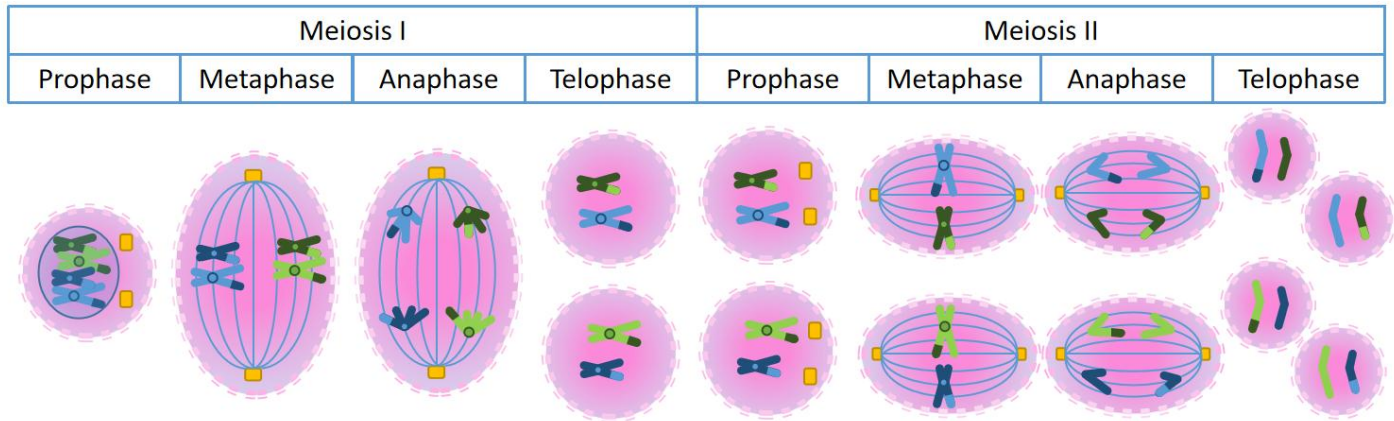


Meiosis

Meiosis is the process that cells produce gametes.

Meiosis is composed by two phase: Meiosis I and Meiosis II

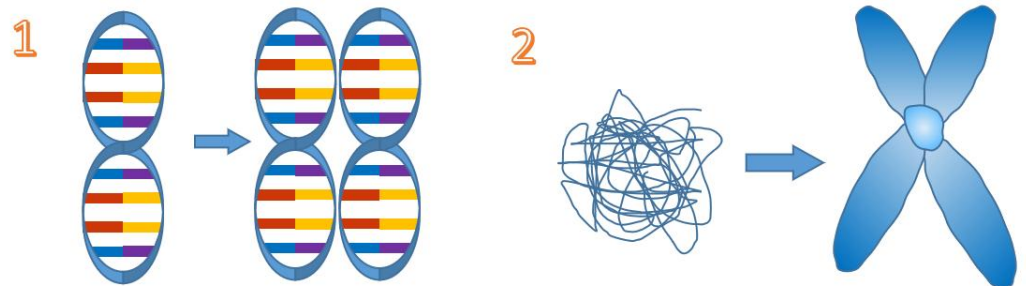
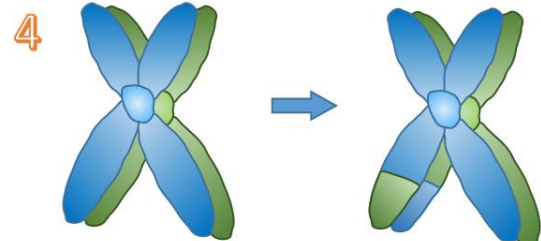
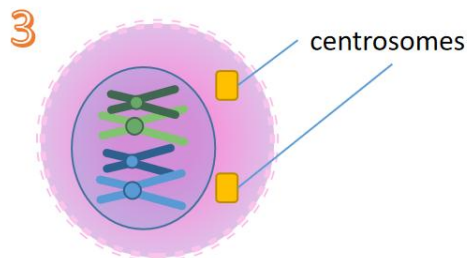


Meiosis

• Meiosis I:

• Prophase:

1. DNA duplicate
2. DNA condense into chromosomes
3. Two centrosomes are produced
4. Crossing Over happens between homologous chromosomes

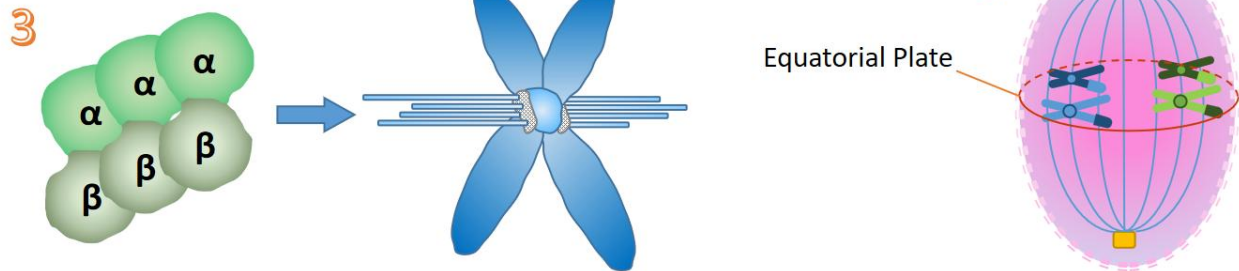


Meiosis

• Meiosis I:

• Metaphase:

1. Envelope disappears
2. Two centrosomes flow to two poles
3. Microtubule formed and connected to the centromeres of chromosomes
4. Chromosomes gather around the Equatorial Plate



Meiosis

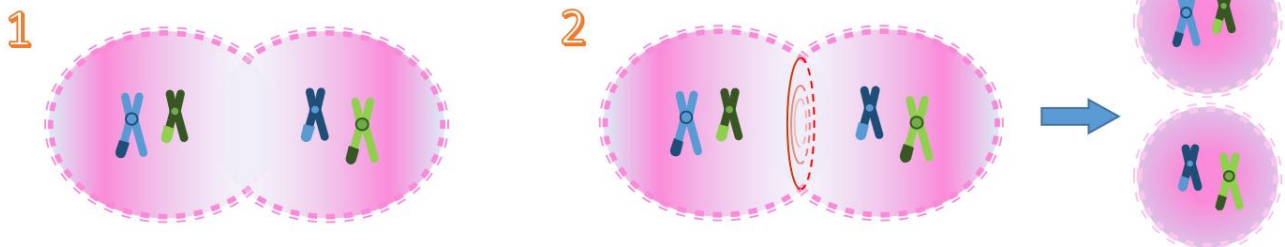
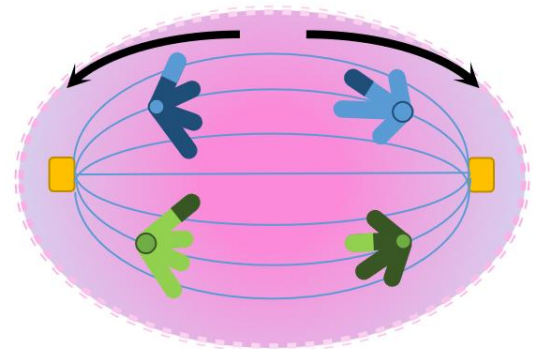
• Meiosis I:

• Anaphase:

Homologous chromosomes separate, and they move toward the two centrosomes (two poles)

• Telophase:

1. Centrosomes and Microtubules disappears
2. The cell divide into two daughter cells



Meiosis

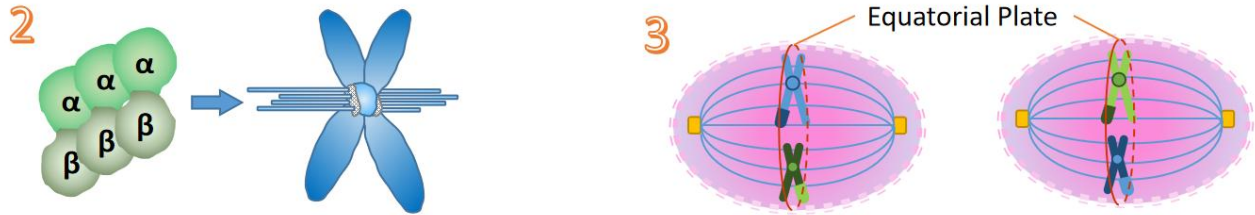
• Meiosis II:

• Prophase:

Two centrosomes are produced

• Metaphase:

1. Two centrosomes flow to two poles
2. Microtubule formed and connected to the centromeres of chromosomes
3. Chromosomes gather around the Equatorial Plate



Meiosis

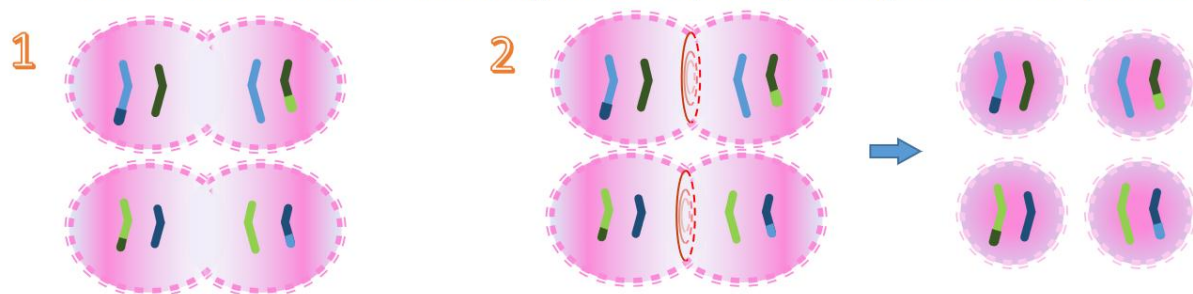
• Meiosis II:

• Anaphase:

Homologous chromosomes separate, and they move toward the two centrosomes (two poles)

• Telephase:

1. Centrosomes and Microtubules disappears
2. Each cell divide into two daughter cells, thus, four gametes are produced



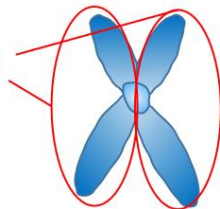
Reproduction

- To most **asexual** species, their offspring only “copied” their gene, and the only difference is the “errors” in duplication, as known as **mutations**.
- The (bi)**sexual** species will have much more gene difference. Because the gene of their offsprings are the **combination** of their parents, while the mechanism of Meiosis gives them more possible “mutations”(actually is different combinations and arrangements).

Reproduction

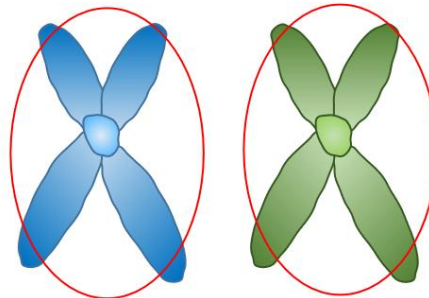
- **Haploid**: A haploid cell contains only a single set of chromosomes.
- **Diploid**: A diploid cell contains two sets of chromosomes, each carried from one of its parents.

- **Sister Chromosome**



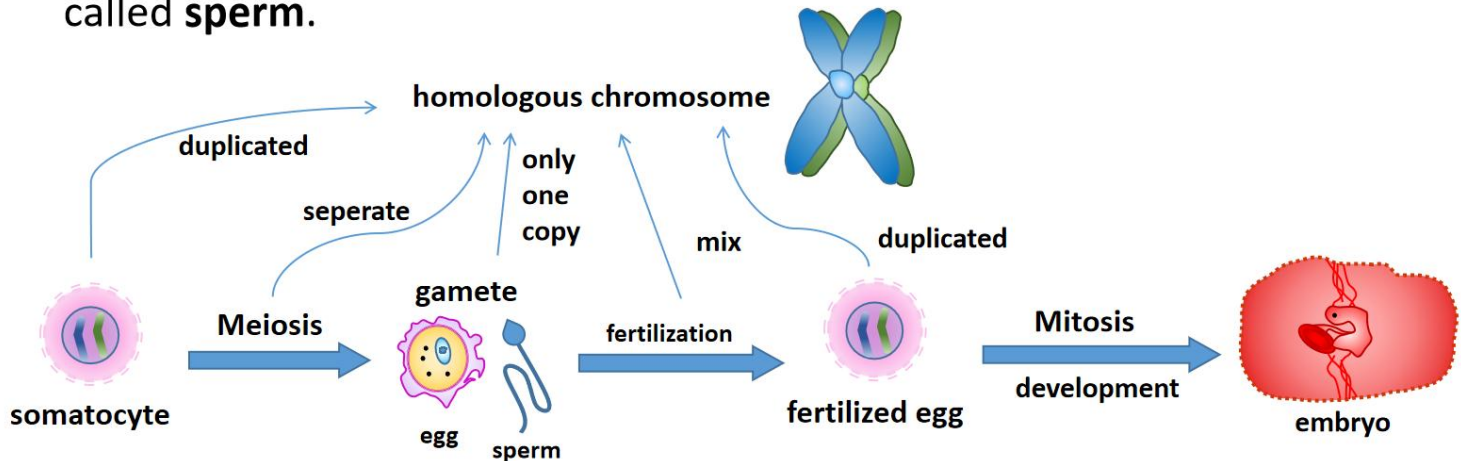
- **Homologous Chromosome**

*in Diploid



Reproduction

- **Gametes** are an organism's reproductive cells. They are also referred to as sex cells. Female gametes are called **egg**, and male gametes are called **sperm**.



Reproduction

- Human have total 23 pairs of chromosomes, while 22 pairs are homologous autosome, and the last pair is sex chromosomes. There are 2 different types of chromosomes in this pair, **X** and **Y**. **XX** is female, and **XY** is male.
- As we learned before, gametes will carry half of our chromosomes. Female's gamete will only carry **X**, because female's cells only have **X**. There is a 50% chance that the gamete of male carries **X**, and the other 50% is **Y**. If the sperm with **X** go into the egg, then this baby would be a girl (**XX**). In contrary, if the sperm with **Y** become part of the fertilized egg, this baby would be a boy (**YY**).

