

Life Science: Cell Structure & Organelle Functions



Name: _____ Date: _____

Part A: Cellular Biology. Analyze cellular functions and choose the best scientific answer.

1. Which cellular organelle is responsible for performing cellular respiration to convert biochemical glucose into usable energy in the form of ATP?
- A. Endoplasmic Reticulum
 - B. Mitochondria
 - C. Lysosome
 - D. Golgi Apparatus
2. A student views a mystery cell specimen under a microscope and observes green disc-shaped chloroplasts, a rigid cellulose cell wall, and a large central vacuole. What kind of cell is this?
- A. Mammalian red blood cell
 - B. Plant leaf cell
 - C. Human nerve cell (neuron)
 - D. Unicellular amoeba
3. What is the critical regulatory role of the selectively permeable plasma (cell) membrane?
- A. Synthesizing ribosomal RNA within the nucleolus
 - B. Controlling the passage of nutrients, water, and waste molecules into and out of the cell
 - C. Storing the primary genomic DNA sequence in chromosomes
 - D. Reflecting incoming solar UV rays to prevent cellular warming

Part B: Organelle Specialization Matrix. Classify whether each organelle feature belongs to Plant Cells Only, Animal Cells Only, or Both.

Sort these items: Chloroplasts containing green chlorophyll pigments for photosynthesis; Nucleus enclosing DNA chromosomes and coordinating cell growth; Centrioles utilized during mitotic spindle fiber separation in animal cell division; Rigid outer cell wall made of structural cellulose fibrils; Mitochondria generating ATP power via cellular respiration; Small, scattered temporary vacuoles rather than a single dominant central vacuole

Plant Cells Only	Found in Both Cells	Animal Cells Only