Allele

An allele or allel, is one of a number of alternative forms of the same gene or same genetic locus.

Sometimes, different alleles can result in different observable phenotypic traits, such as different pigmentation. However, most genetic variations result in little or no observable variation.

An allele is one of the variant forms of a gene that occupies a specific position, or locus, on a chromosome. Genes, which are segments of DNA, provide instructions for building and maintaining the structures and functions of living organisms. Alleles are alternate versions of a gene that can result in different traits or characteristics.

Humans, like many other organisms, inherit one set of alleles from each parent. These alleles can be either identical (homozygous) or different (heterozygous). The combination of alleles an individual inherits determines their genotype, and the observable traits or characteristics resulting from those alleles make up their phenotype.

There are dominant and recessive alleles. A dominant allele will express its trait even if only one copy is present in the genotype. On the other hand, a recessive allele will only express its trait if two copies (homozygous) are present.

For example, consider a gene that determines eye color. The gene may have different alleles, such as one for brown eyes and another for blue eyes. If a person inherits a brown allele from one parent and a blue allele from the other, their genotype is heterozygous. The dominant brown allele will determine the brown eye color, and the blue allele will be masked in the phenotype. In this case, brown is the dominant trait, and blue is the recessive trait.

The concept of alleles is fundamental to understanding genetics and the inheritance of traits from one generation to the next. The interplay between alleles contributes to the diversity observed within a population.