Basics of Genetics

**New terms:**

Genetics – the scientific study of genes and heredity—of how certain qualities or traits are passed from parents to offspring as a result of changes in DNA sequence.

Heredity – the process by which genetic information is passed on from parent to child. This is why members of the same family tend to have similar characteristics. Inheritance describes how genetic material is passed on from parent to child.

Variability – The tendency of individual genetic characteristics in a population to vary from one another or the potential of a genotype to change or deviate when exposed to environmental or genetic factors.

Gene – a part of the DNA in a cell that controls the physical development, behaviour, etc. of an individual plant or animal and is passed on from its parents

Allele – a gene that is found in one of two or more different forms in the same position in a chromosome, and so produces a particular characteristic that can be different for different people, such as eye colour.

Genotype – an individual's collection of genes.

Phenotype – an individual's observable traits, such as height, eye color, and blood type.

**Brief history on genetics:**

Genetics as a scientific discipline stemmed from the work of Gregor Mendel in the middle of the 19th century. Mendel suspected that traits were inherited as discrete units, and, although he knew nothing of the physical or chemical nature of genes at the time, his units became the basis for the development of the present understanding of heredity. All present research in genetics can be traced back to Mendel’s discovery of the laws governing the inheritance of traits. The word genetics was introduced in 1905 by English biologist William Bateson, who was one of the discoverers of Mendel’s work and who became a champion of Mendel’s principles of inheritance.