DOWN

1. The basic unit of structure and function of any living thing.
2. The powerhouses of the cell.
3. All the protoplasm outside the nucleus.
4. Layers of closely-related cells that work together to perform specific tasks.
5. The outer, non-living, layer of plant cells.
6. The organelles where proteins are assembled.
7. The thin, flexible layer that surrounds animal cells.

### ACROSS

1. Wormlike cell structures derived from chromatin during cell reproduction.
3. A structure in animal cells that organizes the spindle fibers during cell reproduction.
5. The organelles of plants where photosynthesis occurs.
6. The abbreviation for ribonucleic acid.
8. A threadlike material of DNA and protein found in the nuclei of non-dividing cells.
9. The organelles in animal cells where large molecules are broken down into smaller molecules.
10. The abbreviation for deoxyribonucleic acid.
11. The cytoplasm's intricate network of tiny tubes is called the \_\_\_\_\_ reticulum.
12. The \_\_\_\_\_ apparatus is used to export certain proteins to the outside of the cell.

**CELLS: THE BASIC UNITS OF LIFE****INTERACTIVE VIDEO QUIZ**

1. True or False: Cytoplasm is the part of a cell's protoplasm found inside of the nucleus.
2. True or False: The nucleus contains very little of the cell's DNA.
3. True or False: Genes are made up of DNA.
4. These organelles called \_\_\_\_\_ are where proteins are assembled.
5. These organelles called \_\_\_\_\_ are thought of as the "powerhouses of the cell."
6. Layers of identical cells found in most multicellular organisms are called \_\_\_\_\_.
7. The outer, non-living, layer of plant cells is called the \_\_\_\_\_.
8. Both animal and plant cells contain a thin, flexible layer called the \_\_\_\_\_ that is very important in controlling what enters and leaves the cell.
9. True or False: Proteins can be packaged for export outside the cell by a special structure called the Golgi apparatus.
10. Photosynthesis is carried out in these organelles called \_\_\_\_\_.

**CELLS: THE BASIC UNITS OF LIFE****LESSON QUIZ, PART 1****VOCALULARY WORD MATCH**

Place the alpha character from the list on the right on the line preceding the matching word on the left.

- |                                 |   |
|---------------------------------|---|
| ___ Cell                        | A. Distinct wormlike cell structures formed from chromatin during cell reproduction.  |
| ___ Cell Wall                   | B. A class of biochemicals made up of amino acids that can be important in building and repairing cells or in controlling chemical reactions inside the cell.         |
| ___ Chromosomes                 | C. A large structure within the cell that contains chromatin, the nucleolus, and is surrounded by a nuclear membrane.   |
| ___ Deoxyribonucleic Acid (DNA) | D. The basic unit of heredity, made up of a specific region on a DNA molecule. Also a specific region of a DNA molecule that holds the code for one specific protein. |
| ___ Enzyme                      | E. The process by which plant cells make food and oxygen from water, carbon dioxide, and sunlight.  |
| ___ Gene                        | F. A special class of proteins that control chemical reactions.   |
| ___ Nucleus                     | G. A large and very complex biochemical that stores the information needed to construct proteins and that carries the genetic information about an organism.          |
| ___ Photosynthesis              | H. A class of nucleic acids that can be used either in reading the genetic information on the DNA or in guiding the process of making proteins.                       |
| ___ Protein                     | I. The basic unit of structure and function of any living thing. The smallest biological unit capable of carrying out all the fundamental activities of life.         |
| ___ Ribonucleic Acid (RNA)      | J. In plant and bacterial cells, the outermost non-living cellulosous layer that surrounds the entire cell, including the cell membrane.                              |

**CELLS: THE BASIC UNITS OF LIFE**  
**LESSON QUIZ, PART 2**

**TRUE OR FALSE** - Place a T for True and an F for False in the box preceding each statement.

- ☐ 1. All bacterial cells are dangerous to humans.
- ☐ 2. Plants and animals both have tissue.
- ☐ 3. Scientists no longer accept the basic principles of the early 19th century "Cell Theory" of Theodore Schwann and M. J. Schlieden.
- ☐ 4. The internal structures of the cell are at rest at times.
- ☐ 5. Even highly trained scientists using the most modern and sophisticated equipment do not understand many of the complex biochemical reactions which underlie cellular functions.

**FILL IN THE BLANK**

- 1. Living things are all made up of \_\_\_\_\_.
- 2. All living things have 7 characteristics. List at least five of them below.
  
- 3. Many of nature's simplest creatures are nothing more than single, independently living cells and are called \_\_\_\_\_ organisms.
- 4. In larger, more biologically advanced creatures called \_\_\_\_\_, many different kinds of cells are joined to perform specialized tasks.
- 5. Cells can be thought of as marvelous and complex miniature factories whose final product is \_\_\_\_\_.

## LESSON QUIZ, PART 3

**ESSAY QUESTIONS.** Use the back of this sheet or another sheet of paper if necessary.

1. Explain how, nearly four hundred years ago, cells came to be named.
2. Briefly explain Theodore Schwann's and M. J. Schlieden's "Cell Theory."
3. Certain differences exist between the structure of animal and plant cells. Write a few paragraphs that compare and contrast animal and plant cells.