

Gregor Mendel: Classical Genetics

Gregor Mendel

- He is known as the _____
- His understanding of heredity came from carefully observing the characteristics of _____ over several generations

Pea Plant Characteristics & Traits

- Mendel Studied 7 different characteristics
 - A _____ is a heritable physical feature (e.g. _____)
- There were 2 variations of each characteristic
 - A _____ is a variation of a character (e.g. purple colored flowers, _____)

Genes

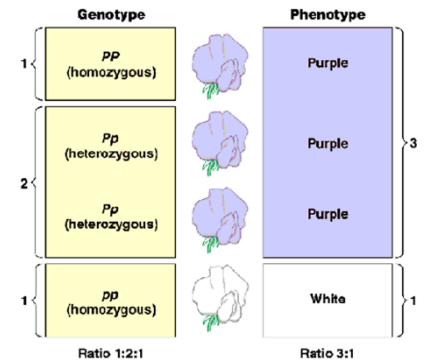
- **Gene**—_____ from parents during reproduction
 - _____, a.k.a. protein (e.g. purple flower color, white flower color)
- **Allele**—different _____. (The purple color allele and the white color allele are two versions of a single gene; they both make flower color)
 - _____
- Alleles are represented by letters: P, p
 - _____ letters are used for _____
 - _____ letters are used for _____

Genotype vs. Phenotype

_____ — the _____ (or genes) an organism inherits.

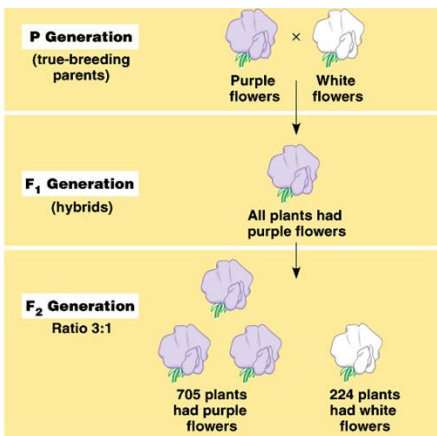
- **True "pure" breed:** organism with only one type of allele for a trait
 - _____
- **Hybrid:** organisms with two different types of alleles for a trait
 - _____

_____ — the _____ that can be "seen" (purple or white flower color)



Mendel's Experiments: Monohybrid Cross

Law of Dominance

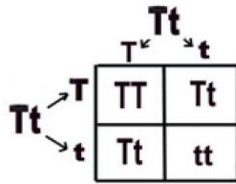


- When two _____ with different versions of a trait are crossed, the offspring will all _____
- Mendel called the version of the trait that appeared in the first generation (F₁) "dominant," and the version that disappeared _____
- Organisms with _____ genotypes (Pp) have the appearance (_____) of the allele that is _____.

- Example: purple flowers (P) are dominant to white (p); a plant with the genotype Pp will have purple flowers because purple is dominant to white

Law of Segregation

- When reproductive cells are made the _____ from each other _____



We show the Law of Segregation every time we draw a Punnett Square; the two alleles from each parent are **separated** into their own rows and columns.

- Pairs of alleles separate when homologous chromosomes separate in _____ of meiosis

Mendel's Experiments: Dihybrid Cross

- Law of Independent Assortment

- _____
 - This means that the alleles a pea plant inherits for flower color do not affect which alleles it inherits for flower position, seed shape, height, etc.
- Chromosomes line up independently of one another in the middle of the cell in _____ of meiosis

