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| <p>Important Concepts</p> <p>Adaptations and Changes Over Time</p> <p>6-8 Level</p> | <p>Alaska Science Content Standard C1 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.</p> |
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Grade Level Expectations:

The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution by

[6] **SC1.1** recognizing sexual and asexual reproduction

[6] **SC1.2** recognizing that species survive by adapting to changes in their environment

[7] **SC1.1** comparing and contrasting sexual and asexual reproduction

[7] **SC1.2** describing possible outcomes of mutations (i.e., no effect, damage, benefit)

[8] **SC1.1** describing the role of genes in sexual reproduction (i.e., traits of the offspring)

According to AAAS's Benchmarks for Science Literacy*, some of the things that students should know and understand by the end of eighth grade are:

In some organisms, all the genes come from a single parent.

In organisms that have two sexes, typically half of the genes come from each parent.

In sexual reproduction, a single specialized cell from a female merges with a specialized cell from a male.

The fertilized egg cell, carrying genetic information from each parent, multiplies to form a complete organism.

The same genetic information is copied in each cell of the new organism.

New varieties of cultivated plants and domestic animals have resulted from selective breeding for particular traits.

Small differences between parents and offspring can accumulate (through selective breeding) in successive generations so that descendants are very different from their ancestors.

Individual organisms with certain traits are more likely than others to survive and have offspring.

Changes in environmental conditions can affect the survival of individual organisms and entire species.

Many thousands of layers of sedimentary rock provide evidence for the long history of the earth and for the long history of changing life forms whose remains are found in the rocks.

More recently deposited rock layers are more likely to contain fossils resembling existing species.

Most species that have lived on the earth are now extinct. Extinction of species occurs when the environment changes and the individual organisms of that species do not have the traits necessary to survive and reproduce in the changed environment.

Reproduction is necessary for the survival of any species.

*Project 2061, American Association for the Advancement of Science, Benchmarks for Science Literacy. New York: Oxford University Press, 1993.