

Name: _____ Date: _____

Operation Organelle: A 5th Grade Mission to Save the Cellular City

Imagine the cell as a high-tech metropolis; students must analyze how power grids and security gates prevent a total infrastructure collapse.

1. If a plant cell were a sprawling factory, which organelle acts as the solar panel array, capturing sunbeams to manufacture glucose fuel?

- A. The Central Vacuole
- B. The Chloroplasts
- C. The Mitochondria
- D. The Nucleus

2. A cell membrane is compared to a drawbridge because it is 'selectively permeable,' meaning it intentionally decides which substances can enter or exit.

- A. True
- B. False

3. Without the _____, a cell would lose its blueprints and be unable to direct the construction of new proteins or replicate itself.

- A. Cytoplasm
- B. Cell Wall
- C. Nucleus
- D. Ribosome

4. In a high-energy muscle cell, you would expect to see a much higher concentration of which 'power plant' organelle to sustain movement?

- A. Lysosomes
- B. Mitochondria
- C. Endoplasmic Reticulum
- D. Golgi Apparatus

5. The _____ acts like a postal shipping center, modifying and tagging protein 'packages' before sending them to their final destination.

- A. Golgi Apparatus
- B. Mitochondria
- C. Cytoplasm
- D. Cell Wall

6. If a scientist observes a cell under a microscope and sees a thick, rigid outer boundary and a giant water-filled sac, what is the most likely source?

- A. A human skin cell

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- B. A swimming bacteria
- C. An oak tree leaf
- D. A red blood cell

7. Lysosomes are the 'recycling technicians' of the cell, using chemicals to break down old cell parts and waste materials.

- A. True
- B. False

8. Ribosomes are like tiny assembly lines that build _____ based on instructions received from the nucleus.

- A. Sugar molecules
- B. Proteins
- C. Oxygen
- D. DNA

9. Which organelle serves as a vast transportation network, moving materials through the cell like a system of tunnels or conveyor belts?

- A. Cytoplasm
- B. Nucleus
- C. Endoplasmic Reticulum
- D. Cell Membrane

10. The cytoplasm is just empty space inside the cell that allows organelles to rattle around freely.

- A. True
- B. False