Subject Area: Life Science
Grade Level: 7th
Bedminster Township School

Unit #: 1
Molecules to Organisms

Dates: September-December	**Time Frame:** 14 weeks

Overview

In this unit, students learn about how all matter is organized from simple groupings of atoms up to complex organisms. This includes the simplest of organisms (prokaryotes) to complex organisms like animals, and everything in between. Concepts such as basic needs for survival, characteristics of living things, and reproduction strategies are all covered in this comprehensive unit.

Enduring Understandings

- Cell Theory
- Organisms
- Prokaryotic vs Eukaryotic
- Plant vs. Animal Cells
- Homeostasis / Osmosis and Diffusion
- Photosynthesis and Respiration
- Cellular Structure and Function
- Biomolecules
- Levels of Cellular Organization
- Body Systems
- Mitosis and Meiosis
- Plant Reproduction
- Energy Pyramid

Skill and Knowledge Objectives

- Provide evidence that living things are made of cells.
- Explain and model the structure of the cell and its function.
- Explain the differences between multicellular organisms and single-cell organisms.
- Connect the process and energy flow for biological processes.
- Explain the purpose and functions of the nervous system.

Assessments

Pre-Assessment:

- Unit Pre Assessment
  - Modifications:
    - General Education (GenEd) Standard/Full version of test
    - IEP / 504 - Limited multiple choice selections, choice of long-response essay, word bank for fill-ins

- G&T - Extension questions, additional writing tasks, greater depth
- At-Risk - Limit scope or number of higher-order thinking questions
- MLL - Translate function available on Chromebook

Formative Assessment:

- Section quizzes (vocabulary, mathematical applications, homework), posters, models, lab activities and reports, Google Forms, Kahoot/Blooket review games, NGSS 3-dimensional performance tasks
  - Modifications:
    - General Education (GenEd)- Standard/Full version of material
    - IEP / 504 - Basic skills and concepts only (not responsible for enrichment content)
    - G&T- Addition of greater depth, extension-related material
    - At-Risk- Basic skills and concepts only (not responsible for enrichment content)
    - MLL - Translate function available on Chromebook, word bank of cognates / similar native language words provided

Self-Reflection/Self-Assessment:

- Exit slips, self-reflection
  - Modifications:
    - General Education (GenEd)- Standard/Full version of material
    - IEP / 504 - Simplify exit slip to one concept if necessary / provide multiple choice
    - G&T - Responsible for additional material / extension topics as well as basics/main concepts
    - At-Risk- Simplify exit slip to one concept if necessary / provide multiple choice
    - MLL - Translate function available on Chromebook

Summative Assessment:

- Unit Post Assessment, unit project
  - Modifications:
    - General Education (GenEd) Standard/Full version of test / full project requirements
    - IEP / 504 - Limited multiple choice selections, choice of long-response essay, word bank for fill-ins / simplified project requirements / frequent project check-ins to document progress
    - G&T - Extension questions, additional writing tasks, greater depth / additional components to project
    - At-Risk - Limit scope or number of higher-order thinking questions, limit multiple-choice selections, choice of long-response essay, word bank for fill-ins / simplified project requirements / frequent project check-ins to document progress
    - MLL - Translate function available on Chromebook, word bank of cognates / similar native language words provided / project directions and requirements provided in native language

Resources

- HMH, Science Fusion: *Cells and Heredity (online)*
- HMH, Science Fusion: *Human Body (online)*
- *IXL Science*
- *Teacher-created resources including presentations, activities, and assessments*
- *BrainPOP Science*
- *Various YouTube videos as selected and previewed by the teacher*
- *Newsela*
- Gizmos Science Simulations
- PhET Interactive Simulations
- NJSLS- Science

- Read the Standards NGSS

Standards Addressed:

NJSLS for this unit:

Life Science

- MS-LS1-1 Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.
- MS-LS1-2 Develop and use a model to describe the function of a cell as a whole and the ways parts of cells contribute to the function.
- MS-LS1-3 Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.
- MS-LS1-4 Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
- MS-LS1-5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
- MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and the flow of energy into and out of organisms.
- MS-LS1-7: Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism

Engineering, Technology, and Applications of Science (ETS)

- **MS-ETS1-1:** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment.
- **MS-ETS1-2:** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- **MS-ETS1-3:** Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- **MS-ETS1-4:** Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

NJSLS for Grades 6-8 (Reading Standards for Science and Technical Subjects - RST)

- **RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical texts.

- **RST.6-8.2:** Determine the central ideas or conclusions of a text; provide an accurate summary distinct from prior knowledge or opinions.
- **RST.6-8.3:** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- **RST.6-8.4:** 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.
- **RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

RST.6-8.8: Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

Technology: NJSLS Computer Science and Design Thinking

8.1 Computer Science and Design Thinking Standards (Grades 6-8)

1. **8.1.8.A.1**
   Demonstrate knowledge of a real-world problem using digital tools.
2. **8.1.8.A.2**
   Create a document (e.g., newsletter, reports, flyers) that includes text, graphics, and other digital elements using word processing software.
3. **8.1.8.B.1**
   Synthesize and publish information about a local or global issue or event (e.g., using a blog, podcast, or video) with peers and experts, using digital tools.
4. **8.1.8.C.1**
   Collaborate to develop and publish work that provides information or solutions to a problem, using digital tools and resources.
5. **8.1.8.D.1**
   Understand and model appropriate online behaviors related to cyber safety, cyberbullying, cyber security, and cyber ethics including appropriate use of social media.
6. **8.1.8.D.2**
   Demonstrate the application of appropriate citations to digital content.
7. **8.1.8.D.3**
   Demonstrate an understanding of fair use and Creative Commons to intellectual property.
8. **8.1.8.E.1**
   Gather and analyze findings using data collection technology to produce a possible solution for a content-related problem or issue.
9. **8.1.8.E.1** Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.
10. **8.1.8.IC.1**: Analyze the impact of computing technologies on culture and society.
11. **8.1.8.AP.2**: Create programs that use algorithms to solve a given problem.
12. **8.1.8.DA.1**: Explain the importance of data collection and analysis in the real world.
13. **8.1.8.DA.2**: Organize and present data in a way that can be interpreted by others.
14. **8.1.8.NI.1**: Identify potential cybersecurity threats and ways to protect against them.

8.2 Design Thinking:

- **8.2.8.ED.1**: Define a design problem and identify criteria and constraints.
- **8.2.8.ED.2**: Develop and test a model of a proposed solution.
- **8.2.8.ETW.1**: Compare how different technologies impact the environment.
- **8.2.8.EC.1**: Explain how ethics influence design and engineering decisions.

Financial Literacy: NJSLS Career Readiness, Life Literacies, and Key Skills

9.1 Personal Financial Literacy:

- **9.1.8.PB.1**: Relate the concept of financial choices to personal financial well-being.
- **9.1.8.PB.2**: Explain how spending choices and decisions impact future opportunities.
- **9.1.8.PB.3**: Create a personal budget to assess spending and saving plans.
- **9.1.8.PB.4**: Relate consumer decisions to personal financial success.
- **9.1.8.FP.1**: Describe the impact of inflation on purchasing power.
- **9.1.8.FP.2**: Evaluate the benefits of saving versus spending.
- **9.1.8.RM.1**: Analyze the purpose and forms of financial risk management.
- **9.1.8.CP.1**: Compare financial products and services.
- **9.1.8.EG.1**: Explain how earning power and working conditions impact personal financial decisions.

NJSLS - Career Readiness, Life Literacies, and Key Skills

- **9.4.8.CI.3**: Investigate new challenges and opportunities for personal growth, advancement, and transition.
- **9.4.8.CT.2**: Develop multiple solutions to solve a problem and evaluate short- and long-term consequences to determine the most appropriate solution.
- **9.4.8.DC.7**: Assess the impact of using a digital tool on personal and professional ethics.
- **9.4.8.TL.3**: Select appropriate tools to organize and present information digitally for different purposes.
- **9.4.8.IML.7**: Evaluate digital sources to determine the credibility and relevance of information needed for a specific problem or question.
- **9.4.8.GCA.2**: Demonstrate openness to diverse ideas and perspectives through active discussion to achieve a group goal

Social and Emotional Competencies - activities/topics

1. Self-Awareness

- Recognizing one's emotions and thoughts and their influence on behavior.
- Accurately assessing one's strengths and limitations, with a well-grounded sense of confidence and optimism.
- Identifying and labeling one's emotions.
- Recognizing personal traits, interests, and values.
- A sense of self-efficacy and optimism.

2. Self-Management

- Regulating one's emotions, thoughts, and behaviors in different situations.
- Managing stress, controlling impulses, and motivating oneself.
- Setting and working toward personal and academic goals.
- Demonstrating self-discipline and organizational skills.
- Using strategies for managing stress and overcoming challenges.

3. Social Awareness

- Showing understanding and empathy for others.
- Understanding social norms for behavior.
- Recognizing family, school, and community resources and supports.
- Respecting others and appreciating diversity in terms of cultural and social differences.
- Demonstrating consideration for and respecting others' perspectives.

4. Relationship Skills

- Establishing and maintaining healthy and rewarding relationships with diverse individuals and groups.
- Communicating clearly, listening actively, and cooperating with others.
- Resisting inappropriate social pressure, negotiating conflict constructively, and seeking and offering help when needed.
- Developing positive peer relationships and resolving interpersonal conflicts constructively.

5. Responsible Decision-Making

- Making constructive and respectful choices about personal behavior and social interactions based on ethical standards, safety concerns, and social norms.
- Evaluating the consequences of one's actions and considering the well-being of oneself and others.
- Developing problem-solving skills and critical thinking.
- Reflecting on experiences and learning from them.

LGBTQ Awareness Infusion:

Discuss scientific research as non-discriminate toward anyone's gender, sexual preference, etc. Always let the data tell the story- all viewpoints accepted

Differentiation and Modifications for this Unit

Differentiate Instruction, depending on individual student needs (students with an IEP, 504, or Intervention Plan; ELL Students; Students At Risk; Gifted Students) **by:**

Presentation Accommodations

- Use alternate texts at lower readability level
- Work with fewer items per page or line and/or materials in a larger print size
- Use magnification device, screen reader, or Braille / Nemeth Code
- Use audio amplification device (e.g., hearing aid(s), auditory trainer, sound-field system (which may require teacher use of microphone)
- Be given a written list of instructions
- Record a lesson, instead of taking notes
- Have another student share class notes with him
- Be given an outline of a lesson
- Be given a copy of teacher's lecture notes
- Be given a study guide to assist in preparing for assessments
- Use visual presentations of verbal material, such as word webs and visual organizers
- Use manipulatives to teach or demonstrate concepts

Response Accommodations

- Use sign language, a communication device, Braille, other technology, or native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use a spelling dictionary or electronic spell-checker
- Use a word processor to type notes or give responses in class

Setting Accommodations

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where he learns best (for example, near the teacher & away from distractions)
- Use special lighting or acoustics
- Take a test in small group setting
- Use sensory tools such as an exercise band that can be looped around a chair's legs (so fidgety kids can kick it and quietly get their energy out)
- Use noise buffers such as headphones, earphones, or earplugs

Timing Accommodations

- Take more time to complete a task or a test
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

Scheduling Accommodations

- Take more time to complete a project
- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization Skills Accommodations

- Use an alarm to help with time management
- Mark text with a highlighter

Assignment Modifications

- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum Modifications

- Learn different material (such as continuing to work on multiplication while classmates move on to fractions, or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get graded or assessed using a different standard than the one for classmate

Subject Area: Grade Level: 7th	Bedminster Township School

Unit #: 2
Ecosystems

Dates: January - March	**Time Frame:** 8 weeks

Overview

In this unit, students learn about how Ecosystems are functional systems that rely on the interaction between the biotic (living) and abiotic (non-living) factors in an area. This includes specific types of Ecosystems in specific habitats. Students will learn how matter cycles between the air, water, soil, and living things via a variety of endless processes. Students will also examine how factors such as temperature, presence of catalysts, or how a lack of a specific resource can affect the processes that are occurring in a functional Ecosystem. In addition, biodiversity is identified and its importance highlighted as seen through the lens of a Biologist.

Resources

- HMH, Science Fusion: *Diversity of Living Things*
- *IXL Science*
- *Teacher-created resources including presentations, activities, and assessments*
- *BrainPOP Science*
- *Various YouTube videos as selected and previewed by the teacher*
- *Water Quality Test Kits*
- *Newsela*
- Gizmos Science Simulations
- PhET Interactive Simulations
- NJSLS- Science
- Read the Standards NGSS

Enduring Understandings / Skill and Knowledge Objectives

- Prove that energy flows from organism to organism in an ecosystem, supplied by the sun or chemical reaction
- Explain and model a food web to demonstrate energy flow
- Explain the organizational hierarchy from producer to quaternary consumer in a food web by developing an energy pyramid
- Connect specific biological processes to levels of the food web
- Explain the purpose and function of ecosystems in regards to providing resources for living things and for recycling waste, excess energy, or chemical byproducts of biological processes
- Identify importance of biodiversity in an ecosystem and explain how biodiversity keeps certain populations balanced/in check
- Examine the effect of Climate Change on food webs
- Explain how biological processes such a photosynthesis may be affected by climate change

- Identify chemical and biological processes that may be amplified by climate change
- Relate the importance of clean water, air, and soil to the health of living things
- Discuss how introduction of a new (invasive) species affects the population of native species
- Explain how balance in an ecosystem is cyclical over a span of generations

Assessments

Pre-Assessment:

- Unit Pre Assessment
  - Modifications:
    - General Education (GenEd) Standard/Full version of test
    - IEP / 504 - Limited multiple choice selections, choice of long-response essay, word bank for fill-ins
    - G&T - Extension questions, additional writing tasks, greater depth
    - At-Risk - Limit scope or number of higher-order thinking questions
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Formative Assessment:

- Section quizzes (vocabulary, mathematical applications, homework), posters, models, lab activities and reports, Google Forms, Kahoot/Blooket review games, NGSS 3-dimensional performance tasks
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Summative Assessment:

- Unit Post Assessment, unit project
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Standards Addressed:

NJ Student Learning Standards for (Content Area):

Life Science (LS)

- **MS-LS1-1:** Conduct an investigation to provide evidence that living things are made of cells, either one cell or many different types and numbers of cells.
- **MS-LS1-2:** Develop and use a model to describe the function of a cell as a whole and the ways parts of cells contribute to the function.
- **MS-LS1-3:** Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.
- **MS-LS1-4:** Use a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy.
- **MS-LS1-5:** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
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- **RST.6-8.8:** Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

Technology: NJSLS Computer Science and Design Thinking

8.1 Computer Science and Design Thinking Standards (Grades 6-8)

15. **8.1.8.A.1**
    Demonstrate knowledge of a real-world problem using digital tools.
16. **8.1.8.A.2**
    Create a document (e.g., newsletter, reports, flyers) that includes text, graphics, and other digital elements using word processing software.
17. **8.1.8.B.1**
    Synthesize and publish information about a local or global issue or event (e.g., using a blog, podcast, or video) with peers and experts, using digital tools.

18. **8.1.8.C.1**
    Collaborate to develop and publish work that provides information or solutions to a problem, using digital tools and resources.
19. **8.1.8.D.1**
    Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.
20. **8.1.8.D.2**
    Demonstrate the application of appropriate citations to digital content.
21. **8.1.8.D.3**
    Demonstrate an understanding of fair use and Creative Commons to intellectual property.
22. **8.1.8.E.1**
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- **8.2.8.ED.1**: Define a design problem and identify criteria and constraints.
- **8.2.8.ED.2**: Develop and test a model of a proposed solution.
- **8.2.8.ETW.1**: Compare how different technologies impact the environment.
- **8.2.8.EC.1**: Explain how ethics influence design and engineering decisions.

NJ Student Learning Standards for mathematics:

8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. Calculating human population growth rate and graphing population data

Financial Literacy, NJSLS Career Readiness, Life Literacies, and Key Skills

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NJSLS - Career Readiness, Life Literacies, and Key Skills

- **9.4.8.CI.3**: Investigate new challenges and opportunities for personal growth, advancement, and transition.
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Social and Emotional Competencies - activities/topics

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- Recognizing one's emotions and thoughts and their influence on behavior.
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- Identifying and labeling one's emotions.
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- Demonstrating self-discipline and organizational skills.
- Using strategies for managing stress and overcoming challenges.

3. Social Awareness

- Showing understanding and empathy for others.
- Understanding social norms for behavior.
- Recognizing family, school, and community resources and supports.
- Respecting others and appreciating diversity in terms of cultural and social differences.
- Demonstrating consideration for and respecting others' perspectives.

4. Relationship Skills

- Establishing and maintaining healthy and rewarding relationships with diverse individuals and groups.
- Communicating clearly, listening actively, and cooperating with others.

- Resisting inappropriate social pressure, negotiating conflict constructively, and seeking and offering help when needed.
- Developing positive peer relationships and resolving interpersonal conflicts constructively.

5. Responsible Decision-Making

- Making constructive and respectful choices about personal behavior and social interactions based on ethical standards, safety concerns, and social norms.
- Evaluating the consequences of one's actions and considering the well-being of oneself and others.
- Developing problem-solving skills and critical thinking.
- Reflecting on experiences and learning from them.

LGBTQ Awareness Infusion:

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Differentiate Instruction, depending on individual student needs (students with an IEP, 504, or Intervention Plan; ELL Students; Students At Risk; Gifted Students) **by:**

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- Be given a written list of instructions
- Record a lesson, instead of taking notes
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- Be given an outline of a lesson
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- Be given a study guide to assist in preparing for assessments
- Use visual presentations of verbal material such as word webs and visual organizers
- Use manipulatives to teach or demonstrate concepts

Response Accommodations

- Use sign language, a communication device, Braille, other technology, or native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use a spelling dictionary or electronic spell-checker
- Use a word processor to type notes or give responses in class

Setting Accommodations

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where he learns best (for example, near the teacher & away from distractions)
- Use special lighting or acoustics
- Take a test in small group setting
- Use sensory tools such as an exercise band that can be looped around a chair's legs (so fidgety kids can kick it and quietly get their energy out)
- Use noise buffers such as headphones, earphones, or earplugs

Timing Accommodations

- Take more time to complete a task or a test
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

Scheduling Accommodations

- Take more time to complete a project

- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization Skills Accommodations

- Use an alarm to help with time management
- Mark texts with a highlighter

Assignment Modifications

- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum Modifications

- Learn different material (such as continuing to work on multiplication while classmates move on to fractions, or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get graded or assessed using a different standard than the one for classmate

Subject Area: Life Sciences
Grade Level: 7th
Bedminster Township School

Unit #: 3
Heredity

Dates: March - April	**Time Frame:** 5 weeks

Overview

In this unit, students will examine the mechanisms of heredity and the presence of genes and alleles which control how traits are passed from parent to offspring. This includes inheritance patterns as well as the mechanisms that allow for genetic copying (mitosis) and independent assortment (meiosis). Multi-factor inheritance will also be identified which successfully explains the tremendous variation possible within a species of organism like humans. Life cycles and growth/development cycles will also be examined and related to well-known animals such as humans and common household pets.

Enduring Understandings / Skill and Knowledge Objectives

- Traits are passed from parent to offspring on chromosomes
- Genes are locations of chromosomes that code for specific traits
- Alleles are different forms of a gene
- There are multiple patterns of inheritance such as Mendelian, Co-Dominant, Incompletely Dominant, and sex-linked
- Genetic disorders may be hereditary
- Pedigrees can be used to track traits through multiple generations
- Errors in cell processes can result in variation amongst the species
- Mutations may be beneficial, harmful, or even result in creation of subspecies
- The rate of reproduction varies amongst species
- Numerous species, such a flowers, rely on natural processes like weather or other organisms to reproduce
- Independent assortment contributes to variation amongst a species, even among siblings of the same family

Assessments

Pre-Assessment:

- Unit Pre Assessment
  - Modifications:
    - General Education (GenEd) Standard/Full version of test
    - IEP / 504 - Limited multiple choice selections, choice of long-response essay, word bank for fill-ins
    - G&T - Extension questions, additional writing tasks, greater depth
    - At-Risk - Limit scope or number of higher-order thinking questions

- MLL - Translate function available on Chromebook

Formative Assessment:

- Section quizzes (vocabulary, mathematical applications, homework), posters, models, lab activities and reports, Google Forms, Kahoot/Blooket review games, NGSS 3-dimensional performance tasks
  - Modifications:
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- Exit slips, self-reflection
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Summative Assessment:

- Unit Post Assessment, unit project
  - Modifications:
    - General Education (GenEd) Standard/Full version of test / full project requirements
    - IEP / 504 - Limited multiple choice selections, choice of long-response essay, word bank for fill-ins / simplified project requirements / frequent project check-ins to document progress
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Resources

- HMH, Science Fusion: *Cells and Heredity*
- HMH, Science Fusion: *Diversity of Living Things*
- *IXL Science*
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- Read the Standards NGSS

Standards Addressed:

NJ Student Learning Standards for (Content Area):

Cross-cutting concepts:

MS-LS3: Heredity: Inheritance and Variation of Traits

1. **MS-LS3-1**: Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.
2. **MS-LS3-2**: Develop and use a model to describe how asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

Disciplinary Core Ideas for MS-LS3:

- **LS3.A: Inheritance of Traits**
  - Genes are located in the chromosomes of cells, with each chromosome pair containing two variants of each gene. These variants provide instructions for forming an organism's characteristics, which are passed from parent to offspring during reproduction.
- **LS3.B: Variation of Traits**
  - Genetic differences that result from either mutations or gene recombination during sexual reproduction contribute to variation in traits among organisms.

NJSLS for Grades 6-8 (Reading Standards for Science and Technical Subjects - RST)

- **RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical texts.
- **RST.6-8.2:** Determine the central ideas or conclusions of a text; provide an accurate summary distinct from prior knowledge or opinions.
- **RST.6-8.3:** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- **RST.6-8.4:** 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.
- **RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- **RST.6-8.8:** Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

Technology: NJSLS Computer Science and Design Thinking

8.1 Computer Science and Design Thinking Standards (Grades 6-8)

29. **8.1.8.A.1**
    Demonstrate knowledge of a real-world problem using digital tools.
30. **8.1.8.A.2**
    Create a document (e.g., newsletter, reports, flyers) that includes text, graphics, and other digital elements using word processing software.

31. **8.1.8.B.1**
    Synthesize and publish information about a local or global issue or event (e.g., using a blog, podcast, or video) with peers and experts, using digital tools.
32. **8.1.8.C.1**
    Collaborate to develop and publish work that provides information or solutions to a problem, using digital tools and resources.
33. **8.1.8.D.1**
    Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.
34. **8.1.8.D.2**
    Demonstrate the application of appropriate citations to digital content.
35. **8.1.8.D.3**
    Demonstrate an understanding of fair use and Creative Commons to intellectual property.
36. **8.1.8.E.1**
    Gather and analyze findings using data collection technology to produce a possible solution for a content-related problem or issue.
37. **8.1.8.F.1** Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.
38. **8.1.8.IC.1**: Analyze the impact of computing technologies on culture and society.
39. **8.1.8.AP.2**: Create programs that use algorithms to solve a given problem.
40. **8.1.8.DA.1**: Explain the importance of data collection and analysis in the real world.
41. **8.1.8.DA.2**: Organize and present data in a way that can be interpreted by others.
42. **8.1.8.NI.1**: Identify potential cybersecurity threats and ways to protect against them.

8.2 Design Thinking:

- **8.2.8.ED.1**: Define a design problem and identify criteria and constraints.
- **8.2.8.ED.2**: Develop and test a model of a proposed solution.
- **8.2.8.ETW.1**: Compare how different technologies impact the environment.
- **8.2.8.EC.1**: Explain how ethics influence design and engineering decisions.

NJ Student Learning Standards for mathematics:

8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. Calculating human population growth rate and graphing population data.

Financial Literacy: NJSLS Career Readiness, Life Literacies, and Key Skills

9.1 Personal Financial Literacy:

- **9.1.8.PB.1**: Relate the concept of financial choices to personal financial well-being.
- **9.1.8.PB.2**: Explain how spending choices and decisions impact future opportunities.
- **9.1.8.PB.3**: Create a personal budget to assess spending and saving plans.
- **9.1.8.PB.4**: Relate consumer decisions to personal financial success.
- **9.1.8.FP.1**: Describe the impact of inflation on purchasing power.
- **9.1.8.FP.2**: Evaluate the benefits of saving versus spending.

- **9.1.8.RM.1**: Analyze the purpose and forms of financial risk management.
- **9.1.8.CP.1**: Compare financial products and services.
- **9.1.8.EG.1**: Explain how earning power and working conditions impact personal financial decisions.

NJSLS - Career Readiness, Life Literacies, and Key Skills

- **9.4.8.CI.3**: Investigate new challenges and opportunities for personal growth, advancement, and transition.
- **9.4.8.CT.2**: Develop multiple solutions to solve a problem and evaluate short- and long-term consequences to determine the most appropriate solution.
- **9.4.8.DC.7**: Assess the impact of using a digital tool on personal and professional ethics.
- **9.4.8.TL.3**: Select appropriate tools to organize and present information digitally for different purposes.
- **9.4.8.IML.7**: Evaluate digital sources to determine the credibility and relevance of information needed for a specific problem or question.
- **9.4.8.GCA.2**: Demonstrate openness to diverse ideas and perspectives through active discussion to achieve a group goal.

Social and Emotional Competencies - activities/topics

1. Self-Awareness

- Recognizing one's emotions and thoughts and their influence on behavior.
- Accurately assessing one's strengths and limitations, with a well-grounded sense of confidence and optimism.
- Identifying and labeling one's emotions.
- Recognizing personal traits, interests, and values.
- A sense of self-efficacy and optimism.

2. Self-Management

- Regulating one's emotions, thoughts, and behaviors in different situations.
- Managing stress, controlling impulses, and motivating oneself.
- Setting and working toward personal and academic goals.
- Demonstrating self-discipline and organizational skills.
- Using strategies for managing stress and overcoming challenges.

3. Social Awareness

- Showing understanding and empathy for others.
- Understanding social norms for behavior.
- Recognizing family, school, and community resources and supports.
- Respecting others and appreciating diversity in terms of cultural and social differences.
- Demonstrating consideration for and respecting others' perspectives.

4. Relationship Skills

- Establishing and maintaining healthy and rewarding relationships with diverse individuals and groups.
- Communicating clearly, listening actively, and cooperating with others.
- Resisting inappropriate social pressure, negotiating conflict constructively, and seeking and offering help when needed.
- Developing positive peer relationships and resolving interpersonal conflicts constructively.

5. Responsible Decision-Making

- Making constructive and respectful choices about personal behavior and social interactions based on ethical standards, safety concerns, and social norms.
- Evaluating the consequences of one's actions and considering the well-being of oneself and others.
- Developing problem-solving skills and critical thinking.
- Reflecting on experiences and learning from them.

LGBTQ Awareness Infusion:

Discuss scientific research as non-discriminate toward anyone's gender, sexual preference, etc. Always let the data tell the story- all viewpoints are accepted!

Differentiate Instruction, depending on individual student needs (students with an IEP, 504, or Intervention Plan; ELL Students; Students At Risk; Gifted Students) **by:**

Presentation Accommodations

- Use alternate texts at lower readability level
- Work with fewer items per page or line and/or materials in a larger print size
- Use magnification device, screen reader, or Braille / Nemeth Code
- Use audio amplification device (e.g., hearing aid(s), auditory trainer, sound-field system (which may require teacher use of microphone)
- Be given a written list of instructions
- Record a lesson, instead of taking notes
- Have another student share class notes with him
- Be given an outline of a lesson
- Be given a copy of teacher's lecture notes
- Be given a study guide to assist in preparing for assessments
- Use visual presentations of verbal material, such as word webs and visual organizers
- Use manipulatives to teach or demonstrate concepts

Response Accommodations

- Use sign language, a communication device, Braille, other technology, or native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use a spelling dictionary or electronic spell-checker
- Use a word processor to type notes or give responses in class

Setting Accommodations

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where he learns best (for example, near the teacher & away from distractions)
- Use special lighting or acoustics
- Take a test in small group setting
- Use sensory tools such as an exercise band that can be looped around a chair's legs (so fidgety kids can kick it and quietly get their energy out)
- Use noise buffers such as headphones, earphones, or earplugs

Timing Accommodations

- Take more time to complete a task or a test

- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

Scheduling Accommodations

- Take more time to complete a project
- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization Skills Accommodations

- Use an alarm to help with time management
- Mark texts with a highlighter

Assignment Modifications

- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum Modifications

- Learn different material (such as continuing to work on multiplication while classmates move on to fractions, or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get graded or assessed using a different standard than the one for classmate

Subject Area: Life Science Grade Level: 7th	Bedminster Township School Revised Summer 2024

Unit #: 4
Biological Evolution

Dates: April - June	**Time Frame:** 9 weeks

Overview

In this unit, students will examine the diversity of living things and the mechanisms that have caused such variation over the span of hundreds of generations. This includes unity and potential common ancestry; that many species are genetically related but have adapted to their surroundings and "branched out". This topic is best viewed through Darwinism and the concept that survival drives adaptation and natural selection.

Enduring Understandings / Skills and Knowledge Objectives

- Understand how species change over time in response to their environment
- Traits are "naturally selected" and advantageous traits will eventually become the norm
- Describe how scientists like Charles Darwin developed the theory of Evolution
- Explain how the environment dictates which species are "best fit"
- Explain how climate change may affect the viability of certain species to survive in their environment
- Discuss how environmental pressures such as lack of clean water, air, or soil may drive change within a species
- Examine how climate change may eliminate certain habitat from an area while creating a new type of habitat
- Graph population changes as they correlate with the effects of climate change on habitat

Assessments

Pre-Assessment:

- Unit Pre Assessment
  - Modifications:
    - General Education (GenEd) Standard/Full version of test
    - IEP / 504 - Limited multiple choice selections, choice of long-response essay, word bank for fill-ins
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Formative Assessment:

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- Read the Standards NGSS

Standards Addressed:

NJ Student Learning Standards for (Content Area):

Biological Evolution: Unity and Diversity (MS-LS4)

- **MS-LS4-1**
  Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.
- **MS-LS4-2**
  Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.
- **MS-LS4-3**
  Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.
- **MS-LS4-4**
  Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
- **MS-LS4-5**
  Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.
- **MS-LS4-6**
  Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.

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- Use an alarm to help with time management
- Mark texts with a highlighter

Assignment Modifications

- Answer fewer or different test questions
- Create alternate projects or assignments

Assessment Modifications:

Assessments are to be designed to meet all students needs. this includes each and all of the following populations:

- General Education (GenEd)
- IEP
- 504
- G&T
- At-Risk
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Curriculum Modifications

- Learn different material (such as continuing to work on multiplication while classmates move on to fractions, or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get graded or assessed using a different standard than the one for classmate