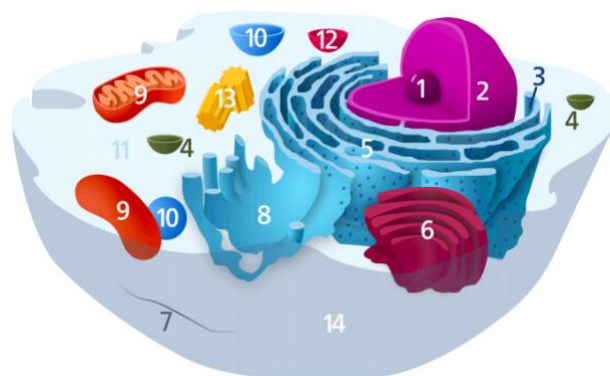


CONCEPT: MEMBRANE ENCLOSED ORGANELLES

	Eukaryotic Cellular Components	Function
	Organelle (membrane bound)	
	Not an Organelle	
1	Nucleolus	Ribosome biogenesis
2	Nucleus	Stores the genome; DNA/RNA synthesis
3	Ribosome	Translation of mRNA/Protein creation
4	Vesicle	Transportation within the cell
5	Rough Endoplasmic Reticulum	Coated with ribosomes for protein synthesis and transportation
6	Golgi Apparatus	Modifications, sorting, and packaging of proteins/lipids
7	Cytoskeleton	Intermediate filaments, actin filaments, and microtubules used for support, transportation, and cellular division
8	Smooth Endoplasmic Reticulum	Synthesizes lipids, phospholipids, and steroids and creates vesicles for transport
9	Mitochondria	ATP synthesis by oxidative phosphorylation (powerhouse)
10	Vacuole	Storage of nutrients, wastes, water, or other substances
11	Cytosol	Aqueous fluid where metabolic pathways and chemical reactions occur
12	Lysosomes	Intracellular degradation
13	Centrosome	Microtubule organizing center
14	Cell Membrane	Phospholipid bilayer separating the interior of the cell from its surroundings
	NOT SHOWN IN DIAGRAM	
	Chloroplasts (plants)	ATP synthesis and carbon fixation by photosynthesis
	Peroxisomes	Oxidation of toxic molecules



- Many organelles are held in place, or move throughout the cell using the cytoskeleton
 - Motor proteins can move them through energy provided from ATP hydrolysis
- Creation of organelles occurred through two main methods
 - Endosymbiont theory describes the formation of mitochondria and chloroplasts
 - All other organelles were created via invagination of the plasma membrane into small internal compartments
 - **Endomembrane system organelles** including Golgi, ER, peroxisomes, endosomes and lysosomes
 - Communication between these organelles occurs through small budding vesicles

PRACTICE:

1. True or False: Organelles must remain stationary within the cell

- a. True
- b. False

2. Which of these cellular components is not considered a membrane bound organelle?

- a. Vacuole
- b. Microtubules
- c. Golgi apparatus
- d. Chloroplast