

Difference Between Dense Regular and Dense Irregular Connective Tissue

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Key Difference - Dense Regular vs Dense Irregular Connective Tissue

Among the four main basic types of animal tissues, connective tissue is one of the major types present. Other types include epithelial tissue, muscle tissue, and nervous tissue. They are developed from the mesoderm. Connective tissues are present in between another type of tissues that establish connections between them. They involve in providing strength and protection to other tissue types. A typical connective tissue consists of three main components which include fibers, ground substance, and cells. The fibers consist of elastic and collagen fibers. Cells include fibroblasts, adipocytes, macrophages, etc. The connective tissue could be divided into dense connective tissue and loose connective tissue. Further classification could be provided for a dense connective tissue as dense regular connective tissue and dense irregular connective tissue. **In dense regular connective tissue, the collagen fibers are arranged parallel to each other in the form of a bundle that consists of a specific orientation while the dense irregular connective tissue is composed of irregularly arranged collagen fibers in differently oriented bundles.** This is the **key difference** between dense regular and dense irregular connective tissue.

What is Dense Regular Connective Tissue?

Dense regular connective tissue establishes a connection between different tissues that are present in the human body. However, not all connections are by dense regular connective tissues. Mostly these types of connective tissues are found in tendons and ligaments. The dense regular connective tissue is composed of collagen fibers that are arranged parallel in the form of a bundle. It could be classified into two sub types of connective tissues namely; dense regular white fibrous connective tissue and dense regular yellow fibrous connective tissue. Both these types could be further divided and arranged according to two aspects; cord arrangement and sheet arrangement. In cord arrangement, the collagen bundles and matrix are arranged in regular alternate patterns. In sheet arrangement, they are arranged in the form of a network in a more irregular pattern.

White fibrous connective tissue consists of a higher proportion of white inelastic fibers when compared with elastic fibers. Since white inelastic content is high in number, it contributes directly to the mechanical strength of the white fibrous connective tissue. Therefore, these connective tissues are present in structures that require higher mechanical strength. This provides adequate support and protection to the surrounding structures.

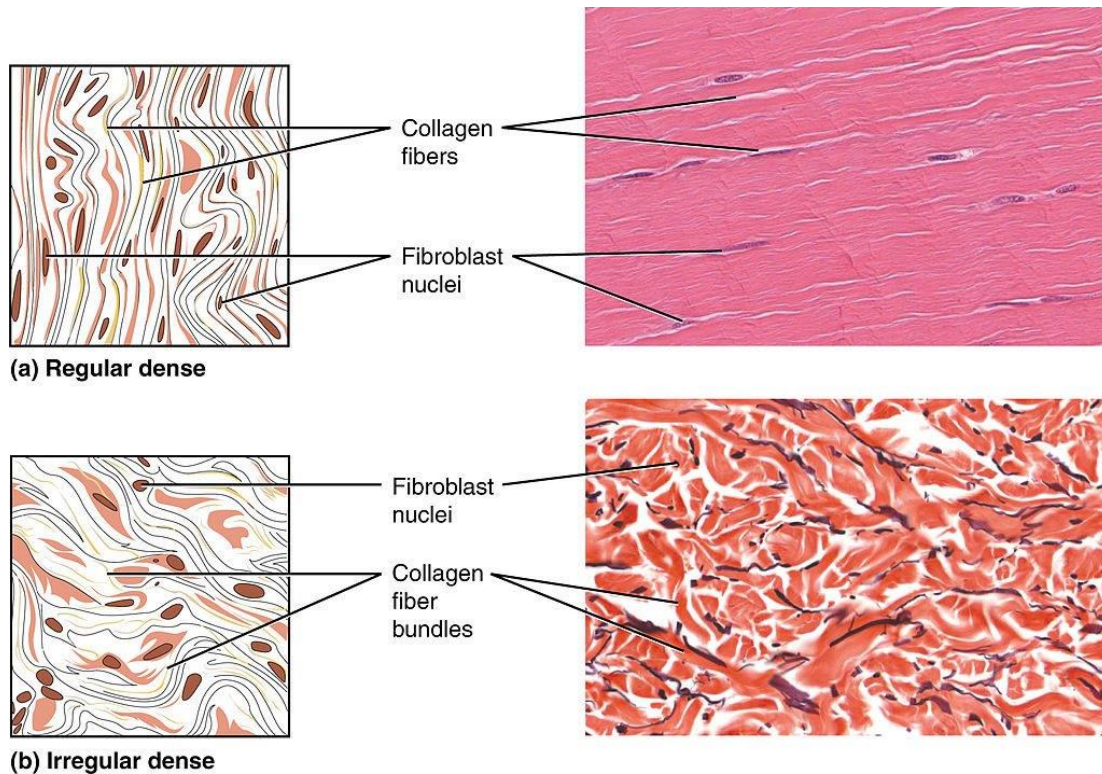
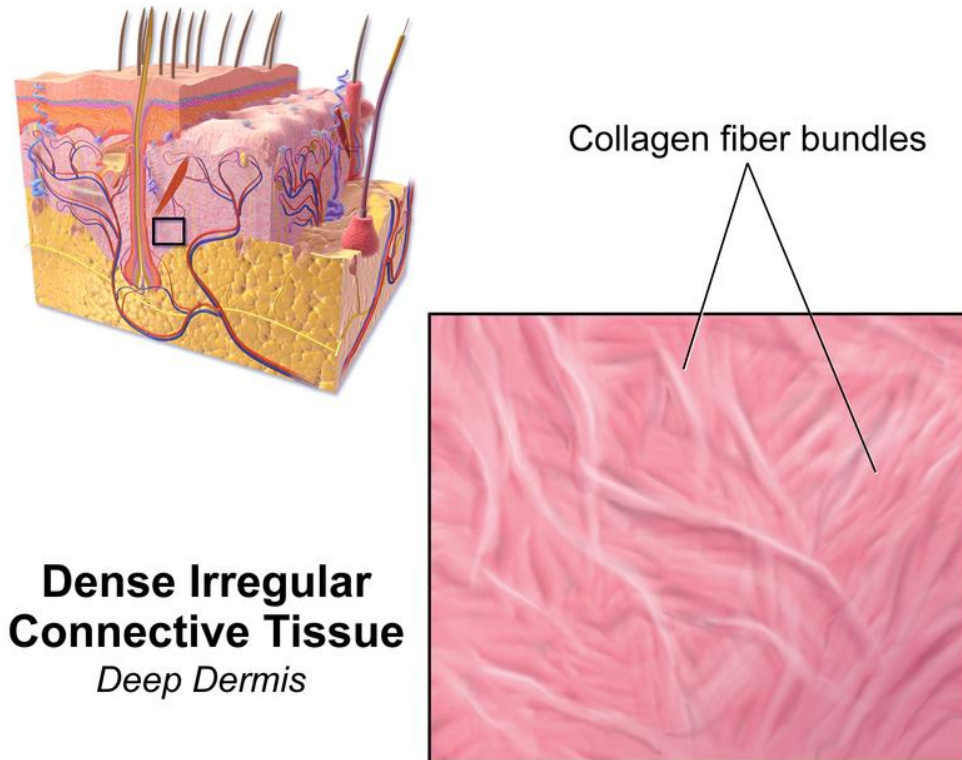


Figure 01: Dense Regular Connective Tissue of the Tendon

In yellow fibrous connective tissue, elastic fibers are present as the dominant content. Therefore, they appear in yellowish. This type of connective tissue is present where force is applied for stretching of different tissues where they could be extended and return to the same level as before without causing any damage. As a common factor, regular connective tissues can extend with a higher tensile strength when forces are applied in one direction. But these types of connective tissues lack proper blood supply. Therefore if these tissues get damages, it will take a considerable amount of time to heal.

What is Dense Irregular Connective Tissue?

Dense irregular connective tissues are present in the dermis of the skin. In dense irregular connective tissue, collagen fibers are arranged irregularly as the name itself suggests. Collagen is the dominant type of fibers present in this tissue. In the context of the composition of the tissue, fibroblasts are present as the predominant cell type that is scattered through the entire region of the tissue. By definition, fibroblasts are cell types that synthesize the extracellular matrix and collagen fibers and are considered as the most common cell type that is present in connective tissues of animals.



**Dense Irregular
Connective Tissue**
Deep Dermis

Figure 02: Dense Irregular Connective Tissue

Dense irregular connective tissues are also present in the sclera and within deeper layers of the skin. These connective tissues are specialized to protect the skin by making the skin resistant to tearing due to the application of higher forces from different directions. This is happens as a result of the collagen fibers which are present in higher quantities. Other than the dermis of the skin, the dense irregular connective tissue is present in the submucosa of the digestive tract, fibrous capsule present in the joints and the lymph. Periosteum and perichondrium could be included as other examples for this type of connective tissue.

What are the Similarities Between Dense Regular and Dense Irregular Connective Tissue?

- Both tissues establish connections between different tissues.
- Collagen fibers are present in both tissues as the main fiber content.

What is the Difference Between Dense Regular and Dense Irregular Connective Tissue?

| Dense Regular vs Dense Irregular Connective Tissue | |
|--|--|
| Dense regular connective tissue is a type of connective tissue in which collagen fibers are arranged parallel in the form of a bundle. | Dense irregular connective tissue is another type of connective tissues in which collagen fibers are arranged irregularly. |
| Collagen Fibers | |

| | |
|---|---|
| Dense regular connective tissue has dark staining collagen fibers. | Collagen fibers are not dark staining in dense irregular connective tissue. |
| Arrangement of Collagen Fibers | |
| In dense regular connective tissue, collagen fibers are arranged parallel to each other in the form of a bundle that is arranged in a specific orientation. | In dense irregular connective tissue, fibers are not arranged parallel, and the bundles are not arranged in a specific orientation. |
| Location | |
| Dense regular connective tissue is found in ligaments and tendons. | Dense irregular connective tissue is present in the dermis of the skin. |
| Stretching of Collagen Fibers | |
| Collagen fibers could be stretched in same or one direction in dense regular connective tissue. | Fibers could be stretched in many different directions in dense irregular connective tissue |

Summary - Dense Regular vs Dense Irregular Connective Tissue

Connective tissues are present in between another type of tissues that establish connections between them. They fill the spaces between organs and tissues by providing structural and mechanical support. Two types of connective tissues can be found such as dense regular and dense irregular. Dense regular connective tissue is composed of collagen fibers that are arranged parallel in the form of a bundle. It could be classified into two sub types of connective tissues namely; dense regular white fibrous connective tissue and dense regular yellow fibrous connective tissue. Dense irregular connective tissues are present in the dermis of the skin, and here the collagen fibers are arranged in an irregular manner. This is the difference between dense regular and dense irregular connective tissue.

Reference:

- 1.Study.com, Study.com. [Available here](#)
- 2.Dense Irregular Connective Tissue, histologyolm.stevegallik.org/node/103.
- 3.Paxton, Steve, et al. "The Leeds Histology Guide." Histology Guide, 1 Jan. 1970. [Available here](#)

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APA: Difference Between Dense Regular and Dense Irregular Connective Tissue.(2017 December 12). Retrieved (date), from <http://differencebetween.com/difference-between-dense-regular-and-vs-dense-irregular-connective-tissue/>

MLA: "Difference Between Dense Regular and Dense Irregular Connective Tissue"
Difference Between.Com. 12 December 2017. Web.

Chicago: "Difference Between Dense Regular and Dense Irregular Connective Tissue."
Difference Between.Com. <http://differencebetween.com/difference-between-dense-regular-and-vs-dense-irregular-connective-tissue/> accessed (accessed [date]).



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