

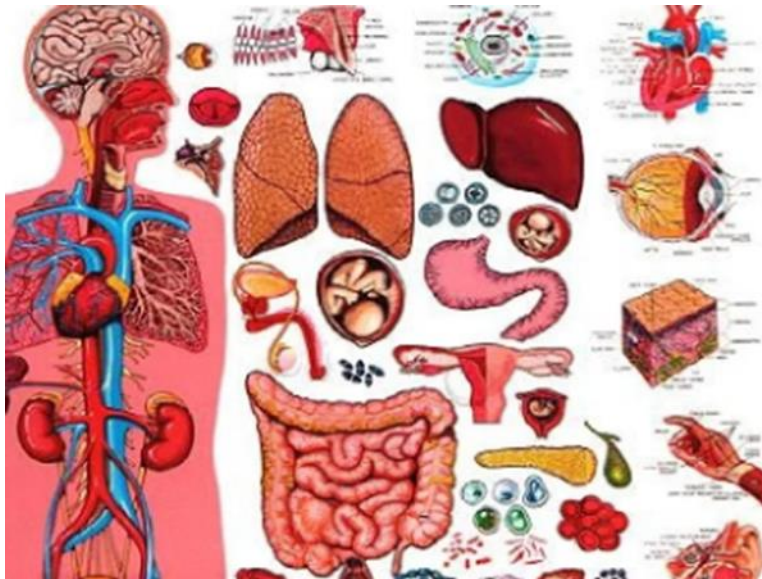


Physiology

Is the study of normal function within living creatures. It is a sub-section of biology, covering a range of topics that include organs, anatomy, cells, biological compounds, and how they all interact to make life possible.

The study of physiology traces its roots back to ancient India and Egypt. Physiology can be divided into viral physiology, bacterial physiology, cellular physiology, plant physiology, human physiology, and many more subdivisions. •

Human physiology is the science of studying the rule of physiological functions in human body.





Medical Laboratory Techniques Department
Cell Physiology: General Functions, Cell Membrane Transport



Dr.Duha Mahdi ----Msc.Sarah Kamil

Cell Physiology:

The basic living unit of the body is the cell, each organ is an aggregate of many different cells held together by intercellular supporting structures

Every living thing has cells: bacteria, protozoans, fungi, plants, and animals are the main groups(Kingdoms) of living things. Some organisms are made up of just one cell (e.g. bacteria and protozoans). But animals, including human beings, are multicellular.

Other non-cellular components in the body include water, macronutrients (carbohydrates, proteins, lipids), micronutrients (vitamins, minerals) and electrolytes

The cell divide into three main parts:

١. plasma membrane
٢. cytoplasm
٣. nucleus

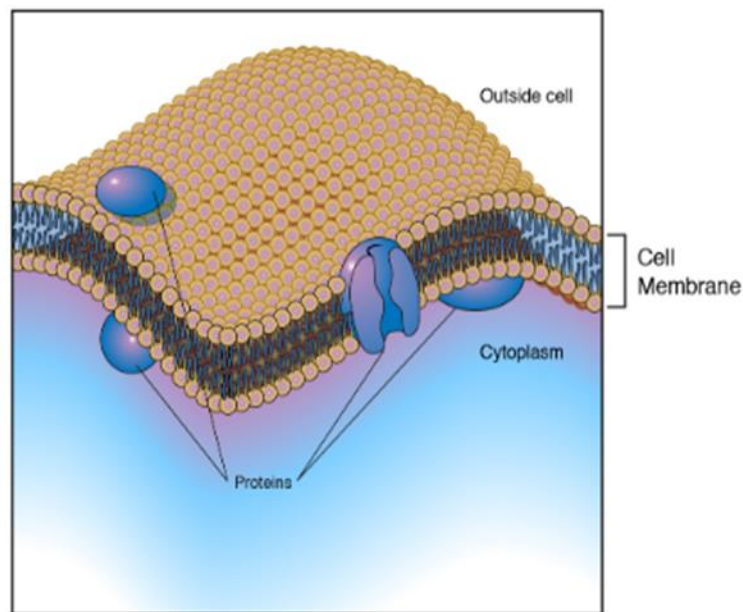


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The cell membrane, also called the plasma membrane, is found in all cells and separates the interior of the cell from the outside environment. The cell membrane consists of a lipid bilayer that is semipermeable. The cell membrane regulates the transport of materials entering and exiting the cell.





The principal components of the plasma membrane:

١-lipids (phospholipids and cholesterol)

A phospholipid is a lipid made of glycerol, two fatty acid tails, and a phosphate-linked head group. Biological membranes usually involve two layers of phospholipids with their tails pointing inward, an arrangement called a phospholipid bilayer

Cholesterol: another lipid composed of four fused carbon rings, is found alongside phospholipids in the core of the membrane.

٢- Proteins

are the second major component of plasma membranes. There are two main categories of membrane proteins: integral and peripheral

٣-Carbohydrate

the third major component of plasma membranes. In general, they are found on the outside surface of cells and are bound either to proteins (forming glycoproteins) or to lipids (forming glycolipids).



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Function of cell membrane

- ١-provides protection for a cell.
- ٢-It also provides a fixed environment inside the cell.
- ٣-transport toxic substances out of the cell

The cell membrane is selectively permeable and able to regulate what enters and exits the cell, thus facilitating the transport of materials needed for survival. The movement of substances across the membrane can be achieved by either passive transport, occurring without the input of cellular energy, or by active transport, requiring the cell to expend energy in transporting