

Meiosis I

Making Sperm and Eggs



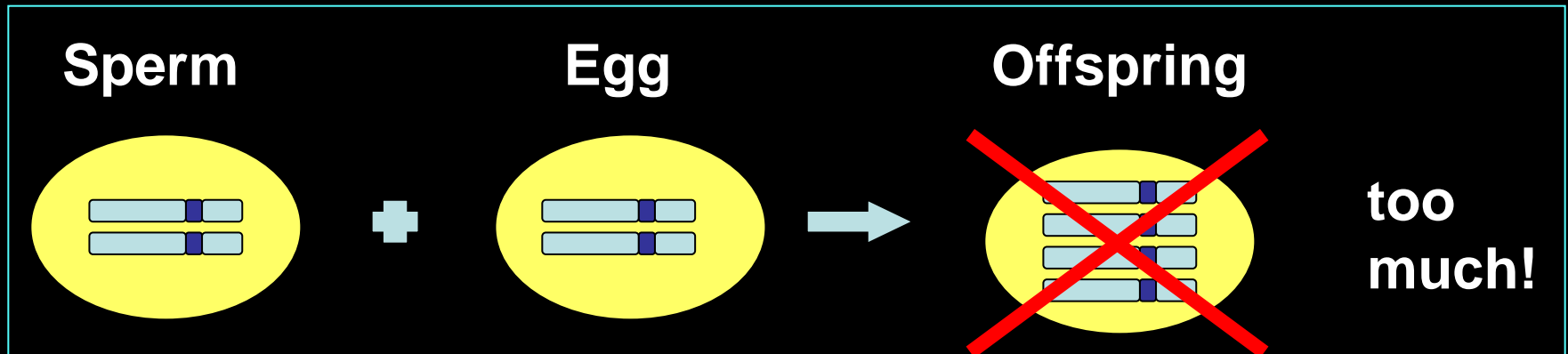
Learning Objectives

- Describe how the process of meiosis results in haploid cells
- Summarize the events of meiosis

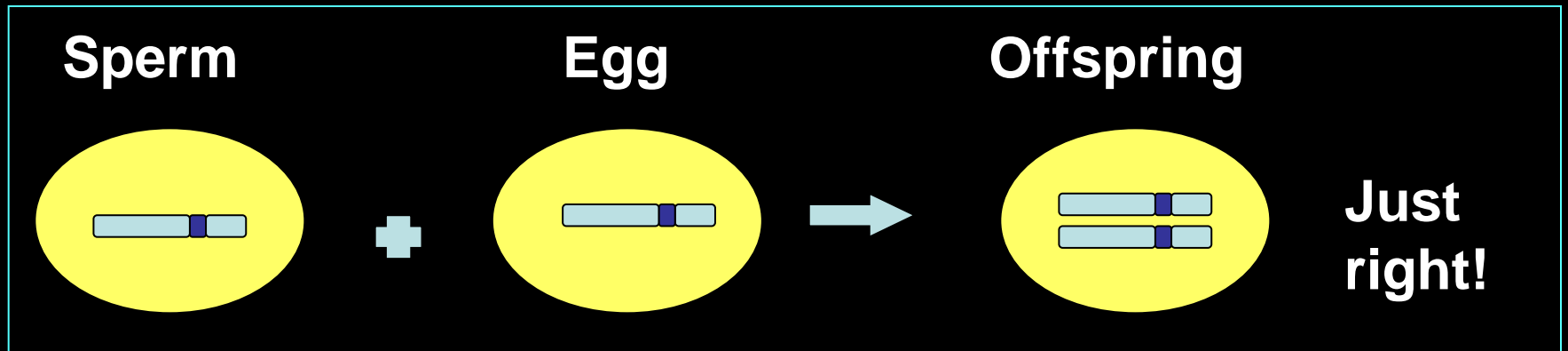
Goal #1 of Meiosis

Reduce genetic material by $\frac{1}{2}$ in gametes.

Without Meiosis:



With Meiosis:



Goal #2 of Meiosis

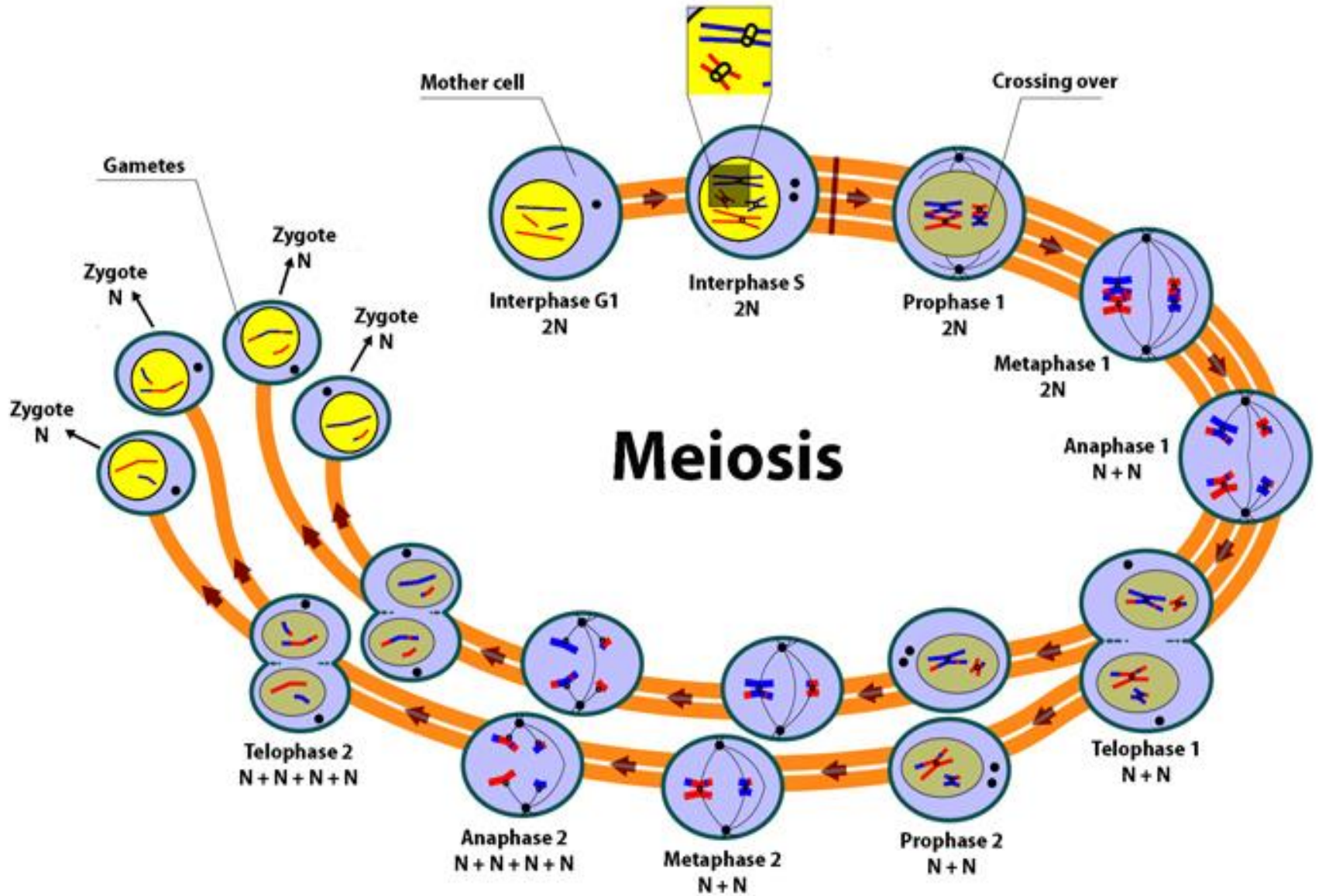
Increase genetic variation in offspring



Without Meiosis:



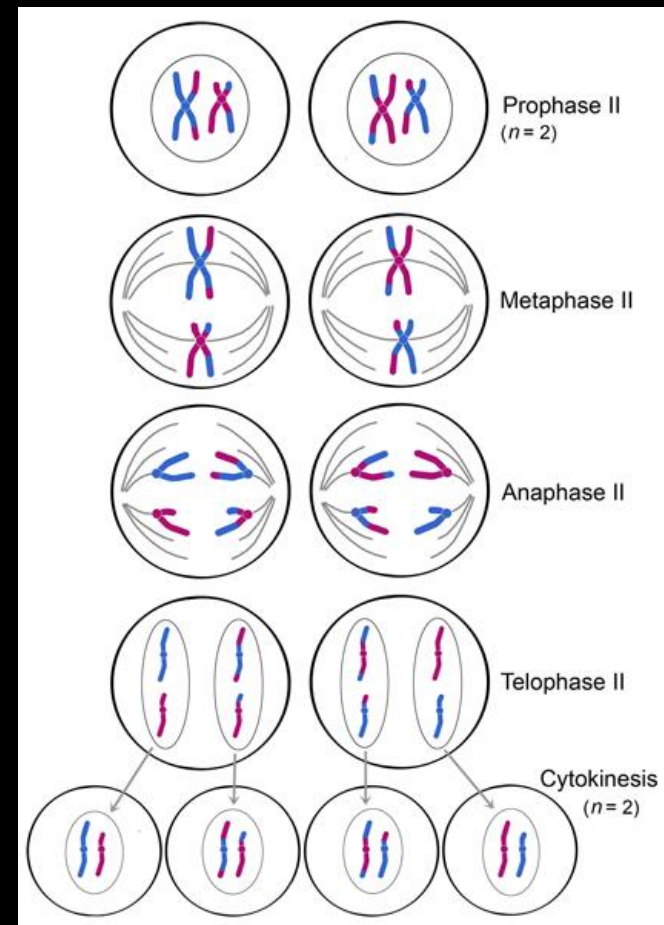
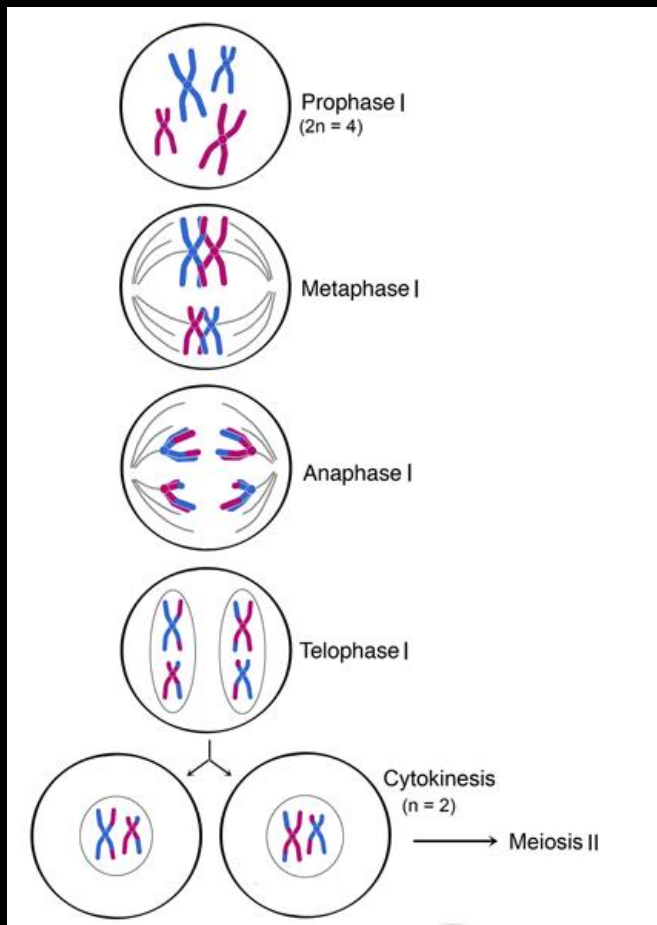
With Meiosis:



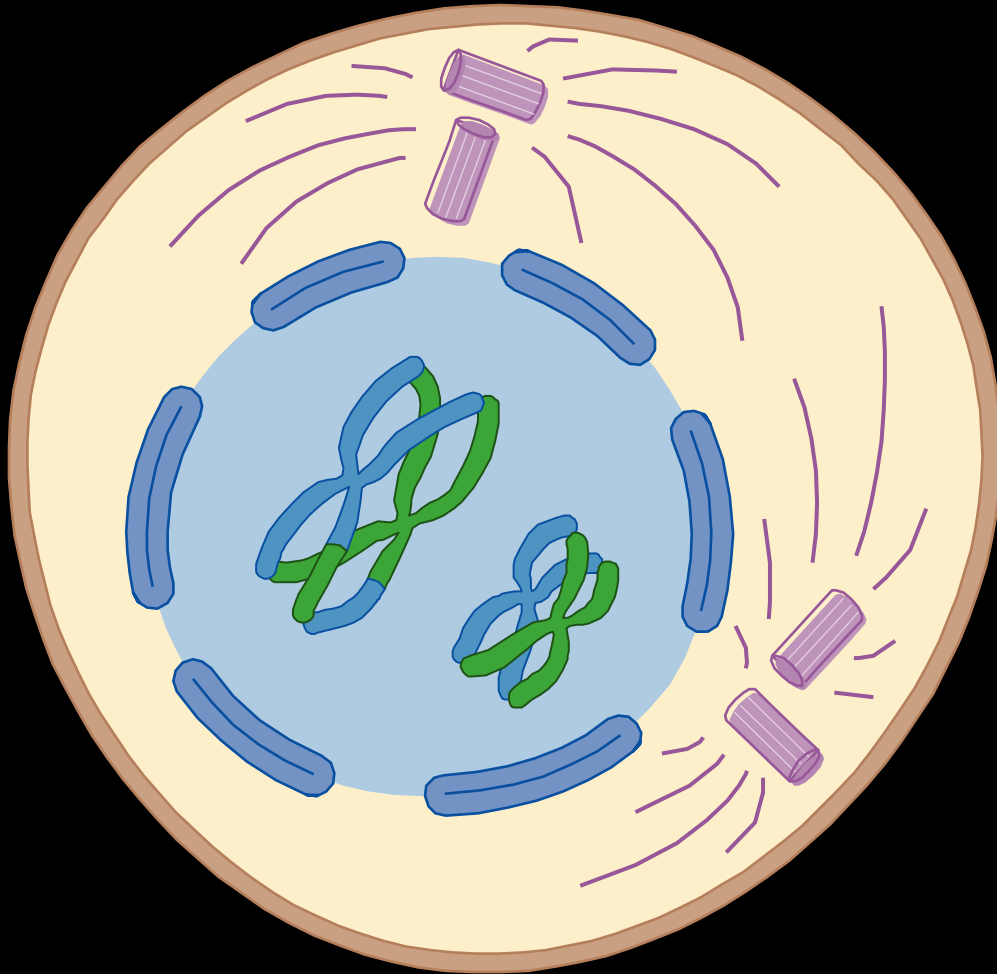
2 Phases of Meiosis

Meiosis I - Homologous chromosomes separate

Meiosis II - Sister chromatids separate

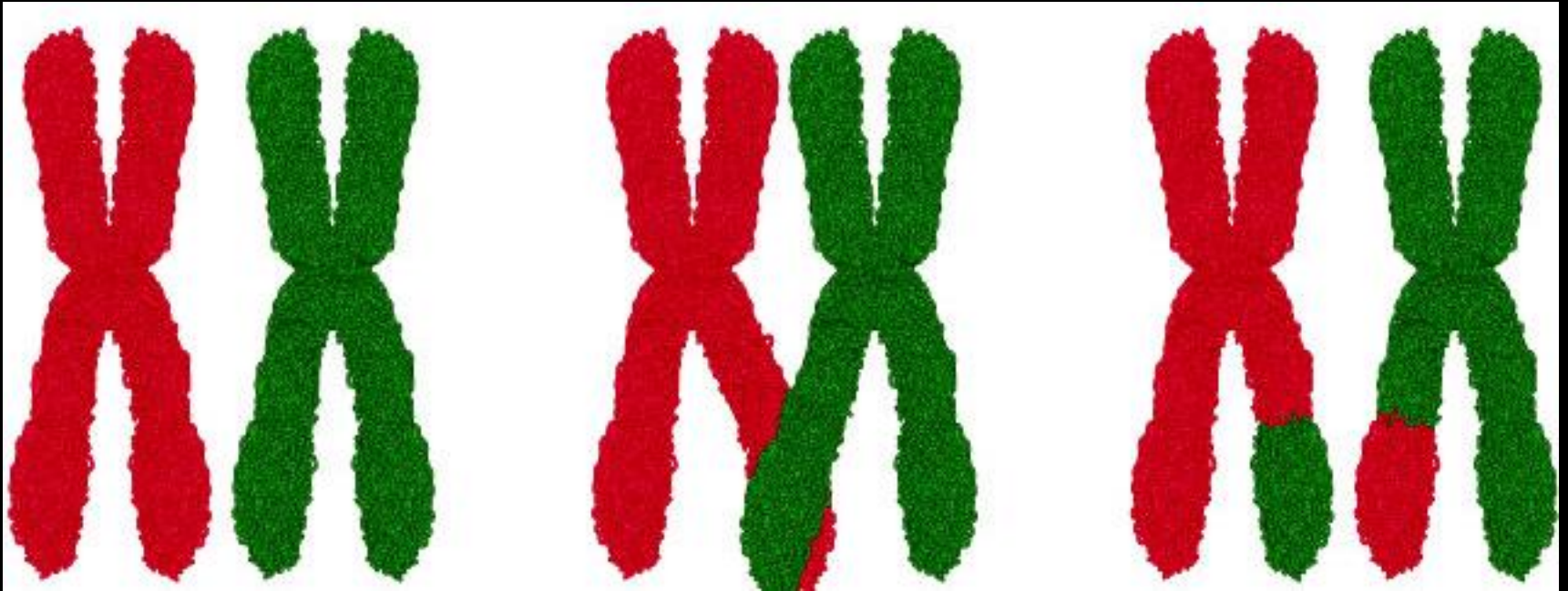


Meiosis I - Prophase I



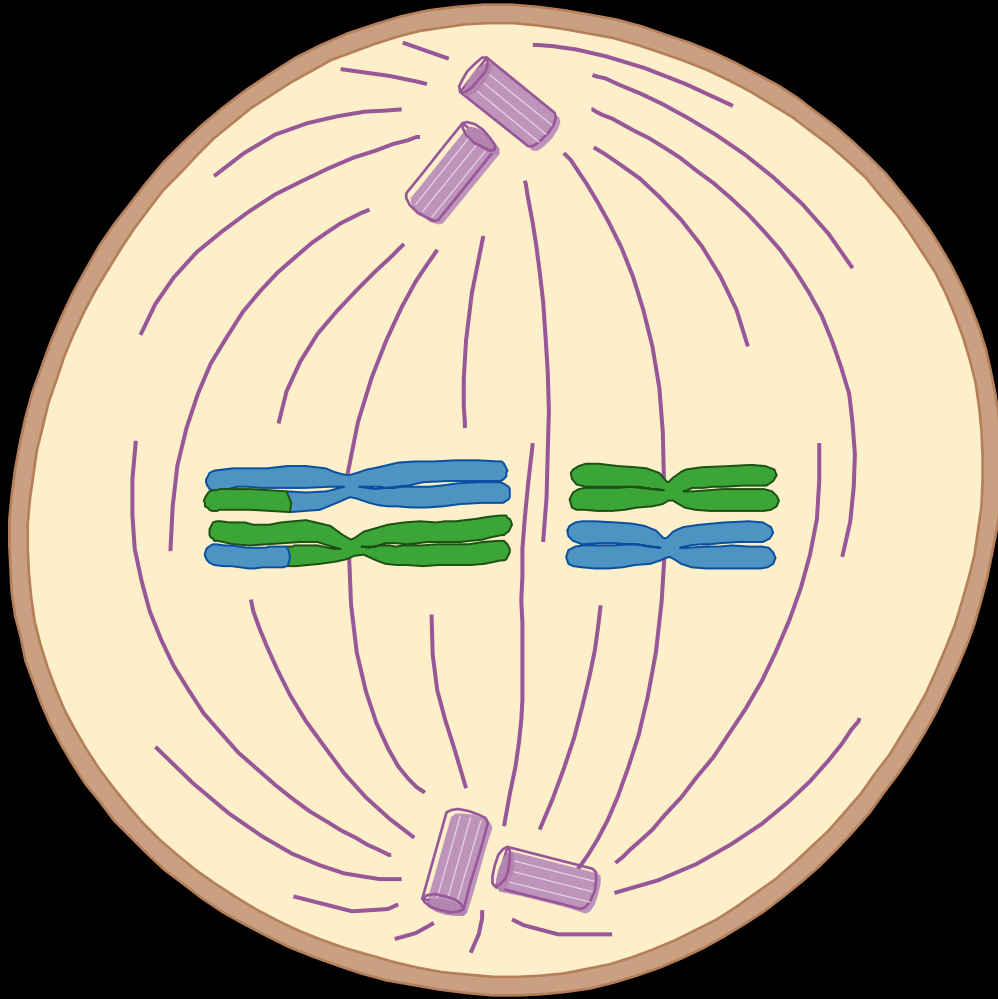
- Homologous chromosomes pair and condense
- Crossing over occurs

Crossing Over



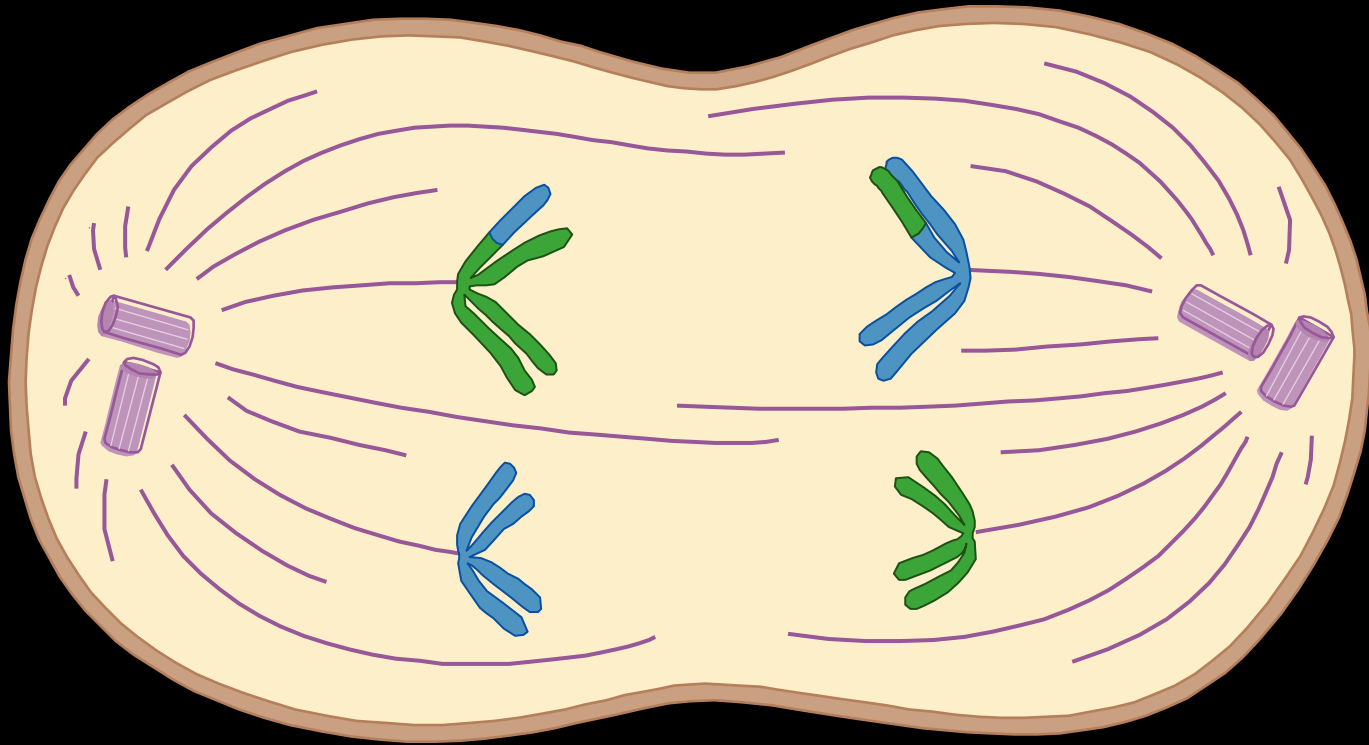
Homologous chromosomes overlap. Crossing over increases genetic variation.

Meiosis I - Metaphase I



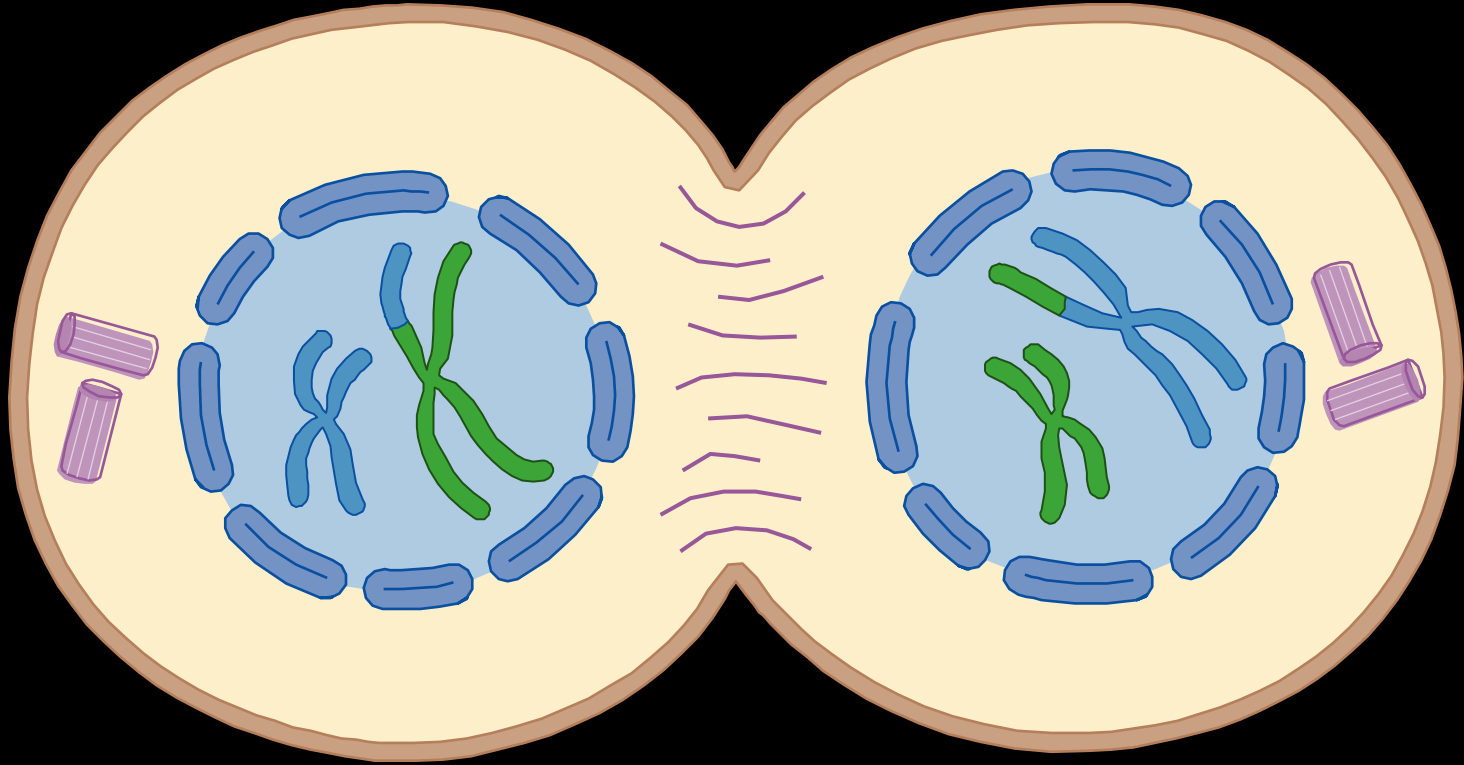
- Chromosome pairs align along the equator of the cell.

Meiosis I - Anaphase I



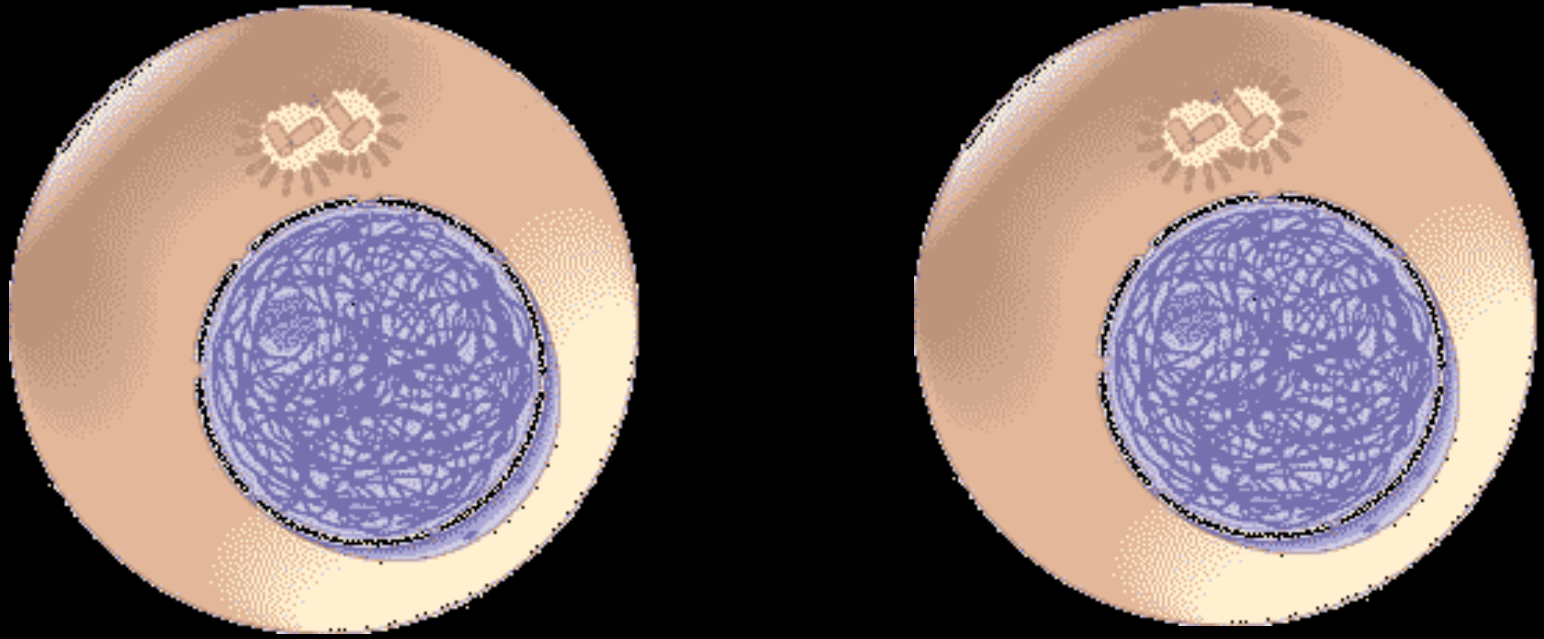
Chromosomes separate and move to opposite poles.

Meiosis I - Telophase I



- Nuclear envelope reassembles
- Cytokinesis divides cell into two

End of Meiosis I



At the end of meiosis I, two diploid cells are produced.

YouTube Video

Crossing Over Animation

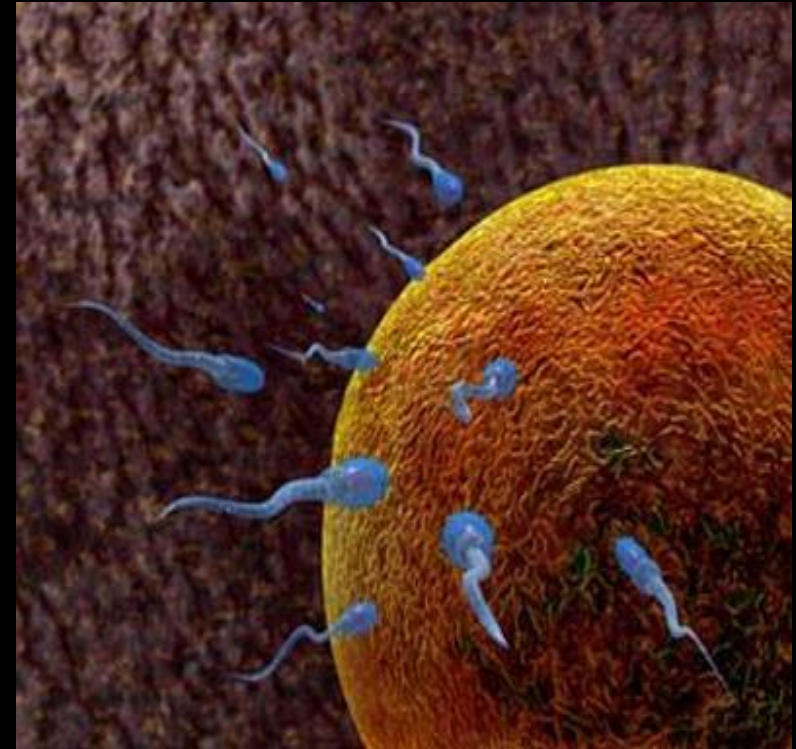
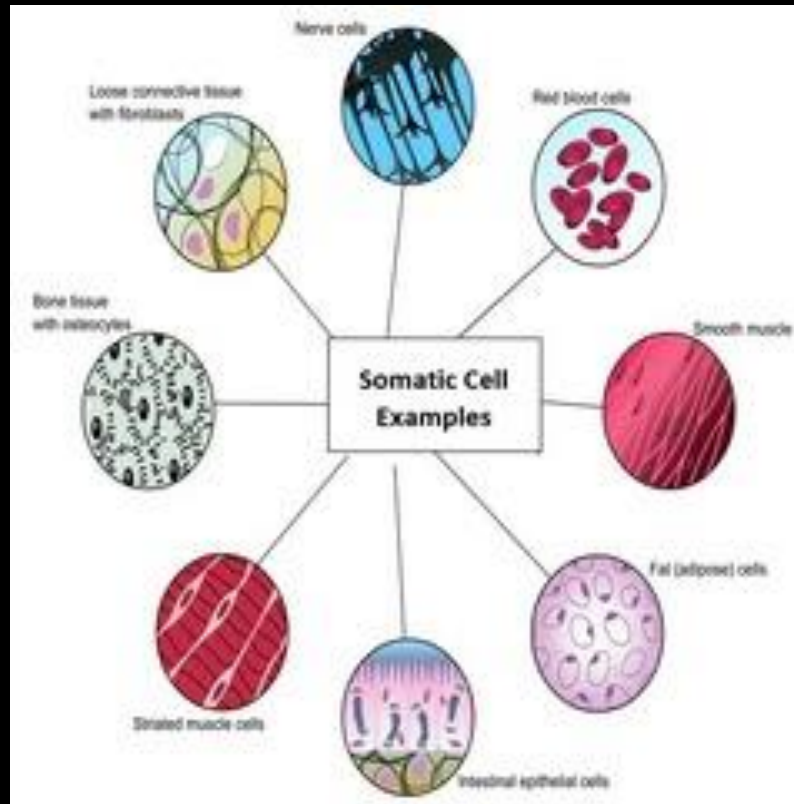
Meiosis

Amoeba Sisters

Stop Here



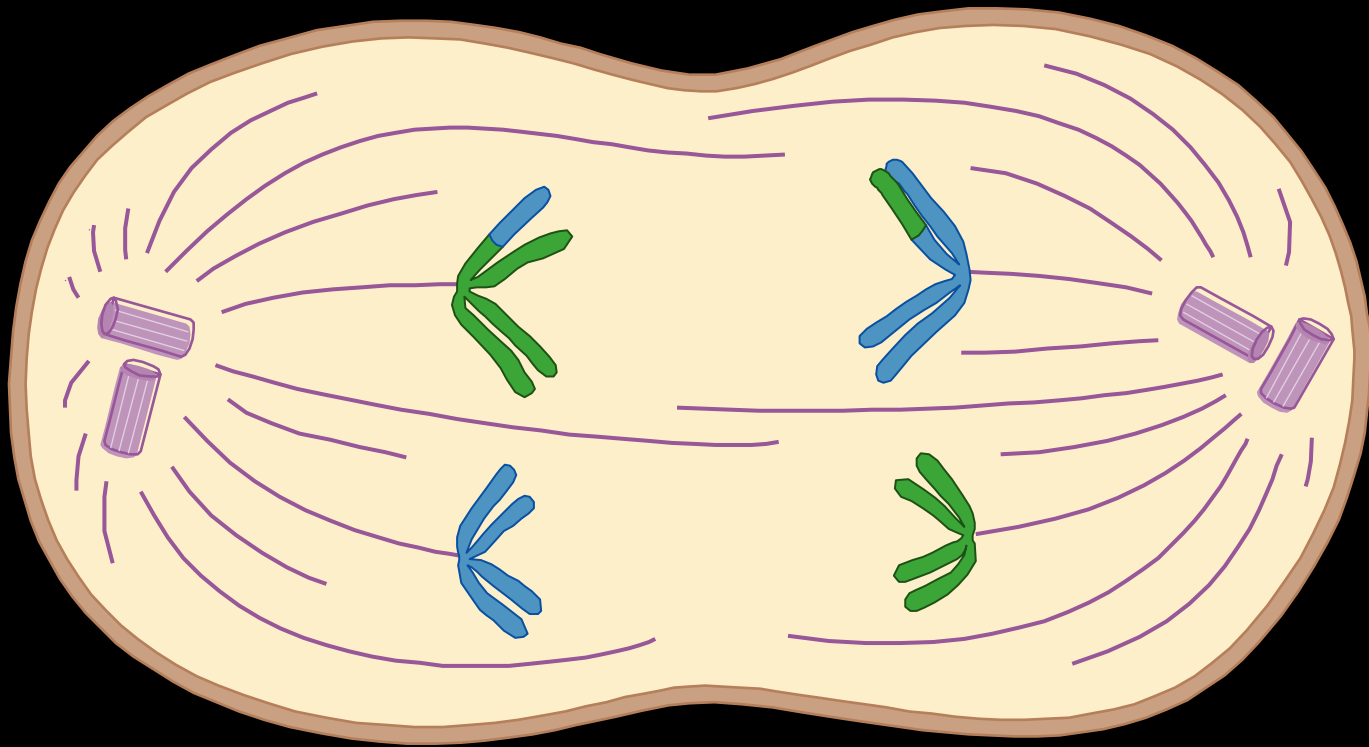
Types of Body Cells



Somatic cells – all cells except gametes

Gametes– sex cells: sperm and egg cells

Meiosis I - Anaphase I



- Chromosomes separate and move to opposite poles.
- Sister chromatids remain attached at their centromeres.