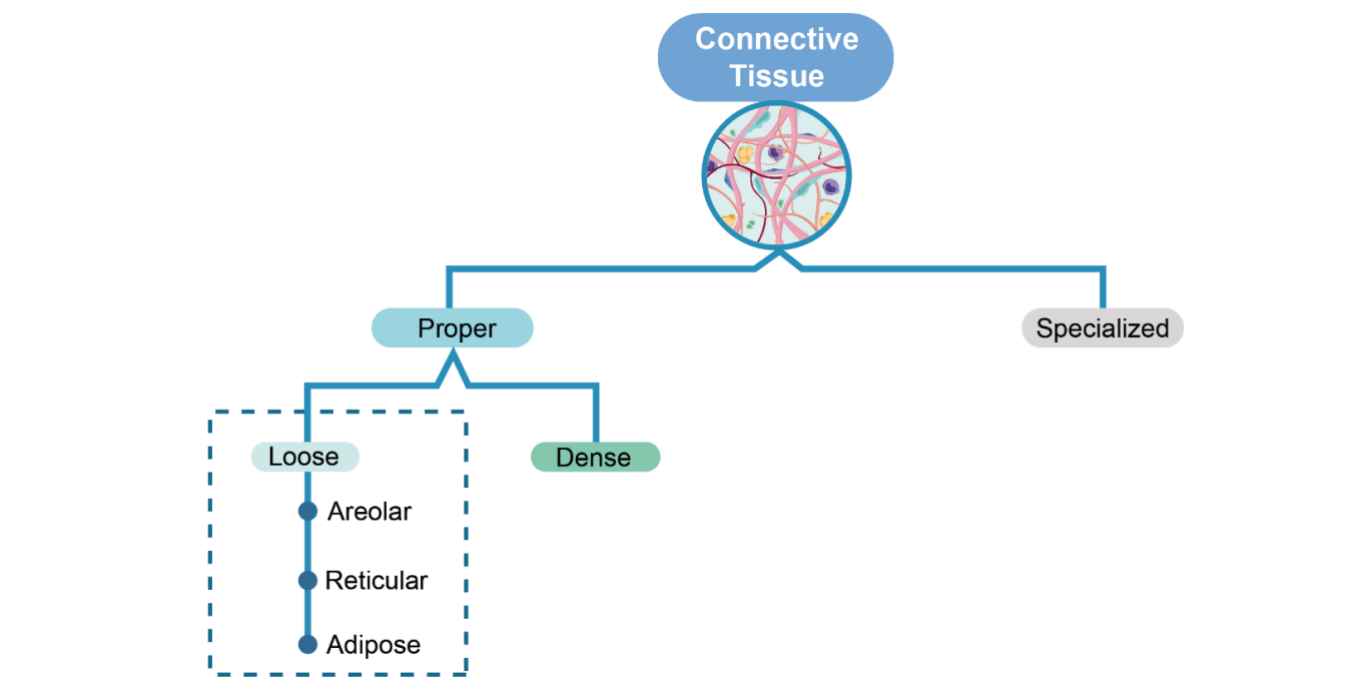
TOPIC: CONNECTIVE TISSUE PROPER: LOOSE CONNECTIVE TISSUE

- **Loose Connective Tissue**: connective tissue named for "_____" arrangement of fibers; often *vascular*.
  - _____ material of the body.
  - _____ types of loose connective tissue (**areolar**, **reticular**, & **adipose**) differ in fiber arrangement & cell types.



1. Areolar Connective Tissue

Characteristics:

- Universal packing material that wraps organs and supports epithelia.

Composition:

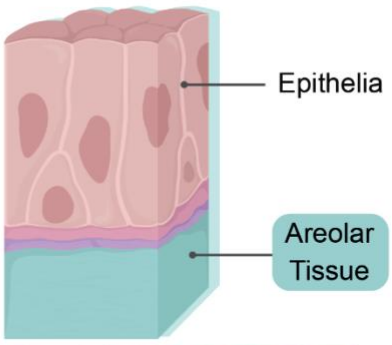
- All 3 types of fibers with viscous matrix.
- Fibroblasts, fibrocytes, mast cells, macrophages, adipocytes.

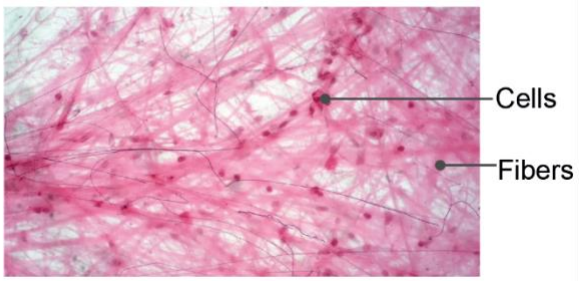
Function: _____ Main Functions.

- Support and Binding.
- _____ against infection.
- _____ nutrients & fluids.

Locations:

- Under epithelia.





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EXAMPLE: How does the structure of areolar tissue help it act as packing material?

a) The ground substance holds fluid.

b) A combination of branched and straight fibers create strength.

c) Presence of adipocytes act as cushions.

d) All of the above.

2. Reticular Connective Tissue

Characteristics:

- Provides structural support using branched reticular fibers.

Composition:

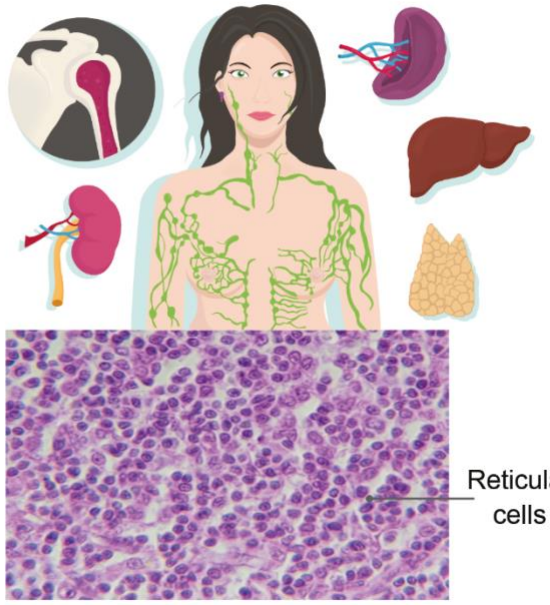
- Only _____ fibers.
- Fibroblasts called reticular cells.

Function: _____ main function.

- Internal scaffolding for soft organs.

Locations:

- Lymph nodes.
- Spleen, liver, kidneys, thymus
- Bone marrow.



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3. Adipose Connective Tissue

Characteristics:

- Stores energy and insulates the body due to its high adipocyte content.

Composition:

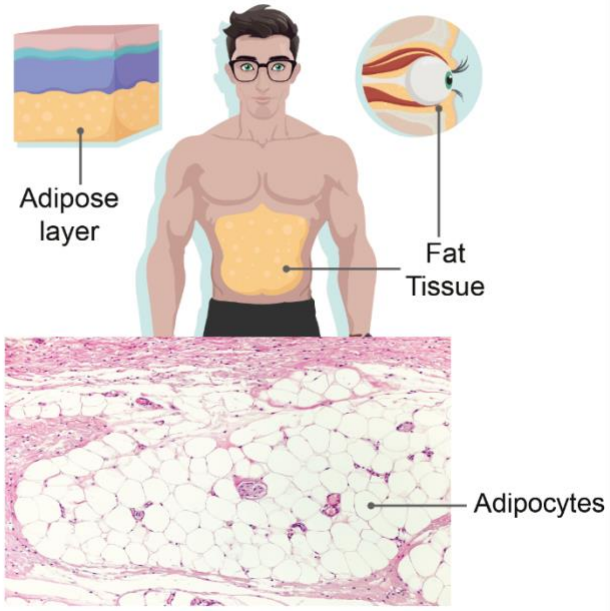
- Mostly adipocytes—sparse matrix.
- Highly vascularized (many blood vessels).

Function: _____ main functions.

- _____ nutrients and energy.
- Protects by absorbing _____.
- Insulates.

Locations:

- Deepest layer of the skin.
- Abdomen.
- Around eyes & kidneys.
- Breasts.



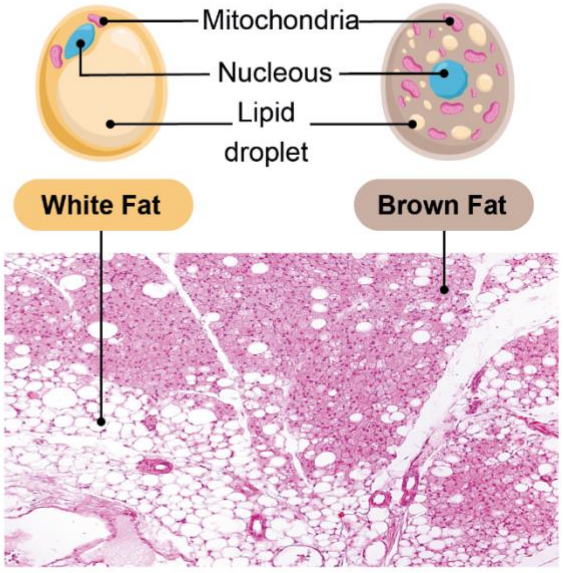
Types of Adipose Tissue

1. White Adipose Tissue (White Fat):

- Most abundant in _____.
- Stores energy.
  - Subcutaneous layer below the skin.
  - Visceral layer around the organs.
- Adipocytes _____ in size not cell divison.

2. Brown Adipose Tissue (Brown Fat):

- More common in _____.
- _____ mitochondria content generates heat.



EXAMPLE: If liposuction procedures remove adipose tissue, why do patients report gaining weight back?

a) Because adipocytes undergo cell division.

b) Because adipose tissue is avascular.

c) Because adipocytes can increase in size.

d) Because adipose tissue holds more water.

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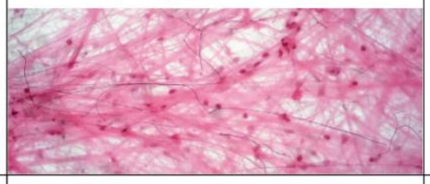
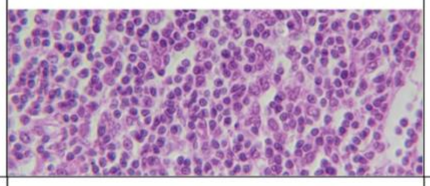
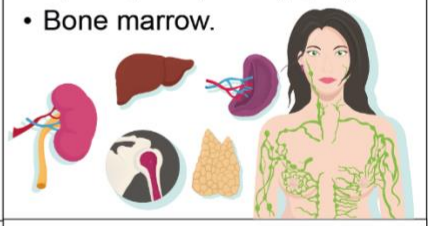
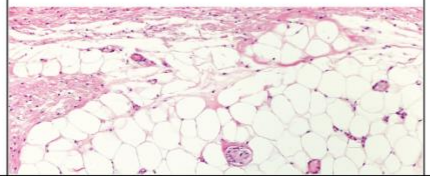
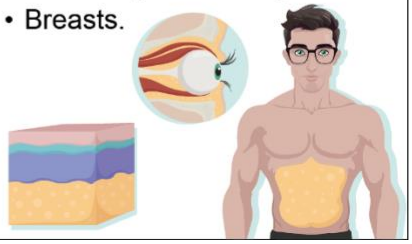
Review: Loose Connective Tissue

Types of Loose Connective Tissue

Type	Characteristics	Function	Locations
Connective Tissue	• Viscous matrix. • *All* 3 fiber types. • *Mostly* fibroblasts, macrophages, and mast cells. 	• Support & binding. • Defend against infection. • Store nutrients & fluids.	• Under epithelia. 
Connective Tissue	• Gel like matrix. • *Only* reticular fibers. • Fibroblasts = reticular cells. 	• Internal scaffolding for soft organs.	• Lymph nodes. • Spleen, liver, kidneys, thymus • Bone marrow. 
Connective Tissue	• Sparse viscous matrix. • *Mostly* adipocytes. • *Highly* vascularized. 	• Store nutrients & energy. • Absorbs shock. • Insulates.	• Deepest layer of the skin. • Abdomen. • Around eyes & kidneys. • Breasts. 

PRACTICE: What part of areolar tissue allows it to protect against infection?

a) Fibroblasts

b) Fibrocytes

c) Adipocytes

d) Macrophages

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PRACTICE: During a dissection, you are asked to identify a connective tissue with a gel like matrix that forms the inside structure of the spleen. What is the type of connective tissue?

a) Areolar Connective Tissue
b) Reticular Connective Tissue
c) Adipose Connective Tissue
d) Cartilage

PRACTICE: How does areolar tissue and epithelial tissue work together to prevent infection?

a) Both areolar tissue and epithelial tissue are richly supplied with blood, mast cells, and macrophages, providing defense against microbes.
b) Areolar tissue provides both the collagen that creates a barrier in epithelial tissue and the macrophage that travel through epithelial tissue defending against microbes.
c) Epithelial tissue provides a tight barrier that microbes cannot pass. Areolar tissue contains immune cells for when that barrier is compromised.
d) Areolar tissue provides a tight barrier that microbes cannot pass and epithelial tissue sends signals directing the immune system where white blood cells are needed.

PRACTICE: Max hears that wrinkles are formed because the dense irregular connective tissue under the skin produces less collagen as we age. To counteract this, they go out and buy a skin cream that claims to contain collagen fibers. Based on what you know about connective tissue and epithelial tissue, do you expect the collagen fibers in this hypothetical skin cream to affect the underlying connective tissue?

a) Yes, because the collagen allows connective tissue to stretch, so supplementing with collagen fibers will allow the skin to stretch & tighten to remove wrinkles.
b) Yes, because epithelial tissue is specialized for absorption, so biological molecules like collagen fibers will be quickly integrated into areolar tissue.
c) No, because areolar tissue mostly produces elastin, so the difference in collagen production is unlikely to affect wrinkles.
d) No, because stratified squamous epithelial tissue prevents the passage of most molecules, so the large collagen fibers will not reach the underlying areolar and dense irregular connective tissues.