Lec.2

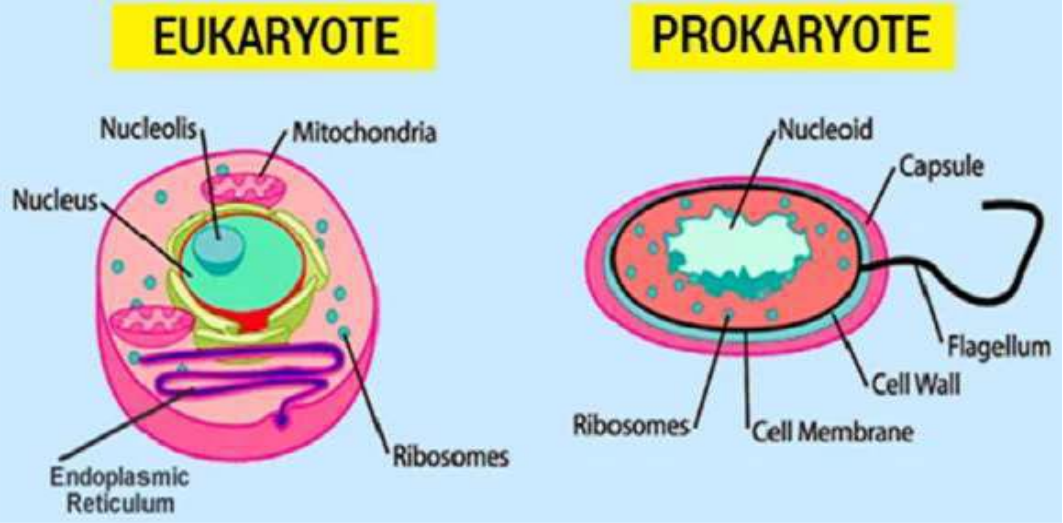
Prokaryotes and Eukaryotes

Biologists classify cells into two broad categories the **Prokaryotes** and **Eukaryotes**.

The primary difference between a prokaryotic cell and a eukaryotic cell is the presence or absence of a nucleus, a membrane-bound structure that houses the DNA. **Prokaryotic cells** lack a nucleus, whereas **eukaryotic cells** possess a nucleus. Despite their differences, both types of cells have a **plasma membrane,** a membrane that regulates what enters and exists a cell.

Comparison between Prokaryotic cell as in bacteria and Eukaryotic cell as a plant

Prokaryotic Cell	**Eukaryotic Cell**
Nucleus is absent	Nucleus is present
Membrane-bound nucleus absent.	Membrane-bound Nucleus is present.
Cell wall chemically complex	Cell wall is present in plants and fungi and chemically simpler
Mitochondria absent	Mitochondria present
One chromosome is present, but not true chromosome plastids	More than one number of chromosomes is present.
Chloroplasts absent; chlorophyll scattered in the cytoplasm	Chloroplasts present in plants
Vacuoles absent	Vacuoles present
Sexual reproduction is absent divided by binary fission	Sexual reproduction is present divided by mitosis meiosis
Golgi apparatus absent	Golgi apparatus present

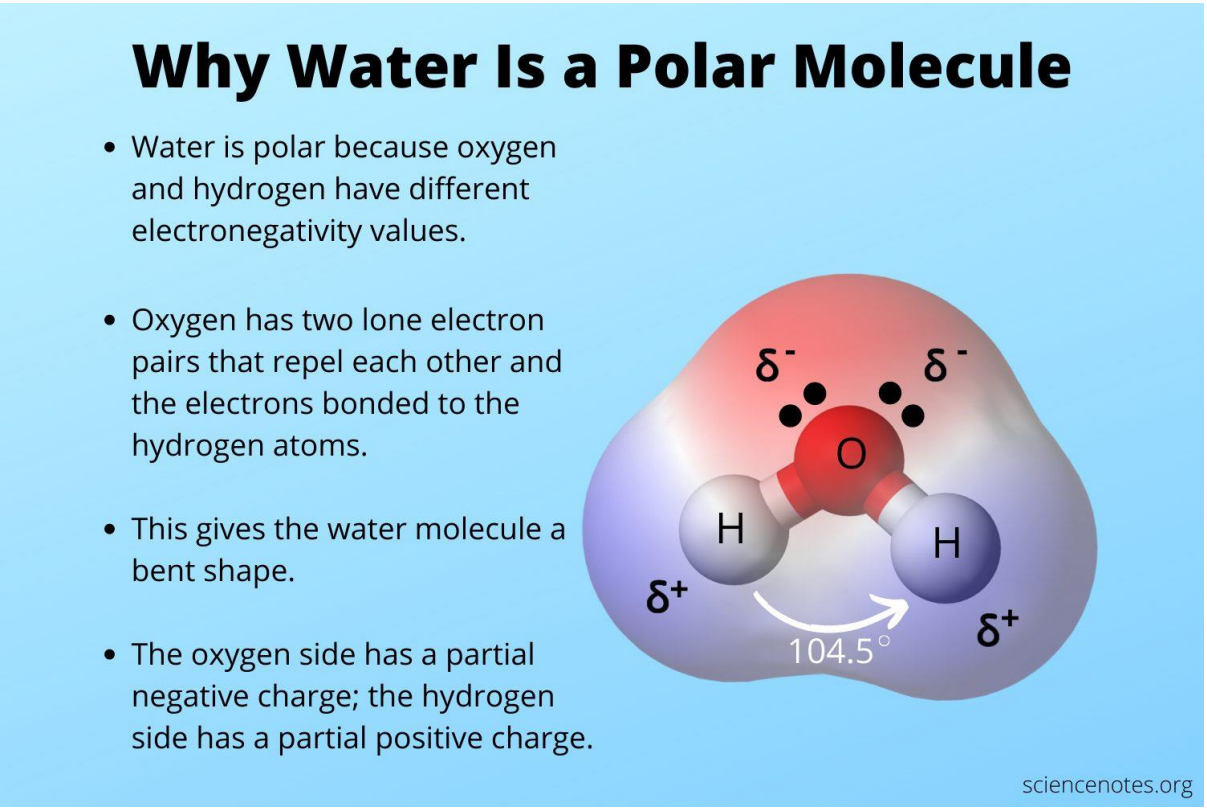


Comparison between Prokaryotic cell as in bacteria and Eukaryotic cell

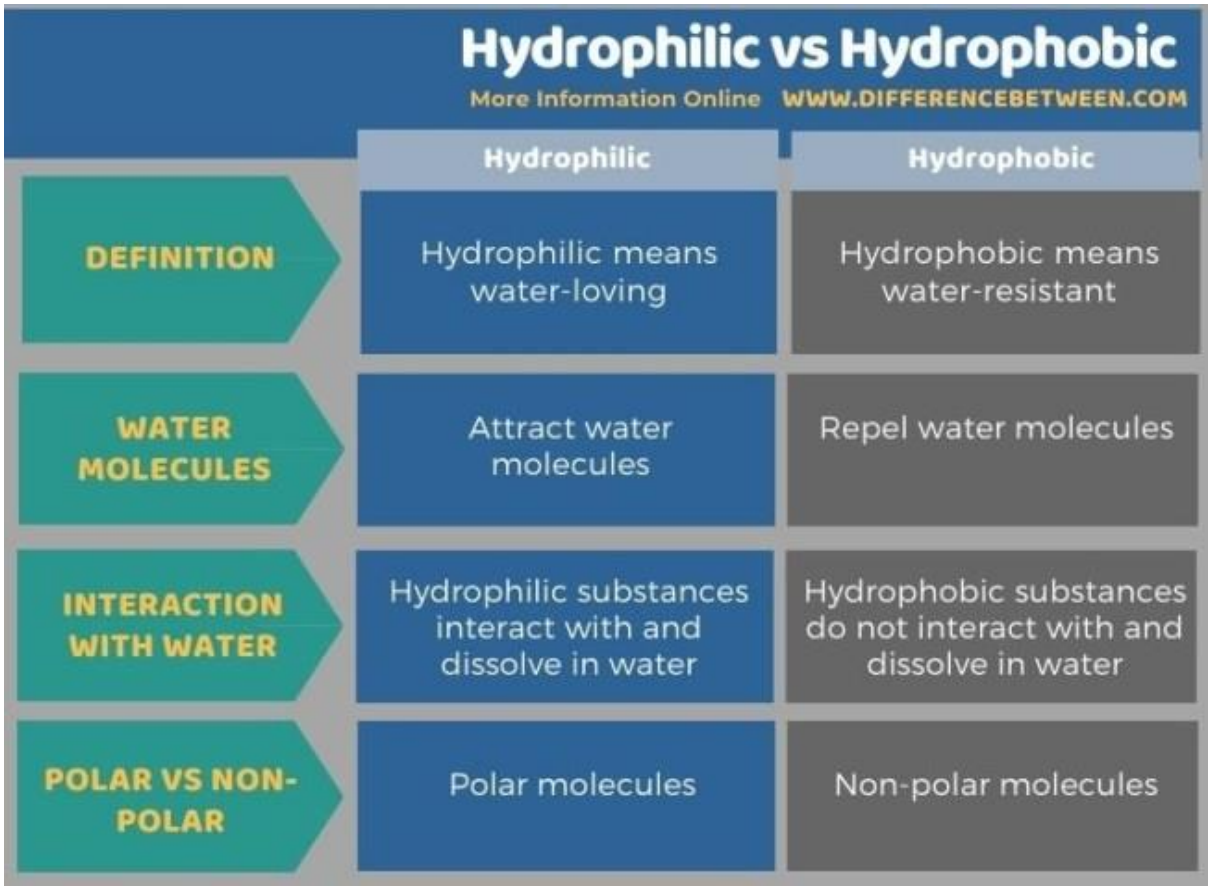
Chemistry of the Cell

The cell is chemically composed of water, organic molecules and inorganic ions.

Water form 70% or more of total cell mass and it is polar molecule



Hydrophilic and hydrophobic



Physical properties of water

1- Water is a liquid in standard tempreture and pressure but it also found in nature in its solid (frozen) and gaseous phases
2- Boiling point is 100 Celsius and its freezing point is 0 Celsius
3- Its universal solvent
4- Water has high heat capacity

Biological properites of the water

1- In the body the major components of cells such as proteins, DNA, and organelles are all dissolved in water
2- Water transport into and out of the cell is strictly regulated
3- Water’s high heat capacity insulates our boidies from drastic temperature changes

4- Water’s chemical and physical properities contribute to all life on earth at the planetary, organismal, cellular and molecular levels.