



**Life Science / 7 / Unit 1 -
Intro to Life Science**

Course/Subject:

Life Science

Grade:

7

Suggested Timeline:

1 week

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Introduction to Life Science
Unit Summary	By using various scientific tools and tried and true scientific practices, we can learn about the life that surrounds us! We can learn what all organisms need in order to live.

Unit Essential Questions:

1. What is science?
2. How do we use the scientific method effectively?
3. What is "life"?
4. What do all living things need in order to survive?
5. What molecules are required by all living things?

Key Understandings:

1. Only by applying the scientific method properly and making accurate observations can we take the data we collect and make accurate conclusions.
2. To define life we must include certain life processes such as reaction to stimuli, and digestion. Some of the requirements of life include water and food. All living things are made up of the same types of molecules.

Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7 A7	Compare life process (eg. digestion) at the organism level with life process at the cellular level.
3.1.7 A2	Describe how organisms obtain & use energy throughout their lives.

Important Standards Addressed in the Unit:

3.2.7 A1	Differentiate between elements, compounds, and mixtures.
3.1.7 A6	Identify the levels of organization from cell to organism.
3.2.7 A2	Identify atoms as the basic building blocks of matter and that elements are composed of one type of atom.

Misconceptions:	Proper Conceptions:
1. What are cells made of?	1. Cells, including all matter, are made of atoms.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
<ul style="list-style-type: none"> List and describe the steps in the Scientific Method. Show how measure various items in the classroom. Our bodies (and those of every living thing) are made, at the most basic level, of atoms functioning together. Know the basic structure of an atom. 	<ul style="list-style-type: none"> Explain how the scientific method can be used to solve problems. Describe and explain how to use several of the tools we use to study Life Science. Demonstrate how to focus a microscope and locate a specimen for observation. Differentiate between elements and compounds. List the main molecules that all living things contain and describe their function. 	<ul style="list-style-type: none"> Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion. Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge. Working collaboratively with teammates during review games. Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos. Collaborating within a lab group and being an active participant. (Microscope parts lab, how to properly use the internet webquest, farmer brown lab, etc.) Create informational presentations through a variety of mediums to present to classmates. (characteristics of living things presentation)

Academic Vocabulary:

<ul style="list-style-type: none"> Observation Data Hypothesis Variable Scientific Method Theory Zoology Botany Ecology 	<ul style="list-style-type: none"> Digest Excretion Stimulus Response Reproduction Respiration Homeostasis Carbohydrates 	<ul style="list-style-type: none"> Lipids Nucleic Acids Amino Acids Consumers Producers
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Assessments:

- Prequiz, Post Quiz
 - Microscope Practicum
 - Periodic Table Quiz - first 20 Elements
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Differentiation:

- Heterozygous groupings for lab work and projects.
 - Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
 - Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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Interdisciplinary Connections:

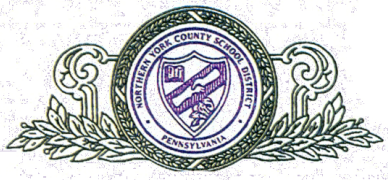
- Tie all sciences together. Using math in science.
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Additional Resources:

- Microscopes
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Created By:

Brindle/Oles



Life Science / 7 / Unit 2
Environment and Ecology

Course/Subject:

Life Science

Grade:

7

Suggested Timeline:

3 weeks

Grade Level Summary	Seventh grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Environment and Ecology
Unit Summary	In this unit we will learn the basics of populations, ecosystems, biomes, competition, food webs, predators, prey, and more. We will learn the varying levels of organization within an ecosystem and the types of organisms within them and how they interact. We will learn about watersheds and do a survey of our school to find our impact on the environment and our watershed.

Unit Essential Questions:

1. What do I need to understand before I even begin to study our effect on our surrounding environment?
2. How do biotic and abiotic factors influence the environment, and what is our influence on those factors?

Key Understandings:

1. Everything in an ecosystem is dependent on the others. There is a balance amongst all organisms in a particular area and if anything disrupts the balance, the whole ecosystem could collapse.
2. Populations can be affected and that balance disrupted by any number of factors such as predation, competition, immigration, and limiting factors (such as food, water, space)

Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
4.1.7.C	Explain the flow of energy within an ecosystem

4.5.7.D	Explain how biological diversity relates to the viability of ecosystems
4.1.7.E	Identify factors that contribute to the change in natural and human-made systems

Important Standards Addressed in the Unit:

4.2.7.A	Explain how water enters, moves through, and leaves a watershed

Misconceptions:	Proper Conceptions:
<ol style="list-style-type: none"> 1. Everything can live wherever. 2. I have little to no impact on my environment. 	<ol style="list-style-type: none"> 1. Organisms adapt to surviving in particular ecosystems. They can't just be moved around. 2. Everything you do affects your environment in some way.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
<ul style="list-style-type: none"> • An ecosystem is a collection of abiotic and biotic factors that interact with a given organism • Populations can be influenced by a number of factors • Food webs are composed of producers and consumers, those that get energy from the sun, and those that eat other organisms for food. • Watersheds are areas that collect water to eventually be deposited into a designated wetland. • We need to be aware of the impact our daily choices can have on our environment 	<ul style="list-style-type: none"> • Sort items as biotic or abiotic • Analyze given scenarios and explain why organisms were affected the way they were • Label organisms as being either a producer or a consumer. • Identify on a food web where certain organisms would fall and on what level of the energy pyramid they belong. • Identify our local, state, and national watersheds. • Analyze our homes, our school, and the things we eat or clean with for their impact on our environment. 	<ul style="list-style-type: none"> • Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion. • Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge. • Working collaboratively with teammates during review games. • Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos. • Collaborating within a lab group and being an active participant. (Ecological survey, schoolyard report card, etc.) • Create informational presentations through a variety of mediums to present to classmates. (Biomes project, endangered species project, I'm eating what! Presentation, etc.)

Academic Vocabulary:

<ul style="list-style-type: none"> • Biotic • Abiotic • Producer • consumer 	<ul style="list-style-type: none"> • Habitat • Ecosystem • Biome • watershed 	<ul style="list-style-type: none"> • Population • Community • Food web • Nitrogen cycle
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Assessments:

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- Schoolyard report card, environment and ecology test
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Differentiation:

- Heterozygous groupings for lab work and projects.
 - Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
 - Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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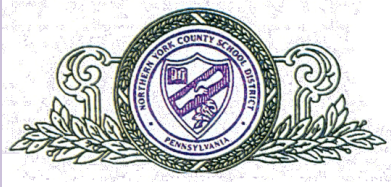
Interdisciplinary Connections:

- World geography during exploration of biomes.
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Additional Resources:

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Created By: Brindle/Oles



**Life Science / 7 / Unit
3 - Cells**

Course/Subject:
Life Science

Grade:
7

Suggested Timeline:
2 weeks

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	The Cell
Unit Summary	Students will learn why the cell is important to the structure and function of living things.

<p>Unit Essential Questions:</p> <ol style="list-style-type: none"> 1. How are cells important to the structure and function of living things? 2. What processes are performed by cells? 3. How are new cells produced? 	<p>Key Understandings:</p> <ol style="list-style-type: none"> 1. All living things are made of cells.
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Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7 A 4	Explain how cells arise from preexisting cells.
3.1.7 A5	Explain how the cell is the basic structural and functional unit of living things.
3.1.7 A6	Identify the levels of organization from cell to organism.

Important Standards Addressed in the Unit:

Misconceptions:

Proper Conceptions:

Knowledge & Concepts

- All living things are made of cells.
- The development of the microscope in the 17th century enabled the discovery of the cell.
- The nucleus is the brain of the cell, controlling all cellular activities.
- The Mitochondria convert glucose into ATP, which is used for cellular processes.
- Ribosomes build proteins.
- The endoplasmic reticulum transports proteins and cellular materials.

Skills & Competencies

- Ability to locate and identify cells using a microscope.
- Identify the parts of the cell.
- Differentiate between plant and animal cells.
- Describe the function of the major parts of the cell.
- Identify the major parts of a cell utilizing a microscope.
- Explain the Cell Theory.
- Describe cellular processes.
- List the steps and explain how a living cell reproduces itself into two “daughter cells”.
- Explain how materials get into and out of a cell.

Dispositions & Practices

- Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion.
- Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge.
- Working collaboratively with teammates during review games.
- Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos.
- Collaborating within a lab group and being an active participant. (cell ID lab, diffusion/osmosis/active transport lab, etc.)
- Create informational presentations through a variety of mediums to present to classmates. (cancer project, plant/animal cell drawings, etc.)

Academic Vocabulary:

- Cell
- Diffusion
- Osmosis
- Active Transport
- Cell membrane/wall

- Microscope
- Mitosis
- ATP
- Nucleus
- Mitochondria
- Endoplasmic Reticulum

- Hooke, Leeuwenhoek, Janssen, Lepparshey
- Ribosome
- Vacuole
- Lysosome
- Cytoplasm

Assessments:

- Cell Part Quiz
- Cell ID Labs
- Cell Sketch - Plant and Animal Cells

Differentiation:

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- Utilize dual ocular scopes for students having trouble locating specimens.
 - Heterozygous groupings for lab work and projects.
 - Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
 - Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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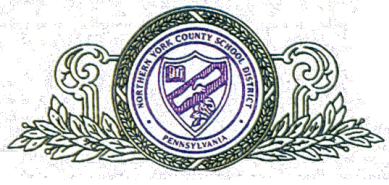
Interdisciplinary Connections:

- History - development of microscope & cell theory.
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Additional Resources:

- Microscopes.
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Created By:
Brindle/Oles



**Life Science / 7 / Unit
4 - DNA**

Course/Subject:
Life Science

Grade:
7

Suggested Timeline:
4 weeks

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	DNA
Unit Summary	DNA acts as “the blueprint of life”. Based upon the order of the four nitrogenous bases, your DNA contains the instructions that tell your cells what proteins to make. That, in turn, makes you who you are because nearly everything in and on your body is made of proteins.

<p>Unit Essential Questions:</p> <ol style="list-style-type: none"> 1. How does genetics make us all unique as individuals? 2. How did we discover DNA? 3. What does DNA look like? What is its role? 4. How is RNA different from DNA? 5. How does a ribosome read DNA? 	<p>Key Understandings:</p> <ol style="list-style-type: none"> 1. The structure of DNA includes two sets of nucleotides wound around each other with the four nitrogen bases forming the rungs of the “twisted ladder”. 2. In order to be used, DNA is translated into mRNA which allows DNA’s instructions to be read by a ribosome, where to prescribed protein is assembled.
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Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7 B1	Explain how genetic instructions influence inherited traits.

Note: There are no standards that explicitly mention DNA. However, to effectively learn about genetics (of which there are explicit standards) a fundamental knowledge of DNA must be learned.

Important Standards Addressed in the Unit:

3.1.7. A2 Describe how organisms obtain and use energy throughout their lives.

Misconceptions:

- Genetic illnesses and conditions are as communicable as any other illness.

Proper Conceptions:

- Genetic illness are in your DNA and either were inherited from your parents, or as a result of a mutation in your DNA, and, are not communicable.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
<ul style="list-style-type: none"> Our bodies are constructed of Protein- everything from hair color, to eye color, is a result of proteins coded for in our DNA. DNA (deoxyribonucleic acid) is comprised of four nitrogen bases (adenine, thymine, cytosine, guanine) bonded by hydrogen bonds, forming the rungs of the “twisted ladder”. The sides of the “ladder” are made of alternating sugar-phosphate molecules. Adenine only bonds to thymine; cytosine only bonds to guanine. Three base-pairs in a row code for a particular amino acid. The chains of amino acids form proteins, which make up our bodies and our traits. Mistakes or damage to these sequences can lead to genetic abnormalities or illnesses. 	<ul style="list-style-type: none"> Describe how DNA was discovered and name several of the scientists whose research led to its discovery, including their contributions. Explain the role of DNA in heredity. Describe how DNA contains the code to construct proteins. Describe the central dogma regarding how DNA is used to construct a protein. Describe what DNA looks like, what it is made of, how it is structured. Explain how RNA differs from DNA, and how the three types of RNA work together to build a protein. 	<ul style="list-style-type: none"> Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion. Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge. Working collaboratively with teammates during review games. Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos. Collaborating within a lab group and being an active participant. (strawberry dna extraction lab, codon identification lab, etc.) Create informational presentations through a variety of mediums to present to classmates. (dna illustrations, dna models, etc.)

Academic Vocabulary:

<ul style="list-style-type: none"> DNA/Deoxyribonucleic acid Nitrogen Base Sugar/Phosphate RNA 	<ul style="list-style-type: none"> mRNA rRNA tRNA Amino Acid 	<ul style="list-style-type: none"> Protein
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Assessments:

- Decoding DNA Quiz

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- Codon Decoding Lab
 - Strawberry DNA Extraction Lab
 - DNA Test
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Differentiation:

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- Heterozygous groupings for lab work and projects.
 - Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
 - Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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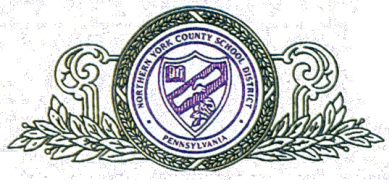
Interdisciplinary Connections:

- History of DNA's Discovery
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Additional Resources:

- Strawberry DNA Extraction Equipment
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Created By:
Brindle/Oles



**Life Science / 7 / Unit
5 - Genetics**

Course/Subject:
Life Science

Grade:
7

Suggested Timeline:
4 weeks

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Genetics
Unit Summary	How does genetics make us all unique as individuals?

<p>Unit Essential Questions:</p> <ol style="list-style-type: none"> 1. What is genetics? 2. What is the structure, function, and role of DNA in Heredity? 3. How does Meiosis create genetic diversity? 4. What is a mutation? 	<p>Key Understandings:</p> <ol style="list-style-type: none"> 1. Gregor Mendel, through experimentation, observation, and documentation, developed the basic laws of genetics. 2. Punnet squares can be used to predict the general outcome of genetic crosses.
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Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7 B1	Explain how genetic instructions influence inherited traits. Identify Mendelian patterns of inheritance.
3.1.7 B4	Describe how selected breeding and biotechnology can alter the genetic composition of organisms.
3.1.7 C2	Explain that mutations can alter a gene and are the original source of new variations in a population.

Important Standards Addressed in the Unit:

Misconceptions:

1. I am a mix of my parents' traits.

Proper Conceptions:

1. Each trait is controlled by two factors (Alleles), one from the mother, one from the father. Some alleles are dominant, and will appear; some are recessive, and will be masked by the dominant allele.
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Knowledge & Concepts

- Gregor Mendel, in the 1800s, developed the basic laws of genetics; without knowing DNA was the genetic code in the cells of all living things.
- Reginold Punnett developed a tool to help predict the outcome of genetic crosses.
- Many traits have two alleles that code for them; one is dominant, the other is recessive. A dominant allele can mask a recessive allele.
- Some traits have alleles that are codominant, in which there is more than one dominant allele, and both can show. Others exhibit intermediate inheritance, in which both alleles show and appear to mix.

Skills & Competencies

- Explain how Gregor Mendel developed the laws of genetics.
- Explain how probability and Punnett squares can be used to predict the results of genetic crosses.
- Describe how hybridization and inbreeding are used to produce new organisms.
- Explain how genetic engineering uses recumbent DNA to produce a product.
- Explain how codominant alleles influence traits such as skin/hair color, and blood type.
- Describe how intermediate alleles "mix".

Dispositions & Practices

- Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion.
 - Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge.
 - Working collaboratively with teammates during review games.
 - Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos.
 - Collaborating within a lab group and being an active participant. (Mendel Pea Lab, Spudimals lab, coin-flippin lab, monster genetics project, etc.)
 - Create informational presentations through a variety of mediums to present to classmates. (Punnett Square class practice, Just Like Me presentations, etc.)
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Academic Vocabulary:

- Genetics
- Trait
- Heredity
- Phenotype
- Genotype

- DNA/RNA
- Transcription
- Translation
- Chromosome
- Gene

- Nucleic Acid
 - Allele
 - Meiosis
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Assessments:

- Genetics Pre-Quiz
 - Punnett Square Practicum
 - "Monster Genetics" Project
 - Genetics Unit Test
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Differentiation:

- Heterozygous groupings for lab work and projects.
 - Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
 - Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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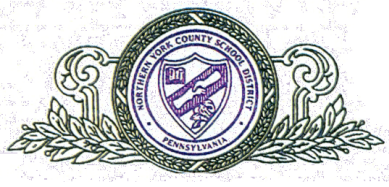
Interdisciplinary Connections:

- Mathematics - Probability
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Additional Resources:

- Froguts Online Dissection Software
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Created By:**Brindle/Oles**



**Life Science / 7 / Unit
6 - Classification**

Course/Subject:
Life Science

Grade:
7

Suggested Timeline:
1 Week

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Classification
Unit Summary	All living organisms are classified upon different traits.

<p>Unit Essential Questions:</p> <ol style="list-style-type: none"> 1. Why do scientists classify organisms? 2. What is the order of classifying living things? 3. What are the differences and similarities between the six kingdoms of life? 4. How do you use and construct a dichotomous key? 	<p>Key Understandings:</p> <ol style="list-style-type: none"> 1. Classification helps us in everyday life from dressing ourselves, eating food, and in school. Scientists classify organisms to make it easier to study them. 2. A common tool used in identification is a dichotomous key. This type of key breaks every option down to two mutually exclusive choices.
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Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7 A1	Describe the similarities and differences of physical characteristics in diverse organisms.

Important Standards Addressed in the Unit:

3.1.7 A3	Explain why the life cycles of different organisms have varied lengths.

Misconceptions:	Proper Conceptions:
1. An organism needs a brain and blood to be considered an animal.	1. Not all animals have organs like humans.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
<ul style="list-style-type: none"> Living things are classified according to: Domain, Kingdom, Phylum, Class, Order, Family, Genus, and Species. Aristotle classified organisms according to those with blood, and those without. Those with blood, were further delineated by those that walked, those that swam, and those that could fly. A dichotomous key is useful in identifying organisms because each question has only two conflicting answers. 	<ul style="list-style-type: none"> Explain the general taxonomic order of classification of living things. Describe Aristotle’s classification system (which was in place for close to 2,000 years). Show how to use a dichotomous key to identify organisms. 	<ul style="list-style-type: none"> Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion. Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge. Working collaboratively with teammates during review games. Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos. Collaborating within a lab group and being an active participant. (grocery store classification activity, dichotomous key lab, etc.) Create informational presentations through a variety of mediums to present to classmates. (8 stage mnemonic)

Academic Vocabulary:

<ul style="list-style-type: none"> Binomial Nomenclature Bacteria Protista Fungi 	<ul style="list-style-type: none"> Plantae Animalia Taxonomy Archaea 	<ul style="list-style-type: none"> Dichotomous Key Aristotle Carolus Linnaeus
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Assessments:

<ul style="list-style-type: none"> Classification Quiz Shark Dichotomous Key Lab
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Differentiation:

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- Heterozygous groupings for lab work and projects.
 - Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
 - Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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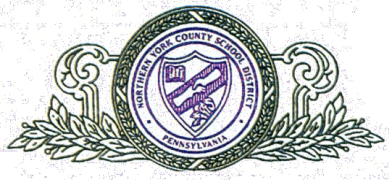
Interdisciplinary Connections:

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Additional Resources:

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Created By:
Brindle/Oles



**Life Science / 7 / Unit
7 - Bacteria &
Viruses**

Course/Subject:
Life Science

Grade:
7

Suggested Timeline:
3 weeks

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Bacteria & Viruses
Unit Summary	Characteristics of Bacteria & Viruses

<p>Unit Essential Questions:</p> <ol style="list-style-type: none"> 1. What are some characteristics of bacteria and viruses? 2. What are the major structures in a bacterial cell? 3. What life functions are viruses capable and incapable of performing? 4. What are the effects of several bacterial and viral diseases on humans? 	<p>Key Understandings:</p> <ol style="list-style-type: none"> 1. Though some bacteria are harmful, most are beneficial or have no effect on humans. 2. Humans have bacteria inside of us, and on our skin. 3. Antibiotics treat bacterial infections. Vaccines can be used to prevent both bacterial and viral infections.
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Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7 A1	Describe the similarities and differences of physical characteristics in diverse organisms.

Important Standards Addressed in the Unit:

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Misconceptions:	Proper Conceptions:
1. Viruses are alive.	1. Viruses cannot perform any life functions, including reproduction, on their own.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
<ul style="list-style-type: none"> Bacterial cells (Prokaryotes) differ majorly from Animal cells (Eukaryotes) in that bacterial DNA is not enclosed inside a nuclear membrane. Bacterial cells may be round (-coccus) or bar shaped (-bacillus), and, may be organized in chains (strepto-) or in clumps (staphylo-). A virus is basically comprised of RNA or DNA enclosed in a protective protein coat. Viruses cannot perform any life functions on their own. They must reproduce inside a living cell, using the cell's organelles to reproduce. 	<ul style="list-style-type: none"> Identify the major structures in a bacterial cell. Locate and identify the major general shapes of bacterial cells. Explain how bacteria reproduce. Describe the major structures that comprise a virus. Explain how a virus reproduces by using a living cell. Describe, compare, and contrast several different diseases caused by both bacteria and viruses. 	<ul style="list-style-type: none"> Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion. Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge. Working collaboratively with teammates during review games. Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos. Collaborating within a lab group and being an active participant. (bacteria growth lab, bacteria reproduction lab, etc.) Create informational presentations through a variety of mediums to present to classmates. (bacteria/virus word splash, bacteria/virus drawings, infectious disease project, etc.)

Academic Vocabulary:

<ul style="list-style-type: none"> Flagella Cell Membrane Archaea Autotroph Cilia/Pilli Cytoplasm Decomposer 	<ul style="list-style-type: none"> Producer Heterotroph Ribosome Hereditary Material Symbiosis/Mutualism Lytic Cycle Protein Coat 	<ul style="list-style-type: none"> Host Parasite Eradication Antibiotics Strepto- Staphylo- Vaccine
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Assessments:

- Infectious Disease Project
- Bacteria/Virus Quiz
- Bacteria Sketch

Differentiation:

- Heterozygous groupings for lab work and projects.
 - Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
 - Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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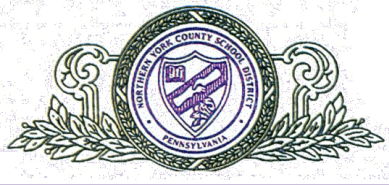
Interdisciplinary Connections:

- Health - Diseases
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Additional Resources:

- Microscopes, slides
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Created By:**Brindle/Oles**



**Life Science / 7 / Unit
8 - Protists**

Course/Subject:
Life Science

Grade:
7

Suggested Timeline:
2 Weeks

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Protists
Unit Summary	Protists are single celled organisms that have a nucleus.

<p>Unit Essential Questions:</p> <ol style="list-style-type: none"> 1. How do animal-like protists move? 2. What are the major differences between animal-like, plant-like, and fungus-like protists? 3. How do you distinguish between the three major types of animal-like protists? 4. How do you distinguish between the main types of plant-like protists? 5. How are protists different from bacteria? 	<p>Key Understandings:</p> <ol style="list-style-type: none"> 1. Animal-like protists must hunt for their food and have adaptations that allow them to move such as cilia and pseudopods. 2. Plant-like protists are capable of producing their own food. 3. Fungus-like protists are called slime molds and reproduce using spores 4. Protists are single-celled organisms with a nucleus. Bacteria are single-celled organisms that lack a nucleus.
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Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7 A1	Describe the similarities and differences of physical characteristics in diverse organisms.

Important Standards Addressed in the Unit:

Misconceptions:

1. An organism must be multi-cellular to be considered alive.

Proper Conceptions:

1. There are many, many organisms that are unicellular
-

Knowledge & Concepts

- Protists are unicellular organisms that contain a nucleus
- There are three types of protists: animal-like, plant-like, and fungus-like.
- Animal-like protists, including ciliates, amoebas, zooflagellates, and sarcodines, must hunt for food and actively seek it. Therefore, they have adaptations that allow them to move.
- Plant-like protists, including diatoms, euglena, and dinoflagellates, are capable of producing their own food, like plants.
- Fungus-like protists are called slime molds and reproduce by means of spores.
- Protists exist in symbiotic relationships with other organisms such as the mutualistic relationship in a lichen or the parasitic relationship of malaria.

Skills & Competencies

- Be able to identify various types of protists and classify them by the feature that puts them in a particular category (ex. Cilia for ciliates, armor-like walls for dinoflagellates, ect.)
- Find and identify types of protists under the microscope.
- In the “Microbe Mystery Lab” Compare protists found in a “victim” with those found in various locations (“crime scenes”) to determine where a crime took place.

Dispositions & Practices

- Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion.
 - Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge.
 - Working collaboratively with teammates during review games.
 - Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos.
 - Collaborating within a lab group and being an active participant. (microbe mystery lab)
 - Create informational presentations through a variety of mediums to present to classmates. (protist foldable)
-

Academic Vocabulary:

- | | | |
|---|---|---|
| <ul style="list-style-type: none">● Pseudopod● Sarcodine● Cilia | <ul style="list-style-type: none">● Zooflagellates● Euglena● Dinoflagellate | <ul style="list-style-type: none">● Diatom● Slime Mold● |
|---|---|---|
-

Assessments:

- Protist Microscope Lab, Microbe Mystery ID Lab
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Differentiation:

- Heterozygous groupings for lab work and projects.
 - Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
-

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- Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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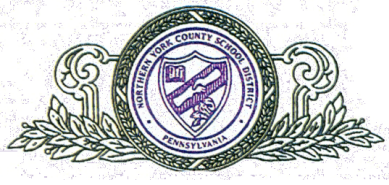
Interdisciplinary Connections:

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Additional Resources:

- Microscopes, live samples, protist example pre-made slides
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Created By:
Brindle/Oles



**Life Science/ 7 / Unit
9 - Fungi**

Course/Subject:
Life Science

Grade:
7

Suggested Timeline:
1 Week

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Fungi
Unit Summary	Fungi are organisms that are plant-like in that they don't move or hunt for food. However, they are still heterotrophic, meaning they cannot make their own food, and reproduce by means of spores.

<p>Unit Essential Questions:</p> <ol style="list-style-type: none"> 1. How do the structures in a mushroom affect its survival? 2. How are each type of fungi distinguished from the others? 3. How are fungi both beneficial and harmful to us? 	<p>Key Understandings:</p> <ol style="list-style-type: none"> 1. Mushrooms reproduce by spores which, in mushrooms, are held in the gills. The cap is held up by the stalk and is nourished by the underground root system of hyphae. 2. Fungi exist in many different shapes and sizes. We will see examples of molds, lichens, and yeast.
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Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7.A1	Describe the similarities and differences of physical characteristics in diverse organisms
3.1.7.A2	Describes how organisms obtain and use energy throughout their lives

Important Standards Addressed in the Unit:

CC.3.5.6-8.I	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Misconceptions:	Proper Conceptions:
<ol style="list-style-type: none"> 1. Mushrooms are just the part you seeing growing above ground. 2. You can pick and eat all kinds of mushrooms. 	<ol style="list-style-type: none"> 1. The part of a mushroom growing above ground only accounts for about 10% of the fungus. 2. You can eat some kinds of mushrooms but there are others that will make you sick or kill you.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
<ul style="list-style-type: none"> • There are many structures to a fungus, they more complicated than they look. Each structure performs a different function. The hyphae underground are for collecting water and nutrients. The stalk, cap, and other protective structures keep the reproductive spores safe. The gills are for releasing and spreading the spores. • Some fungi can reproduce asexually using budding. Others reproduce using spores. Conditions must also be perfect for a fungal spore to mature into a fungus. • Fungi are used for much more than just eating. They are used for baking, to ferment foods such as cheese and soy sauce, and they play an instrumental role in our medical industry as antibiotics. • Fungi exists in many mutualistic relationships such as Fungi and protists in lichen, fungi and plants through mycorrhiza, etc. • Fungi are important decomposers in an ecosystem. Without them we would be buried under decomposing organic material. 	<ul style="list-style-type: none"> • Be able to identify the different structures within a fungus and explain their purpose. • Identify means of reproduction in fungi including asexual and sexual processes. • Investigate uses of fungi and the processes that benefit humans. • Discuss parasitic and mutualistic relationships fungi have with other organisms such as protists, plants, and insects as well as the role they play in an ecosystem. 	<ul style="list-style-type: none"> • Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion. • Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge. • Working collaboratively with teammates during review games. • Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos. • Collaborating within a lab group and being an active participant. (mushroom dissection lab, moldy questions lab, yeast lab, fungi webquest, etc.)

Academic Vocabulary:

<ul style="list-style-type: none"> • Mushrooms • Spores • Gills 	<ul style="list-style-type: none"> • Mold • Yeast • Lichen 	<ul style="list-style-type: none"> • Hyphae • Stalk
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- | | | |
|--|---------------|--|
| | ● Slime Molds | |
|--|---------------|--|
-

Assessments:

- Fungi Quiz
 - Yeast Lab
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Differentiation:

- Heterozygous groupings for lab work and projects.
 - Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
 - Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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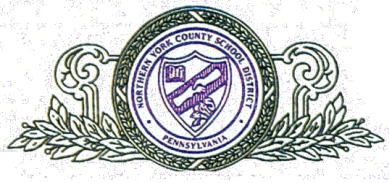
Interdisciplinary Connections:

- FACS brought into discussion during Yeast Lab for what ingredients to use and proper technique for making bread and other baked goods.
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Additional Resources:

- Biology: The Science of Life. The World of Fungi video
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Created By:
Brindle/Oles



**Life Science/ 7 / Unit
10 - Human Body
Systems**

Course/Subject:

Life Science

Grade:

7

Suggested Timeline:

7 Weeks

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Human Body Systems
Unit Summary	The human body is comprised of many interrelated systems that work together to keep you alive. Many organisms in Kingdom Animalia have a similar body and system structure.

Unit Essential Questions:

1. How do the structures of your body compare to other organisms in Kingdom Animalia?
2. How do the muscular and skeletal system work together to allow movement?
3. How does oxygen get into every cell of your body and how does carbon dioxide get out?
4. How does the digestive system provide energy for the body?
5. How does the immune system prevent foreign invaders from entering the body?
6. How does the body control all of these systems to work together and how do we respond to our environment?

Key Understandings:

1. Knowing how your body systems work together will help you understand how similar systems function in many of the organisms in Kingdom Animalia.
2. The muscular and skeletal systems provide the ability for an organism to move as well as give it the strength it needs to support the body.
3. The circulatory and respiratory systems work together to provide the body with essential elements and get rid of cellular wastes.
4. The digestive system provides the body with energy through the breaking down of food.
5. The immune system is a multi-layered defense network for protecting the body from foreign invaders.
6. The nervous system employs different types of neurons to help us respond to our environment.

Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7.A1	Describe the similarities and differences of physical characteristics in diverse organisms
3.1.7.A5	Explain how the cell is the basic structural and functional unit of living things

Important Standards Addressed in the Unit:

3.1.7.A6	Identify the levels of organization from cell to organism
3.1.7.A7	Compare life processes (eg. growth, digestion) at the organism level with life processes at the cellular level

Misconceptions:

1. The blood in your body is blue
2. You only use 10% of your brain

Proper Conceptions:

1. It is not blue, just a duller red
2. You use all of your brain, just not at the same time.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
<ul style="list-style-type: none"> ● The skeletal system gives an organism strength and, along with connective tissue (tendons, ligaments, and cartilage), allows the body to be strong and yet still have the ability to move. ● The muscular system gives an organism not only the ability to move the entire organism, but also to transport fluids inside of the body as well. ● The circulatory system is responsible not only for transporting oxygen around the body but also for transporting other nutrients like sugar, waste products like carbon dioxide, white blood cells, platelets, and more. ● The respiratory system allows for organisms to exchange gases with their environment. ● The digestive system, using both mechanical and chemical digestion, breaks down food in order to obtain nutrients and energy for the body ● The immune system uses an arsenal of weapons and physical defense structures to prevent harmful bacteria, viruses, parasitic protists, and other invaders from entering the body ● The nervous system is responsible for our entire bodies and its experiences. 	<ul style="list-style-type: none"> ● Identify major bones of the body ● Describe the structure of a bone and what holds them together ● Associate different types of muscle tissue with their abilities and function ● Illustrate the muscles involved and the type of work used to perform various movements. ● Describe the paths of blood through the body and identify the parts of the heart responsible for each. ● Match contents of the blood with its function. ● Diagnose patients' blood types for a successful transfusion. ● Describe the parts of the respiratory system that allow for the exchange of gas and speech. ● Demonstrate how the body generates the force needed to inhale and exhale air. ● Compare and contrast mechanical and chemical digestions ● Identify various components of the digestive tract and what their contribution to the process is. ● Relate the various aspects of the immune system to man made defenses ● Describe the functions of various cells involved in the immune system. 	<ul style="list-style-type: none"> ● Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion. ● Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge. ● Working collaboratively with teammates during review games. ● Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos. ● Collaborating within a lab group and being an active participant. (X-Ray Weblab, Muscle Stim Lab, Muscle Fatigue Lab, Arthroscopic Surgery Web Lab, Pulse Lab, Blood Typing Lab, Breathing Challenge Lab, Saltine Challenge Lab, Reaction Time Lab, Touch Receptors Lab, Dizziness Lab, etc.) ● Create informational presentations through a variety of mediums to present to classmates. (breathing limitation presentation, neuron drawings, oxygen path essays, etc.)

<p>The nervous system processes information and stimuli from our environment, decides how to respond to it, and learns from it all while keeping our bodies running efficiently and effectively.</p>	<ul style="list-style-type: none"> ● Label parts of the brain. ● Identify the types of neurons involved in various stimuli and identify their parts. ● Compare and contrast central and peripheral nervous systems as well as somatic and autonomic nervous systems. 	
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Academic Vocabulary:

<ul style="list-style-type: none"> ● Marrow ● Cartilage ● Tendons ● Ligaments ● Smooth muscle ● Cardiac muscle ● Skeletal muscle ● Plasma ● Artery ● Vein ● Capillaries ● Valve ● Atrium ● Ventricle ● Red blood cells ● White blood cells ● Platelets 	<ul style="list-style-type: none"> ● Blood pressure ● Stomach ● Gall bladder ● Liver ● Pancreas ● Esophagus ● Large intestine ● Small intestine ● Neutrophils ● Interferon ● Antigens ● Antibodies ● B-cell lymphocytes ● T-cell lymphocytes 	<ul style="list-style-type: none"> ● Stimuli ● Response ● Neuron ● Axon ● Dendrites ● Sensory neuron ● Interneuron ● Motor neuron ● Cerebellum ● Cerebrum ● Brain stem ● Central nervous system ● Peripheral nervous system ● Somatic nervous system ● Autonomic nervous system
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Assessments:

- Musculoskeletal Quiz, Bone ID Quiz, X-Ray Weblab, Oxygen Path Essay, Immune/Nervous System Quiz

Differentiation:

- Heterozygous groupings for lab work and projects.
- Teacher and Aide assistance for completion of labs and projects
- Varying levels of questions for various student ability groups for completion during labs.
- Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.

Interdisciplinary Connections:

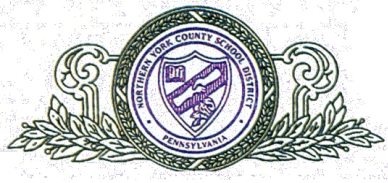
- Math used throughout unit for calculating volumes, capacities, and pressure
- Engineering principles used for joints, force, and motion

Additional Resources:

- Crash Course Biology Edpuzzles
- McGraw-Hill online labs

Created By:

Brindle/Oles



**Life Science / 7 / Unit
11 - Invertebrates**

Course/Subject:
Life Science

Grade:
7

Suggested Timeline:
6 Weeks

Grade Level Summary	7th Grade Life Science
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Kingdom Animalia - Invertebrate Phyla (Porifera, Cnidaria, Platyhelminthes, Nematodes, Annelids, Mollusks, Echinoderms, Arthropods)
Unit Summary	In this unit we will explore organisms in phyla outside of Phylum Chordata and compare them to ourselves. Here we will see adaptations like filter feeding, nematocysts, bilateral symmetry, complete digestive systems, open circulatory systems, water vascular systems, setae, tentacles and more. We will discuss how natural selection is the theory that these organisms have all adapted in a variety of ways to survive, or move away from, their environment. We will discuss the adaptations each group has made and how they allow them to take advantage of their environment.

<p>Unit Essential Questions:</p> <ol style="list-style-type: none"> 1. What are the different adaptations found in Kingdom Animalia? 2. How do adaptations determine which organisms survive? 	<p>Key Understandings:</p> <ol style="list-style-type: none"> 1. There are many and diverse adaptations in the animal kingdom that allow organisms to survive and even thrive in their environment. These adaptations do not have to be similar to anything that a human or other mammal has, although we do share many of these adaptations in one form or another. 2. There is a progression of complexity amongst organisms, beginning with Porifera and moving all the way up to a human being. 3. Natural selection is the theory that states a species must change to adapt to new conditions or it will die off. The adaptations that invertebrates have made depends on the phylum.
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Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7.A1	Describe the similarities and differences of physical characteristics in diverse organisms

Important Standards Addressed in the Unit:

3.1.7.A6	Identify the levels of organization from cell to organism
3.1.7.A7	Compare life processes (eg. growth, digestion) at the organism level with life processes at the cellular level

Misconceptions:	Proper Conceptions:
<ol style="list-style-type: none"> Horseshoe Crabs are crabs. Sponges and Coral aren't alive. Sand Dollars are just pretty shells. Daddy Longlegs are the most poisonous spider in the world, but their fangs are too small to cause harm. An animal needs to have a brain in order to be considered an animal. 	<ol style="list-style-type: none"> Horseshoe Crabs are arachnids, not crustaceans. Sponges and Coral are very much alive and have their own Phyla. Sand Dollars are living organisms under Phylum Echinodermata Daddy Long Legs/Harvestmen/Pholcids may be venomous, but rarely bite humans. If bitten, you may experience a mild burning sensation for a few minutes. Many organisms in Kingdom Animalia do not have a brain or have a cluster of nerves or something resembling a brain.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
<ul style="list-style-type: none"> Phylum Porifera includes all sponges which are invertebrates with no body symmetry and don't have tissues or organs. Cnidarians include jellyfish, sea anemones, corals, and hydras which use stinging cells to hunt and defend. There are three main categories of worms: flatworms, roundworms (always parasites), and segmented worms. Mollusks include bivalves, gastropods, and cephalopods which are soft-bodied animals often with a shell and an organ called a pseudopod, or "false foot" Echinoderms include starfish, sea urchins, sea cucumbers, and 	<ul style="list-style-type: none"> Identify the different invertebrate phyla and what characteristics cause an organism to be placed in them. Compare and Contrast the organisms within each phylum based on these characteristics. Label the body parts of various organisms, including internal structures during online labs. Discuss the relative intelligence of each phyla and how they demonstrate this intelligence. Compare the adaptations of the different invertebrate phyla with those of vertebrates. Identify means of self defense amongst these organisms including active defenses like claws and nematocysts versus passive defenses like camouflage and mimicry. 	<ul style="list-style-type: none"> Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion. Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge. Working collaboratively with teammates during review games. Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos. Collaborating within a lab group and being an active participant. (squid dissection lab, starfish dissection lab, ant and grasshopper diagrams, etc.) Create informational presentations through a variety of mediums to present to classmates. (under the sea

<p>sand dollars which all have a spiny skin, an internal skeleton, tube feet, five-fold symmetry, and a water vascular system.</p> <ul style="list-style-type: none"> • Arthropods include insects, arachnids, crustaceans, centipedes and millipedes which are defined by their segmented bodies, jointed appendages, and an exoskeleton. 	<ul style="list-style-type: none"> • Compare the different life cycles of each phyla and be able to identify the stages of each. 	<p>project, create your own arthropod project, etc.)</p>
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Academic Vocabulary:

<ul style="list-style-type: none"> • Natural Selection • Adaptation • Nematocyst • Invertebrate • Bilateral symmetry • Regeneration 	<ul style="list-style-type: none"> • Pseudopod • Open Circulatory System • Water vascular system • Exoskeleton • Mimicry • Pheromone 	<ul style="list-style-type: none"> • Thorax • Abdomen • Cephalothorax • Complete Metamorphosis • Incomplete metamorphosis • Spiracles • Mandibles
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Assessments:

<ul style="list-style-type: none"> • Invertebrates Quiz, Starfish Dissection, Squid Dissection, Create your Own Arthropod Project
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Differentiation:

<ul style="list-style-type: none"> • Student choice for how they want to present their project. Whether it be a slide presentation, a research paper, a poster, etc. • Heterozygous groupings for lab work and projects. • Teacher and Aide assistance for completion of labs and projects. • Varying levels of questions for various student ability groups for completion during labs. • Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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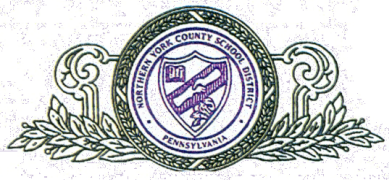
Interdisciplinary Connections:

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Additional Resources:

- Crash Course Biology Edpuzzles
- Froguts Online Dissection Labs
- Shape of Life Video Series

Created By:
Brindle/Oles



**Life Science/ 7 / Unit
12 - Vertebrates**

Course/Subject:

Life Science

Grade:

7

Suggested Timeline:

5 Weeks

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Vertebrates - Birds, Reptiles, Fish, Amphibians, and Mammals
Unit Summary	To give students the background information needed to be able to compare our human body systems with comparable systems of mammals and various other chordates.

Unit Essential Questions:

1. How does the structure of your body compare to other organisms in Kingdom Animalia?
2. What adaptations have enabled mammals to take advantage of their environment better than any other group of organisms?
3. How have the mammals of Pennsylvania adapted to their environments?

Key Understandings:

1. Skeletal and organ systems in humans are comparable to similar systems in many other organisms in Kingdom Animalia.
2. Every animal in Phylum Chordata has a notochord on its dorsal side. Ours is protected by our spine.
3. Mammals have adapted to live in virtually every environment on Earth. This is due, in large part, to their having a larger and more developed brain.

Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7.A1	Describe the similarities and differences of physical characteristics in diverse organisms
3.1.7.A5	Explain how the cell is the basic structural and functional unit of living things

Important Standards Addressed in the Unit:

3.1.7.A6	Identify the levels of organization from cell to organism
3.1.7.A7	Compare life processes (eg. growth, digestion) at the organism level with life processes at the cellular level

Misconceptions:	Proper Conceptions:
1. An animal needs a hard, bony spine to be considered a vertebrate (or chordate).	1. The notochord (spinal cord) is what distinguishes chordates from other organisms in Kingdom Animalia.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
<ul style="list-style-type: none"> All organisms in Phylum Chordata have a notochord on the dorsal side which is connected to the brain. Vertebrates can either be exothermic in which they absorb heat from their environment or, endothermic, in which they can generate their own heat. Vertebrates can reproduce by giving birth to live young that are relatively developed; lay eggs, in which the embryo develops inside; or, in the case of marsupials, give birth, then have the young develop inside the mother's pouch. 	<ul style="list-style-type: none"> Describe a few characteristics of birds. Explain how birds can fly. Describe a few characteristics of reptiles. Describe a few characteristics of fish. Explain how fish are able to survive in water. Describe a few characteristics of amphibians. Explain how a frog develops from a tadpole to an adult frog. List and explain the main characteristics of mammals. Explain how the mammals of Pennsylvania have adapted to their various environments. List the three main groups of mammals and name a few examples. Be able to identify and describe the characteristics of several native mammals of Pennsylvania. Explain how you can tell what a mammal eats by the shape and characteristics of its skull. 	<ul style="list-style-type: none"> Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion. Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge. Working collaboratively with teammates during review games. Gathering and synthesizing information from Edpuzzles, Brainpop, and other videos. Collaborating within a lab group and being an active participant. (froguts dissection lab, mammal internal organ organization diagrams, mammal skull identification lab, etc.) Create informational presentations through a variety of mediums to present to classmates. (mammal project)

Academic Vocabulary:

<ul style="list-style-type: none"> Notochord Spinal Chord Chordate 	<ul style="list-style-type: none"> Endothermic Exothermic Monotremes 	<ul style="list-style-type: none"> Marsupials Gestation Period
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Assessments:

-
- Mammal Brochure
 - Mammal Identification Practicum
 - Frog Dissection Lab
-

Differentiation:

-
- Heterozygous groupings for lab work and projects.
 - Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
 - Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
-

Interdisciplinary Connections:

-
-

Additional Resources:

- Various Skulls, skins, and egg shells.
-

Created By:
Brindle/Oles



**Life Science / 7 / Unit
13 - Plants**

Course/Subject:

Life Science

Grade:

7

Suggested Timeline:

1 week

Grade Level Summary	Seventh Grade
Grade Level Units	<ol style="list-style-type: none"> 1. Introduction to Life Sciences 2. Environment and Ecology 3. Cells 4. DNA 5. Genetics 6. Classification 7. Bacteria and Viruses 8. Protists 9. Fungi 10. Human Body Systems 11. Invertebrates 12. Vertebrates 13. Plants

Unit Title	Plants
Unit Summary	General characteristics of organisms in Kingdom Plantae.

<p>Unit Essential Questions:</p> <ol style="list-style-type: none"> 1. What are some characteristics of plants? 2. Why are plants important to all living things on Earth? 3. How does photosynthesis enable plants to make food for themselves? 4. What is the difference between vascular and nonvascular plants? 	<p>Key Understandings:</p> <ol style="list-style-type: none"> 1. Plants are essential to life on our planet, providing oxygen and food. 2. Photosynthesis in plants requires sunlight, water, and carbon dioxide in order to produce food for the plant. 3. Oxygen is a waste product, or a by product of photosynthesis.
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Focus Standards Addressed in the Unit:

<i>Standard Number</i>	<i>Standard Description</i>
3.1.7 A1	Describe the similarities and differences of physical characteristics in diverse organisms.

Important Standards Addressed in the Unit:

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Misconceptions:	Proper Conceptions:
1. We don't need plants and can just cut them down when they get in our way.	1. Plants are the base of all food pyramids in the form of producers. They also produce oxygen as a waste product which is essential for us to live.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
<ul style="list-style-type: none"> • Photosynthesis uses water collected by plants roots, carbon dioxide collected through the stomata, and sunlight collected through chloroplasts to produce sugar and give off oxygen. • Plants from seeds are classified as either angiosperms (have flowers and leaves that fall off) or gymnosperms (no flowers or leaves that fall off). • Seedless plants are broken down into two categories: vascular and nonvascular. Vascular seedless plants get bigger because they have the ability to easily transport water and other nutrients throughout the plant whereas nonvascular absorb water directly where it is needed. 	<ul style="list-style-type: none"> • Identify the major structures in a plant cell. • Explain the differences and similarities between plant and animal cells. • Explain how plants reproduce through fertilization or pollination. • Explain the functions of roots, stems, and leaves. • Explain the general chemical reaction that results in photosynthesis. 	<ul style="list-style-type: none"> • Collaborating and Communicating during Powerpoint presentations by completing notes and contributing to class discussion. • Critically thinking about teacher questions and communicating understanding, questions, or expanding knowledge. • Working collaboratively with teammates during review games. • Gathering and synthesizing information from Edpuzzles, Brainpops, and other videos. • Collaborating within a lab group and being an active participant. (water from trees lab) • Create informational presentations through a variety of mediums to present to classmates. (

Academic Vocabulary:		
<ul style="list-style-type: none"> • Chloroplasts • Chlorophyll • Absorption • Reflection • transpiration 	<ul style="list-style-type: none"> • Pistil • Stigma • vascular • nonvascular 	<ul style="list-style-type: none"> • Stomata • Pollen • Gymnosperm • angiosperm

Assessments:
<ul style="list-style-type: none"> • Plant Parts Quiz • Water from Trees Lab report

Differentiation:
<ul style="list-style-type: none"> • Heterozygous groupings for lab work and projects.

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- Teacher and Aide assistance for completion of labs and projects
 - Varying levels of questions for various student ability groups for completion during labs.
 - Skeleton notes provided for students with processing, reading, writing, seeing, or hearing issues.
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Interdisciplinary Connections:

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Additional Resources:

- Nature trail, leaf guides
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