

Lesson Topic: Unit 2 Structure, Function and Information Processing

Grade level: 7th

Length of Unit:

Content Standards

MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.

MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

MS-LS1-8. Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

Big Ideas:

Students will understand

- Organisms are composed of cell(s)
- Each cell has organelles that function together allowing the organism to live
- Living organisms are organized into taxonomic groupings
- The human body is organized into body 11 systems.
- Sensory receptors respond to stimuli in the environment and guide human behavior

Essential Question(s):

- What does it mean to be single cellular or multi-cellular and give examples of each?
- What are the organelles of a cell and their functions?
- What are the taxonomic groupings and what do they represent?
- What are the functions of the 11 human body systems?
- How does the human nervous system respond to stimuli in the environment to guide human behavior?

Student objectives (outcomes):

Students will be able to:

1. Compare, contrast and identify common examples of single and multi-cellular organisms.
2. Identify structures and tell the structure and functions of basic cellular organelles.
3. Describe the basic hierarchical taxonomic system and explain what the groupings represent.
4. Describe the human body systems and explain how they work together.
5. Explain and give example of response to stimuli in the environment

Assessment Evidence

Performance Task(s):

See Topics Below

Other Evidence:

See Topics Below

Topic 1 – What is Life?

Content Standard:

MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.

Big Ideas:

Students will understand

- All organisms are composed of cell(s)

Essential Question(s):

- What does it mean to be single cellular or multi-cellular and give examples of each?

Student objectives (outcomes):

Students will be able to:

- Explain that all organisms are made of cells.
- Compare, contrast and identify common examples of single and multi-cellular organisms.

Assessment Evidence

Performance Task(s):

- History of Cytology Front Page Newspaper
- Inventing Life Forms
- Quiz

Other Evidence:

Learning Plan

Learning Activities: *resource in file

What is life?

Living or Not Activity (students identify a variety of things as living or not; brainstorm characteristics of living things including "made of cells.")*

Candle Demo Activity (Is it Alive?)

Characteristics of Life WS; Venn Diagram; *

Brief History of Cytology and Cell Theory: Notes/discussion

Marty Martian Case*

Project: History of Cytology Front Page Newspaper*

Single Cells and Multi-cells

Discovery Education Video: *Cells: The Basic Units of Life* (editable quiz available).

Information-Reading/Notes/discussion: Single cell and multi-cellular organisms

SINGLE CELL-

Ponds and Puddles Comes Alive*

LAB: Single Celled Organisms: Mixed Protists Microscope Lab

MULTI CELL-

Multicellular Organization Reading

LAB: Multicellular Organisms: Plant and Animal Cells

Inventing Life Forms Activity*

QUIZ- What is Life?

Topic 2 – Cell Structure and Function

Content Standard:

MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

Big Ideas:

Students will understand:

- Identify structures and tell the structure and functions of basic cellular organelles.

Essential Question(s):

- What are the cellular organelles?
- What are the functions of the organelles?
- How do the cellular organelles work together?

Student objectives (outcomes):

Students will be able to:

- Identify structures and tell the structure and functions of basic cellular organelles.

Assessment Evidence

Performance Task(s):

Cell Structure and Function Quiz
Cell Organelles Super Hero Project

Other Evidence:

Learning Plan

Learning Activities: *resource in file

Discussion/Notes: Cell Organelles; see Cells Alive.com

Cell Diagrams- Plant and Animal*

Cell Structure and Function Chart WS*

Plant and Animal Cell Venn*

The Cell Song*

Cell Organelle Super Heroes Mini-Project*

Cell City WS/Activity*

Cell Structure and Function Jeopardy Review Game

Cell Structure and Function Quiz

Topic 3 – Classification

Content Standard:

MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

Big Ideas:

Students will understand:

- Living organisms are organized into taxonomic groupings

Essential Question(s):

- What are the taxonomic groupings and what do they represent?

Student objectives (outcomes):

Students will be able to:

- Describe the basic hierarchical taxonomic system and explain what the grouping represent.

Assessment Evidence

Performance Task(s):

Classification Test

Other Evidence:

Learning Plan

Learning Activities: *resource in file

Classification Linnea System Notes *

Classification of Shoes Activity*

Classification of Shoes (2nd) <http://teachers.net/lessonplans/posts/1228.html>

Five Kingdoms of Life (Chart)*

Classification of Bird Eggs*

Classification Test

Topic 4 – Human Body System

Content Standard:

MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

Big Ideas:

Students will understand:

- The human body is organized into eleven body systems

Essential Question(s):

- What are the functions of the eleven body systems?

Student objectives (outcomes):

Students will be able to:

- Describe the human body systems and explain how they work together.

Assessment Evidence

Performance Task(s):

Human Body Test

Other Evidence:

Learning Plan

Learning Activities: *resource in file

Introduction to Human Body Systems (Overview) - Notes/discussion

Human Body Worksheet Packet *

Skeletal System- Calcium Lab

Muscular system - Chicken Wing Dissection Lab

Respiratory system - Chicken Heart Dissection Lab and Blood Cells Micro Lab

What Happens When You Eat Lab Set - <http://mypages.iit.edu/~smile/bi9706.html>

Digest This! Lab

Eye Pupil Dilation Activity (observe eyes in dark and with light)

Human Body Test

Topic 5 – Response to Stimuli

Content Standard:

MS-LS1-8. Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

Big Ideas:

Students will understand:

- Sensory receptors respond to stimuli in the environment and guide human behavior.

Essential Question(s):

- How does the human nervous system respond to stimuli in the environment to guide human behavior?

Student objectives (outcomes):

Students will be able to:

- Explain and give example of response to stimuli in the environment.

Assessment Evidence

Performance Task(s):

Sense Quiz

Other Evidence:

Learning Plan

Learning Activities: *resource in file

Intro Activity - How Sensitive Are You? Lab <http://www.planet-science.com/categories/experiments/biology/2011/05/how-sensitive-are-you.aspx>

Notes/Discussion - What are the senses?

Create a Concept Map - What are senses?*

Reaction Time and the Senses Lab*

Senses Hearing Lab*

Pupil Change Lab

The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i>		
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts