

Supplemental Instruction – Biology 2300

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Session: 1 – Cell Biology Introduction

1. What are the two basic forms of cells? What are some defining characteristics?

2. Bacteria and archaea are _____ cells.

3. Name the region of coiled DNA present in prokaryotic cells.
 - Is the DNA in prokaryotes surrounded by a membrane?

4. T/F: Eukaryotes are the only cells that have a cell wall.

5. Some prokaryotes have surface projections. List some surface projections and their function.

6. Prokaryotes and eukaryotic cells are similar in several different ways, one of which is the presence of ribosomes. What is the function of ribosomes? In terms of bacteria why is this an important function?

7. What are the four elements that make up 96% of all living matter?

15. What is the name of the structure that is formed when two or more atoms are held together by covalent bonds?
16. T/F: Protons and electrons determine an atom's electronegativity.
17. What is the difference between nonpolar and polar covalent bonds?
18. A weak attraction of hydrogen to any negative particle is a hydrogen bond. What are some examples?
19. In terms of ionic bonding, an ion with a negative charge is an _____, and a positively charged ion is a _____.
20. T/F: The products and reactants of a chemical reaction are present in equal amounts.
21. What is the defining characteristic of organic compounds?
22. How many bonds can carbon form? Why?
23. Functional groups we will cover include Amino, Phosphate, and Methyl. Draw each.

24. What are the 4 classes of macromolecules? What are the building blocks of each?

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25. Building blocks are called _____ and are linked together to form _____ through _____ which remove water. The breakdown of these bonds is called _____, the addition of water.

26. We will cover 4 main carbohydrates in this class, list them and their purpose.

27. T/F: Lipids repel water and are said to be hydrophobic.

28. Other than energy storage, the other important function of lipids is construction of the _____.

29. A large lipid made of two smaller molecules (glycerol and fatty acids) is called a _____. What are some of the characteristics?

30. Fatty acids can contain no/one/or more than one double bond. If a fatty acid has a double bond it is considered a _____. A fatty acid with no double bonds has the maximum number of hydrogens and is called a _____. Draw each kind of fatty acid.

31. Which kind of lipid is the major component of all cell membranes?

32. In terms of the membrane phospholipids cluster together and form a membrane with two layers called a _____. The _____ heads are in contact with the environment and the internal part of the cell. The _____ tails cluster together in the center and face each other.

33. Another common component of the cell membrane (used to increase membrane flexibility/rigidity) is _____. It is also a starting material for making steroids (including sex hormones testosterone and estrogen).