Chapter 5 Living Systems: Organisms

Introduction

Structural and physiological traits that link organisms are presented in Chapter 5. The physiological traits that link all organisms are called ***life processes***, and include ***nutrition***, ***respiration***, ***transport***, ***excretion***, ***regulation***, ***reproduction***, and ***growth***. The functional units of organisms that carry out these life processes are ***cells***. The differences between plant and animal cells are discussed, as well as the ability of some cells to cause disease in the human body. This chapter also introduces the use of a ***microscope*** in order to reinforce the study of the cell and its structures.

Students Should Understand the Following Concepts

- All organisms are made of cells.
- All living things must carry out all of the life processes, which are nutrition, respiration, transport, excretion, regulation, reproduction, and growth.
- Plant cells have organelles called cell walls and *chloroplasts* that are not found in animal cells.
- Animals must take in nutrients in order to perform their life processes, whereas plant cells can make their own food using sunlight.
- Single-celled *organisms* called pathogens can cause human diseases.

Activities to Develop the Topic

Use one or more of the following activities to help your students review this topic.

The fact that organisms can vary greatly in appearance, behavior, and lifestyle and yet still have some profound similarities may not be evident to all of the students right away. Once the students are comfortable with the idea that all organisms have similar characteristics, they can be introduced to all the life processes organisms must perform to stay alive. The idea of life processes can be introduced by comparing a cell to a factory. Make the hypothetical factory produce something fun. Get the class involved by asking the students what they want the factory to produce. Once the class has arrived at what they want their factory to produce, have them generate a list of activities that are necessary for the factory to run smoothly. The factory obviously needs supplies, needs to get rid of waste, and needs to coordinate all the other tasks essential to stay in business. These activities can be correlated to similar activities within cells.

The factory analogy can also be carried over into a later discussion of how an infection occurs. You could point out that a viral infection is similar to someone taking over a factory and changing what the factory produces, which is in essence what a *virus* does.

Name _____ Date _____

Class _____

Review of Chapter 5

1. The basic unit of all living things is the
   (1) neuron
   (2) cell
   (3) nephron
   (4) organelle

2. Which of the following compounds could supply a person with a quick source of energy?
   (1) carbohydrates
   (2) proteins
   (3) fats and oils
   (4) minerals

3. The two organelles that are found in plant cells but not animal cells are
   (1) chloroplasts and centromeres
   (2) centrioles and cell walls
   (3) cell walls and chloroplasts
   (4) chromosomes and cell membranes

4. When a student uses the 40× objective with a 10× eyepiece, the total magnification produced is:
   (1) 100×
   (2) 200×
   (3) 300×
   (4) 400×

ED: These are multi signs

5. What is an example of a disease that can be passed from person to person?
   (1) cancer
   (2) arthritis
   (3) asthma
   (4) pneumonia

6. Which life process is not necessary for an individual organism but is necessary in order for the species to survive?
   (1) reproduction
   (2) respiration
   (3) nutrition
   (4) growth

7. Which organism cannot produce its own food?
   (1) cow
   (2) tomato plant
   (3) dandelion
   (4) oak tree

8. What type of reproduction do single-celled organisms perform?
   (1) sexual reproduction
   (2) spontaneous generation
   (3) asexual reproduction
   (4) regulation

18. The purpose of the diaphragm on a compound microscope is to
    (1) help focus the slide under high power
    (2) hold the slide in place
    (3) regulate the amount of light passing through the slide
    (4) protect the slide from cracking under high power

19. Compared to the field of view for a sample under high power, the field of view for a sample under low power is
    (1) larger
    (2) smaller
    (3) the same
    (4) needs to be calculated for each specific microscope

20. The purpose of using a stain on a microscope slide is to
    (1) help keep the specimen alive for observation
    (2) increase the ability to see certain structures in the specimen
    (3) lower the amount of light needed to see the specimen
    (4) preserve the specimen for later inspection