Chromosomal Basis of Heredity Cheat Sheet

by pokemonsz via cheatography.com/44231/cs/13104/

Meiosis I

Prophase I	Chromosomes condense, homologous pairs align, **synapsis** (precise alignment, ensires 1 copy of each gene in a daughter cell). Synapsed set called a **tetrad** (4 chromatids). Then, **crossing-over** occurs (exchange of chromosome segments between pairs of *homologous* chromosomes, or *nonsister chromatids*). **Chiasma** forms, visible structure from crossover. X and Y chromosomes pair and synapse thru terminal ends (*PARs*).	2N
Metaphase I	Nucleoli and envelope broken down, centroiles w/ spinde enternuclear area, *kinetechore microtubules* attach to sister kinetochores, tetrads align at *metaphase plate*.	2N
Anaphase I	Chromosomes of tetrad separate (now **dyads**). Sister chromatids remain attached at centromeres. *DNA content is halved.*	2N-N
Telophase I	Spindles dissasemble, cytokinesis forms two **haploid** cells.	N

Meiosis

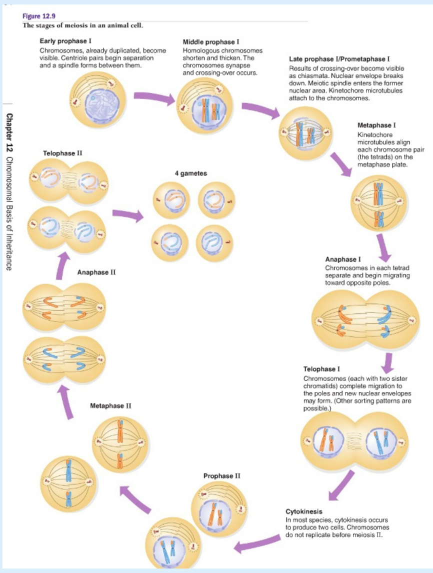

Figure 12.9

The stages of meiosis in an animal cell.

Meiosis II

Prophase II	Chromosomes condense and spindles form, kinetochores attach to tubules..
Metaphase II	Alignment on metaphase plate.
Anaphase II	Centromeres separate, daughter chromosomes (still haploid) pulled to opposite sides.
Telophase II	Chromosomes decondense, nuclear envelope forms, cytokinesis. *Four haploid cells produced, each with one chromosome from each homologous pair*.

Meiosis Results

- ❤ Generates *haploid* nuclei with *half* the number of chromosomes found in diploid cell. (2N -> N) Diploid number restored in fertilization.
- ❤ **Independent assortment of genes** paternal and maternal chromosomes have an equal chance of aligning on one side of metaphase plate.
- ❤ Number of chromosome arrangements is 2^{n-1}, n= # chromosomes pairs (haploid number).
- ❤ Number of chromosome combinations resulting from *independent assortment* is 2^{n} (number of different *gametes*).
- ❤ Number of *kinds* of genotypes is 3^{n}.

Ploidy

Haploid	ONE copy of each chromosome. (N)
Diploid	TWO copies (homologues) of each chromosome. (2N)
Homologous pairs	Same gene loci, structure, and pair during meiosis.

Genes

Allele	Alternative forms of a single gene on the same locus that determine the same trait, but can produce different phenotypes.

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Published 16th October, 2017.
Last updated 11th October, 2017.