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<th>STAAR Biology EOC Study Resources 2017</th>
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### Category I: Cell Structure and Function

| B.4A | SS | compare and contrast prokaryotic and eukaryotic cells; | Interactive Animations  
Online Lesson  
Video  
PP Cell Review  
Cell Comparisons |
|------|----|--------------------------------------------------|-------------------------------------------------|
|      | B.4B | Investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules | How Osmosis Works  
HHMI Diffusion Across Membranes  
Fermentation  
Respiration  
Photosynthesis  
Osmosis |
|      | B.4C | Compare the structures of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases such as immunodeficiency virus (HIV) and influenza | Virus: Disease  
How a Virus Invades Your Body  
Virus: Reproduction  
Virus: Structure |
|      | B.5A | describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms; | Cell Cycle Phases  
The Cell Cycle  
Video: Paired DNA Strands  
Video: DNA Replication |
|      | B.5B | examine specialized cells, including roots, stems, and leaves of plants; and animal cells such as blood, muscle, and epithelium | Cell Specialization and Differentiation  
You Tube – Specialized Cells  
Interactive Sites - Cells |
|      | B.5C | describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation | Cell Specialization and Differentiation  
Stem Cells Mini Lessons |
|      | B.5D | recognize that disruptions of the cell cycle lead to diseases such as cancer | You Tube – From Normal to Cancer  
P53  
Disruptions of the Cell Cycle: Cancer |
|      |      | compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids; | B.9A |
|      |      | analyze and evaluate the evidence regarding formation of simple organic molecules and their organization into long complex molecules having information such as the DNA molecule for self-replicating life | Miller-Urey Experiment  
Miller-Urey "Icon of Evolution" |
### Category 2: Mechanisms of Genetics

| B.6A | RS | Identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA | DNA Movies
How DNA Works |
| B.6B | SS | Recognize that components that make up the genetic code are common to all organisms | DNA - the Common code
DNA Common Code |
| B.6C | SS | Explain the purpose and process of transcription and translation using models of DNA and RNA | Mechanisms of Genetics - Protein Synthesis
Nucleic Acids and Proteins |
| B.6D | SS | Recognize that gene expression is a regulated process | Gene Expression
Prokaryote Gene Expression
Lac Operon |
| B.6E | RS | Identify and illustrate changes in DNA and evaluate the significance of these changes | Crossing Over
Mutations
HHMI Gene Switch
Mechanisms of Genetics
Genetic Mutations |
| B.6F | RS | Predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses and non-Mendelian inheritance | Predict Monohybrid Crosses
Monohybrid and Dihybrid Crosses
Codominance
Incomplete Dominance |
| B.6G | SS | Recognize the significance of meiosis to sexual reproduction | Meiosis Videos |
| B.6H | SS | Describe how techniques such as DNA fingerprinting, genetic modifications, and chromosomal analysis are used to study the genomes of organisms | How to Sequence a Genome
DNA Fingerprinting |

### Category 3: Biological Evolution and Classification

| B.7A | RS | Analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental | Evolution of Cells
Fossil Evidence
Anatomical Evidence
Homologous Structures
Embryological Evidence
Molecular Evidence for Evolution |
| B.7B | SS | Analyze and evaluate scientific explanations concerning any data of sudden appearance, stasis, and sequential nature of groups in the fossil record | Evo Devo
Stasis |
| B.7C | SS | Analyze and evaluate how natural selection produces change in populations, not individuals | Natural Selection  
Natural Selection basics |
| B.7D | SS | analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success; | Biodiversity in Caribbean Lizards  
Adaptation Examples  
Five Fingers of Evolution  
Genetic Variation in Humans |
| B.7E | RS | analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species; | Causes of Speciation  
Isolation Factors  
What Causes Diversity |
| B.7F | SS | analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination; and | Mechanisms of Evolution beyond Natural Selection  
Gene Flow  
Mutations  
Genetic Drift |
| B.7G | SS | analyze and evaluate scientific explanations concerning the complexity of the cell |  |
| B.8A | SS | define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community; | What's in A Name?  
Taxonomy  
Taxonomy Standards |
| B.8B | RS | categorize organisms using a hierarchical classification system based on similarities and differences shared among groups; and | How to Read a Cladogram  
Dichotomous Key |
| B.8C | SS | compare characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals. | Taxonomy - Major Groups |

**Category 4: Biological Processes and Systems**

<p>| B.9B | SS | compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter | Energy and Matter in Cells |</p>
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