



e-Mission:
PANDEM-SIM

NGSS Standards

A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas

<http://www.nextgenscience.org/>

<http://www.nextgenscience.org/sites/default/files/HS%20LS%20topics%20combined%206.13.13.pdf>

Core Idea LS 1: From Molecules to Organisms: Structures and Processes

- how individual organisms are configured
- how structures function to support life, growth, behavior, and reproduction

Core Idea LS 2: Ecosystems: Interactions, Energy, and Dynamics

- organisms' interactions with each other and their physical environment
- how changing environmental factors affect organisms and ecosystems

Core Idea LS 3: Heredity: Inheritance and Variation of Traits

- the flow of genetic information between generations
- the environmental and genetic causes of gene mutation and the alteration of gene expression

Core Idea LS4: Biological Evolution: Unity and Diversity

- changes in the traits of populations of organisms over time
- how variation of genetically-determined traits in a population may give some members a reproductive advantage in a given environment
- natural selection can lead to adaptation, that is, to a distribution of traits in the population that is matched to and can change with environmental conditions

Life Sciences 6-13

Traits are passed from one generation to the next via genes. Topic includes genes, traits, alleles, chromosomes, sexual reproduction, mutations and variations, environmental variation, DNA, nucleotides, RNA



e-Mission: **PANDEM-SIM**

Biodiversity affects humans. Topics include biological evolution, evolutionary relationships, natural selection, genetic variation, adaptation, antibiotic resistance, naturally-occurring and human-induced changes in the physical environment, species extinction, and overpopulation.

High School Life Sciences

<http://www.nextgenscience.org/sites/default/files/HS%20LS%20topics%20combined%206.13.13.pdf>

Natural Selection and Evolution

HS-LS4-2. Construct an explanation based on evidence that the process of evolution primarily results from four factors: 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, ...and 4) the proliferation of those organisms that are better able to survive and reproduce in the environment.

HS-LS4-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.