

Mutation :- Mutation is a phenomenon which results in alteration of DNA sequence and consequently results in changes in the genotype and the phenotype of an organism. In addition to recombination, mutation is another phenomenon that leads to variation in DNA.

- The term mutation was coined by Hugo de Vries.
- Hugo de Vries work on Oenothera lamarckiana or Evening Primrose.
- Mutation brings about sudden and discrete changes in the germplasm or genetic material of the organisms.
- Mutation add new variation in the populations and are the fountain head of evolution.
- Depending upon the cause mutation are of two types. (i) chromosomal mutation (ii) Gene mutation

chromosomal mutation :-

These include genomic mutation (change in chromosome number) and chromosomal aberrations (change in chromosome structure)

(1) chromosomal Aberrations :-

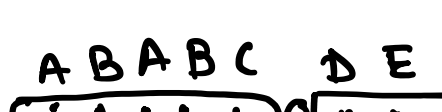
DNA helix runs continuously from one end to other in each chromatid, in a highly super-coiled form. Therefore loss (deletion) or gain (insertion or duplication) of a segment of DNA, results in alteration in chromosomes. Since genes are known to be located on chromosome, alteration of chromosome results in abnormalities i.e change in number and arrangement of gene in the chromosome known as aberrations.

- chromosomal aberrations are commonly observed in cancer cells.

- They are of following types. 

(a) Deletion :- 

(b) Inversion :- 

(c) Duplication :- 

(d) Translocation :- Exchange of genetic material between non-homologous chromosomes or between different linkage group.

(2) Gene Mutation :-

(a) Point mutation :- It arises due to change in a single base pair of DNA. Example sickle cell anemia

(b) Frame shift mutation :- deletion or insertion of base pairs of DNA lead to frame-shift mutation.

Mutagens :- Physical and chemical factor which induce mutations are called mutagens.

Example:- UV rays, X-rays, HNO_2