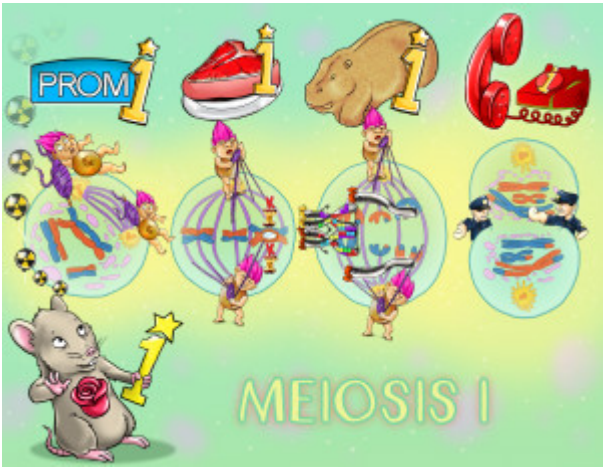
Meiosis I

Meiosis I is referred to as reduction division, and in this process, one cell is divided into two. Interphase is a pre-meiotic phase, and meiosis I is comprised of prophase I, metaphase I, anaphase I, and telophase I. At the end of this process there are two 2n cells, each with 46 chromosomes.In interphase I, which is a pre-meiotic process, the genetic material is duplicated. In prophase I, the nuclear membrane disappears, and the meiotic spindle, comprised of microtubules and other proteins, forms between two pairs of centrioles, which have migrated to opposite poles of the cell. This is the longest phase of meiosis. Metaphase I is the second phase of cell division and is associated with the alignment of chromosomes at the midpoint between centrioles. In this phase, the chromosomes are tightly coiled and condensed. Here, spindle fibers from one pole of the cell attach to one chromosome of each pair, and spindle fibers from the opposite pole attaches to the homologous chromosome. Anaphase I is the third phase of cell division characterized by sister chromatids or homologous chromosomes separating. In this phase, the tetrad separates and the two chromosomes are pulled towards opposite poles. Remember that in meiosis I, the sister chromatids remain joined. Telophase I is the fourth phase of cell division and is characterized by the beginning of physical splitting into two daughter cells. In this phase, a nuclear envelope reforms around each chromosome set, and the spindle disappears. Later in this stage, cytokinesis splits the cell into two.



PLAY PICMONIC

Characteristics

Prophase I
Prom-phase (1) Wand
Prophase is the first phase of cellular division and occurs in mitosis, meiosis I, and meiosis II. In prophase I, the nucleus disappears. Additionally, the meiotic spindle, composed of microtubules and other proteins, forms between two pairs of centrioles, which have migrated to opposite poles of the cell. This is the longest phase of meiosis.

Centrioles Migrate
Cent-trolls Migrating
Centrioles are groups of microtubules that, in both types of cell division, migrate to different poles and attach to chromosomes.

Spindle Apparatus Forms
Spindles
A spindle apparatus is fundamentally composed of spindle microtubules and hundreds of proteins that, in both types of cell division, help separate chromosomes during cell division. This apparatus forms between the two pairs of centrioles as they migrate.

Nuclear Membrane Disintegrates
Nuclear-balloons flying away
In the beginning of prophase for both types of cell division, the nuclear membrane disintegrates, allowing for splitting of genetic material.

Metaphase I
Meat-phase (1) Wand
Metaphase is the second phase of cell division and is associated with the alignment of chromosomes at the midpoint between centrioles. In this phase, the chromosomes are tightly coiled and condensed. Here, spindle fibers from one pole of the cell attach to one chromosome of each pair, and spindle fibers from the opposite pole attach to the homologous chromosome.

Microtubules Extend from Centrioles Spindle
Microtubules from Cent-troll's Spindle
Microtubules from the spindle apparatus connect to the kinetochores of chromosomes.

Spindle Fibers Attach to Centromere
Attaching to Cent-mirror
The centromere is part of the chromosome that links sister chromatids together. The spindles attach to centromeres through kinetochores.

Fused at Kinetochore
K-apple-core
The kinetochore is a protein structure on the chromatids where the spindle fibers attach to pull sister chromatids apart (or homologous chromosomes in the case of meiosis I).

Sign up for FREE at picmonic.com

Randomly Align at Metaphase Plate

Aligned at Meat Plate

In meiosis I, homologous chromosome pairs, or tetrads, are lined up at the metaphase plate ready to be split such that each daughter cell gets one of the chromosomes from a homologous pair. Thus, each daughter cell gets one of the parent's chromosomes for each chromosome (1-23), but not both parent's genetic information.

Anaphase I

Animal-cracker-phase (1) Wand

Anaphase is the third phase of cell division characterized by sister chromatids or homologous chromosomes separating. In this phase, the tetrad separates and the two chromosomes are pulled towards opposite poles. Remember that in meiosis I, the sister chromatids remain joined.

Spindle Microtubules from Centrioles Split Pairs

Microtubules from Cent-trolls Splitting Pairs

Spindle microtubules extend from the centrioles and pull pairs of chromosomes apart and toward the poles.

Tetrad Splits into 2 Sister Chromatid Pairs

Tetris-chromosomes Split into 2 Sister Chrome-kids

Tetrads are pulled apart during meiosis I. This is a source of genetic diversity as the chromosome from either parent can be separated into either cell and genetic material exchange has already happened.

Telophase I

Telephone-phase (1) Wand

Telophase is the fourth phase of cell division and is characterized by the beginning of physical splitting into two daughter cells. In this phase, a nuclear envelope reforms around each chromosome set, and the spindle disappears.

Cytokinesis Divides Cell

Side-toe-police Divide Cell

Cytokinesis is the separation of plasma and organelles between each daughter cell so that it has what it needs to survive.

Sign up for FREE at picmonic.com