

# Genes

# 4. Inheritance

## CONCEPT 3

## LESSON GUIDE

### MUTATIONS

#### PRECISE LEARNING POINTS

##### KNOW

I know what a mutation is.

##### APPLY

I can apply my knowledge to explain how mutations can occur.

##### EXTEND

I can extend my knowledge to explain the possible impact of mutations.

#### NOTES

When a cell divides as in the process of growth and replacement of dead cells, the genetic information is copied so that each new cell carries a replica of the parent cell. Sometime an error occurs in replication, causing a mutation, which may or may not be damaging to the organism. Changes in genes can be caused by environmental conditions, such as radiation and chemicals. These changes can affect the individual but only affect the offspring if they occur in sex (sperm or egg) cells.

Mutations happen very regularly during cell division but only sometimes are they harmful.

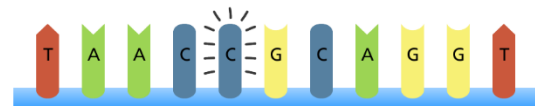
New forms of genes can be caused due to mutations which change the coding order of the base pairs in the DNA. The diagram below shows the types of mutation which may occur which change the order of the base pairs.

Mutations gives rise to variation and when mutations give an organism an advantage over other organisms, natural selection can select for this new characteristic.

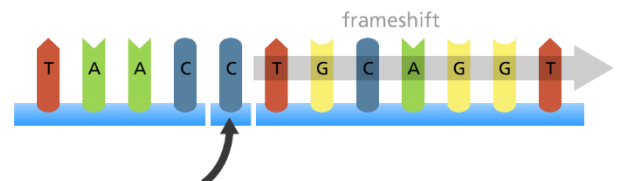
Original sequence



Base substitution



Base addition



Base deletion

