Cell Structure Quiz Answer Key PDF

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What are the roles of the cytoskeleton? (Select all that apply)

A. Structural support ✓

B. Cell movement ✓

C. Photosynthesis

D. Cell division ✓

Explain the role of the nucleus in eukaryotic cells.

The nucleus is responsible for storing the cell's DNA, coordinating activities such as growth, metabolism, protein synthesis, and reproduction through the regulation of gene expression.

Describe the differences between prokaryotic and eukaryotic cells.

Prokaryotic cells do not have a nucleus or membrane-bound organelles, are generally smaller in size, and include bacteria and archaea. Eukaryotic cells have a defined nucleus, are larger, and include organisms such as plants, animals, and fungi.

Why is the process of cellular respiration crucial for cell survival?

Cellular respiration is crucial for cell survival because it produces ATP, which provides the energy necessary for cellular functions.

Discuss the process of protein synthesis, including the roles of the nucleus and ribosomes.

The process of protein synthesis begins in the nucleus where DNA is transcribed into messenger RNA (mRNA). The mRNA then exits the nucleus and is translated by ribosomes in the cytoplasm, where transfer RNA (tRNA) brings amino acids to form a polypeptide chain, ultimately folding into a functional protein.

How do plant cells maintain their structure and rigidity?

Plant cells maintain their structure and rigidity through a rigid cell wall made of cellulose and turgor pressure from the central vacuole.

Which of the following is a function of lysosomes?

A. Photosynthesis
B. Protein synthesis
C. Digestion of cellular waste ✓
D. Lipid synthesis

Which of the following are found in both plant and animal cells? (Select all that apply)

A. Nucleus ✓
B. Cell wall
C. Mitochondria ✓
D. Chloroplasts

What is the main function of the cell wall in plant cells?

A. Energy production
B. Photosynthesis
C. Structural support ✓
D. Protein synthesis

Which process occurs in the chloroplasts of plant cells?

A. Cellular respiration
B. Photosynthesis ✓
C. Protein synthesis
D. Lipid synthesis

Which organelles contain their own DNA? (Select all that apply)

A. Nucleus ✓
B. Mitochondria ✓

C. Chloroplasts ✓
D. Ribosomes

What structure surrounds and protects the cell?

A. Cell wall
B. Cell membrane ✓
C. Cytoplasm
D. Nucleus

Which of the following is a characteristic of prokaryotic cells?

A. Presence of a nucleus
B. Lack of membrane-bound organelles ✓
C. Large central vacuole
D. Presence of chloroplasts

Which structures are involved in protein synthesis? (Select all that apply)

A. Ribosomes ✓
B. Golgi apparatus
C. Rough endoplasmic reticulum ✓
D. Lysosomes

Which organelle is responsible for modifying and packaging proteins?

A. Endoplasmic reticulum
B. Golgi apparatus ✓
C. Lysosome
D. Ribosome

Which organelle is known as the powerhouse of the cell?

A. Nucleus
B. Mitochondria ✓
C. Ribosome

D. Golgi apparatus

What is the significance of the cell membrane's semi-permeable nature?

The significance of the cell membrane's semi-permeable nature is that it allows the cell to selectively control the movement of substances in and out, maintaining homeostasis and protecting cellular integrity.

Which processes are considered passive transport? (Select all that apply)

A. Diffusion ✓
B. Osmosis ✓
C. Active transport
D. Facilitated diffusion ✓

What are the main components of the cell membrane? (Select all that apply)

A. Phospholipids ✓
B. Proteins ✓
C. Nucleic acids
D. Carbohydrates ✓

What is the basic unit of life?

A. Atom
B. Molecule
C. Cell ✓
D. Tissue