Human Body Systems (HBS) - PLTW

Curriculum/Content Area: Science	**Course Length:** 2 terms, 1 semester
Course Title: Human Body Systems (HBS) - PLTW	**Date last reviewed:** September 2017
Prerequisites: Principles of Biomedical Science (PBS) or Biology	**Board approval date:** December 5, 2017
Primary Resource:	

Desired Results

Course description and purpose :
Students examine the interactions of human body systems as they explore identity, power, movement, protection, and homeostasis. Students design experiments, investigate the structures and functions of the human body, and use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration. Exploring science in action, students build organs and tissues on a skeletal mannequin, work through interesting and real world cases and often play the roles of biomedical professionals to solve medical mysteries.
This is the second course (in the series of four) in the Project Lead the Way Biomedical Sciences program. (*Project Lead The Way*)

Enduring Understandings:	**Essential Questions**:
1. The human body is made up of complex systems functioning together to maintain homeostasis. 2. Communication between body systems, via electrical impulses, is crucial to maintaining homeostasis. 3. The skeletal system works with the muscular system to move the human body. 4. The human body has several protective systems in place.	1. How can various tools be used to demonstrate knowledge of the smallest atom to the largest body system? 2. How do body systems that work interdependently communicate? 3. How can the generation of molecular energy be applied to induce skeletal, cardiac, and smooth muscle movement? 4. How can the human body protect itself through a variety of mechanisms to insure a homeostatic balance?

5. Homeostasis impacts health and wellness inside and outside the human body.	

Unit 1: Identity

Major Topics:

1. Body Systems and Directional Terms
2. Tissues
3. Molecules and Cells

Standards:

PLTW Document with Standards Listed by Unit and Lesson

Cross-Cutting Concepts

1. **Patterns -** Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them. Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.
2. **Cause and Effect** - Cause and effect relationships can be suggested and predicted for complex natural and human designed systems by examining what is known about smaller scale mechanisms within the system. Changes in systems may have various causes that may not have equal effects.
3. **Scale, Proportion, and Quantity -** Algebraic thinking is used to examine scientific data and predict the effect of a change in one variable on another (e.g., linear growth vs. exponential growth).
4. **Systems and System Models -** A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems. Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales.
5. **Structure and Function -** The functions and properties of natural and designed objects and systems can be inferred from their overall structure, the way their components are shaped and used, and the molecular substructures of its various materials.
6. **Stability and Change -** For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand. Much of science deals with constructing explanations of how things change and how they remain stable.

Science and Engineering Practices

1. **Asking Questions and Defining Problems**
    - Ask questions
        - that arise from careful observation of phenomena, or unexpected results, to clarify and/or seek additional information.
        - that arise from examining models or a theory, to clarify and/or seek additional information and relationships.
        - to determine relationships, including quantitative relationships, between independent and dependent variables.
        - to clarify and refine a model, an explanation, or an engineering problem.
    - Ask and/or evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of a design.
2. **Developing and Using Models**
    - Develop, revise, and/or use a model based on evidence to illustrate and/or predict the relationships between systems or between components of a system.
    - Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.
    - Develop and/or use a model (including mathematical and computational) to generate data to support explanations, predict phenomena, analyze systems, and/or solve problems.
3. **Analyzing and Interpreting Data**
    - Select appropriate tools to collect, record, analyze, and evaluate data. Make directional hypotheses that specify what happens to a dependent variable when an independent variable is manipulated.
    - Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.
4. **Using Mathematics and Computational Thinking**
    - Use mathematical, computational, and/or algorithmic representations of phenomena or design solutions to describe and/or support claims and/or explanations.
    - Apply techniques of algebra and functions to represent and solve scientific and engineering problems.
    - Apply ratios, rates, percentages, and unit conversions in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m3 , acre-feet, etc.)
5. **Constructing Explanations and Designing Solutions**
    - Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations,

models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.
    - Apply scientific ideas, principles, and/or evidence to provide an explanation of phenomena and solve design problems, taking into account possible unanticipated effects.
    - Apply scientific reasoning, theory, and/or models to link evidence to the claims to assess the extent to which the reasoning and data support the explanation or conclusion.
6. **Engaging in Argument from Evidence**
    - Evaluate the claims, evidence, and/or reasoning behind currently accepted explanations or solutions to determine the merits of arguments.
    - Construct, use, and/or present an oral and written argument or counter-arguments based on data and evidence.
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    - Compare, integrate and evaluate sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a scientific question or solve a problem.
    - Gather, read, and evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source.
    - Evaluate the validity and reliability of and/or synthesize multiple claims, methods, and/or designs that appear in scientific and technical texts or media reports, verifying the data when possible. Communicate scientific and/or technical information or ideas (e.g., about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e., orally, graphically, textually, mathematically).

<u>Disciplinary Core Ideas</u>

1. **LS1.A: Structure and Function**
    a. Systems of specialized cells within organisms help them perform the essential functions of life. (HS-LS1-1)
    b. All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells. (HS-LS1-1), (Note: This Disciplinary Core Idea is also addressed by HS-LS3-1.)
    c. Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
2. **LS3.A: Inheritance of Traits**

a. Each chromosome consists of a single very long DNA molecule, and each gene on the chromosome is a particular segment of that DNA. The instructions for forming species' characteristics are carried in DNA. All cells in an organism have the same genetic content, but the genes used (expressed) by the cell may be regulated in different ways. Not all DNA codes for a protein; some segments of DNA are involved in regulatory or structural functions, and some have no as-yet known function. (HS-LS3-1)

3. **LS3.B: Variation of Traits**
    a. In sexual reproduction, chromosomes can sometimes swap sections during the process of meiosis (cell division), thereby creating new genetic combinations and thus more genetic variation. Although DNA replication is tightly regulated and remarkably accurate, errors do occur and result in mutations, which are also a source of genetic variation. Environmental factors can also cause mutations in genes, and viable mutations are inherited. (HS-LS3-2)

Learning Targets:

1. I can diagram the relationship between multiple human body systems.
2. I can demonstrate correct use of directional and regional terms.
3. I can identify and locate bones of the human skeletal system.
4. I can analyze bones to determine a person's gender, age, stature and ethnicity.
5. I can evaluate current technology used to verify and protect identity and design a biometrics plan specific to a real-world situation.
6. I can explain the jobs of a forensic anthropologist and DNA analyst.

Assessment Evidence:

Performance Assessment Options *May include, but are not limited to the following:* ● Lab Experiments ● Lab Journals	**Other assessment options** *May include, but are not limited to the following:* ● Unit Assessment

Digital Tools & Supplementary Resources:

- Vernier probeware and software
- Inspiration
- Edvotek Gel Electrophoresis Machinery

Unit 2: Communication

1. The Brain
2. Electrical Communication
3. Chemical Communication

4. Special Senses

Standards:

PLTW Document with Standards Listed by Unit and Lesson

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    - Changes in systems may have various causes that may not have equal effects.
3. **Scale, Proportion, and Quantity**
    - Algebraic thinking is used to examine scientific data and predict the effect of a change in one variable on another (e.g., linear growth vs. exponential growth).
4. **Systems and System Models**
    - A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.
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6. **Stability and Change**
    - For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.
    - Much of science deals with constructing explanations of how things change and how they remain stable.
    - Feedback (negative or positive) can stabilize or destabilize a system

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    - Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly.
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    - Select appropriate tools to collect, record, analyze, and evaluate data. Make directional hypotheses that specify what happens to a dependent variable when an independent variable is manipulated.
4. **Analyzing and Interpreting Data**
    - Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.
    - Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.
5. **Using Mathematics and Computational Thinking**

- Create and/or revise a computational model or simulation of a phenomenon, designed device, process, or system.

6. **Constructing Explanations and Designing Solutions**
   - Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables.
   - Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.
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<u>Disciplinary Core Ideas</u>

1. **LS1.A: Structure and Function**
   a. Systems of specialized cells within organisms help them perform the essential functions of life. (HS-LS1-1)
   b. Multicellular organisms have a hierarchical structural organization, in which any

one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)

c. Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

2. **PS3.A: Definitions of Energy**
   a. Energy is a quantitative property of a system that depends on the motion and interactions of matter and radiation within that system. That there is a single quantity called energy is due to the fact that a system's total energy is conserved, even as, within the system, energy is continually transferred from one object to another and between its various possible forms. (HS-PS3-1),(HS-PS3-2)
   b. At the macroscopic scale, energy manifests itself in multiple ways, such as in motion, sound, light, and thermal energy. (HS-PS3-2) (HS-PS3-3)

Learning Targets:

1. I can identify major regions of the human brain.
2. I can design a "brain map" that links regions of the brain with specific human actions, emotions, personality traits or functions.
3. I can outline what goes on in the body from an initial stimulus to a response.
4. I can design feedback loops that shows how the body maintains proper levels of hormones.
5. I can analyze physical symptoms of a patient and relate these symptoms to errors in chemical communication.
6. I can describe the structure and function of the human eye.
7. I can evaluate visual perception by performing various vision tests.

Assessment Evidence:

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Unit 3: Power

1. Metabolism
2. Digestive System
3. Oxygen Usage in the Human Body
4. Water Usage in the Human Body

Standards:

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5. **Energy and Matter**
    - Tracking energy and matter flows, into, out of, and within systems helps one understand their system's behavior.
    - The total amount of energy and matter in closed systems is conserved.
    - Changes of energy and matter in a system can be described in terms of energy and matter flows into, out of, and within that system.
    - Energy cannot be created or destroyed - only moves between one place and another place, between objects and/or fields, or between systems.
    - Energy drives the cycling of matter within and between systems.
6. **Structure and Function**
    - The functions and properties of natural and designed objects and systems can be inferred from their overall structure, the way their components are shaped and used, and the molecular substructures of its various materials.
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    b. Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
    c. Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)
2. **LS1.C: Organization for Matter and Energy Flow in Organisms**
    a. The sugar molecules thus formed contain carbon, hydrogen, and oxygen: their hydrocarbon backbones are used to make amino acids and other carbon-based molecules that can be assembled into larger molecules (such as proteins or DNA), used for example to form new cells. (HS-LS1-6)
    b. As matter and energy flow through different organizational levels of living systems, chemical elements are recombined in different ways to form different products. (HS-LS1-6),(HS-LS1-7)
    c. As a result of these chemical reactions, energy is transferred from one system of interacting molecules to another. Cellular respiration is a chemical process in which the bonds of food molecules and oxygen molecules are broken and new compounds are formed that can transport energy to muscles. Cellular respiration also releases the energy needed to maintain body temperature despite ongoing energy transfer to the surrounding environment. (HS-LS1-7)
3. **LS2.B: Cycles of Matter and Energy Transfer in Ecosystems**
    a. Photosynthesis and cellular respiration (including anaerobic processes) provide most of the energy for life processes. (HS-LS2-3)
4. **PS3.A: Definitions of Energy**
    a. Energy is a quantitative property of a system that depends on the motion and interactions of matter and radiation within that system. That there is a single quantity called energy is due to the fact that a system's total energy is conserved, even as, within the system, energy is continually transferred from one object to another and between its various possible forms.

(HS-PS3-1),(HS-PS3-2)

5. **PS3.B: Conservation of Energy and Energy Transfer**
    a. Conservation of energy mans that the total change of energy in any system is always equal to the total energy transferred into or out of the system. (HS-PS3-1)
    b. Energy cannot be created or destroyed, but it can be transported from one place to another and transferred between systems. (HS-PS3-1, HS-PS3-4)
    c. The availability of energy limits what can occur in anys system (HS-PS3-1)

Learning Targets:

1. I can analyze the body processes and systems that help create and distribute materials required for life.
2. I can design a model of the human digestive tract.
3. I can explain the structure and function of the digestive tract.
4. I can design and carry out a laboratory experiment investigating the impact environmental changes can have on enzyme function within the human body.
5. I can analyze data collected on lung function using Vernier software.
6. I can explain the connections between urine and blood and demonstrate the exchange of ions and fluids that occurs across the nephron
7. I can analyze urine to diagnose disease and dysfunction in other human body systems.

Assessment Evidence:

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Digital Tools & Supplementary Resources:

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Unit 4: Movement

1. Joints and Motion
2. Muscles
3. Blood Flow
4. Exercise Physiology

Standards:

PLTW Document with Standards Listed by Unit and Lesson

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        - to clarify and refine a model, an explanation, or an engineering problem.
    - Evaluate a question to determine if it is testable and relevant.
    - Ask questions that can be investigated within the scope of the school laboratory, research facilities, or field (e.g., outdoor environment) with available resources and, when appropriate, frame a hypothesis based on model or theory.
    - Ask and/or evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of a design.

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    - Apply scientific ideas, principles, and/or evidence to provide an explanation of phenomena and solve design problems, taking into account possible unanticipated effects.
    - Apply scientific reasoning, theory, and/or models to link evidence to the claims to assess the extent to which the reasoning and data support the explanation or conclusion.
    - Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.
7. **Engaging in Argument from Evidence**
    - Evaluate the claims, evidence, and/or reasoning behind currently accepted explanations or solutions to determine the merits of arguments.
    - Construct, use, and/or present an oral and written argument or counter arguments based on data and evidence.
    - Make and defend a claim based on evidence about the natural world or the effectiveness of a design solution that reflects scientific knowledge and student-generated evidence.
8. **Obtaining, Evaluating, and Communicating Information**
    - Compare, integrate and evaluate sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a scientific question or solve a problem.
    - Gather, read, and evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source.
    - Evaluate the validity and reliability of and/or synthesize multiple claims, methods, and/or designs that appear in scientific and technical texts or media reports, verifying the data when possible. Communicate scientific and/or technical information or ideas (e.g., about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e., orally, graphically, textually, mathematically).

<u>Disciplinary Core Ideas</u>

1. **LS1.A: Structure and Function**
    a. Systems of specialized cells within organisms help them perform the essential functions of life. (HS-LS1-1)
    b. Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)

Learning Targets:

1. I can demonstrate terms that describe the types of movement possible at a joint and match range of motion to specific actions.
2. I can use a cow elbow to explain the movement in a human elbow.
3. I can construct a model to investigate muscle structure.
4. I can design a model to demonstrate the process of muscle contraction as well as the phenomenon of rigor mortis.
5. I can test the effect of varying solutions of ATP on the contraction of muscle tissue.
6. I can compare and contrast the structure of arteries, veins and capillaries.
7. I can analyze a four-part case that looks at the effects of smoking on circulation and blood pressure.
8. I can complete a laboratory investigation using data acquisition software and probes to explore muscle fatigue.
9. I can design an experiment to test the effect of feedback, coaching or competition on muscle fatigue.
10. I can design a comprehensive training plan for an athlete training for a particular event.

Assessment Evidence:

Performance Assessment Options
May include, but are not limited to the following:

- Lab Experiments
- Lab Journals

Digital Tools & Supplementary Resources:

- Vernier probeware and software
- Inspiration
- Edvotek Gel Electrophoresis Machinery

Unit 5: Protection

1. The Skin
2. Bones
3. Lymph and Blood Cells

Standards:

PLTW Document with Standards Listed by Unit and Lesson

Cross-Cutting Concepts

Patterns - Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them. Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.

Cause and Effect - Cause and effect relationships can be suggested and predicted for complex natural and human designed systems by examining what is known about smaller

scale mechanisms within the system. Changes in systems may have various causes that may not have equal effects.

Systems and System Models - A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems. Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows— within and between systems at different scales.

Structure and Function - The functions and properties of natural and designed objects and systems can be inferred from their overall structure, the way their components are shaped and used, and the molecular substructures of its various materials.

Stability and Change - For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand. Much of science deals with constructing explanations of how things change and how they remain stable. Feedback (negative or positive) can stabilize or destabilize a system

<u>Science and Engineering Practices</u>

1. **Asking Questions and Defining Problems**
    - Ask questions
        - that arise from careful observation of phenomena, or unexpected results, to clarify and/or seek additional information.
        - that arise from examining models or a theory, to clarify and/or seek additional information and relationships.
        - to determine relationships, including quantitative relationships, between independent and dependent variables.
        - to clarify and refine a model, an explanation, or an engineering problem.
    - Ask and/or evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of a design.
2. **Developing and Using Models**
    - Develop, revise, and/or use a model based on evidence to illustrate and/or predict the relationships between systems or between components of a system.
    - Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.
    - Develop and/or use a model (including mathematical and computational) to generate data to support explanations, predict phenomena, analyze systems, and/or solve problems.
3. **Analyzing and Interpreting Data**
    - Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

4. **Using Mathematics and Computational Thinking**
    - Create and/or revise a computational model or simulation of a phenomenon, designed device, process, or system.
5. **Constructing Explanations and Designing Solutions**
    - Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.
    - Apply scientific ideas, principles, and/or evidence to provide an explanation of phenomena and solve design problems, taking into account possible unanticipated effects.
    - Apply scientific reasoning, theory, and/or models to link evidence to the claims to assess the extent to which the reasoning and data support the explanation or conclusion.
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<u>Disciplinary Core Ideas</u>

1. **LS1.A: Structure and Function**
    a. Systems of specialized cells within organisms help them perform the essential functions of life. (HS-LS1-1)
    b. All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of

proteins, which carry out most of the work of cells. (HS-LS1-1) *(Note: This Disciplinary Core Idea is also addressed by HS-LS3-1.)*

c. Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
d. Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

2. LS3.A Inheritance of Traits

a. Each chromosome consists of a single very long DNA molecule, and each gene on the chromosome is a particular segment of that DNA. The instructions for forming species' characteristics are carried in DNA. All cells in an organism have the same genetic content, but the genes used (expressed) by the cell may be regulated in different ways. Not all DNA codes for a protein; some segments of DNA are involved in regulatory or structural functions, and some have no as-yet known function. (HS-LS3-1)

Learning Targets:

1. I can design and build a 3-D model of human skin displaying tissue layers and accessory organs.
2. I can model and describe how damage to skin through burns can affect both the functions of the skin and other body systems.
3. I can draw a detailed diagram of relevant bone anatomy.
4. I can produce a feedback loop that illustrates how the body maintains a calcium balance.
5. I can analyze simulated blood samples to determine blood type and determine potential donors for a transfusion.
6. I can produce and analyze a family pedigree to determine blood type.
7. I can graph antibody data collected after an infection and relate this data to the response of body cells.

Assessment Evidence:

Performance Assessment Options *May include, but are not limited to the following:*	**Other assessment options** *May include, but are not limited to the following:*
● Lab Experiments ● Lab Journals	● Unit Assessment

Digital Tools & Supplementary Resources:

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Unit 6: Homeostasis

1. Health and Wellness

Standards:

PLTW Document with Standards Listed by Unit and Lesson

Cross-Cutting Concepts

1. **Patterns -** Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them. Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.
2. **Cause and Effect** - Cause and effect relationships can be suggested and predicted for complex natural and human designed systems by examining what is known about smaller scale mechanisms within the system. Changes in systems may have various causes that may not have equal effects.
3. **Systems and System Models -** A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems. Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales.
4. **Stability and Change -** For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand. Much of science deals with constructing explanations of how things change and how they remain stable.

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Learning Targets:

1. I can design an innovative medical intervention to protect the human body in extreme external environments.
2. I can model a disease and a medical intervention on a skeletal model.
3. I can trace disease in human systems by generating a fictional case study and compiling a patient case file.

Assessment Evidence:

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