

# CARTILAGE

15 October 1992, 10/11/94, 10/15/96, 3 Oct 01, 16 Oct 02, 4 Oct 04, 13 Oct 08, 5Oct09, 11Oct10, 10/10/11  
 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-, 9<sup>th</sup>: 127-130

**CARTILAGE** (p 128): 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 CT., well vascularized  
 (Heals very slowly for this reason)

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

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

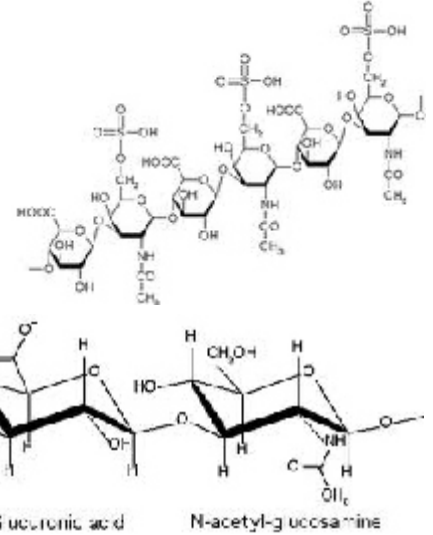
**Chondroitin sulfate**

alternating:  $\beta$  glucuronic acid-  $\beta$  1,3 to  $\beta$  N-acetyl galactoseamine sulfate  
 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  $\beta$  1,4 N-acetyl galactoseamine  $\beta$  1,3 to glucuronic acid  
 lubricant in synovial joints and thickens vitreous humor

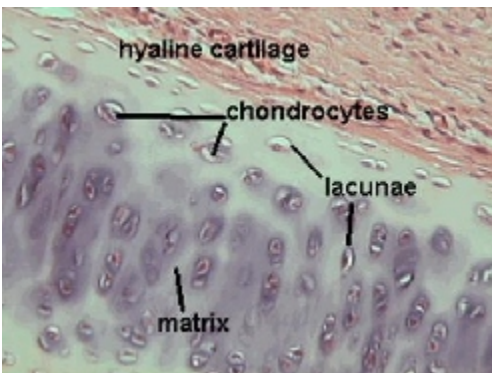
**CELLS** **chondrocytes**, often in pairs, encased in holes in the **matrix** called **lacunae**

see p 129:

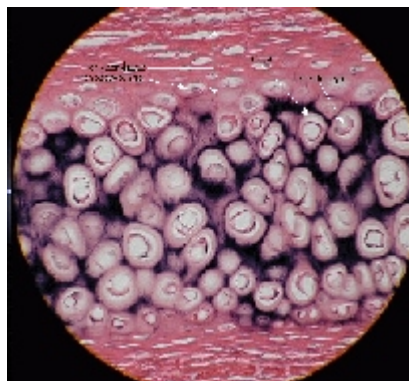


Type of Cartilage	Characteristics	Examples
<b>Hyaline cartilage</b>	most common, translucent matrix	gristle articular cartilage models for bone support nose, larynx
<b>Elastic Cartilage</b>	same as hyaline, but with elastic fibers give yellowish tinge	found in auditory tubes external ear epiglottis
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

hyaline cartilage:



Elastic cartilage:



fibrocartilage:

