

Name _____

Period _____

AP Biology

Date _____

2010 AP BIOLOGY SCHEDULE

(All Chapters refer to Raven & Johnson, 7th edition)

NOTE: All Chapters **REQUIRE** you to complete a Chapter Reading Guide and hand it in **BEFORE** the class discusses the chapter in class!! All Reading Guides can be found on the ExploreBiology.com Web site under AP Biology>Handouts. Be sure the reading Guide is written for Raven 7th edition.

A. INTRODUCTION

1. SCIENTIFIC METHOD: How do we **do** science?
 - a. Chapter 1: The Science of Biology
 - b. Lab: Blackworm Heart Rate Research

B. LARGE-SCALE INTERACTIONS

2. EVOLUTION: How has life changed over long periods of time?
 - a. Chapter 22: The Evidence for Evolution
 - b. Chapter 21: Genes within Populations
 - c. Chapter 4: The Origin and Early History of Life
 - d. Chapter 23: The Origin of Species
 - e. Lab: Natural Selection of Butterflies Activity
 - f. Lab: Natural Selection of Strawfish Activity
 - g. Lab: Population Genetics Hardy-Weinberg Activity
 - h. Lab: Wisconsin Fast Plant (*Brassica rapa*) Research
3. CLASSIFICATION / DIVERSITY OF LIFE: How do we organize life into evolutionary-related groups?
 - a. Chapter 25: Systematics and the Phylogenetic Revolution
 - b. Chapters 26–34: “Parade Through The Kingdoms” — NOTE: These chapters provide a survey of life on Earth and its current organization. You will NOT read these chapters. We may highlight some aspects of this information throughout the course, but it is no longer included in the new AP curriculum which will be formally instituted next year. And it has been downplayed on the most recent APB exams.
 - c. Lab: Cladistics — Evolution of Marine Mammals Research
4. ECOLOGY: How do individuals and groups of organisms interact?
 - a. Chapter 53: Population Ecology
 - b. Chapter 54: Community Ecology
 - c. Chapter 52: Behavioral Biology
 - d. Chapter 55: Dynamics of Ecosystems

- e. ??Chapter 56: The Biosphere
- f. ??Chapter 57: Conservation Biology
- g. Lab: Chi Square Demonstration
- h. Lab: Animal Behavior Research
- i. Lab: Marsh Ecology Research (Sunken Meadow Field Trip)
- j. ??Lab: Sex and The Single Guppy Simulation

C. CELLULAR PROCESSES: CELL STRUCTURE

- 5. BIOCHEMISTRY: What molecules are living organisms built out of?
 - a. Chapter 2: The Nature of Molecules
 - b. Chapter 3: The Chemical Building Blocks of Life
 - c. Lab: Dissolved Oxygen and Temperature Research
 - d. Lab: Chemistry of Life: Organisms and pH — Buffers Research
- 6. CELL STRUCTURE: Cells are the basic unit of life...what are their parts and what do these parts do?
 - a. WARNING: You are responsible for Chapter 5, but this chapter will NOT be taught in class. It will be auto-tutorial. This chapter will be tested. You need to read and review it yourself and come to class with specific questions, if you have them. PowerPoint presentations and worksheets will be posted on the ExploreBiology Web site to help you.
 - b. Chapter 5: Cell Structure
 - c. Chapter 6: Membranes
 - d. Chapter 49: Maintaining the Internal Environment
 - e. Chapter 45: The Nervous System
 - f. Lab: Freshwater Protist and Animal Observation Activity
 - g. Lab: Diffusion Through A Membrane Demonstration
 - h. Lab: Osmosis Through A Membrane Demonstration
 - i. Lab: Osmosis in a Plant Cell Demonstration
 - j. Lab: Osmosis Challenges
 - k. Lab: Limits to Cell Size Study
 - l. Lab: Lights, Camera, Action Potential Model

D. CELLULAR PROCESSES: MAKING ENERGY

- 7. RESPIRATION: How do cells harvest ATP energy from oxygen and organic fuels?
 - a. Chapter 8: Energy and Metabolism
 - b. Chapter 9: How Cells Harvest Energy

- c. Lab: Enzyme Function Research
 - d. Lab: Enzymes & Jell-o Activity
 - e. Lab: Respiration Research
 - f. Lab: Sucrose Fermentation — Making Root Beer Activity
 - g. Lab: Lactic Acid Fermentation — Making Yogurt
8. ANIMAL SYSTEMS IN SUPPORT OF RESPIRATION: What systems in organisms have evolved to support cells making energy from respiration?
- a. Chapter 43: Fueling Body Activities: Digestion
 - b. Chapter 44: Circulation and Respiration
 - c. Chapter 42: The Animal Body and How It Moves (Muscles)
 - d. Chapter 47 The Endocrine System / Chapter 7: Cell to Cell Interactions (Pertinent parts of Chapter 7 will be included in the discussion of hormones & endocrine system, Chapter 47)
 - e. Chapter 48: The Immune System
 - f. Lab: Hormones and the Human Menstrual Cycle Activity
9. PHOTOSYNTHESIS: How do cells harvest ATP energy & build carbohydrates from solar energy, CO₂ & water?
- a. Chapter 10: Photosynthesis
 - b. Lab: Photosynthesis Research
 - c. Lab: Dissolved Oxygen & Primary Productivity (Lab Bench?)
10. PLANT SYSTEMS IN SUPPORT OF PHOTOSYNTHESIS: What systems in plants have evolved to support cells making energy from photosynthesis?
- a. Chapter 29: Overview of Plant Diversity
 - b. Chapter 35: Plant Form
 - c. Chapter 36: Vegetative Plant Development
 - d. Chapter 37: Transport in Plants
 - e. Chapter 38: Plant Nutrition
 - f. Chapter 40: Sensory Systems in Plants
 - g. Lab: Leaf Anatomy Activity
 - h. Lab: Transpiration Research
 - i. Lab: Plant Game Activity
 - j. Lab: Corn and Bean Studies

E. MAKING CELLS & MAKING NEW ORGANISMS

11. MITOSIS: How do cells reproduce exact copies?
- a. Chapter 11: How Cells Divide

- b. Lab: Mitosis and Cancer Activity
12. MEIOSIS: How do organisms produce haploid cells for sexual reproduction?
- a. Chapter 12: Sexual Reproduction and Meiosis
 - b. Chapter 50: Sex and Reproduction
 - c. ??Chapter 51: Vertebrate Development
 - d. Chapter 41: Plant Reproduction
 - e. Lab: Meiosis Activity
 - f. Lab: Flower Structure Study
13. GENETICS: How do organisms reproduce sexually?
- a. Chapter 13: Patterns of Inheritance
 - b. Lab: Chi Square Analysis & Genetics Demonstration
 - c. Lab: Virtual Fly Genetics Research
 - d. Lab: Genetics of Wisconsin Fast Plant (*Brassica rapa*) Research

F. MAKING PROTEINS

14. PROTEIN SYNTHESIS: How are proteins produced from our genetic code?
- a. Chapter 14: DNA—The Genetic Material
 - b. Chapter 15: Genes and How They Work
 - c. Lab: Protein Synthesis Modeling
15. GENE REGULATION: How are genes turned on and off at the correct times for proper organism development and function?
- a. Chapters 18: Control of Gene Expression
 - b. ??Chapter 19: Cellular Mechanisms of Development
 - c. ??Chapter 24: Evolution of Genomes and Developmental Mechanisms
 - d. ??Chapter 20: Cancer Biology and Cell Technology
16. BIOTECHNOLOGY: Now that we can decode the DNA of any organism and move DNA from one organism to another, what new DNA technologies can we implement?
- a. Chapter 16: Gene Technology
 - b. Lab: Cloning A Paper Plasmid Simulation
 - c. Lab: Green Fluorescent Protein Cloning
 - d. Lab: Restriction Digest of DNA Simulation
 - e. Lab: Restriction Digest Demonstration

G. WHOLE COURSE REVIEW