K. Sorensen BIOL 2060

Study Guide for Unit 1

1. Know the five classes of Microbes & the others that are included as microbes
2. Living organisms must….. 6 things
3. Know contributions of Hook, Leeuwenhoek, Schleiden, Schwann, Redi, Pasteur, Tyndall, Koch, Semmelweis, Lister, Jenner, Beijerinck, Ehrilich, Flemming, Hershey, Chase, Watson, & Crick.
4. Know Koch's postulates
5. Know and describe the scientific method
6. Define an atom, element, compound, & mixture
7. Draw and diagram an atom and identify the atomic particles
8. Know and understand the following: atomic number, proton, neutron, electron, mass number, molecular weight, isotope, octet rule, covalent bonds, ionic bonds, hydrogen bonds, & polarity.
9. What makes water unique in nature.
10. Know the properties of water
11. What is pH? Acid? Base?
12. Know the functional groups that are attached to carbon atoms: alcohol (hydroxyl), carbonyl (aldehyde & ketone), carboxyl, sulfhydryl, amino, phosphate, & hydrocarbon chain.
13. Know and identify the four classes of biological molecules and their monomers.
14. Define the following: monosaccharide, disaccharide, polysaccharide, dehydration/condensation, & polymer.
15. Recognize the following by their functional groups: Fatty acids (saturated and unsaturated), triglyceride, phospholipid, sterols, amino acids, and ATP.
16. Understand the nature of phospholipids
17. Identify polar/non-ionizable, polar/ionizable, and nonpolar amino acids based upon functional groups.
18. Define and explain the four levels of protein structure.
19. Know some examples of protein.
20. Be able to recognize the structure of ATP.
21. Know the nucleotide bases and which bases pair with each other in DNA and RNA.
22. Know which bases are purines and which are pyrimidines.
23. When looking at a nucleotide (RNA or DNA), be able to identify the hydrogen bonds, ribose, and phosphate.
24. Define resolution
25. Know the parts of the microscope.
26. Know the objective magnification.
27. Know the three stains for the light microscope and some examples of each.
28. Know the Gram stain and acid fast stain.
29. Which organisms are acid fast positive?
30. Understand how the electron microscope works and how samples are stained.
31. Basic differences between prokaryotic and eukaryotic cells.
32. Shape and arrangements of bacterial cells. Use the lab for this too.
33. Know the key structural differences between Gram (-) and Gram + bacteria. How does this relate to peptidoglycan and staining.
34. What are N-acetylglucosamine and N-actylmuramic acid.
35. What are endotoxin, lipid A and exogenous pyrogen? What effect to they have on us?
36. Be able to label the parts of a bacterial cell: Ribosome, cytoplasm, chromatophores (if present), endospores, flagellum, pilus, capsule, cell wall, and nucleoid region.
37. Know how a bacterial flagellum moves and what a run and tumble are.
38. Know the key structural differences between acid fast bacteria (Mycobacterium) and other bacteria.
39. Understand what penicillin and lysozyme do to bacteria.
40. Understand the make-up of the membrane.
41. Know the different arrangements of flagella.
42. From a diagram, be able to identify and label the following: mitochondria, chloroplast, nucleus, nucleolus, plasma membrane, nuclear envelope, & endoplasmic reticulum (smooth and rough). Know the function of each.
43. Know the function of the following: lysosomes, peroxisomes, vacuole, & cytoskeleton.
44. Know the structure of flagellum and cilium.
45. Understand Osmosis and diffusion and the difference between the two.
46. Know the three methods of transport across the membrane and which requires a protein and energy.
47. Define isotonic, hypertonic, and hypotonic.
48. Know the other mechanism for transporting material in and out of the cell.