

Name \_\_\_\_\_

Period \_\_\_\_\_

AP Biology

Date \_\_\_\_\_

**THE GREAT ANIMAL SYSTEMS CHALLENGE!**

1. List the systems that had to evolve to support cellular respiration in multicellular animals? (I can come up with three, how about you?).

- 1. \_\_\_\_\_ 2. \_\_\_\_\_
- 3. \_\_\_\_\_

2. List the systems that either evolved by piggybacking on the ones above or evolved to compensate for potential problems caused by the systems listed above. (I can come up with three, how about you?).

- 1. \_\_\_\_\_ 2. \_\_\_\_\_
- 3. \_\_\_\_\_

3. Structure/Function: List all the adaptations that increase surface area in animal systems and explain why increased surface area improves the function of that system. (I can come up with at least seven, how about you?).

- 1. \_\_\_\_\_  
\_\_\_\_\_
- 2. \_\_\_\_\_  
\_\_\_\_\_
- 3. \_\_\_\_\_  
\_\_\_\_\_
- 4. \_\_\_\_\_  
\_\_\_\_\_
- 5. \_\_\_\_\_  
\_\_\_\_\_
- 6. \_\_\_\_\_  
\_\_\_\_\_
- 7. \_\_\_\_\_  
\_\_\_\_\_

4. Structure/Function: List all the countercurrent exchange systems used in animal systems and explain the adaptive advantage of each. (I can come up with three, how about you?).

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

5. Structure/Function: List all the instances zymogens are used and explain the adaptive advantage of each. (I can come up with three, how about you?).

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

6. Structure/Function: List as many molecular examples of structure fits function as you can. (I can come up with at least five, how about you?).

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

7. Structure/Function: List as many cellular examples of structure fits function as you can (includes organelles). (I can come up with at least five, how about you?).

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

8. Structure/Function: List as many organ or system examples of structure fits function as you can. (I can come up with at least five, how about you?).

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

9. Movement across a Membrane: List all the systems in which some component is based on movement of material across a cell or organelle membrane. List whether the movement is diffusion, osmosis, active transport, or bulk flow. Describe the adaptations that increase the efficiency of this movement. (I can come up with at least eight, how about you?).

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

4. \_\_\_\_\_

\_\_\_\_\_

5. \_\_\_\_\_

\_\_\_\_\_

6. \_\_\_\_\_

\_\_\_\_\_

7. \_\_\_\_\_

\_\_\_\_\_

8. \_\_\_\_\_

\_\_\_\_\_

10. Cell-to-cell Communication: List all the systems in which some component is based on cell-to-cell communication and explain how this is accomplished. (I can come up with at least four, how about you?).

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

4. \_\_\_\_\_

\_\_\_\_\_

11. Conformational change: List all the systems in which some component is based on conformational changes in proteins. (I can come up with at least four, how about you?).

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

\_\_\_\_\_