



Phenotype: Tall and green plant – 3

Dwarf and green plant - 1

**2. Two heterozygous parents are crossed. If the two loci are linked what would be the distribution of phenotypic features in F<sub>1</sub> generation for a dihybrid cross?**

**Solution:**

The co-existence of two or more genes in the same chromosome is termed as linkage. If the genes are located close to each other and on the same chromosome, they are inherited together and are referred to as linked genes. If two heterozygous parents exhibit linkage, then the outcome is as follows:

|          |           |   |           |
|----------|-----------|---|-----------|
| Parents  | BbLl      | x | BbLl      |
| Genotype | Blue long |   | Blue long |

Phenotype in F<sub>1</sub> in all the possible may exhibit parental characters as the genes are linked completely. With all the possible genotypes in F<sub>1</sub> progeny can display blue long type of phenotype in the abovementioned example. However, if there is an incomplete linkage, the parental combination will comparatively be more than the newer combinations which are less in number.

**3. Briefly mention the contribution of T.H. Morgan in genetics.**

The contributions of T.H. Morgan in the field of genetics is as follows:

- He proposed and established that genes are positioned on the chromosomes
- He discovered the basis for variations as a result of sexual reproduction
- He discovered the concept of linkage and discriminated linked and unlinked genes
- He stated the chromosomal theory of linkage