

Meiosis



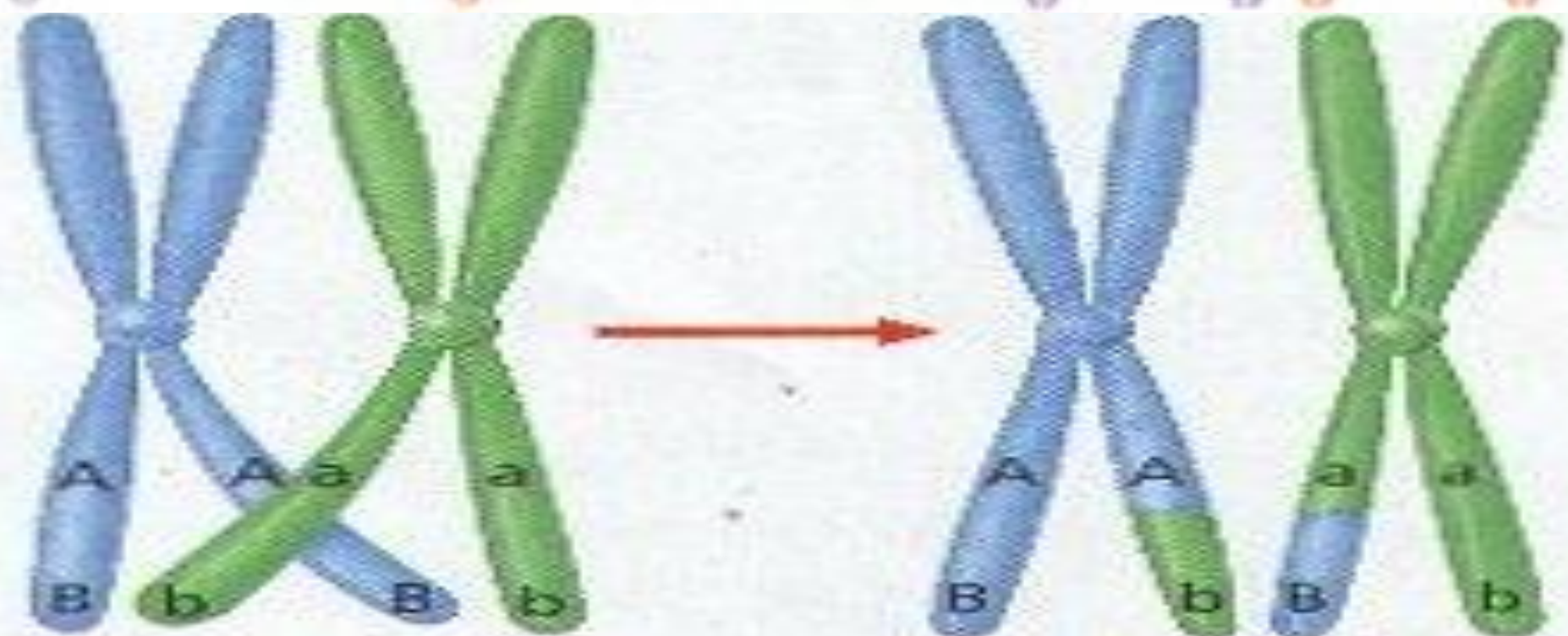
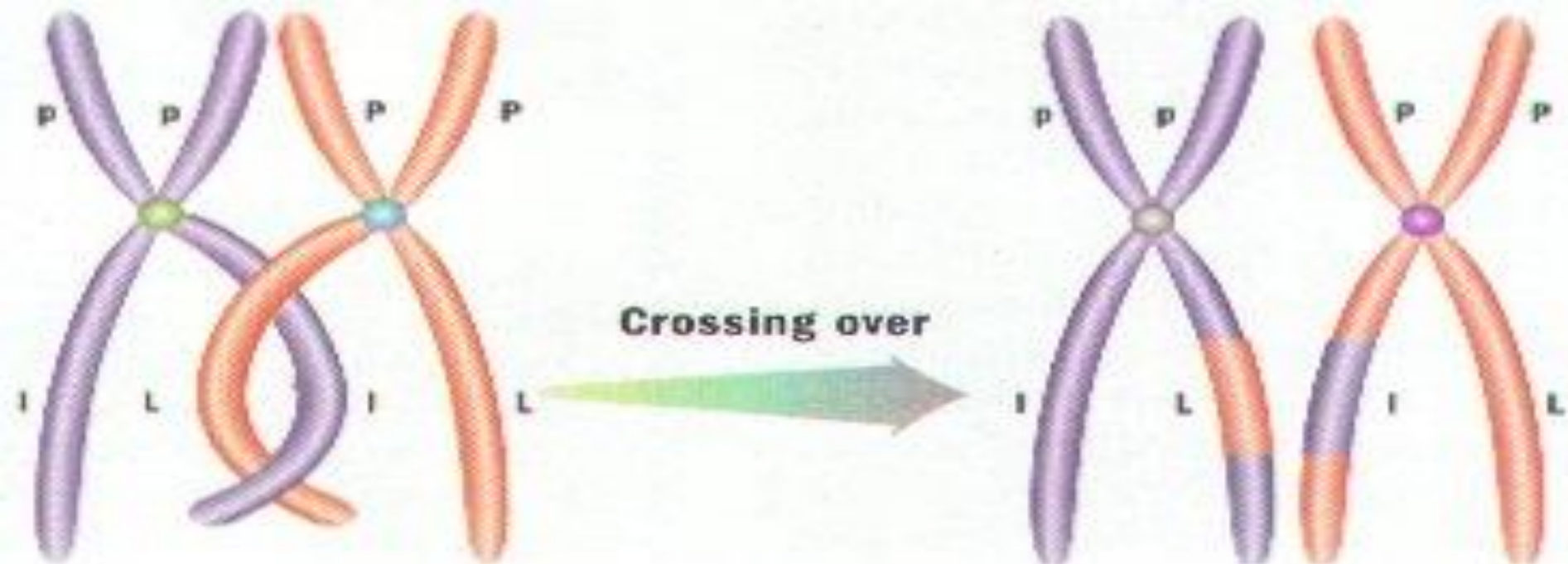
- Meiosis is the process of cell division in which the number of chromosomes per cell is cut in half.
- This is the basis of sexual reproduction.
- **Function**: to produce gametes, sex cells (sperm and egg).

MEIOSIS I

- **PROPHASE I:**

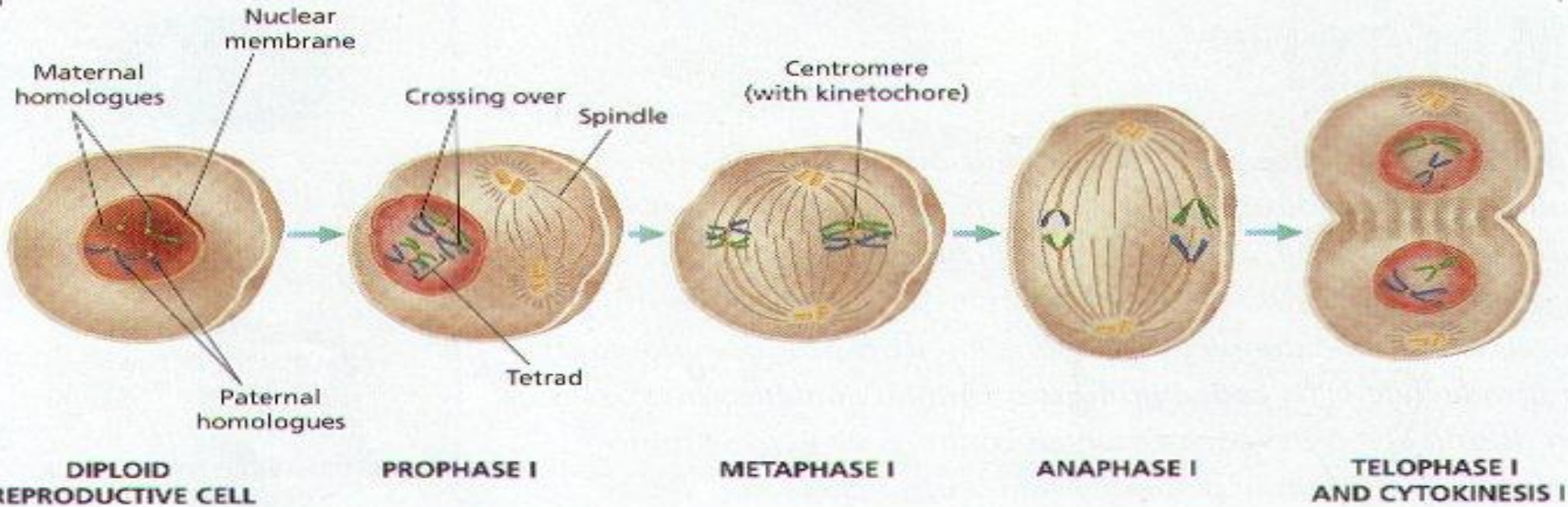
- Portions of Chromatids may break off and attach to other Chromatids on the homologous Chromosome - a process called **CROSSING-OVER**.

- **Crossing-Over causes an increase in Genetic Diversity by producing a new mixture of Genetic material.**

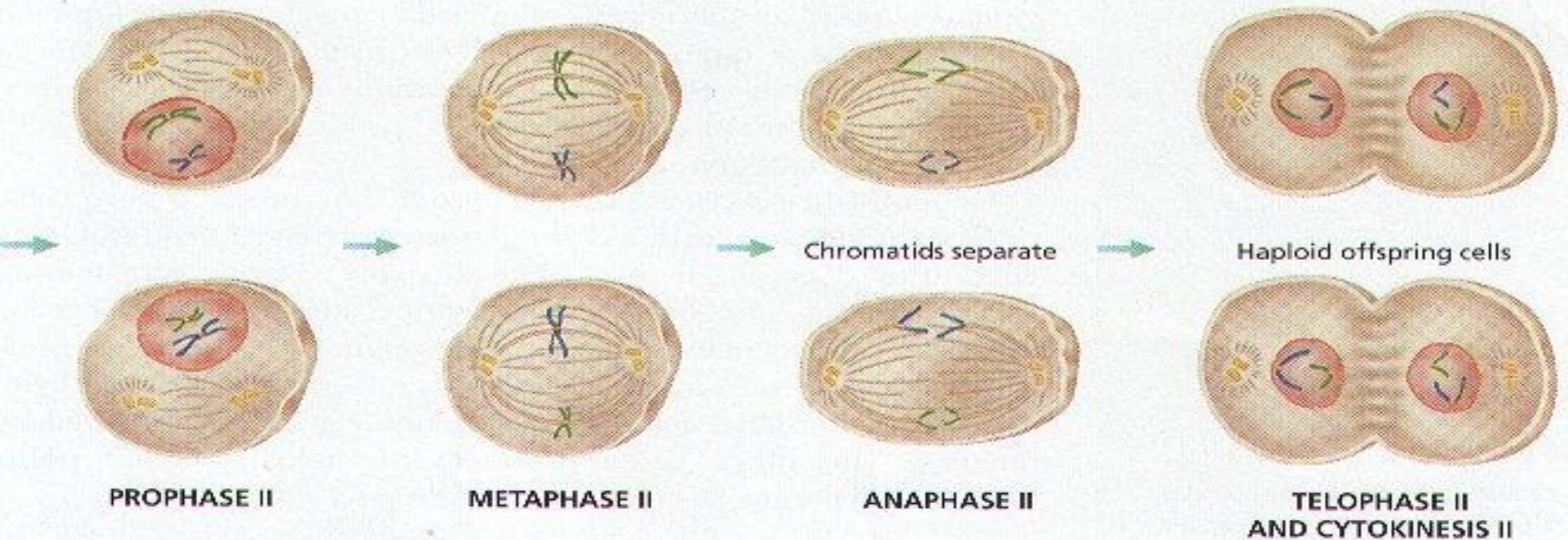


- In meiosis II each cell splits, so four cells are formed eventually, each with half the amount of DNA as in the original cell ($n = \text{Haploid}$)

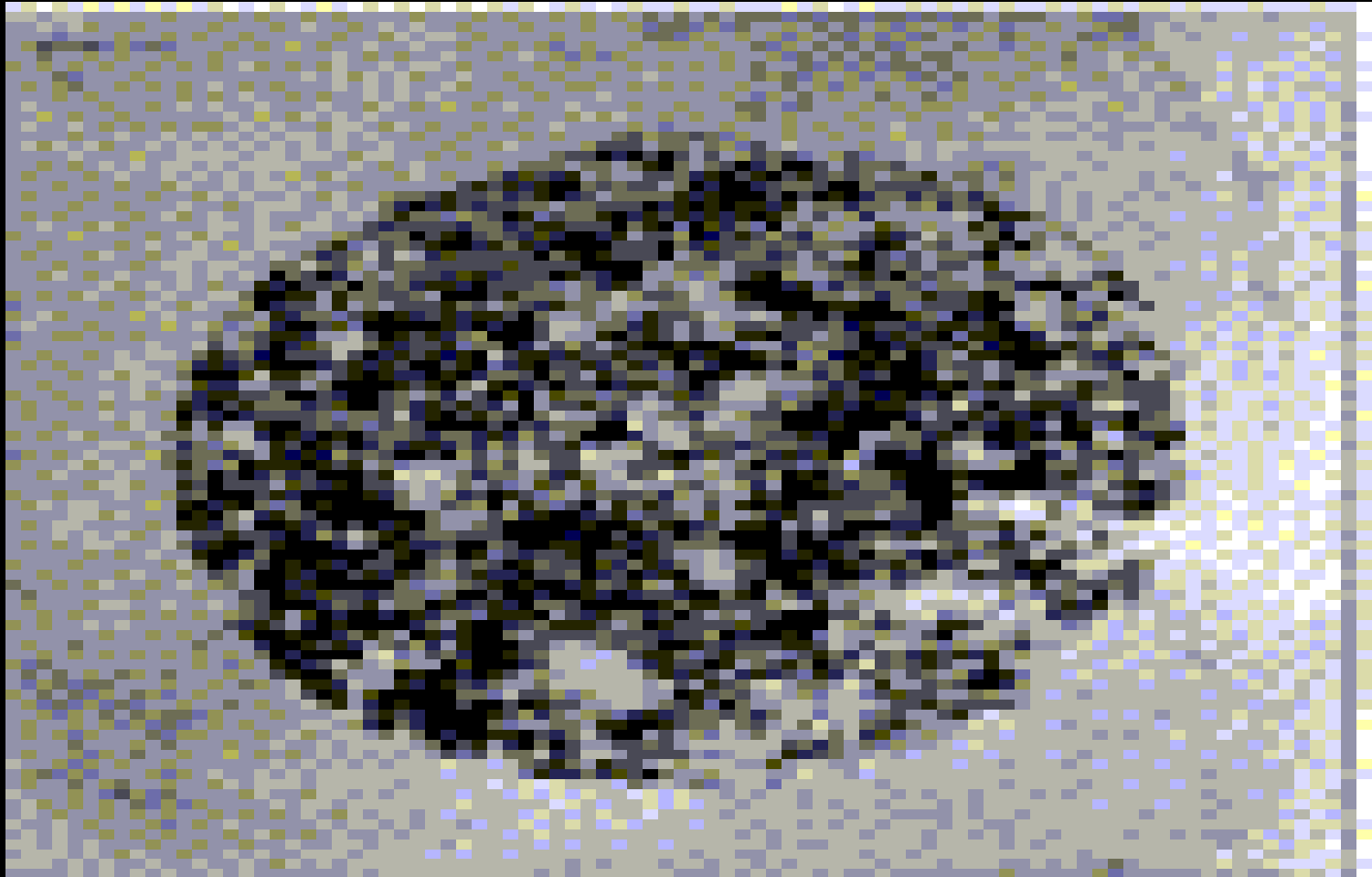
MEIOSIS I



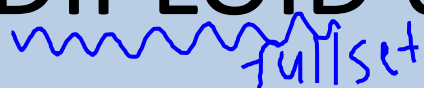

MEIOSIS II



Do a little dance!



MEIOSIS VS. MITOSIS

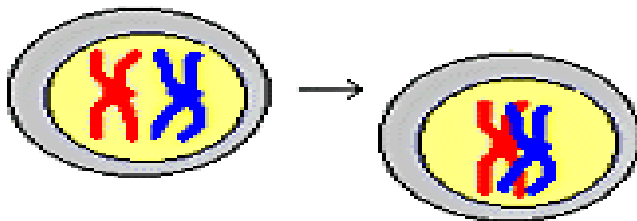
- The number of cells produced by MEIOSIS is different (4 vs. 2).
- Mitosis - One parent cell produces 2 identical DIPLOID cells.
full set
- Meiosis - One parent cell produces 4 different HAPLOID cells.
half

MEIOSIS

MITOSIS

DNA replication

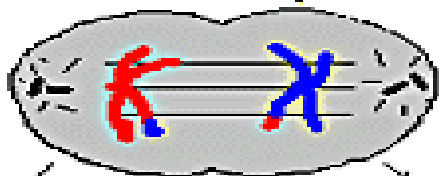
Meiotic division 1



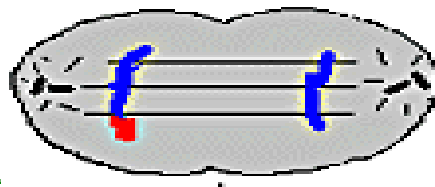
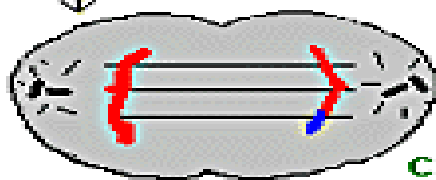
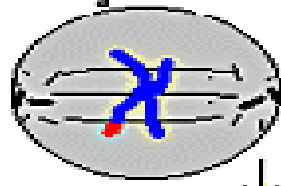
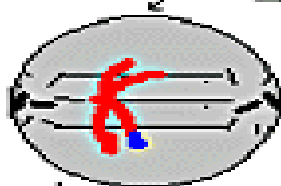
Homologous chromosomes at the same level on equatorial plate



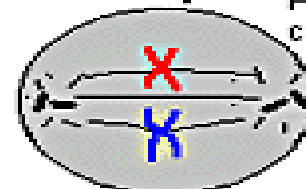
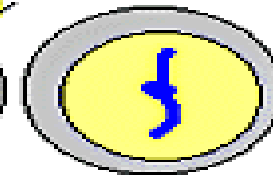
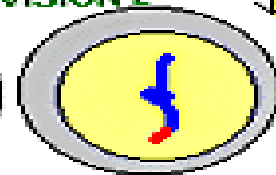
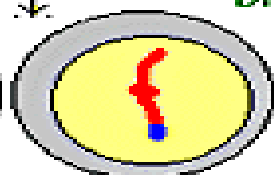
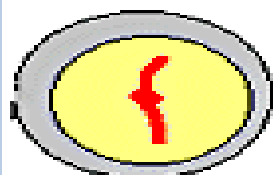
CELL DIVISION 1



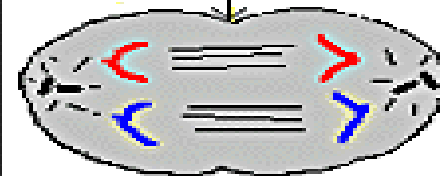
Meiotic division 2



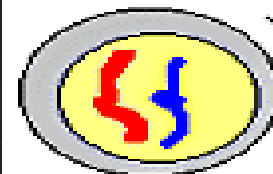
CELL DIVISION 2



Homologous chromosome line up individually at the equatorial plate



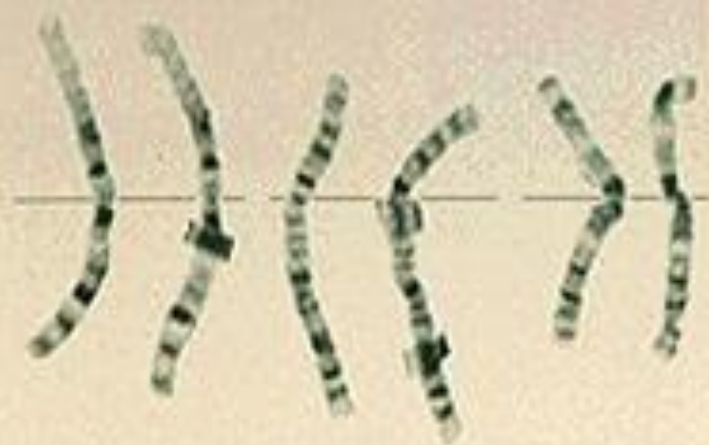
CELL DIVISION



Chromosomal Disorders

Nondisjunction: the failure of chromosomes to separate properly during one of the stages of meiosis.

- It can produce gametes with more or less than 23 chromosomes.



1

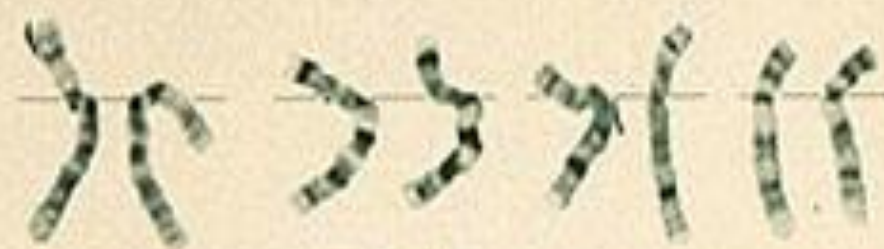
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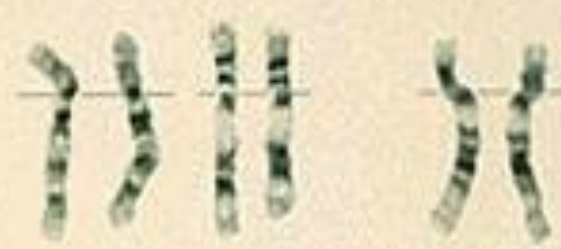


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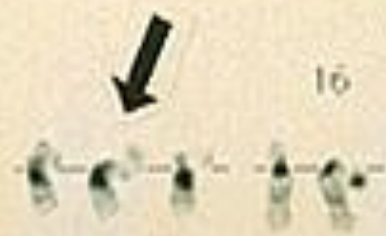
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X

Y