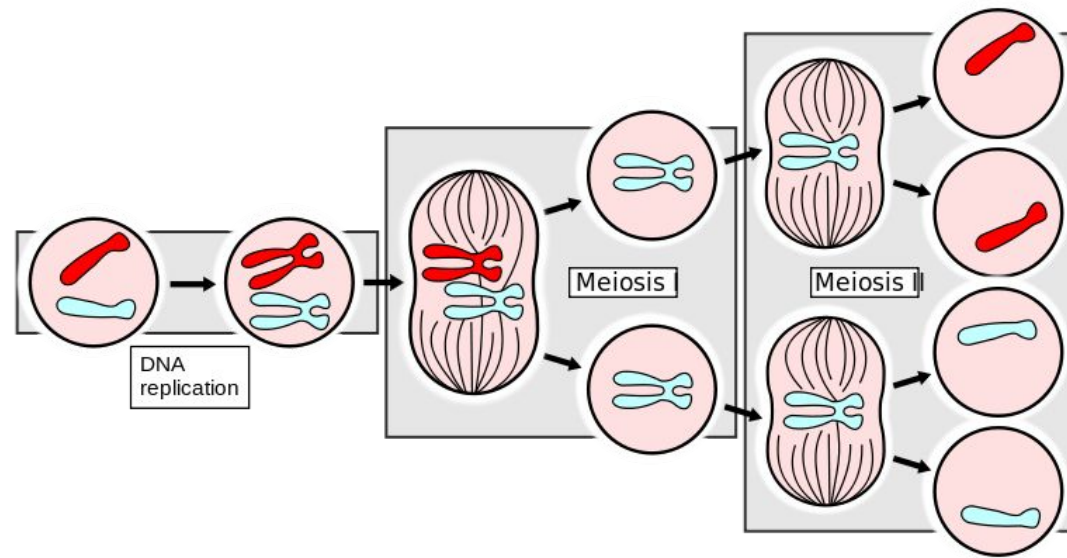


Phases of Meiosis



- Meiosis is a process in which the number of chromosomes per cell is cut in half through the separation of homologous chromosomes in a diploid cell.
- Meiosis usually involves two divisions:
 - Meiosis I
 - Meiosis II
- **The parent diploid cell becomes four haploid daughter cells by the end of meiosis II.**

Interphase

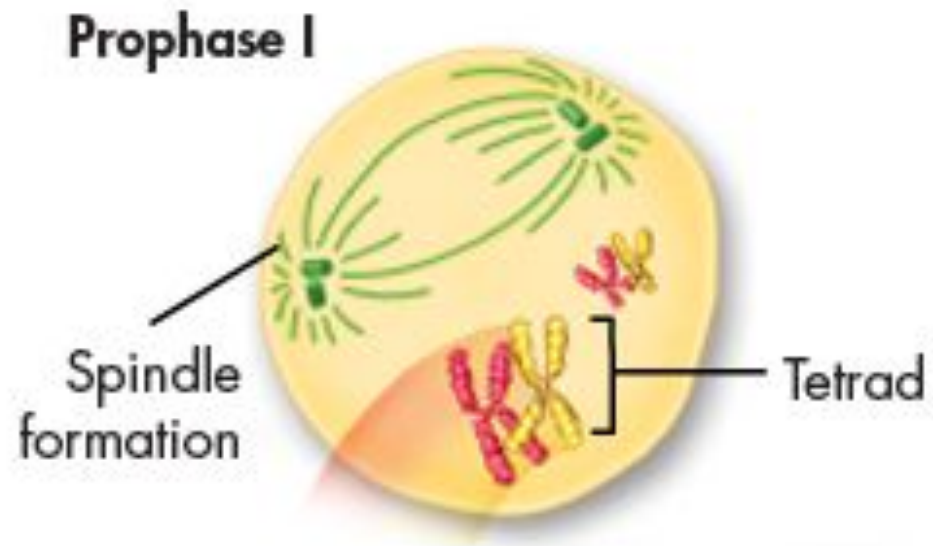
- **Chromosomes replicate.**
- **Each replicated chromosome consists of two identical chromatids joined at the centromere.**
- **Centrioles replicate.**

Interphase



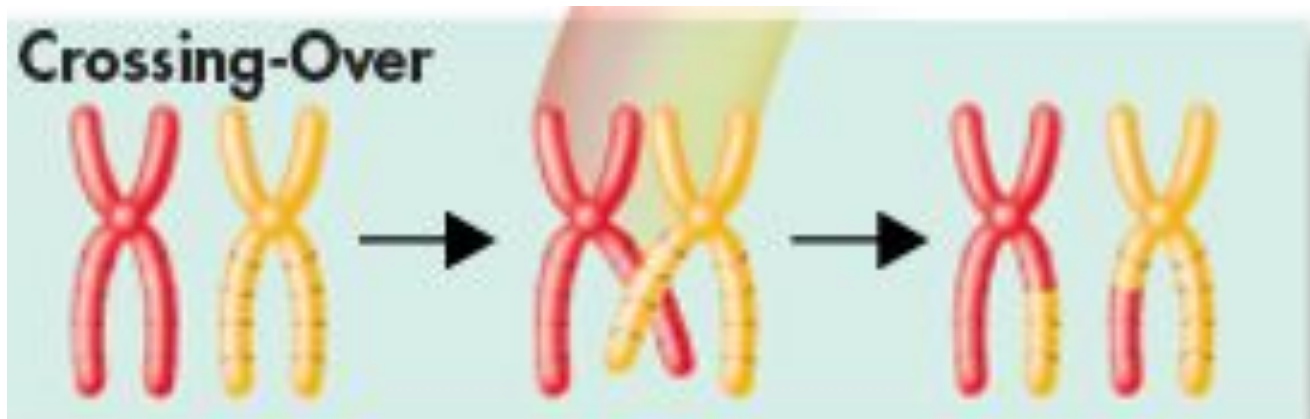
Prophase I

- Chromosomes condense.
- Nucleus disappears.
- Spindle fibers form.
- Homologous pairs of chromosomes form tetrads (4 chromatids).



Prophase I

- **Crossing-over occurs.**
 - **As homologous chromosomes pair up and form tetrads, segments of DNA are exchanged between chromatids.**



Metaphase I

- Tetrads, paired homologous chromosomes, line up in the middle of the cell.

Metaphase I



Anaphase I

- Homologous pairs are separated and move to opposite ends of the cell.
 - Sister chromatids remain attached.

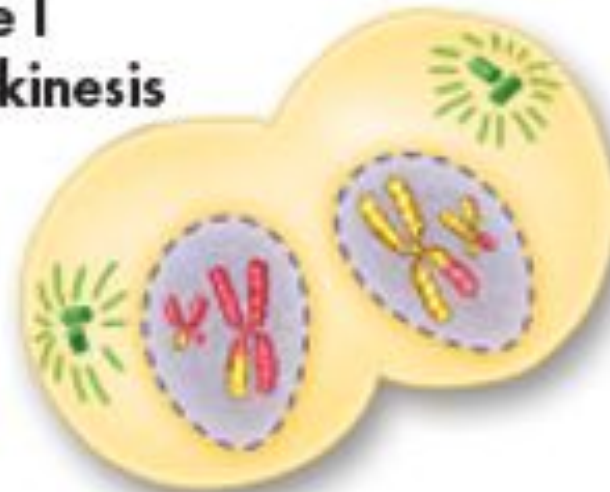
Anaphase I



Telophase I and Cytokinesis

- Chromosomes unwind.
- Spindle fibers disappear.
- Nuclei form around chromosomes.
- Cytoplasm divides producing 2 haploid daughter cells.

Telophase I
and Cytokinesis



After Meiosis I

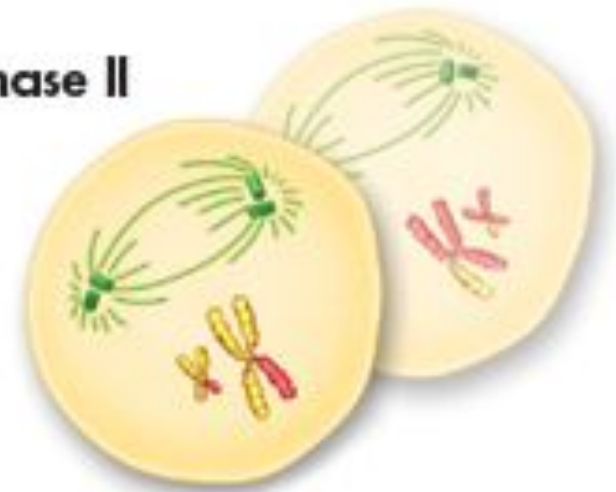
- **Two daughter cells:**
 - **Each haploid = “One set” of chromosomes**
 - **Each chromosomes has sister chromatids**
 - **Not identical**



Prophase II

- Chromosomes condense.
- Nucleus disappears.
- Spindle fibers form.
- Centrioles replicate.

Prophase II



Metaphase II

- Single chromosomes line up in the middle of the cell.

Metaphase II



Anaphase II

- **Sister chromatids are separated and move to opposite ends of the cell.**

Anaphase II



Telophase II and Cytokinesis

- Chromosomes unwind.
- Spindle fibers disappear.
- Nuclei form around chromosomes.
- Cytoplasm divides producing 4 different haploid daughter cells.

Telophase II
and Cytokinesis



After Meiosis II: Gametes

- The haploid cells produced by meiosis II are gametes.
- Gametes are reproductive sex cells.
 - Female gametes = egg cells
 - Male gametes = sperm cells
- Haploid gametes join together during fertilization to produce a diploid zygote.

