

Lesson 3.1: Critical Reading

Name _____ Class _____ Date _____

Read these passages from the text and answer the questions that follow.

Two Types of Cells

There is another basic cell structure that is present in many but not all living cells: the nucleus. The **nucleus** of a cell is a structure in the cytoplasm that is surrounded by a membrane (the nuclear membrane) and contains DNA. Based on whether they have a nucleus, there are two basic types of cells: prokaryotic cells and eukaryotic cells.

Prokaryotic Cells

Prokaryotic cells are cells without a nucleus. The DNA in prokaryotic cells is in the cytoplasm rather than enclosed within a nuclear membrane. Prokaryotic cells are found in single-celled organisms, such as bacteria. Organisms with prokaryotic cells are called **prokaryotes**. They were the first type of organisms to evolve and are still the most common organisms today.

Eukaryotic Cells

Eukaryotic cells are cells that contain a nucleus. Eukaryotic cells are usually larger than prokaryotic cells, and they are found mainly in multicellular organisms. Organisms with eukaryotic cells are called eukaryotes, and they range from fungi to people. Eukaryotic cells also contain other organelles besides the nucleus. An **organelle** is a structure within the cytoplasm that performs a specific job in the cell. Organelles called mitochondria, for example, provide energy to the cell, and organelles called vacuoles store substances in the cell. Organelles allow eukaryotic cells to carry out more functions than prokaryotic cells can.

Viruses: Prokaryotes or Eukaryotes?

Viruses are tiny particles that may cause disease. Human diseases caused by viruses include the common cold and flu. Do you think viruses are prokaryotes or eukaryotes? The answer may surprise you. Viruses are not cells at all, so they are neither prokaryotes nor eukaryotes.

Viruses contain DNA but not much else. They lack the other parts shared by all cells, including a plasma membrane, cytoplasm, and ribosomes. Therefore, viruses are not cells, but are they alive? All living things not only have cells; they are also capable of reproduction. Viruses cannot reproduce by themselves. Instead, they infect living hosts, and use the hosts' cells to make copies of their own DNA. For these reasons, most scientists do not consider viruses to be living things.

Questions

1. What is one main difference between prokaryotic and eukaryotic cells?
2. Give an example of a prokaryotic organism.
3. What is an organelle? Give three examples. (*Hint: See the Eukaryotic Cell figure in the FlexBook.*)

3.1 Introduction to Cells

Lesson 3.1: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. All organisms are made of more than one cell.
- _____ 2. Early microscopes created by Leeuwenhoek were almost as strong as modern light microscopes.
- _____ 3. Proteins are made on ribosomes.
- _____ 4. Prokaryotic cells have a nucleus.
- _____ 5. The plasma membrane forms the physical boundary between the cell and its environment.
- _____ 6. For cells, a smaller size is more efficient.
- _____ 7. Compared to eukaryotic cells, prokaryotic cells are very complex.
- _____ 8. Organelles are located within the cytoplasm.
- _____ 9. Viruses are similar to prokaryotic cells.
- _____ 10. All cells have a plasma membrane, cytoplasm, and ribosomes.
- _____ 11. DNA is located in the nucleus of prokaryotic cells.
- _____ 12. Organelles allow eukaryotic cells to carry out more functions than prokaryotic cells.
- _____ 13. Viruses are considered living organisms.
- _____ 14. Most cells are about the size of the period at the end of this sentence.
- _____ 15. Observation of cork helped in the discovery of cells.