

# Adult Guidance

## Inheritance

### Genetics

Children in Year 6 do not need to learn the specifics of DNA, genes or genomes of living things.

Nevertheless, it is likely that they will have come across some of the above terms and ideas about their relationship with inheritance, adaptation and evolution.

Genetics as a field of study is fast-changing and the research over the last few decades has shown that it is a complex field and there is much still to understand and discover.

Some of the general misconceptions occurring as a result of previous theories include:

### Genes

Many earlier theories of how genes behaved were based on Gregor Mendel's laws. These stipulated that inherited traits are linked to single genes on chromosomes in the nucleus and that each parent contributes one of two possible alleles (an allele is one form of a gene of which there are only two forms) for a trait. These were either dominant or recessive resulting in the observable inherited characteristics that we see. These are discontinuous variations.

However there are multiple alleles for some genes – for example the ABO blood type in humans.

Polygenic traits are produced by the interaction of several genes. Often the number of genes involved are large in number but small in effect – examples of these traits in humans includes skin colour, eye colour and height. These are recognisably continuous variations rather than discontinuous, which are binary. A large region of DNA that accounts for variation in a measured trait is called a locus but this can be made up of multiple genes. In addition there may be multiple loci which interact in a variety of ways!

Therefore it is important to address misconceptions about inheriting a single gene responsible for a particular observable trait.