

SEPUP Reproduction 3rd Edition—Phenomena, Driving Questions and Storyline

Although each person is unique, each tends to have traits more similar to those of their biological relatives than to the general population.

What explains the similarities and differences between related individuals?

Phenomenon	Driving Questions	Guiding Questions	Activities	PE	Storyline/Flow
Some health conditions can be passed from parents to offspring.	What determines whether a person will have a genetic disease and how they will be affected?	What questions should Joe ask his doctor and the genetic counselor? (Activity 1)	1 (14)	MS-LS3-2	What does an individual with a genetic condition need to know about the science related to their condition?
Organisms tend to resemble their biological relatives, yet each individual is unique.	How do organisms inherit traits from their biological parents?	How are simple inherited traits passed from parents to their offspring and then to the next generation? (Activity 2)	(1), 2, 3, 4, 5, 6, 8, 9	MS-LS3-2	In some way, information is passed from parents to offspring.
		What do cells have to do with sexual and asexual reproduction? (Activity 3)			Cells transmit the genetic information that determines traits to offspring cells.
		What happens when two parents with different traits have offspring? Why? (Activity 4)			Patterns can be observed in the offspring from a cross, and these patterns provide evidence of how genes are passed on and interact.
		How can we model and predict the ratios of traits observed in the offspring of parents with two versions of a trait? (Activity 5)			We can use models to predict the ratios of traits in offspring.
		What causes the patterns that can be observed when two parents with different traits have offspring? (Activity 6)			Similar patterns of inheritance have been found for many traits in a variety of organisms, and are useful in understanding heredity.

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		How do sex cells transmit genetic information for determining traits to their offspring? (Activity 8)			The location of genetic information on chromosomes, and the behavior of chromosomes during formation of eggs and sperm, explain the patterns of inheritance observed for many traits.
		What causes variation between offspring of the same parents? (Activity 9)			In addition to differences in genes inherited from parents, environmental differences can lead to variation.
Even genetically identical organisms aren't exactly the same.	What causes the differences between genetically identical organisms?	What causes the differences between genetically identical organisms? (Activity 7)	(1), 7, 9	MS-LS1-5	Environmental factors can lead to differences between organisms, even when those organisms share the same genetic information.
		What causes variation between offspring of the same parents? (Activity 9)			Both genetic and environmental factors can cause variation.
Specialized structures and behaviors are important for organisms to survive and reproduce.	How do inherited behaviors and structures increase the likelihood of successful reproduction?	How do animal behaviors and other traits affect the probability of successful reproduction? (Activity 10)	10, 11	MS-LS1-4	Genetic factors can affect traits, including animal behavior and structures, needed for successful reproduction of animals.
		How do specialized plant structures and traits affect the probability of successful reproduction in plants? (Activity 11)			Genetic factors can affect animal behavior, as well as plant structures, needed for successful reproduction of plants.

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Mutations can cause changes in function, including the changes in hereditary health conditions.	How do mutations cause changes?	How does a gene produce a trait? (Activity 12)	12, 13	MS-LS3-1	A gene codes for a protein, and the structure of that protein is important for proper function. In Marfan syndrome, the gene affects a protein called fibrillin.
		How can a change in a gene, like the gene linked to Marfan syndrome, lead to a change in the function of a person’s body? (Activity 13)			A change in a gene can change the structure and function of a protein, such as fibrillin. This explains how the gene affects a person’s body.
Some health conditions can be passed from parents to offspring.	What determines whether a person will have a genetic disease and how they will be affected?	What have you learned that could help Joe understand and make choices about his situation if he does have Marfan syndrome? (Activity 14)	(1), 14	MS-LS3-2	Understanding how genetic and environmental factors interact helps people understand and manage genetic conditions.

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