



MOHAWK

Local School District

Preparing today's students for tomorrow's challenges

Mohawk Local Schools Grade BIOLOGY

Quarter 1 Curriculum Guide

Guiding Principles of the Scientific Inquiry/Learning Cycle:

Evaluate...Engage...Explore...Explain...Extend...Evaluate

Identify ask valid and testable questions

Research books, other resources to gather known information

Plan and Investigate

Use appropriate mathematics, technology tools to gather, interpret data.

Organize, evaluate, interpret observations, measurements, other data

Use evidence, scientific knowledge to develop explanations

Communicate results with graphs charts, tables

Critical Areas of Focus Being Addressed:

- Cells
- Heredity
- Scientific Inquiry

Content Statements Addressed and Whether they are Knowledge, Reasoning, Performance Skill, or Product:

Underpinning Targets Corresponding with Standards and Whether they are Knowledge, Reasoning, Performance Skill, or

(DOK1)	(DOK2)	(DOK3)	(DOK4)	Product: "I can.....", "Students Will Be Able To....."
Cell Structure and Function (DOK1)	(DOK2)	(DOK3)	(DOK4)	<ul style="list-style-type: none"> • Explain that the cell is a functioning system (e.g., regulation, homeostasis, cell cycle, and transport) (R) • Identify and describe that the cell has specialized parts for the transport of materials, energy transformation, protein building, waste disposal, and movement; (R) • Interpret diagrams of cells from a variety of organisms connected to a real-world scenario. (e.g., plant vs. animal cells, prokaryotic vs. eukaryotic, cells with or without potassium pump); (PS) • Explain how the structure of cellular parts facilitates their function; (R) • Compare organic molecules and their role in cells; (R) • Explain how cell components work together to perform the functions of the cell; (R) • Design an experiment to determine the effect of external factors (e.g., pH, temperature, concentration) on the cellular function (e.g., transport, enzyme rate, photosynthesis, cellular respiration); (P) • Describe the role of water and organic molecules in cells (lipids, carbohydrates, nucleic acids, proteins); (K) • Understand the properties of the cellular environment that affect shape and function of enzymes (e.g., pH, temperature, concentration); (R)

<p>Cellular processes (DOK1) (DOK2) (DOK3) (DOK4)</p>	<ul style="list-style-type: none"> • Diagram the transformation of energy through ATP and cycling of carbon through cellular processes in cells (e.g., photosynthesis, cellular respiration). (K) • Investigative scenarios that explore abiotic effects on the cell cycle; (R) • Investigative scenarios that determine factors that affect the activity of enzymes on their substrates; (R) • Investigate real-world applications of cells that play a foundational role in engineering and industry (e.g., fermentation, medicine); (R) • Interpret diagrams of photosynthesis, cellular respiration, and/or chemosynthesis connected to a real-world scenario; (PS) • Interpret diagrams of cellular transport (R) • Create and interpret graphs or data (e.g., temperature, pH, light, concentration) to explain the rate of enzyme activity in a cell; (PS) • Describe regulation of the cellular environment (e.g., homeostasis); (R) • Describe how photosynthesis and cellular respiration impact the concentration of chemicals in a system; (R) • Use a diagram of the basic stages of photosynthesis (light and dark reactions) identify the major reactants/products (CO₂, H₂O, ATP, O₂, glucose) involved in each stage. (K) • Analyze graphs displaying data about enzyme activity and how that impacts a cell; (R) • Evaluate or improve the design of an industrial application of cellular processes (e.g., optimal environment for fermentation, genetically modified organisms). (P)
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<p>Cellular Genetics (DOK1) (DOK2)</p>	<ul style="list-style-type: none">• Understand the concept of differentiation – although all cells have identical genetic information, different genes are active in different types of cells; (K)• Differentiate between parent and daughter cells before and after meiosis; (R)• Compare and contrast the genetic makeup of two different types of cells in the same organism; (R)
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