

CARTILAGE HISTOLOGY LAB

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http://Biology.clc.uc.edu/Fankhauser/Labs/Anatomy_&_Physiology/A&P201/Connective_Tissues/Cartilag.htm

Cartilage is a connective tissue in which the cells are relatively sparse and embedded in a large amount of characteristic matrix. The matrix is composed of ground substance bound together with fibers each of which vary according to the type of cartilage. Note in each type of cartilage the following distinguishing characteristics:

1. arrangement of cells
2. unusual details of the matrix
3. its staining characteristics

Identify the listed features, and illustrate a typical 400x field and, as always, give a brief description of the function and/or significance of each feature.

1. (slide 11) **Hyaline cartilage** (VE 9th: fig 3-3, p 43) (trachea): Forms models for immature bones, gives shape to nose, trachea, etc, connects bones as with ribs, forms epiphyseal cartilage on long bones by which they grow. It is resilient and shock absorbing. Collagen is the primary fiber, chondroitin the major component of ground substance.

chondrocytes	cells which maintain cartilage
lacunae	chambers in which chondrocytes are housed
matrix	material which fills space between lacunae
perichondrium	fibrous layer (dense irreg CT) which surrounds the cartilage
chondroblasts	at boundary of perichondrium and cartilage proper

Glands in surrounding connective tissue:

- mucus acinar gland
- serous gland with darker shallow cuboid epithelium

2. (slide 12) **Elastic cartilage** (VE 9th: fig 3-5, p 45) (ear): Similar to hyaline cartilage, but elastin is the predominant fiber, giving the tissue great elasticity. It is prominent in cartilage which give the epiglottis, the external ear and the eustachian tubes their structure. The Verhoeff stain specifically stains elastin blue, making it visible in this slide as blue fibers surrounding lacunae.

- perichondrium
- elastic fibers in matrix (anastomosing)
- lacunae
- chondrocytes

3. (slide 13) **Fibrocartilage** (VE 9th: 3-4, p 45) (intervertebral disc): First find rows of chondrocytes: they lie between multiple layers of collagen. The high concentration of this fiber gives this cartilage strength, allow it to absorb shock and to tie bones together as in the pubic symphysis and intervertebral discs. View it first at low power to see the loosely organized pulp in the center of the disc, and the highly organized cortex which you should use for your illustration. (Some slides are stained with aniline blue, and lack pulp.)

- lacunae
- rows of chondrocytes
- collagenous fibers, concentric in arrangement