

Alaska Tutorials are designed specifically for the Alaska Standards.

Biology Tutorials offer targeted instruction, practice, and review designed to help students develop fluency, deepen conceptual understanding, and apply scientific thinking skills. Students engage with the content in an interactive, feedback-rich environment as they progress through standards-aligned modules. By constantly honing their ability to explain and analyze biological scenarios, students build the depth of knowledge and higher-order skills required to demonstrate their mastery when put to the test.

In each module, the Learn It and Try It make complex ideas accessible through focused content, guided analysis, multi-modal representations, and personalized feedback as students reason through increasingly challenging problems. The Review It offers a high-impact summary of key concepts and relates those concepts to students' lives. The Test It assesses students' mastery of the module's concepts, providing granular performance data to students and teachers after each attempt. To help students focus on the content most relevant to them, unit-level pretests and posttests can quickly identify where students are strong and where they're still learning.

Unit 1: The Nature and Chemistry of Life

- **CHARACTERISTICS OF LIFE**
- **BIOMOLECULES**
 - SC2.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. describing the structure-function relationship (i.e., joints, lungs).

Unit 2: Cell Structure and Function

- **PROKARYOTIC AND EUKARYOTIC CELLS**
 - SC2.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. describing the structure-function relationship (i.e., joints, lungs).
 - SC2.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. explaining that cells have specialized structures in which chemical reactions occur.
- **PLANT AND ANIMAL CELLS**
 - SC2.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the

structure, function, behavior, development, life cycles, and diversity of living organisms. describing the structure-function relationship (i.e., joints, lungs).

- SC2.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. explaining that cells have specialized structures in which chemical reactions occur.

Unit 3: Passive Transport and Active Transport

- **PASSIVE TRANSPORT**

- SC2.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. describing the structure-function relationship (i.e., joints, lungs).
- SC2.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. explaining that cells have specialized structures in which chemical reactions occur.

- **ACTIVE TRANSPORT**

- SC2.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. describing the structure-function relationship (i.e., joints, lungs).
- SC2.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. explaining that cells have specialized structures in which chemical reactions occur.

Unit 4: Cellular Energetics, Growth, and Reproduction

- **PHOTOSYNTHESIS**

- SC3.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. exploring ecological relationships (e.g., competition, niche, feeding relationships, symbiosis).

- **THE CELL CYCLE**

- **MITOSIS**

Unit 5: DNA Structure and Function

- **COMPONENTS OF DNA**

- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how

science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. relating the structure of DNA to characteristics of an organism.

- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. recognizing that all organisms have chromosomes made of DNA and that DNA determines traits.
- **THE GENETIC CODE**
 - SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. recognizing that all organisms have chromosomes made of DNA and that DNA determines traits.
 - SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. relating the structure of DNA to characteristics of an organism.
- **DNA REPLICATION**
 - SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. recognizing that all organisms have chromosomes made of DNA and that DNA determines traits.
 - SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. relating the structure of DNA to characteristics of an organism.

Unit 6: Gene Expression

- **TRANSCRIPTION**
 - SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. relating the structure of DNA to characteristics of an organism.
 - SC1.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. explaining how the processes of natural selection can cause speciation and extinction.

- SC1.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. examining issues related to genetics
- **TRANSLATION**
- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. relating the structure of DNA to characteristics of an organism.

Unit 7: Mutations

- **GENETIC CHANGES IN DNA**
- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. recognizing that all organisms have chromosomes made of DNA and that DNA determines traits.
- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. relating the structure of DNA to characteristics of an organism.
- **GENETIC CHANGES IN CHROMOSOMES**
- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. recognizing that all organisms have chromosomes made of DNA and that DNA determines traits.
- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. relating the structure of DNA to characteristics of an organism.

Unit 8: Heredity

- **MENDELIAN LAWS OF HEREDITY**
- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. relating the structure of DNA to characteristics of an organism.
- SC1.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural

selection, and biological evolution. using probabilities to recognize patterns of inheritance (e.g., Punnett Squares).

- **MULTIPLE ALLELES AND ALLELES WITHOUT DOMINANCE**

- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. recognizing that all organisms have chromosomes made of DNA and that DNA determines traits.
- SC1.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. using probabilities to recognize patterns of inheritance (e.g., Punnett Squares).

Unit 9: Reproduction

- **MEIOSIS**

- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. recognizing that all organisms have chromosomes made of DNA and that DNA determines traits.
- SC1.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. relating the structure of DNA to characteristics of an organism.
- SC1.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. researching how the processes of natural selection cause changes in species over time.

- **SEXUAL AND ASEXUAL REPRODUCTION**

Unit 10: Evolution

- **MULTIPLE LINES OF EVIDENCE**

- SC1.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. inferring evolutionary pathways from evidence (e.g., fossils, geologic samples, recorded history).

- **THE FOSSIL RECORD**

- SC1.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. inferring evolutionary pathways from evidence (e.g., fossils, geologic samples, recorded history).

Unit 11: Mechanisms of Evolution

• NATURAL SELECTION

- SC1.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. researching how the processes of natural selection cause changes in species over time.
- SC3.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. identifying dynamic factors (e.g., carrying capacity, limiting factors, biodiversity, and productivity) that affect population size.
- SC3.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. exploring ecological relationships (e.g., competition, niche, feeding relationships, symbiosis).
- SC1.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. explaining how the processes of natural selection can cause speciation and extinction.

• EVOLUTION OF SPECIES

- SC1.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. inferring evolutionary pathways from evidence (e.g., fossils, geologic samples, recorded history).
- SC1.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. explaining how the processes of natural selection can cause speciation and extinction.
- SC1.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of how

science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution. researching how the processes of natural selection cause changes in species over time.

Unit 12: Classification

• TAXONOMY

- SC2.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. describing and comparing the characteristics of phyla/divisions from each kingdom.

• THE SIX KINGDOMS

- SC2.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. describing and comparing the characteristics of phyla/divisions from each kingdom.

Unit 13: Homeostasis and Functions of Animal Systems

• HOMEOSTASIS AND DYNAMIC EQUILIBRIUM

- SC2.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. explaining the functions of organs of major systems (i.e., respiratory, digestive, circulatory, reproductive, nervous, musculoskeletal, and excretory).

• THE NERVOUS SYSTEM

- SC2.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. stating the function of major physiological systems (i.e., circulatory, excretory, digestive, respiratory, reproductive, nervous, immune, endocrine, musculoskeletal, and integumentary).
- SC2.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. explaining the functions of organs of major systems (i.e., respiratory, digestive, circulatory, reproductive, nervous, musculoskeletal, and excretory).
- SC2.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. describing the structure-function relationship

• THE IMMUNE AND LYMPHATIC SYSTEMS

- SC2.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. stating the function of major physiological systems (i.e., circulatory, excretory, digestive, respiratory, reproductive, nervous, immune, endocrine, musculoskeletal, and integumentary).
- SC2.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. explaining the functions of organs of major systems (i.e., respiratory, digestive, circulatory, reproductive, nervous, musculoskeletal, and excretory).
- SC2.3: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. describing the functions and interdependencies of the organs within the immune system and within the endocrine system.

Unit 14: Functions of Plant Systems

- **PLANT TISSUES**

- SC2.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. describing the structure-function relationship (i.e., joints, lungs).

- **PLANT RESPONSES**

- SC2.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms. describing the structure-function relationship (i.e., joints, lungs).

Unit 15: Matter and Energy

- **FOOD CHAINS AND WEBS**

- SC3.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. exploring ecological relationships (e.g., competition, niche, feeding relationships, symbiosis).

- **PYRAMIDS OF ENERGY, NUMBERS, AND BIOMASS**

- SC3.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. exploring ecological relationships (e.g., competition, niche, feeding relationships, symbiosis).

Unit 16: Cycles in Nature**• THE CARBON CYCLE**

- SC3.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. describing the carbon and nitrogen cycle within an ecosystem and how the continual input of energy from sunlight keeps the process going.
- SD1.2: Concepts of Earth Science Students develop an understanding of the concepts, processes, theories, models, evidence, and systems of earth and space sciences. Students develop an understanding of Earths geochemical cycles. describing their interrelationships (i.e., water cycle, carbon cycle, oxygen cycle).
- SC3.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. relating the carbon cycle to global climate change.
- SD1.2: Concepts of Earth Science Students develop an understanding of the concepts, processes, theories, models, evidence, and systems of earth and space sciences. Students develop an understanding of Earths geochemical cycles. describing their interrelationships (i.e., water cycle, carbon cycle, oxygen cycle).
- SD1.2: Concepts of Earth Science Students develop an understanding of the concepts, processes, theories, models, evidence, and systems of earth and space sciences. Students develop an understanding of Earths geochemical cycles. describing their interrelationships (i.e., water cycle, carbon cycle, oxygen cycle).
- SC3.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. analyze the potential impacts of changes (e.g., climate change, habitat loss/gain, cataclysms, human activities) within an ecosystem.

• THE NITROGEN AND PHOSPHOROUS CYCLES

- SC3.1: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. describing the carbon and nitrogen cycle within an ecosystem and how the continual input of energy from sunlight keeps the process going.
- SC3.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. analyze the potential impacts of changes (e.g., climate change, habitat loss/gain, cataclysms, human activities) within an ecosystem.

Unit 17: Ecology of Succession

- **SUCCESSION IN COMMUNITIES**

- SC3.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. analyze the potential impacts of changes (e.g., climate change, habitat loss/gain, cataclysms, human activities) within an ecosystem.

- **NATURAL IMPACTS ON ECOSYSTEMS**

- SC3.2: Concepts of Life Science Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science. Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy. analyze the potential impacts of changes (e.g., climate change, habitat loss/gain, cataclysms, human activities) within an ecosystem.