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Paper: III Group – A

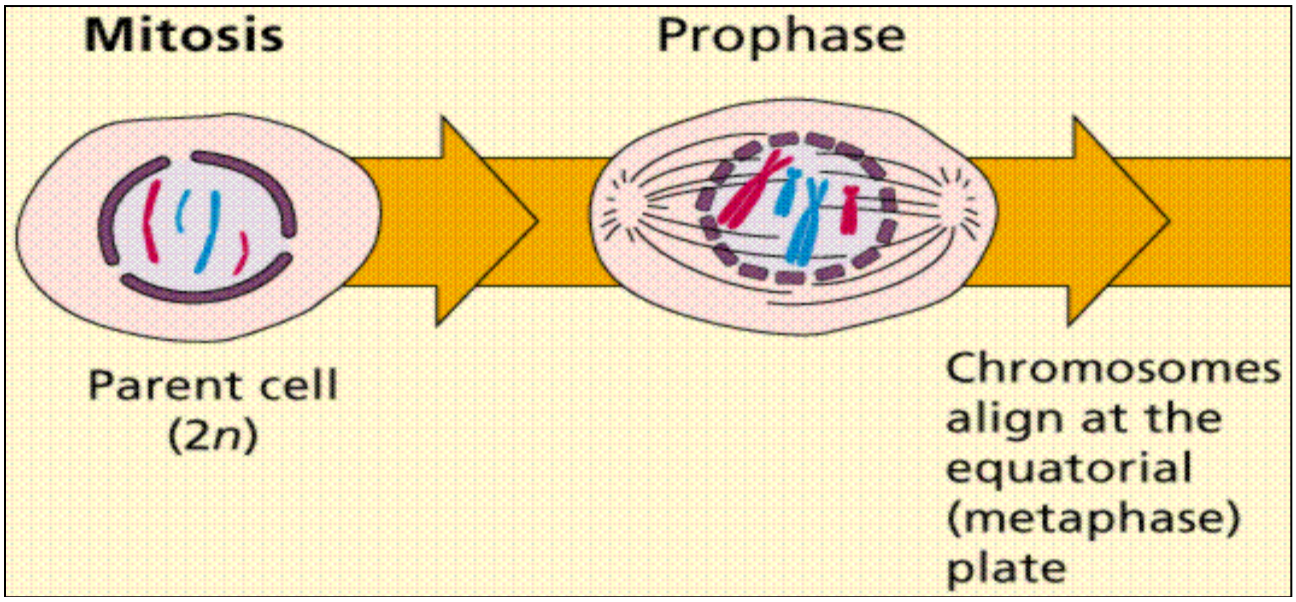
Topic: Differences between Mitosis and Meiosis

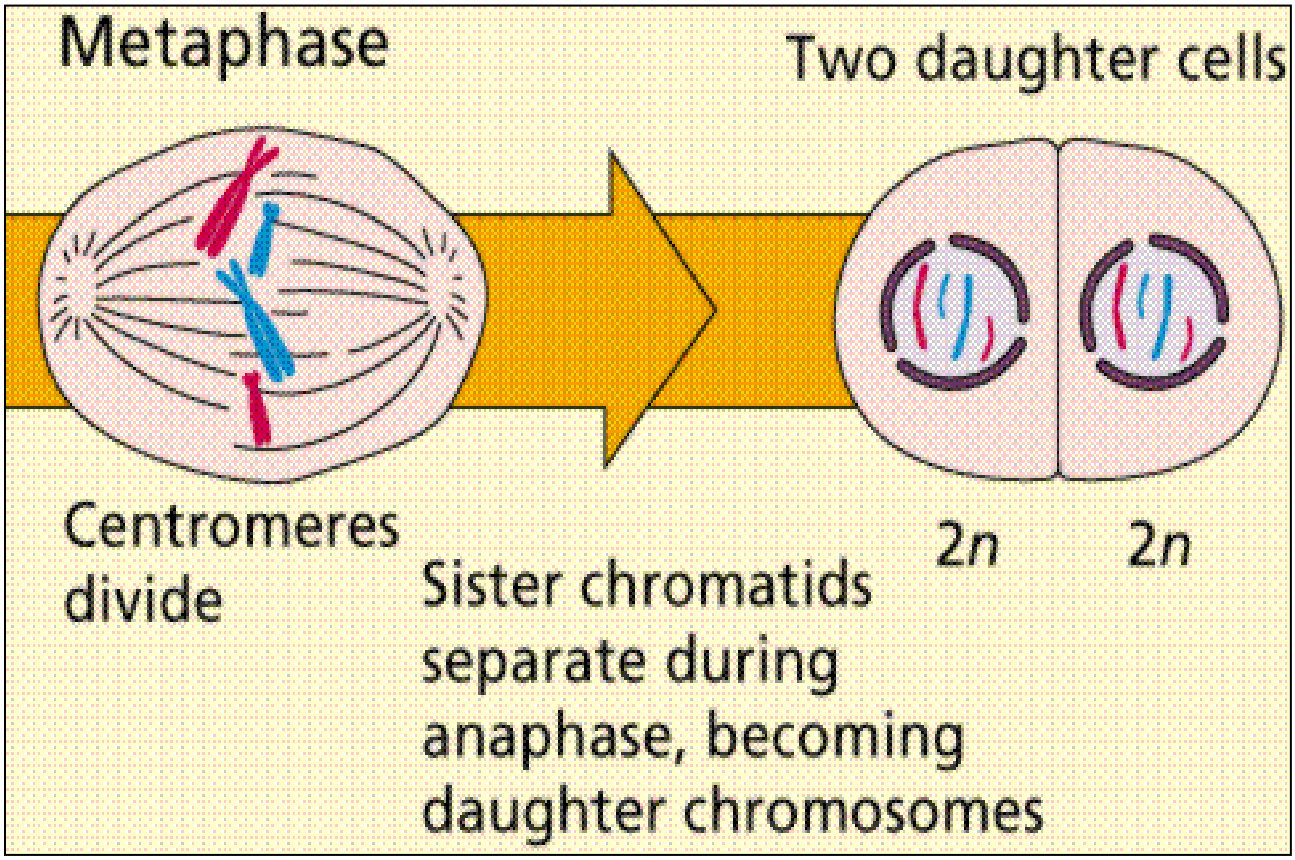
Differences between Mitosis and Meiosis

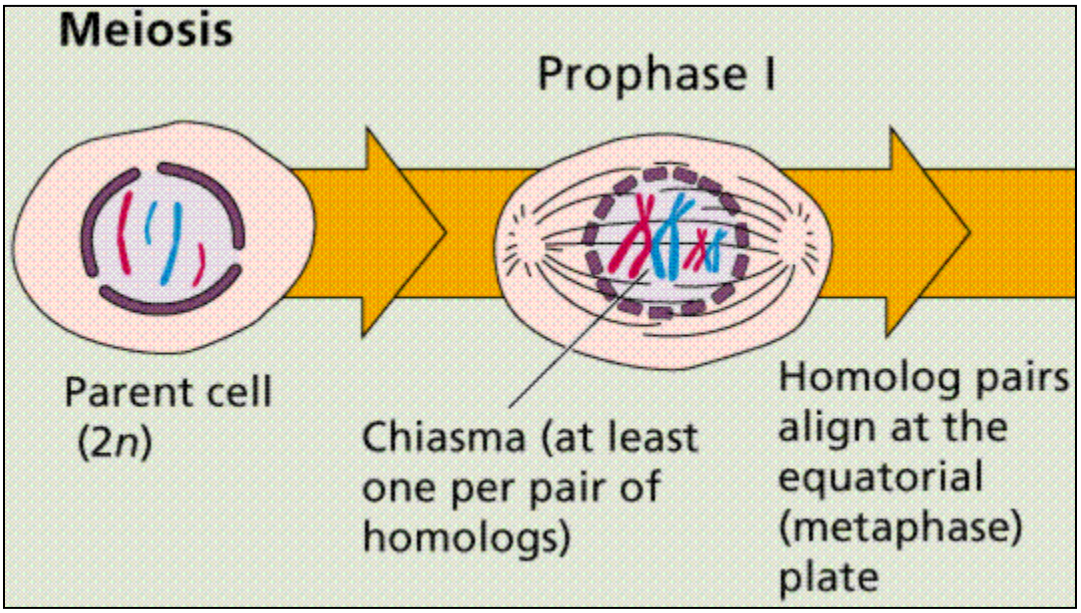
Mitosis	Meiosis
1. Takes place mainly in somatic cells.	Takes place in germinal cells only.
2. Prophase is simple and short	Prophase is elaborate with sub-stages.
3. No exchange of parts between chromatids of a chromosome takes place.	Mutual exchange of parts between chromatids of a chromosome takes place.
4. Chiasmata are not formed; no crossing over.	Chiasmata are formed due to crossing over.
5. Completed in one stage, resulting in the production of two daughter cell.	Completed in two stages, resulting in the production of four daughter cells.

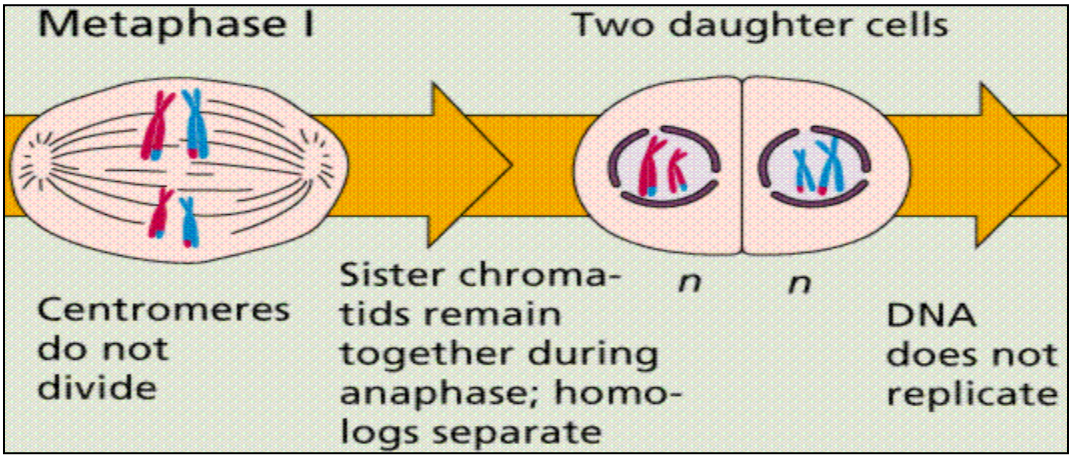
Mitosis maintains ploidy level, while meiosis reduces it. Meiosis may be considered a reduction phase followed by a slightly altered mitosis.

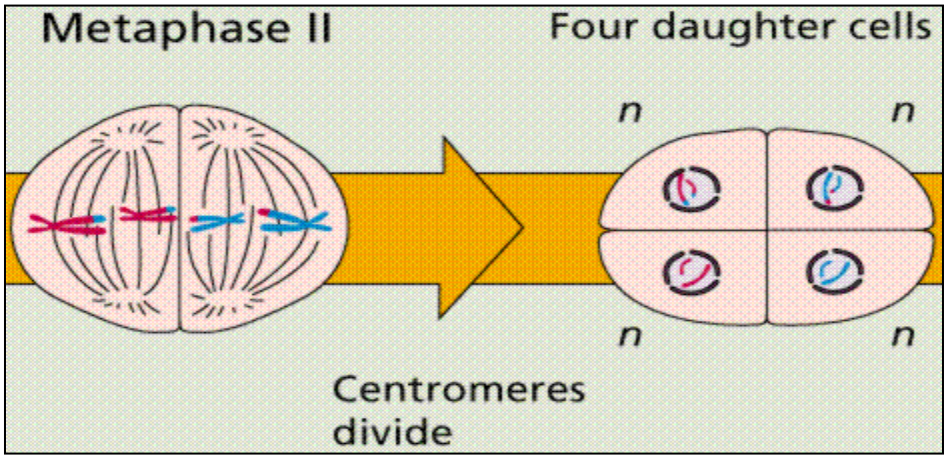
Meiosis occurs in a relative few cells of a multicellular organism, while mitosis is more common.






Meiosis
Prophase I
Parent cell
(2n)
Chiasma (at least one per pair of homologs)
Homolog pairs align at the equatorial (metaphase) plate


Metaphase I
Two daughter cells
Centromeres do not divide
Sister chroma-tids remain together during anaphase; homo-logs separate
n
n
DNA does not replicate


Metaphase II
Four daughter cells
n
n
n
n
Centromeres divide

Mitosis is a process of asexual reproduction in which the cell divides in two producing a replica, with an equal number of chromosomes in each resulting diploid cell.

Meiosis is a type of cellular reproduction in which the numbers of chromosomes are reduced by half through the separation of homologous chromosomes, producing two haploid cells.