

Elastic Cartilage Encyclopedia Article

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Elastic Cartilage

Elastic **cartilage** is found in regions of the body where support, resiliency and flexibility are important. Such places include the lobe of the ear, the eustachian tube of the **middle ear**, the epiglottis and in parts of the **larynx**.

Elastic cartilage is similar to another type of cartilage called **hyaline cartilage**. Both types of cartilage contain cells called chondrocytes that are widely spaced in a fluid-filled matrix known as the lacunae (also called ground substance). The lacunae contain a gelatinous substance called chondroitin sulfate. Elastic cartilage differs markedly from hyaline cartilage as the lacunae are also enriched in elastic fibers that run through the matrix in all directions. These fibers compact the spatial arrangement of the chondrocytes, so that they are closer together than those found in hyaline cartilage.

Under microscopic magnification, elastic cartilage appears as chondrocytes dispersed in a network of fibers. Staining for elastin in particular will reveal the extensive network of dense fibrous bundles. This appearance is the best identifier to differentiate elastic cartilage from hyaline cartilage.

Like all cartilage, elastic cartilage exhibits properties that place it between connective **tissue** and bone. In other words, it is tough but flexible. The large water content of elastic and other types of cartilage--about 80% water by weight--allows the cartilage to be compressed and then to regain its shape.

The elasticity of this type of cartilage are well suited to the places where it is found. For example, the epiglottis must be tough, but flexible enough to be capable of closure if necessary. Likewise, the Eustachian tube must be able to withstand increased air pressures. Having a tube constructed of a material that can expand and contract in response to changing internal pressures is vital to the intended function.

Biomedical researchers are taking advantage of the physicochemical properties of elastic cartilage. One advantageous feature is that elastic cartridge does not stimulate much of an immune response from the body. Also, the malleable nature of the cartilage allows it to be packed into a configuration that, in preliminary studies, shows potential as an implant or through direct injection into tissue. Researchers hope that engineered elastic cartilage may be used for reconstructive surgery, such as on facial defects.