

The TGCA advises owners/ breeders, in the colour section of the official vet's identity document, that we record **Phenotype** NOT Genotype

So hence if the animal has had DNA testing for any colours this would be recorded in the pedigree section i.e. page 22 if requested and applicable within the MSB1 & MSB2

Phenotype

The phenotype is the observable expression of the genetic information.

Phenotype: This refers to the observable characteristics or traits of an organism, which result from the interaction of its genotype with the environment. Phenotypes include physical attributes like height, colour, and shape, as well as behavioural traits. For instance, while the genotype may indicate the potential for blue eyes, the actual blue eye colour observed is the phenotype.

Genotype

The genotype refers to an organism's genetic makeup.

Genotype: This term describes the complete set of genes or genetic material present in an organism. It includes all the alleles (versions of a gene) inherited from both parents. For example, in humans, the genotype can determine traits such as blood type or eye colour. Genotypes are often represented by letters, such as "AA," "Aa," or "aa," indicating dominant and recessive alleles.

Key Differences

Nature: The genotype is the genetic constitution of an organism, while the phenotype is the physical manifestation of that genetic information.

Inheritance: Genotypes are inherited from parents and remain constant throughout an organism's life. In contrast, phenotypes can change due to environmental influences, such as nutrition or climate.

Expression: The genotype provides the instructions for traits, but the phenotype is the actual expression of those traits. For example, two individuals with the same genotype may exhibit different phenotypes if they are exposed to different environmental conditions.

Examples

Example of Genotype: In pea plants, the genotype for flower colour can be represented as "PP" (homozygous dominant for purple) or "pp" (homozygous recessive for white).

Example of Phenotype: The visible flower colour (purple or white) is the phenotype resulting from the underlying genotype.

Conclusion

Understanding the distinction between genotype and phenotype is crucial in genetics, as it helps explain how traits are inherited and expressed. While the genotype lays the groundwork for potential traits, the phenotype is shaped by both genetic and environmental factors, leading to the diversity of characteristics observed in living organisms. This distinction is fundamental in fields such as evolutionary biology, medicine, and agriculture.