

**Class XI**  
**Chapter 8**  
**Cell: The Unit of Life - Case Study**

Cells that have membrane bound nuclei are called eukaryotic whereas cells that lack a membrane bound nucleus are prokaryotic. In both prokaryotic and eukaryotic cells, a semi-fluid matrix called cytoplasm occupies the volume of the cell. The cytoplasm is the main arena of cellular activities in both the plant and animal cells. Various chemical reactions occur in it to keep the cell in the 'living state'. Besides the nucleus, the eukaryotic cells have other membrane bound distinct structures called organelles like the endoplasmic reticulum (ER), the golgi complex, lysosomes, mitochondria, microbodies and vacuoles. The prokaryotic cells lack such membrane bound organelles.

1. State the characteristics of prokaryotic cells.
2. Mention a single membrane-bound organelle which is rich in hydrolytic enzymes.
3. Justify the statement, "Mitochondria are powerhouses of the cell"
4. Write the functions of the following:
  - a. Smooth ER
  - b. Golgi Apparatus
  - c. Vacuoles