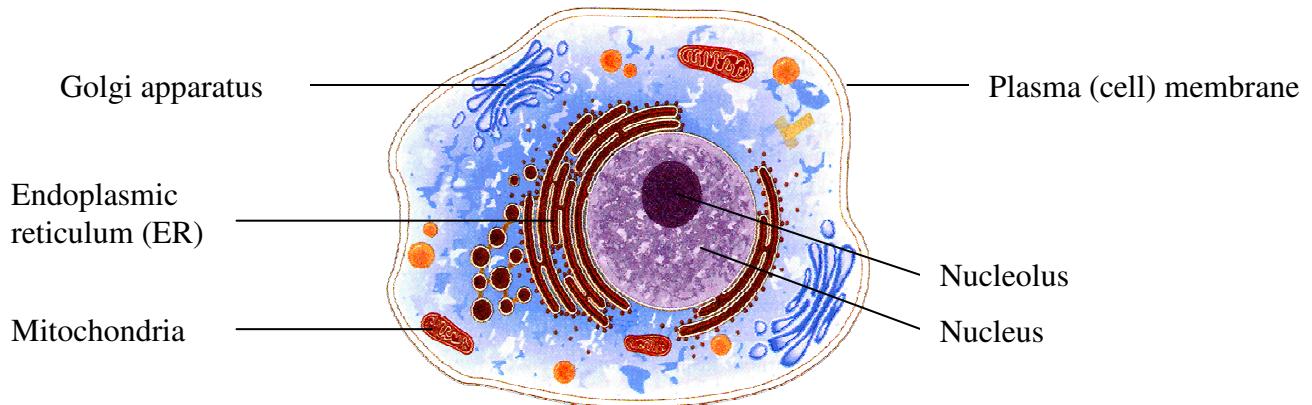


## CELLS

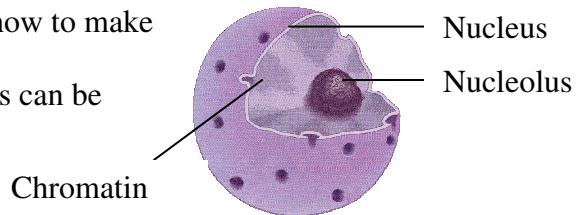
The **cell theory** states that cells are the basic unit of life, all living things are made up of one or more cells, and that cells come only from other living cells.

**Eukaryotic cells** are cells that have internal membrane-bound structures. Plants, animals, and fungi are made up of eukaryotic cells. The structures found inside of eukaryotic cells are called **organelles** (little organs), and each organelle has a particular function linked to cell survival.



**Nucleus**- contains DNA, which holds the instructions for how to make proteins

(all cell parts depend on proteins to function, so the nucleus can be considered the control center of the cell)



The blueprints for protein production are contained in

**chromatin**- strands of DNA

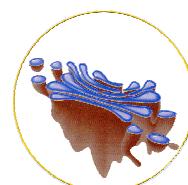
**nucleolus**- the dark sphere within the nucleus, where ribosomes are made

**Ribosomes**- the site of protein synthesis (where proteins are made)

Once ribosomes are made in the nucleolus, they move to the cytoplasm (the jelly-like region outside of the nucleus). Ribosomes can then attach to the **endoplasmic reticulum (ER)**, a series of highly folded membranes that act as the highway of the cell. Once proteins are made by the ribosomes, the proteins travel through the ER, and...

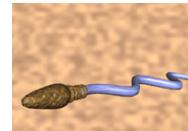


are transferred to the **Golgi apparatus**. The Golgi apparatus is a series of flattened membrane sacs that sorts and distributes proteins.



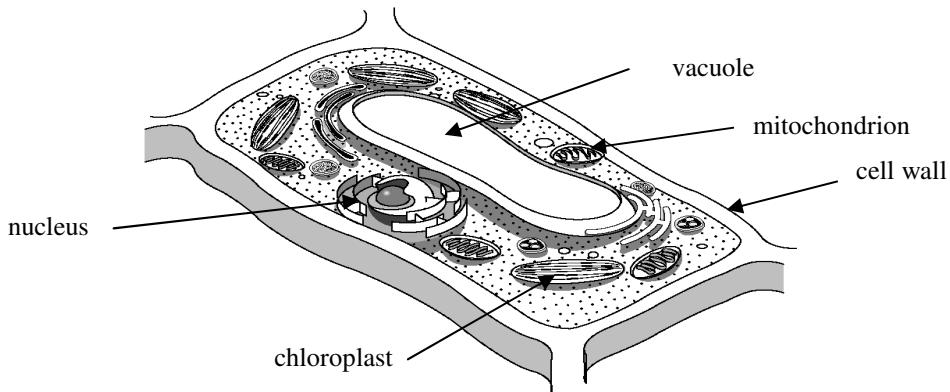
**Vacuoles**- store things (enzymes, food, and other materials) within the cell

**Lysosomes**- contain enzymes that digest or break down worn out cell parts, excess food particles, and invading bacteria or viruses

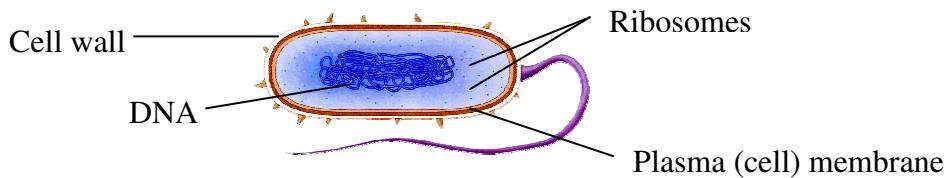


**Flagella**- some cells have whip-like extensions that they help them move

**Plant cells** look different than animal cells because plants have cell walls and chloroplasts, and also usually have a large central vacuole used to store water.



**Prokaryotic cells**, such as bacteria, lack internal membrane-bound structures.  
(A prokaryotic cell does not have a nucleus or organelles.) Prokaryotes do synthesize proteins, so they do contain ribosomes.



### PRACTICE

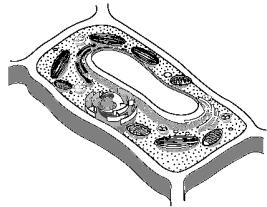
1. Which part of the cells acts as a barrier to control what enters and leaves the cell?
  - a. cell membrane
  - b. cytoplasm
  - c. DNA
  - d. Nucleus
  
2. Which of the following is a main difference between prokaryotic and eukaryotic cells?
  - a. smaller size of eukaryotes
  - b. absence of a membrane-bound nucleus in prokaryotes
  - c. absence of ribosomes in prokaryotes
  - d. absence of organelles in eukaryotes
  
3. Which statement is false?
  - a. Eukaryotes are much more complex than prokaryotes
  - b. The components inside a prokaryotic cell lack membranes
  - c. Prokaryotes were the first organisms on Earth
  - d. Prokaryotes lack genetic material

4. Muscle cells require a great deal of energy. Therefore, they are likely to have a high number of \_\_\_\_.

- a. Golgi
- b. Mitochondria
- c. ER
- d. Lysosomes

5. This cell is most likely a member of which Kingdom?

- a. Fungi
- b. Animalia
- c. Protista
- d. Plantae



6. If a cell was unable to produce ribosomes, which of the following would it be unable to make?

- a. carbohydrates
- b. proteins
- c. nucleic acids
- d. lipids

7. Which organelle is most like a miniature stomach inside of the cell?

- a. Vacuole
- b. Endoplasmic reticulum
- c. Lysosome
- d. Chloroplast

8. Which of the following is not a cell organelle?

- a. mitochondrion
- b. cytoplasm
- c. endoplasmic reticulum
- d. lysosome

9. Which of the following would you find in a plant cell but not in an animal cell?

- a. cell membrane
- b. endoplasmic reticulum
- c. nucleus
- d. chloroplast

10. Cellulose is which type of organic compound?

- a. carbohydrate
- b. lipid
- c. nucleic acid
- d. protein

11. How are eukaryotes different from prokaryotes?

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