

Genetic variation:

Genetic variation is a term used to describe the variation in the DNA sequence in each of our genomes. Genetic variation is what makes us all unique, whether in terms of hair colour, skin colour or even the shape of our faces.

Individuals of a species have similar characteristics but they are rarely identical, the difference between them is called variation. Genetic variation is a result of subtle differences in our DNA. Single nucleotide polymorphisms (SNPs) are the most common type of genetic variation amongst people. Each single nucleotide polymorphism represents a difference in a single DNA base, A, C, G or T, in a person's DNA. On average they occur once in every 300 bases and are often found in the DNA between genes.

Genetic variation results in different forms, or alleles, of genes. For example, if we look at eye colour, people with blue eyes have one allele of the gene for eye colour, whereas people with brown eyes will have a different allele of the gene. Eye colour, skin tone and face shape are all determined by our genes so any variation that occurs will be due to the genes inherited from our parents.

In contrast, although weight is partly influenced by our genetics, it is strongly influenced by our environment. For example, how much we eat and how often we exercise. Genetic variation can also explain some differences in disease susceptibility and how people react to drugs.

Genetic variation is important in evolution. Evolution relies on genetic variation that is passed down from one generation to the next. Favourable characteristics are 'selected' for, survive and are passed on. This is known as natural selection.