

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"> <li>Recognizes scientific thinking, tools, and technologies in the study of biology.</li> <li>Identifies cell structures and their functions.</li> <li>Identifies the characteristics of life.</li> <li>Recognizes the hierarchy of biological organization.</li> <li>Recognizes the unique properties of water that support life on Earth.</li> <li>Recognizes biological macromolecules and their basic functions.</li> <li>Identifies the role of enzymes as a catalyst and the factors that influence their activity.</li> <li>Identifies energy transformations through appropriate cell structures.</li> <li>Identifies structures and processes involved in the movement of materials into, out of, and within a cell.</li> <li>Identifies the benefits of homeostasis.</li> <li>Identifies the events and/or outcomes of the cell cycle and nuclear division.</li> <li>Recognizes the role of DNA in inheritance and protein synthesis.</li> <li>Recognizes patterns of inheritance.</li> <li>Recognizes the impacts of genetic engineering.</li> <li>Defines the scientific terms: hypothesis, inference, law, theory, principle, fact, and observation.</li> <li>Identifies mechanisms and evidence related to the theory of evolution.</li> <li>Recognizes the hierarchy of the levels of organization in the biosphere.</li> <li>Identifies biotic and abiotic components in an ecosystem.</li> <li>Recognizes interactions and relationships in an ecosystem.</li> <li>Recognizes that ecosystems change in response to natural and human disturbances.</li> </ul>	<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"> <li>Applies scientific thinking, processes, tools, and technologies in the study of biology.</li> <li>Describes structural and functional similarities and differences between prokaryotes and eukaryotes.</li> <li>Interprets relationships between structures and functions at various levels of biological organization.</li> <li>Describes how the unique properties of water support life on Earth.</li> <li>Describes and interprets relationships between structure and function at various levels of biochemical organization.</li> <li>Explains the role of enzymes as a catalyst and the factors that influence their activity.</li> <li>Describes cell structures and processes that transform energy in living systems.</li> <li>Describes structures and processes involved in the movement of materials into, out of, and within a cell.</li> <li>Explains mechanisms that permit organisms to maintain homeostasis.</li> <li>Describes the three stages and the outcomes of the cell cycle.</li> <li>Explains how genetic information is inherited, altered, and expressed.</li> <li>Describes the processes associated with protein synthesis.</li> <li>Explains the impacts of genetic engineering on medicine, forensics, and agriculture.</li> <li>Distinguishes between the scientific terms: hypothesis, inference, law, theory, principle, fact, and observation.</li> <li>Analyzes and explains the mechanisms and evidence related to the theory of evolution.</li> <li>Describes ecological levels of organization in the biosphere.</li> <li>Describes interactions and relationships in an ecosystem as they relate to energy flow, biotic components, biogeochemical cycles, and limiting factors.</li> <li>Describes changes in an ecosystem in response to natural and human disturbances.</li> </ul>	<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"> <li>Evaluates the application of scientific reasoning, inventions, tools, and new technologies in the study of biology.</li> <li>Analyzes structural and functional similarities and differences between prokaryotes and eukaryotes.</li> <li>Evaluates relationships between structures and functions at various levels of biological organization.</li> <li>Analyzes the unique properties of water and explains how they support life on Earth.</li> <li>Evaluates relationships between structure and function at various levels of biochemical organization.</li> <li>Analyzes and predicts how enzymes can regulate biochemical reactions within a cell.</li> <li>Analyzes cell structures and processes that transform energy in living systems.</li> <li>Analyzes and predicts how cell structures transport material into, out of, and within a cell.</li> <li>Analyzes how organisms use feedback and response mechanisms to maintain homeostasis.</li> <li>Compares and analyzes the three stages and the outcomes of the cell cycle.</li> <li>Analyzes and predicts how genetic information is inherited, altered, and expressed.</li> <li>Analyzes the processes associated with protein synthesis.</li> <li>Predicts the impacts of genetic engineering on medicine, forensics, and agriculture.</li> <li>Applies the scientific concepts: hypothesis, inference, law, theory, principle, fact, and observation.</li> <li>Evaluates the mechanisms and sources of evidence related to the theory of evolution.</li> <li>Compares ecological levels of organization in the biosphere.</li> <li>Analyzes interactions and relationships in an ecosystem as they relate to energy flow, biotic components, biogeochemical cycles, and limiting factors.</li> <li>Predicts changes in an ecosystem in response to natural and human disturbances.</li> </ul>

**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.