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Diploma in Pharmacy 1st Year
Human Anatomy and Physiology
Important Questions
Chapter 2 : CELL

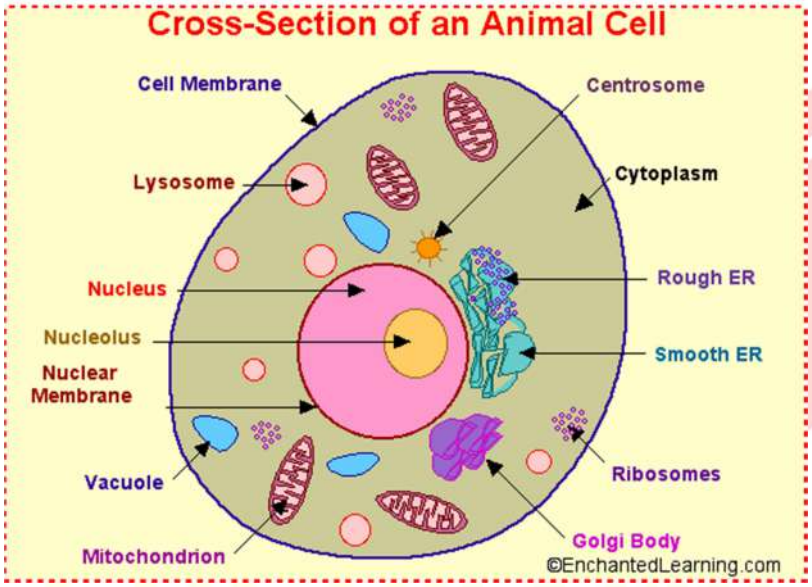
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Chapter 2
CELL
IMPORTANT Questions

Q1 Discuess the anatomy of cell with a neat and labeled diagram and write the functions of cell

Ans.



Cell is the basic structural & functional unit of all living organism.

All the living organisms can be categorised into

I. Unicellular organisms eg. Protozoa, yeast, and bacteria
II. Multicellular organisms eg. Plants & humans.

A human cell consist 100 trillon of cells

Size of the cell is 10 µm

Mass of the cell is 1 nano gram

There are two types of cells

- **Prokaryotic Cells :** These cells do not have well developed nucleus,but organells are present.
  Eg. Archaebacteria,
- **Eukaryotic Cells :** These cells have well developed nucleus & other organells.
  Eg, plants, animals

Functions

- cell growth & Metabolism
- Cell Division
- Protein Synthesis
- Molecule Transport

Q2. Write the Short note on Cell membrane (or Plasma membrane) Cytoplasm Nucleus

Ans. 1. Cell Membrane (or Plasma membrane)

- The cell membrane is a selectively permeable biological membrane which allow only certain substance to pass through it.
- It acts as a barrier between the inner and outrer surface of the cell
- It also known as Plasma lemma

Properties of cell membrane

- ➢ It guards the cell against the external environment
- ➢ It allows cellular transport between cwlls
- ➢ It helps in recognising a cell
- ➢ It divides the cell into smaller section having different structure & function
- ➢ It allows the fussion of cell membrane with other membrane of cell organells through special point of attachment

Structure (Fluid mosaic model)

- The fluid mosaic model is the most accepted one
- The fluid mosaic model of the plasma membrane was given by S.J Singer & G.L Nicholson

Function

- ✓ Protection of cells
- ✓ Separation from surrounding
- ✓ Tissue formation
- ✓ Contribution to enzyme acting
- ✓ Particle Transportation

2. Cytoplasm

- The cell consistsof cytoplasm enclosed with in the plasma membrane
- The cytoplasm includes various organells present inside a cell and therefore these organells are also referred as a cytoplasmic organells
- Bassically The cytoplasm is the fluid in which cell organells remain suspended (mitochondria ' Golgi body, nucleus,etc

Structure of cytoplasm

The cytoplasm is ndivided into three parts Namely

1. Cytosol
2. Cytoplasmic organelles
3. Cytoplasmic Inclusion

Function

- It provide the site for cell growth and expansion
- It provide space for organelles to remain suspended in the medium
- It also helps in the movement of several elements within the cell
- Various biochemical reactions, importance for the maintenance of life, occur in the cytoplasm

3. Nucleus

- Mucleus is the spherical organelle that consists of a double layer membrane build up of phosopholipids & protein
- It also known as the control cell
- It consist genetic material of cell

Structure of Nucleus

- Nuclear Envelop
- Nucleoplasm
- Chromatin material
- Nucleolus
- Chromosome

Function

1) It consists most of the physiological activities of the cell
2) It functions to encode all the genetic information that carries the hereditary characteristics in living organisms
3) It has direct Involvement in reproduction (cell division)

Q3. Discuess the Mitochondria, Golgi bodies, Lysosomes, Microsomes / Endoplasmic reticulum, Ribosomes in detail

Ans. Mitochondria,

- Most of the eukaryotic cells contain a membrane-bound cell organells called mitochondria
- Diameter ranging from 0.5µm – 10.µm
- Mitochondria are also know as the power house of the cell
- Because they generate Adenosine Triphosphate (ATP) used as a source of chemical
- Mitochondria are the chief source of energy in the cell

Structure of mitochondria

1. Outer membrane
2. Inner Menbrane
3. Mitichonderial matrix

Function

- Regulates plasma membrane potential and cellular anabolism &catabolism
- Synthesis of steroids
- Aerobic Respiration to create energy for the functioning of cell

Golgi bodies

- The golgi body comprises of folded and compresed membranous sacs piled up each other All the cell contain golgi body however it is large in those cells facilitate the systhesis and export of protein via, endoplasmic reticulum to the golgi complex

Function

- Modifying, sorting, and packing
- Modification of protein
- Transportation of substance
- Formation of spindle
- Excretion of water

Lysosomes

- In 1949 a bwlgian cytoligist Christan de duve had discovered the cell organelle ' lysosomes '
- The word lysosome derived from greek word
- Lysis means to separate
- Some means body
- They are generally known as suicide-sacs or suicide bags

Function

i. Provide defence against invading micraorganisms via circulatating macrophages
ii. Helps dissolve blood clots
iii. Cause the sperm to penetrate the ovum
iv. Decompose the mature RBC and dead cells
v. Help in reabsorption of water and small molecule in kidney and urinary bladder

Microsomes / Endoplasmic reticulum

- Microsome are a heterogeneous set of vesicles having diameter 20- 200 nm 7 consisting of endoplasmic reticulum
- This vesicles are isolated by differential centrifugation and formed three structural features
- i.e, rough vesicles smooth vesicles ribosomes

Structure

1. Rough endoplasmic reticulum (RER) :
2. Smooth endoplasmic reticulum (SER) :

Function

- It acts as a structural framework of the cytoplasm
- It exchanges material with the cytosol by active transport, osmosis, and diffussion
- Protein synthesised by its surface- bound ribosomes are collected and stored by RER
- It has different metabolic enzymes which helps in the synthesis of phospholipid,cholestrol

Ribosomes

Ribosomes are cell organelles where protein synthesis takes place They are abundant in living cells They are either found as free particles (in prokaryotic and eukaryotic cells or particle attached to er membrane (as in eukaryotic cells

Function

- The primary Function of ribosomes is protein synthesis

The information carried in the genetic code is converted into protein molecule within the ribosomes