

# The Phases of Meiosis

## Interphase:

- the cell replicates its chromosomes
- each chromosome has two sister chromatids held together by a centromere

## Prophase 1:

- chromosomes coil up and a spindle forms
- homologous chromosomes come together matched gene by gene forming a tetrad
- Crossing Over may occur when chromatids exchange genetic material
- this occurs two or three times per pair of homologous chromosomes
- Crossing Over results in new combinations of alleles on a chromosomes

## Metaphase 1:

- the centromere of each chromosome becomes attached to a spindle fiber
- the spindle fibers pull the tetrads to the equator of the spindle
- homologous chromosomes are lined up side by side as tetrads

## Anaphase 1:

- homologous chromosomes separate and move to opposite ends of the cell
- centromeres do not split
- this ensures that each new cell will receive only one chromosome from each homologous pair

## Telophase 1:

- the spindle breaks down and the chromosomes uncoil
- the cytoplasm divides to yield two new cells
- each cell has half the genetic information of the original cell because it has only one homologous chromosome from each pair

## Prophase II-

-a spindle forms in each of the two new cells and the fibers attach to the chromosomes

## Metaphase II-

-the chromosomes are pulled to the center of the cell and line up randomly at the equator

## Anaphase II-

-the centromere of each chromosome splits  
-the sister chromatids separate and move to opposite poles

## Telophase II-

-nuclei re-form  
-the spindles break down  
-the cytoplasm divides  
-identical to mitosis (Meiosis II)

## What Meiosis produces:

-four haploid sex cells from one original diploid cell  
-each haploid cell contains one chromosome from each homologous pair  
-haploid cells will become gametes transmitting genes to offspring