

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Cytoplasmic Quest: A 6th Grade Organelle Systems Mission

Comparative analysis, cellular logistics, and energy transformations — this 10-question challenge applies organelle roles to specialized biological systems.

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**1. In a leaf cell responsible for photosynthesis, which organelle acts like a solar panel to capture light energy and convert it into sugar?**

- A. Mitochondria
- B. Chloroplast
- C. Central Vacuole
- D. Cytoskeleton

**2. Just as a central warehouse stores and ships products, the \_\_\_\_ modifies and packages proteins into vesicles for delivery to specific locations.**

- A. Rough ER
- B. Cell Membrane
- C. Golgi Apparatus
- D. Ribosome

**3. Unlike animal cells, plant cells possess a rigid cell wall located outside of the cell membrane for structural support.**

- A. True
- B. False

**4. A scientist observes a cell with a very high number of mitochondria. Based on this evidence, what is the most likely function of this cell?**

- A. Storing fat for long-term use
- B. Providing structural support for bones
- C. Recording genetic information
- D. Performing tasks that require high energy

**5. How does the function of a Vacuole differ between a typical animal cell and a mature plant cell?**

- A. Plants have one large central vacuole for water pressure; animals have several small ones.
- B. Animal vacuoles produce energy; plant vacuoles produce sugar.
- C. Plants use vacuoles for movement; animals use them for digestion.
- D. Only animal cells use vacuoles to store waste products.

**6. The \_\_\_\_ is a jelly-like substance that fills the space within the cell and provides a medium for chemical reactions to occur.**

- A. Nucleoplasm
- B. Cytoplasm

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- C. Cell Membrane
- D. Extracellular Fluid

**7. Ribosomes are only found floating freely in the cytoplasm; they never attach to other organelles.**

- A. True
- B. False

**8. If the Nucleus is compared to a city hall, which of the following best describes its primary 'administrative' role?**

- A. It constructs the cell's outer defensive wall.
- B. It breaks down toxic chemicals using enzymes.
- C. It contains the instructions for all cellular activities.
- D. It transports nutrients from the environment to the organelles.

**9. In the human immune system, white blood cells use \_\_\_\_ to digest and destroy invading bacteria.**

- A. Lysosomes
- B. Mitochondria
- C. Chloroplasts
- D. Nuclei

**10. The Cell Membrane is 'selectively permeable,' meaning it only allows certain substances to pass through while blocking others.**

- A. True
- B. False