



## Unit 1 Evolution

### High School Biology

#### Unit Length and Description:

#### 10 Instructional Weeks

- **Bend 1:** Students will initially investigate a case of a young girl with a life-threatening infection of pan-resistant bacteria. This case sparks questions that lead students to investigate the growing prevalence of such cases and discrepancies between antibiotic use in the community and CDC recommendations.
- **Bend 2:** Students will also expand their investigations to look at population changes occurring in a population of junco birds which exhibit noticeable differences in physical and behavioral traits over the past 60 years.

#### Science Standards:

- HS-LS4-1** Analyze and interpret scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.
- HS-LS4-2** Construct an explanation based on evidence that biological diversity is influenced by (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.
- HS-LS4-3** Apply concepts of statistics/probability to support explanations that populations of organisms adapt when an advantageous heritable trait increases in proportion to organisms lacking this trait.
- HS-LS4-4** Construct an explanation based on evidence for how natural selection and other mechanisms lead to genetic changes in populations.
- HS-LS4-5** Evaluate evidence supporting claims that changes in environmental conditions can affect the distribution of traits in a population causing: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
- HS-LS1-8** Obtain, evaluate, and communicate information about (1) viral and bacterial reproduction and adaptation, (2) the body's primary defenses against infection, and (3) how these features impact the design of effective treatment.

**Enduring Understandings-  
Unit Anchor Phenomenon:**

**Essential Questions-  
Reflective Summaries:**

**Bend 1:**

- **Bend 1:** A little girl goes to a hospital with a bacterial infection. After several weeks of antibiotic treatment, she developed a life-threatening pan-resistant bacterial infection.
- **Bend 2:** UCSD juncos have different behaviors and physical traits than juncos who live in a nearby mountain range.

- Describe the differences between viral and bacterial reproduction and adaptation and the body's primary defenses against these infections. How have these features impacted the design of effective treatments from viral and bacterial infections?

**Bend 1 & 2:**

- Explain common ancestry and biological evolution are supported by multiple lines of empirical evidence.
- Construct an explanation based on evidence that biological diversity is influenced by (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.
- Describe that populations of organisms adapt when an advantageous heritable trait increases in proportion to organisms lacking this trait.
- Make a claim supported by evidence that natural selection and other mechanisms lead to genetic changes in populations.
- Make a claim supported by evidence that changes in environmental conditions can affect the distribution of traits in a population causing: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.