

# Topic: **Role of Cytology in Taxonomy**

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## Role of Cytology in Taxonomy

### Chromosome Behavior in Crosses:

- The behavior of chromosomes in crosses is a reliable factor in assessing relationships.
- Pathak (1940) made a careful karyotypic analysis of various species of *Aegilops*, *Secale* and *Triticum* and they suggested that the hexaploid *T. spelta* and *T. vulgare* were probably derived through hybridisation between a tetraploid wheat.
- Roy (1959) carried out detailed genome analysis of *Aegilops longissima* and *A. sharonensis*.
- On the basis of chromosome pairing and fertility of  $F_1$  hybrids and the derived amphidiploidy, he thought that the two species are closely related.

- A polytypic species *Sisymbrium irio* plants of various sizes are available, differing in the size and shape of leaves, flowers and fruits as well as branching pattern.
- According to Khoshoo (1960), variation and evolution within this Species is primarily due to hybridisation and polyploidy and secondarily to gene mutation and structural changes in chromosomes.
- Often there exists a close parallelism between taxonomical and cytogenetical studies.
- In *Prunus persica* for example the systematics satisfactorily classified the variations; the geneticist found that these variations were inherited as per simple Mendelian laws and the cytologists found the plants to be ordinary diploids.