

## Chromosomal Basis of Inheritance

15 In 1902, Walter S. Sutton and T. Boveri proposed the chromosomal theory of inheritance.

The theory provides a way, to explain how the cellular transmission on chromosomes passes genetic determinant (i.e. genes) from parent to offspring. According to this view -

1. Chromosome contains the genetic material (genes) <sup>that is</sup> transmitted from parent to offspring.

25 2. Chromosomes are replicated and passed along generation after generation from parent to offspring.

30 3. The nuclei of most eukaryotic cells contained chromosomes that are found in homologous pairs (i.e. they are diploid). One member of each pair is inherited from the mother, the other from

the father. At meiosis, one of the two members of each pair segregates into one daughter nucleus and the other segregates into different daughter nucleus. Therefore, gametes contain one set of chromosomes (i.e. they are haploid).

4. During gamete formation, different types of chromosomes segregate independently of each other.

5. Each parent contributes one set of chromosomes to each offspring.

\* Hence, the chromosome theory of inheritance describes the relationship bet<sup>n</sup> Mendel's law and Chromosomal Transmission.