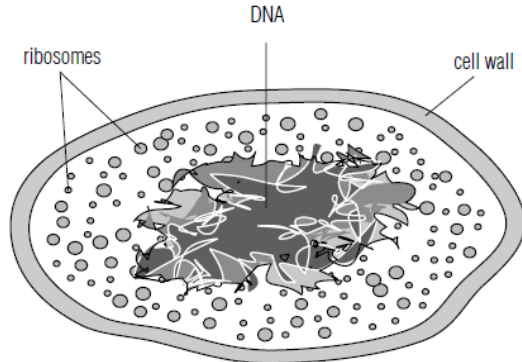


SECTION 1.2 ASSESSMENT, p. 39

Check Your Understanding Answers

Checking Concepts

1. The nucleus is the control centre of the cell.
2. The cell membrane is a protective barrier that also regulates what enters and leaves the cell.
3. Mitochondria break down glucose using oxygen to produce energy for the cell.
4. Vacuoles are storage containers used by cells.
5. Animal and plant cells break down glucose using oxygen in their mitochondria. Plant cells make their own glucose (chemical energy) through the process of photosynthesis.
6. Plant cells would eventually die once their supply of glucose has been used up. Without light, they would not be able to make any more food.
7. A cell membrane; B cytoplasm; C nucleus; D mitochondria; E chloroplast; F nucleus; G cell wall
8. The bottom, green cell is the plant cell. It has both a cell wall and chloroplasts.
9. Cytoplasm contains organelles, water, and other life-supporting materials.
10. Cell theory states that the cell is the basic unit of life and makes up all organisms. It also states that all cells come from other cells.
11. Students' answers may vary but could include the following: Scientists consider that cell theory is a main idea of modern biology because it explains the observations that we have made about cells and presents a logical framework that is testable. For example, if we observed cells being made from nonliving materials, we would have to reject the cell theory.



Prokaryotic cell

- 12.
13. Students' answers may vary but could include that bacteria have cell membranes and ribosomes while viruses do not, and that viruses need other cells in order to reproduce while bacteria do not.

Understanding Key Ideas

14. The cell membrane must allow the exchange of nutrients and wastes to occur all over its surface. One opening would not allow this.
15. • Plant organelles: chloroplasts, cell wall
• Plant and animal organelles: cell membrane, nucleus, mitochondria, endoplasmic reticulum, Golgi bodies, vesicles, vacuoles, ribosomes
• Animal organelles: lysosomes

16. Onion roots do not contain chloroplasts because the roots are covered with soil and therefore do not receive sunlight.

17. Cell membranes need openings of various sizes because the molecules that must move through the membranes have different sizes.

18. Animals obtain their food by eating other organisms and not through photosynthesis.

19. In both cellular respiration and burning paper, fuel (food) is broken down in the presence of oxygen, and produces energy, carbon dioxide, and water.

20. The equations for cellular respiration and photosynthesis are the reverse of each other.

Photosynthesis: Carbon dioxide + water + light \rightarrow food (glucose) + oxygen

Cellular respiration: Glucose + oxygen \rightarrow water + carbon dioxide + energy

21. Plant cells need cell walls for support and therefore tend to have a regular shape. Animal cells do not have cell walls and can assume a variety of shapes.

22. A virus takes over the DNA of a cell and uses it to produce more viruses.

Pause and Reflect Answer

Students' answers may vary but could include:

- Airport: air traffic control = nucleus; runways = endoplasmic reticulum
- Shopping mall: grocery store = mitochondrion; hallways and escalators = endoplasmic reticulum
- Hospital: power plant = mitochondrion; administration = nucleus