



Cartilage

Embryology

Highly proliferative **Mesenchymal Stem cells**

Differentiate into clusters of **Chondroblasts**

These lay down the extracellular matrix

Ready to be activated when disturbed

These mature into **Chondrocytes** when trapped in their own extracellular matrix

Function

Covering for the articular surfaces

Template for bones

Cartilage has a very poor capacity for repair and unable to migrate.

Firm, flexible connective tissue

Returns to original shape when compressed and twisted.

Properties

Elastic and Viscoelastic

Returns to original shape when compressed and twisted.

Contents

Cells

Chondrocytes

Fibres

Elastin

Type II collagen

Extracellular Matrix

Water

Ground Substance

Types

Hyaline

Purpose

Covers synovial joints

Ultrastructure

- Extensive ground substance
- 90% water
- Type 2 collagen scaffold in a 3-dimensional construct
- Very few cells which are sited in small lacunae
- No** blood supply or innervation, the only nourishment is via diffusion which is why the perichondrium is so important to protect and nourish

Function

- Resists compression/loading
- Provides a template for the bones and reduces friction

Fibrocartilage

Purpose

- Symphysis pubis, triangular fibrocartilage complex, ACJs, Meniscus..
- "Fibre-ey" like cartilage

Ultrastructure

- Lots more collagen in the form of type I collagen
- Its rough and may be innervated
- No** perichondrium

Organisation

- Cords/bands**:- ITB, retinaculum
- Sheets**:- Deep Fascia, Intermuscular septae
- Blocks**:- Menisci, Symphysis pubis

Elastic

Properties

Elastic

Highly flexible

Ultrastructure

Histologically similar to hyaline cartilage

Type 2 collagen