

JARINGAN JKAT

**Desy andari
umm**

Pendahuluan

- Jaringan ikat: jaringan yang dibentuk oleh sel-sel mesenkim yang berasal dari mesoderm.
- = jaringan mesenkim = jaringan penyambung.
- Jumlah pada organ bervariasi
- Matriks = bahan intersel /ekstra seluler (serat + subs.dasar)
- 3 unsur utama: sel, serat dan substansi dasar amorf → cairan jaringan.

Function

- Binding & supporting
- Protecting
- Insulating
- Storing reserve fuel
- Transporting substances within the body

Cairan jaringan

- Cairan encer yg mengandung kristaloid, oksigen terlarut dan zat makanan yang menembus kapiler menuju sel.
- Kapiler → ekstra sel (difusi).
- Ekstra sel → kapiler (osmosis).
- Hub. Cairan jaringan dgn substansi intersel:
 - Solusion, cair atau setengah cair: cairan jaringan sbg media dispersi.
 - Agar, gel kaku atau setengah kaku: air dr cairan jaringan.
 - Matriks padat (tulang) → saluran halus.

Komposisi cairan jaringan:

- Unsur plasma darah → menembus ddg kapiler.
- Pembentukan: merembes dari ddg kapiler.
- Penyerapan: penyerapan kapiler → osmosis
absorpsi limfe
- Pada sediaan → hilang → ruang kosong.
- Cairan jaringan bervariasi.
- Kondisi patologis → odeme.

Substansi intersele

- Ada 2 jenis: amorf (tdk berbentuk) dan fibrosa (berbentuk).
- Bahan amorf: glikosaminoglikans (proteoglikans, as.hialuronat, kondroitin sulfat,dll) dan glikoprotein (fibronektin,laminin dan kondronektin).
- Bahan fibrosa: serat kolagen, serat retikulin dan serat elastin.

Pembagian

- Jaringan ikat sejati umum:
 - Jaringan ikat longgar (areolar)
 - Jaringan ikat padat: teratur dan tidak teratur
- Jaringan ikat sejati khusus: jar. Lemak dan jar. retikuler
- Jaringan ikat khusus: tulang, tulang rawan dan darah

Sel jaringan ikat

- Fibroblas
- Paling banyak pada jaringan ikat longgar.
- Sel besar, gepeng, bercabang-cabang, dari samping spt gelendong (fusiform), inti lonjong(memanjang).
- Synthesize the extracellular matrix & collagen
- Sel tetap pd jar.ikat, regenerasi seumur hidup.

- Sel mesenkim yg belum berdiferensiasi.
- =sel perivaskular=sel adventisia
- Lebih kecil drpd fibroblas, bentuk stelatta.
- Mampu berdiferensiasi mjd sel lain: sel otot polos dan sel lemak.
- Sering dianggap pluripotent.

- Makrofag
- = histiosit
- Paling banyak (spt fibroblas)
- Sel berbentuk tidak beraturan, cabang pendek gemuk, bergerak amuboid (pseudopodia), inti lonjong (kdg berlekuk).
- Fungsi: pertahanan → fagositosis → vakuola dan granula.
- Sekresi: lisozim, kolagenase dan interferon.

- Sel lemak
- Banyak di jaringan ikat longgar
- Sendiri atau berkelompok (jar.lemak)
- Tiap sel lemak mengandung satu tetes minyak yg besar dan sedikit sitoplasma dengan inti gepeng di bag.tepi (signet ring cell).

- Sel pigmen
- Jar. ikat longgar<<<, jar.ikat padat >>>
- = melanosit
- Mempunyai tonjolan2 sitoplasma yg mengandung granula (melanosom) berisi melanin.

Tipe jar.ikat

- Jar.ikat mesenkim
- = jar.embrional
- Ada pd bbrp mgg pertama kehidupan
- Tdd atas sel2 mesenkim dgn banyak cabang yg saling bersentuhan.
- Menghilang krn sel2nya berkembang.

- Jar. Ikat mukus
- Bersifat sementara
- Tdd sel2 fibroblas besar
- Substansi dasar mirip gel mengandung serat kolagen halus.

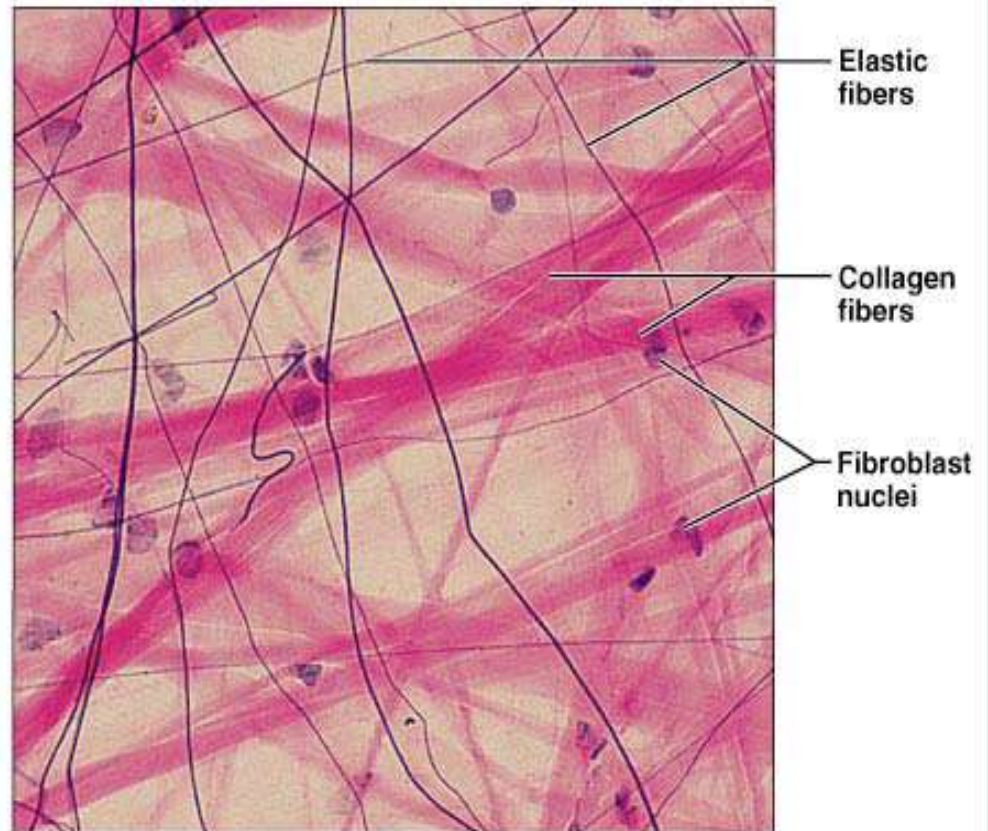
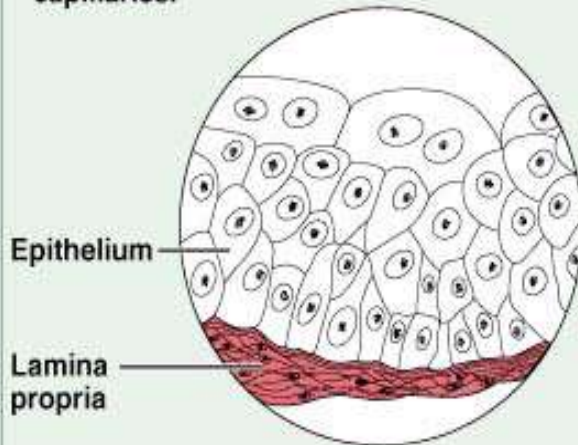
- Jar.ikat longgar (areolar)
- Berkembang langsung dari jar.mesenkim
- Berupa jar.fibroelastis yg jarang, bersifat fleksibel.
- Hampir pada semua bagian tubuh.
- Sel paling banyak fibroblas dan makrofag, serat paling banyak kolagen.

(b) Connective tissue proper: loose connective tissue, areolar

Description: Gel-like matrix with all three fiber types; cells: fibroblasts, macrophages, mast cells, and some white blood cells.

Function: Wraps and cushions organs; its macrophages phagocytize bacteria; plays important role in inflammation; holds and conveys tissue fluid.


Location: Widely distributed under epithelia of body, e.g., forms lamina propria of mucous membranes; packages organs; surrounds capillaries.



Photomicrograph: Areolar connective tissue, a soft packaging tissue of the body (400 \times).

Loose connective tissue



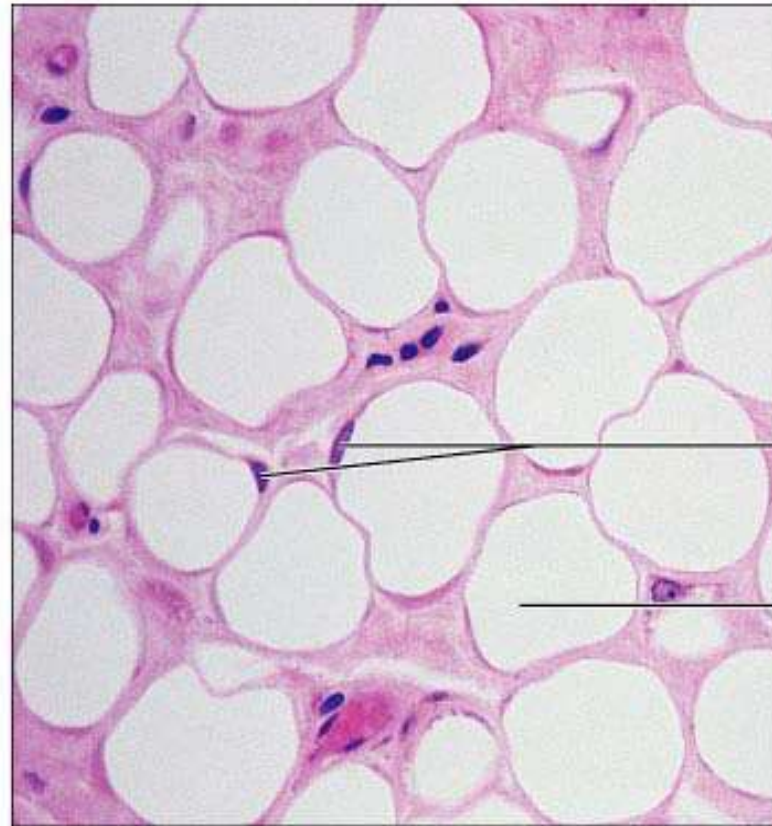
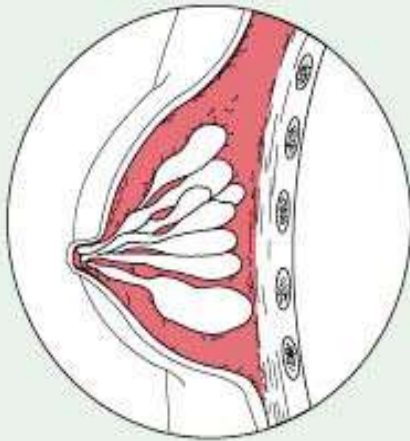
- Jar.lemak
- Sel lemak tersebar di jar.areolar
- Jar. Lemak coklat (multilokular) dan jar. Lemak putih (unilokular).
- Sel lemak berimpitan → lobul2 dipisahkan septa fibrosa.
- Kapiler darah di dalam dan di antara lobul → metabolisme .
- Mesenterium, omentum, sutul dan sekitar ginjal.
- Fungsi: cadangan, bantalan dan isolator.

(c) Connective tissue proper: loose connective tissue, adipose

Description: Matrix as in areolar, but very sparse; closely packed adipocytes, or fat cells, have nucleus pushed to the side by large fat droplet.

Function: Provides reserve food fuel; insulates against heat loss; supports and protects organs.

Location: Under skin; around kidneys and eyeballs; within abdomen; in breasts.

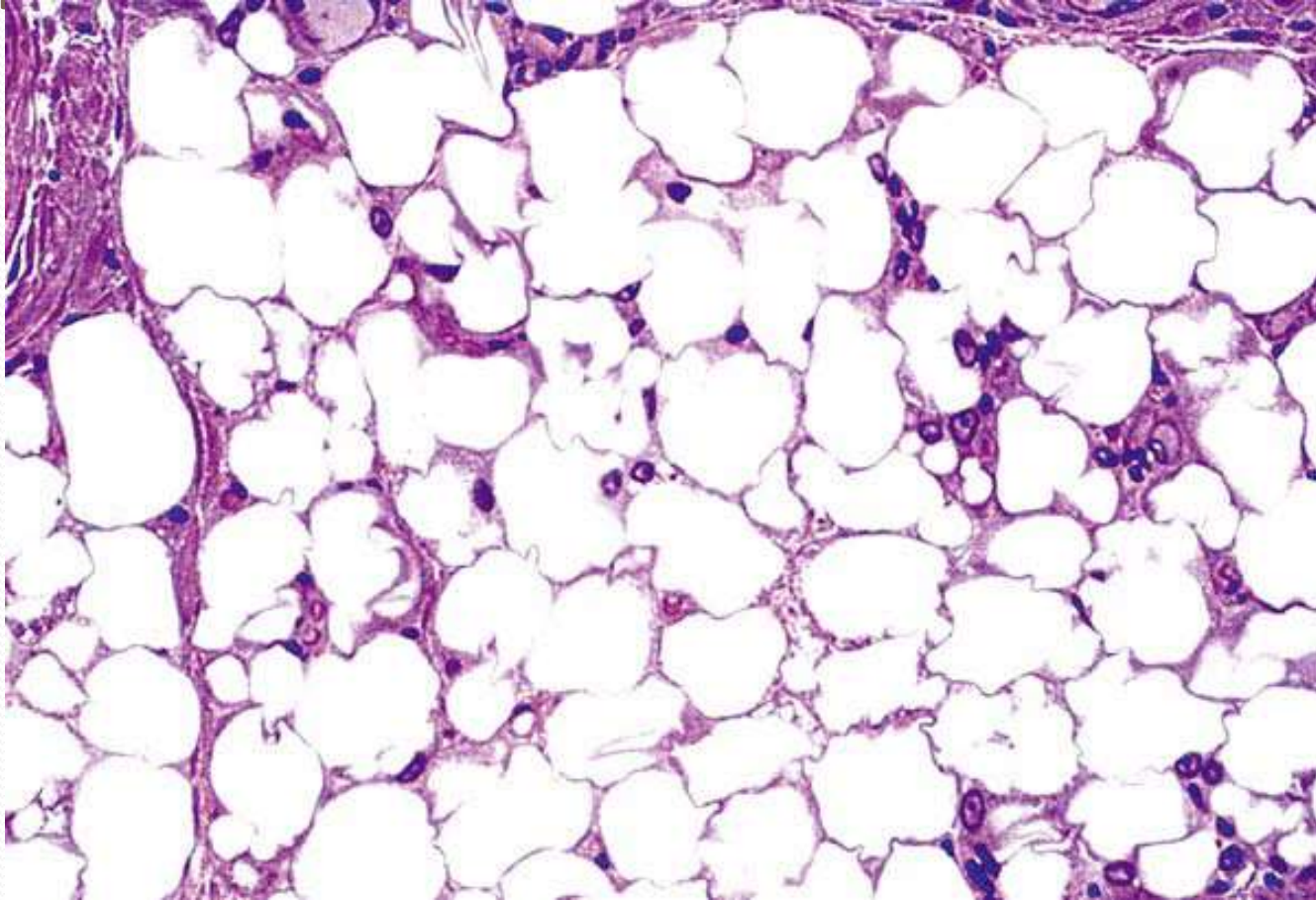


Nuclei of fat cells

Vacuole containing fat droplet

Photomicrograph: Adipose tissue from the subcutaneous layer under the skin (600 \times).

Adipose tissue



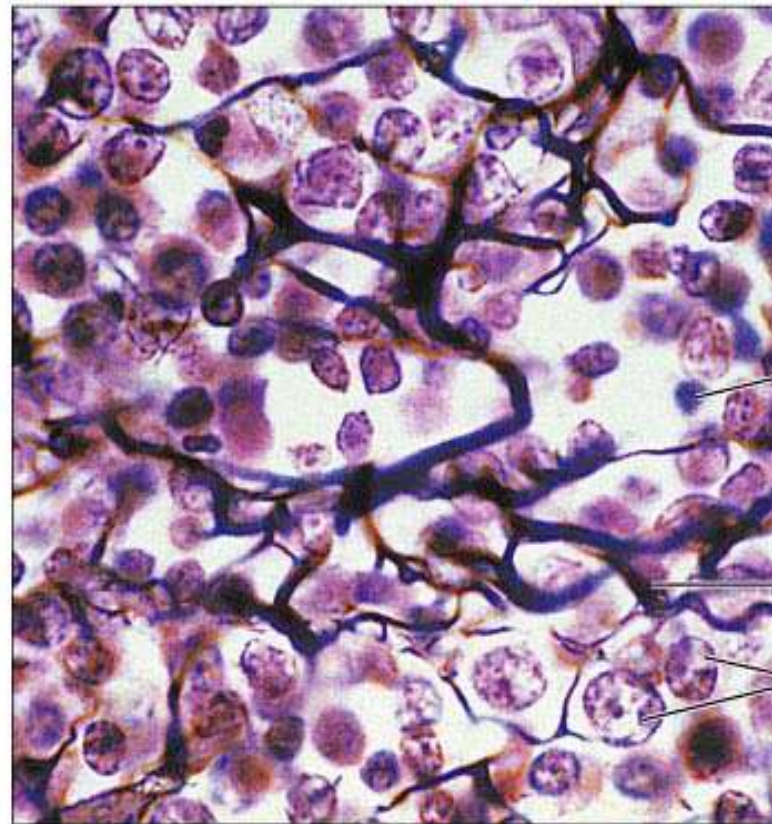
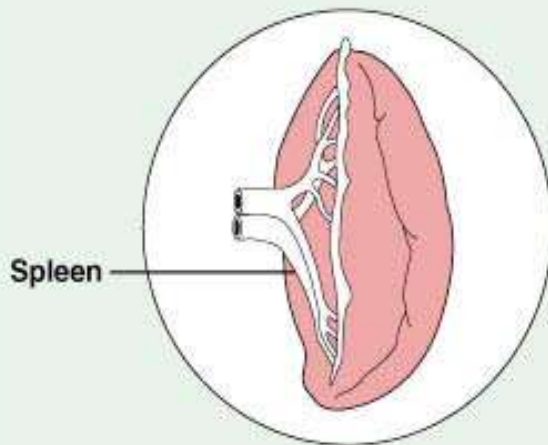
- Jar.retikuler
- Jar.ikat primitif → serat retikulum primitif.
- Bentuk sel: stelatta (mirip mesenkim), inti besar dan pucat, sitoplasma bercabang dan basofil.
- Dapat berkembang menjadi: makrofag, eritrosit dan leukosit.
- Membentuk kerangka organ2 limfoid, sutul dan hati.

(d) Connective tissue proper: loose connective tissue, reticular

Description: Network of reticular fibers in a typical loose ground substance; reticular cells lie on the network.

Function: Fibers form a soft internal skeleton (stroma) that supports other cell types including white blood cells, mast cells, and macrophages.

Location: Lymphoid organs (lymph nodes, bone marrow, and spleen).



White blood
(lymphocyte)
cell

Reticular
fibers

Mast cells

Photomicrograph: Dark-staining network of reticular connective tissue fibers forming the internal skeleton of the spleen (350 \times).

- Jar.ikat padat
- Serat2 berimpitan, substansi dasar amorf <<<.
- Ada 2 jenis, beraturan dan tidak beraturan.

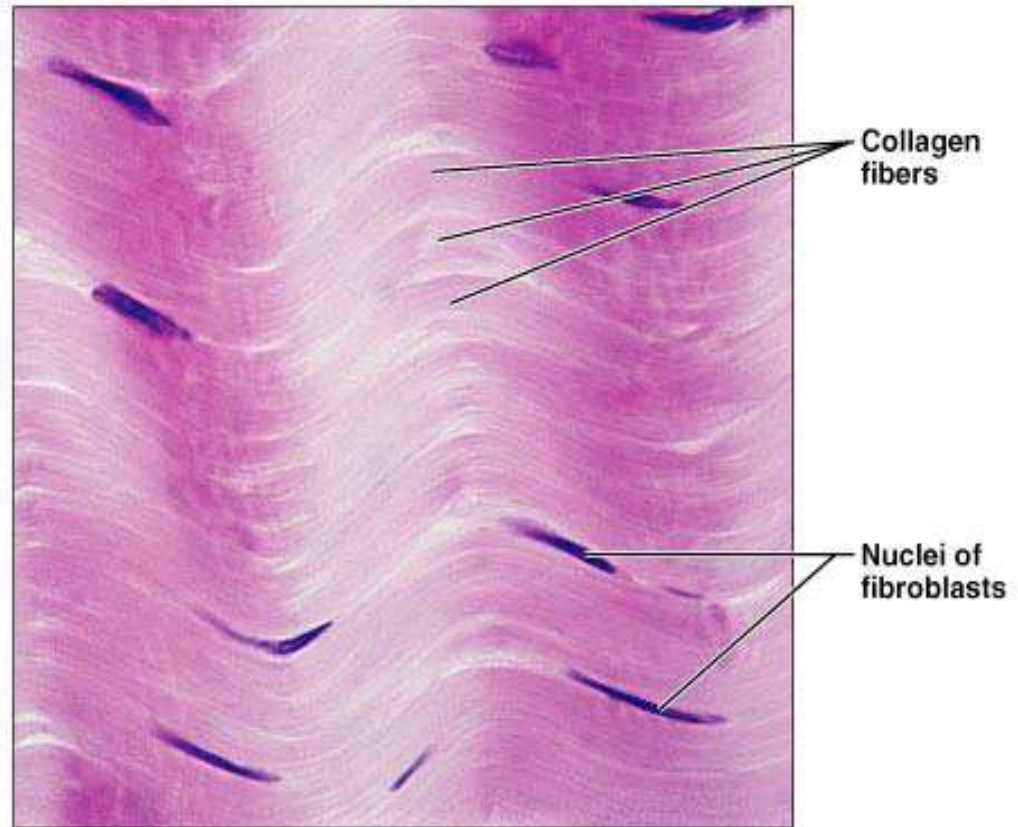
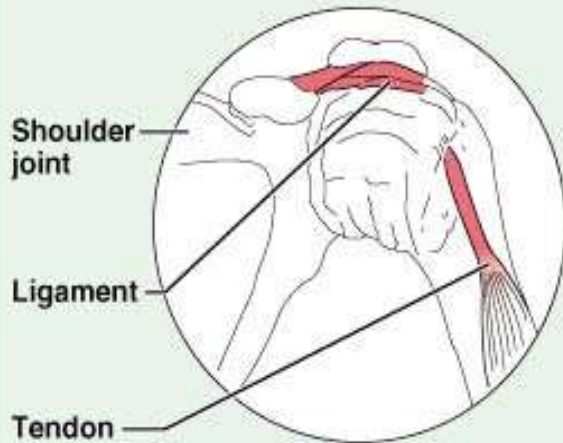
- *Jar.ikat padat beraturan.*
- Serat2 berimpitan secara paralel dan sangat kuat.
- Contoh: tendon, ligamen dan aponeurose.

(e) Connective tissue proper: dense connective tissue, dense regular

Description: Primarily parallel collagen fibers; a few elastin fibers; major cell type is the fibroblast.

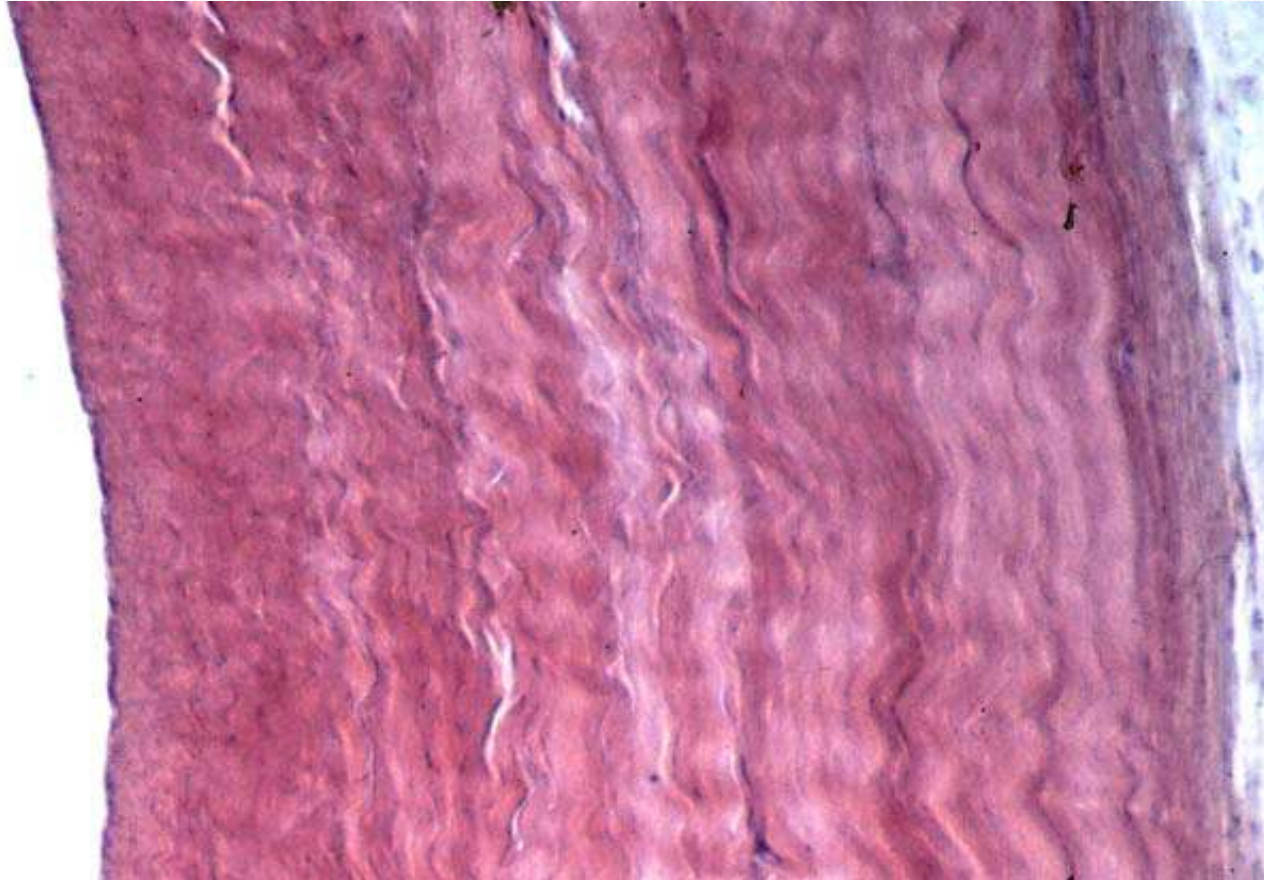
Function: Attaches muscles to bones or to muscles; attaches bones to bones; withstands great tensile stress when pulling force is applied in one direction.

Location: Tendons, most ligaments, aponeuroses.



Photomicrograph: Dense regular connective tissue from a tendon (1000x).

Dense regular



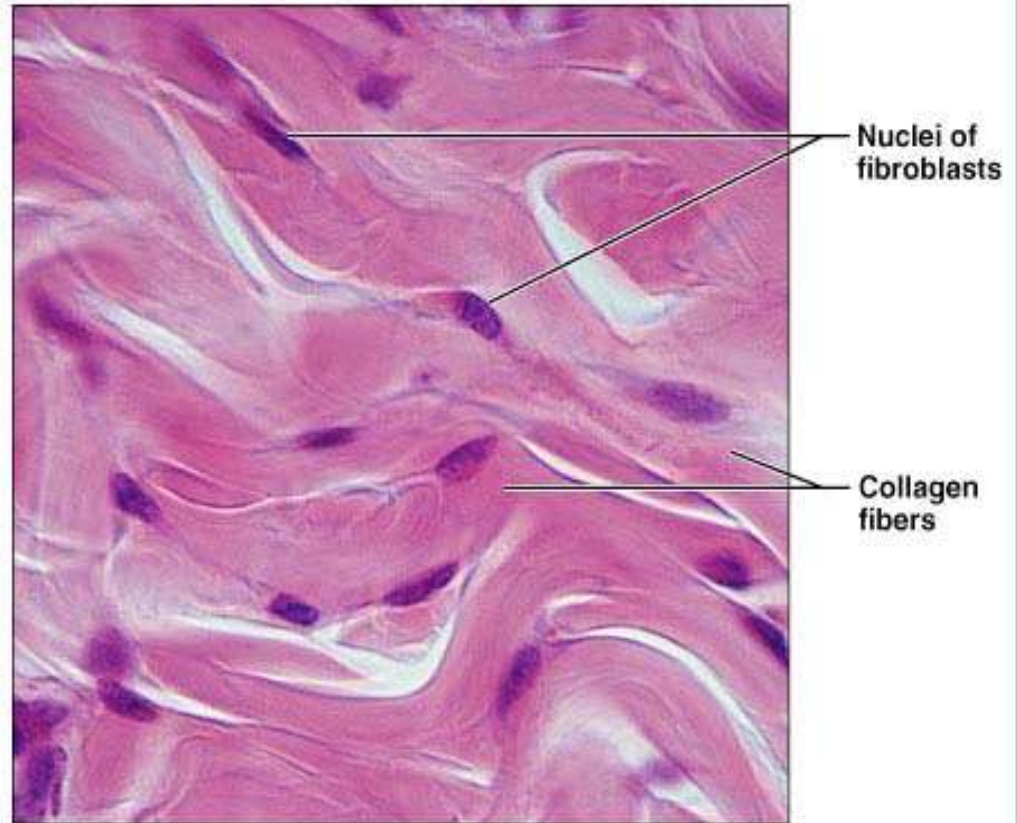
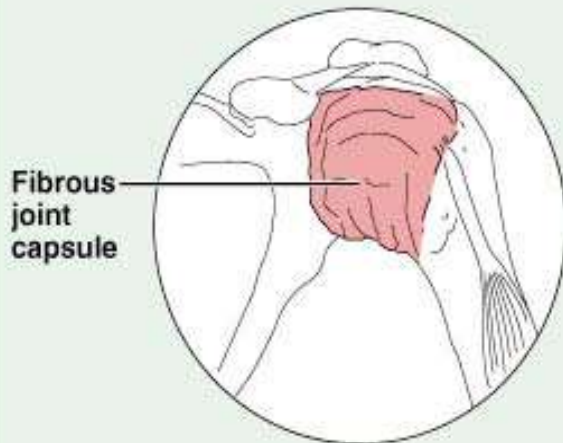
- *Jaringan ikat padat tidak beraturan.*
- Berupa lembaran, teranyam kasar dan kuat.
- Unsur utama: serat kolagen kasar, serat elastin dan retikulin <<.
- Contoh: fascia, dermis, kapsula fibrosa, periosteum dan perikondrium.

(f) Connective tissue proper: dense connective tissue, dense irregular

Description: Primarily irregularly arranged collagen fibers; some elastic fibers; major cell type is the fibroblast.

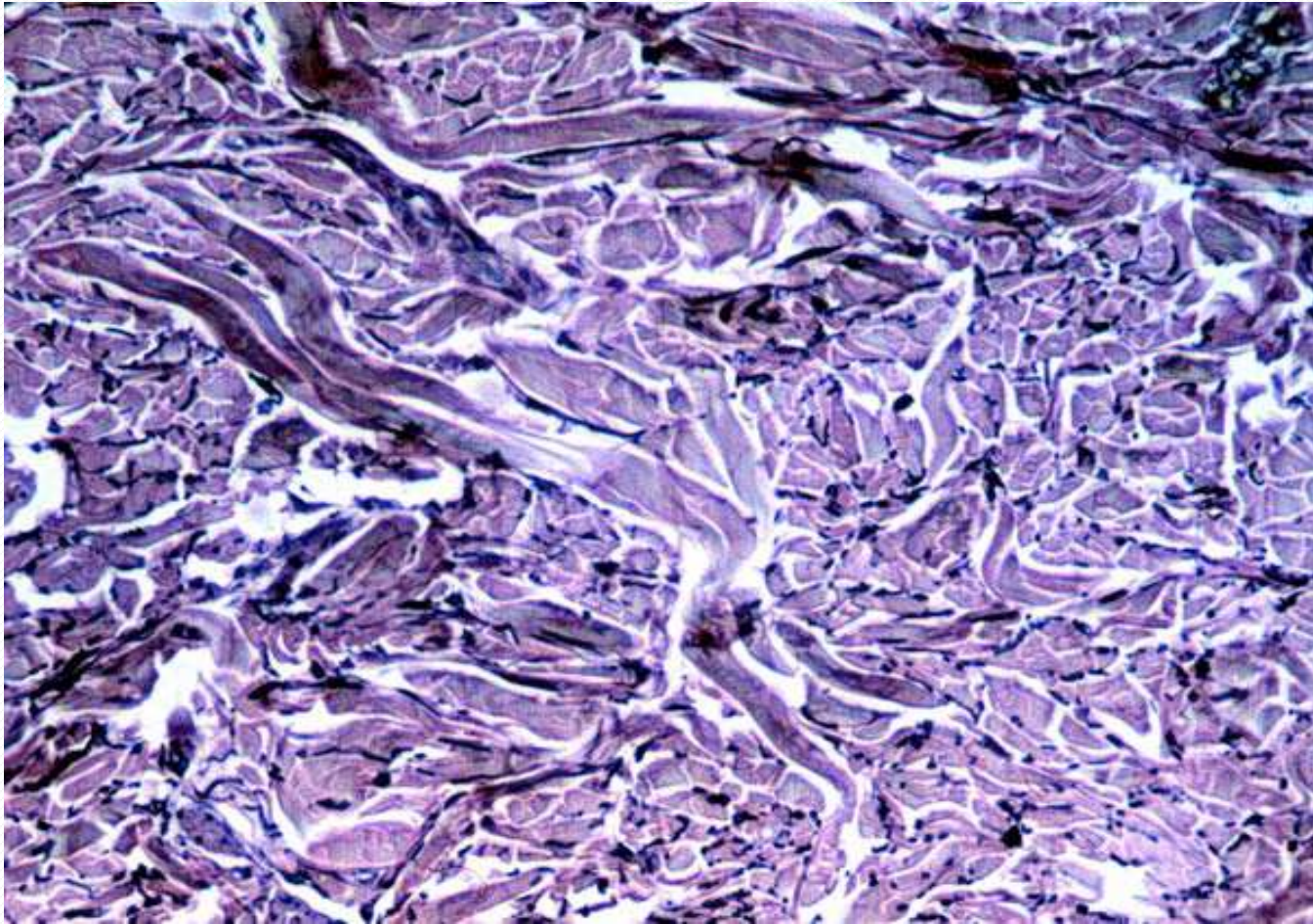
Function: Able to withstand tension exerted in many directions; provides structural strength.

Location: Dermis of the skin; submucosa of digestive tract; fibrous capsules of organs and of joints.



Photomicrograph: Dense irregular connective tissue from the dermis of the skin (400 \times).

Dense irregular





TERIMAKASIH