

DCI: Biological Evolution: Unity and Diversity

MS.LS4.A: Evidence of Common Ancestry and Diversity

The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. (MS-LS4-1)

DCI: Biological Evolution: Unity and Diversity

MS.LS4.A: Evidence of Common Ancestry and Diversity

Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. (MS-LS4-2)

DCI: Biological Evolution: Unity and Diversity

MS.LS4.A: Evidence of Common Ancestry and Diversity

Comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully-formed anatomy. (MS-LS4-3)

DCI: Biological Evolution: Unity and Diversity

MS.LS4.B: Natural Selection

Natural selection leads to the predominance of certain traits in a population, and the suppression of others. (MS-LS4-4)

DCI: Biological Evolution: Unity and Diversity

MS.LS4.B: Natural Selection

In artificial selection, humans have the capacity to influence certain characteristics of organisms by selective breeding. One can choose desired parental traits determined by genes, which are then passed on to offspring. (MS-LS4-5)

DCI: Biological Evolution: Unity and Diversity

MS.LS4.C: Adaptation

Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6)

**DCI: From Molecules to Organisms:
Structures and Processes**

**MS.LS1.B: Growth and Development of
Organisms**

Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. (MS-LS-14)

**DCI: From Molecules to Organisms:
Structures and Processes**

**MS.LS1.B: Growth and Development of
Organisms**

Genetic factors as well as local conditions affect the growth of the adult plant. (MS-LS1-5)

DCI: Earth and Human Activity

MS.ESS3.A: Natural Resources

Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes. (MS-ESS3-1)

DCI: Earth and Human Activity

**MS.ESS3.C: Human Impacts on Earth
Systems**

Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)

DCI: Earth and Human Activity

**MS.ESS3.C: Human Impacts on Earth
Systems**

Typically, as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS-ESS3-3)

DCI: Earth and Human Activity

**MS.ESS3.C: Human Impacts on Earth
Systems**

Typically, as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS-ESS3-4)

**DCI: Biological Evolution: Unity and
Diversity**

MS.LS4.C: Adaptation

Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6)

DCI: Earth's Systems

**MS.ESS2.A: Earth Materials and
Systems**

All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. (MS-ESS2-1)

DCI: Earth's Systems

**MS.ESS2.A: Earth Materials and
Systems**

The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. (MS-ESS2-2)

DCI: Earth's Systems

**MS.ESS2.C: The Roles of Water in
Earth's Surface Processes**

Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations. (MS-ESS2-2)