Meiosis and Sexual Reproduction Chapter 11

Reproduction Section 1

Reproduction

Key Idea: An individual formed by asexual reproduction is genetically identical to its parent.

Asexual Reproduction

- In asexual reproduction, a single parent passes a complete copy of its genetic information to each of its offspring.
- Examples:
  - binary fission
  - fragmentation
  - budding

Sexual Reproduction

Key Idea: In sexual reproduction, two parents give genetic material to produce offspring that are genetically different from their parents.

- A gamete is a reproductive cell produced by each parent.
  - Male = sperm
  - Female = egg
- A zygote is a fertilized egg formed by the fusion of both gametes.

Germ Cells and Somatic Cells

- Germ cells are cells that are specialized for sexual reproduction. (gametes)

- Somatic cells are all other body cells. (skin, muscle, brain)

Advantages of Sexual Reproduction

- Sexual reproduction produces genetically diverse individuals.

- A population of diverse organisms is more likely to have some individuals that survive a major environmental change.

Chromosome Number

Key Idea: Each chromosome has thousands of genes that play an important role in determining how an organism develops and functions.

- A diploid is a cell, such as a somatic cell, that has two sets of chromosomes.

- A haploid is a cell that has one set of chromosomes.

- Homologous chromosomes are chromosomes that are similar in size, in shape, and in kinds of genes.

Haploid and Diploid Cells

- The symbol n is used to represent the number of chromosomes in one set.

- Human gametes have 23 chromosomes ($n = 23$).

- Human somatic cells have 46 chromosomes ($2n = 46$).

Homologous Chromosomes

- Each diploid cell has pairs of chromosomes made up of two homologous chromosomes.

- Each chromosome in a homologous pair comes from one of the two parents.

Autosomes and Sex Chromosomes

- *Autosomes* are chromosomes with genes that do not determine the sex of an individual.

- *Sex chromosomes* have genes that determine the sex of an individual.