

Biology—PLDs

Below Basic	Basic	Proficient	Advanced
<p>A Biology student performing at this level demonstrates a limited conceptual understanding of science content and an ineffective application of skills and processes related to biological concepts.</p>	<p>A Biology student performing at this level demonstrates a partial conceptual understanding of science content and the application of skills and processes related to biological concepts.</p> <p>A student performing at the Basic Level:</p> <ul style="list-style-type: none"> • Recognizes scientific thinking, tools, and technologies in the study of biology. • Identifies cell structures and their functions. • Identifies the characteristics of life. • Recognizes the hierarchy of biological organization. • Recognizes the unique properties of water that support life on Earth. • Recognizes biological macromolecules and their basic functions. • Identifies the role of enzymes as a catalyst and the factors that influence their activity. • Identifies energy transformations through appropriate cell structures. • Identifies structures and processes involved in the movement of materials into, out of, and within a cell. • Identifies the benefits of homeostasis. • Identifies the events and/or outcomes of the cell cycle and nuclear division. • Recognizes the role of DNA in inheritance and protein synthesis. • Recognizes patterns of inheritance. • Recognizes the impacts of genetic engineering. • Defines the scientific terms: hypothesis, inference, law, theory, principle, fact, and observation. • Identifies mechanisms and evidence related to the theory of evolution. • Recognizes the hierarchy of the levels of organization in the biosphere. • Identifies biotic and abiotic components in an ecosystem. • Recognizes interactions and relationships in an ecosystem. • Recognizes that ecosystems change in response to natural and human disturbances. 	<p>A Biology student performing at this level demonstrates a general conceptual understanding of science content and the application of skills and processes related to biological concepts.</p> <p>A student performing at the Proficient Level:</p> <ul style="list-style-type: none"> • Applies scientific thinking, processes, tools, and technologies in the study of biology. • Describes structural and functional similarities and differences between prokaryotes and eukaryotes. • Interprets relationships between structures and functions at various levels of biological organization. • Describes how the unique properties of water support life on Earth. • Describes and interprets relationships between structure and function at various levels of biochemical organization. • Explains the role of enzymes as a catalyst and the factors that influence their activity. • Describes cell structures and processes that transform energy in living systems. • Describes structures and processes involved in the movement of materials into, out of, and within a cell. • Explains mechanisms that permit organisms to maintain homeostasis. • Describes the three stages and the outcomes of the cell cycle. • Explains how genetic information is inherited, altered, and expressed. • Describes the processes associated with protein synthesis. • Explains the impacts of genetic engineering on medicine, forensics, and agriculture. • Distinguishes between the scientific terms: hypothesis, inference, law, theory, principle, fact, and observation. • Analyzes and explains the mechanisms and evidence related to the theory of evolution. • Describes ecological levels of organization in the biosphere. • Describes interactions and relationships in an ecosystem as they relate to energy flow, biotic components, biogeochemical cycles, and limiting factors. • Describes changes in an ecosystem in response to natural and human disturbances. 	<p>A Biology student performing at this Level demonstrates a thorough conceptual understanding of science content and the application of skills and processes related to biological concepts.</p> <p>A student performing at the Advanced Level:</p> <ul style="list-style-type: none"> • Evaluates the application of scientific reasoning, inventions, tools, and new technologies in the study of biology. • Analyzes structural and functional similarities and differences between prokaryotes and eukaryotes. • Evaluates relationships between structures and functions at various levels of biological organization. • Analyzes the unique properties of water and explains how they support life on Earth. • Evaluates relationships between structure and function at various levels of biochemical organization. • Analyzes and predicts how enzymes can regulate biochemical reactions within a cell. • Analyzes cell structures and processes that transform energy in living systems. • Analyzes and predicts how cell structures transport material into, out of, and within a cell. • Analyzes how organisms use feedback and response mechanisms to maintain homeostasis. • Compares and analyzes the three stages and the outcomes of the cell cycle. • Analyzes and predicts how genetic information is inherited, altered, and expressed. • Analyzes the processes associated with protein synthesis. • Predicts the impacts of genetic engineering on medicine, forensics, and agriculture. • Applies the scientific concepts: hypothesis, inference, law, theory, principle, fact, and observation. • Evaluates the mechanisms and sources of evidence related to the theory of evolution. • Compares ecological levels of organization in the biosphere. • Analyzes interactions and relationships in an ecosystem as they relate to energy flow, biotic components, biogeochemical cycles, and limiting factors. • Predicts changes in an ecosystem in response to natural and human disturbances.

DRAFT
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These Proficiency Level Descriptors are currently in draft form. These descriptors will become finalized during the Standards Setting process after the 2011 Spring test administration.