

# Cell Unit Study Guide

1. **Plant** cells have seven main parts:
  - a. **Cell wall**: outside, rigid cellulose, helps keep structure
  - b. **Cell membrane**: thin, the “gatekeeper”; lets things in & out
  - c. **Chloroplasts**: absorbs light energy; where photosynthesis takes place
  - d. **Mitochondrion**: the “powerhouse”; converts energy
  - e. **Nucleus**: the “brain”; controls functions; contains genetic material
  - f. **Cytoplasm**: gel-like liquid in cells; where organelles float around
  - g. **Vacuoles**: storage area for food, water, and wastes
2. **Plant** cells usually have only one vacuole which is very large.
3. **Animal** cells have multiple vacuoles which are smaller in size than that in plant cells.
4. **Animal** cells have five main parts:
  - a. **Cell membrane**: thin, the “gatekeeper”; lets things in & out
  - b. **Mitochondrion**: the “powerhouse”; converts energy
  - c. **Nucleus**: the “brain”; controls functions; contains genetic material
  - d. **Cytoplasm**: gel-like liquid in cells; where organelles float around
  - e. **Vacuoles**: storage area for food, water, and wastes
5. The **mitochondrion** convert energy for tissues. Tissues that use a lot of energy, like muscles, need a lot of mitochondria (plural).
6. The **nucleus** contains the chromosomes and DNA.
7. The **cytoplasm** is the gel-like liquid in the cell that the nucleus and organelles float around in.
8. The outer boundary of a **plant** cell is the **cell wall**, but the outer membrane of an **animal** cell is the **cell membrane**.
9. Levels of organization from **smallest** to **largest**:
  - a. **Cell** (the basic microscopic unit of all living things)
  - b. **Tissue** (cells make up tissues)
  - c. **Organ** (tissues make up organs)
  - d. **Organ system** (organs make up organ systems)
  - e. **Organism** (organ systems make up organisms)
  - f. **Population** (organisms make up populations: members of one species)
  - g. **Community** (populations make up communities)
  - h. **Ecosystem** (communities make up ecosystem)
  - i. **Biosphere** (everywhere living things are found: all ecosystems together)