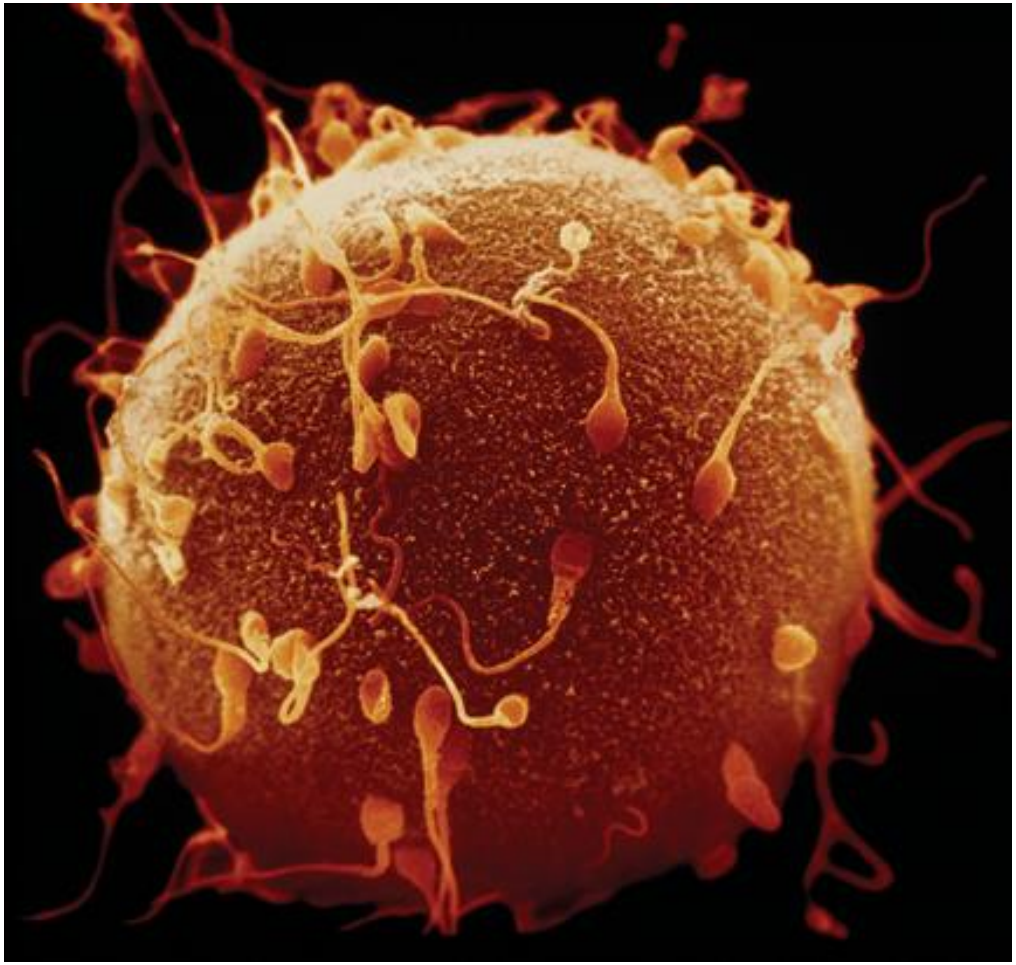
6.1 Chromosomes and Meiosis

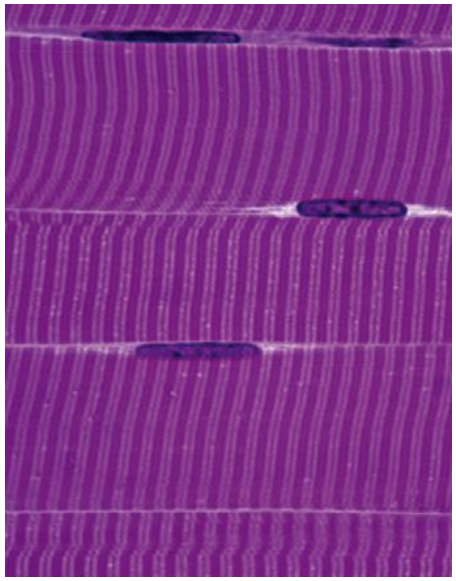
KEY CONCEPT

Gametes have half the number of chromosomes that body cells have.



6.1 Chromosomes and Meiosis

- **You have body cells and gametes.**
  - **Somatic Cells**
    - Are also called **body cells**
    - Make up most of the body tissues and organs
    - NOT passed on to children

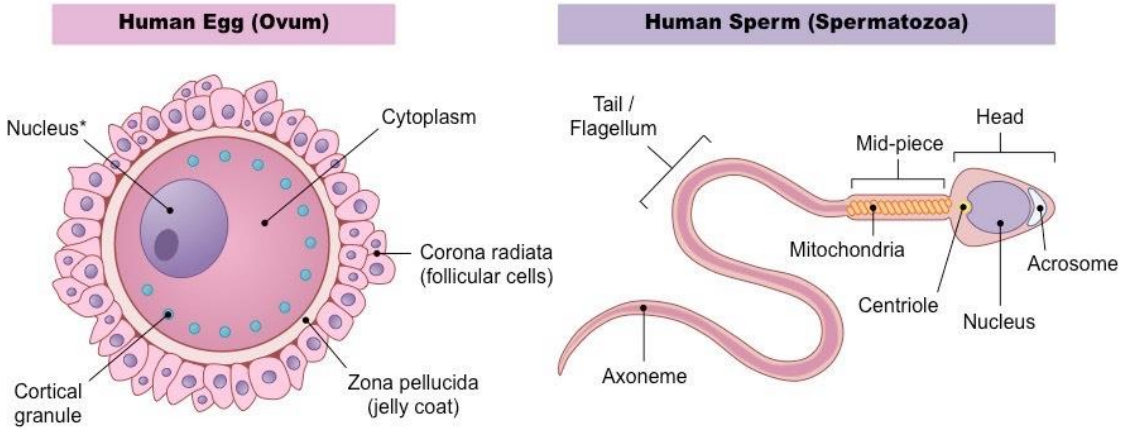


body cells

sex cells (sperm)

6.1 Chromosomes and Meiosis

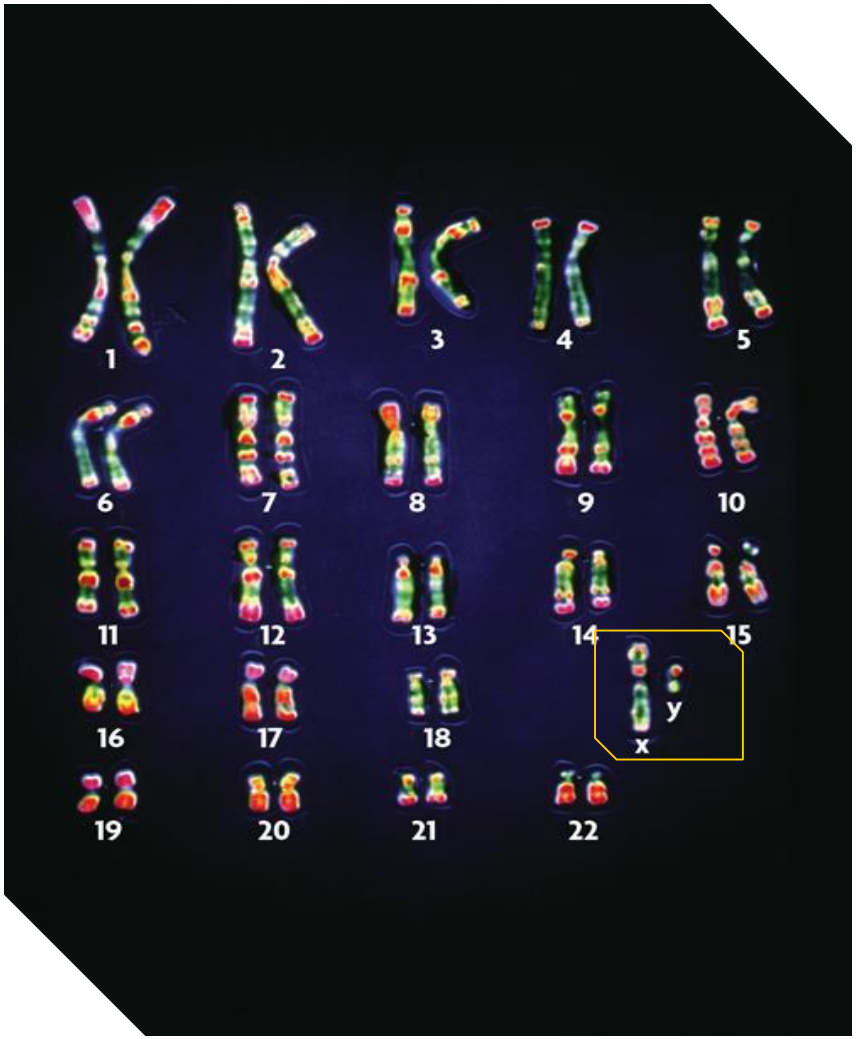
- **You have body cells and gametes.**
  - **Gametes:**
    - are also called **germ cells** or **sex cells** – **egg** and sperm
    - Located in the ovaries and testes.
    - Have DNA that can be passed to offspring.



*NB: Mature human ova are arrested in metaphase II until fertilization and hence do not actually possess a condensed nucleus However, nuclei are typically included in biological drawings of egg cells to represent the presence of haploid DNA material

6.1 Chromosomes and Meiosis

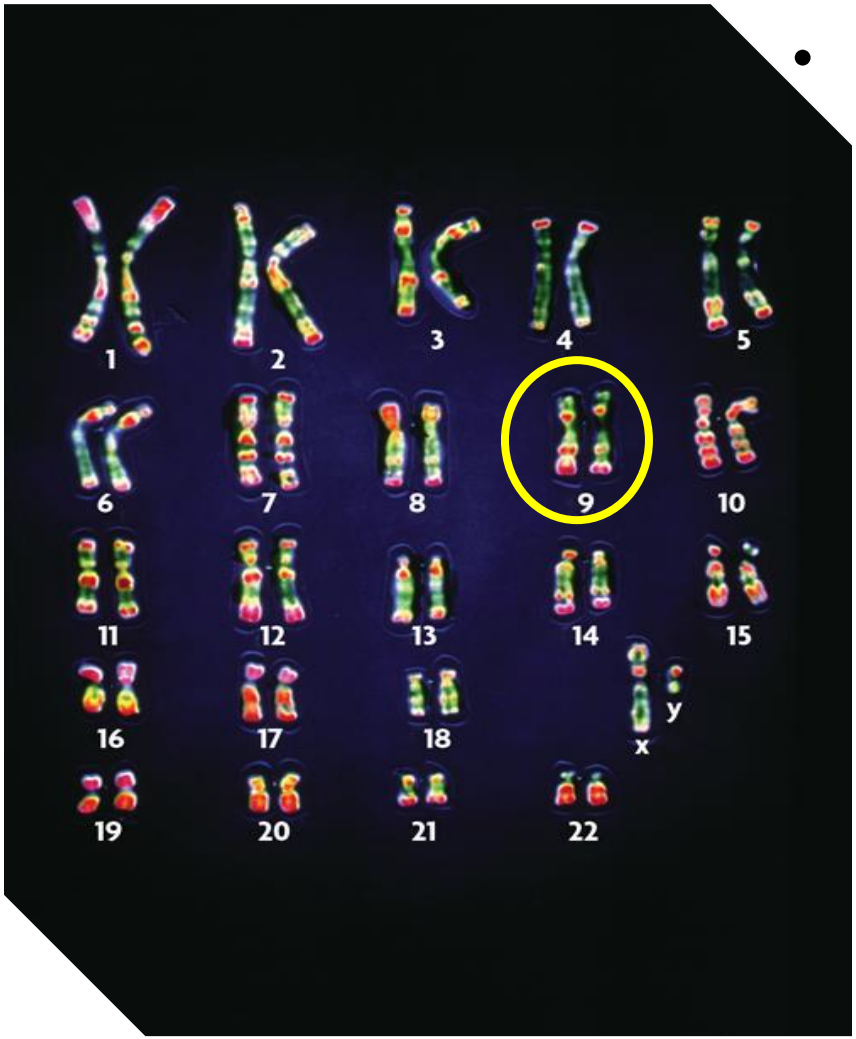
Your cells have autosomes and sex chromosomes.



- 1. **AUTOSOMES**
  - Chromosomes that contain genes not directly related to the sex of an organism.
  - Refers to pair 1 to 22

6.1 Chromosomes and Meiosis

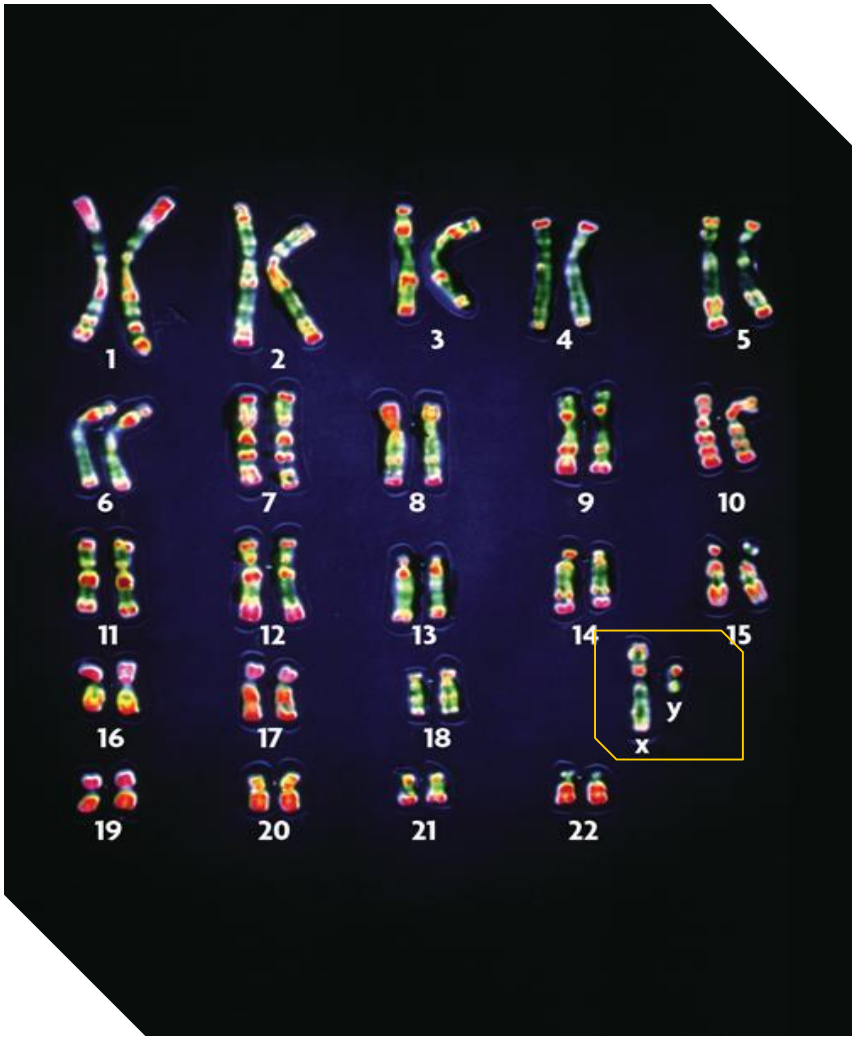
- **Your cells have autosomes and sex chromosomes.**



- 2. **Homologous Chromosomes**
  - A pair of chromosomes, inherited one from each parent, carry the same genes although the genes may code for different traits
  - Example – pair #9

6.1 Chromosomes and Meiosis

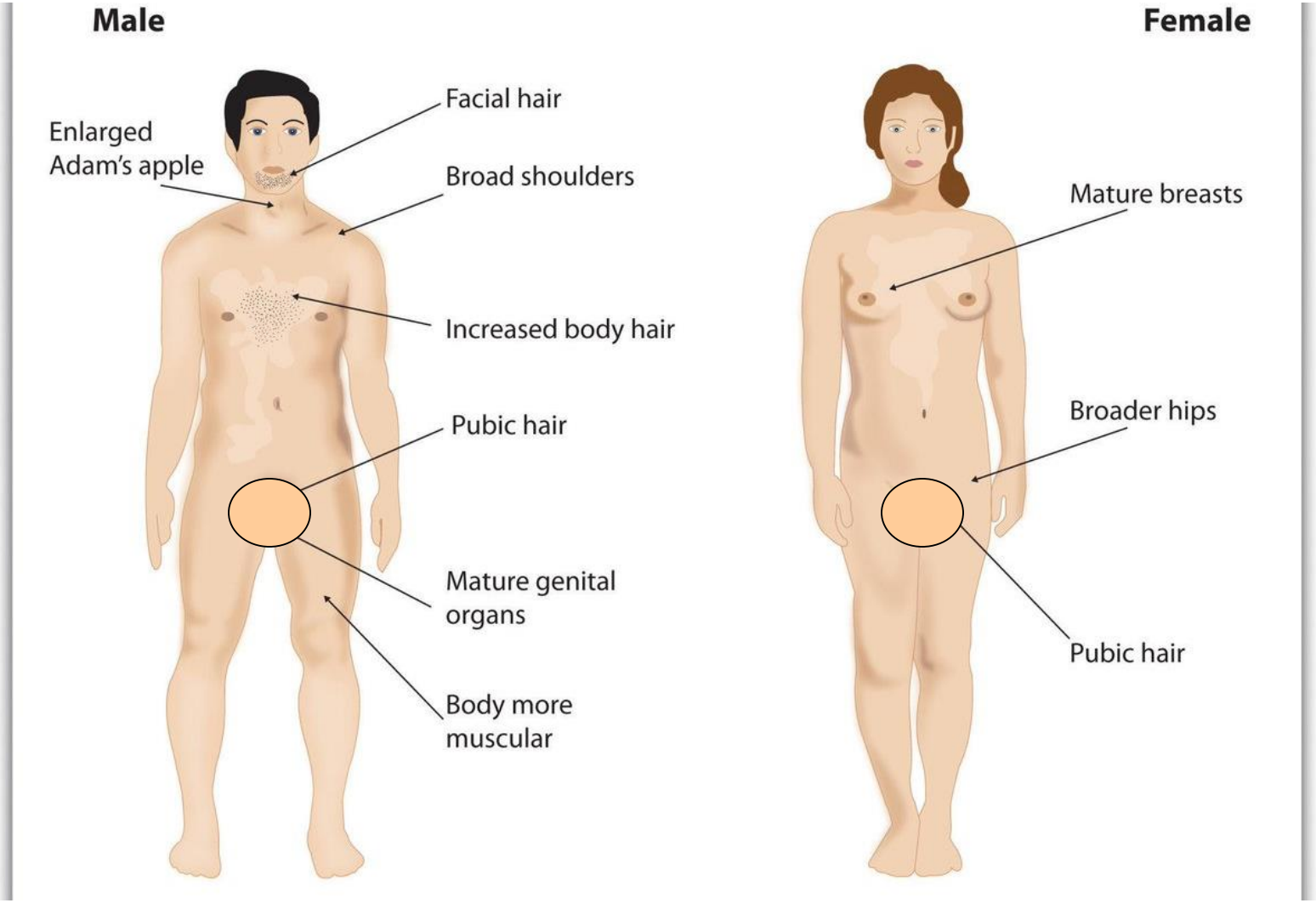
- **Your cells have autosomes and sex chromosomes.**



- 3. **Sex Chromosomes**
  - Contain genes that directly control the development of sexual characteristics.
  - Pair # 23

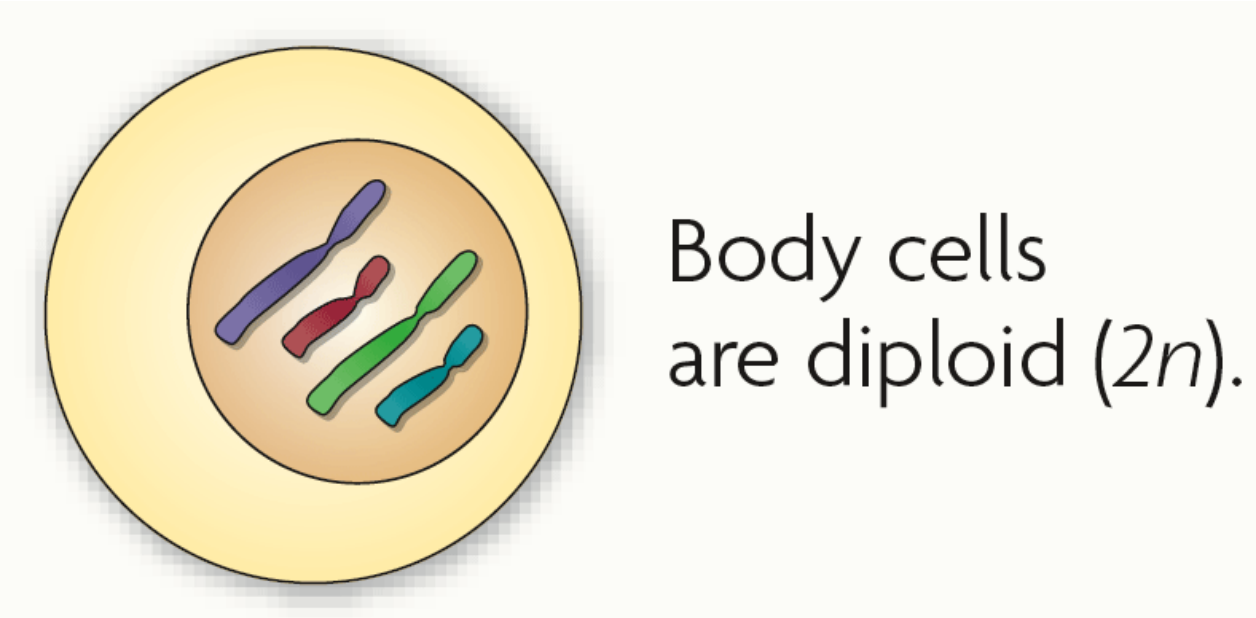
6.1 Chromosomes and Meiosis

- **Secondary sexual characteristics**



6.1 Chromosomes and Meiosis

- **Body cells are diploid; gametes are haploid.**
  - **Diploid (2*n*) cells**
    - have two copies of every chromosome.
    - One from the mother and one form the father.
    - ***Body cells*** typically diploid
    - Result from Mitosis.

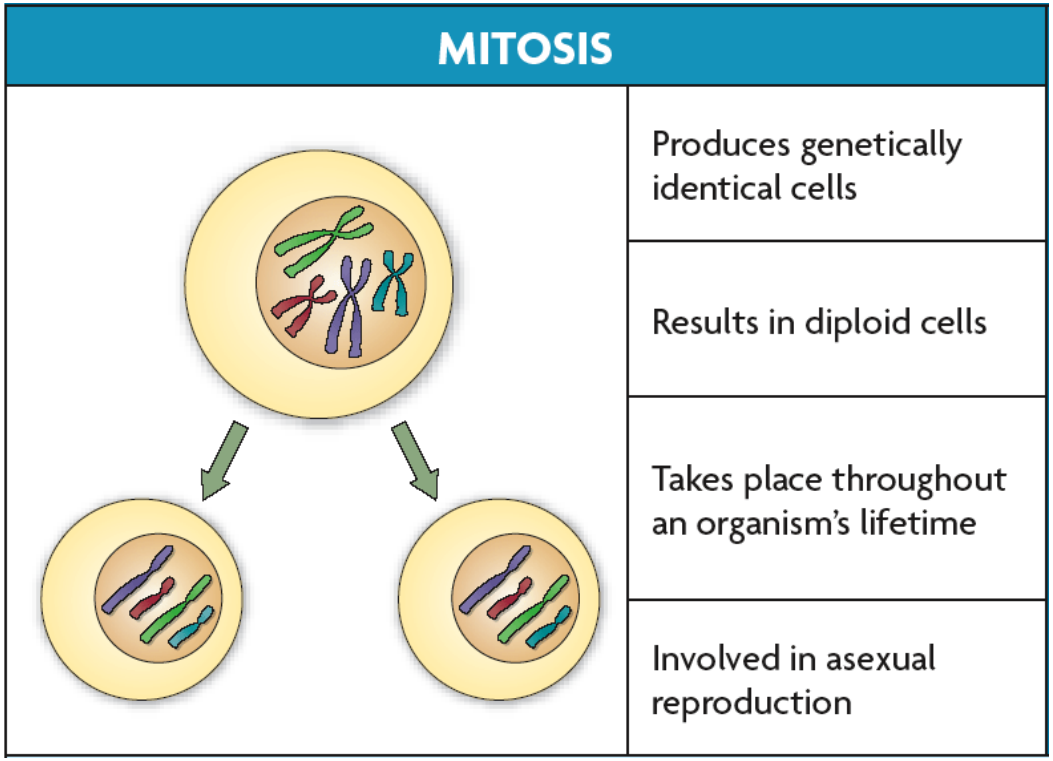


6.1 Chromosomes and Meiosis

- **Haploid (*n*) cells**
  - have one copy of every chromosome.
  - Gametes are haploid.
  - ***Gametes*** have 22 autosomes and 1 sex chromosome
  - Result from Meiosis

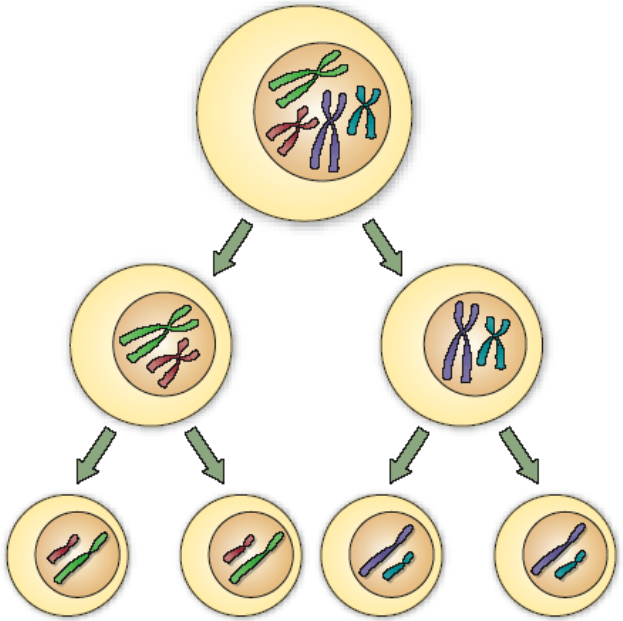
6.1 Chromosomes and Meiosis

- **MITOSIS**:
  - Makes genetically **identical** cells
  - Makes **diploid** cells
  - Takes place **throughout** the organism's **lifetime**
  - Involved in **asexual** reproduction



6.1 Chromosomes and Meiosis

- **MEIOSIS**
  - Makes genetically **unique** cells
  - Makes **haploid** cells
  - Takes place at **certain time** in life cycle
  - Involved in **sexual** reproduction

MEIOSIS	
Produces genetically unique cells	
Results in haploid cells	
Takes place only at certain times in an organism's life cycle	
Involved in sexual reproduction	