

NEXT TO EACH CELL PART, DESCRIBE ITS FUNCTION(S), AND THE PART OF A CITY IT IS MOST SIMILAR TO. USE THE WORD BANK, BUT DO NOT LET IT LIMIT YOUR WORD CHOICE.



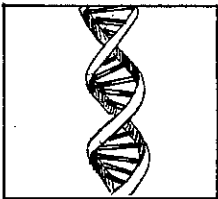
KATZ '04

WORD BANK OF BIOLOGY TERMS

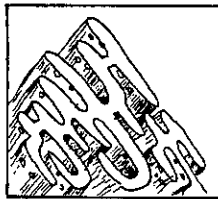
LOCATION OF	PACKAGES	WATER
STORES (2)	PRODUCTION (2)	NUTRIENTS
CONTROLS	CELL (2)	OLD
PRODUCES (3)	DNA	PARTS
PROTEIN(S) (3)	ENERGY	MICROBES
FOOD (2)	DIGESTS	INFORMATION



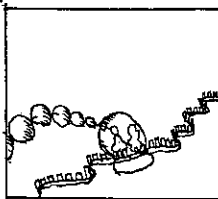
1. NUCLEUS _____



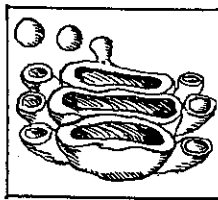
2. DNA/GENETIC MATERIAL _____



3. ENDOPLASMIC RETICULUM _____



4. RIBOSOMES _____



5. GOLGI COMPLEX _____

NAME: _____

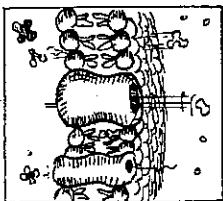
CLASS: _____ DATE: _____

NEXT TO EACH CELL PART, DESCRIBE ITS FUNCTION(S), AND THE PART OF A CITY IT IS MOST SIMILAR TO. USE THE WORD BANK, BUT YOU ARE FREE TO USE OTHER WORDS AS WELL.

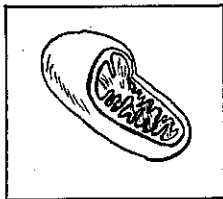


WORD BANK

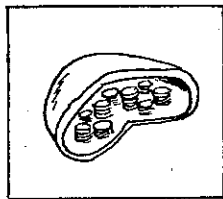
REGULATES	PRODUCES	DIGESTS
CITY	ENERGY	OLD
LIMITS	WATER	CELL
WHAT PASSES	NUTRIENTS	PARTS
INTO	STORES	BACTERIA
OUT OF	FOOD	VIRUSES



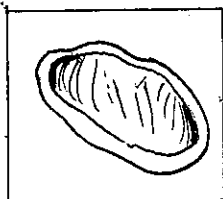
6. MEMBRANE _____



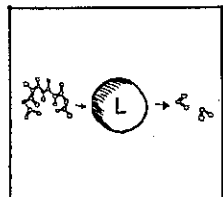
7. MITCHONDRION _____



8. CHLOROPLAST _____



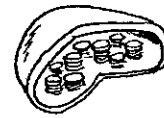
9. VACUOLE _____



10. LYSOSOME _____



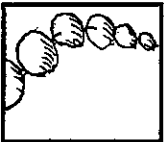
STUDY QUESTIONS



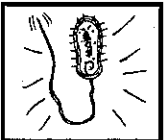
Directions: Answer the following questions to the best of your ability.



1. In your own words, compare and contrast a eukaryotic cell with a city.



2. a) Which three organelles are involved in the production of proteins?
b) Circle the organelle that controls the process.



3. You are a bacterium invading the inside of an animal cell. What cell part do you have to fear the most? Why?



4. How might the mitochondrion help an athlete in a five-mile race?



5. How is the nucleus similar to city hall? To a library?



Background: The Cell and the City



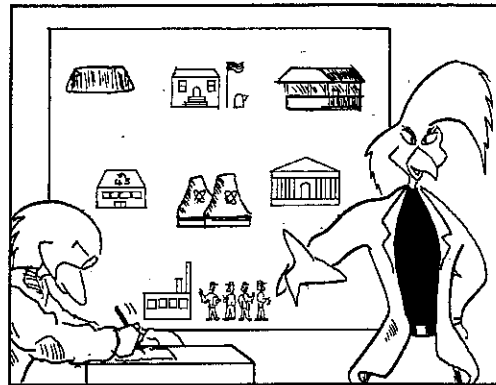
The purpose of this cartoon is to explain the functions of various cell parts in the **eukaryotic cell**, and compare them to the buildings in a city.

Five parts are involved in protein synthesis. The **nucleus** stores the original copies of **DNA**: instructions for building cell parts and controlling the cell's operations. DNA copies, called messenger RNA (mRNA), are sent to an organelle called the **rough endoplasmic reticulum (RER)**, where proteins are manufactured.

Within the RER, **ribosomes** use the mRNA to build proteins. Some of the proteins are sent to the **golgi bodies** for further packaging.

Other organelles are involved in energy use. The **mitochondrion** uses oxygen and food molecules to produce energy in the form of molecules known as **ATP**.

Plant cells have additional organelles called **chloroplasts**, which use sunlight, water, and carbon dioxide to produce glucose through photosynthesis. Cells also have **vacuoles**, which store water and nutrients. To break down unwanted viruses, bacteria, and old cell parts, cells use **lysosomes**.



Many of these cell parts can be remembered by drawing analogies to buildings in a city. The nucleus is like city hall or the library. The RER is similar to the factory, and the ribosomes can be likened to the workers. golgi bodies can be compared to the post office or warehouse.

The mitochondrion is like the powerplant, the chloroplast could be thought of as a restaurant, the lysosome is similar to a garbage truck or recycling center, and the vacuole can be thought of as a water reservoir. Try to think of your own analogies for these and other cell parts. The sky's the limit!

1. What happens within the rough endoplasmic reticulum?

2. How is the mitochondrion different from a chloroplast?
