Meiosis

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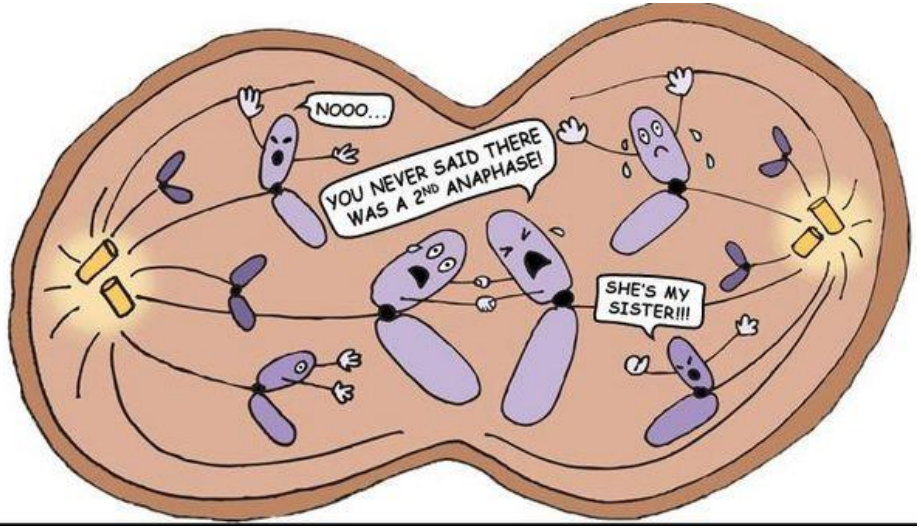
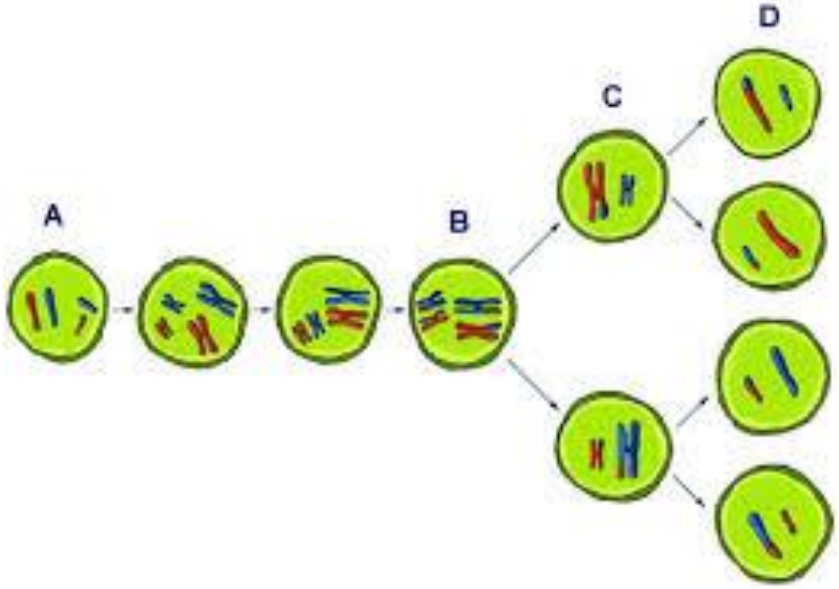
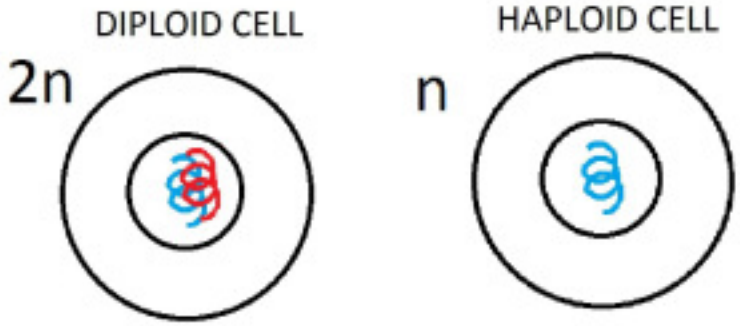




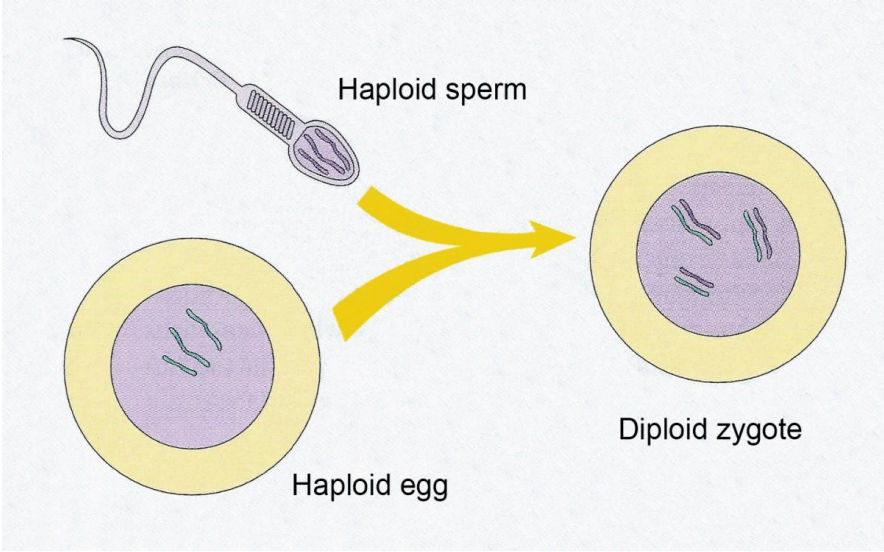
Types of Cells

- **Haploid vs. Diploid**
  - Use “n” to indicate nuclear state of cell (pairs of chromosomes)
  - Haploid (n): only 1 set of chromosomes (n=23 chromosomes)
  - Diploid (2n): having 2 sets of chromosomes (2n=46 chromosomes)
    - one set from mom and one set from dad



Types of Cells

- 2 haploid cells (sperm and egg) can combine to make a diploid (zygote)

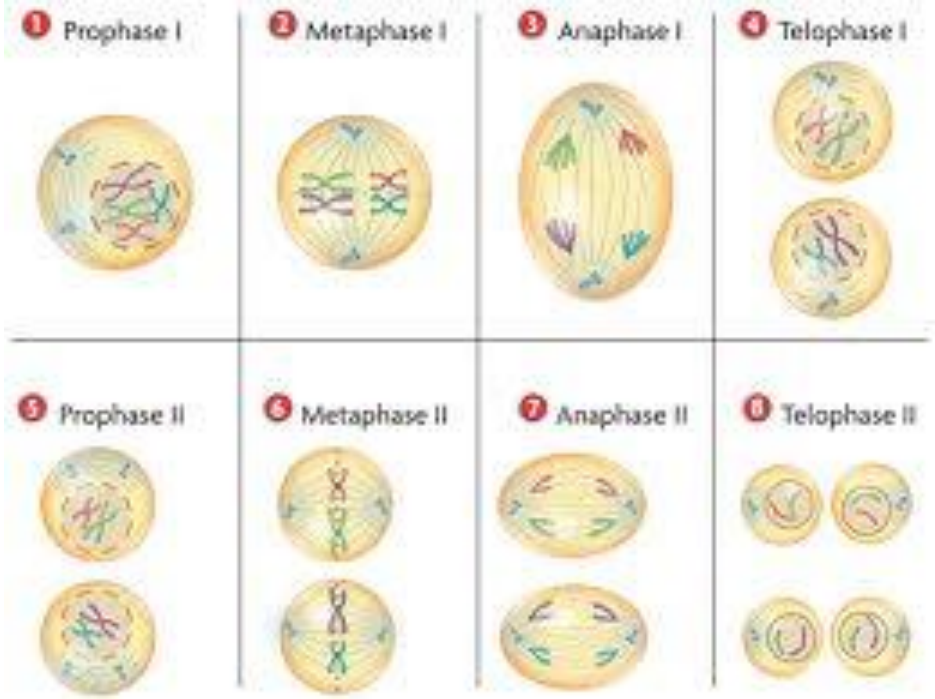


Purpose of Meiosis

- To reduce chromosome # in half (46→ 23)
- Make gametes (eggs or sperm)

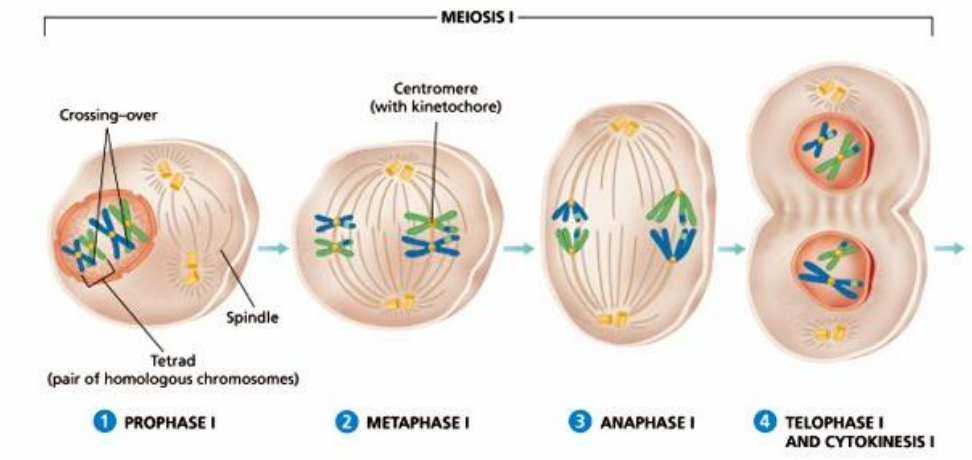
Meiosis

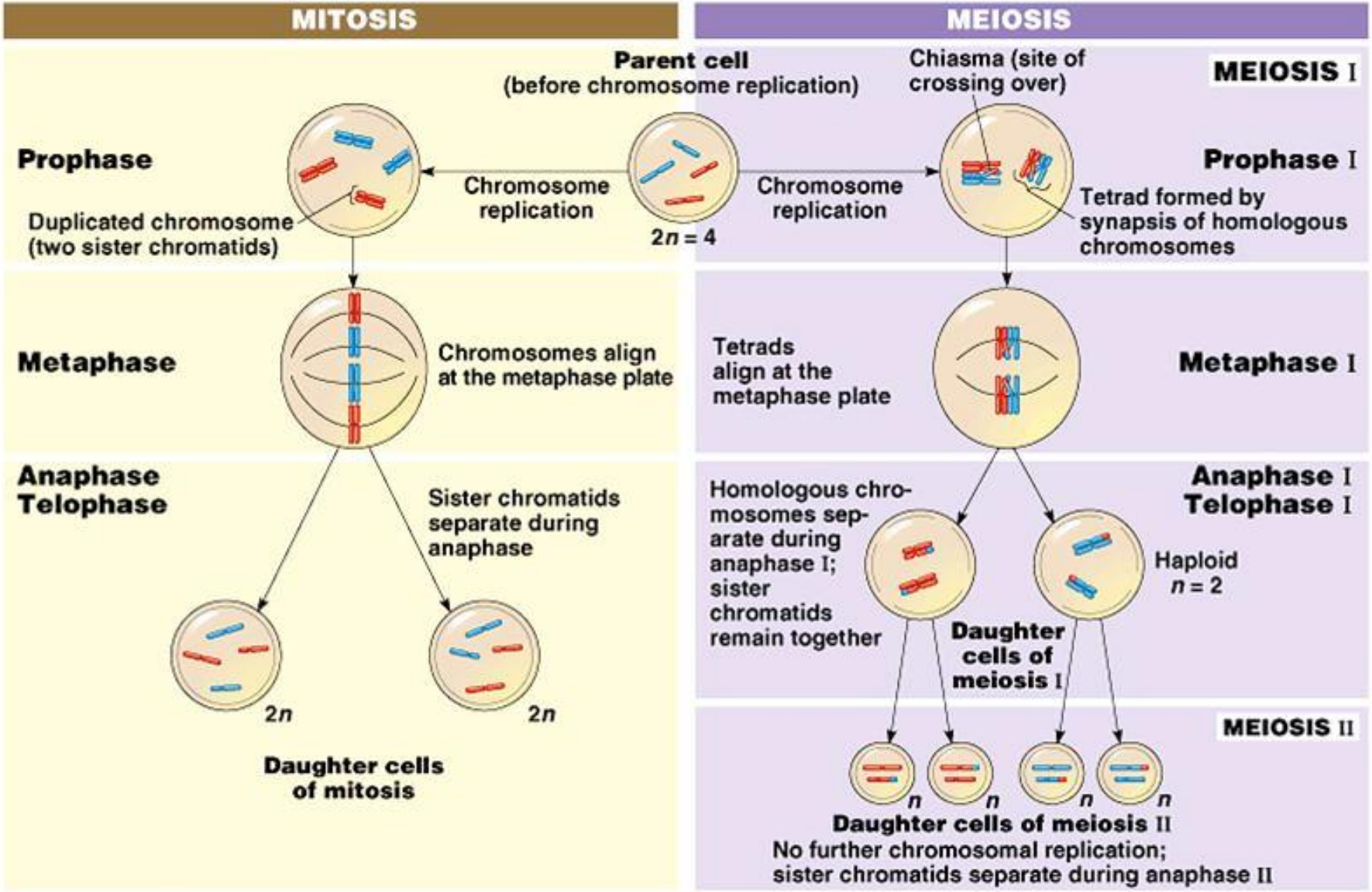
- Two cell divisions
- (1) 2n cell→ (2) 2n cells → (4) n cells
- Results in four haploid cells (n)→ gametes



Meiosis I

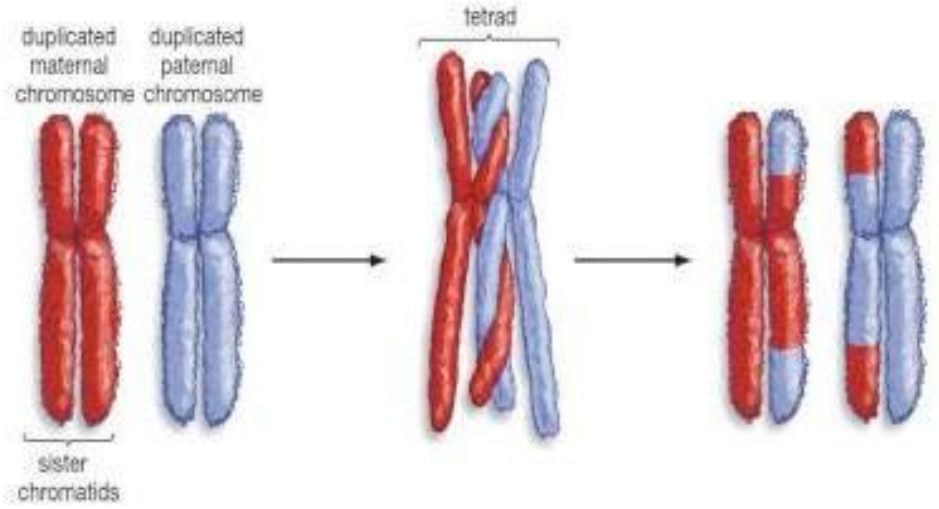
- Similar to the phases of mitosis
- (1) 2n cell → **(2) 2n cells**
- Separates **<u>homologous chromosomes</u>** in four phases (PMAT I)
  - Homologous chromosomes: similar chromosomes that code for the same types of genes, one from mother, one from father





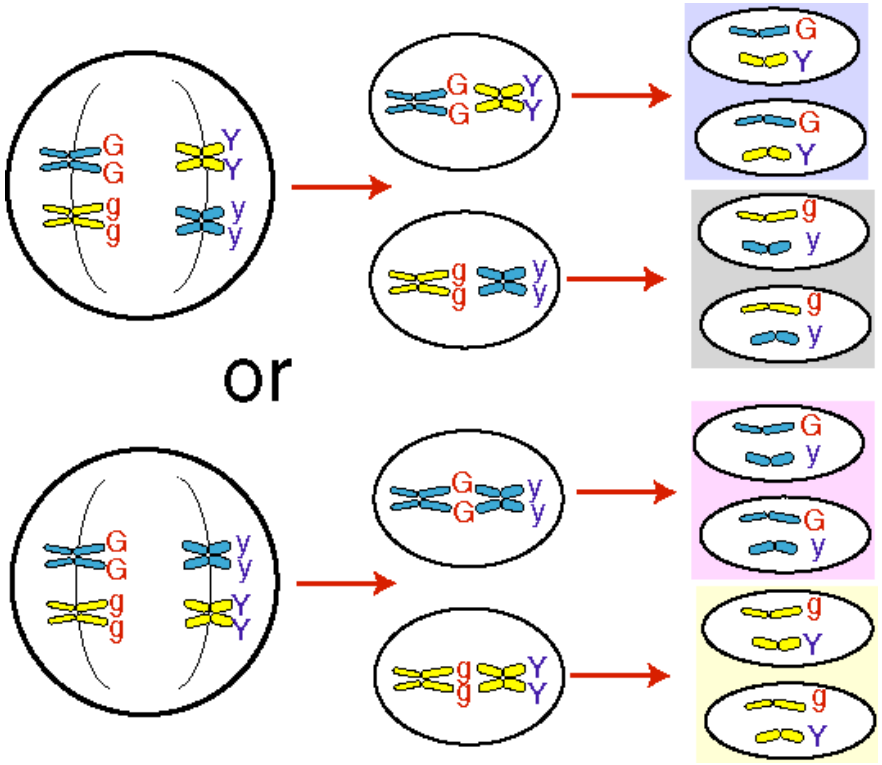
Two important events occur

- **Crossing-over:** random exchange of genetic material during Prophase I
  - homologous pairs overlap and twist on each other and exchange genetic material (increases genetic diversity)



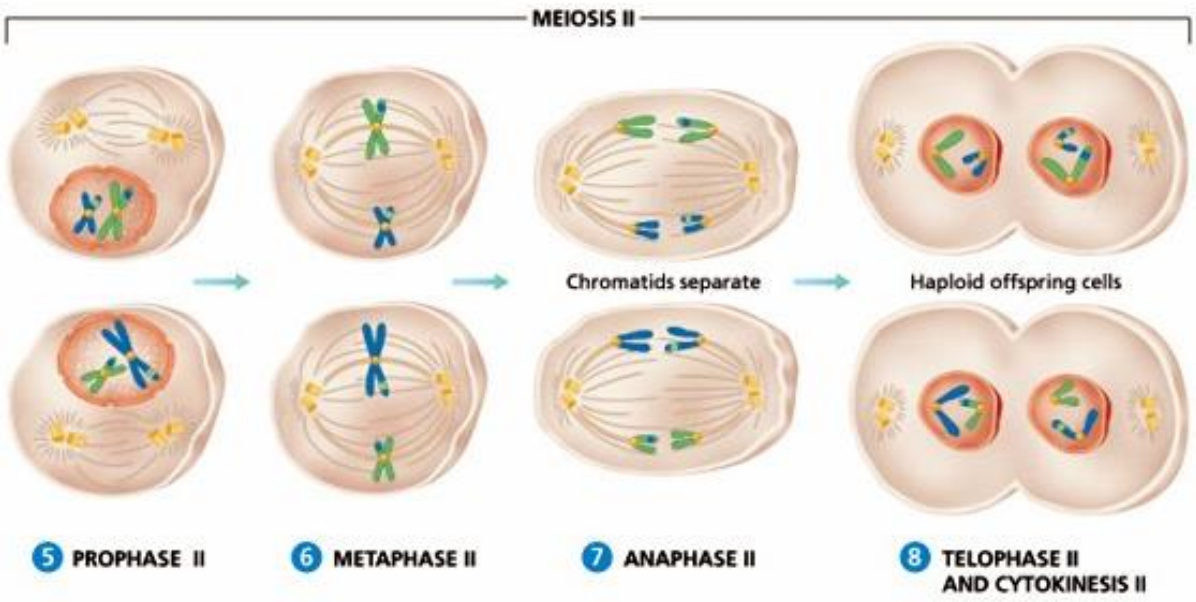
Two important events occur

- **Independent Assortment**: random separation of the homologous chromosomes occur during <u>anaphase I</u>
  - Increases genetic diversity

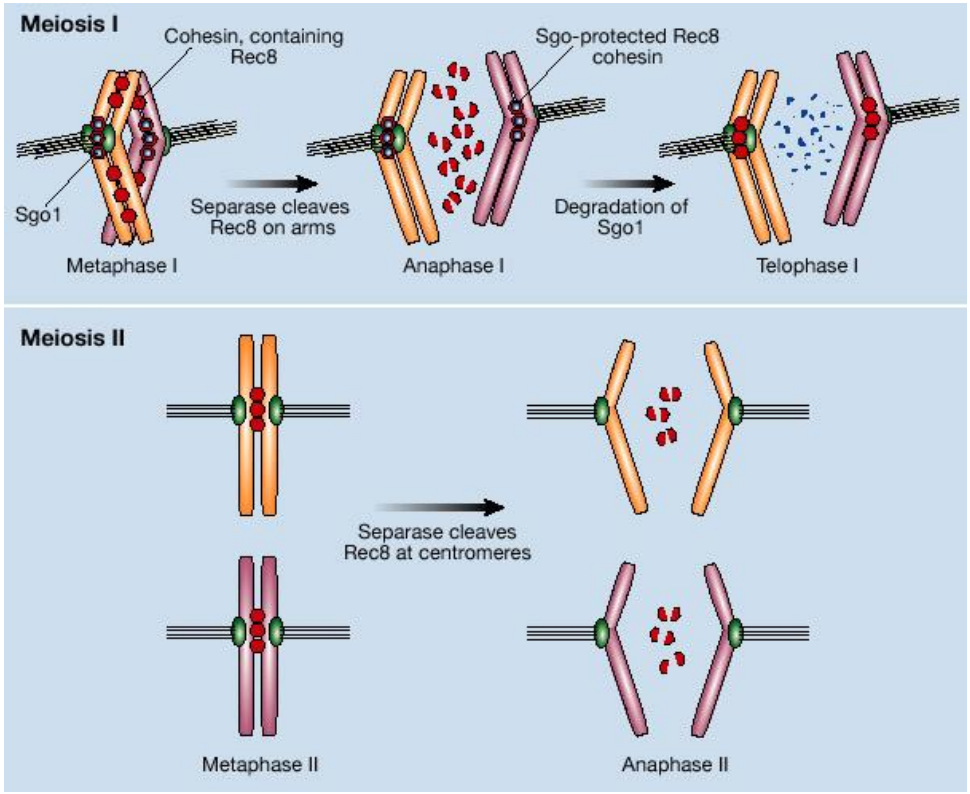


Meiosis II

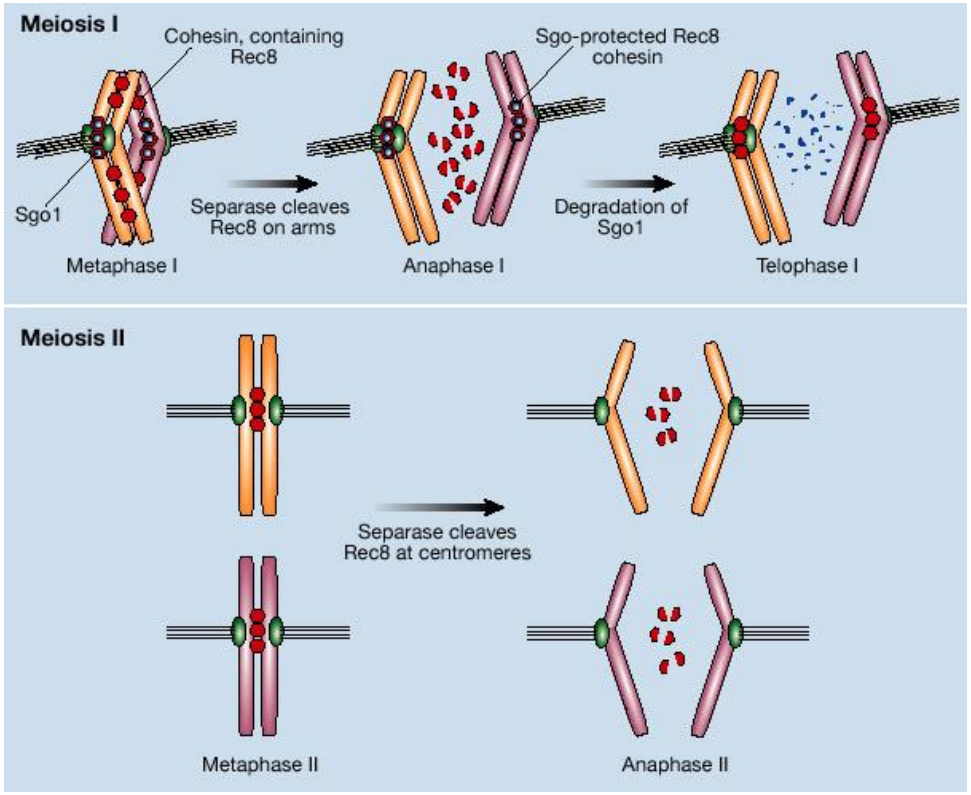
- (2) 2n cells → (4) n cells
- DNA is <u>not</u> replicated between meiosis I and meiosis II
- Divides sister **<u>chromatids</u>** in four phases (PMAT II)



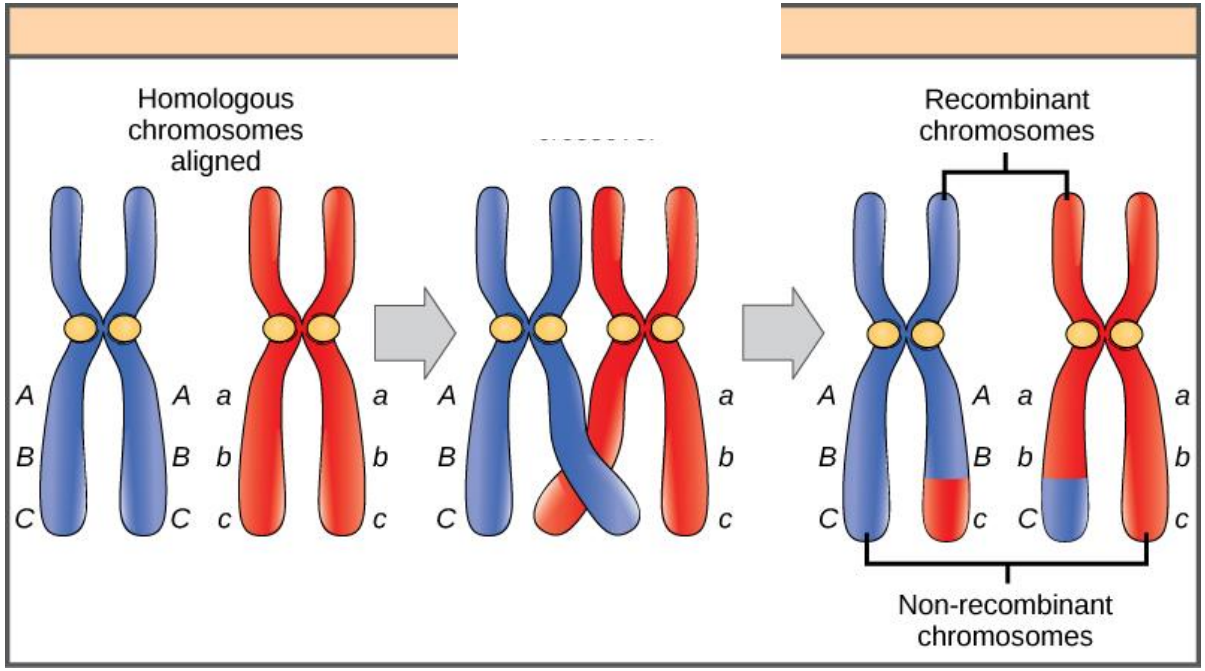
Review: Homologous chromosomes are separated during (meiosis I) or (meiosis II)?



Review: Sister chromatids are separated during (meiosis I) or (meiosis II)?

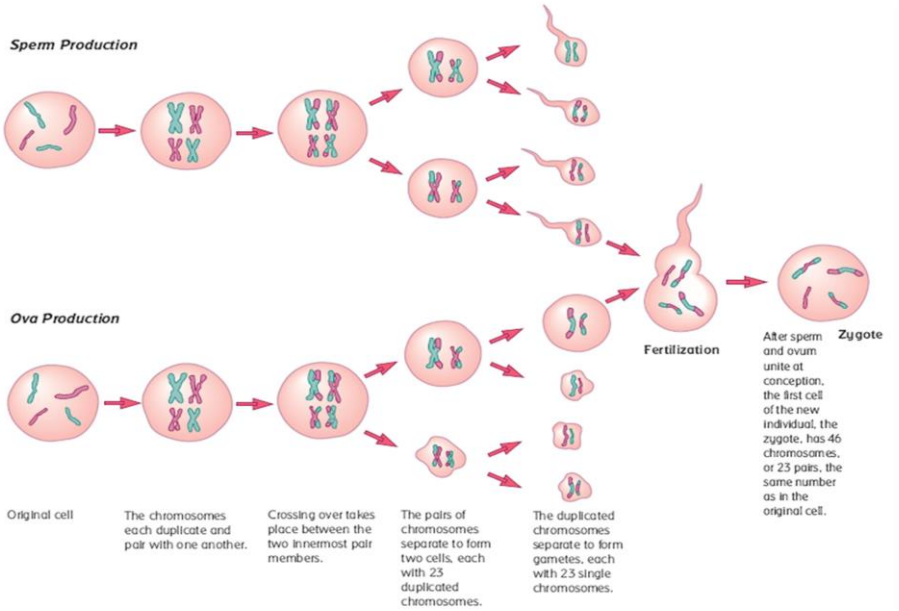


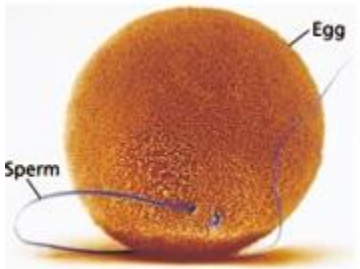
Review: Name the Event Depicted. When does this occur?



Meiosis is the formation of gametes

- Gametes differ between the sexes
  - Males produce 4 equal sperm cells
  - Females produce one large egg and 3 smaller polar bodies that are eventually broken down





Mitosis	Cell Division	Meiosis
	Number of Cells Made	
	Nuclear State of cell Made	
	Chromosome # (for humans)	
	Type of Cell Made (gamete or somatic)	
	Genetically unique or identical?	
	Picture	