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Heredity and Evolution

1. The transmission of characters from parent to their off springs is known as heredity.

The study of heredity and variations is known as genetics.

♦ Clones are those organisms which are the carbon copies of one another.

♦ Variation in sexually reproducing organisms are caused due to the following factors like environment, crossing over and recombination of genes and mutation.

♦ The first study of inheritance was done by Gregor Mendel on garden pea.

♦ Paired condition of chromosomes is known as diploid.

♦ Unpaired condition of chromosomes is known as haploid.

♦ DNA (Deoxyribo Nucleic Acid), RNA (Ribo Nucleic Acid) is the genetic material in all organisms.

2. Mendel's laws of inheritance are

(i) Law of Dominance
(ii) Law of Segregation (Law of purjty of gametes)
(iii) Law of Independent Assortment

3. Genotype is the composition of genes present in an organism and the characteristic which is visible in an organism is called its phenotype.

4. When two parents cross (or breed) to produce progeny (or offsprings), then their progeny is called F1-generation (First Filial Generation) and when the first generation progeny cross among themselves to prod or second Filial Generation.

♦ Mendel conducted his famous experiments on garden pea (Pisum sativum).

♦ He used a number of contrasting characters like round / wrinkled seeds, tall/ short plants, white/ violet flowers and so on.

5. During Monohybrid Cross

♦ When tall pea plants are crossed with short pea plants then in Fi generation only tall plants were obtained.

♦ F2 progeny ofFi tall plants are not all tall but one quarter of them are short indicating that both tallness and shortness traits were inherited in F1 but only tallness trait was expressed due to dominance.

♦ In dihybrid cross two pairs of contrasting characters were considered. Tall plant with round seeds were crossed with short plant with wrinkled seeds. In Fi tall plants with round seeds were obtained. On selfing these F, plants with F2 produced tall plants with round seeds, short plant with wrinkled seeds and some new combinations (tall plant }
with wrinkled seeds and short plant with rounds seeds) were also obtained. The tall/short trait and round wrinkled traits are independently inherited.