

ASA Presentation Notes Lesson 7.1

Unit Name: [Unit 7 Genetics](#)

Lesson Topic: [Lesson 7.1 A New Pair of Genes](#)

Presentation on: [Genetic Fun-de-Mendels](#)

Gregor Mendel: The Man, the Monk, the Master of Genetics.

- Austrian monk in the mid-1800s who conducted experiments with pea plants to discover the principles of heredity.
- His work provided the basis for four laws of inheritance:
 - The law of dominance.
 - The law of segregation.
 - The law of independent assortment.
 - The law of unit characters.

What are genes?

- A **gene** is the simplest unit of inheritance.
- A **gene** influences certain genetic traits in living things.
- The collection of similar genetic make-up of plants or animals is referred to as **genotype**.

What do genes do?

- **Genes** are carried in the **chromosomes** in the **gametes**.
- **Genes** are passed from parent to offspring through the process of **meiosis** and **mitosis** during sexual reproduction.
- The genetic transfer of traits from parent to offspring is called **heredity** or **inheritance**.

Defining Traits of Living Things.

- **Genotype**.
 - **Genotype** is the genetic make-up of living things.
 - Individual organisms of the same **genotype** breed alike.
- **Phenotype**.
 - **Phenotype** is the observed characteristics of an individual organism without reference to its genetic make-up.
 - Individuals of the same **phenotype** look alike but may not breed alike.

How Heredity is Affected by Genes.

- Each characteristic or trait has two genes – one derived from each parent.
- If both genes for a characteristic are the same, the animal is **homozygous** for that characteristic.
- If the two genes differ for a given characteristic, the animals are **heterozygous**.

Which Trait Wins in Heterozygous Pairings?

- The law of dominance offered by Mendel states that one gene of the pair may exert its influence over the other.

Dominance.

- A **dominant gene** overrides the other gene and is visible in the organism's physical characteristics (i.e., phenotypic characteristics).
- This is sometimes referred to as a **dominant trait**.

Recessive.

- The other gene partner of heterozygous traits will not be seen in the phenotype.

- It does still remain in the genotype however.
- When crossed with another animal containing the same recessive trait, some offspring may show the recessive characteristic.

Predicting Offspring.

- Each gene is signified by a letter.
- Each gene is paired with another – one gene from each parent.
- If the letter is capitalized it is a dominant gene.
- If the letter is not capitalized it is a recessive gene.

Polled Trait in Herefords.

- If polled is a dominant trait, it is represented by the letter “P.”
- If a parent is homozygous for the genetic traits of polled, the gene pair would be “PP.”
- If it is heterozygous for polled traits, the gene pair would be “Pp.”

Punnett Square.

- Use a Punnett Square to determine the offspring for two homozygous parents:

Results of Homozygous Pairing.

Let’s see how recessive genes reappear...

- Use a Punnett Square to determine the offspring for two heterozygous parents:

The Results...

ASA Reflection Page

List 5 key points that are important to remember from this presentation.

- 1.
- 2.
- 3.
- 4.
- 5.

List 3 ideas or concepts that this new information has in common with previous things learned.

- 1.
- 2.
- 3.

List questions or ideas that remain unclear about the information presented that should be asked for clarity at the appropriate time.