

## Exam 2 Review

Match the organelle to its function:

Nucleus Carries Chromosomes

Ribosome Protein synthesis

Nucleolus assembly of rRNA and Ribosomal subunits

Rough ER Protein synthesis and processing

Smooth ER Lipid Synthesis

Golgi Apparatus Protein processing and shipping

Lysosome- digestion and recycling

Peroxisome oxidation of fatty acids

Vacuole store waste water and toxins and calcium

Mitochondrion ATP production

Chloroplast conversion of light energy to sugar

Cytoskeleton structural support and movement

Plasma Membrane- selectively permeable

Cell Wall protection and support

Indicate whether the following statements are true or false.

\_\_\_\_\_ T\_ Prokaryotes have a single circular chromosome.

\_\_\_\_\_ F Prokaryotes do not have a cytoskeleton structure.

\_\_\_\_\_ T(plant do animal doesn't) Some eukaryotes have a cell wall.

\_\_\_\_\_ T Some prokaryotes can be photosynthetic.

\_\_\_\_\_ F(eukaryotes) Prokaryotes have a nuclear envelope which has pores to allow the passage of material (proteins) in and out.

\_\_\_\_\_ F(some) All prokaryotes have some sort of flagella used for cell movement.

\_\_\_\_\_ f(very selective) The nuclear pore complex allows any molecule to flow in and out of the nucleus.

\_\_\_\_\_ F(swapped) Importin takes proteins out of the nucleus and exportin bring proteins into the nucleus.

\_\_\_\_\_ T\_ Reduction reactions must always be coupled with oxidation reactions.

\_\_\_\_\_ f(endergonic)Photosynthesis is an exergonic process.

\_\_\_\_\_ FThe colors that a pigment absorbs are the ones that we see.

Fill in the blank or circle the word/phrase which best completes the sentence:

- 1) Vesicles released from the ER enter the Golgi on the (cis/trans) face and exit on the (cis/trans) face.
- 2) Glycosylation is the addition of a sugar chain to a protein.
- 3) Actin filaments use the motor protein myosin for movement while Microtubules use Kinesin and Dynein.
- 4) Gap junctions allow movement of molecule between animal cells.
- 5) Rough ER of adjacent cells can be connected through plasmodesmata in plant cells.
- 6) When a molecule is reduced it Gains electrons.
- 7) When a molecule is oxidized it loses electrons.
- 8) In the absence of oxygen, instead of using cellular respiration to produce ATP, the cell undergoes a process called Fermentation.
- 9) The two electron carriers used in cellular respiration are NADH and FADH.
- 10) The electron transport chain (ETC) is located on the inner mitochondrial membrane of the mitochondrion.
- 11) Alcohol or lactic acid is the byproduct of fermentation in plant cells and CO<sub>2</sub> is the byproduct in animal cells.
- 12) The high concentration of H<sup>+</sup> ions in the intermembrane space produces a proton gradient known as a Electron Transport Chain
- 13) The two steps of photosynthesis are light independent reactions- calvin cycle and light dependent reactions- photophosphorylation

- 14) The production of ATP during the light reactions of photosynthesis is called **photophosphorylation**.
- 15) The products of the light reactions are **NADPH**, which is produced in photosystem I, and **O<sub>2</sub>** which is produced in photosystem II.
- 16) **O<sub>2</sub>** is a competitive inhibitor for rubisco. It competes against **CO<sub>2</sub>**

Choose the best response:

- 1) Which structures are common to ALL prokaryotes and eukaryotes?
- I. Cell Wall- both
  - II. Plasma Membrane- both
  - III. Membrane Bound Nucleus- eukaryotic
  - IV. Ribosomes- larger in eukaryotic smaller in prokaryotic
  - V. Chromosomes- both
- A. All of the above  
B. II, III, and V  
C. I, II, IV, V  
D. II only  
E. II, IV, V
- 2) What is the function of plasmids?
- A. **Carry genes required for adapting to unusual conditions**  
B. Carry genes required for synthesizing the plasma membrane  
C. Carry genes required for infecting other cells  
D. None of the above
- 3) What is the purpose of membrane bound organelles in eukaryotes?
- A. **To compartmentalize reactions, making them more efficient and keeping them from interfering with other reactions.**  
B. To allow for the organelles to be more easily moved around the cell via microtubules  
C. There is no purpose for the membrane; it is just there because the organelles were formed from the plasma membrane of the cell.  
D. Both A and B
- 4) Which body cell would you expect to have a large amount of mitochondria?
- A. Cells lining your digestive tract  
B. Skin cells  
C. **Muscle cells**  
D. Liver cells
- 5) Which type of cells would you expect to have a large amount of cellulose?
- A. Animal cells  
B. **Plant cells**  
C. Bacteria cells  
D. None of the above
- 6) NLS stands for
- A. nuclear lipid synthesis and signals the Smooth ER to produce lipids needed for the nuclear membrane  
B. **nuclear localization signal which is built into proteins and attaches to chaperone molecules which carry the protein into the nucleus**  
C. nuclear localization signal which is built into proteins and allows the protein to pass through the selective nuclear pore complex