

Variation

Different species have different characteristics. Even organisms of the same species have slightly different characteristics. For example in a room full of people you will see different hair colour, eye colour, a variety of heights, etc.

Differences in characteristics are called variation and there are two causes of variation: genes and the environment.



Variation and Genes

Plants and animals have characteristics similar to their parents because they inherit genes from their parents.

Most animals, and some plants, get their genes from the mother and some from the father. The combination of genes from two parents causes genetic variation. No two organisms of the same species are genetically identical, other than identical twins.

Genetic variation can also be caused by changes in the organisms genes called mutations. Genetic mutations can cause differences in an organism's characteristic.

Some characteristics are determined only by genes. In animals these include: eye colour, blood group, and inherited disorders (e.g. haemophilia and cystic fibrosis).

Variation and the Environment

The environment that organisms live and grow in can also cause differences between the same species, called environmental variation. Differences caused by the environment are called acquired characteristics and in humans include a suntan, having a scar, neat hand writing, etc.



A plant grown on a nice sunny windowsill would grow luscious and green.

The same plant grown in darkness would grow tall and spindly and its leaves would turn yellow — these are environmental variations.

Other environmental factors that can cause variation are diet, exercise, temperature, light intensity, amount of water, etc.

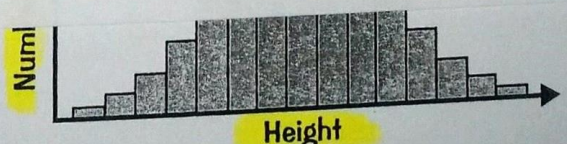
Characteristics caused by the environment are called 'acquired characteristics'.

Genes and the Environment

Most characteristics like body weight, height, condition of teeth, academic or sporting ability are a mixture of genetic and environmental factors.

For example, the maximum height an animal or plant can grow is determined by its genes, but whether it grows that tall depends on its environment (e.g. how much food it gets).

a range.



- Microorganisms – e.g. the width of bacteria varies within a range.