

Subject:.....

2019 / 2 / 10

Dr. Ferdous "Notes from record"

C. T. cells

\* The Extra cellular Matrix is composed of :-

- ① Fibers
- ② Ground substance

\* Undifferentiated Mesenchymal cell is a type of stem cells.

↳ Fusiform with many processes

↳ it has a highly active Nucleus.

↳ It's the origin of all C.T. Fixed cells.

\* Fibroblasts and we have 2 types :-

① Young Fibroblast → highly active cell

② Mature (Fibrocytes) → less active

\* The young fibroblast has an active nucleus and it's rich with Ribosomes and Rough endoplasmic reticulum.

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\* Fat cells = Adipocytes

we have 2 types :-

① unilocular fat cells :- single and large lipid droplet which pushes the nucleus to the peripheral and makes it flat in shape. ((yellow fat))

② Multilocular fat cells :- Multiple small lipid droplets. ((Brown fat)). It's found in the newborn.

\* ~~what~~ what makes the Brown fat Brown in color?

① highly vascular ② numerous mitochondria

③ it has the cytochrome pigment in it.

\* when we get older our Brown fat gets replaced by the yellow fat.

\* Adipocytes have a constant number so in obese people they don't increase their number but they increase the amount of stored lipids in them.

\* Fats and lipids doesn't appear when stained by H and E.

\* we stain fat with osmic acid.

\* we stain Glycogen with best carmine stain and it appears red.

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\* pigment cells :- which contain pigment granules like Melanin.

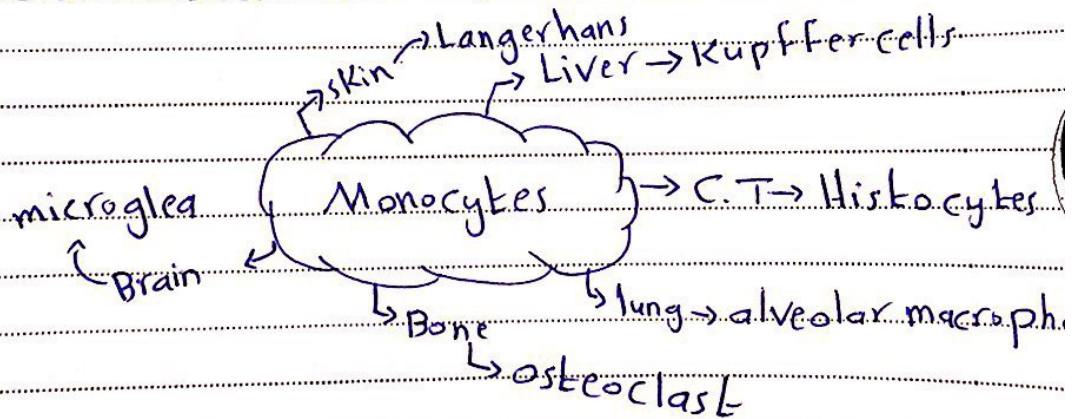
\* we have cells that produce melanin (Melanocytes) and they are found in the Epidermis of the skin.

\* we have cells that store Melanin (pigment cells) which are found in the dermis of the skin.

\* Free cells = Immigrating

① Macrophages = Histocytes

\* Origin :- From Blood Monocytes which are ~~undifferentiated~~ undifferentiated white blood cells.



\* Macrophages are large in size and irregular in shape.

\* we stain the Macrophages with a special stain while the animal is still alive, like the indian ink stain.

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- \* when pathogens pass through the skin and the mucous membrane they encounter the ground substance which slows their spreading in the body.
- \* then our first line of defense gets activated which is composed of Neutrophils and Macrophages which moves to the stimulus.  $\Rightarrow$  Elicited.
- And then they phagocytose the pathogen.

② Mast cells: they are large cells which have a central nucleus and round in shape.

\* we have 2 types :-

① C T Mast cells

② mucosal Mast cells  $\rightarrow$  they are found in the (Lamina propria)

\* origin: haemopoietic stem cells in Bone Marrow.

\* they contain heparin and histamine.

\* heparin is responsible for their basophilic cytoplasm.

\* Mast cells are extremely dangerous because they can cause hypersensitivity response, anaphylactic shock caused by extreme vasodilation due to the release of histamine.

① plasma cells & their main function is the formation of antibodies when pathogens enter the body.

\* They have a large negative golgi image because with the light microscope golgi isn't seen unless it's large like in this case.

\* it's rich with ribosomes and rough endoplasmic reticulum because the antibodies are protein in nature.

\* Loose CT → highly abundant Ground substance  
↳ less Fibers

\* dense CT → less Ground substance  
↳ little amount of blood vessels  
↳ highly abundant Fibers

\* Reticular C.T → Not stained by H and E.

They are found to support other cells and organs.

Adipose C.T. Functions:-

① shape of the body → different distribution of fat between males and females.

② Thermal insulation → so we must cover the newborns with much clothes to keep their temperature normal because they don't have enough Adipose tissue to keep them warm.

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S Notebook

## \* Elastic CT

- \* It contains elastin protein which makes them flexible
- \* It's a thin branching fiber

\* They are found at any organ which expands in volume (Distention)

\* The fibers are made by smooth muscle cells.

\* The fibers form corrugated membranes in ~~the~~ large blood vessels.

كثافة الألياف المرنة

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