Gregor Mendel in One Page

Gregor Mendel (1822-1884), through his experiments with pea plants, established the fundamental principles of heredity, demonstrating that traits are passed down in predictable patterns, now known as Mendelian inheritance, which includes concepts like dominant and recessive traits.

Mendel's Work:

Gregor Mendel, an Austrian monk, conducted extensive breeding experiments with pea plants in the 1850s and 1860s. He meticulously tracked the inheritance of different traits, such as flower colour, seed shape, and plant height, across multiple generations. Mendel's work laid the foundation for the field of genetics, though it was not widely recognized during his lifetime.

Key Concepts of Mendelian Inheritance:

1. **Traits are inherited as discrete units:** Mendel proposed that traits are determined by "factors" (now known as genes) that come in pairs.
2. **Segregation:** During the formation of reproductive cells (gametes), these pairs of factors separate, so that each gamete carries only one factor for each trait.
3. **Dominance and Recessiveness:** Some traits (or alleles) are dominant, meaning they mask the expression of other traits (or alleles) that are recessive.
4. **Independent Assortment:** The inheritance of one trait is independent of the inheritance of another trait, meaning that genes for different traits are sorted independently during gamete formation.

Mendel's Laws of Inheritance:

1. **Law of Segregation:** Each individual carries two alleles for each trait, and these alleles separate during gamete formation, resulting in each gamete carrying only one allele.
2. **Law of Independent Assortment:** The inheritance of one trait is independent of the inheritance of another trait.
3. **Law of Dominance:** In a pair of alleles (genetic code elements), one allele (the dominant allele) will mask the expression of the other allele (the recessive allele).

Significance of Mendel's Work:

Mendel's work provided a fundamental understanding of how traits are inherited, paving the way for the development of modern genetics. His experiments and observations demonstrated that inheritance is not a blending process, but rather a particulate process involving discrete units (genes). Mendel's laws of inheritance are still used today to predict the inheritance patterns of traits in various organisms.