**AP Exam Review: Cells**

**Animations and Tutorials**

General Cell Tutorial:

<http://www.biology.arizona.edu/cell_bio/tutorials/cells/cells1.html>

Cell Membrane Animation/Information:

<http://www.johnkyrk.com/cellmembrane.html>

Transport:

<http://highered.mcgraw-hill.com/sites/0072437316/student_view0/chapter6/animations.html>

Lysosomes:

<http://highered.mcgraw-hill.com/olc/dl/120067/bio01.swf>

|  |  |
| --- | --- |
|  | **General Cells**  How do bacterial cells differ from animal cells? |
|  | Cells that make proteins would have a large number of \_\_\_\_\_\_\_\_?  What organelle converts light energy into chemical energy? |
|  | What organelle makes lipids? |
|  | What is the function of these cell structures --- mitochondrion, chloroplast, ribosome, lysosome, cell wall, & chromosomes?  What organelles have their own DNA and a lipid bilayer?  Explain the Endosymbiont Theory.  Is DNA only found in the nucleus of a cell? Explain.  Do plant cells have mitochondria? Why or Why not?  Describe the interior of chloroplast and mitochondria. |
|  |  |
|  |  |
|  | **Cell Membrane (Plasma Membrane) & Transport**  What chemical in animal cell membranes maintains their fluid nature?  What is the function of glycolipids & glycoproteins in animal cell membranes? |
|  | Is diffusion active or passive transport? |
|  | What is active transport? |
|  | How does potassium move into & out of a cell?  What is water potential?  What type of channels exist between cells (plant and animal)? |
|  |  |
|  | **Cell Communication**  Describe paracrine signaling.  When the signal molecule changes the protein receptor, what process begins? |
|  |  |
|  |  |
|  | Describe the signal-transduction pathway in animals.  What is a BIOFILM? |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  | How does one rotting piece of fruit affect the ripening of others?  How is synaptic signaling different from hormone signaling? |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

A. Sample Multiple Choice Questions

Complete the multiple choice questions to review this unit.

1. The nucleolus functions in the production of (1994:12)

A. Golgi apparatus

B. microtubules

C. mitochondria

D. ribosomes

E. endoplasmic reticulum

2. Which is a characteristic of mitochondria and chloroplasts that supports the endosymbiotic

theory (1994:10)

A. Both have bacteria-like polysaccharide cell walls

B. Both can reproduce on their own outside the cell

C. Both contain DNA molecules

D. Both contain endoplasmic reticulum and Golgi bodies

E. Both contain ribosomes that are identical to ribosomes of the eukaryotic cytoplasm

3. All of the following cell components are found in prokaryotic cells EXCEPT (1990:17)

A. DNA

B. ribosomes

C. cell membrane

D. nuclear envelope

E. enzymes

4. The organelle that is the major producer of ATP and is found in both heterotrophs and

autotrophs is the (1990:7)

A. chloroplast

B. nucleus

C. ribosome

D. Golgi apparatus

E. mitochondrion

5. If plant cells are immersed in distilled water, the resulting movement of water into the cells is

called (1990:34)

A. conduction

B. active transport

C. transpiration

D. osmosis

E. facilitated diffusion

6. Which of the following is the primary role of the lysosome (1990:46)

A. ATP synthesis

B. intracellular digestion

C. lipid transport

D. carbohydrate storage

E. protein synthesis

7. Cytoplasmic channels between plant cells which are most similar to gap junctions between

animal cells are called (1990:64)

A. middle lamellas

B. tonoplasts

C. plasmodesmata

D. tight junctions

E. desmosomes



The following questions refer to an experiment in which a

dialysis-tubing bag is filled with a mixture of

3% starch and 3% glucose and placed in a

beaker of distilled water, as shown at right.

After 3 hours, glucose can be detected in

the water outside the dialysis-tubing bag,

but starch cannot. (*99:114.116)*

8. From the initial conditions and results

described which of the following is a logical conclusion? (*99:114)*

A. The initial concentration of glucose in the bag is higher than the initial concentration of

starch in the bag.

B. The pores of the bag are larger than the glucose molecules but smaller than the starch

molecules.

C. The bag is not selectively permeable.

D. A net movement of water into the beaker has occurred.

E. The molarity of the solution in the bag and the molarity of the solution in the surrounding

beaker are the same.

9. Which of the following best describes the conditions expected after 24 hours? (*99:115)*

A. The bag will contain more water than it did in the original condition.

B. The contents of the bag will have the same osmotic concentration as the surrounding

solution.

C. Water potential in the bag will be greater than water potential in the surrounding solution.

D. Starch molecules will continue to pass through the bag.

E. A glucose test on the solution in the bag will be negative.

10. If, instead of the bag, a potato slice were placed in the beaker of distilled water, which of the

following would be true of the potato slice? (*99:116)*

A. It would gain mass.

B. It would neither gain nor lose mass.

C. It would absorb solutes from the surrounding liquid.

D. It would lose water until water potential inside the cells is equal to zero.

E. The cells of the potato would increase their metabolic activity.

**Constructed Response 1. 2004B:1**

Prokaryotes are found throughout the biosphere. Answer two of the following.

a. Provide three examples of adaptations found in various prokaryotes. Explain how these

three adaptations have ensured the success of prokaryotes.

b. Discuss how prokaryotes early in Earth’s history altered environments on Earth.

c. Discuss three ways in which prokaryotes continue to have an ecological impact today.

**Constructed Response 2. 2007:1**

Membranes are essential components of all cells.

a. Identify THREE macromolecules that are components of the plasma membrane in a

eukaryotic cell and discuss the structure and function of each.

b. Explain how membranes participate in THREE of the following biological processes.

 muscle contraction, Fertilization of an egg, Chemiosmotic production of ATP, Intercellular signaling