AN OVERVIEW OF CELL

- In the realm of microscopic exploration, the cell takes center stage, offering a fascinating glimpse into the intricate structures that underpin life. Whether scrutinizing an onion peel cell or delving into the minute details of human cheek cells under a microscope, the fundamental characteristics of cells come to light.
- **Structural Variations:** Consider the onion cell, a quintessential representation of a plant cell. It proudly displays a discernible cell wall, forming the outer boundary, followed by the cell membrane nestled within. On the other hand, human cheek cells showcase a distinct outer membrane encapsulating the cellular domain. Intriguingly, at the cellular core resides the nucleus, a dense, membrane-bound structure housing chromosomes brimming with genetic material, DNA.
- **Eukaryotic and Prokaryotic Distinctions:** Cells are categorized into two primary types based on the presence or absence of a membrane-bound nucleus. Those with such nuclei are deemed eukaryotic, while their counterparts lacking this feature are termed prokaryotic. The cytoplasm, a semi-fluid matrix, serves as the bustling arena of cellular activities in both plant and animal cells.
- **Organelles and Their Role:** Eukaryotic cells boast additional membrane-bound organelles, each with a specialized function. From the endoplasmic reticulum (ER) and Golgi complex to lysosomes, mitochondria, micro bodies, and vacuoles, these structures contribute to the cell's complexity. In contrast, prokaryotic cells lack such intricate, membrane-bound organelles.
- **Ubiquitous Ribosomes:** An exception to the membrane-bound trend, ribosomes stand as non-membrane-bound organelles found in all cells, be they eukaryotic or prokaryotic. These versatile entities grace the cytoplasm, as well as the organelles chloroplasts (in plants) and mitochondria, along with rough ER. Animal cells introduce another non-membrane-bound player, the centriole, instrumental in cell division.
- **Diversity in Size, Shape, and Function:** The cell realm exhibits vast diversity in size, ranging from the minuscule Mycoplasma at 0.3 μm to bacteria measuring 3 to 5 μm. In the realm of multicellular organisms, human red blood cells, with a diameter of about 7 μm, hold significance. Nerve cells, among the longest cells, highlight the cellular tapestry's intricate threads. The spectrum of cell shapes encompasses disc-like, polygonal, columnar, cuboid, thread-like, and irregular forms, each tailored to the specific functions they undertake.

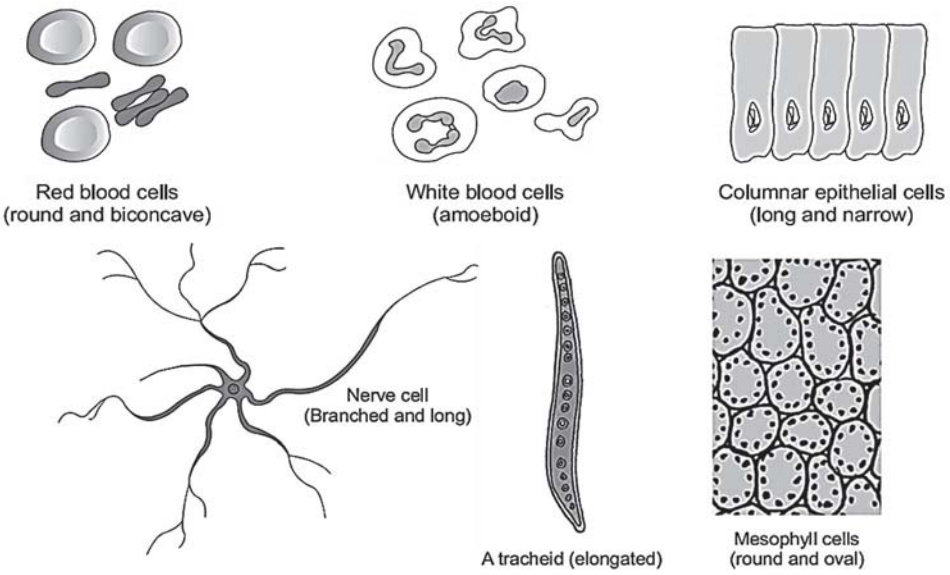

Fig. : Diagram showing different shapes of the cells.