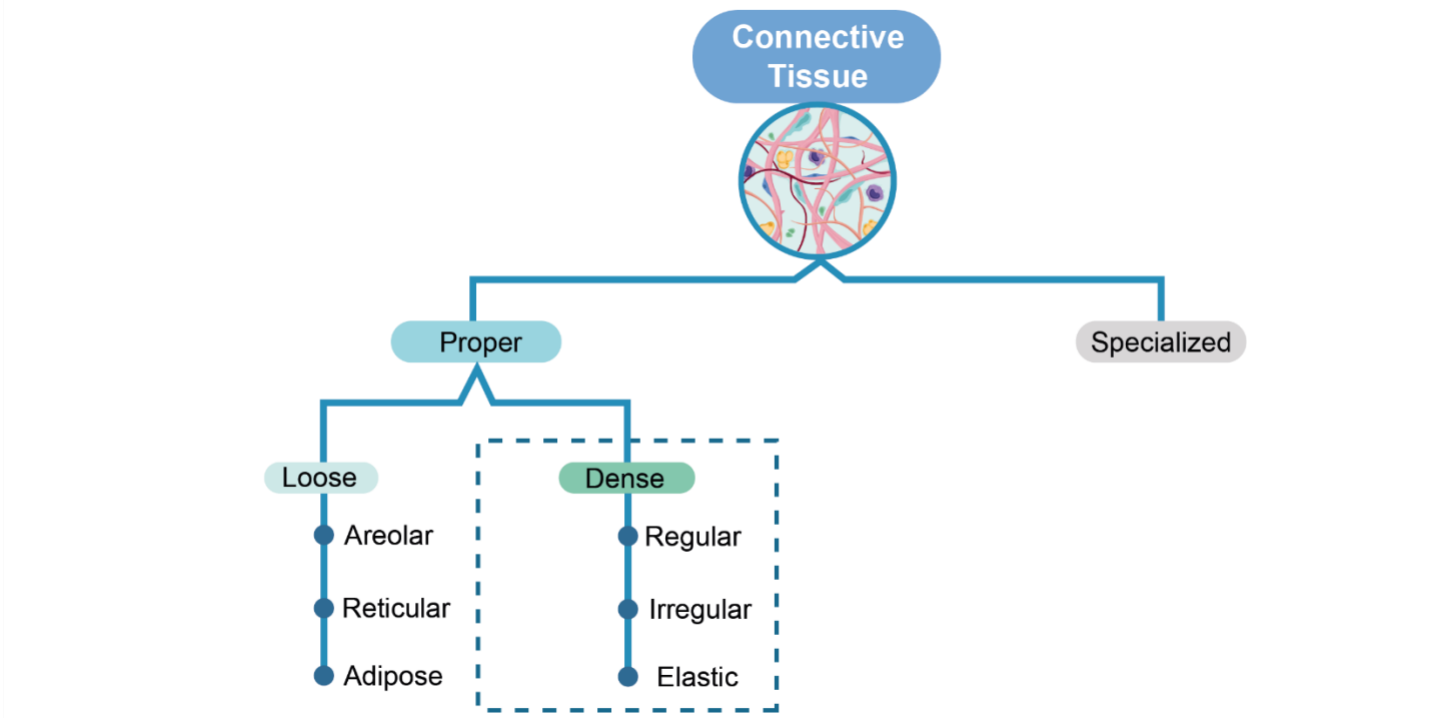
TOPIC: CONNECTIVE TISSUE PROPER: DENSE CONNECTIVE TISSUE

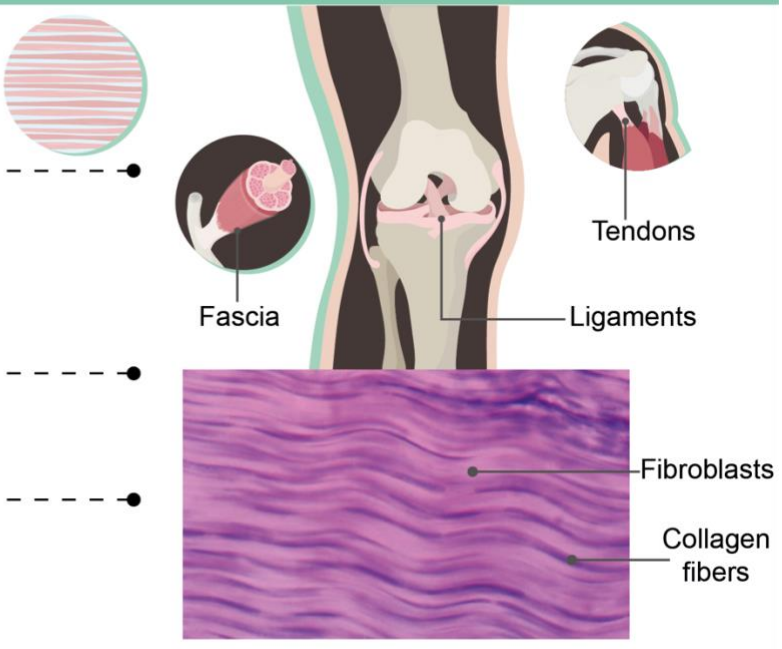
- **Dense Connective Tissue**: named for the _____ arrangement of fibers.
  - Often _____ vascularized (few blood vessels) in comparison to loose connective tissue.
  - High & dense fiber content increases _____.
  - _____ types of dense connective tissue: (**regular, irregular, & elastic**) differ in fiber arrangement.



1. Dense Regular Connective Tissue

Characteristics:

- Regular or _____ fiber arrangement.



Composition:

- Mostly _____ fibers.
- _____ adipocytes or immune cells.
- _____ vascularized (few blood vessels).

Function:

- Specialized for strength in _____ direction.

Locations:

- Ligaments: connect bone to bone..
- Tendons: connect muscles to bone.
- Fascia: wraps muscle.

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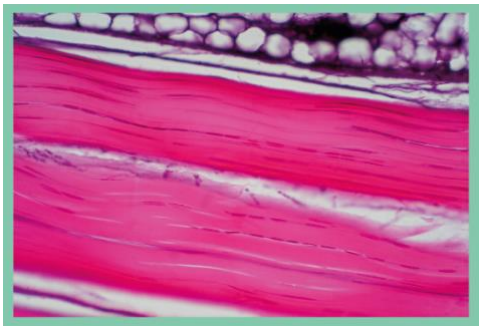
EXAMPLE: What type of connective tissue is shown in the image below?

a) Areolar Connective Tissue.

b) Dense Irregular Connective Tissue.

c) Dense Regular Connective Tissue.

d) Dense Elastic Connective Tissue.



PRACTICE: What feature about dense regular connective tissue makes them well suited for tendons?

a) The uniform direction of fibers make it extremely strong.

b) The multidirectional fibers withstand forces from different directions.

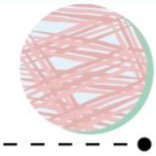
c) The elastic fibers optimize for recoil.

d) The high adipocyte content cushions joints.

2. Dense Irregular Connective Tissue

Characteristics:

- Irregular or _____ fiber arrangement.



Composition:

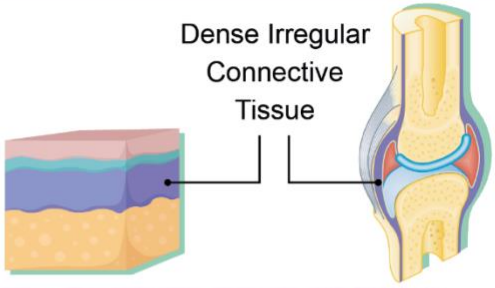
- Mostly _____ fibers.

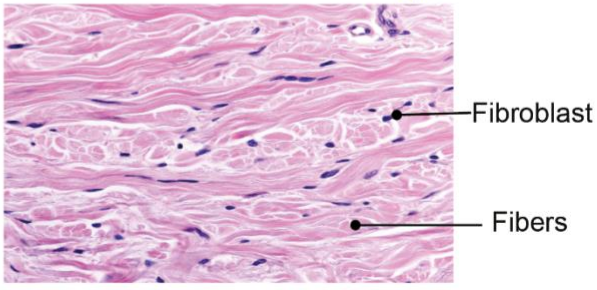
Function:

- Specialized for strength in _____ directions. (Not as strong)
- Provides structural strength & protection

Locations:

- Beneath areolar tissue in skin (prevents tearing).
- Wraps joints, organs, & bones.





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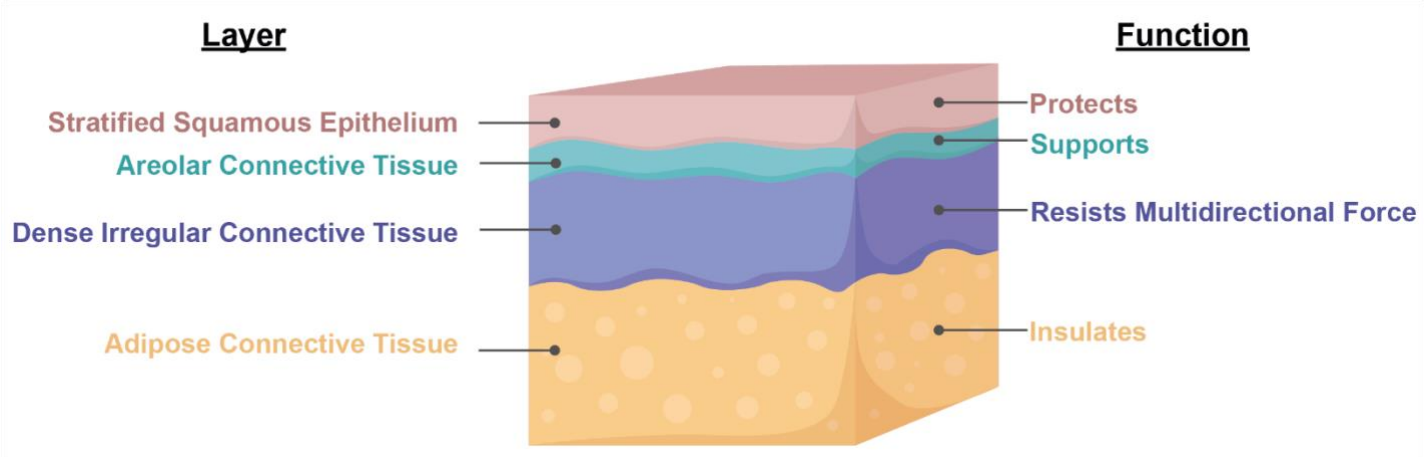
Putting It Together: What's Under Your Skin?

- Many layers of connective tissue and epithelial tissue come together to create the skin.



EXAMPLE: What property of dense irregular connective tissue makes it well suited to withstand the wear and tear experienced by the skin?

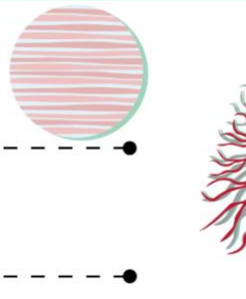
a) The uniform direction of fibers increases strength.

b) The multidirectional collagen fibers resist force from different directions.

c) The elastic fibers optimize for recoil.

d) The high adipocyte content cushions the skin.

3. Elastic Connective Tissue



Characteristics:

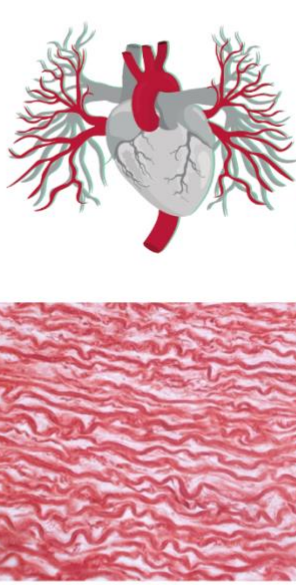
- Regular or _____ fiber arrangement.

Composition:

- Elastic fibers outnumber collagen fibers.

Function:

- Specialized for _____ : ability to return to original shape after stretching.
- Important for body structures that need to bend, expand, & contract.



Locations:

- Walls of arteries.
- Respiratory passageways.
- Ligaments of spine.

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EXAMPLE: True or False: Elastic connective tissue is high in adipocytes.

a) True, elastic connective tissue has high quantities of adipocytes to assist in recoil.

b) False, elastic connective tissue has high quantities of elastic fibers to assist in recoil.

PRACTICE: Marfan syndrome is a genetic condition that affects production and maintenance of elastic fibers in the ECM. Based on this information, what may be a regular serious complication of Marfan Syndrome?

a) An inability to store nutrients as production of adipose tissue is inhibited significantly.

b) Regular rupture of ligaments as the fibers in dense regular connective tissue would not be produced properly.

c) Hyper elasticity of skin as dense irregular connective tissue of the dermis would stretch more.

d) Rupture of the aorta, as elastic connective tissue in large blood vessels allows for stretching and recoil.

PRACTICE: During a dissection, you are asked to identify a tough connective tissue that connects 2 of the bones of the arm. What type of connective tissue makes up that structure?

a) Dense Regular Connective Tissue.

b) Dense Irregular Connective Tissue.

c) Dense Elastic Connective Tissue.

d) Cartilage.

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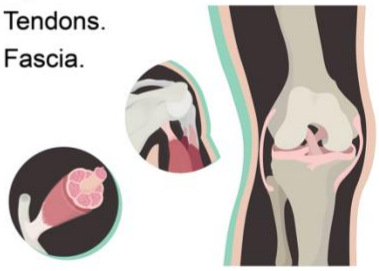
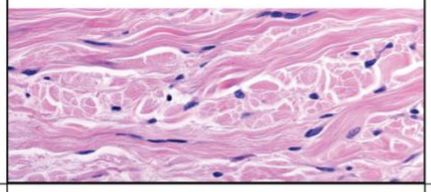
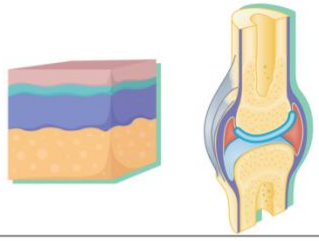
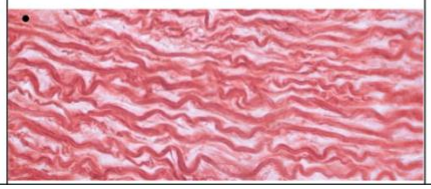
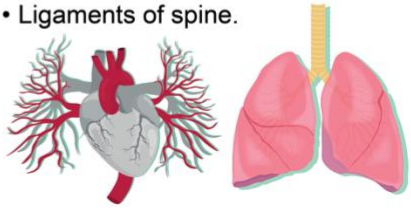
Review: Dense Connective Tissue

Types of Dense Connective Tissue

Type	Characteristics	Function	Locations
Dense _____ **Connective Tissue**	• _____ parallel collagen fibers. • Lacks adipocytes or immune cells. • Poorly vascularized 	• Specialized for strength in _____ direction.	• Ligaments. • Tendons. • Fascia. 
Dense _____ **Connective Tissue**	• Irregular or random fiber arrangement. • Mostly collagen fibers. 	• Specialized for strength in _____ directions.	• Beneath areolar tissue in skin (prevents tearing). • Wraps joints, organs, & bones. 
_____ **Connective Tissue**	• Parallel fiber arrangement. • Elastic fibers outnumber collagen fibers. • 	• Specialized for _____. • Important for body structures that need to bend, expand, & contract.	• Walls of arteries. • Respiratory passageways. • Ligaments of spine. 

PRACTICE: An anterior cruciate ligament (ACL) tear is a common knee injury among athletes. The function of ligaments is to attach bones to each other and keep them stable. Given what you know about connective tissue, what type of tissue do you expect would be involved?

a) Loose Connective Tissue Proper.

b) Dense Regular Connective Tissue.

c) Areolar Connective Tissue.

d) Dense Irregular Connective Tissue.