

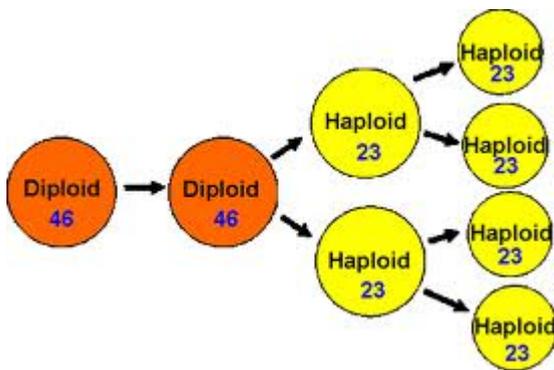
Phases And Significance Of Meiosis

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Meiosis I & Meiosis II

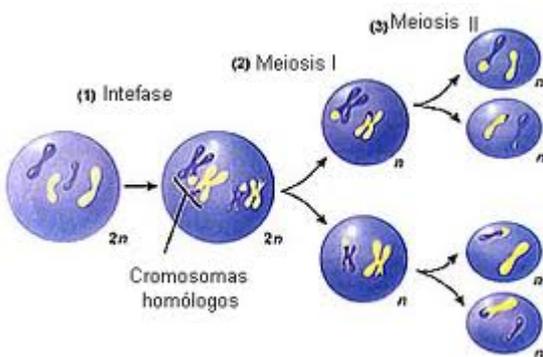
What is meiosis I?

Meiosis I separates homologous chromosomes and produce two haploid cells with 23 chromosomes and hence it is termed as a reductional division. This first step of meiosis generates genetic diversity.



What is meiosis II?

Second step of the meiotic process is meiosis II. It is more or less similar to mitosis. But the end result with the production of four haploid from the two haploid cells produced in meiosis I.



Phases of Meiosis I & II

Prophase I

DNA replication precedes the meiosis I process. During this stage homologous chromosomes get together and form a pair termed 'synapses', which is a very unique step of meiosis I. This chromosome pair is known as bivalents, and because of genetic recombination the chiasmata formed. We can view the condensation of chromosomes with the aid of a microscope. These 2 chromosomes came from the 2 parental organisms.

Prometaphase I

The nuclear membrane disappears. The kinetochore formed in each chromosome not in each chromatid. The chromosomes get attached with spindle fibres and start their move towards poles.

Metaphase I

Bivalents have two chromosomes align at the metaphase plate. It shows the random orientation and any parent chromosome can go to any side. 50-50 chance for the daughter cells to get either the mother's or father's homologue for each chromosome.

Anaphase I

Chiasmata separate. Chromosomes start to move towards separate poles. Each of the daughter cells is in haploid state.

Telophase I

Nuclear envelopes may reform, or the cell may quickly start meiosis II.

Cytokinesis

Analogous to mitosis, where two complete daughter cells form.

Significance of Meiosis

It facilitates sexual reproduction. The fertilization would result with diploid zygotes. Successive generations may show an increase in the number of chromosomes. The recombination and independent assortment of homologous chromosomes helps for a greater diversity of genotypes in the population. The new genetic variation of gametes induces the evolutionary changes.

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Reference Links:

- <http://www.cellsalive.com/meiosis.htm>
- <http://www.accessexcellence.org/RC/VL/GG/meiosis.php>
- <http://en.wikipedia.org/wiki/Meiosis>

- <http://www.youtube.com/watch?v=uh7c8YbYGqo>

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