



CELLULAR STRUCTURE AND FUNCTION

Sections 7.1-7.3



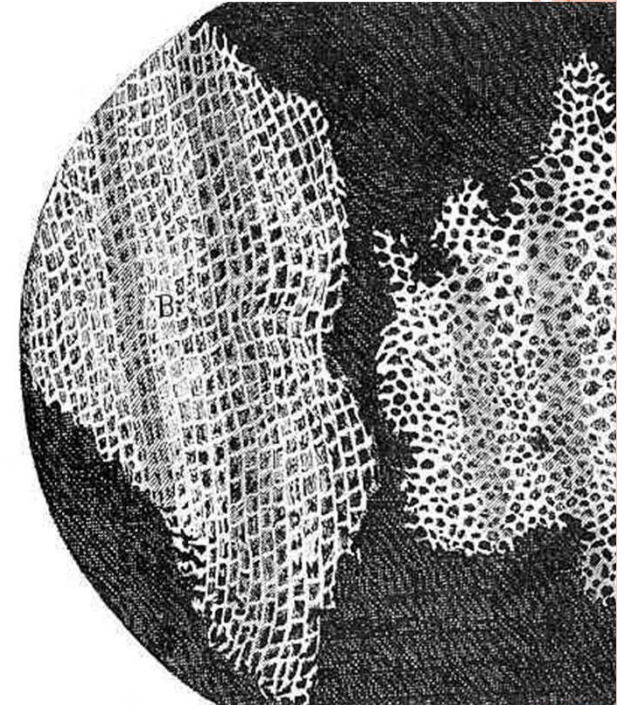


CELL DISCOVERY AND THEORY

Section 7.1

HISTORY OF THE CELL THEORY

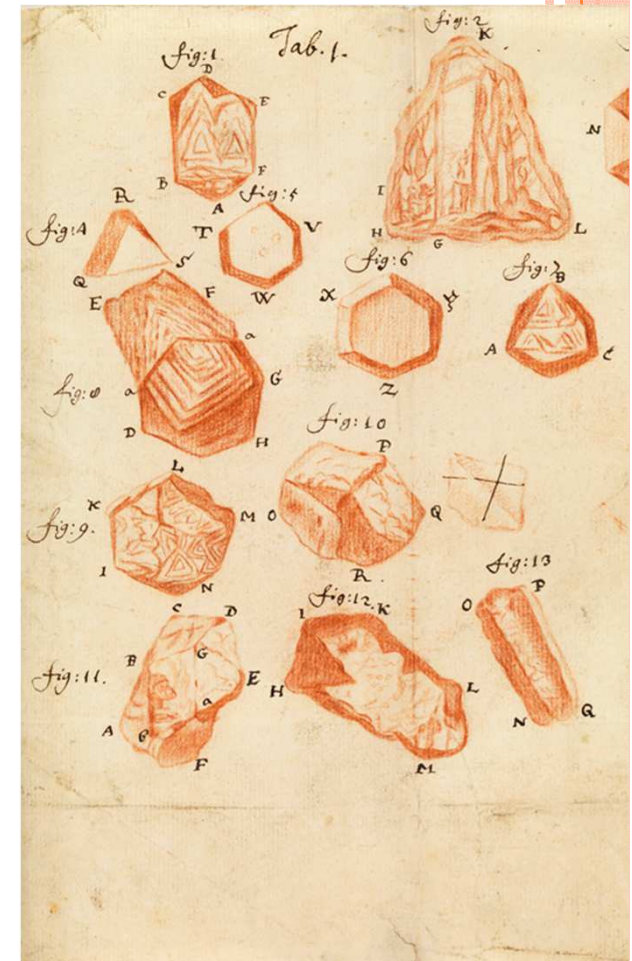
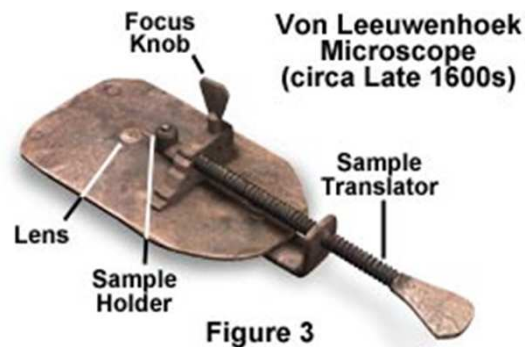
- No one knew about cells until the invention of the microscope
- Robert Hooke (1665)
 - Looked at a piece of cork under a simple microscope
 - Cork is made of dead wood cells
 - Saw small, box shaped structures
 - Called these “cells” from the Latin word meaning “small rooms”
- CELL – basic structural unit of all living organisms



HISTORY OF THE CELL THEORY

- Anton van Leeuwenhoek (late 1600s):

- read a book by Hooke and was inspired
- Designed his own microscope
- Saw living organisms (cells) in:
 - Pond water
 - Milk
- Led to the of new branches of science



THE CELL THEORY

- Theory – statement that explains how or why something happens
 - Lots of experimental evidence to support
 - Can be proven false
 - Developed over 200 years by many scientists using lab data
 - Fundamental idea of modern biology
 - Composed of three parts
- 1. all living organisms are composed of one or more cells
 - 2. cells are basic unit of structure and organization of all things
 - 3. Cells arise only from previously existing cells, passing copies of genetic material to their new cells



THE CELL THEORY

Year	Scientist	Contribution
1595	Zacharias Jensen	Jensen creates the first compound microscope.
1655	Robert Hooke	Hooke, using a microscope that he devised, viewed the cell walls of cork for the first time. He coined the term 'cell' still used in biology today.
1670	Antonie van Leeuwenhoek	van Leeuwenhoek observes the first living cells in pond water using lenses that he created for his microscope.
1833	Robert Brown	Brown discovers the nucleus in plant cells and suggests its importance in cell creation.
1838	Matthias Jakob Schleiden	Schleiden proposes that all plant tissues are composed of cells.
1839	Theodor Schwann	Schwann concludes that not just plant tissue, but animal tissues, as well, are composed of one or more cells. He also states that the cell is the basic unit for all organisms.
1845	Carl Heinrich Braun	Braun restates the second part of the cell theory proposing that cells are the basic unit of life.
1855	Rudolf Virchow	Virchow adds the third part to the cell theory stating that cells only come from other living cells.



BASIC CELL TYPES

- Cells exist in different shapes, sizes, and differ in function
- All cells have one common trait
 - **ALL HAVE A PLASMA MEMBRANE**
 - Helps control what comes in and out of the cell
- Cells have functions in common:
 - Have genetic information
 - Break down molecules to provide energy
- Two main types of cells
 - PROKARYOTE
 - EUKARYOTE



BASIC CELL TYPES

- **EUKARYOTE**

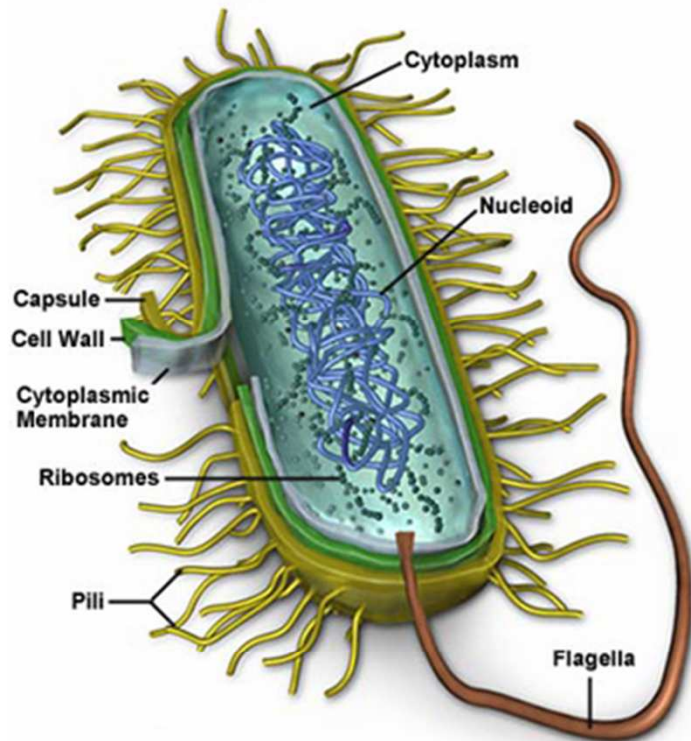
- Have a nucleus
 - Contains DNA
- Organelles bound by membranes
 - Enable cell to have multiple things going on at once
- Most organisms are eukaryotes

- **PROKARYOTE**

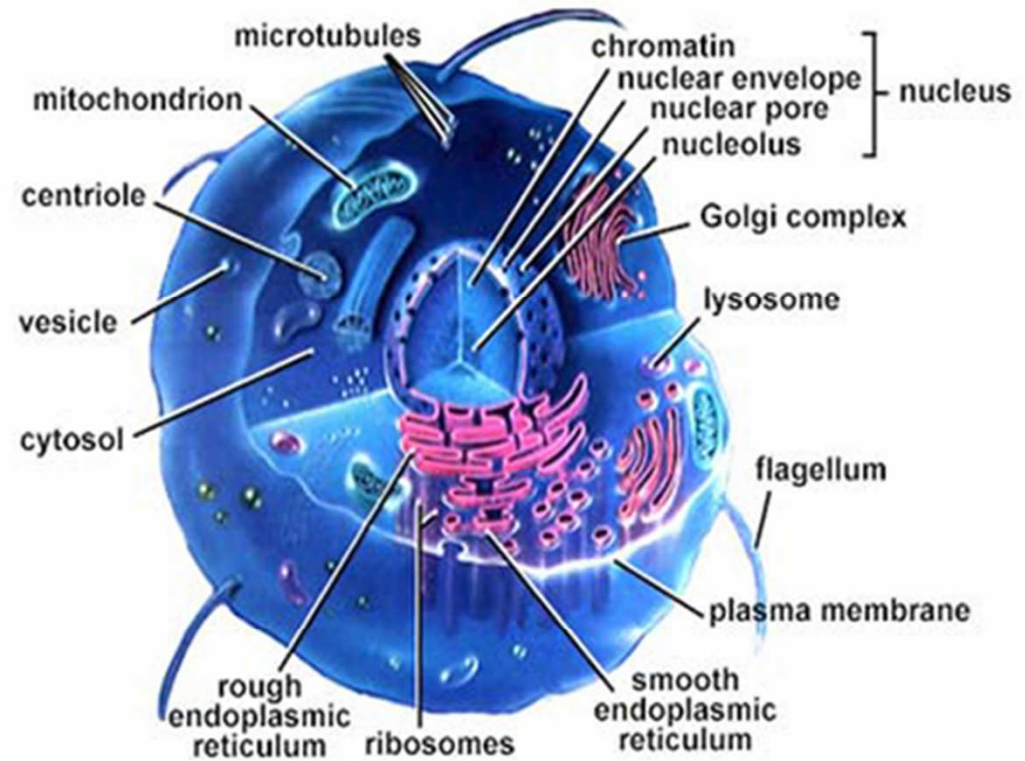
- No nucleus
- No membrane-bound organelles
- Bacteria
- Believed to be the first organisms on Earth



BASIC CELL TYPES



**prokaryotic cell
(bacteria)**



**eukaryotic cell
(protists, fungi, animals, plants)**