Chapter Five: Heredity
Section 3: Meiosis

Two Kinds of Reproduction:

1. Asexual
    a. Offspring have genotypes with exact copies as parents
    b. One parent cell
    c. Type of cell reproduction that is mitosis
    d. Most cells in your body and most single-celled organisms reproduce this way

2. Sexual
    a. Offspring shares traits with parents but not exactly alike
    b. 2 parent cells (called sex cells) join together
        i. different from ordinary body cells
        ii. Human body has 46, or 23 pairs of, chromosomes
    c. **Homologous chromosomes:** chromosomes that carry the same sets of genes
        i. Think of a pair of shoes. Each shoe is like a homologous chromosome. The pair together represents the homologous pair of chromosomes

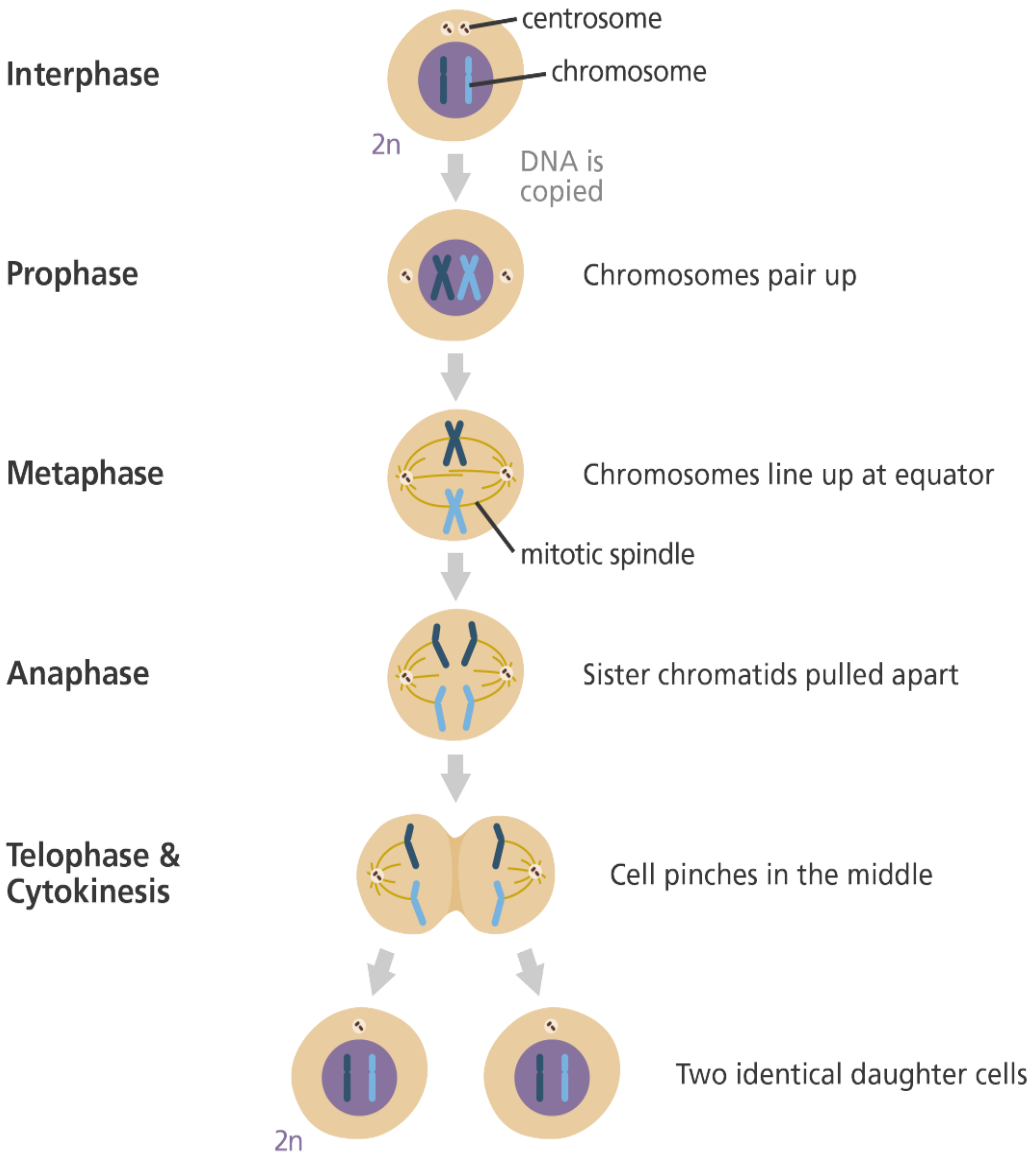
Meiosis: a copying process that produces cells with half the usual number of chromosomes

- Sex cells are made during meiosis
    - Egg cell has 23 chromosomes
    - Sperm cell has 23 chromosomes
    - The new cell that forms when the egg and sperm cell join has 46 chromosomes

Walter Sutton:

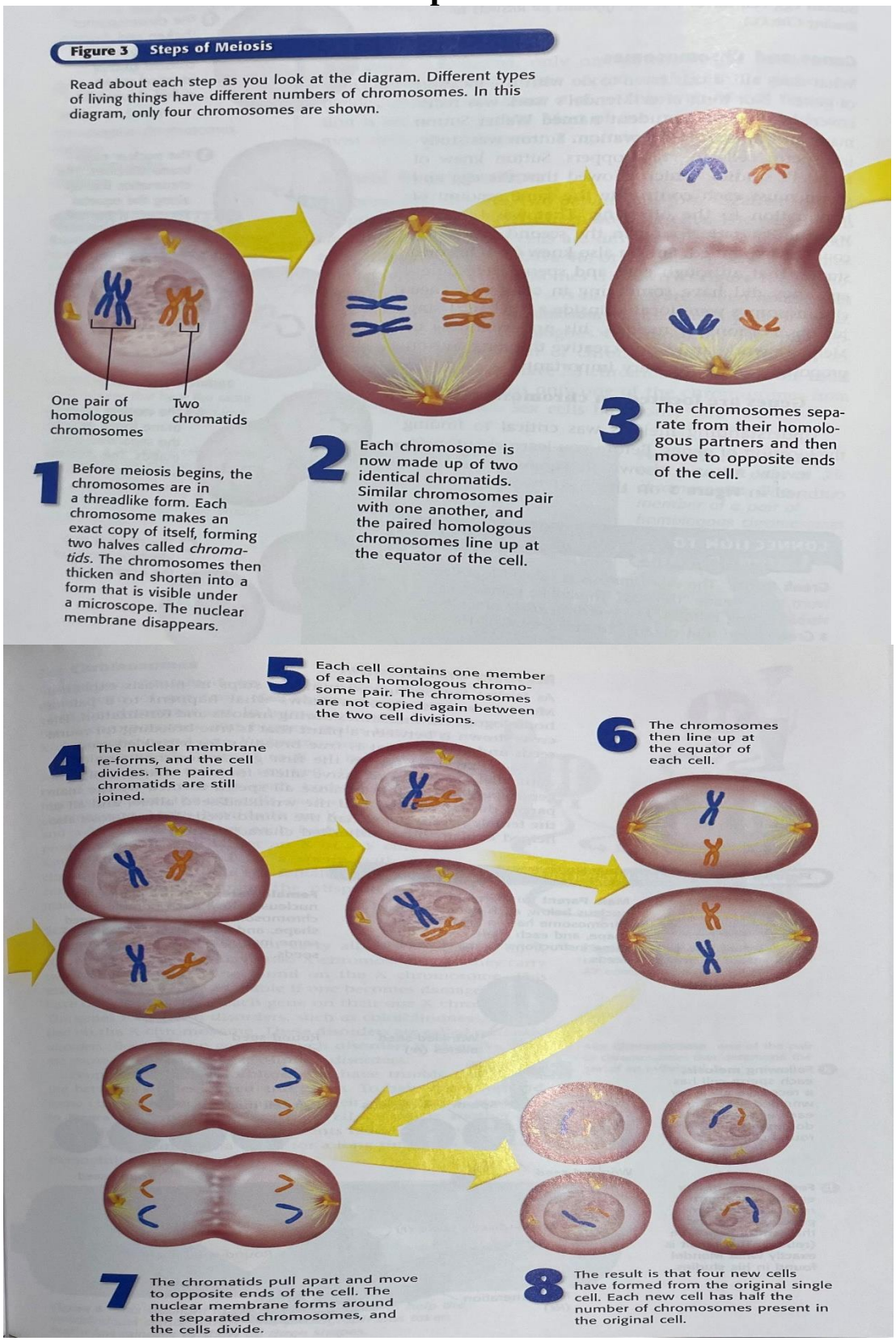
- Studied sperm cells in grasshoppers
- Proposed that genes are located on chromosomes.

Review Mitosis

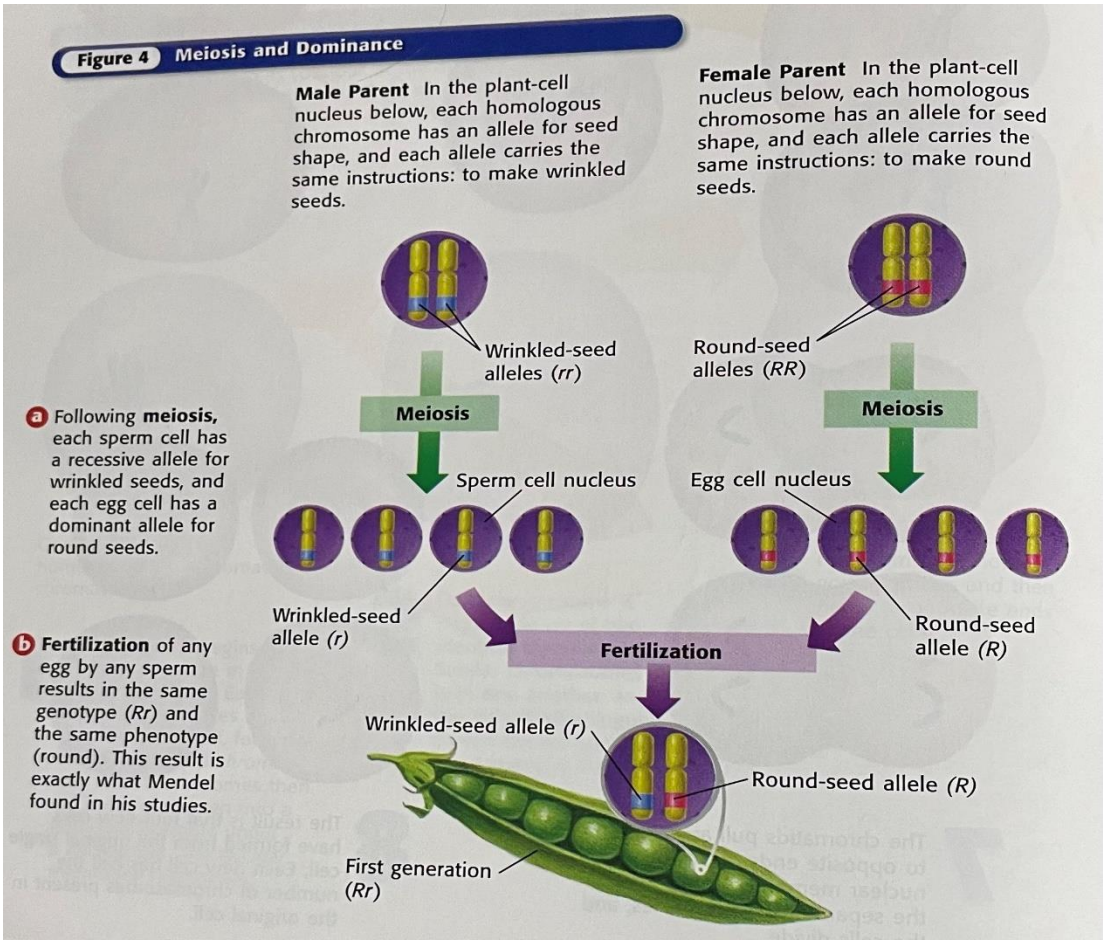


2n - diploid

The Steps of Meiosis

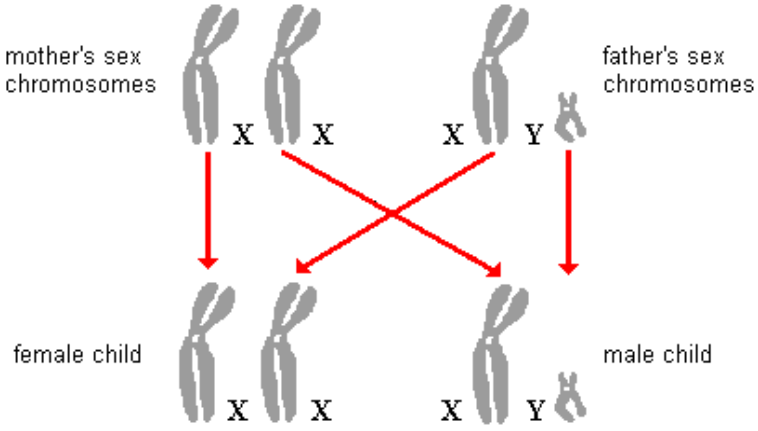


Meiosis and Mendel



Sex Chromosomes: carry genes that determine sex

- Females…XX
- Males…XY

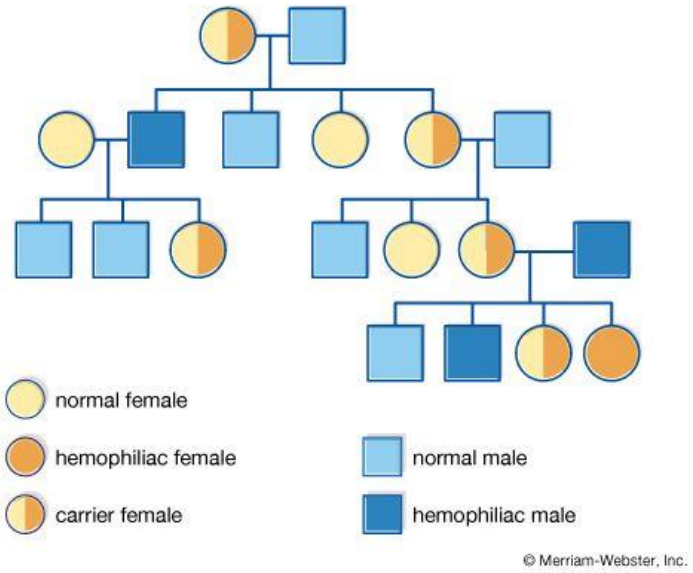


The Y-chromosome does not carry all of the geners of an X-chromosome.

- The genes for certain disorders, such as colorblindness, are carried on the X-chromosome
- *Sex-lined disorders:* the genes for certain disorders are carried on the X chromosome
    - These genes are usually recessive, men are more likely to carry the sex-linked disorder
    - Colorblindness, hemophilia (prevents the clotting of blood), and cystic fibrosis (cause serious lung problems) are examples of sex-linked disorders

People can consult a genetic counselor or use a family tree to trace the sex-linked disorder. They will use a pedigree.

- **Pedigree:** a diagram that shows the occurrence of a genetic trait in several generations of a family
    - For someone to get the sex-linked disorder, they must get 2 recessive genes



Selective breeding: organisms with desirable characteristic are mated

- Corn, roses, dogs, and chickens are all examples of selective breeding