

The Living Cell
from the *Biology: The Science of Life Series*
Pre-Test

Directions: Answer each question TRUE OR FALSE.

1. The instructions for making proteins are stored in molecules of DNA. _____
2. Proteins are made in the nucleus. _____
3. All cells are surrounded by a cell or plasma membrane which regulates everything that enters and leaves a cell. _____
4. The cells of bacteria and other monerans are much simpler than the cells of plants and animals. _____
5. Life cannot exist without cells. _____
6. Very few cells need to take in energy to live. _____
7. Most cells are so small they can only be seen with a microscope. _____
8. Unicellular means having more than one cell. _____
9. Cells have all the characteristics of living things except one: They cannot respond to their surroundings. _____
10. The cells of plants and animals are exactly the same. _____

The Living Cell
 from the *Biology: The Science of Life Series*
Vocabulary List

algae- Primitive plantlike organisms of the kingdom Protista.

Adenosine Triphosphate (ATP)- The major source of readily available energy in cells. ATP is produced in the mitochondria when sugar and oxygen are chemically combined. The energy released is transferred to a chemical known as ADP to make ATP.

amoeba- A protist unicellular organism that has no definite outer shape.

ATP- Abbreviation for adenosine triphosphate, the chemical compound used by cells as a source of readily available energy.

bacteria- Simple, one-celled, organisms that lack a nucleus belonging to the kingdom Monera. Bacteria are found almost everywhere on earth. Some cause disease while others are helpful. In food chains bacteria play important roles as decomposers.

blue-green algae- Primitive plantlike creatures of the kingdom Monera.

carbon dioxide- A colorless, odorless gas abbreviated by the chemical formula CO_2 . (This formula shows that one molecule of CO_2 has two atoms of oxygen and one of carbon). Animals exhale carbon dioxide because it is a by-product of cellular respiration. Plants can use the sun's energy to combine carbon dioxide with water to make sugar.

cell division- The process that results in two cells being formed from one cell.

cell membrane- The outer layer of the cell that helps control what comes into and what goes out of the cell. Also called the plasma membrane.

cell wall- The tough layer outside the cell membrane in plants fungi, and bacteria. Wood is little more than the cell walls of the cells of trees.

centrioles- Cytoplasmic structures in animal cells that play a role in cell division by aiding spindle formation.

characteristic- A distinctive feature; a trait.

chemical- Chemicals are substances made from combinations of different elements.

chemical bonds- The way in which atoms connect to one another: For example, in water, an atom of oxygen is joined to two atoms of hydrogen by chemical bonds. The subatomic particles called electrons are responsible for creating chemical bonds.

chemical energy- Energy stored in chemical

bonds.

chemical equation- A diagram that uses chemical formulas, numbers, and other symbols to describe what happens in a chemical reaction.

chemical reactions- Events in which chemical bonds are broken, rearranged and reformed. Matter is changed by chemical reactions: This is what happens when chemical compounds react with one another and new compounds are formed.

chloroplasts- Organelles in plant and protist algae cells that contain the green pigment chlorophyll, which captures the sun's energy during photosynthesis.

chlorophyll- The chemical found in chloroplasts that transfers light energy to chemical energy. Plants get their green color from chlorophyll.

chromatin- Chromatin is made up of the tangled, threadlike, coils of chromosomes. Chromatin contains DNA plus certain proteins.

chromosomes- Chromosomes are worm-shaped structures that develop from chromatin before cells divide. Chromosomes contain DNA and protein. Human body cells have two full sets of 23 different chromosomes.

combustion- The process of burning is called combustion. If combustion is 100% effective, only carbon dioxide and water are produced and energy is released. These are the same products that are produced by cellular respiration, which is a biological process that strongly resembles combustion.

complementary- Two parts of a puzzle fit together to make a whole; they are complementary parts. In the same way, photosynthesis and cellular respiration are complementary to one another because the products of one reaction are the reactants of the other reaction.

cytoplasm- All the protoplasm located outside the nucleus.

cytoskeleton- The cell's "skeleton" of microtubules which gives it shape and strength.

deoxyribonucleic acid (DNA)- A long molecule shaped like a twisted ladder. The plans for running and reproducing cells are chemically stored in the DNA. DNA is found mostly in the nucleus but small amounts have also been found in the mitochondria and chloroplasts.

(continued on Blackline Master 3)

The Living Cell
 from the *Biology: The Science of Life Series*
Vocabulary List (continued)

electron microscope- Microscopes used by biologists who study cells. Although they only work on nonliving examples, they provide very high magnification images.

energy- The world is made up of matter and energy. Matter has mass (weight), but energy does not. Matter occupies space; energy does not. Energy is the ability to do work—the ability to move matter. Living things need a source of energy to power their life activities.

endocytosis (end-oh-sigh-toe-sis)- The same as phagocytosis.

endoplasmic reticulum- A complex network of tubular passageways leading out of the nuclear membrane used in transporting proteins.

enzymes- Proteins that control the rates of chemical reactions in cells. Digestive enzymes, such as pepsin and trypsin, are produced by specialized cells to break down food in the digestive tract.

eukaryotic cells (you-carry-ought-ick)- Cells that possess nuclei. Protists, fungi, plants, and animals are called eukaryotes because their cells have nuclei.

exocytosis (ec-oh-sigh-toe-sis)- The reverse of endocytosis. The process where wastes are enclosed in tiny sacs and expelled from a cell.

food vacuole- A small sac created when the cell membrane surrounds a food particle.

genetic code- The chemical language of the cell. DNA stores its instructions in the genetic code.

GOLGI body (GOLGI complex)- An organelle made up of stacks of curved slightly flattened membranes that help process, package and deliver proteins from the endoplasmic reticulum.

lysosomes (lie-so-soams)- Organelles rarely found in plants that contain digestive enzymes which break down food and digest worn out cell parts.

moneran- An organism belonging to the kingdom Monera, such as a bacterium or blue-green alga. Moneran cells have no nuclei, mitochondria or chloroplasts. All Monerans are prokaryotes.

micro-organisms- Organisms that are so small they can only be seen under a microscope.

multicellular organisms- An organism made up of many cells.

microtubules- Microscopic tubes that make up the "skeleton" of the cell and that also help move

certain organelles in the cell.

mitochondria (Singular: Mitochondrion (My-toe-con-dree-un)- The organelles where chemically stored energy is released. Known as the "powerhouses of the cell."

nuclear- Refers to the nucleus.

nucleus (Plural: nuclei)- A rounded structure located in the cytoplasm that acts as the control center for the entire cell.

nucleolus (new-kee-oh-lus)- "Little Nucleus" The area of the nucleus where ribosomes are made. Cells can have more than one nucleolus.

nutrients- Food broken down into simple chemicals the body can use.

offspring- Descendants, children.

organelles- "Little Organs." Certain structures in the cytoplasm where specific tasks are carried out.

organism- An entire living thing that carries out all the basic functions of life.

plasma membrane- Another name for the cell membrane.

prokaryotic cells (pro-carry-ought-ick)- Cells of very primitive organisms, such as bacteria and blue-green algae that lack nuclei, mitochondria, and chloroplasts.

proteins- Molecules made up of long chains of amino acids. Proteins build living material, help carry out chemical reactions, fight disease, and help transport things out of the cell.

protist- An organism belonging to the Kingdom Protista, unicellular creatures that have a nucleus.

protoplasm- The living jelly-like substance of cells.

protozoa- Animal-like organisms of the Kingdom Protista.

red blood cells- These cells cause our blood to be red. Their role is to carry oxygen from the lungs to other cells in the body. Although red blood cells have nuclei when they are developing, the mature cells have no nuclei.

phagocytosis (fah-go-sigh-toe-sis)- "cell eating" occurs when the cell membrane surrounds food material producing a food vacuole; also called endocytosis.

respond- To make a response; to react to something. Living things respond to stimuli in the world around them.

(continued on Blackline Master 4)

The Living Cell
 from the *Biology: The Science of Life Series*
Vocabulary List and Activity(continued)

respiratory system- The organ system that brings oxygen into the body and removes waste carbon dioxide and water vapor.

ribosomes- The organelles where proteins are made from amino acids.

specialized cells- Cells in the bodies of multicellular organisms that carry out special tasks. For example, muscle cells are specialized cells that help move parts of the body.

tissue- Usually tissues are layers of similar cells that perform a certain function.

trillion- A million millions. Adult human beings have around 100 trillion cells.

unicellular organism- An organism made up of only one cell.

vacuole (vac-you-oh)- A cell sac. In plant cells, the vacuole is a large sac that contains liquid.

white blood cells- Special blood cells that act as a defense system against disease.

Vocabulary Activity

From the vocabulary list, find the correct word and use it to fill in the blank.

1. _____ is a process that is similar to cellular respiration.
2. Multicellular organisms possess cells that are _____ to perform certain tasks. (Muscle cells and blood cells are examples of these types of cells).
3. A layer of similar cells that performs a certain activity is called a _____.
4. The process by which two cells are created from one cell is called _____.
5. Wood is little more than the _____ of the cells of trees.

The Living Cell
from the *Biology: The Science of Life Series*
Post-Test

Part A.

Describe the function of each of the following cell parts:

1. Ribosome-
2. Mitochondrion-
3. Endoplasmic reticulum-
4. Golgi body-
5. Lysosome-
6. Cell membrane-
7. Chloroplast-
8. Chromatin-
9. Food vacuole-
10. Cell wall-

Part B.

From the list above, which parts would not be found in animal cells.

Part C.

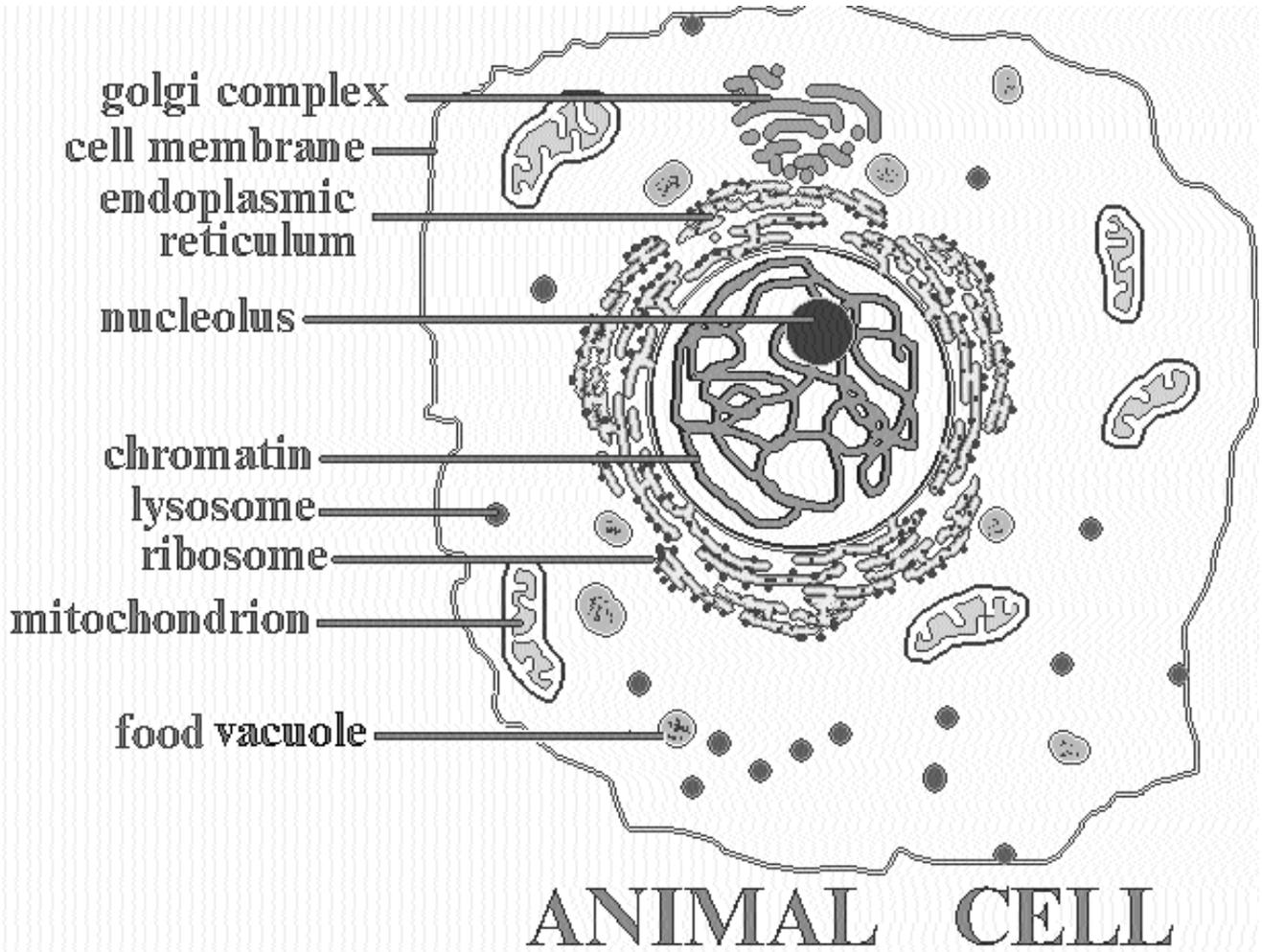
What is a eukaryote? What is a prokaryote?

The Living Cell
from the *Biology: The Science of Life Series*
Video Quiz

Directions: Answer the following questions either True or False.

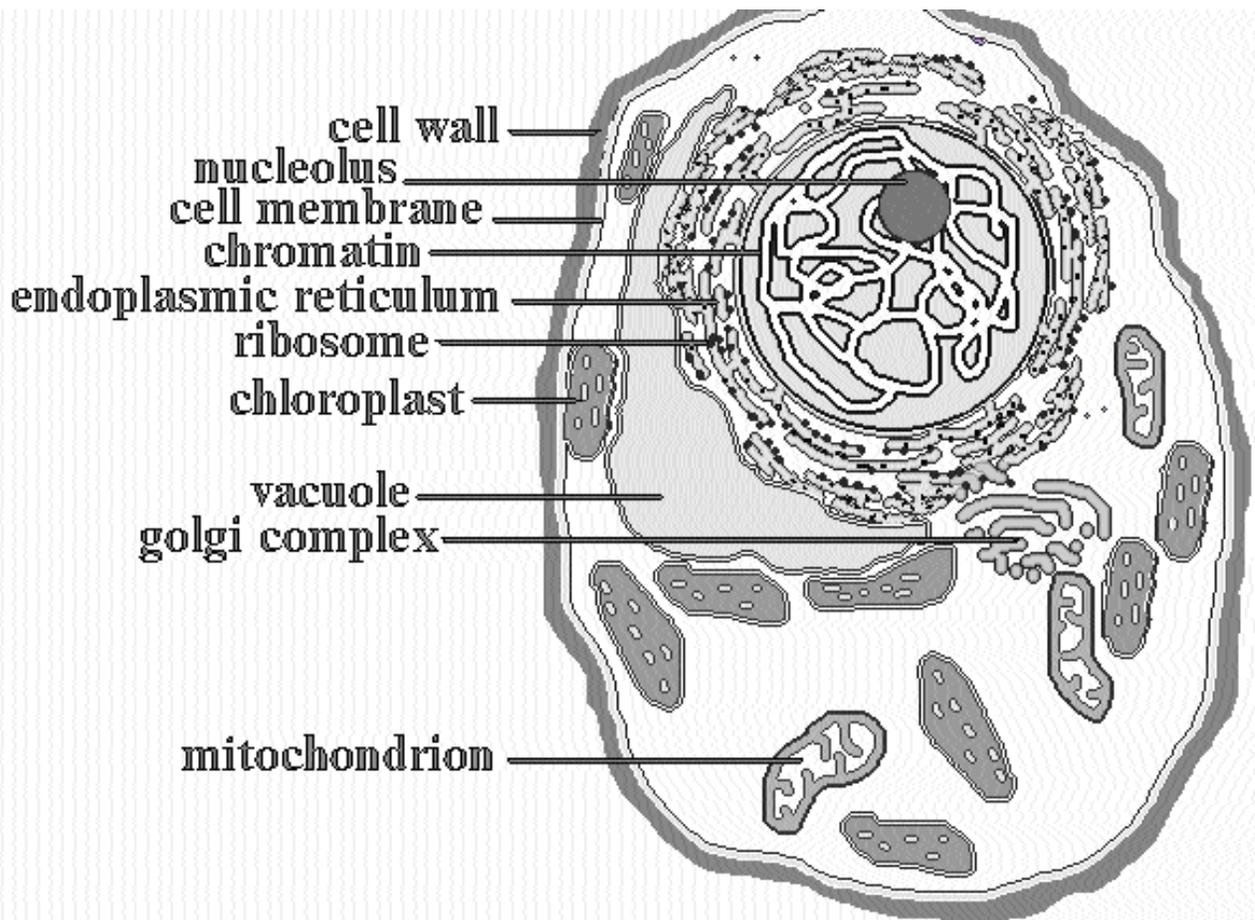
1. TRUE OR FALSE? Ribosomes are known as "the powerhouses of the cell." _____
2. TRUE OR FALSE? Not all cells have a nucleus. _____
3. TRUE OR FALSE? Proteins travel through the endoplasmic reticulum. _____
4. TRUE OR FALSE? Enzymes are proteins. _____
5. TRUE OR FALSE? Animal cells have more chloroplasts than plant cells. _____

The Living Cell
from the *Biology: The Science of Life Series*
Diagram of an Animal Cell



AGC/United Learning 1560 Sherman Ave., Suite 100 Evanston, IL 60201 800-323-9084

The Living Cell
from the *Biology: The Science of Life Series*
Diagram of a Plant Cell



PLANT CELL

AGC/United Learning 1560 Sherman Ave., Suite 100 Evanston, IL 60201 800-323-9084