Biology 150: 2nd in-class examination **Name**_____
October 10, 2011

Indicate the lab you are registered in:

Tuesday, 8-9:50 _____ **Tuesday, 10-11:50** _____ **Tuesday, 12-1:50** _____

Tuesday, 3-4:50 _____ **Tuesday, 5-6:50** _____ **Thursday, 3-4:50** _____

Answer the questions in the space provided and you may also use the back of the page to complete your response. There are 26 questions worth a total of 50 points (plus three one point bonus questions). The point value of individual questions appears in parentheses.

1. DNA is a antiparallel. Explain. What is found at either end of each strand? (2)

2. RNA is single stranded and contains ribose. How else does it differ from DNA? (1)

3. Plants, animal, and bacteria, which generally have the smallest cells and which the largest? (1)

4. If the Bacteria and the Archaea constitute the Prokaryotes, what term describes plants, animals, fungi, and the protists? (1)

5. The semi-fluid contents of cells can variously be described. _____ refers to everything inside the cell membrane, _____ refers to everything inside the cell except the nucleus, while _____ refers to the cell contents surrounding but not including the various organelles. (3)

6. The term organelle is sometimes used to describe any structure or particle inside a cell but, strictly speaking, an organelle is defined as _____. (1)

7. Describe/diagram the structure of the nuclear envelope. Describe or illustrate how molecules move in and out of the nucleus. (3)

8. What is the nucleolus? What happens there? (1)

9. What is the difference between RER and SER? (1)

10. What does the golgi do? (1)

11. What is a lysosome? What is the difference between a primary lysosome and a secondary lysosome? (1)

12. _____ refers to the class of organelles containing crystal cores. Examples of these include _____ which function in the preliminary breakdown of some food molecules and _____ which convert fats to sugars. These last are found only in the cells of _____. (4)

13. You breathe to provide O2 to what organelles? (1)

14. Chloroplasts, amyloplasts, and chromoplasts are collectively referred to as _____. While chloroplasts do photosynthesis, and chromoplast contain pigments, amyloplasts store _____. (2)

15. The endosymbiosis theory explains the origin of what two classes of organelles? Give two examples of evidence that supports idea. (3)

16. The cytoskeleton consists of three types of protein fibers. Name each and name the protein subunits of each. (3)

17. Briefly, explain why and how *rigor mortus* occurs. Name and describe the proteins involved in

each. (3)

18. Describe the arrangement of microtubules within cilia and flagella. How does it differ from that found within basal bodies. (2)

19. Name a protein found in the extracellular matrix. (1)

20. Who first proposed cell membranes contained a phospholipid bilayer? (1)

21. The currently accepted fluid mosaic model of the cell membrane has three essential components or features. Describe them. (3)

22. A "cell" made of dialysis tubing containing a 0.5 M sucrose solution is placed in a beaker containing 0.2 M sucrose. What will happen? In terms of tonicity, what term applies to the solution in the beaker? (2)

23. Collectively what term refers to channels and carriers? How do channels and carriers differ? (2)

24. Describe the function of the sodium-potassium pump. What does it transport, in which directions, and in what proportions. (2)

25. Movement of ions, atoms, and molecules down concentration and electrical (i.e. electrochemical) gradients across the cell membrane is collectively referred to as _____ transport, while _____ transport refers the movement of ions across the membrane against their electrochemical gradients by ion pumps using energy supplied by the hydrolysis of molecules of _____. (3)

26. Name and describe the two forms of cotransport. (2)

Bonus questions:

(1) In the guest lecture by Dr. Kritsky describing the Gyrodactylidae, we learned that all but a few of these organisms are viviparous. What does viviparous mean? (2)

(2) The members of the Gryrodactylidae are parasites of what organisms? (1)