

## Cell Objectives:

### Chapter 4

1. Calculate surface area to volume ratios
  
2. *Explain the effect of surface area-to-volume ratios on the exchange of materials between cells or organisms and the environment.*
  
  
  
  
  
  
  
  
  
  
3. *Explain how specialized structures and strategies are used for the efficient exchange of molecules to the environment.*
  
  
  
  
  
  
  
  
  
  
4. *Describe the structure and/or function of subcellular components and organelles.*
  - a. Endoplasmic reticulum
    - i. Smooth versus rough
  
  - b. Ribosomes
  
  
  
  - c. Golgi complex
  
  
  
  
  - d. Lysosome
  
  
  
  
  - e. Vacuole
  
  
  
  
  - f. Mitochondrion
  
  
  
  
  - g. Chloroplast
  
  
  
  
  - h. Cell wall

5. Explain the function and structural components of the endomembrane system
  
  
  
  
  
  
  
  
  
  
6. Compare and contrast mitochondria and chloroplasts
  
  
  
  
  
  
  
  
  
  
7. *Describe the structural features of a cell that allow organisms to capture, store and use energy*
  
  
  
  
  
  
  
  
  
  
8. *Explain how subcellular components and organelles contribute to the function of the cell.*
  
  
  
  
  
  
  
  
  
  
9. Describe similarities and/or differences in compartmentalization between prokaryotic and eukaryotic cells.
  
  
  
  
  
  
  
  
  
  
10. *Describe the relationship between the functions of endosymbiotic organelles and their free-living ancestral counterparts.*

## **Chapter 5**

1. *Describe the Fluid Mosaic Model of cell membranes*
2. *Describe the roles of each of the components of the cell membrane in maintaining the internal environment of the cell.*
3. *Explain how the structure of biological membranes influences selective permeability.*
4. *Describe the mechanisms that organisms use to transport large molecules across the plasma membrane.*
5. *Explain how the structure of a molecule affects its ability to pass through the plasma membrane.*
6. *Compare and contrast diffusion, facilitated diffusion and active transport*

7. Using hypertonic/hypotonic, describe the movement of water. Using osmolarity, describe the flow of water.
8. Calculate water potential and solute potential when given formulas and data.