

Meiosis

- Meiosis is a special type of cell division
- Normal cell division (Mitosis) produces cells that are identical to the original cell
- In meiosis, the cells duplicate such that the resulting cells end up with only half the number of chromosomes
 - Haploid cells

- Meiosis is responsible for producing sex cells (gametes)
 - Sperm and egg cells
- These cells combine (fertilization) to form one cell that has the total number of chromosomes
 - Diploid cell

- Meiosis is divided into two parts:
 - Meiosis I
 - Meiosis II

Meiosis I

- The purpose of the meiosis I phase is to produce haploid cells
- It has the same phases as mitosis

Prophase 1

- The chromosomes become visible, the nuclear envelope disappears and spindle fibers form that envelope the chromosomes.
- Each chromosome is split into two sister chromatids
- Crossing over takes place between two of the non-sister chromatids (the other two remain uncrossed)

Metaphase I

- The chromosomes line up along the central line in homologous pairs

Anaphase I

- The chromosomes are divided so that there are equal amounts on either side of the cell
- As there are 46 chromosomes in a human cell, 23 end up on either side.

Telophase I

- The two daughter cells are completely divided, a nucleic envelope forms and the chromosomes become less visible
- There are 23 chromosomes in each of these cells.

- These two new cells now prepare to divide again
- BOTH cells goes through Meiosis II

Prophase II

- The chromosomes become visible, the nuclear envelope disappears and spindle fibers form

Metaphase II

- The chromosomes line up along the middle line on the spindle fibers

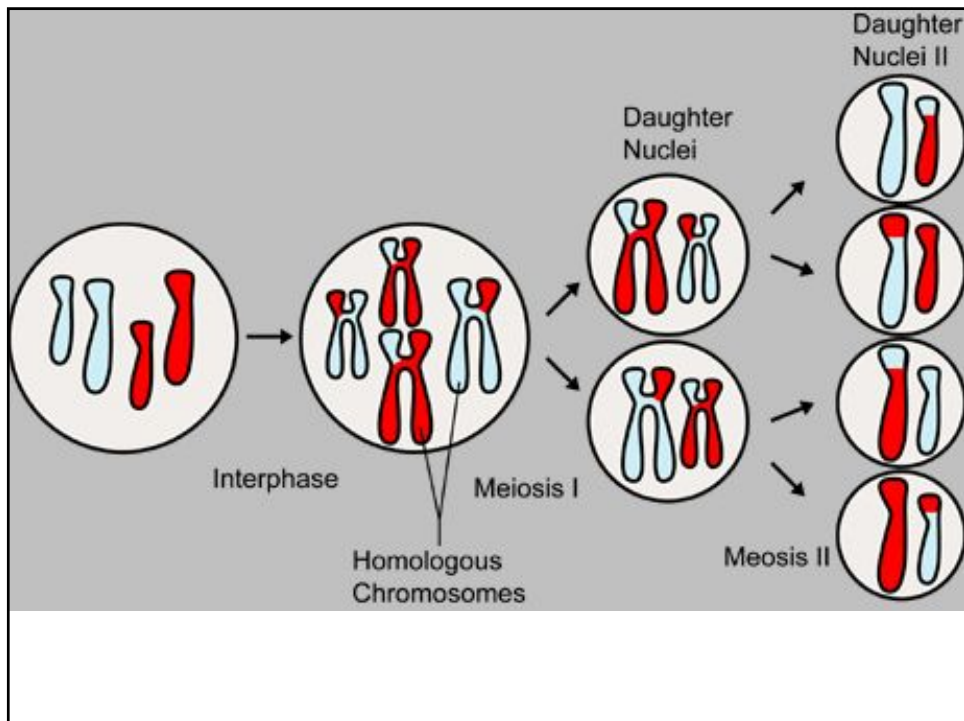
Anaphase II

- The chromosomes get split into two chromatids

Telophase II

- The cells are completely divided
- The nucleic envelope reforms and four new cells with **different** DNA are created.

- In males, all four cells become sperm
- In females, only one becomes a mature egg, while the remaining three become re-absorbed into the body



- www.cellsalive.com/meiosis.htm
- www.johnkyrk.com/meiosis.html