

# CARTILAGE

15 October 1992, 10/11/94, 10/15/96, 3 Oct 01, 16 Oct 02, 4 Oct 04, 13 Oct 08, 5Oct09  
 Marieb p. 124, & Seeley, Stevens & Tate, p 120, and GJ, p 90, Martini 5<sup>th</sup>: 125-128, 6<sup>th</sup>: 129-132, 7<sup>th</sup>: 125-129, 8<sup>th</sup>:131-

**CARTILAGE** (p 132): Consists of cells embedded in a matrix consisting of fibers and ground substance **firm gel matrix**, intermediate between dense connective tissue and bone to which it is related

**Traits**           Avascular, no nerves (!)  
                           nourished by diffusion from:           **perichondrium**, dense irregular connect. tis., well vascularized  
                           (Heals very slowly for this reason)

**FIBERS**           *lots* of collagen, some with elastin

**GROUND SUBSTANCE** (proteoglycans, mostly polysaccharides, anchored to protein)

**Chondroitin sulfate**   alternating  $\alpha$ 1,4 N-acetyl galactoseamine  $\beta$  1,3 to glucuronic acid, both sulfated  
 Complexed with protein: called **mucopolysaccharides**  
 GAG chondroitin sulfate molecules extend from hyaluronic acid  
 very hydrophilic, cause high hydration level in tissue, forms jelly-like sol.

**Hyaluronic acid**       alternating  $\alpha$ 1,4 N-acetyl galactoseamine  $\beta$  1,3 to glucuronic acid  
 serves as lubricant in synovial joints and thickens vitreous humor

**CELLS**            **chondrocytes**, often in pairs, encased in holes in the **matrix** called **lacunae**

see p 133:

Type of Cartilage	Characteristics	Examples
<b>Hyaline cartilage</b>	most common, translucent matrix	gristle articular cartilage models for bone support nose, larynx
<b>Elastic Cartilage</b>	same as hyaline, but with elastic fibers, give yellowish tinge	found in auditory tubes external ear epiglottis
<b>Fibrocartilage</b>	more similar to dense irregular connective tissue small amount of ground substance chondrocytes squeezed between collagen bundles Lacks perichondrium always associated with hyaline cartilage or dense irregular connective tissue it is compressible, resists tension, absorbs shock	vertebral discs, menisci (cartilages of knee) pubic symphysis