

MEIOSIS

Meiosis reduces the number of chromosomes in half by copying once and dividing twice. The first division (meiosis I) separates homologous chromosomes, while the second division (meiosis II) separates sister chromatids.

(Two sets of haploid chromosomes)
→ diploid cells
Meiosis I = diploid cells

Spikes: early spindle fibers that haven't formed
Nuclear envelope

Interphase: During Interphase the chromosomes are replicated to form sister chromatids. They are genetically identical and joined at the centromere.

Prophase I

The chromosomes condense and homologous chromosomes pair up to form tetrads.

Centriole Pairs
Tetrads

Homologous pairs

Metaphase I

In metaphase I the tetrads are all arranged at the metaphase plate.

Anaphase I

In anaphase I, the homologous chromosomes separate, however the sister chromatids remain together. The homologous chromosomes are pulled toward opposite poles.

Homologous Chromosomes Separate

(diploid cells)
Meiosis I: Division in meiosis I happens in four phases: prophase, metaphase, anaphase, and telophase. In this first division in meiosis I, separates homologous chromosomes.

Meiosis II

The second division consists of separating the sister chromatids.

Prophase II

Prophase II: During prophase II a spindle apparatus forms, that attaches to the centromeres of each sister chromatid, and moves them around.

Metaphase II

Metaphase II: The sister chromatids are arranged at the metaphase plate.

Meiosis II

Haploid cells: Cells that have a single copy of each chromosome

Telophase II

Telophase II: In telophase, the sister chromatids separated arriving at opposite poles. Nuclear membranes form around the chromosomes, cytokinesis separates cytoplasm.

At the end of meiosis, there are four haploid daughter cells.

4 haploid daughter cells
Gametes

