

High School Biology Quiz

Test your knowledge of cell biology, genetics, evolution, and ecology with this 15-question biology quiz.

Name / Team: _____

Score: _____

- 1 What is the powerhouse of the cell, responsible for producing ATP?
 - A. Nucleus
 - B. Ribosome
 - C. Mitochondria
 - D. Endoplasmic reticulum
- 2 Which molecule carries genetic information from DNA to the ribosome during protein synthesis?
 - A. tRNA
 - B. mRNA
 - C. rRNA
 - D. ATP
- 3 What is the term for a segment of DNA that codes for a specific protein?
 - A. Chromosome
 - B. Gene
 - C. Codon
 - D. Allele
- 4 In a Punnett square, a cross between two heterozygous parents (Bb x Bb) produces what ratio of phenotypes?
 - A. 1:1
 - B. 2:1
 - C. 3:1
 - D. 4:0
- 5 Which process allows plants to convert sunlight, water, and carbon dioxide into glucose and oxygen?
 - A. Cellular respiration
 - B. Fermentation
 - C. Photosynthesis
 - D. Chemosynthesis
- 6 What type of cell division produces four genetically unique daughter cells?
 - A. Mitosis
 - B. Binary fission
 - C. Meiosis
 - D. Budding
- 7 Charles Darwin's theory of evolution is based on which key mechanism?
 - A. Genetic drift
 - B. Spontaneous generation
 - C. Natural selection
 - D. Artificial selection
- 8 What is the basic structural and functional unit of all living organisms?
 - A. Atom
 - B. Molecule
 - C. Cell
 - D. Organ
- 9 Which blood cells are primarily responsible for fighting infections?
 - A. Red blood cells
 - B. Platelets
 - C. White blood cells
 - D. Plasma cells
- 10 What is the relationship called when two organisms benefit from living together?
 - A. Parasitism
 - B. Commensalism
 - C. Mutualism
 - D. Competition
- 11 DNA is made up of repeating units called nucleotides. Each nucleotide contains a sugar, a phosphate group, and a what?
 - A. Amino acid
 - B. Fatty acid
 - C. Nitrogenous base
 - D. Carbohydrate

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(continued)

12 Which level of ecological organization includes all living and nonliving things in an area?

- A. Community
- B. Population
- C. Ecosystem
- D. Biome

13 What structure in plant cells is not found in animal cells?

- A. Nucleus
- B. Cell membrane
- C. Cell wall
- D. Mitochondria

14 What is the name of the process by which water moves across a semipermeable membrane from low to high solute concentration?

- A. Diffusion
- B. Active transport
- C. Osmosis
- D. Endocytosis

15 Which organ system is responsible for breaking down food into nutrients the body can absorb?

- A. Respiratory system
- B. Circulatory system
- C. Digestive system
- D. Endocrine system

High School Biology Quiz — Answer Key

1. C Mitochondria

Mitochondria convert glucose and oxygen into ATP through cellular respiration, providing energy for the cell.

2. B mRNA

Messenger RNA (mRNA) is transcribed from DNA in the nucleus and travels to ribosomes where it is translated into proteins.

3. B Gene

A gene is a specific sequence of nucleotides on a chromosome that encodes instructions for building a protein.

4. C 3:1

A Bb x Bb cross yields a 3:1 phenotype ratio: three showing the dominant trait (BB or Bb) and one showing the recessive trait (bb).

5. C Photosynthesis

Photosynthesis occurs primarily in chloroplasts, using chlorophyll to capture light energy and convert CO₂ and H₂O into glucose and O₂.

6. C Meiosis

Meiosis involves two rounds of division, producing four haploid cells with unique genetic combinations. This is essential for sexual reproduction.

7. C Natural selection

Natural selection is the process where organisms with traits better suited to their environment are more likely to survive and reproduce.

8. C Cell

The cell is the smallest unit of life. All living things are made of one or more cells, as stated in cell theory.

9. C White blood cells

White blood cells (leukocytes) are part of the immune system and defend the body against bacteria, viruses, and other pathogens.

10. C Mutualism

Mutualism is a symbiotic relationship where both organisms benefit, like bees pollinating flowers while collecting nectar.

11. C Nitrogenous base

Each nucleotide contains a deoxyribose sugar, a phosphate group, and one of four nitrogenous bases: adenine, thymine, guanine, or cytosine.

12. C Ecosystem

An ecosystem includes all the living organisms (biotic factors) and their physical environment (abiotic factors) in a given area.

13. C Cell wall

Plant cells have a rigid cell wall made of cellulose outside the cell membrane. Animal cells lack this structure.

14. C Osmosis

Osmosis is the passive movement of water across a membrane, moving toward the area of higher solute concentration to equalize concentrations.

15. C Digestive system

The digestive system breaks food down mechanically and chemically, absorbing nutrients in the small intestine and eliminating waste.