

Introduction

This assignment comprises a parenthetical, a sentence, and an expanded definition of the term phenotype. This assignment is an exercise to be able to communicate effectively and understand the varying amount of details we as technical writers should disclose depending on our intended readers. This assignment is to help non-technical readers with little to no scientific background understand the word “phenotype.”

Parenthetical Definition

A random genetic mutation gave rise to the sandy-colored phenotype (observable trait) of beach mice.

Sentence Definition

A phenotype is an observable or measurable trait of an organism. A phenotype may relate to physical appearance (e.g. antlers, muscles), behavior (e.g. increased aggression), a developmental process (e.g. learning), or a performance trait (e.g. running speed). An individual's genotype (genetic composition) and its environment largely determine these characteristics.

Expanded Definition**How did its name originate?**

The word phenotype comes from the Greek Word Phainein, which means “to display” and typos meaning “type” or “general form.” Wilhelm Johannsen coined the word in 1905 and also created the terms “genes” and “genotype.”

How does it relate to Genotype?

An individual's genotype is the entire set of genes in its DNA. The genes (alleles) that are inherited and expressed, ultimately determine the phenotype of an organism. Genotype contributes to the traits, and the phenotype is the observable expression of the genes. Although genotype is a major factor that determines phenotype, the environment also influences an individual's phenotype. Therefore, the interaction between genotype and phenotype is often conceptualized by the following equation:

$$\text{Genotype (G) + Environment (E) } \rightarrow \text{Phenotype (P)}$$

How is phenotype important?

Variations in phenotypes allow some individuals to survive better than others. Some changes lead to the development of adaptive characteristics that become essential for an organism's survival. Natural selection eliminates individuals with inferior traits and preserves those with superior traits. Phenotypic variation is the basis of evolution and adaptation.

Examples of different phenotypes?

Since phenotype is an observable trait, examples of phenotypes can be any visible characteristic, such as:

- Eye color
- Hair color
- Height
- Certain types of disease
- Certain behaviors
- Size of a bird's beak
- Length of a bird's tail
- Color of the stripes on a cat
- Size and shape of the spots on a dog's back
- Flower colour
- Design of shells

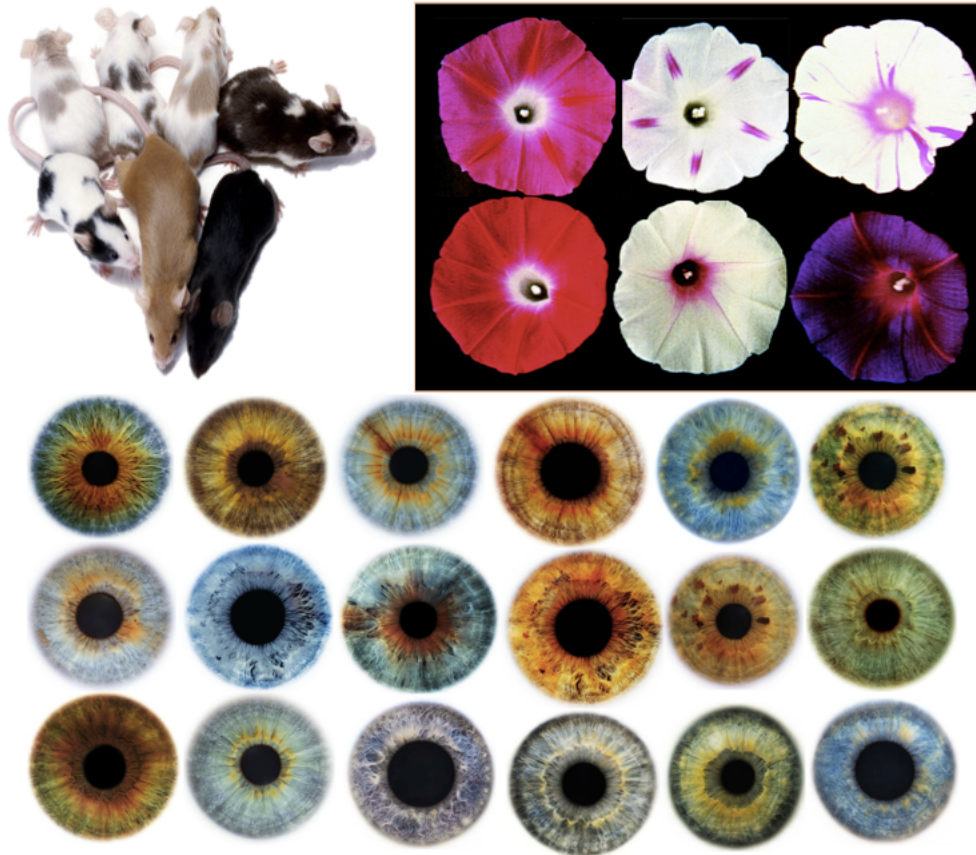


Figure 1: Examples of varying phenotypes; different mice coat color, different flower petal color, and different colored irises.

Works Cited

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