

Inheritance

“We know what we are, but we know not what we may be.”
- Ophelia, in Shakespeare’s Hamlet

In this unit, we will address the following Maine Learning Results standards:

A2a: compare different types of models that can be used to represent the same thing, in order to match the purpose and complexity of a model to its use

A2b: propose changes to models and explain how those changes may better reflect the real thing

E4a: Explain that sexual reproduction includes fertilization that results in the inclusion of genetic information from each parent and determines the inherited traits that are part of every cell.

E4c: Describe asexual reproduction as a process by which all genetic information comes from one parent and determines the inherited traits that are part of every cell.

...and take a stab at this new Next Generation Science standard:

MS-LS3-2. Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

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Key Terms

Trait	Alleles	Dominant
Recessive	Gene	Chromosome
Genotype	Phenotype	Heterozygous
Homozygous	Punnett square	Gregor Mendel
Sexual reproduction	Asexual reproduction	

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By the end of this unit, you should be able to...

- Describe and give examples of traits that are caused by genes and traits not caused by genes
- Explain how alleles of genes cause siblings to inherit different traits from the same parents
- Explain the difference between dominant and recessive alleles
- Use the terms “genotype” and “phenotype” to explain how traits are inherited and show up in an individual
- Use the terms “homozygous” and “heterozygous” to describe an individual’s alleles
- Use a Punnett square to solve genetics problems
- Use a genotype to build an organism’s phenotype
- Use information about parents’ alleles to predict ratios and percentages of their offspring’s traits
- Explain the advantages and disadvantages of sexual and asexual reproduction