

Lecture 1: Introduction to Cell Biology

History of Cells

Some key figures & dates in the history of cell biology:

- 1600s - invention of microscope
- Hooke 1665
- Leeuwenhoek 1673
- Brown 1833
- Schleiden and Schwann 1838
- Virchow (pictured) 1855
- Flemming 1882



"Omnis cellula e cellula"
/

Cell unity and diversity

Unity:

The cell is the basic unit of life. Anything less than a cell cannot be considered living.

All cells share certain features.

Diversity:

Differences between Prokaryotic and Eukaryotic cells

Differences between Plant and Animal Cells

Parts of a Eukaryotic cell

Plasma membrane

Membrane-bound organelles compartmentalize functions and biochemical processes:

- Nucleus
- Mitochondria
- Endoplasmic reticulum (ER)
- Golgi apparatus
- Lysosomes
- Peroxisomes

Cytosol

Ribosomes

Cytoskeleton: 3 classes of filamentous polymers (microtubules, microfilaments, intermediate filaments)

Centrosome

Intercellular junctions

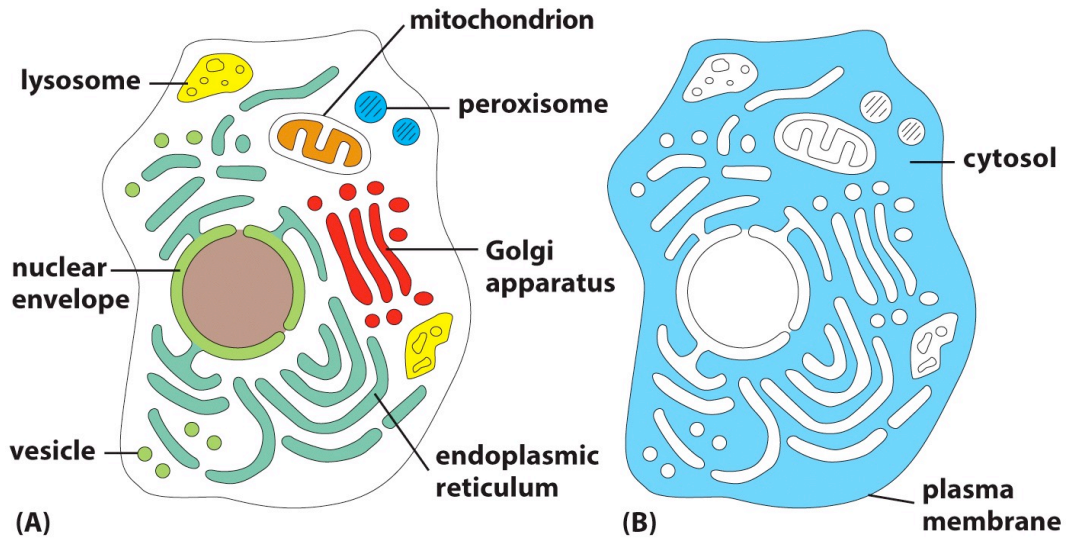


Figure 1-23 Essential Cell Biology, 4th ed. (© Garland Science 2014)

Mitochondria and Chloroplasts are believed to be derived from symbiotic bacteria (endosymbiont theory).

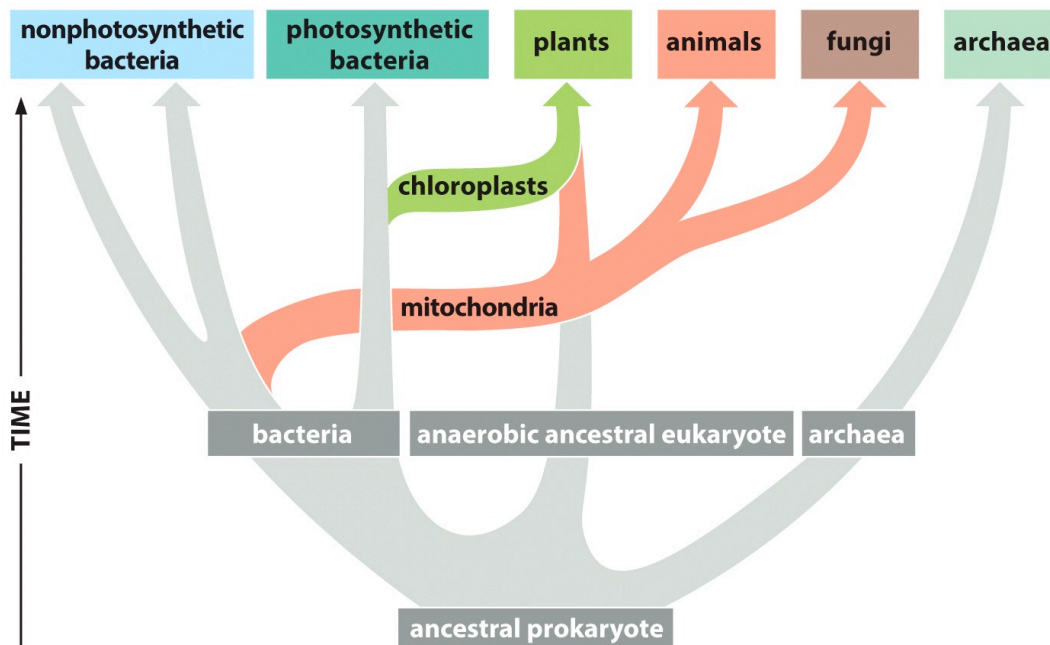


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Types of cells (hundreds)

Epithelial cells
Muscle cells
Connective tissue
Neurons and glial cells

Blood cells
Germ cells - sperm and eggs
Sensory cells

Cell shape is related to function.