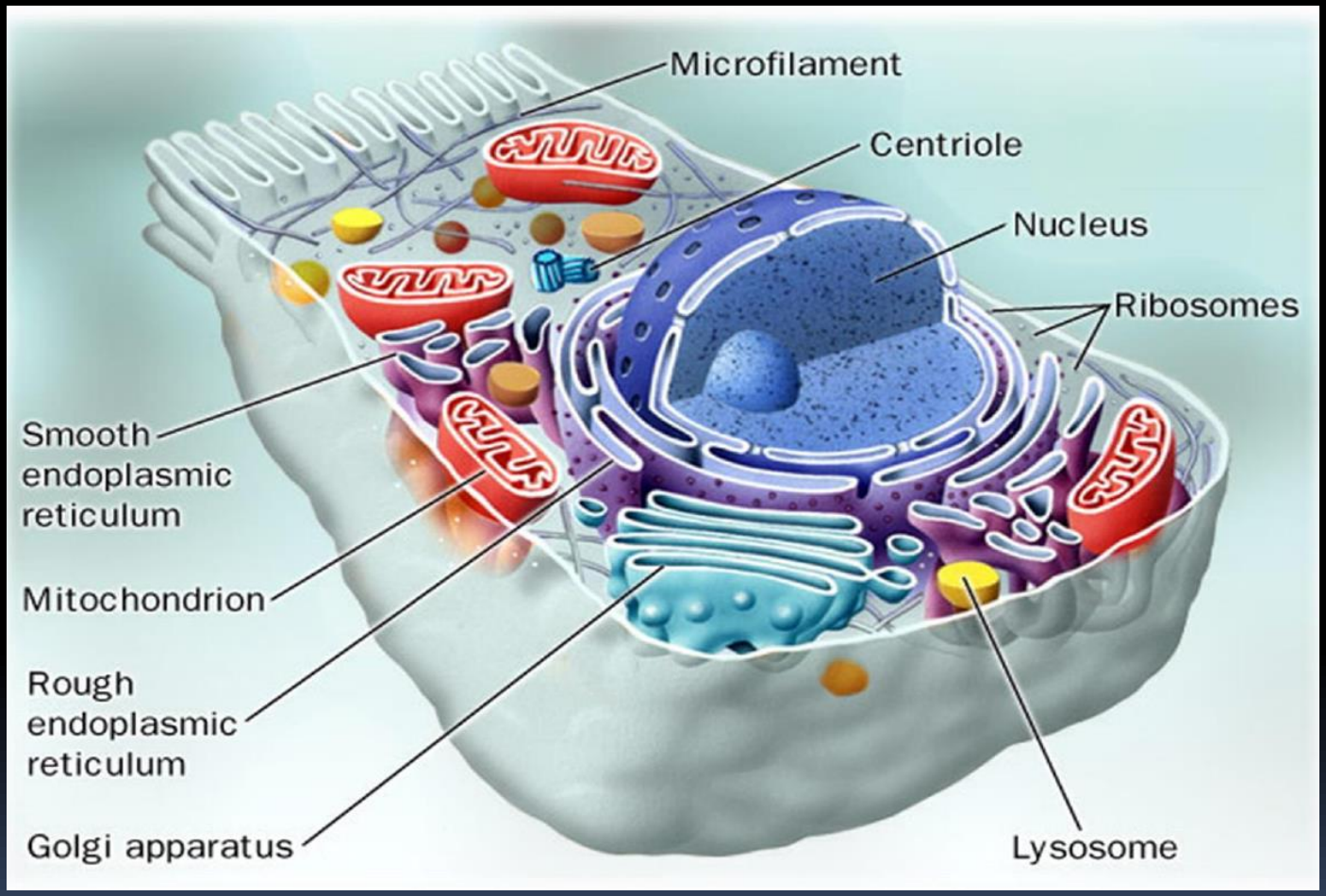
General Physiology

Introduction to human physiology

The cell

1st Lecture

1st Term


Microfilament
Centriole
Nucleus
Ribosomes
Smooth endoplasmic reticulum
Mitochondrion
Rough endoplasmic reticulum
Golgi apparatus
Lysosome

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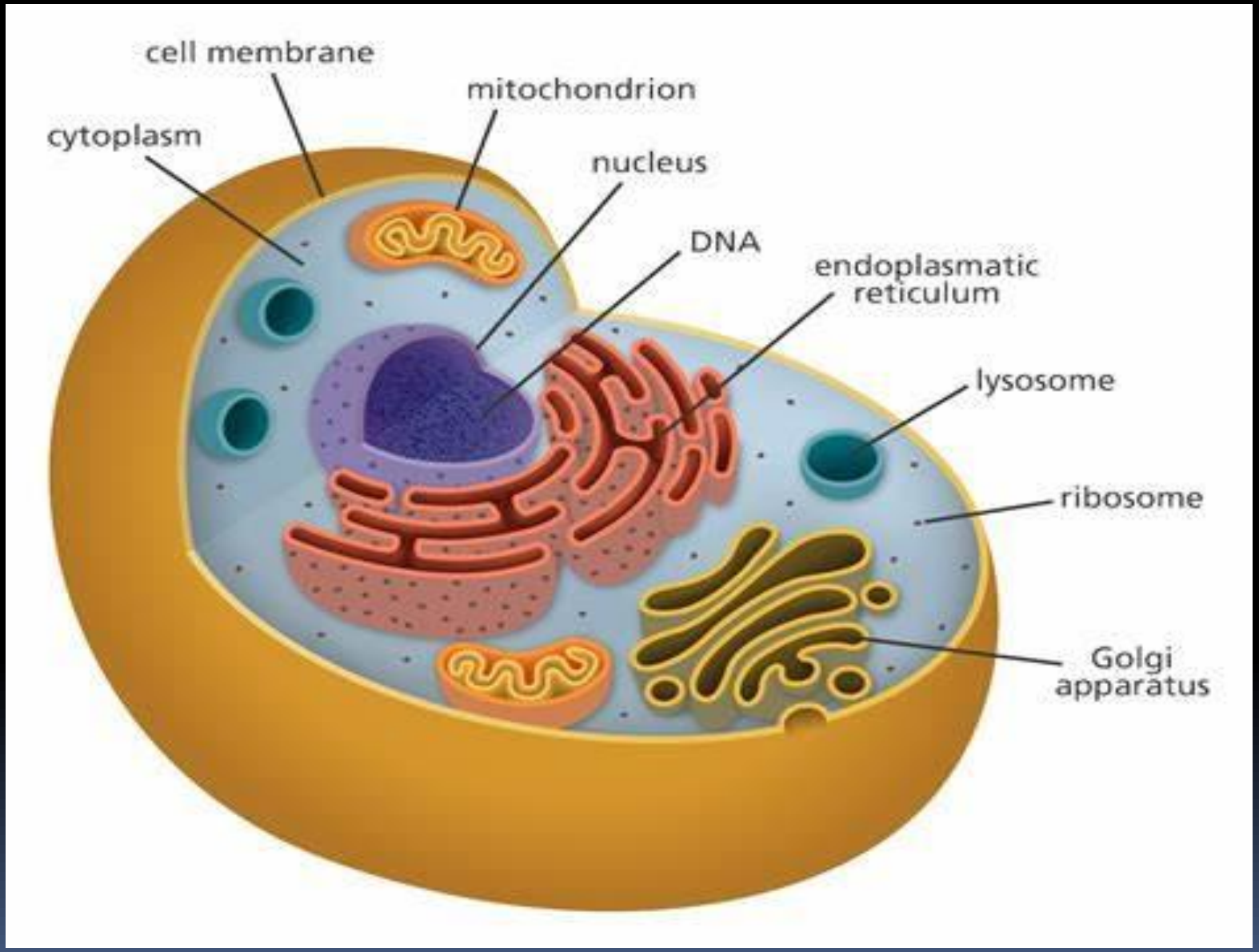
A cell is the basic structural and functional unit of a living organism.

The cell is the basic building block of life, which makes anything alive and is self-sufficient to carry out all the fundamental functions of an organism.

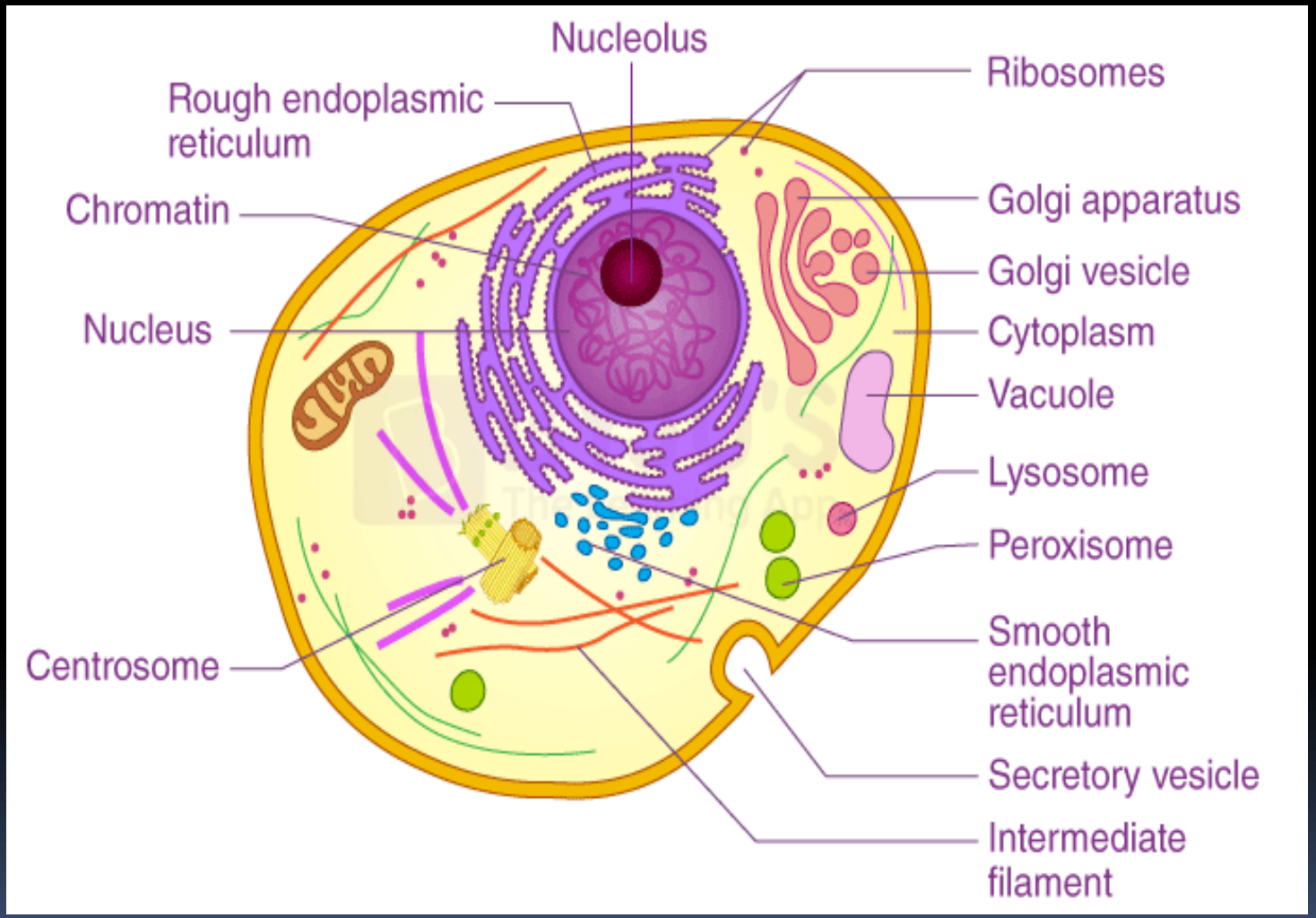
The cellular components are called cell organelles. These cell organelles include both membrane and non-membrane bound organelles, present within the cells and are distinct in their structures and functions.


cell membrane
mitochondrion
cytoplasm
nucleus
DNA
endoplasmatic reticulum
lysosome
ribosome
Golgi apparatus

Organelles without membrane: The Cell wall, Ribosomes, and Cytoskeleton are non-membrane-bound cell organelles.

Single membrane-bound organelles: Vacuole, Lysosome, Golgi Apparatus, Endoplasmic Reticulum are single membrane-bound organelles present only in a eukaryotic cell.

Double membrane-bound organelles: Nucleus, mitochondria and chloroplast are double membrane-bound organelles present only in a eukaryotic cell.


Nucleolus
Rough endoplasmic reticulum
Chromatin
Nucleus
Centrosome
Ribosomes
Golgi apparatus
Golgi vesicle
Cytoplasm
Vacuole
Lysosome
Peroxisome
Smooth endoplasmic reticulum
Secretory vesicle
Intermediate filament

List of Cell Organelles and their Functions

Plasma Membrane

The plasma membrane is also termed as a Cell Membrane or Cytoplasmic Membrane. It is a selectively permeable membrane of the cells, which is composed of a lipid bilayer and proteins.

Cytoplasm

The cytoplasm is present both in plant and animal cells. They are jelly-like substances, found between the cell membrane and nucleus. They are mainly composed of water, organic and inorganic compounds.

Nucleus

The nucleus is a double-membraned organelle found in all eukaryotic cells. It is the largest organelle, which functions as the control center of the cellular activities and is the storehouse of the cell's DNA.

Endoplasmic Reticulum

The Endoplasmic Reticulum is a network of membranous canals filled with fluid. There are two different types of Endoplasmic Reticulum:

Rough Endoplasmic Reticulum – They are composed of cisternae, tubules, and vesicles, which are found throughout the cell and are involved in protein manufacture.

Smooth Endoplasmic Reticulum – They are the storage organelle, associated with the production of lipids, steroids, and also responsible for detoxifying the cell.

Mitochondria

Mitochondria are called the powerhouses of the cell as they produce energy-rich molecules for the cell.

Ribosome

The primary function of the ribosomes includes protein synthesis in all living cells that ensure the survival of the cell. They are named as the 70s (found in prokaryotes) or 80s (found in eukaryotes) The letter S refers to the density and the size, known as Svedberg's Unit. Both 70S and 80S ribosomes are composed of two subunits.

Golgi Apparatus

Golgi Apparatus is also termed as Golgi Complex. Golgi Apparatus is found within the cytoplasm of a cell and is present in both plant and animal cells.