

Unit 1 Introduction to Biology

Content Area: **Science**
Course(s): **Biology CP, Biology Honors, STEM Biology Honors**
Time Period: **September**
Length: **2 weeks**
Status: **Published**

Transfer

Living things share certain characteristics that differentiate them from the non living world.

Enduring Understandings

There are specific characteristics that are shared by all living things

Biologists investigate the living world by conducting controlled experiments

Essential Questions

What is the study of biology?

What is the difference between a living and a nonliving thing?

How do biologists design and conduct controlled experiments?

What types of safety hazards are present in biology lab?

What types of equipment do biologists use to study living things?

Content

Chapter 1

Vocabulary:

- Stimulus
- asexual reproduction
- sexual reproduction
- homeostasis
- metabolism
- heterotroph
- autotroph
- hypothesis

- controlled experiment
- variable
- independent variable
- dependent variable
- control group
- experimental group
- metric system

Vocabulary

Stimulus

asexual reproduction

sexual reproduction

homeostasis

metabolism

heterotroph

autotroph

hypothesis

controlled experiment

variable

independent variable

dependent variable

control group

experimental group

metric system

Learning Objectives

Identify characteristics that are shared by all groups of living things: cells, reproduction, homeostasis, evolution, obtain and use material and energy, respond to stimuli, DNA, grow and develop.

Design and perform a controlled experiment to solve a simple problem.

Graph and analyze quantitative and qualitative data collected during an experiment.

Draw conclusions from experimental data.

Identify sources of error in experimental design and modify the procedure or suggest future experiments to further understanding of the concept.

Standards

LA.9-10.CCSS.ELA-Literacy.RST.9-10.2	Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
LA.9-10.CCSS.ELA-Literacy.RST.9-10.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
LA.9-10.CCSS.ELA-Literacy.RST.9-10.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.
LA.9-10.CCSS.ELA-Literacy.RST.9-10.7	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
LA.9-10.CCSS.ELA-Literacy.WHST.9-10.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
LA.9-10.CCSS.ELA-Literacy.WHST.9-10.2a	Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
LA.9-10.CCSS.ELA-Literacy.WHST.9-10.2e	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
LA.9-10.CCSS.ELA-Literacy.WHST.9-10.2f	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
SCI.9-12.5.1.12	All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.
SCI.9-12.5.1.12.A	Students understand core concepts and principles of science and use measurement and observation tools to assist in categorizing, representing, and interpreting the natural and designed world.
SCI.9-12.5.1.12.A.2	Develop and use mathematical, physical, and computational tools to build evidence-based models and to pose theories.
SCI.9-12.5.1.12.A.3	Use scientific principles and theories to build and refine standards for data collection, posing controls, and presenting evidence.
SCI.9-12.5.1.12.B	Students master the conceptual, mathematical, physical, and computational tools that need to be applied when constructing and evaluating claims.
SCI.9-12.5.1.12.B.1	Design investigations, collect evidence, analyze data, and evaluate evidence to determine measures of central tendencies, causal/correlational relationships, and anomalous data.
SCI.9-12.5.1.12.B.3	Revise predictions and explanations using evidence, and connect explanations/arguments

	to established scientific knowledge, models, and theories.
SCI.9-12.5.1.12.C	Scientific knowledge builds on itself over time.
SCI.9-12.5.1.12.C.1	Reflect on and revise understandings as new evidence emerges.
SCI.9-12.5.1.12.C.2	Use data representations and new models to revise predictions and explanations.
SCI.9-12.5.1.12.C.3	Consider alternative theories to interpret and evaluate evidence-based arguments.
SCI.9-12.5.1.12.D	The growth of scientific knowledge involves critique and communication, which are social practices that are governed by a core set of values and norms.
SCI.9-12.5.1.12.D.1	Engage in multiple forms of discussion in order to process, make sense of, and learn from others' ideas, observations, and experiences.
SCI.9-12.5.1.12.D.2	Represent ideas using literal representations, such as graphs, tables, journals, concept maps, and diagrams.
SCI.9-12.5.1.12.D.3	Demonstrate how to use scientific tools and instruments and knowledge of how to handle animals with respect for their safety and welfare.

Assessments

Written: Informative

Living things writing assignment defining the characteristics used to determine if things are living

Performance: Lab Assignment

Safety Lab

Summative: Transfer Tasks: Other: Quiz

Characteristics of life quiz

Summative: Transfer Tasks: Test: Written

Chapter 1 Test

Formative: Other Evidence: Performance: Lab Assignment

Identifying lab equipment lab

Formative: Other Evidence: Project: Visual Arts

Independent vs dependent variable project

Performance: Lab Assignment

Scientific Methodology Lab

