



## Note on Connective Tissue Structure and Functions

Payvand Kamrani\*

Department of Biology, Harvard University, Cambridge, United States

### DESCRIPTION

Along with epithelial tissue, muscular tissue, and nerve tissue, connective tissue is one of the many basic forms of animal tissue. It develops from the mesoderm in embryology. Everywhere in the body, including the neurological system, connective tissue exists connecting other tissues. The three outer membranes that surround the brain and spinal cord (meninges) are made up of dense, inert connective tissue. Fibres (elastic and collagen fibres), ground substance, and cells are the three basic components of connective tissue. Because they lack the fibre component, not all experts classify blood and lymph as connective tissue. Everyone is submerged in the bodily water. Fibroblasts, adipocytes, macrophages, mast cells, and leucocytes are connective tissue cells.

As the name implies, connective tissue refers to a group of tissues in the body that serve to connect, support, and bind other tissues in the body. Connective tissue is divided into three groups: loose connective tissue, dense connective tissue, and specialised connective tissue. Extracellular matrix and collagenous, elastic, and reticular fibres make up loose connective tissue, which acts to keep organs in place. Tendons and ligaments are made up of dense connective tissue, which has a higher density of collagen fibres. Adipose tissue, cartilage, bone, blood, and lymph are examples of specialised connective tissues.

### Structure and function

Collagen fibres are made up of tiny collagen fibrils that run in a wavy pattern across tissues. These parallel fibrils are made up of flexible proteoglycans that provide an important mechanical feature. They provide adaptable but effective resistance to pulling forces. Collagen runs in a parallel course through loose connective tissue before joining to form a bigger bundle. They separate from one another and reassemble at various points to form a three-dimensional meshwork. Collagen fibres are primarily found in dense connective tissue such as ligaments and tendons.

Reticular fibres, also known as argyrophilic fibres, are found in small amounts throughout the human body. Basement epithelial tissue, adipose cells, Schwann and muscle cells, lymphoid tissue, and the endothelium of hepatic sinusoids are the most common places where they can be found. These reticular fibres are fine, dark fibrils that are continuous with the collagen fibres mentioned above when viewed under a microscope. The network of fibres that lies underneath the basal lamina layer is formed by their arrangement. These fibres have a strong connection to the basal lamina, indicating that they, along with the collagen fibres, form a functional and structural unit that supports tissues. These fibres' loose configuration also allows for molecular mobility inside the extracellular fluid.

Elastin fibres are the final component to describe. Elastic recoil is a distinguishing attribute of these fibres. Elastin is typically a loose network in loose connective tissue. The type of tissue determines how they are organised and distributed. The presence of concentrated elastin fibres in the arterial wall aids in the maintenance of a constant blood pressure. The lungs and urine bladder, for example, are distensible and contractible organs that contain fibres.

Connective tissue is divided into two types: connective tissue proper and connective tissue special. There are two types of connective tissue: loose connective tissue and thick connective tissue (which is further subdivided into dense regular and dense irregular connective tissues). The ratio of ground substance to fibrous tissue distinguishes loose and dense connective tissues. Dense connective tissue contains a lot more ground material and a lot less fibrous tissue, whereas loose connective tissue has a lot more ground substance and a lot less fibrous tissue. Collagen fibres are arranged in an orderly parallel pattern in dense regular connective tissue, which gives it tensile strength in one direction and is seen in structures such as tendons and ligaments. Dense irregular connective tissue, with its dense bundles of fibres arranged in irregular patterns, gives strength in various directions.

**Correspondence to:** Payvand Kamrani, Department of Biology, Harvard University, Cambridge, United States, E-mail: Payvand Kamrani 111@gmail.com

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