

BAY DISTRICT SCHOOLS BIOLOGY END-OF-COURSE REVIEW 2015

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PART ONE

L.14.1 – Cell Theory

Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the process of science.

References: Textbook: Chapter 3.1 Pg. 70-71 Test Prep: Pg. 4 – 6 Interactive Reader: Pg. 31 - 38

Key Vocabulary: cell theory, spontaneous generation

- *What are the 3 main points of the cell theory?*
- *What technology advanced cell theory?*
- *How do you differentiate between a theory and a law?*

L.14.3 – Prokaryotic and Eukaryotic Cells, Animal and Plant Cells, Cell Transport

Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells.

References: Textbook: Chapter 3.1, 2, 3, 4, 5 Pg. 73-79 and Pg. 85-91 Test Prep: pg. 10 – 12 Interactive Reader: Pg. 39 - 50

Key Vocabulary: active transport, cell membrane, cell plate, cell wall, cellular respiration, centriole, chloroplasts, diffusion, equilibrium, eukaryote, nucleus, organelle, osmosis, passive transport, photosynthesis, prokaryote, ribosome, semi-permeable

- *List or chart the structures and function of an animal cell and a plant cell.*
- *Differentiate between a prokaryotic and eukaryotic cell.*
- *How does the cell membrane support cells in getting needed nutrients?*

L.14.7 – Plant Structures and Functions

Relate the structure of each of the major plant organs and tissues to physiological processes.

References: Textbook: Chapter 21.1, 2, 3, 4 Pg. 640 – 655 and Chapter 22.2, 3 Pg. 668 – 675

Test Prep: Pg. 19 – 22 Interactive Reader: Pg. 346 – 357 and Pg. 364 - 369

Key Vocabulary: roots, stem, leaves, photosynthesis, transpiration, reproduction, flower, fruit, phloem, pollen, stomata, xylem

1. *List or chart the structure and physiological function of plant tissues and organs.*

L.14.26 – Brain parts

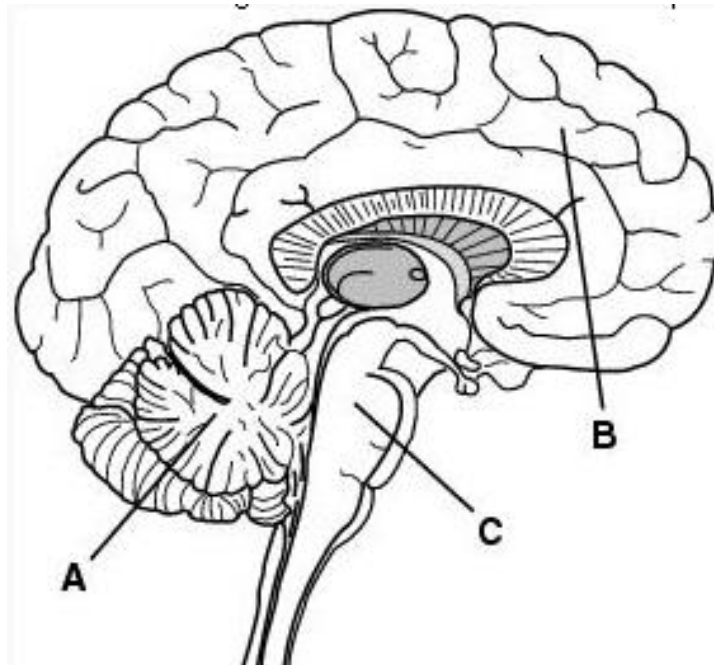
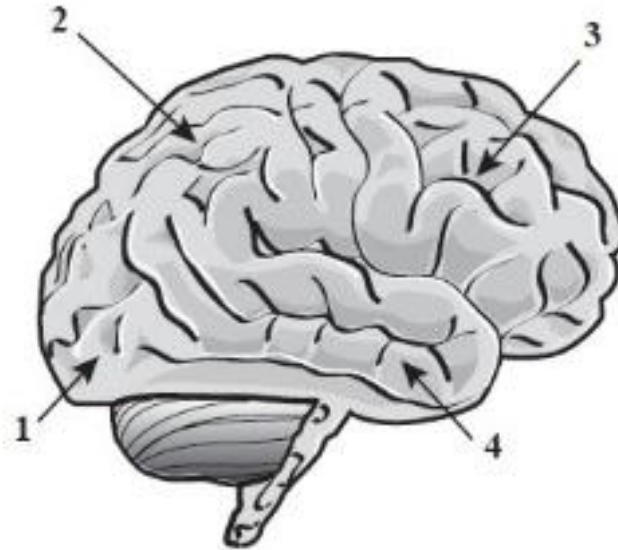
Identify the major parts of the brain on diagrams or models.

References: Textbook: Chapter 29, Section 29.4, pages 727-728, Test Prep: Pg. 23 – 25, Interactive Reader: pages 391-392

Key Vocabulary: cerebrum, cerebellum, frontal lobe, medulla oblongata, occipital lobe, parietal lobe, temporal lobe, pons, brain stem

- *Label the Lobes and sections of the human brain*

Four Lobes of the Human Brain



L.14.36 – Blood Flow

Describe the factors affecting blood flow through the cardiovascular system.

References: Textbook: Chapter 30, Section 30.4, pages 747-748 Test Prep: Pg. 26 – 28 Interactive Reader: pages 406-407

Key Vocabulary: anatomy, artery, blood flow, blood pressure, capillaries, cardiovascular system, homeostasis, physiology, vein, vascular tissue

- *Describe or diagram blood circulation and flow.*
- *List how these factors affect blood flow: nutrition, genetics, activity level.*

L.14.52 – Immune System

Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics.

References: Textbook: Chapter 31, Section 31.3 & 31.4, pages 762-768 Test Prep: Pg. 29 – 31 Interactive Reader: pages 413-419

Key Vocabulary: antibiotic, antibody, antigen, communicable disease, inflammation, pathogen, vaccine, white blood cells

- *How does the immune system protect humans from disease?*
 - *Active*
 - *Passive*
- *Explain how vaccines and antibiotics work.*

Review L.15.1 – Theory of Evolution

Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change.

References: Textbook: Chapter 10, Section 10.4, pages 310-313; Chapter 12, Section 12.6, pages 379-383 Test Prep: Pg. 32 – 34 Interactive Reader: pages 164-165; 173-175; 215-218

Key Vocabulary: continental drift, embryology, evidence, evolution, fossil, genetic drift, gene flow, homologous structures, observations, species, natural selection, speciation, vestigial structures;

- *List evidence that supports the Theory of Evolution.*

L.15.8 – Origin of Life on Earth

Describe the scientific explanations of the origin of life on Earth.

References: Textbook: Chapter 12, Section 12.3, pages 368-371 Test Prep: Pg. 45 – 47 Interactive Reader: pages 207-209

Key Vocabulary: amino acids, nucleotides, organic molecules, chemical evolution, proteins, DNA, RNA, oxygen

- *Describe how science explains the origin of life on earth.*
- *What sequence of events resulted in the origin of life on earth?*

L.15.13 – Natural Selection

Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success.

References: Textbook: Chapter 10.3, pages 304-309; Chapter 11.3, pages 335-337 and page 343
Test Prep: Pg. 51 – 54 Interactive Reader: pages 170-172

Key Vocabulary: adaptation, biodiversity, diversity, genetic drift, gene flow, mutation, offspring, reproductive isolation, species, natural selection, speciation, subspecies, variation

- *What conditions must be present for natural selection to result in a difference in reproductive success?*
- *How do mechanisms like genetic drift, gene flow and nonrandom mating result in evolutionary change?*
- *How do mutation and genetic recombination increase genetic variation?*

L.15.6 – Classification, Taxonomy, Kingdoms

Discuss distinguishing characteristics of the domains and kingdoms of living organisms.

References: Textbook: Chapter 17, Section 17.4, pages 533-535 Test Prep: Pg. 56 – 44 Interactive Reader: pages 287; 292-294

Key Vocabulary: animalia, archaea bacteria, binomial nomenclature, chordates, cladogram, dichotomous key, eukarya, fungi, invertebrate, kingdom, phylum, plantae, protista, vertebrate.

- *What are the 3 domains, the kingdoms in the domains, and the characteristics of organisms in each kingdom?*
- *Give an example of an organism whose classification is based on evolutionary relationships?*
- *Give an example of how classifying organisms has changed over time.*

VIRUAL REPRODUCTION- LYSOGENIC/LYTIC CYCLE

END PART ONE OF REVIEW

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PART TWO

L.16.1 – Mendel’s Laws, Inheritance patterns

Use Mendel’s laws of segregation and independent assortment to analyze patterns of inheritance.

References: Textbook: Chapter 6.3, 4, 5 Pg. 177 – 187 and Chapter 7.1, 2 Pg. 200 – 207 Test Prep: Pg. 61 – 63
Interactive Reader: Pg. 96 – 104 and Pg. 109 – 114

Key Vocabulary: alleles, codominant, dominant, gene, genetics, genotype, heredity, heterozygous, homozygous, hybrid, incomplete dominance, independent assortment, pedigree, phenotype, polygenic, purebred, recessive, segregation, sex-linked, trait

- *Why is meiosis necessary for sexual reproduction and how does it allow for genetic diversity?*
- *How do the laws of segregation and independent assortment affect the analysis of inheritance patterns?*
- *How does the mode of inheritance (dominance, co-dominance, etc.) affect the prediction and analysis of inheritance patterns?*

L.16.3 – DNA Replication

Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic information.

References: Textbook: Chapter 8.3, 4, 5, 7 Pg. 235 – 247, 252 – 255 Test Prep: Pg. 67 – 70 Interactive Reader: Pg. 129 – 138 and Pg. 142 – 144

Key Vocabulary: DNA, protein synthesis, replication, RNA, transcription, translation, mRNA, tRNA, ribosome, amino acid, protein

- *How does the process of DNA replication enable genetic information to be transmitted and used to build proteins?*
- *How do the processes of transcription and translation determine how genes are expressed?*
- *How is DNA alike in all organisms?*
- *How can DNA mutate?*
- *Why don't all mutations result in visible change?*

L.16.10 – Biotechnology

Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues.

References: Textbook: Chapter 9.4 Pg. 275 – 279 Test Prep: Pg. 81 – 83 Interactive Reader: Pg. 154 – 156

Key Vocabulary: biotechnology, genetic engineering, recombinant DNA, clone, plasmid

- *Why do scientists use DNA as evidence that all organisms are related?*
- *List the positive and negative impacts biotechnology can have on society.*

L.16.13 – Human Reproduction

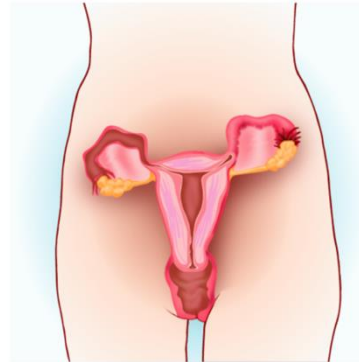
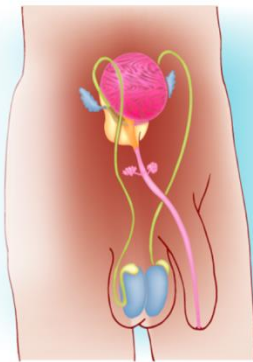
Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy.

References: Textbook: Chapter 34, Sections 34.1, 34.2 & 34.3, pages 788 -803 Test Prep: Pg. 84 – 86

Interactive Reader: pages 432-441

Key Vocabulary: anatomy (seminal vesicle; prostate gland; vas deferens, urethra; epididymis; scrotum; penis; testes; ovaries; oviduct; uterus, cervix and vagina), placenta, umbilical cord, amniotic sac, amniotic fluid, fertilization, trimester, zygote, embryo, fetus.

- *Identify the important structures in the female and male reproductive systems*



- *Sequence the development of a human from a zygote to a "full term" baby (by trimester)?*

L.16.17 – Mitosis/ Meiosis

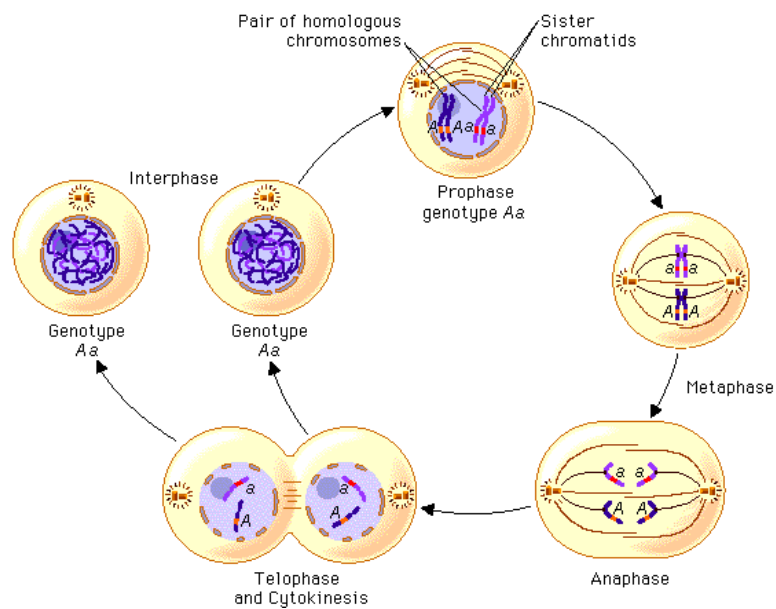
Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation.

References: Textbook: Chapter 5.1, 2, 4 Pg. 134 – 142, 146 – 150 and Chapter 6.1, 2 Pg. 168 – 176

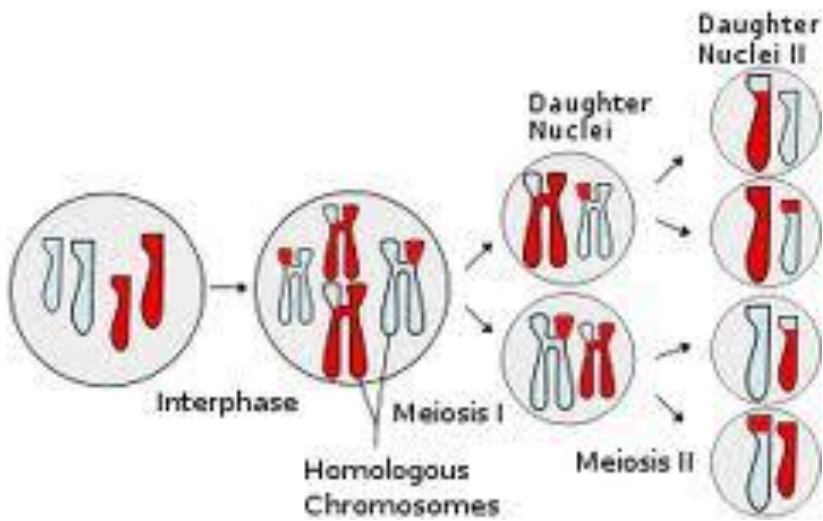
Test Prep: Pg. 87 – 96 Interactive Reader: Pg. 74 – 79, Pg. 82 – 83, and Pg. 90 – 95

Key Vocabulary: chromatid, chromosome, diploid, gamete, haploid, meiosis, mitosis, nucleus, replication, prophase, metaphase, anaphase, telophase, independent assortment, crossing over, centrioles, cytokinesis

- *How can independent assortment and crossing over occur during meiosis?*
- *Describe the stages of mitosis resulting in identical daughter cells?*



- *Match mitosis and meiosis to sexual and asexual reproduction.*
- *Describe the stages of meiosis resulting in the formation of haploid gametes.*



- Give an example of how meiosis creates genetic diversity?
- Compare and contrast mitosis and meiosis.

ASEXUAL VS SEXUAL REPRODUCTION

CANCER CELL REPRODUCTION

END PART II OF REVIEW

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PART THREE

L.17.5 – Populations

Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity.

References: Textbook: Chapter 14, Section 14.4, pages 440-444; Test Prep: Pg. 103 – 106 Interactive Reader: pages 248-250

Key Vocabulary: abiotic, biodiversity, biomass, biotic, carrying capacity, emigration, extinction, immigration, limiting factor, population

- *Describe how biotic and abiotic factors affect an increase or decrease of a population?*
- *What affects carrying capacity?*
- *How does the chemistry, geography, light, depth, salinity, and/or temperature of an aquatic system affect what organisms can live there?*
- *Reducing biodiversity can impact an ecosystem. Give an example of both a positive and negative impact.*
- *How can ecosystems be changed by seasonal variations, climate changes and succession? (give example)*
- *What are possible environmental impacts caused by invasive species?*

L.17.9 – Trophic Levels

Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.

References: Textbook: Chapter 13, Sect 13.6, pages 417-419; Sect 13.5, pages 412 & 414; Sect 13.4, pages 408-411 Test Prep: Pg. 110 – 112 Interactive Reader: pages 228-233; 236-238

Key Vocabulary: abiotic, autotroph, biotic, carbon cycle, commensalism, consumer, decomposer, ecology, ecosystem, energy, heterotroph, mutualism, primary producer, producer, succession, trophic level, water cycle

- *Describe and give an example of producers, consumers, and decomposers in an ecosystem.*
- *Explain why less energy is available to each successive trophic level as you move from producers through all levels of consumers.*

- *Draw and explain the carbon cycle for an ecosystem.*

L.17.20 – Human Impact

Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability.

References: Textbook: Chapter 16, Section 16.1, pages 484-487; Section 16.5, pages 502-505 Test Prep: Pg. 119 – 121 Interactive Reader: pages 269-271; 280-281

Key Vocabulary: fossil fuel, invasive species, nonrenewable resource, productivity, renewable resource, sustainability.

- *Identify actions of humans that may impact environmental systems and/or affect sustainability?*
- *Explain the relationship of nonrenewable resources and sustainability.*

L.18.1 – Macromolecules, Enzymes

Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules

References: Textbook: Chapter 2.3, 5 Pg. 44 – 48, 54 – 56 Test Prep: Pg. 122 – 124 Interactive Reader: Pg. 25 – 29, Pg. 33 – 34

Key Vocabulary: acid, activation energy, amino acid, base, carbohydrate, catalyst, energy, enzyme, inorganic, lipid, macromolecule, molecule, nucleic acid, organic, pH, protein

- *List the 4 macromolecules in the body and describe how they support body functions?*
- *An enzyme is called a biological catalyst, why?*
- *What is the effect of pH, temperature, and concentration on the enzyme activity?*

L.18.9 – Photosynthesis and Cellular Respiration

Explain the interrelated nature of photosynthesis and cellular respiration.

References: Textbook: Chapter 4.1, 2, 4 Pg. 100 – 103, 113 – 114, 121 Test Prep: Pg. 131 – 135 Interactive Reader: Pg. 53 – 58, Pg. 62 – 65

Key Vocabulary: ATP, aerobic, anaerobic, cellular respiration, chlorophyll, chloroplasts, mitochondria, photosynthesis, products, reactants

- *List the products and reactants of photosynthesis and cellular respiration?*
- *How do the processes of photosynthesis and cellular respiration form a cycle? (hint: compare the products of photosynthesis to the reactants of cellular respiration)*
- *What is the difference between aerobic and anaerobic respiration?*

- *ATP is used to store and release energy for the cell. Describe how ATP is produced and what is produced when energy is released from ATP.*

L.18.12 – Properties of Water

Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.

References: Textbook: Chapter 2.2 Pg. 40 – 42 Test Prep: Pg. 136 – 141 Interactive Reader: Pg. 22 – 24

Key Vocabulary: adhesion, cohesion, high specific heat capacity, hydrogen bonds, pH, polar molecule, surface tension, solute, solution, solvent.

- *What would happen to life on earth if water did not expand upon freezing?*
- *Water is called the universal solvent. How does this property help the body function?*
- *The ocean determines weather and climate due to the _____.*
- *Which property of water enables water to be transported from the roots to the leaves of plants?*

END PART III OF REVIEW