

## Chromosome Forms

There are many terms used to refer to different groupings and organizations of chromosomes during cell replication and division. Chromatid is the condensed version of chromatin, which consists of DNA wound around histones. Chromatid is only formed during cell reproduction and division, because the copies of genetic material are most easily divided while condensed. One chromatid can be referred to as a chromosome. Sister chromatids consist of an original chromatid and its copy joined at the centromere, and can also be called a chromosome.

Homologous chromosomes are two chromosomes (two sister chromatid pairs; four chromatids total) that group together during meiosis I, but are also present in mitosis. They code for the same genes but have different alleles. Homologous chromosomes are associated with synapsis and crossing over in meiosis I. Finally, the tetrad is a formation where two homologous chromosomes overlap, and it is named because of the four chromatids in close proximity. This occurs in meiosis I during prophase, and is briefly seen in metaphase before the homologous chromosomes are separated.



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### Characteristics

#### Chromatid

##### Chrome-kid

Chromatid is the condensed form of chromatin, which consists of DNA wound around histones. It is typically only seen during cell replication and division, as the genetic material must condense in order to be divided evenly between cells.

#### Sister Chromatids

##### Sister Chrome-kids

Sister chromatids consist of one chromatid and a replicated copy connected at the centromere. They are typically homozygous with similar traits, but may have slight differences due to mutation or crossing over (meiosis I). They only exist during cell reproduction and division. During mitosis and meiosis II, sister chromatids are pulled apart into separate daughter cells.

#### Homologous Chromosomes

##### Home-of-logs Chromosomes

Homologous chromosomes are chromosome pairs that code for the same genes at similar loci, but have allelic variance as one chromosome is from the mother and the other from the father. During meiosis I, homologous chromosomes synapse and exchange genetic information when crossing over.

#### Tetrad

##### Tetris-chromosomes

The tetrad is formed by two chromosomes (each chromosome consisting of two sister chromatids) grouped together. It only occurs in meiosis I, as homologous chromosomes do not synapse in mitosis or meiosis II.