

Cell Review Cards Pt 2

<u>Prokaryotic (Bacteria)</u>	<u>Eukaryotic (all other living things)</u>
no membrane-bound organelles	m.b.o, ex. Chloroplasts and nucleus
no nucleus(single; circular DNA)	mulple linear DNA
free ribosomes and cell wall	histones on DNA

Endosymbiont theory- all eukaryoc cells came from bacterial cells that lived together; proof= all chloroplasts and mitochondria have own DNA and are autonomous

Cell organelles

1. Nucleus- holds DNA and nucleolus(where ribosomal subunits are made)
2. Mitochondria- double membrane; outer is smooth and inside is folded with enzymes to make ATP (site of cellular respiration (glucose breakdown))
3. Ribosome- site of translation- protein synthesis; made of rRNA and protein
4. E.R.- connected to nucleus; allows for reactions, membranous; smooth= lipids; rough=proteins
5. Golgi complex- packaging in membrane and signals for export

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6. Cytoskeleton: Microfilaments- contractile protein, gives shape, movement within cell; Microtubules- centrioles, cilia, flagella, spindle fibers

7. vacuoles/vesicles- water and solutes; large and central in plants

ANIMAL ONLY

- Lysosomes- contain enzymes; used for intracellular digestion and apoptosis
- Centrioles- used in cell division

PLANT ONLY

- Chloroplast- double membrane; site of photosynthesis (glucose synthesis)
- Cell wall- middle lamella- pectin; primary cell wall- cellulose; secondary cell wall- lignin

Cell membrane (separates the internal environment of cell from external environment).

- > Phospholipid bilayer (selectively permeable; amphipathic)
- > Fluid mosaic model (in motion; proteins, cholesterol, glycoproteins and glycolipids among phospholipids). Membrane is hydrophilic on inside and outside, hydrophobic within membrane
- > Simple diffusion- from high to low concentration- small and uncharged move freely through phospholipids ex. CO_2 , O_2 (passive; no energy; no protein carrier)
- > Facilitated diffusion- large or charged from high to low, passive; with protein carrier: ex. glucose, K^+

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- Active transport- from low to high concentration; uses ATP; uses a protein
- Endocytosis- phagocytosis (solid) and pinocytosis (liquid); membrane surrounds and forms vesicles; receptor mediated endocytosis has receptors on surface
- Exocytosis- release of material using vesicles fusing with membrane
- Osmosis- diffusion of water using a selectively permeable membrane; passive; no proteins

- Water potential= pressure potential plus solute potential; water moves from high water potential to low water potential; solutes always lower water potential; pressure can increase or decrease depending on if it is negative or positive.
- Plant cells have pressure related to cell wall and vacuole; turgor pressure
- Hypertonic (high solute), hypotonic (low solute), and isotonic solutions (equal concentration)
- High surface area : volume ratio increases rate at which food can be taken in and waste expelled

Nervous System

- a. function: sensory input, motor function, regulation
- b. structure: neuron, axon, dendrites, synapse
- c. Polarized neuron: Na^+ outside, K^+ and Cl^- inside
- d. Depolarization moves Na^+ into neuron, generating an action potential
- e. Repolarization exchanges Na^+ and K^+ through the sodium-potassium pump
- f. At synapse, calcium channels open to allow calcium to rush in, stimulating release of neurotransmitters
- g. Neurotransmitters released into synapse to generate an action potential for motor neuron or muscle cell