Wallenpaupack Area School District
Planned Course Curriculum Guide

Department: Science

Name of Course: Biology
*Biology CP

Course Description:

Biology and *Biology CP – This course is taught with an emphasis on biological concepts. An inquiry-based, hands-on approach is used when appropriate. Topics include characteristics of life, compounds of life, cells, homoeostasis, cellular energy, cell division, DNA, genetics, and evolution. The focal point of this course is to better prepare our high school students to investigate and understand these topics as they are related to the Pennsylvania State Science Standards and the Common Core.

Revision Date: June 2014

Wallenpaupack Area School District Curriculum	
COURSE: Biology and *Biology CP	GRADE/S: 10th
UNIT 1: Review of 9th Grade Science	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.10.A9:

- Compare and contrast scientific theories.
- Know that both direct and indirect observations are used by scientists to study the natural world and universe.
- Identify questions and concepts that guide scientific investigations.
- Formulate and revise explanations and models using logic and evidence.
- Recognize and analyze alternative explanations and models.
- Explain the importance of accuracy and precision in making valid measurement

3.1.12.A9:

- Compare and contrast scientific theories.
- Know that both direct and indirect observations are used by scientists to study the natural world and universe.
- Identify questions and concepts that guide scientific investigations.
- Formulate and revise explanations and models using logic and evidence.
- Recognize and analyze alternative explanations and models.
- Explain the importance of accuracy and precision in making valid measurements.
- Examine the status of existing theories.
- Evaluate experimental information for relevance and adherence to science processes.
- Judge that conclusions are consistent and logical with experimental conditions.
- Interpret results of experimental research to predict new information, propose additional investigable questions, or advance a solution.
- Communicate and defend a scientific argument.

3.1.10.B6:

- Compare and contrast scientific theories.

- Know that both direct and indirect observations are used by scientists to study the natural world and universe.
- Identify questions and concepts that guide scientific investigations.
- Formulate and revise explanations and models using logic and evidence.
- Recognize and analyze alternative explanations and models.
- Explain the importance of accuracy and precision in making valid measurements.

3.1.12.B6:

- Examine the status of existing theories.
- Evaluate experimental information for relevance and adherence to science processes.
- Judge that conclusions are consistent and logical with experimental conditions.
- Interpret results of experimental research to predict new information, propose additional investigable questions, or advance a solution.
- Communicate and defend a scientific argument.

3.1.10.C4:

- Compare and contrast scientific theories.
- Know that both direct and indirect observations are used by scientists to study the natural world and universe.
- Identify questions and concepts that guide scientific investigations.
- Formulate and revise explanations and models using logic and evidence.
- Recognize and analyze alternative explanations and models.
- Explain the importance of accuracy and precision in making valid measurements.

3.1.12.C4:

- Examine the status of existing theories.
- Evaluate experimental information for relevance and adherence to science processes.
- Judge that conclusions are consistent and logical with experimental conditions.
- Interpret results of experimental research to predict new information, propose additional investigable questions, or advance a solution.
- Communicate and defend a scientific argument.

4.1.10.A:

Examine the effects of limiting factors on population dynamics.

- Analyze possible causes of population fluctuations.
- Explain the concept of carrying capacity in an ecosystem.
- Describe how organisms become classified as threatened or endangered.
- Describe how limiting factors cause organisms to become extinct.

4.1.10.D: Research practices that impact biodiversity in specific ecosystems.

- Analyze the relationship between habitat changes to plant and animal population fluctuations.

4.1.10.E: Analyze how humans influence the pattern of natural changes (e.g. primary / secondary succession and desertification) in ecosystems over time.

4.1.10.F:

- Compare and contrast scientific theories.
- Know that both direct and indirect observations are used by scientists to study the natural world and universe.
- Identify questions and concepts that guide scientific investigations.
- Formulate and revise explanations and models using logic and evidence.
- Recognize and analyze alternative explanations and models.

4.3.12.A: Evaluate the advantages and disadvantages of using renewable and nonrenewable resources.

- Explain how consumption rate affects the sustainability of resource use.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Explain the scientific method.
- Compare and contrast the scientific definition for theory and hypothesis.
- Analyze the difference between what is and what is not science.
- Evaluate energy flow through ecosystems (food chains, food webs, energy pyramids).
- Compare and contrast biogeochemical cycles (nitrogen, phosphorous, carbon, water).
- Compare and contrast primary and secondary succession.
- Analyze population growth curves (exponential growth, logistic growth, carrying capacity, limiting factors).
- Evaluate the threats to biodiversity.

- Arrange the levels of classification from most inclusive to least inclusive.
- Compare and contrast the characteristics of organisms found in the six kingdoms.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes
- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: abiotic factor, biodiversity, biogeochemical cycle, biome, biosphere, biotic, carbon cycle, carrying capacity, consumer, desertification, ecosystem, endangered species, energy pyramids, endemic species, evolution, extinction, family, food chain, food web, geochemical cycles, habitat, hydrologic cycle, hypothesis, law (scientific), limiting factor, mechanism (scientific), niche, nonnative species, nonrenewable resource, population, population dynamics, predator-prey, principal (scientific), producer (ecological), renewable resources, resource, succession, species, succession, sustainability, symbiotic, terrestrial, theory (scientific), trophic level, and water cycle

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments
- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better
- Summative Assessments score of 70% or better

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

Teacher /student individualized instruction to include...

- typed notes
- guided questions

- textbook review
- audio textbook

Advanced Student – Extension

Teacher /student individualized instruction to include...

*Student assignments are more in-depth, critical thinking incorporated increased independent work, and more challenging assessments.

RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Biology Foundation by Miller & Levine

*Biology by Miller & Levine

RESOURCE SPECIFIC VOCABULARY: abiotic factor, algal bloom, animalia, archaea, archaebacteria, autotroph, bacteria, binomial nomenclature, biodiversity, biogeochemical cycle, biological magnification, biomass, biome, biosphere, biotic factor, class, carnivore, carrying capacity, climate, commensalism, community, competitive exclusion principle, consumer, controlled experiment, data, decomposer, deforestation, denitrification, density-dependent limiting factor, density-independent limiting factor, desertification, detritus, detritivore, domain, ecological pyramid, ecological succession, ecology, ecosystem, ecosystem diversity, endangered species, eubacteria, eukarya, evaporation, exponential growth, extinction, family, food chain, food web, fungi, genetic diversity, genus, habitat, habitat fragmentation, herbivore, heterotroph, hypothesis, inference, invasive species, kingdom, limiting factor, limiting nutrient, logistic growth, manipulated variable, microclimate, mutualism, niche, nitrogen fixation, nonrenewable resource, nutrient, observation, omnivore, order, parasitism, photosynthesis, phylum, phytoplankton, pioneer species, plankton, plantae, pollutant, population, population density, predation, predator-prey relationship, primary productivity, primary succession, producer, protista, renewable resources, resource, responding variable, salt marsh, science, secondary succession, species, species diversity, sustainable development, symbiosis, taxon, taxonomy, ten percent rule, theory, tolerance, transpiration, trophic level

Wallenpaupack Area School District Curriculum	
COURSE: Biology and *Biology CP	GRADE/S: 10th
UNIT 2: Characteristics and Compounds of Life	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.10.A1: Explain the characteristics of life common to all organisms.

3.1.10.A2: Explain cell processes in terms of chemical reactions and energy changes.

3.1.10.A3: Compare and contrast the life cycles of different organisms.

3.1.10.A7: Describe the relationship between the structure of organic molecules and the function they serve in living organisms. Explain how cells store and use information to guide their functions.

3.1.12.A1: Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.

3.1.12.A2: Evaluate how organisms must derive energy from their environment or their food in order to survive.

3.1.12.A7: Evaluate metabolic activities using experimental knowledge of enzymes.

Describe the potential impact of stem cell research on the biochemistry and physiology of life.

3.1.10.B5: PATTERNS Use models to demonstrate patterns in biomacromolecules.

Compare and contrast Mendelian and non-Medalian patterns of inheritance.

3.1.12.B5: PATTERNS Relate the monomer structure of biomacromolecules to their functional roles.

CC.3.5.9-10.A Cite specific textual evidence to support analysis of science and technical texts, attending to the

precise details of explanations or descriptions.

CC.3.5.9-10.B. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CC.3.5.9-10.D Determine the meaning of symbols, key terms, and other domain-specific words

and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.J. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

CC.3.5.11-12.B. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Describe the characteristics common to all living organisms.
- Analyze the differences between the structure and function of the basic compounds of life.
- Evaluate food labels for content of various compounds of life.
- Interpret why enzymes are important to living things.
- Examine factors that affect enzyme function in living organisms.
- Compare and contrast asexual and sexual reproduction.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes
- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: adhesion, asexual reproduction, atom, biology, bio-

macromolecules, carbohydrate, catalyst, cell, cohesion, compounds, deoxyribonucleic acid (DNA), element, enzyme, freezing point, homeostasis, homeostatic mechanism, hydrogen bonds, lipid, mixture, molecule, monomer, multicellular, nucleic acid, nucleus, organic molecule, organisms, pH, protein, sexual reproduction, specific heat, and unicellular

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments
- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better
- Summative Assessments score of 70% or better

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

Teacher /student individualized instruction to include...

- typed notes
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- textbook review
- audio textbook

Advanced Student – Extension

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*Student assignments are more in-depth, critical thinking incorporated increased independent work, and more challenging assessments.

RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Biology Foundation by Miller & Levine

*Biology by Miller & Levine

RESOURCE SPECIFIC VOCABULARY: acid, activation energy, adhesion, amino acid, asexual reproduction, atom, base, biology, buffer, carbohydrate, catalyst, cell, cellulose, chemical reaction, cohesion, compound, covalent bond, dehydration synthesis, deoxyribonucleic acid (DNA), electron, element, enzyme, glucose, glycogen, homeostasis, hydrolysis, ion, ionic bond, isotope, lipid, metabolism, mixture, molecule, monomer, monosaccharide, nucleic acid,

nucleotide, nucleus, pH scale, polar molecule, polymer, polymerization, polysaccharide, product, protein, reactant, ribonucleic acid (RNA), science, sexual reproduction, solute, solution, solvent, starch, stimulus, substrate, and suspension

Wallenpaupack Area School District Curriculum	
COURSE: Biology and *Biology CP	GRADE/S: 10th
UNIT 3: Cells	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.10.A5: Relate life processes to sub-cellular and cellular structures to their functions.

3.1.10.A6: Identify the advantages of multi-cellularity in organisms.

3.1.12.A5: Analyze how structure is related to function at all levels of biological organization from molecules to organisms.

3.1.12.A6: Analyze how cells in different tissues/organs are specialized to perform specific functions.

CC.3.5.9-10.A Cite specific textual evidence to support analysis of science and technical texts, attending to the
precise details of explanations or descriptions.

CC.3.5.9-10.B. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CC.3.5.9-10.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

CC.3.5.9-10.D Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.I. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous

explanations or accounts.

CC.3.5.9-10.J. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

CC.3.5.11-12.B. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Explain cell theory.
- Categorize cells as prokaryotic and eukaryotic.
- Use a microscope to examine, identify, classify, and sketch cell organelles.
- Compare and contrast plant and animal cells.
- Calculate the size of organisms using a microscope.
- Categorize and describe the structure and function of organelles in eukaryotic cells.
- Distinguish between the four levels of organization in multicellular organisms.
- Relate cell specialization to multicellular organisms.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes
- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: cell, chloroplast, chromosome, endoplasmic reticulum, eukaryote, extracellular, Golgi apparatus, mitochondrion, nucleus, organ, organ system, organelle, plasma membrane, plastids, prokaryote, red blood cells, ribosome, tissue,

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments

- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better
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DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

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RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Biology Foundation by Miller & Levine

*Biology by Miller & Levine

RESOURCE SPECIFIC VOCABULARY: cell, cell membrane, cell specialization, cell theory, cell wall, centriole, chloroplast, chromatin, chromosome, cytoplasm, cytoskeleton, endoplasmic reticulum, eukaryote, extracellular, flagella, Golgi apparatus, intracellular, lysosome, microfilament, microtubule, microvilli, mitochondrion, nucleus, nuclear envelope, nucleolus, organ, organ system, organelle, osmosis, plastids, prokaryote, ribosome, tissue, vacuole, and vesicles.

Wallenpaupack Area School District Curriculum	
COURSE: Biology and *Biology CP	GRADE/S: 10th
UNIT 4: Homeostasis	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.12.A1: Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.

3.1.12.A8: CHANGE AND CONSTANCY Describe and interpret dynamic changes in stable systems

CC.3.5.9-10.A Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

CC.3.5.9-10.B. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CC.3.5.9-10.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

CC.3.5.9-10.D Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.H. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.

CC.3.5.9-10.J. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

CC.3.5.11-12.B. Determine the central ideas or conclusions of a text; summarize complex

concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Interpret the relationship between cell membrane structure and its function.
- Compare and contrast the processes of osmosis and diffusion.
- Apply knowledge of the importance of osmosis and diffusion to existence of life on Earth.
- Evaluate the effects of cells placed in hypertonic, hypotonic, and isotonic solutions.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes
- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: active transport, carrier (transport) proteins, concentration, concentration gradient, diffusion, endocytosis, equilibrium, exocytosis, facilitated diffusion, impermeable, intracellular, osmosis, passive transport, and pumps (ion or molecular)

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments
- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better
- Summative Assessments score of 70% or better

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

Teacher /student individualized instruction to include...

- typed notes
- guided questions
- textbook review
- audio textbook

Advanced Student – Extension

Teacher /student individualized instruction to include...

*Student assignments are more in-depth, critical thinking incorporated increased independent work, and more challenging assessments.

RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Biology Foundation by Miller & Levine

*Biology by Miller & Levine

RESOURCE SPECIFIC VOCABULARY: active transport, carrier (transport) proteins, cell membrane, cell receptors, cell wall, concentration, contractile vacuole, cytolysis, diffusion, endocytosis, equilibrium, exocytosis, facilitated diffusion, fluid-mosaic model, homeostasis, hydrophilic, hydrophobic, hypertonic, hypotonic, impermeable, isotonic, lipid bilayer, osmosis, passive transport, permeable, phagocytosis, pinocytosis, plasmolysis, selectively permeable, solute, solution, and solvent.

Wallenpaupack Area School District Curriculum	
COURSE: Biology and *Biology CP	GRADE/S: 10th
UNIT 5: Cellular Energy	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.10.A2: Explain cell processes in terms of chemical reactions and energy changes.

3.1.12.A2: Evaluate how organisms must derive energy from their environment or their food in order to survive.

4.1.10.C: Evaluate the efficiency of energy flow within a food web.

Describe how energy is converted from one form to another as it moves through a food web (photosynthetic, geothermal).

CC.3.5.9-10.A Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

CC.3.5.9-10.B. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CC.3.5.9-10.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

CC.3.5.9-10.D Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.I. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

CC.3.5.9-10.J. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

CC.3.5.11-12.B. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Explain the role of ATP in photosynthesis and cellular respiration.
- Interpret the role of the light and chlorophyll in photosynthesis.
- Compare and contrast the processes of photosynthesis and respiration.
- Explain the chemical equations for photosynthesis and respiration.
- Distinguish between aerobic and anaerobic respiration.
- Analyze the relationship between the plant structures and their functions.
- Describe the cyclical nature of the energy transformations in photosynthesis and respiration.
- Describe the cyclical nature of matter in photosynthesis and respiration.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes
- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: adenosine triphosphate (ATP), bioenergetics, cellular respiration, energy transformation, and photosynthesis

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments
- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better
- Summative Assessments score of 70% or better

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

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RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Biology Foundation by Miller & Levine

*Biology by Miller & Levine

RESOURCE SPECIFIC VOCABULARY: adenosine triphosphate (ATP), aerobic, anaerobic, autotroph, Calvin cycle, cellular respiration, chlorophyll, electron transport chain, fermentation, glycolysis, guard cells, heterotroph, Krebs cycle, lactic acid, light-dependent reactions, NAD^+, $NADP^+$, photosynthesis, photosystem, pigment, stomata, stroma, thylakoid, and transpiration

Wallenpaupack Area School District Curriculum	
COURSE: Biology and *Biology CP	GRADE/S: 10th
UNIT 6: Cell Division	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.10.A4: Describe the cell cycle and the process and significance of mitosis.

3.1.10.A6: Identify the advantages of multi-cellularity in organisms.

3.1.12.A4: Explain how the cell cycle is regulated.

3.1.10.B1: Describe how genetic information is inherited and expressed.

3.1.12.B2: Evaluate the process of sexual reproduction in influencing genetic variability in a population.

CC.3.5.9-10.A. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

CC.3.5.9-10.B. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CC.3.5.9-10.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

CC.3.5.9-10.D Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.I. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

CC.3.5.9-10.J. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

CC.3.5.11-12.B. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Calculate the surface area to volume ratio of model cells and evaluate its significance.
- Analyze and classify the stages of cell division in plant and animal cells.
- Explain the factors that regulate the cell cycle.
- Interpret the ways cancer cells are different from normal cells
- Compare and contrast the differences between meiosis and mitosis.
- Predict the outcome of nondisjunction during meiosis.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes
- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: cell cycle, crossing-over, cytokinesis, gamete, gene recombination, interphase, meiosis, and mitosis

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments
- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better
- Summative Assessments score of 70% or better

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

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RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

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*Biology by Miller & Levine

RESOURCE SPECIFIC VOCABULARY: anaphase, asexual reproduction, budding, cancer, cell cycle, cell division, centriole, centromere, chromatid, chromatin, chromosomes, crossing-over, cyclin, cytokinesis, daughter cell, diploid, gamete, gametogenesis, gene map, haploid, homologous, interphase, meiosis, metaphase, mitosis, nondisjunction, oogenesis, polar bodies, prophase, sexual reproduction, spermatogenesis, spindle, surface area to volume ratio, telophase, and tetrad

Wallenpaupack Area School District Curriculum	
COURSE: Biology and *Biology CP	GRADE/S: 10th
UNIT 7: DNA	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.10.A7: Describe the relationship between the structure of organic molecules and the function they serve in living organisms. Explain how cells store and use information to guide their functions.

3.1.12.A7: Evaluate metabolic activities using experimental knowledge of enzymes.
Describe the potential impact of stem cell research on the biochemistry and physiology of life.

3.1.10.B1: Describe how genetic information is inherited and expressed.

3.1.10.B2: Explain the process of meiosis resulting in the formation of gametes. Compare and contrast the function of mitosis and meiosis.

3.1.10.B3: Describe the basic structure of DNA and its function in genetic inheritance.Describe the role of DNA in protein synthesis as it relates to gene expression.

3.1.10.B4: Explain how genetic technologies have impacted the fields of medicine, forensics, and agriculture.

3.1.12.B1: Explain gene inheritance and expression at the molecular level.

3.1.12.B3: Analyze gene expression at the molecular level. Explain the impact of environmental factors on gene expression.

3.1.12.B4: Evaluate the societal impact of genetic engineering techniques and applications.

3.1.12.B5: PATTERNS Relate the monomer structure of biomacromolecules to their functional roles.

3.4.12.B1: Analyze ethical, social, economic, and cultural considerations as related to the development, selection, and use of technologies.

3.4.10.E1: Assess how medical technologies over time have impacted prevention and rehabilitation, vaccines and pharmaceuticals, medical and surgical procedures, and genetic engineering.

4.4.10.C: Analyze how agricultural sciences and technologies strive to increase efficiency while balancing the needs of society with the conservation of our natural resources.

4.4.10.D: Evaluate the use of technologies to increase plant and animal productivity.

CC.3.5.9-10.A . Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

CC.3.5.9-10.B. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CC.3.5.9-10.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

CC.3.5.9-10.D Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.F. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.H. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.

CC.3.5.9-10.I. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

CC.3.5.9-10.J. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

CC.3.5.11-12.B. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Arrange genes, DNA, and chromosomes based on their structure and function.
- Create and label models of DNA.
- Conduct an interactive simulation of DNA replication.
- Synthesize a protein molecule given a DNA sequence.
- Predict the result of various DNA mutations on protein synthesis.
- Compare and contrast DNA and RNA.
- Evaluate the use of biotechnology on society including, DNA fingerprinting, cloning, gene therapy, the human genome project, stem cells, transgenic organisms.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes
- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: biotechnology, cloning, DNA, DNA replication, forensics, frame-shift mutation, gene, genetic engineering, gene expression, gene splicing, gene therapy, genetic engineering, genetically modified organism, mutation, point mutation, protein synthesis, semiconservative replication, stem cells, transcription, and translation

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments
- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better
- Summative Assessments score of 70% or better

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

Teacher /student individualized instruction to include...

- typed notes
- guided questions
- textbook review
- audio textbook

Advanced Student – Extension

Teacher /student individualized instruction to include...

*Student assignments are more in-depth, critical thinking incorporated increased independent work, and more challenging assessments.

RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Biology Foundation by Miller & Levine

*Biology by Miller & Levine

RESOURCE SPECIFIC VOCABULARY: adenine, anticodon, base pairing, biotechnology, chromatin, clone, codon, cytosine, deletions, deoxyribose, differentiation, DNA, DNA fingerprinting, DNA polymerase, frame-shift mutation, gel electrophoresis, gene, gene splicing, gene therapy, genetic engineering, genetically modified organism, genome, guanine, histone, hox gene, hybridization, inbreeding, insertion, messenger RNA, missense mutation, mutation, nitrogenous bases, nonsense mutation, nucleic acid, nucleotide, phosphate group, plasmid, point mutation, polymerase chain reaction (PCR), recombinant DNA, replication, restriction enzyme, ribose, ribosomal RNA, ribosome, RNA polymerase, protein synthesis, selective breeding, silent mutation, stem cell, substitution, thymine, transcription, transfer RNA, transformation, transgenic, translation, and uracil

Wallenpaupack Area School District Curriculum	
COURSE: Biology and *Biology CP	GRADE/S: 10th
UNIT 8: Genetics	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.10.B1: Describe how genetic information is inherited and expressed.

3.1.10.B5: PATTERNS Use models to demonstrate patterns in biomacromolecules.

Compare and contrast Mendelian and non-Medalian patterns of inheritance.

3.1.12.B2: Evaluate the process of sexual reproduction in influencing genetic variability in a population.

3.1.12.B3: Analyze gene expression at the molecular level.Explain the impact of environmental factors on gene expression.

CC.3.5.9-10.A Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

CC.3.5.9-10.B. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CC.3.5.9-10.D Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.I. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

CC.3.5.9-10.J. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

CC.3.5.11-12.B. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Predict the outcomes of various crosses involving different types of inheritance (dominant, recessive, codominant, incomplete dominant, x-linked)
- Create and analyze pedigrees to determine patterns of inheritance.
- Conduct a blood typing experiment and analyze the results.
- Recognize the significance of probability on genetic inheritance.
- Distinguish between Mendelian and non-Mendelian genetics.
- Apply knowledge of genetics to understand genetic disorders.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes
- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: allele, chromosomal mutation, codominance, crossing-over, dominant inheritance, gamete, gene, gene expression, genetics, genotype, incomplete dominance, inheritance, meiosis, Mendelian patterns of inheritance, multiple alleles, nondisjunction, phenotype, polygenic traits, recessive inheritance, sex-linked trait and translocation

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments
- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better

- Summative Assessments score of 70% or better

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

Teacher /student individualized instruction to include...

- typed notes
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- textbook review
- audio textbook

Advanced Student – Extension

Teacher /student individualized instruction to include...

*Student assignments are more in-depth, critical thinking incorporated increased independent work, and more challenging assessments.

RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Biology Foundation by Miller & Levine

*Biology by Miller & Levine

RESOURCE SPECIFIC VOCABULARY: allele, allele frequency, autosome, codominance, crossing-over, diploid, DNA fingerprinting, fertilization, gamete, gene, gene map, gene recombination, gene shuffling, genetics, genotype, haploid, heredity, heterozygous, homologous, homozygous, hybrid, incomplete dominance, independent assortment, inheritance, inversion, karyotype, locus, meiosis, multiple alleles, nondisjunction, pedigree, phenotype, polygenic traits, translocation, probability, Punnett square, segregation, sex chromosome, sex-linked gene, tetrad, trait, true-breeding,

Wallenpaupack Area School District Curriculum	
COURSE: Biology and *Biology CP	GRADE/S: 10th
UNIT 9: Evolution	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.10.A6: Identify the advantages of multi-cellularity in organisms.

3.1.12.A1: Relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms.

3.1.12.A5: Analyze how structure is related to function at all levels of biological organization from molecules to organisms.

3.1.12.A8: CHANGE AND CONSTANCY Describe and interpret dynamic changes in stable systems

3.1.12.B2: Evaluate the process of sexual reproduction in influencing genetic variability in a population.

3.1.12.B3: Analyze gene expression at the molecular level. Explain the impact of environmental factors on gene expression.

3.1.10.C1: Explain the mechanisms of biological evolution.

3.1.10.C2: Explain the role of mutations and gene recombination in changing a population of organisms.

3.1.10.C3: CONSTANCY AND CHANGE Interpret data from fossil records, anatomy and physiology, and DNA studies relevant to the theory of evolution.

3.1.12.C1: Analyze how natural selection leads to speciation.

3.1.12.C2: Analyze how genotypic and phenotypic variation can result in adaptations that influence an organism's success in an environment.

3.1.12.C3: CONSTANCY AND CHANGE Analyze the evidence to support various theories of evolution (gradualism, punctuated equilibrium). Evaluate survival of the fittest in terms of species that have remained unchanged over long periods of time.

4.1.10.A: Examine the effects of limiting factors on population dynamics. Analyze possible causes of population fluctuations. Explain the concept of carrying capacity in an ecosystem. Describe how organisms become classified as threatened or endangered. Describe how limiting

factors cause organisms to become extinct.

4.1.12.A: Analyze the significance of biological diversity in an ecosystem.

- Explain how species adapt to limiting factors in an ecosystem.
- Analyze the differences between natural causes and human causes of extinction.

CC.3.5.9-10.A Cite specific textual evidence to support analysis of science and technical texts, attending to the
precise details of explanations or descriptions.

CC.3.5.9-10.B. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CC.3.5.9-10.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

CC.3.5.9-10.D Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.F. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.H. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.

CC.3.5.9-10.I. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

CC.3.5.9-10.J. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

CC.3.5.11-12.B. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Explain how organisms change over time by the process of evolution.
- Simulate natural selection and create a visual representation of changes in allele frequency.
- Predict changes in a population's traits given a change in the environment.
- Compare and contrast natural and artificial selection.
- Analyze different patterns of evolution (coevolution, convergent evolution, adaptive radiation, divergent evolution)
- Explain the origin of new variation in a population.
- Analyze the relationship between evolution and extinction of species.
- Explain various forms of evidence of evolution.
- Compare and contrast historical theories of evolution.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes
- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: adaptation, allele frequency, analogous structure, competition, endosymbiosis, environment, evolution, extinction, fossil, founder effect, genetic drift, geologic time, gradualism, homologous structure, isolating mechanism, law of superposition, limiting factor, natural selection, punctuated equilibrium, selective breeding, species, speciation, theory

of evolution, and vestigial organ

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments
- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better
- Summative Assessments score of 70% or better

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

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Advanced Student – Extension

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RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Biology Foundation by Miller & Levine

*Biology by Miller & Levine

RESOURCE SPECIFIC VOCABULARY: adaptation, adaptive radiation, analogous structure, artificial selection, behavioral isolation, coevolution, common descent, convergent evolution, descent with modification, differential reproduction, directional selection, disruptive selection, endosymbiotic theory, evolution, extinct, fitness, fossil, fossil record, founder effect, gene pool, gene shuffling, genetic drift, genetic equilibrium, genetic variation, geographic isolation, geologic time scale, Hardy-Weinberg principle, homologous structure, hybrid, index fossil, macroevolution, mass extinction, microfossil, mutation, natural selection, paleontologist, period, polygenic trait, punctuated equilibrium, radioactive dating, relative dating, relative frequency,

reproductive isolation, selective breeding, selective pressure, single-gene trait, speciation, stabilizing selection, struggle for existence, survival of the fittest, temporal isolation, vestigial organ

Wallenpaupack Area School District Curriculum	
COURSE: *Biology CP	GRADE/S: 10th
UNIT 10: Anatomy	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.10.A6: Identify the advantages of multi-cellularity in organisms.

3.1.10.A8: Investigate the spatial relationships of organisms' anatomical features using specimens, models, or computer programs.

3.1.12.A5: Analyze how structure is related to function at all levels of biological organization from molecules to organisms.

3.1.12.A6: Analyze how cells in different tissues/organs are specialized to perform specific functions.

CC.3.5.9-10.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

CC.3.5.9-10.D Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.I. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

CC.3.5.11-12.B. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Examine the organization of the human body.
- Analyze the structure and function of the major body organs.
- Compare and contrast frog and human anatomy and physiology.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes
- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: anatomical, embryology, digestion, homeostasis, lymphocyte, neuron, organ, organ system, physiology, and red blood cells

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments
- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better
- Summative Assessments score of 70% or better

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

Teacher /student individualized instruction to include...

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- textbook review
- audio textbook

Advanced Student – Extension

Teacher /student individualized instruction to include...

*Student assignments are more in-depth, critical thinking incorporated increased independent work, and more challenging assessments.
RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.): Biology Foundation by Miller & Levine *Biology by Miller & Levine
RESOURCE SPECIFIC VOCABULARY: body systems, connective tissue, epithelial tissue, feedback inhibition, homeostasis, muscle tissue, nervous tissue, specialized cell

Wallenpaupack Area School District Curriculum	
COURSE: Biology	GRADE/S: 10th
UNIT 10: Pathogens	TIMEFRAME: 9 classes

PA COMMON CORE/PA SCIENCE STANDARDS:

3.1.10.A3: Compare and contrast the life cycles of different organisms.

CC.3.5.9-10.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

CC.3.5.9-10.D Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.J. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

CC.3.5.11-12.B. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Identify various forms of pathogens (viruses, bacteria, protists, fungi)
- Compare and contrast bacteria and virus anatomy and physiology.
- Evaluate the human role in disease prevention.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- PowerPoints and Notes

- Worksheets
- Laboratory Activity
- Small and Large Group Discussions
- Group Work
- Independent Work
- Written Assignments – Based on Book/Chapter Questions

ANCHOR VOCABULARY: asexual reproduction, eukaryote, multicellular, prokaryote, and unicellular

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- CDTs (Diagnostic)
- Formative Assessments
- Summative Assessments

EVIDENCE OF MASTERY/Cut Score:

- Formative Assessments score of 70% or better
- Summative Assessments score of 70% or better

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

Teacher /student individualized instruction to include...

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- textbook review
- audio textbook

Advanced Student – Extension

Teacher /student individualized instruction to include...

*Student assignments are more in-depth, critical thinking incorporated increased independent work, and more challenging assessments.

RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Biology Foundation by Miller & Levine

*Biology by Miller & Levine

RESOURCE SPECIFIC VOCABULARY: antibiotic, bacteriophage, binary fission, capsid,

conjugation, endospore, flagellum, , lysogenic infection, lytic infection, pathogen, plasmodium, prokaryote, retrovirus, spore, vaccine, and virus