Name: _____ Date: _____ Per: ___

CP Biology Fall Semester Final Exam Study Guide - 2010

Use your notes, textbook, homework, and old tests and quizzes to answer the following questions. You will be allowed one 4X6 note card to use on the test. Study guides are due on the day of the test. The questions on this study guide are not in any particular order. Answer all questions completely, but remember completing the study guide is only one part of your study strategy. You still need to review concepts, diagrams, and vocabulary. Staple your answers to the back of this page and turn in on day of test. The test will consist of around 80 multiple choice questions, so make sure you know each topic listed here in detail.

Chapters covered:

Science process: 1.1 – 1.3	Chemistry: 2.1 - 2.5	Cells: 3.1 - 3.5
Energy: 4.1 - 4.5	Mitosis/Meiosis: 5.1, 5.2, 6.1, 6.2	Genetics: 6.3-6.6

FINAL EXAM DATE:

Scientific Method

1. Identify the steps to the scientific method in an experimental situation
2. Know the difference between a hypothesis, theory and law
3. Know the difference between independent and dependent variables
4. Know and identify examples of qualitative and quantitative observations
5. Identify the characteristics of living things and give examples
6. Summarize the 4 unifying themes in biology and give examples

Chemistry of Life

7. Define atom, element, compound, ion, and molecule. State the differences between an ionic bond and aa covalent bond. Give an example of each
8. What are the three important properties of water? Briefly explain each. Draw a water molecule with its correct charges. How do solvents, solutes, and solutions relate to each other?
9. Know and understand pH concentrations in Fig. 2.9
10. Give the structures and functions of all four organic compounds.
11. What is a monomer? A polymer? Give examples of each.
12. What is a chemical reaction and how do reactants, products and energy bonds relate to it?
13. State the difference between and exothermic and an endothermic reaction. Give an example
14. What are catalysts and how do they relate to enzymes?
15. Explain how enzymes help chemical reactions to occur (lock and key model)

Cell Division

16. Describe what happens during meiotic division. What kind of cells does it occur in?
17. Where in the human body does meiosis occur
18. Describe what happens during mitotic division. What kind of cells does it occur in?
19. What do the symbols (2n) and (n) refer to in cell division
20. Why does sexual reproduction result in more variety than asexual reproduction?
21. What type of cells are produced by meiosis? What types are produced by mitosis?
22. Explain the processes of segregation of chromosomes and independent assortment. During which process does random distribution of chromosomes occur?
23. What is cancer? Describe how cancerous cells behave.
24. How is cell division different in plant and animal cells?
25. Describe and recognize the stages of mitosis and meiosis on a diagram.
26. How many chromosomes are in a human autosomal cell and a human gamete (define gamete)?
27. Define gametogensis. Define zygote
28. How are do the results of meiosis differ between male and female sex cells?

Cell structure

29. What are the 3 main parts of cell theory? What organisms are an exception to cell theory (do not meet all 3 requirements)?
30. What structures do all living cells have in common
31. What is the function of the mitochondria
32. What is the function of the Centrioles in animal cells?
33. Explain the process of osmosis and active transport. What causes diffusion to occur in cells? What are some indications that osmosis happens in a plant cell (think about the elodea lab with salt water)
34. How are plant and animal cells different?
35. Describe the structure of the cell membrane, what is the function. How is it different from the cell wall?
36. Explain the function of the endoplasmic reticulum, nucleus, vacuole, ribosome, cytoplasm, chloroplast
37. Define homeostasis

Genetics

38. Define genotype and phenotype, allele and gene
39. Practice reading and interpreting pedigrees for both sex-linked and autonomic traits
40. How are blood types inherited? Describe the genotypes and phenotypes for each blood type and be able to determine probabilities.
41. Define homozygous and heterozygous
42. Explain the difference between dominant alleles and recessive alleles
43. Be able to determine probabilities for monohybrid crosses and convert into actual numbers of offspring.
44. How did Mendel make his discovery regarding how traits are inherited?
45. What happens in meiosis that creates genetic variations (think about changes in chromosomes)
46. What are some ways DNA/genes can be affected by the environment?
47. Describe the process of crossing over. When and where does it occur?

Energy

48. What biochemical process produces most of the oxygen in the atmosphere?
49. How can you determine gasses present in a solution using the experiments with BTB?
50. What is the purpose of photosynthesis?
51. What is the purpose of respiration?
52. What are the chemical formulas for glucose, carbon dioxide, oxygen and water.
53. What are the equations for photosynthesis and respiration (chemical formulas and words)
54. Know the reactants and products for respiration and photosynthesis
55. Explain what causes lactic acid to build up in cells (fermentation)
56. What is required for energy to be produced in the mitochondria
57. What is the major source of energy used in cells? What molecules produce the most energy, which are broken down most often and quickly for energy, and which are not often used for energy?