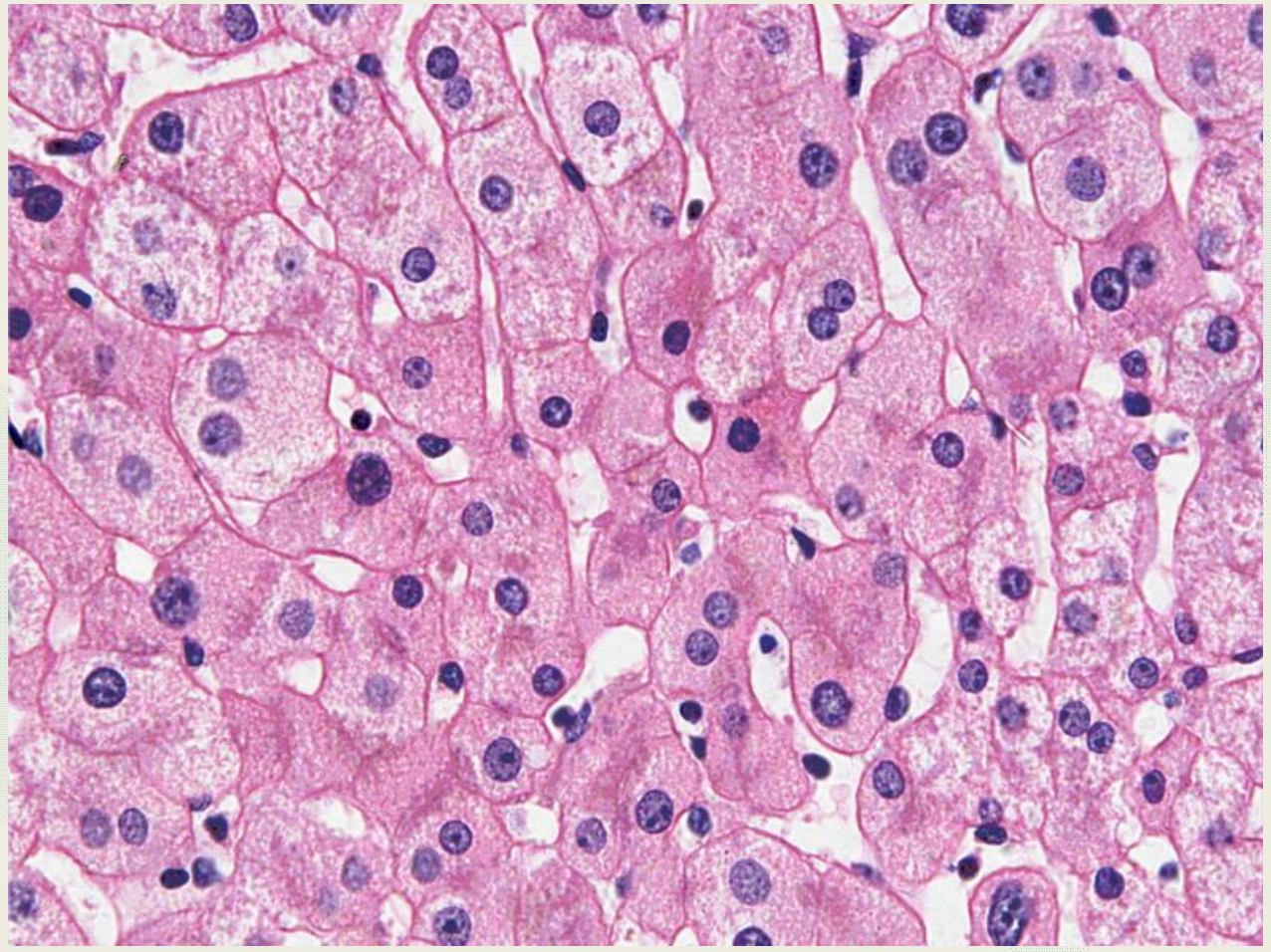
Cells



VOCABULARY

- Organelle
- Endoplasmic Reticulum
- Ribosome
- Mitochondria
- Diffusion
- Osmosis
- Mitosis
- DNA
- Chromosome

THE IMPORTANCE OF CELLS

- Cells are the smallest unit of life in all living things
- They are organized structures that help living things carry on the activities of life, such as digestion, movement, growth and reproduction
- Different cells have different jobs

THE CELL THEORY

- All living things are made of one or more cells
- The cell is the basic unit of life in which the activities of life occur
- All cells come from cells that already exist

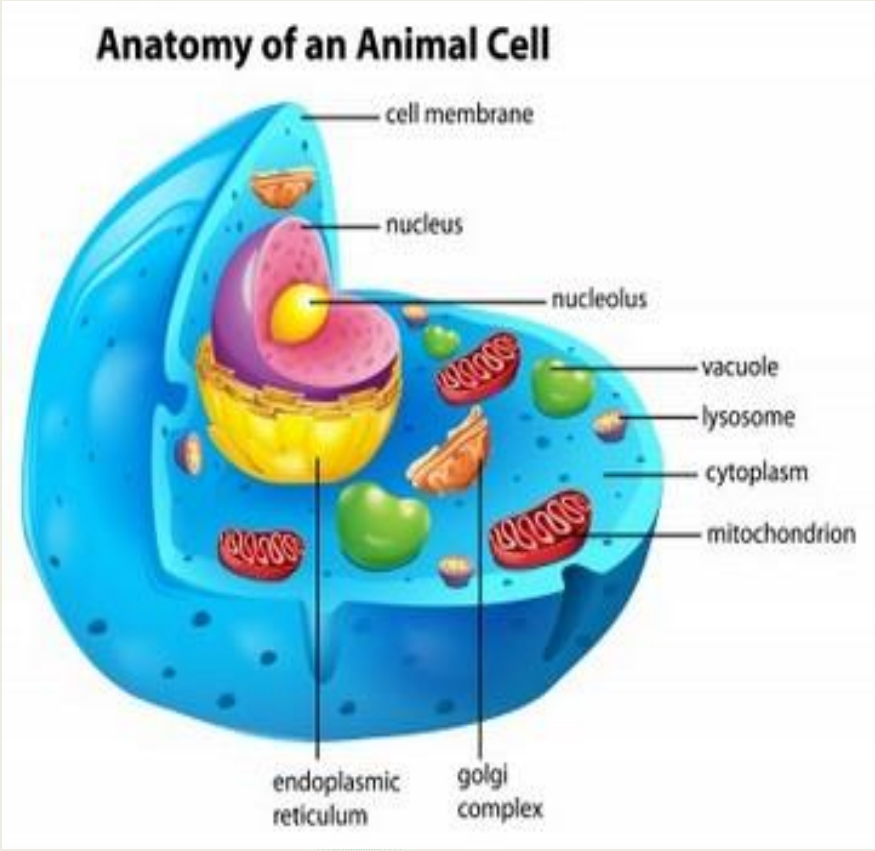
THE MICROSCOPIC CELL

- Cells were first observed by Robert Hooke in 1665
  - He used a microscope that he made himself
  - He first observed cells in a thin slice of cork
  - He called them cells after the small box-like rooms that monks lived in
- As microscopes became more and more advanced, scientists were able to view the different parts of cells and learn the different functions of each part

What Are Cells Made Of?

Animal Cells

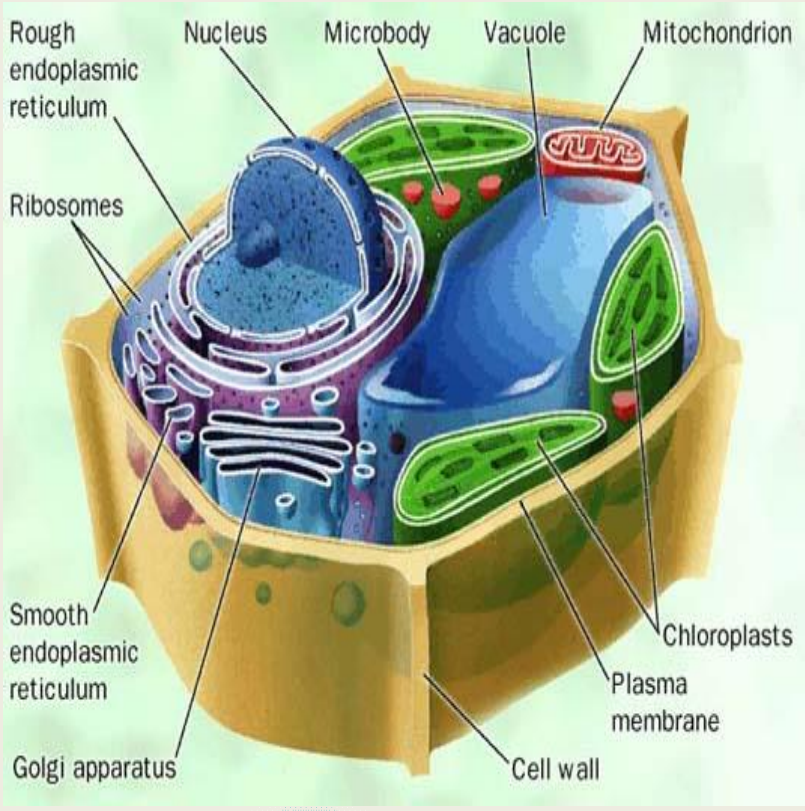
- Cell Membrane: Outer layer of the cell
  - Controls what enters and leaves the cell
- Cytoplasm: A gelatin-like substance that contains many chemicals that the cell needs
- Nucleus: Controls most of the cellôs activities
  - Contains chromosomes, which contain DNA
  - DNA determines which traits an organism will have (Genes)
- Mitochondria: ñPowerhouse of the cellò
  - Converts food energy into a form that the cell can use
- Vacuole: Stores food, water, minerals and wastes



What Are Cells Made Of?

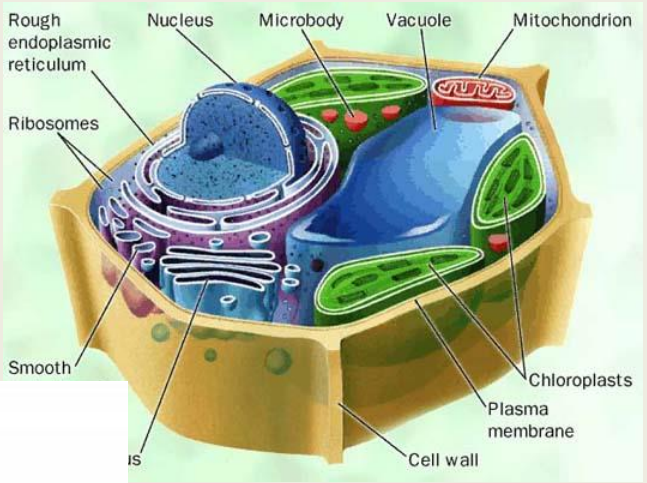
Plant Cells

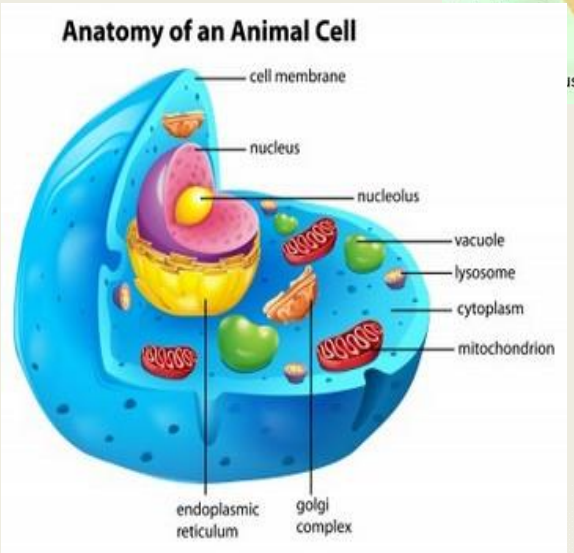
- Cell Wall: The outermost layer
  - Provides support and protection
- Cell Membrane: Outer layer of the cell
  - Controls what enters and leaves the cell
- Cytoplasm: A gelatin-like substance that contains many chemicals that the cell needs
- Nucleus: Controls most of the cellôs activities
  - Contains chromosomes, which contain DNA
  - DNA determines which traits an organism will have (Genes)
- Chloroplast: Captures energy from sunlight and uses it to convert carbon dioxide and water into food and oxygen
  - Give plants their green color
- Mitochondria: ñPowerhouse of the cellò
  - Converts food energy into a form that the cell can use
- Vacuole: Stores food, water, minerals and wastes



Differences Between Animal and Plant Cells

- Animal cells and plant cells are very similar
- Plant cells contain some things that animal cells do not:
  - Cell wall
  - Chloroplasts
- Both cells have vacuoles, but animal cell vacuoles are far smaller than plant cell vacuoles

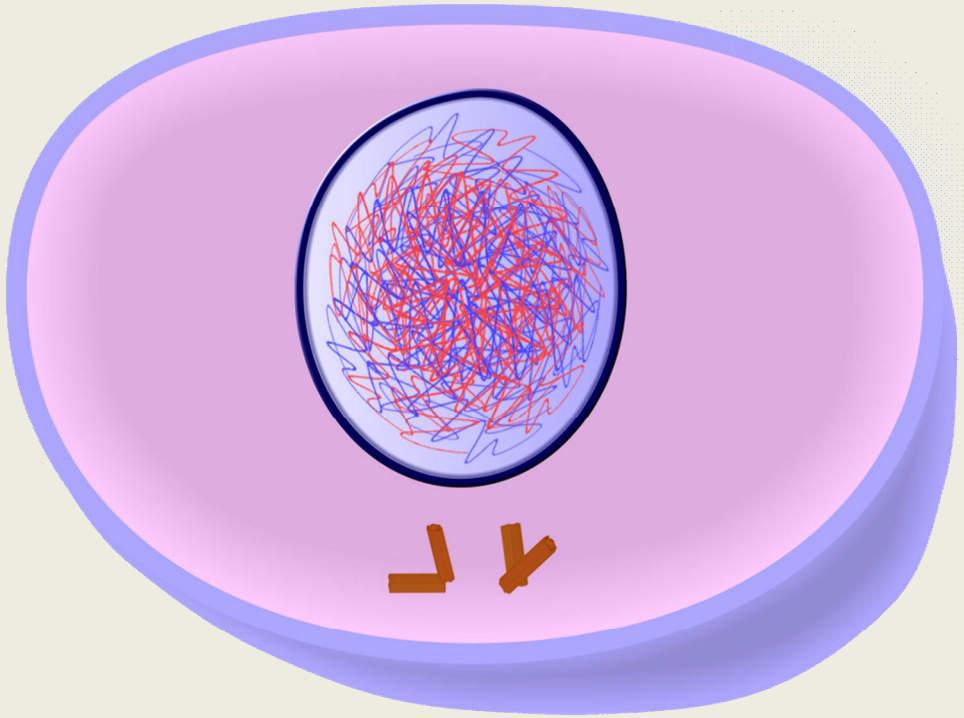




MITOSIS

Interphase

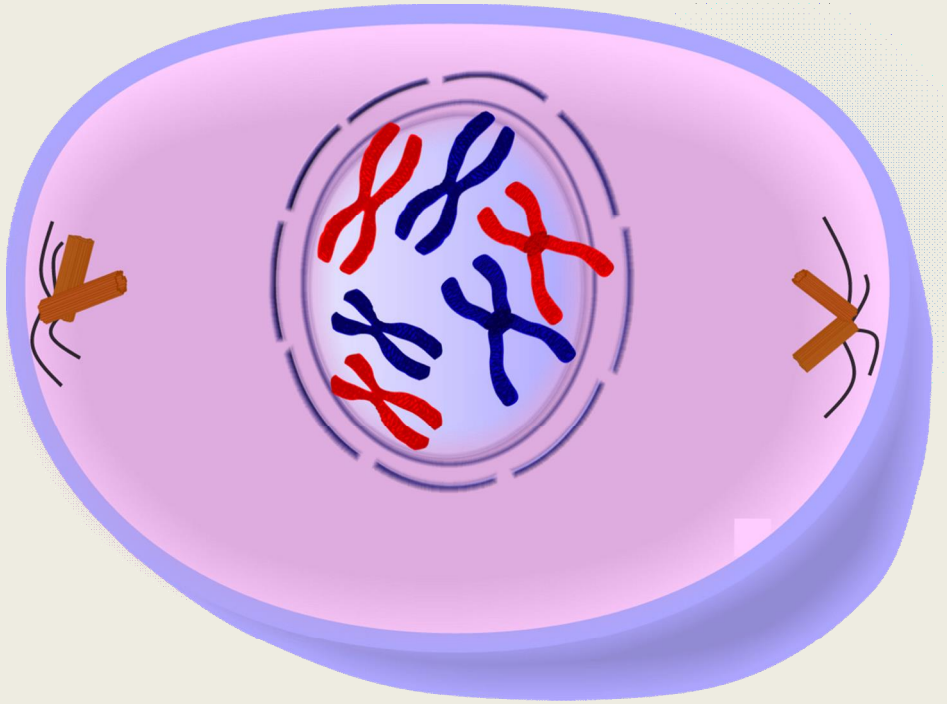
- The cellôs chromosomes duplicate
- The nucleolus is clearly visible in the nucleus



Mitosis

Prophase

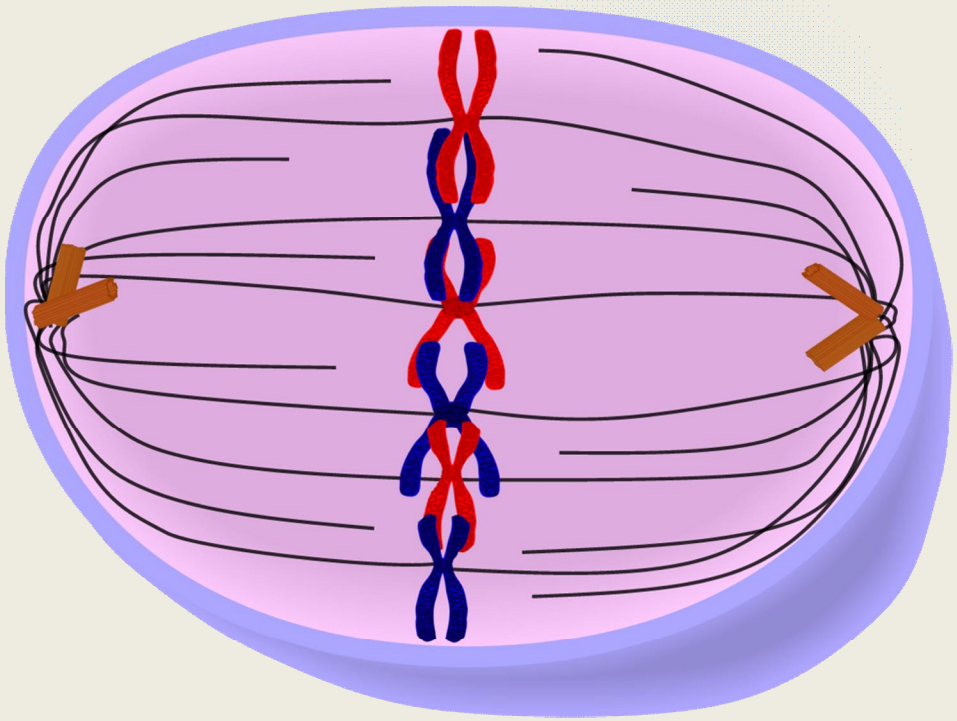
- The chromatid pairs are now visible
- Spindle fibers are beginning to form



MITOSIS

Metaphase

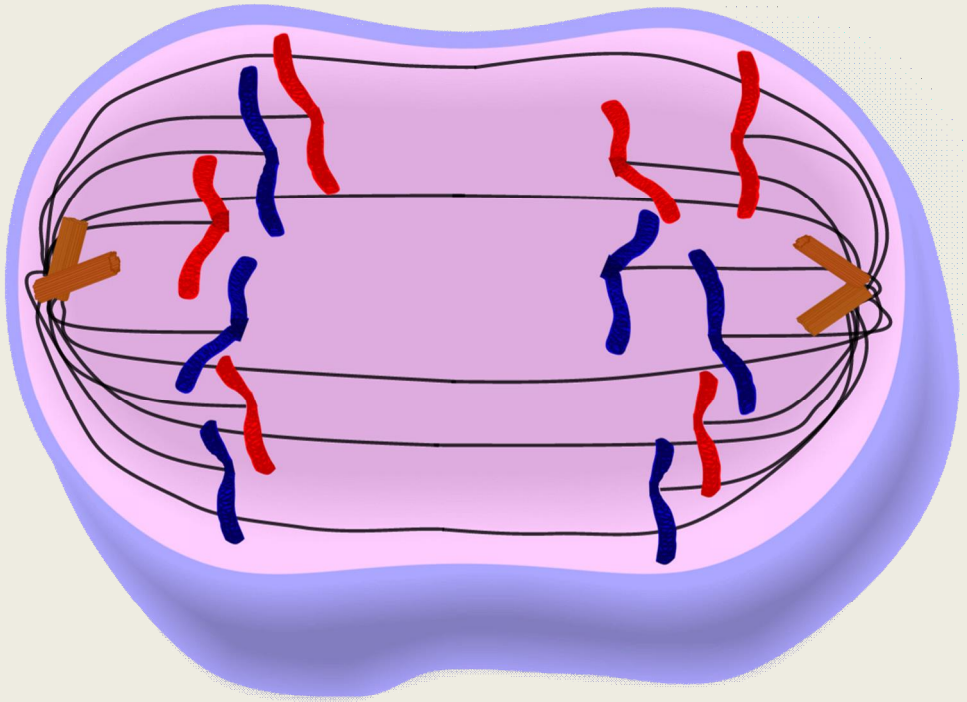
- Chromatid pairs are lined up in the center of the cell
- Spindle fibers connect to each chromatid



Mitosis

Anaphase

- The chromosomes have separated



Mitosis

Telophase

- Two new nuclei are formed
- The cytoplasm begins to split