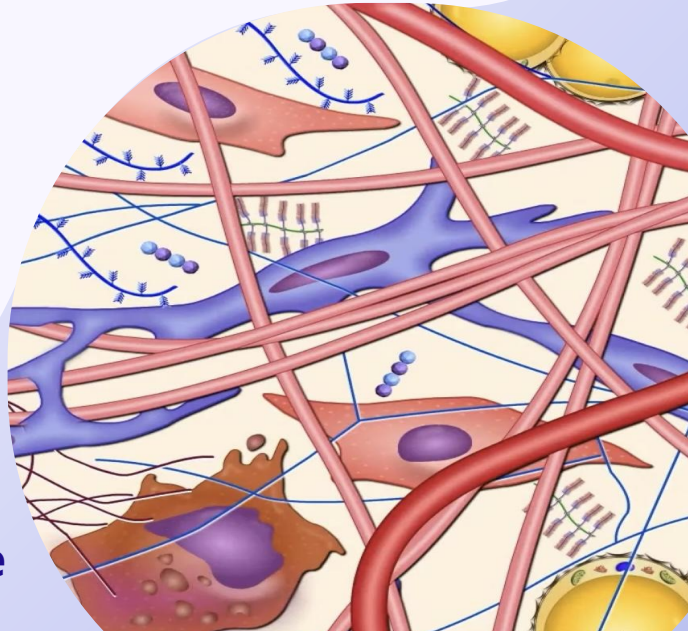
Foundation Block

Connective Tissue



Color Index:
-Main Text -Important -Notes
-Boy Slides -Girl Slides -Extra

Editing File

Objectives:

01 Enumerate the general characteristics of C.T.

02 Classify C.T. into C.T. proper (C.T.P.) and special types of C.T.

03 Describe components of C.T.P.

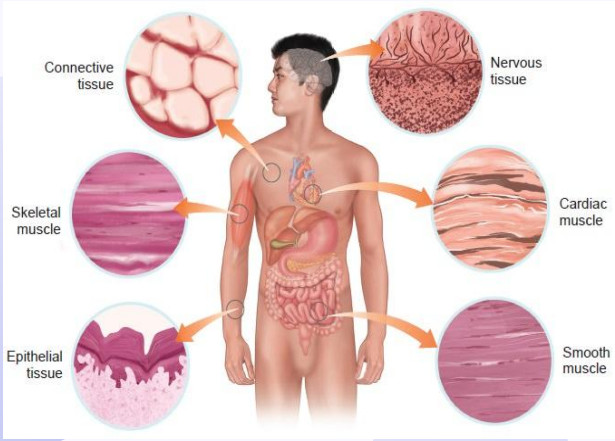
04 Classify C.T.P.

05 Describe the structure, distribution, and function of different types of C.T.P.

06 Enumerate the functions of C.T.

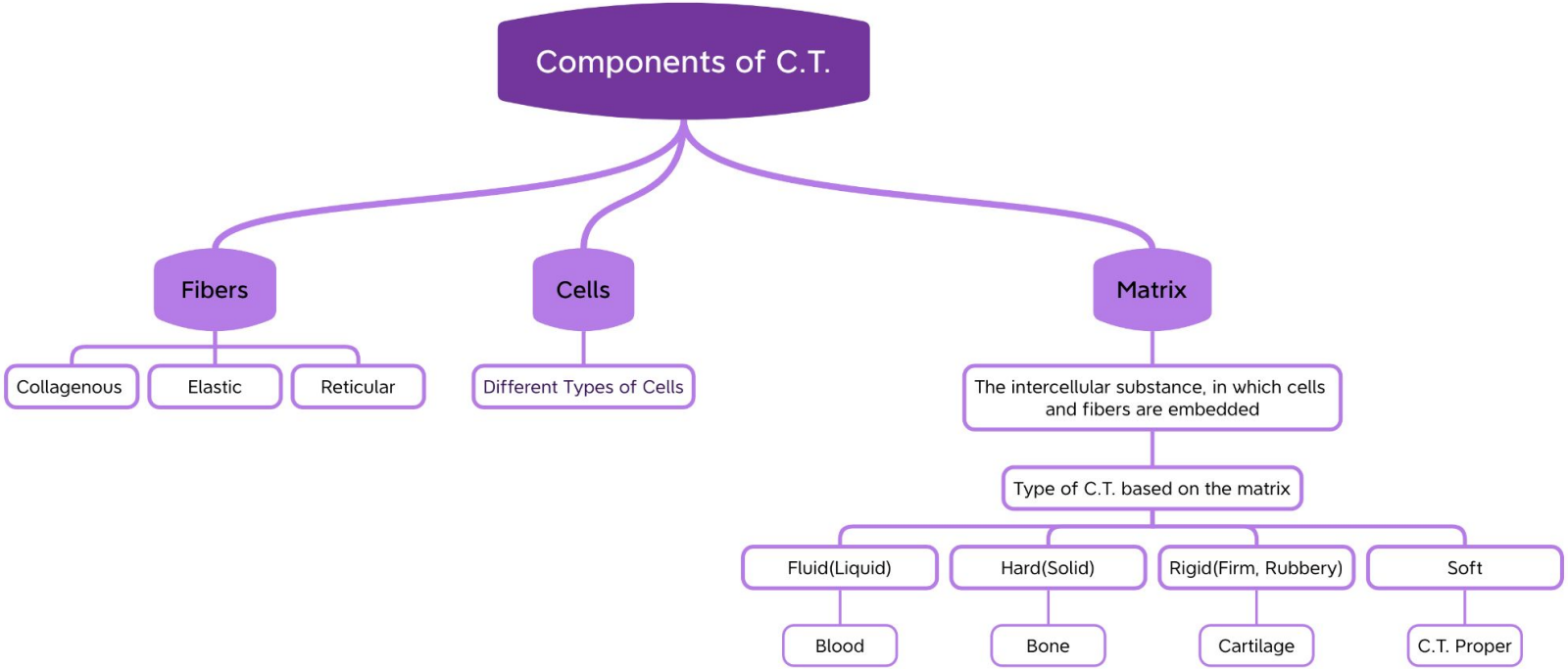
Definition of C.T.

- It is one of the 4 basic tissues.
- It is mesodermal in origin.
- It supports, binds, and connects other tissues and organs providing structural and metabolic support for them.

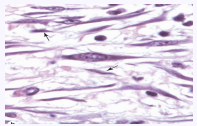
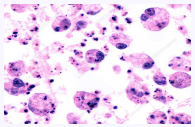
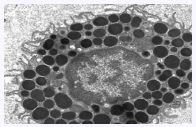
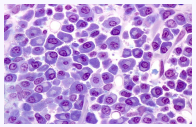
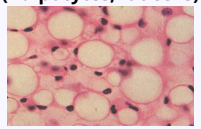
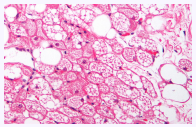
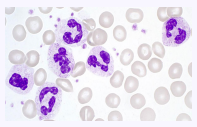
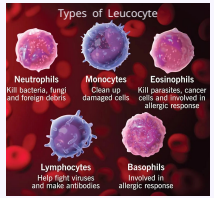


General Characteristics of C.T.

- C.T. is formed of widely separated, few cells with abundant extracellular matrix.
- Most C.T. are vascular(has blood vessels)


Components of C.T.
Fibers
Cells
Matrix
Collagenous
Elastic
Reticular
Different Types of Cells
The intercellular substance, in which cells and fibers are embedded
Type of C.T. based on the matrix
Fluid(Liquid)
Hard(Solid)
Rigid(Firm, Rubbery)
Soft
Blood
Bone
Cartilage
C.T. Proper

cells (of C.T.P.)

Name	Fibroblast	Macrophages	Mast cells	Plasma cells	Unilocular adipose cells (Adipocytes, fat cells)	Multilocular Adipose Cells	Leucocytes (white blood cells)
							
L / M	-Most common cell; found nearly in all types of C.T. proper. -Flat branched cells (spindle-shaped) with basophilic cytoplasm (full of ribosomes). -They can divide. -Old fibroblasts are called fibrocyte. (blast > Active) (cyte > Less Active)	-Basophilic cytoplasm rich in lysosomes. -Irregular outlines. -They can divide. -They originate from blood monocytes.	-Cytoplasm contains numerous basophilic cytoplasmic granules.	-basophilic cytoplasm with a negative Golgi image. -Nucleus: spherical, eccentric with a clock-face appearance of chromatin.  -Derived from B-lymphocytes.	-Large, spherical, with a single large fat droplet. -Thin rim of cytoplasm at the periphery. -Nucleus: flattened, peripheral.	-Small cells with multiple smaller lipid droplets. -Nucleus: spherical, not flattened. "Med 443"	-appear normally in C.T. proper. -Neutrophils increase in acute inflammation. -Lymphocytes and monocytes increase in chronic inflammation. -Eosinophils and basophils increase in allergic inflammation. "Important"
Function	-Formation of proteins of C.T. fibres. -Formation of C.T. matrix. -Healing of wounds (cell divide)	Phagocytosis	-Secrete heparin (anticoagulant) (helps prevent blood clots) -Secrete histamine (allergic reaction).	Secretion of antibodies (immunoglobulins)	Synthesis, storage and release of fat.	Production of body heat because of their large number of mitochondria. "Med 443"	

Fibers

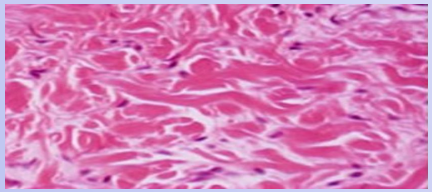
Note: *other important types of Collagen includes*:

-Type II (in cartilage)

-Type IV (in basement membranes)

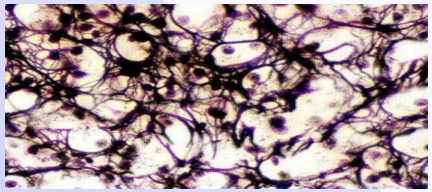
Collagen Fibers

- Made of collagen type I
- Non-Branched, arranged in bundles
- Acidophilic



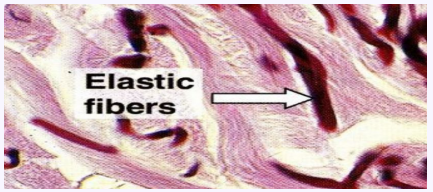
Reticular Fibers

- Made of collagen type III
- Branched and form a network
- Stained Black with silver

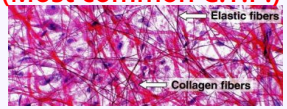
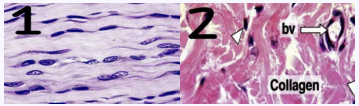
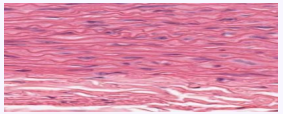
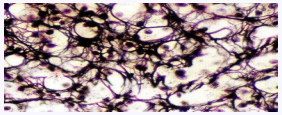
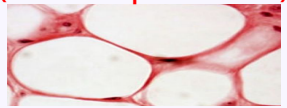


Elastic Fibers

- Made of Elastin
- Branched
- Stained Brown with orcein
  (Reddish-brown dye)



Connective Tissue proper (According to the most predominant element)

	1- Loose(Areolar) C.T. (Most common C.T.P.)	2- Dense collagenous C.T.	3- Elastic C.T.	4- Reticular C.T.	5- Unilocular adipose tissue (White Adipose Tissue)
Type					
L/M	-Contains all the main components of C.T.P.: All types of C.T. cells and fibers + abundant matrix. -No predominant element in loose C.T.	-Predominance of collagen fibers + fibroblasts.	-Predominance of elastic fibers (sheets or membrane) + fibroblasts.	-Predominance of reticular fibers + reticular cells (specialized fibroblasts)	-Predominance of Unilocular fat cells.
Sites	-E.g. Subcutaneous tissue (the layer of tissue underlines the skin)	1-Dense regular: e.g. tendons, ligaments 2-Dense irregular: e.g. dermis of the skin, capsules.	-Large arteries: E.g. Aorta.	-Stroma of organs: E.g. liver, lymph node, spleen.	-Subcutaneous tissue especially in : .Buttocks .Abdominal wall .Female breast  -Around the kidney 
Function		Tough tissue; resistance to stretch	Elastic tissue; Stretchable	Structural support	1- Synthesis, storage, release of fat. 2- Supports organs e,g. Kidney 3- Heat insulation

Functions of Connective Tissue proper

1-Supports, binds and connects other tissues and organs.

2- Nourishes the surrounding structures, through its blood vessels.

3- Its **Cells** provides Healing of injured tissues, Produce heparin, histamine and antibodies, Store fat, preserve body temperature and Protect against microorganisms.

4- Its **Fibers** provide rigidity or elasticity

MCQs

1-What is the most common cell in C.T. proper ?

A- Plasma cells	B- Macrophages	C- Fibroblast	D- Mast cells

2- What type of cells is rich in lysosomes ?

A- Reticulocytes	B- Mast cell	C- Fibroblast	D- Macrophages

3- Which of the following structures are the main component of dense collagenous C.T. ?

A-Reticular fibers	B- Collagen fibers only	C- Collagen fibers and fibroblast	D- Elastic fibers

MCQs

4-Which of the following cells is responsible for phagocytosis ?			
A- Macrophages	B- Mast cells	C- Fat cells	D- Fibroblasts

5- Which of the following connective tissues consists of type III collagen?			
A- Reticular	B- Adipose	C- Dense collagenous	D- Elastic

6- Which of the following cells is responsible for the secretion of antibodies?			
A-Fat cells	B- Fibroblast	C- Mast cells	D- Plasma cells

1-C 2-D 3-C 4-A 5-A 6-D

The Team

Team Leaders:

- Ahmad Addas
- Hessah Alghanim

Team Members:

- Saud Alsaeed
- Fahad Alqahtani
- Abdulaziz Alobathani
- Ibrahim Albabtain
- Fahad Albalawi
- Faisal Alessa
- Yazan Alkheder
- Ziyad Bukhari
- Joud Alahmari
- Lulwah Alwabel
- Hessah Alyousef
- Haneen Baatiah
- Norah Alnoshan
- Lina Albaqiyh
- Layan Alsubaie
- Ghaida Alotaibi

histology.444ksu@gmail.com