Unit Review: Cells, Transport, DNA

AP Biology

**Cells:**

1. What are the key differences between prokaryotic and eukaryotic cells?

2. Identify the importance of surface area to volume ratios in cells.

3. Differentiate between vacuoles and golgi vesicles.

4. Which organelles employ highly folded membranes, and for what purposes?

5. Which organelles are used to transform energy? In what processes?

6. Which organelles are involved in protein synthesis?

7. How does a cell maintain its shape and structure?

8. What strategies/structures does a cell employ for movement?

9. What are the key differences between animal and plant cells?

10. Discuss the various forms DNA takes in both pro-and eukaryotic cells.

**Transport**:

1. What are the components of a cell membrane?

2. Why do we call the cell membrane a fluid mosaic bilayer?

3. Describe the various functions of membrane proteins.

4. What factors contribute to the selective permeability of the cell membrane?

5. How do molecule sbecoame evenly distributed throughout a system?

6. Osmosis is diffusion, but diffusion is not osmosis – explain.

7. Define the terms hypotonic, hypertonic and isotonic. Explain the effect of each on plant & animal cells.

8. What structures/processes do organism employ to be able to tolerate a hypotonic environment?

9. Explain plasmolysis & turgor pressure.

10. What is facilitated diffusion? Compare/contrast with active transport.

11. Why do cells sometimes need active transport?

12. Describe cotransport and explain how it is useful to cells

13. How do cells transport molecules that cannot cross the plasma membrane?

14. What are the components of water potential?

15. How can a plant cell reach equilibrium in a distilled water environment?

16. What variables determine solute potential?

17. Why is solute potential always negative?

18. A cell has a solute potential of -0.2 bars and is placed in an open environment with a solute potential of -.4 bars. Which direction will water diffuse? Which direction will solutes diffuse? What is the pressure potential of the cell?

19. Compare the SA:V ratio of a square plant cell with dimensions of 8 micrometers with one that is a rectangle with dimensions of 4 X 8 X 6 micrometers.

20. What is the solute potential of a .2M NaCl solution at 22C?

**DNA:**

1. Summarize the conclusions of Griffith & Avery, Hershey & Chase, Franklin & Wilkins.

2. Describe the model of DNA proposed by Watson and Crick. How did Franklin’s x-ray image help them?

3. What is the monomer/polymer for this organic macromolecule? What atoms/functional groups does it include?

4. How/where are the monomers joined to create DNA? What kinds of bonds are formed?

5. DNA is described as anti-parallel, complementary, and semi-conservative. Explain.

6. DNA works as the genetic code because of the base pair rule. Explain.

7. Discuss the role of each enzyme in replication.

8. What cell machinery is needed to synthesize proteins?

9. Distinguish between the RNA involved in protein synthesis.

10 List in sequence the steps for synthesizing a protein.

11. Compare and contrast codon and anti-codon.

12. Transcribe and translate the DNA segment 3’ AUG CCT AAA TAG CAT 5’

12. What are the classes of mutations? How does each create a changed protein?

13. The genetic code is redundant but not ambiguous – explain.