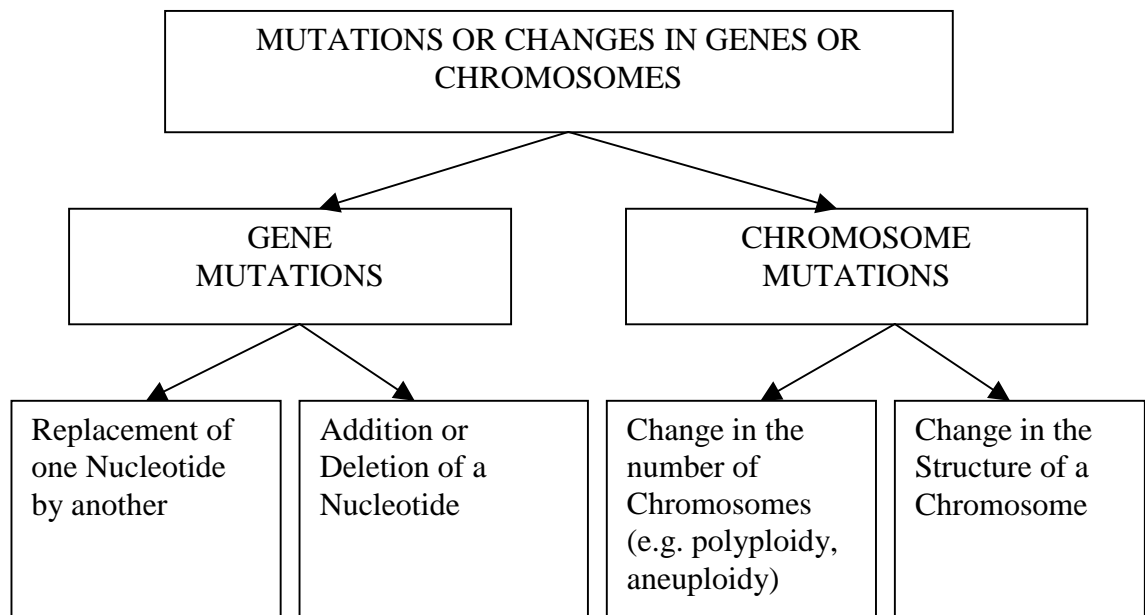


Refer to several diagrams showing mutations of genes and chromosomes in your textbook.

MUTATIONS

- ◆ Mutations are changes in genes or chromosomes.
- ◆ Mutations may be spontaneous (i.e. arise naturally as random errors in DNA) or induced (i.e. deliberately or accidentally produced by chemicals or radiation).
- ◆ Mutagens are chemicals or forms of radiation that cause mutations.



2 TYPES OF GENE MUTATIONS

1. Replacement of one nucleotide by another (also called Point Mutation) may lead to :
 - ◆ No change in the protein formed
 - ◆ Change in an amino acid and protein
 - ◆ Non-functional protein or incomplete protein if a stop codon is formed
2. Addition or deletion of a nucleotide will probably cause a non-functional protein.

TYPES OF CHROMOSOME MUTATIONS

1. Changes in the Number of Chromosomes can be of two types:
 - ◆ Polyploidy – is a condition of having extra sets of chromosomes to make organisms such as plants tetraploid (4n). This is an advantage in plants as cells are larger.
 - ◆ Aneuploidy – is a condition of the gain or loss of individual chromosomes. Examples include Down's Syndrome (extra No. 21 chromosome), Turner Syndrome (extra X chromosome in a female), and Klinefelter Syndrome (extra X chromosome in a male).
2. Change in the Structure of Chromosomes