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AP Biology B

1. **Energy and Enzymes (20.00%)**

Learning Targets

1.1 I can discuss environmental impacts on enzyme function and ideal enzymatic conditions.

Learning Target	Descriptor	Definition
4	Proficient	I can discuss environmental impacts on enzyme function and ideal enzymatic conditions.
3	Developing	I can explain how changes in enzyme structure affect function.
2	Basic	I can explain how enzymes affect the rate of chemical reactions.
1	Minimal	I can describe enzyme structure and function.
0	No Evidence	No evidence shown.

1.2 I can interpret and analyze data collected from the cheese lab pertaining to environmental impacts of enzymes and ideal conditions.

Learning Target	Descriptor	Definition
4	Proficient	I can interpret and analyze data collected from the cheese lab pertaining to environmental impacts of enzymes and ideal conditions.
3	Developing	I can design a cheese lab and choose accurate methods of representing data (charts, graphs, etc.).
2	Basic	I can describe the purpose (the background and the "why" of the experiment) for guided and inquiry-based cheese labs.
1	Minimal	I can write a hypothesis for guided and inquiry-based cheese labs.
0	No Evidence	No evidence shown.

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2. **Cellular Respiration and Photosynthesis (20.00%)**

Learning Targets

2.1 I can speculate, and support with evidence, the effects of any disruptions or changes in the process of photosynthesis.

Learning Target	Descriptor	Definition
4	Proficient	I can speculate, and support with evidence, the effects of any disruptions or changes in the process of photosynthesis.
3	Developing	I can describe the reactants, steps, and products of the light-dependent reaction
2	Basic	I can describe the reactants, steps, and products of the light-dependent reaction
1	Minimal	I can describe the origins of Earth's oxygenated atmosphere.
0	No Evidence	No evidence shown.

2.2 I can speculate, and support with evidence, the effects of any disruptions or changes in the process of cellular respiration.

Learning Target	Descriptor	Definition
4	Proficient	I can speculate, and support with evidence, the effects of any disruptions or changes in the process of cellular respiration.
3	Developing	I can trace the path of glucose and its products through glycolysis, the Krebs cycle, and the electron transport chain.
2	Basic	I can describe the reactants and products of glycolysis, the Krebs Cycle, and the electron transport chain.
1	Minimal	I can identify the steps and equation of cellular respiration.
0	No Evidence	No evidence shown.

3. **Cell Communication (20.00%)**

Learning Targets

3.1 I can describe the impact of the environment in eliciting a cellular response and what those responses could be.

Learning Target	Descriptor	Definition
4	Proficient	I can describe the impact of the environment in eliciting a cellular response and what those responses could be.
3	Developing	I can describe the role of components of a signal transduction pathway in producing a cellular response.
2	Basic	I can describe reception and transduction for G-coupled protein receptors, enzyme-mediated receptors, and ligand gated ion channels.

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Learning Target	Descriptor	Definition
1	Minimal	I can define the types of cell signaling and describe when they are used.
0	No Evidence	No evidence shown.

3.2 I can apply knowledge of cell communication to the functioning of immune defenses and ELISA immunology tests.

Learning Target	Descriptor	Definition
4	Proficient	I can apply knowledge of cell communication to the functioning of immune defenses and ELISA immunology tests.
3	Developing	I can relate immune responses, including the cells and proteins involved, to autoimmune diseases and cell communication.
2	Basic	I can describe an immune response before and after vaccination.
1	Minimal	I can define the two different immune responses.
0	No Evidence	No evidence shown.

3.3 I can explain how positive feedback affects homeostasis.

Learning Target	Descriptor	Definition
4	Proficient	I can explain how positive feedback affects homeostasis.
3	Developing	I can explain how negative feedback affects homeostasis.
2	Basic	I can define homeostasis, negative feedback, and positive feedback.
1	Minimal	I can identify parts of the nervous system and neurons.
0	No Evidence	No evidence shown.

3.4 I can discuss the consequences of a build up of mutations and improper cell cycle control.

Learning Target	Descriptor	Definition
4	Proficient	I can discuss the consequences of a build up of mutations and improper cell cycle control.
3	Developing	I can explain how checkpoints as well as cyclins/cyclin dependent kinases maintain the cell cycle.
2	Basic	I can describe the role and phases of mitosis.
1	Minimal	I can describe the phases of the cell cycle.
0	No Evidence	No evidence shown.

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5 I can use my knowledge of scientific roots to deduce the meanings of biological terms.

Learning Target	Descriptor	Definition
4	Proficient	I can use my knowledge of scientific roots to deduce the meanings of biological terms.
3	Developing	I can use my knowledge of scientific roots to identify words related to a root.
2	Basic	I can sort scientific roots into prefixes and suffixes
1	Minimal	I can identify scientific roots, prefixes, and suffixes.
0	No Evidence	No evidence shown.

4. Heredity (20.00%)

Learning Targets

4.1 I can describe the effects of disruptions to the cell cycle on the cell or organism.

Learning Target	Descriptor	Definition
4	Proficient	I can describe the effects of disruptions to the cell cycle on the cell or organism.
3	Developing	I can describe the role of checkpoints in regulating the cell cycle.
2	Basic	I can explain how mitosis results in the transmission of chromosomes from one generation to the next.
1	Minimal	I can describe the events that occur in the cell cycle.
0	No Evidence	No evidence shown.

4.2 I can conduct a mitosis lab, use data to run a Chi Square test and analyze the results.

Learning Target	Descriptor	Definition
4	Proficient	I can conduct a mitosis lab, use data to run a Chi Square test and analyze the results.
3	Developing	I can perform most steps of a Chi Square test correctly, given data, without assistance.
2	Basic	I can perform a Chi Square test with notes or assistance.
1	Minimal	I can define degrees of freedom and identify degrees of freedom for a particular problem.
0	No Evidence	No evidence shown.

4.3 I can explain how the process of meiosis generates genetic diversity.

Learning Target	Descriptor	Definition
4	Proficient	I can explain how the process of meiosis generates genetic diversity.
3	Developing	I can compare/contrast mitosis and meiosis.
2	Basic	I can explain how meiosis results in the transmission of chromosomes from one generation to the next.

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Learning Target	Descriptor	Definition
1	Minimal	I can describe the practical uses of meiosis in sexual reproduction.
0	No Evidence	No evidence shown.

4.4 I can interpret Mendel's laws of dominance and recessiveness by creating accurate pedigrees and performing all crosses using probability math.

Learning Target	Descriptor	Definition
4	Proficient	I can interpret Mendel's laws of dominance and recessiveness by creating accurate pedigrees and performing all crosses using probability math.
3	Developing	I can use a pedigree to follow a trait through a family and determine how the trait is transmitted.
2	Basic	I can perform mono and dihybrid crosses using Punnet squares.
1	Minimal	I can explain how shared, conserved, fundamental processes and features support the concept of common ancestry for all organisms.
0	No Evidence	No evidence shown.

4.5 I can use data to determine gene linkage and create a linkage map of those genes on a chromosome.

Learning Target	Descriptor	Definition
4	Proficient	I can use data to determine gene linkage and create a linkage map of those genes on a chromosome.
3	Developing	I can use recombination data to determine if genes are linked.
2	Basic	I can use a karyotype to diagnose disorders and chromosomal abnormalities.
1	Minimal	I can explain how incomplete dominance, codominance, and sex-linked traits are deviations from Mendelian genetics.
0	No Evidence	No evidence shown.

4.6 I can use my knowledge of scientific roots to deduce the meanings of biological terms.

Learning Target	Descriptor	Definition
4	Proficient	I can use my knowledge of scientific roots to deduce the meanings of biological terms.
3	Developing	I can use my knowledge of scientific roots to identify words related to a root.
2	Basic	I can sort scientific roots into prefixes and suffixes
1	Minimal	I can identify scientific roots, prefixes, and suffixes.

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Learning Target	Descriptor	Definition
0	No Evidence	No evidence shown.

5. Gene Expression and Regulation (20.00%)

Learning Targets

5.1 I can describe the process of polymerase chain reaction (and the enzymes involved) and the purpose of the process.

Learning Target	Descriptor	Definition
4	Proficient	I can describe the process of polymerase chain reaction (and the enzymes involved) and the purpose of the process.
3	Developing	I can describe the mechanisms by which genetic information is copied for transmission between generations.
2	Basic	I can describe the characteristics of DNA that allow it to be used as a hereditary material.
1	Minimal	I can describe the structures involved in passing hereditary information from one generation to the next.
0	No Evidence	No evidence shown.

5.2 I can discuss the process and importance of RNA processing in creating different proteins .

Learning Target	Descriptor	Definition
4	Proficient	I can discuss the process and importance of RNA processing in creating different proteins .
3	Developing	I can describe/diagram the process of transcription.
2	Basic	I can discuss the possible consequences of mutations in codons resulting from incorrect transcription.
1	Minimal	I can diagram an operon on DNA before transcription
0	No Evidence	No evidence shown.

5.3 I can predict effects of DNA mutations in polypeptide production.

Learning Target	Descriptor	Definition
4	Proficient	I can predict effects of DNA mutations in polypeptide production.
3	Developing	I can determine an amino acid sequence given DNA or RNA bases.
2	Basic	I can describe/diagram the process of translation.
1	Minimal	I can list the components and their functions in translation.

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Learning Target	Descriptor	Definition
0	No Evidence	No evidence shown.

5.4 I can explain the connection between the regulation of gene expression and phenotypic differences in cells and organisms.

Learning Target	Descriptor	Definition
4	Proficient	I can explain the connection between the regulation of gene expression and phenotypic differences in cells and organisms.
3	Developing	I can explain how transcription factors and promoter regions affect gene expression or the phenotype of the organism.
2	Basic	I can explain how the location of regulatory sequences relates to their function.
1	Minimal	I can describe the types of interactions that regulate gene expression.
0	No Evidence	No evidence shown.

5.5 I can conduct and analyze results of a bacterial transformation lab.

Learning Target	Descriptor	Definition
4	Proficient	I can conduct and analyze results of a bacterial transformation lab.
3	Developing	I can explain the use of genetic engineering techniques in analyzing or manipulating DNA
2	Basic	I can explain how alterations in DNA sequences contribute to variation that can be subject to natural selection.
1	Minimal	I can explain how changes in genotype may result in changes in phenotype.
0	No Evidence	No evidence shown.

5.6 I can conduct a gel electrophoresis lab and use proper graphing and statistics to analyze results.

Learning Target	Descriptor	Definition
4	Proficient	I can conduct a gel electrophoresis lab and use proper graphing and statistics to analyze results.
3	Developing	I can explain how differences in DNA sequences can result in differing banding patters in gel electrophoresis.
2	Basic	I can describe the role of restriction enzymes in gel electrophoresis.
1	Minimal	I can describe the process of PCR and gel electrophoresis.
0	No Evidence	No evidence shown.

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5.7 I can use my knowledge of scientific roots to deduce the meanings of biological terms.

Learning Target	Descriptor	Definition
4	Proficient	I can use my knowledge of scientific roots to deduce the meanings of biological terms.
3	Developing	I can use my knowledge of scientific roots to identify words related to a root.
2	Basic	I can sort scientific roots into prefixes and suffixes
1	Minimal	I can identify scientific roots, prefixes, and suffixes.
0	No Evidence	No evidence shown.

Submitted on 11/9/2021 by Crystal Odegard