

HISTOLOGY

Histo means Tissue

Logy means science

This science deal with the structures of the organs which include the structures of cells

A group of cells form the tissue

A group of tissues form the organ

A group of the organs form the system

The whole systems form the body .

THE CELL

.....

The cell is the structural and functional unit of the tissue and each cell have many intracellular structures which are vital and non vital for the cell.

The intracellular structures are classified into

A:- Organelles

B:-Inclusions

The organelles are the vital and live masses inside the cell cytoplasm

The inclusions are non vital and non a live masses inside it.

A:- The Organelles are including the following :-

1- Nucleus

2-Cytoplasm

3-Cell membrane

4-Golgi apparatus

5-Mitochondria

6-Rough endoplasmic reticulum (RER)

7-Smooth endoplasmic reticulum (SER)

8-Nucleolus

9-Centrioles

10- Lysosomes

.....

2-The inclusions are the non-vital materials or masses embedded inside the cytoplasm which are usually non-essential structures :-

A- Fibrils

B-Microtubules

C-Lipid granules

D-Lipofuchins

.....

The nucleus

Is the spherical or oval shape in the center or near the center of the cell, embedded inside the cytoplasm, its center has the nucleolus , and the matrix or its ground substance has the chromatin associated with the presence of the DNA which is the deoxynucleic acid which has a role in the transmission the genetic factors from the parents to the sons ,

The nuclear membrane is fenestrated to allow for the Ribonucleic acid to pass from the nucleolus to the nucleus and then to the RER in the cytoplasm ,

The nucleolus

Is the central mass in the nucleoplasm of the nucleus which is responsible for the synthesis of the RNA and this with histones form the ribosomes associated with the RER.

The Mitochondria

Are the energy houses of the cell, which are located in the cytoplasm and present in the form of oval shapes possess outer smooth membrane and inner folded membrane, the center of the mitochondria is containing the matrix which is associated with a fine granules called the crystalloid masses associated with the respiratory chain of the ATP.

The mitochondria is increased in number in the cases of the increasing the activity of the cell, like the cells of the liver and kidney.

The rough endoplasmic Reticulum

These are sacs like or tubular structures packed to each other associated with the presence of ribosomes on its surface in the form of beads, RER., is involved for the synthesis of the proteins in the cell for extra and intracellular use.

The smooth endoplasmic reticulum (SER)

Are sacs like or tubular structures associated with synthesis of steroids, so these are present mostly in the cells with high activity for production of the steroids like steroidal hormones.

Golgi Apparatus

These are stacks like structures which are present in the cells with highly excretion function, like the cells of salivary glands, pancreas and gastric glands, also these are involved for the packing the products of cells in the form of vesicles for intra or extra cellular use. Golgi apparatus assist in the formation of the cell membrane of the same cell.

The cell membrane

Is selective barrier surrounding the contents of cytoplasm and the nucleus, this membrane is doubled layer of phospholipids containing a channels or pores for the passing of materials from the cell to the outside and opposite and consider as selective barrier, this membrane also connect the cell to the adjacent cell by desomsomes .

The centrioles

Are the centers of the cell when start to divide , associated with the phases of the cell division, like anaphase, metaphase, and telophase also associated with the strands of the DNA of the nucleus to complete the division.

The Inclusions

Are non vital materials in the cytoplasm of the cell, but some of tem have certain functions like fibrils which assist in the building the skeleton of the cell (cytoskeleton), others are the lipids , pigments which store in the cell and could be consider as indication for the aging of the cell when accumulated in high percent in the cytoplasm such as the lipofucin pigments in the nerve cells reflect the aging of cell.

The microtubules are tubular structures also associated with the cell division and transportation of the materials out and inside the cell , so this could be consider as vital structure to the cell.