Main Criteria: Cogent Education's Interactive Cases
Secondary Criteria: Colorado K-12 Academic Standards
Subject: Science
Grades: 9, 10, 11, 12

Title	Common Among States	Colorado K-12 Academic Standards	Colorado K-12 Academic Standards	Colorado K-12 Academic Standards	Colorado K-12 Academic Standards
Action Potential -	CO	CO.2. - Life Science 2.3. - Cellular metabolic activities are carried out by biomolecules produced by organisms. Students can: 2.3.a. - Identify biomolecules and their precursors/building blocks 2.3.c. - Develop, communicate, and justify an evidence-based explanation regarding the optimal conditions required for enzyme activity 2.3.d. - Infer the consequences to organisms of suboptimal enzyme function - such as altered blood pH or high fever - using direct and indirect evidence 2.5. - Cells use passive and active transport of substances across membranes to maintain relatively stable intracellular environments. Students can: 2.5.c. - Diagram the cell membrane schematically, and highlight receptor proteins as targets of hormones, neurotransmitters, or drugs that serve as active links between intra and extracellular environments 2.6. - Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments. Students can: 2.6.a. - Discuss how two or more body systems interact to promote health for the whole organism 2.6.b. - Analyze and interpret data on homeostatic mechanisms using direct and indirect evidence to develop and support claims about the effectiveness of feedback loops to maintain homeostasis 2.6.d. - Use computer simulations and models of homeostatic mechanisms	CO.2. - Life Science 2.3. - Cellular metabolic activities are carried out by biomolecules produced by organisms. 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Cellular Respiration -	CO	CO.2. - Life Science 2.3. - Cellular metabolic activities are carried out by biomolecules produced by organisms. Students can: 2.3.a. - Identify biomolecules and their precursors/building blocks 2.3.c. - Develop, communicate, and justify an evidence-based explanation regarding the optimal conditions required for enzyme activity 2.3.d. - Infer the consequences to organisms of suboptimal enzyme function - such as altered blood pH or high fever - using direct and indirect evidence 2.5. - Cells use passive and active transport of substances across membranes to maintain relatively stable intracellular environments. Students can: 2.5.a. - Analyze and interpret data to determine the energy requirements and/or rates of substance transport across cell membranes 2.5.d. - Use tools to gather, view, analyze, and interpret data produced during scientific investigations that involve passive and active transport 2.5.e. - Use computer simulations and models to analyze cell transport mechanisms 2.6. - Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments. Students can:	CO.2. - Life Science 2.3. - Cellular metabolic activities are carried out by biomolecules produced by organisms. Students can: 2.3.a. - Identify biomolecules and their precursors/building blocks 2.3.c. - Develop, communicate, and justify an evidence-based explanation regarding the optimal conditions required for enzyme activity 2.3.d. - Infer the consequences to organisms of suboptimal enzyme function - such as altered blood pH or high fever - using direct and indirect evidence 2.5. - Cells use passive and active transport of substances across membranes to maintain relatively stable intracellular environments. Students can: 2.5.a. - Analyze and interpret data to determine the energy requirements and/or rates of substance transport across cell membranes 2.5.d. - Use tools to gather, view, analyze, and interpret data produced during scientific investigations that involve passive and active transport 2.5.e. - Use computer simulations and models to analyze cell transport mechanisms 2.6. - Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments. Students can:	CO.2. - Life Science 2.3. - Cellular metabolic activities are carried out by biomolecules produced by organisms. Students can: 2.3.a. - Identify biomolecules and their precursors/building blocks 2.3.c. - Develop, communicate, and justify an evidence-based explanation regarding the optimal conditions required for enzyme activity 2.3.d. - Infer the consequences to organisms of suboptimal enzyme function - such as altered blood pH or high fever - using direct and indirect evidence 2.5. - Cells use passive and active transport of substances across membranes to maintain relatively stable intracellular environments. Students can: 2.5.a. - Analyze and interpret data to determine the energy requirements and/or rates of substance transport across cell membranes 2.5.d. - Use tools to gather, view, analyze, and interpret data produced during scientific investigations that involve passive and active transport 2.5.e. - Use computer simulations and models to analyze cell transport mechanisms 2.6. - Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments. Students can:	CO.2. - Life Science 2.3. - Cellular metabolic activities are carried out by biomolecules produced by organisms. Students can: 2.3.a. - Identify biomolecules and their precursors/building blocks 2.3.c. - Develop, communicate, and justify an evidence-based explanation regarding the optimal conditions required for enzyme activity 2.3.d. - Infer the consequences to organisms of suboptimal enzyme function - such as altered blood pH or high fever - using direct and indirect evidence 2.5. - Cells use passive and active transport of substances across membranes to maintain relatively stable intracellular environments. Students can: 2.5.a. - Analyze and interpret data to determine the energy requirements and/or rates of substance transport across cell membranes 2.5.d. - Use tools to gather, view, analyze, and interpret data produced during scientific investigations that involve passive and active transport 2.5.e. - Use computer simulations and models to analyze cell transport mechanisms 2.6. - Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments. Students can:

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Diffusion -	CO	CO.2. - Life Science 2.3. - Cellular metabolic activities are carried out by biomolecules produced by organisms. Students can: 2.3.a. - Identify biomolecules and their precursors/building blocks 2.3.e. - Analyze and interpret data on the body's utilization of carbohydrates, lipids, and proteins 2.6. - Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments. Students can: 2.6.a. - Discuss how two or more body systems interact to promote health for the whole organism 2.6.b. - Analyze and interpret data on homeostatic mechanisms using direct and indirect evidence to develop and support claims about the effectiveness of feedback loops to maintain homeostasis 2.6.d. - Use computer simulations and models of homeostatic mechanisms	CO.2. - Life Science 2.3. - Cellular metabolic activities are carried out by biomolecules produced by organisms. Students can: 2.3.a. - Identify biomolecules and their precursors/building blocks 2.3.e. - Analyze and interpret data on the body's utilization of carbohydrates, lipids, and proteins 2.6. - Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments. Students can: 2.6.a. - Discuss how two or more body systems interact to promote health for the whole organism 2.6.b. - Analyze and interpret data on homeostatic mechanisms using direct and indirect evidence to develop and support claims about the effectiveness of feedback loops to maintain homeostasis 2.6.d. - Use computer simulations and models of homeostatic mechanisms	CO.2. - Life Science 2.3. - Cellular metabolic activities are carried out by biomolecules produced by organisms. Students can: 2.3.a. - Identify biomolecules and their precursors/building blocks 2.3.e. - Analyze and interpret data on the body's utilization of carbohydrates, lipids, and proteins 2.6. - Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments. Students can: 2.6.a. - Discuss how two or more body systems interact to promote health for the whole organism 2.6.b. - Analyze and interpret data on homeostatic mechanisms using direct and indirect evidence to develop and support claims about the effectiveness of feedback loops to maintain homeostasis 2.6.d. - Use computer simulations and models of homeostatic mechanisms	CO.2. - Life Science 2.3. - Cellular metabolic activities are carried out by biomolecules produced by organisms. Students can: 2.3.a. - Identify biomolecules and their precursors/building blocks 2.3.e. - Analyze and interpret data on the body's utilization of carbohydrates, lipids, and proteins 2.6. - Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments. Students can: 2.6.a. - Discuss how two or more body systems interact to promote health for the whole organism 2.6.b. - Analyze and interpret data on homeostatic mechanisms using direct and indirect evidence to develop and support claims about the effectiveness of feedback loops to maintain homeostasis 2.6.d. - Use computer simulations and models of homeostatic mechanisms
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Nitrogen Cycle -	CO	CO.2. - Life Science 2.1. - Matter tends to be cycled within an ecosystem, while energy is transformed and eventually exits an ecosystem. Students can: 2.1.d. - Develop, communicate, and justify an evidence-based scientific explanation showing how ecosystems follow the laws of conservation of matter and energy 2.1.e. - Define and distinguish between matter and energy, and how they are cycled or lost through life processes 2.1.f. - Describe how carbon, nitrogen, phosphorus, and water cycles work 2.2. - The size and persistence of populations depend on their interactions with each other and on the abiotic factors in an ecosystem. Students can:	CO.2. - Life Science 2.1. - Matter tends to be cycled within an ecosystem, while energy is transformed and eventually exits an ecosystem. Students can: 2.1.d. - Develop, communicate, and justify an evidence-based scientific explanation showing how ecosystems follow the laws of conservation of matter and energy 2.1.e. - Define and distinguish between matter and energy, and how they are cycled or lost through life processes 2.1.f. - Describe how carbon, nitrogen, phosphorus, and water cycles work 2.2. - The size and persistence of populations depend on their interactions with each other and on the abiotic factors in an ecosystem. Students can:	CO.2. - Life Science 2.1. - Matter tends to be cycled within an ecosystem, while energy is transformed and eventually exits an ecosystem. Students can: 2.1.d. - Develop, communicate, and justify an evidence-based scientific explanation showing how ecosystems follow the laws of conservation of matter and energy 2.1.e. - Define and distinguish between matter and energy, and how they are cycled or lost through life processes 2.1.f. - Describe how carbon, nitrogen, phosphorus, and water cycles work 2.2. - The size and persistence of populations depend on their interactions with each other and on the abiotic factors in an ecosystem. Students can:	CO.2. - Life Science 2.1. - Matter tends to be cycled within an ecosystem, while energy is transformed and eventually exits an ecosystem. Students can: 2.1.d. - Develop, communicate, and justify an evidence-based scientific explanation showing how ecosystems follow the laws of conservation of matter and energy 2.1.e. - Define and distinguish between matter and energy, and how they are cycled or lost through life processes 2.1.f. - Describe how carbon, nitrogen, phosphorus, and water cycles work 2.2. - The size and persistence of populations depend on their interactions with each other and on the abiotic factors in an ecosystem. Students can:

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