

Characteristic Features of Chromosomes:

i. Karyotype:

Karyotype refers to the characteristic morphological features of chromosomes of a species such as chromosome Number, Size, Position of centromere, Position of satellite, and degree and distribution of heterochromatin. Generally, karyotype is represented by arranging the haploid set of chromosomes an organism in descending order of size, keeping their centromeres in the same line. Thus the largest chromosome is placed on extreme left and the shortest on extreme right. The diagrammatic representation of karyotype of a species is known as ideogram or ideotype (Fig. 4.2). Hence, the karyotype represents haploid (gametic) chromosome number in a given

species.

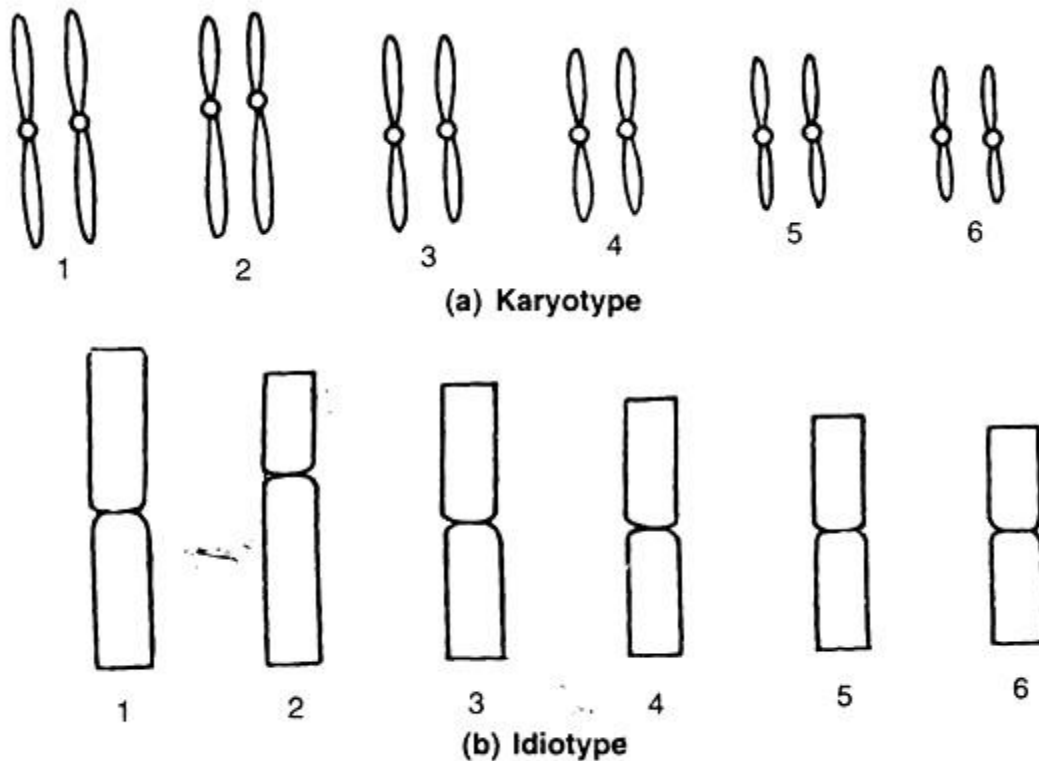


Fig. 4.2. A schematic representation of (a) Karyotype, and (b) idiotype using $2n = 12$.

Importance of karyotype study:

1. The karyotype is generally identical for a species, but it differs from species to species. Hence karyotype represents evolutionary relationships.
2. KARYOTYPE suggest primitive and advanced feature of an organism. Karyotype is of two types, viz., symmetrical and asymmetrical. In the symmetrical karyotype, all the

chromosomes are mostly Meta centric chromosomes and less variation in the size of chromosomes. Plant species with this type of karyotype are considered as primitive ones. In case of asymmetrical karyotype, the chromosomes show large differences between the size of the smallest and the longest chromosome and have fewer metacentric chromosomes. Plant species with asymmetrical karyotype are considered advanced from evolution point of view. Flowering plants having specialized zygomorphic flowers show asymmetrical karyotype. Thus, study of karyotype helps in understanding the evolutionary process.