

CARTILAGE

revised 13 Sept 2016

Marieb p. 124, & Seeley, Stevens & Tate, p 120, and GJ, p 90, Martini 5th: 125-128, 6th: 129-132, 7th: 125-129, 8th:131-, 9th: 127-130, 10th: 126-149

CARTILAGE (p 134): 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, elastic cartilage has significant elastin

GROUND SUBSTANCE (proteoglycans, mostly glycosaminoglycans: GAGs with peptides)

Complexed with protein: called **mucopolysaccharides** (glycan = polysaccharide)

Chondroitin sulfate: jel-like polysaccharide derivative sol, fills in cartilage matrix

Monomers: N-acetylglucosamine, β glucuronic acid, N-acetyl galactoseamine

disaccharides polymer (NAG-glucuronic H⁺, or NAGal-glucuronic H⁺)

GAG chondroitin sulfate molecules extend from hyaluronic acid

very hydrophilic, cause high hydration level in tissue.

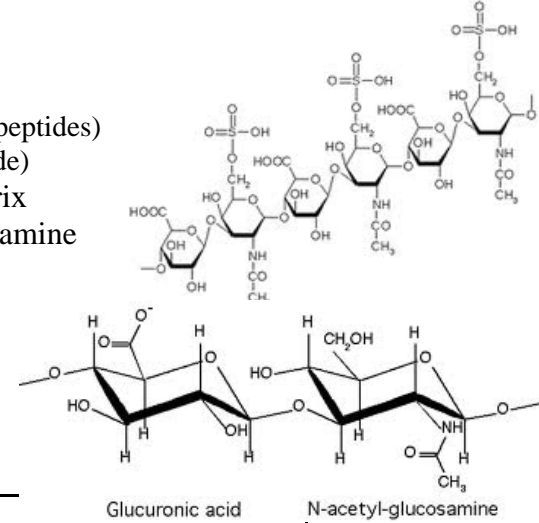
Hyaluronic acid alternating β 1,4 NAGal to β 1,3 to glucuronic acid: no SO₄,

lubricant in synovial joints and thickens vitreous humor

chondrocytes, pairs occupy holes in the **matrix** called **lacunae**

CELLS

see p 135:



Type of Cartilage	Characteristics	Examples
Hyaline cartilage	most common, translucent matrix	gristle articular cartilage models for bone support nose, larynx
Elastic Cartilage	same as hyaline, but with elastic fibers give yellowish tinge	found in auditory tubes external ear epiglottis
Fibrocartilage	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:

