Before starting……

please switch off your mobile

BASIC STRUCTURES

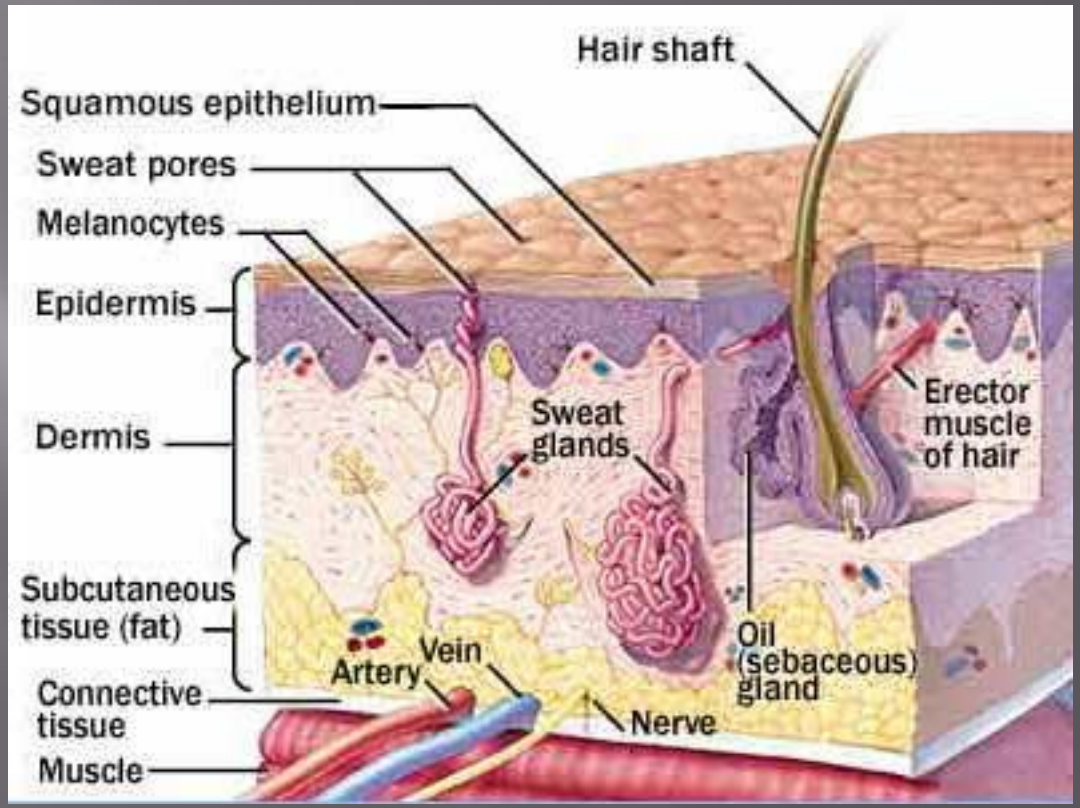
Skin

1.Epidermis

- Extremely Thick (palm & sole)
- Thin (ant. Surface of arm & forearm)

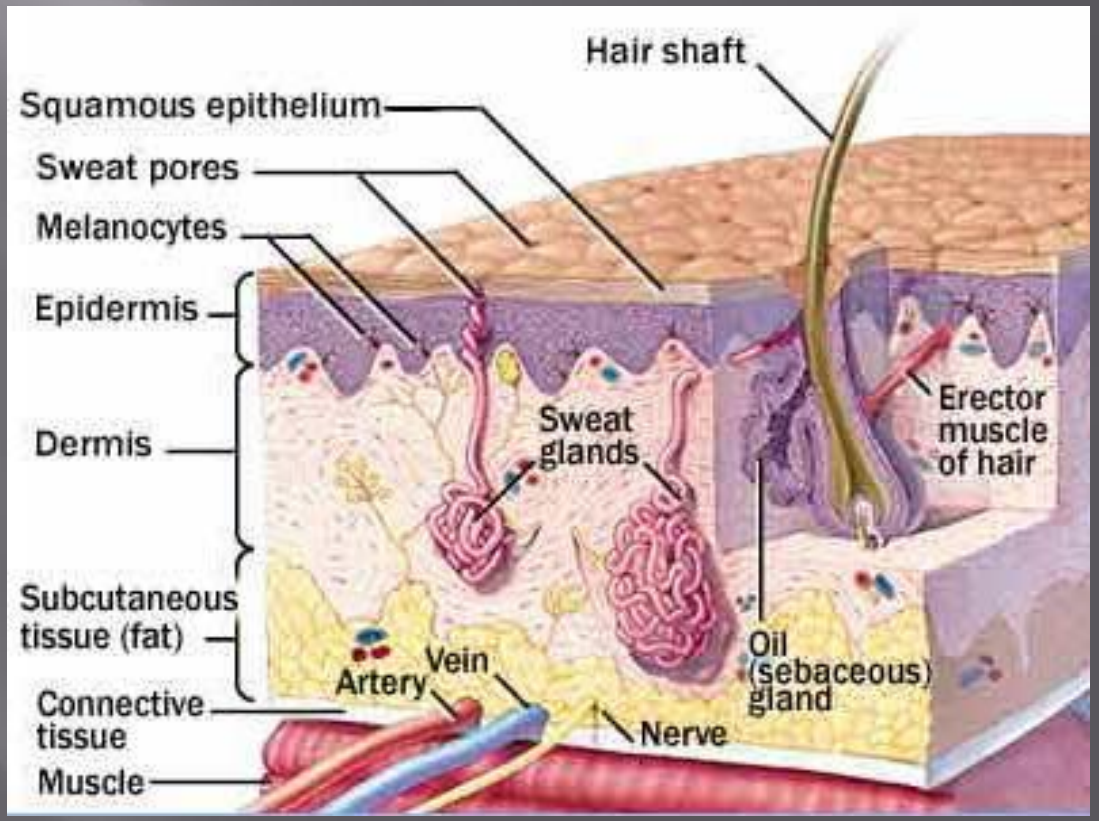
2. Dermis

- Dense C.T.
- BV, lymphatic and nerves
- Variation in thickness (thinner on ant. Than post. Body surface)
- Thin in women than men
- Connected to underlying deep fascia or bone by the superficial fascia (subcut.)



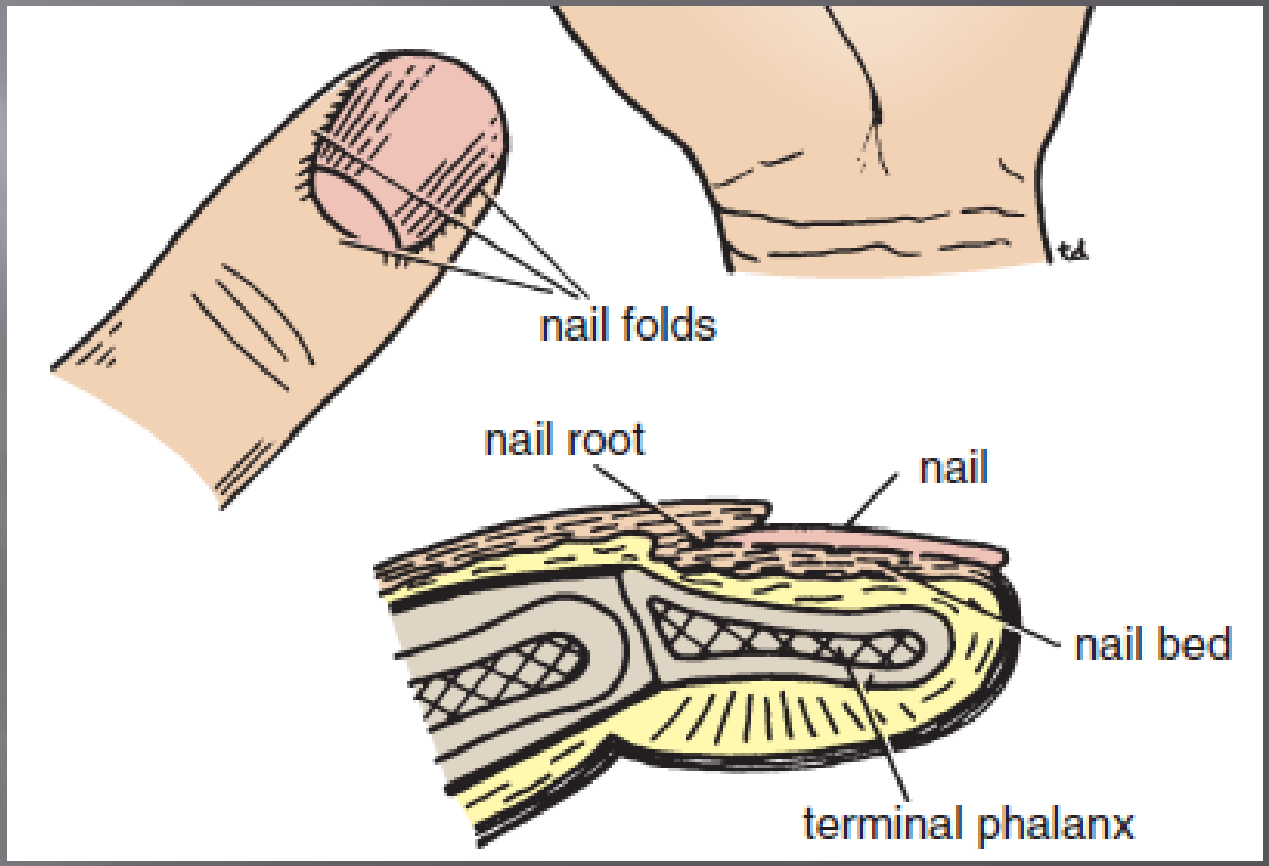
The appendages of the skin are:

the nails
hair follicles
sebaceous glands
sweat glands.

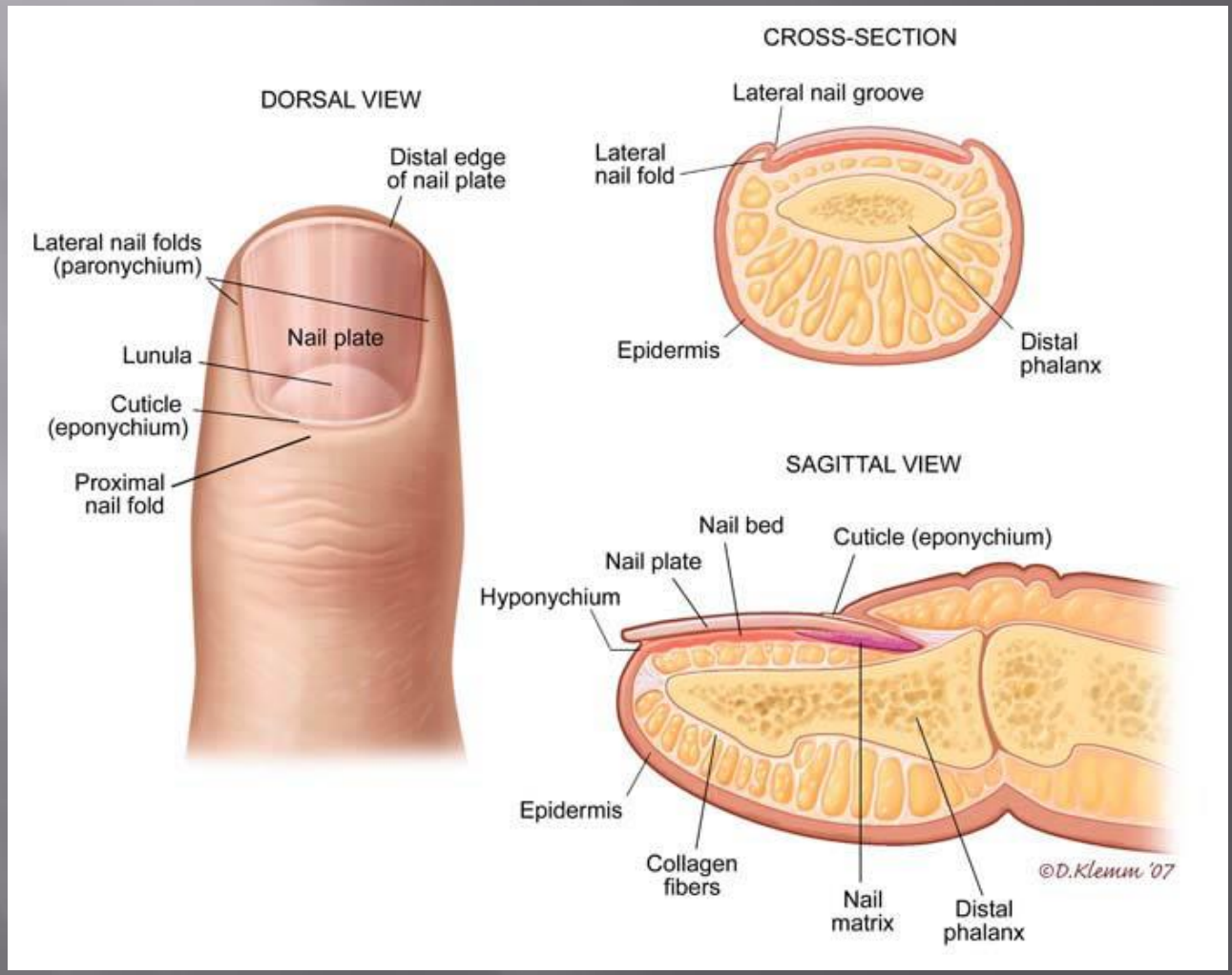


nail

- **Keratinized plate**
- **Proximal edge (root)**
- **Surrounded and overlapped by fold**
- **Skin surface covered by nail (bed)**



nail


DORSAL VIEW
Distal edge of nail plate
Lateral nail folds (paronychium)
Nail plate
Lunula
Cuticle (eponychium)
Proximal nail fold
CROSS-SECTION
Lateral nail groove
Lateral nail fold
Epidermis
Distal phalanx
SAGITTAL VIEW
Nail bed
Cuticle (eponychium)
Nail plate
Hyponychium
Epidermis
Collagen fibers
Nail matrix
Distal phalanx
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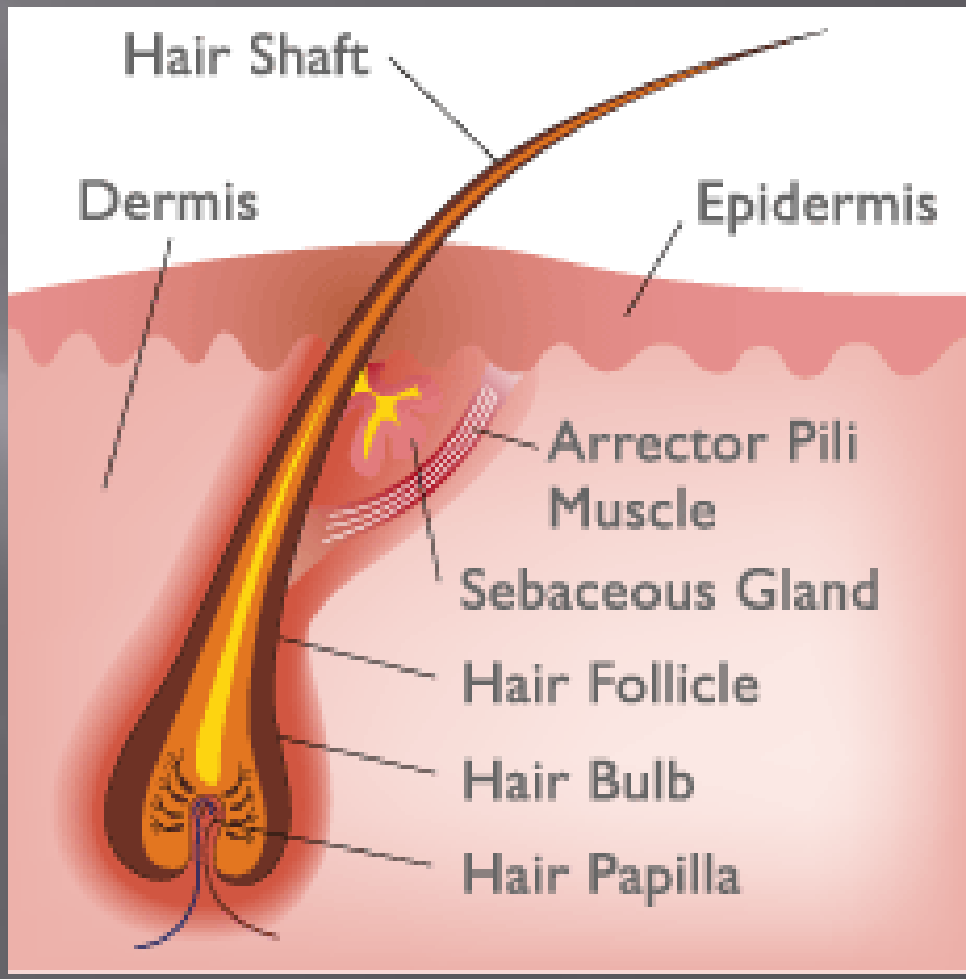
Hair follicle

- **Hair follicles:** invaginations of the epidermis into the dermis
- obliquely to skin surface
- the expanded extremities, called **hair bulbs,** penetrate to deep part of dermis
- **hair papilla**: hair bulb is concave at its end, and occupied by vascular C.T.

arrector pili:

- Band of smooth muscle
- connects the undersurface of the follicle to the superficial part of dermis
- Innervated by sympathetic nerve fibers,
- its contraction causes :

1. hair to move into a more vertical position
2. Compresses the sebaceous gland , causes it to extrude someof its secretion.
3. pull of the muscle also causes dimpling of the skin surface, so-called **gooseflesh**



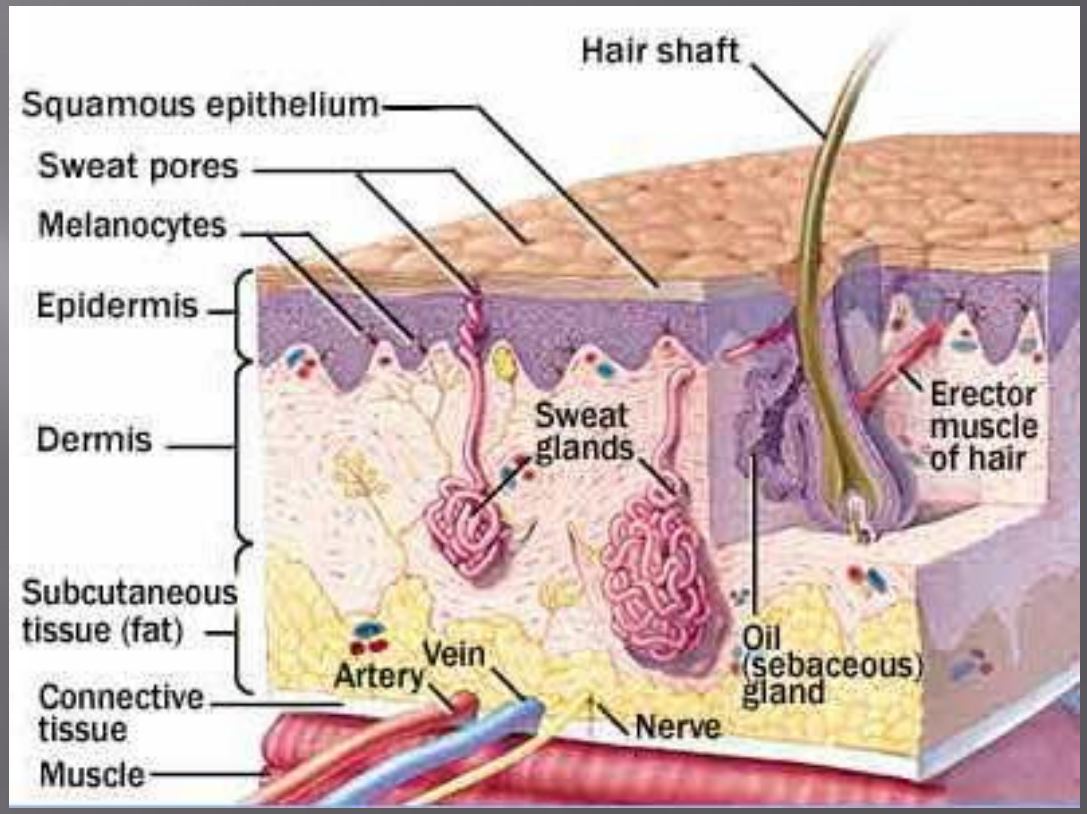
Gooseflesh

sebaceous glands

- pour their secretion, the sebum, onto the shafts of the hairs
- helps preserve the flexibility of the emerging hair

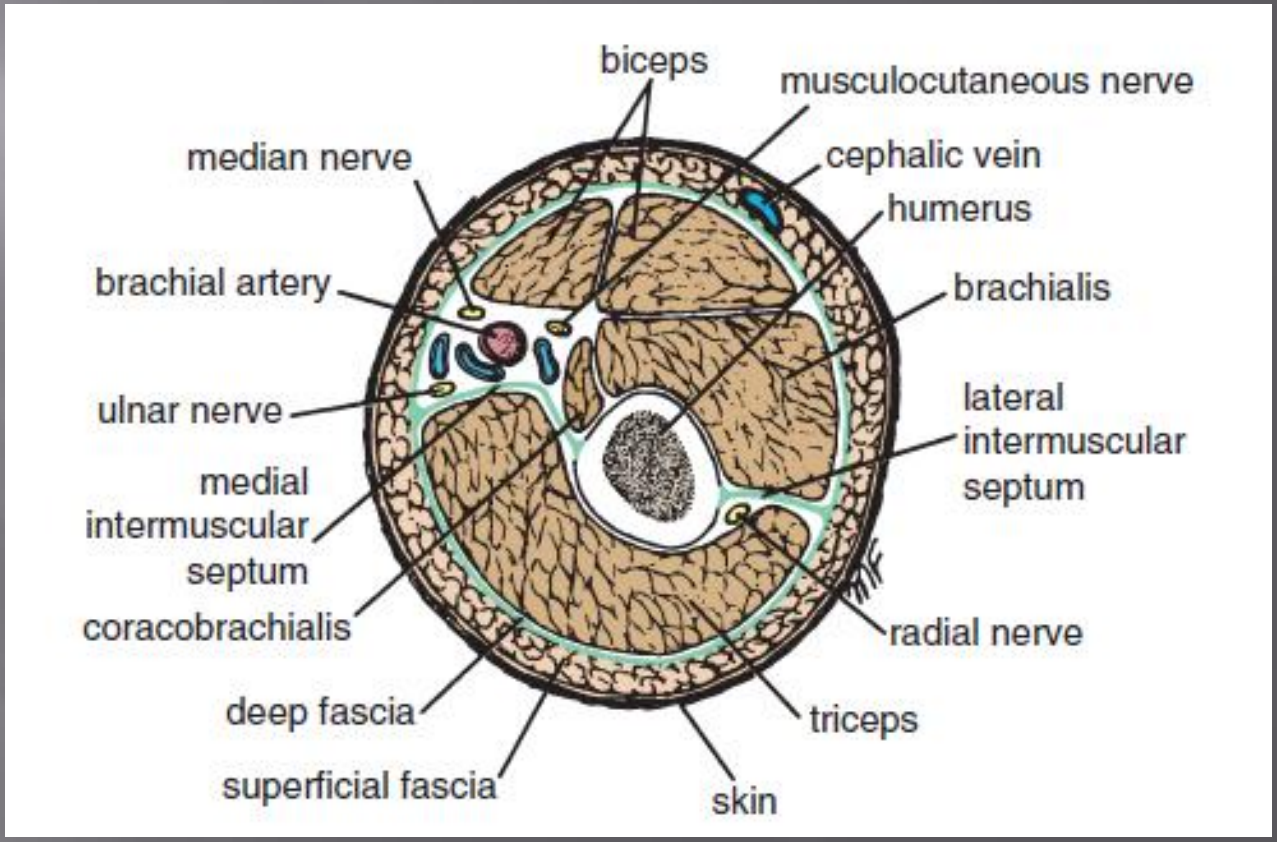
sweat glands.

- long, spiral, tubular glands
- Distributed over most of body surface
- extend through the full thickness of dermis, their extremities may lie in superficial fascia.
- the most deeply penetrating structures of all the epidermal appendages



Fascia:

- two types
  - Superficial
  - Deep
- Between skin & underlying muscles & bones



Fascia:

1. **Superficial (or subcutaneous tissue)**

- **mixture of loose and adipose tissue**
- **Unite the dermis to deep fascia**
- **In (scalp, neck, palm and sole) contain bundles of collagen fibers**
- **In (Eyelid, Auricle and genitalia) its devoid of adipose tissue**

Fascia:

2. Deep fascia

a membranous layer of connective tissue that invests the muscles and other deep structures

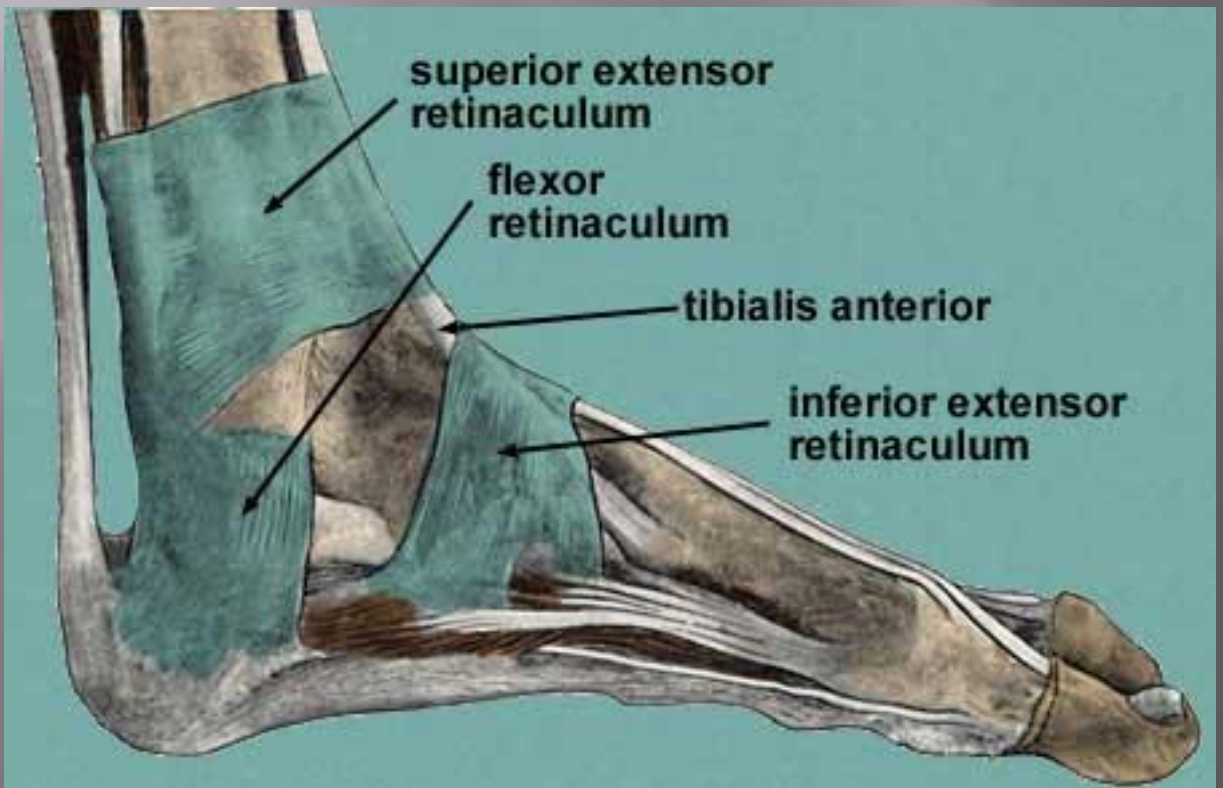
thick ----- neck

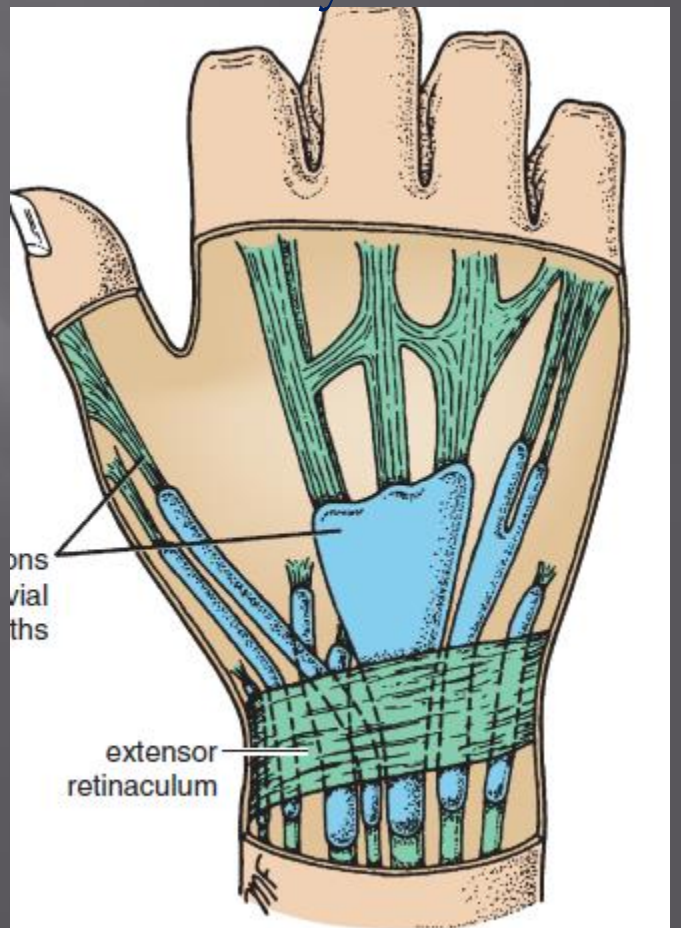
thin---abdomen and thorax

Fascia in the joint

deep fascia may be thickened to form restraining bands called **retinacula**

- hold underlying tendons in position
- serve as pulleys around which the tendons may move





Muscles

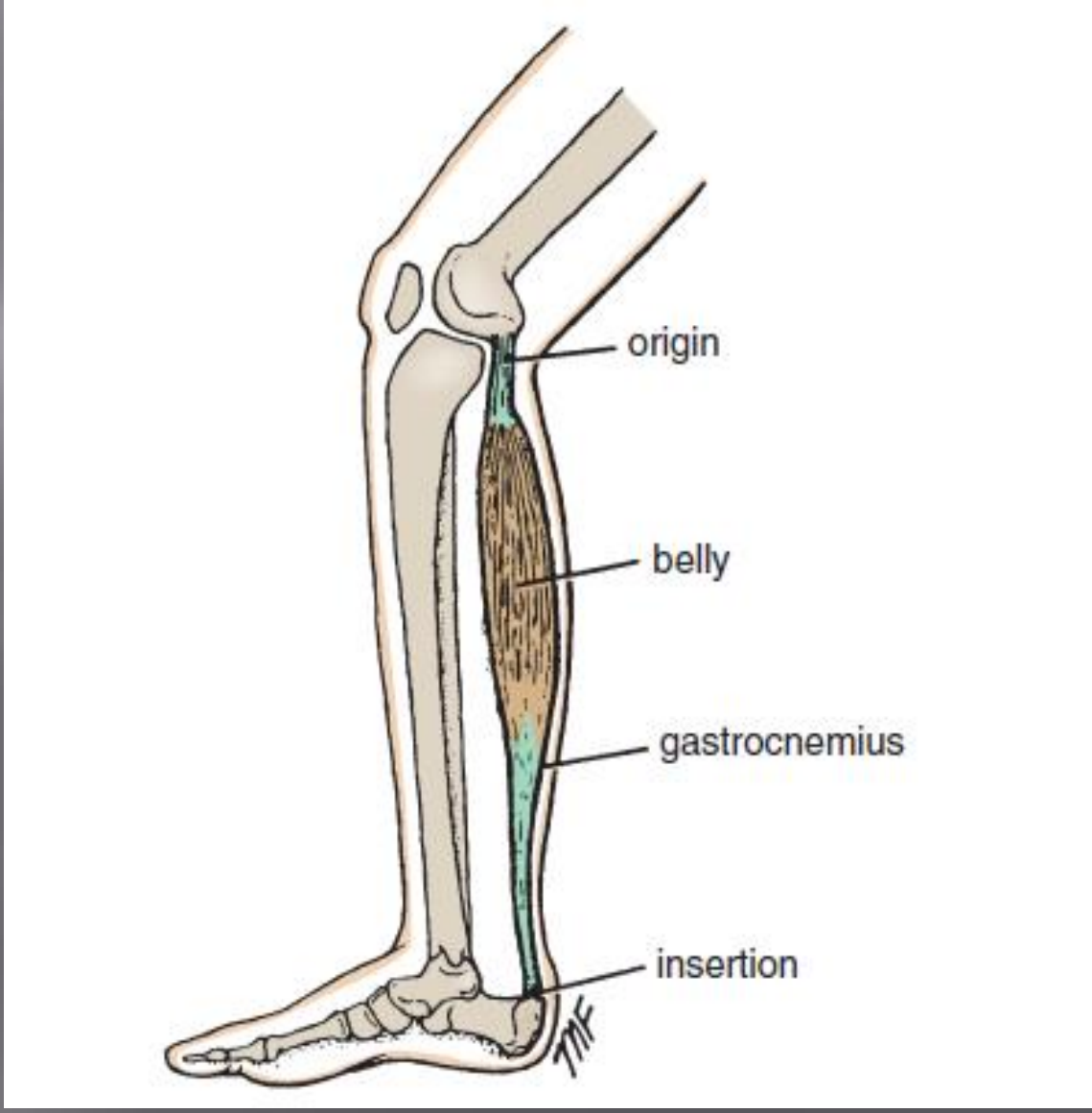
1. Skeletal
2. Smooth
3. cardiac

1. **Skeletal**

- Produce movements of the skeleton
- called **voluntary muscles**
- made up of striped muscle fibers

Skeletal muscles

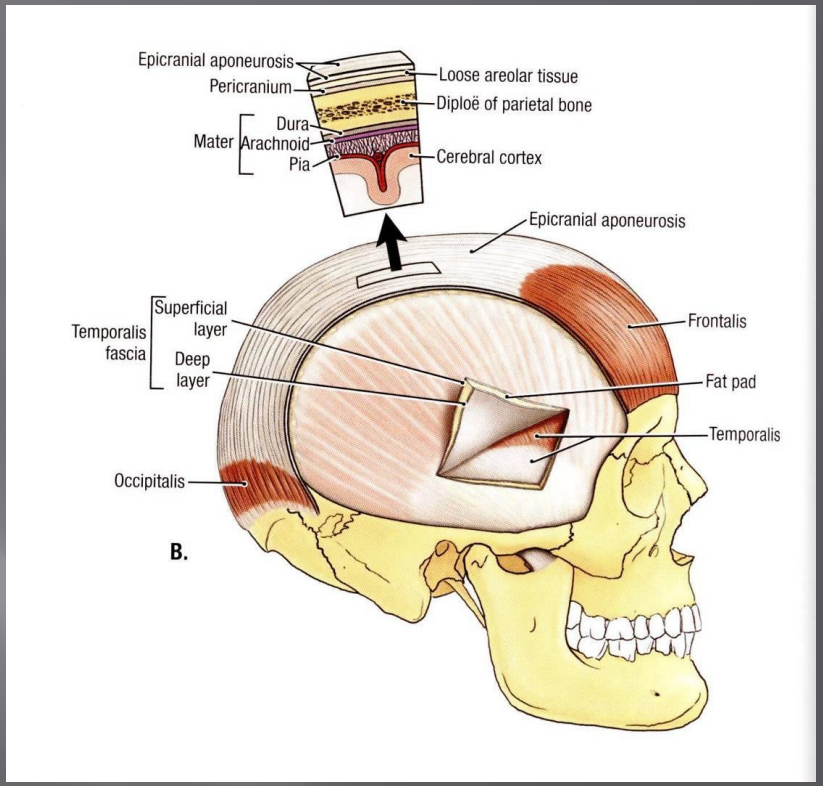
- has two or more attachments. The one moves the least is the **origin,** the one that moves the most, the **insertion**
- fleshy part of the muscle (**belly)**
- The ends are attached to bones, cartilage, or ligaments by cords of fibrous tissue called **tendons**

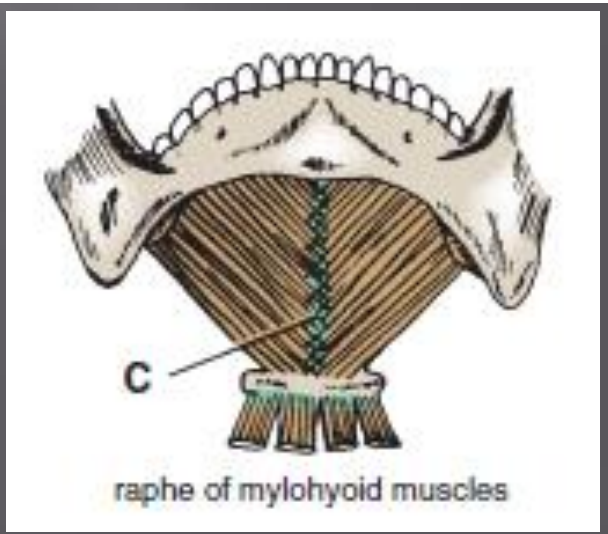


Aponeurosis

- Occasionally, flattened muscles are attached by a thin but strong sheet of fibrous tissue called an **aponeurosis**

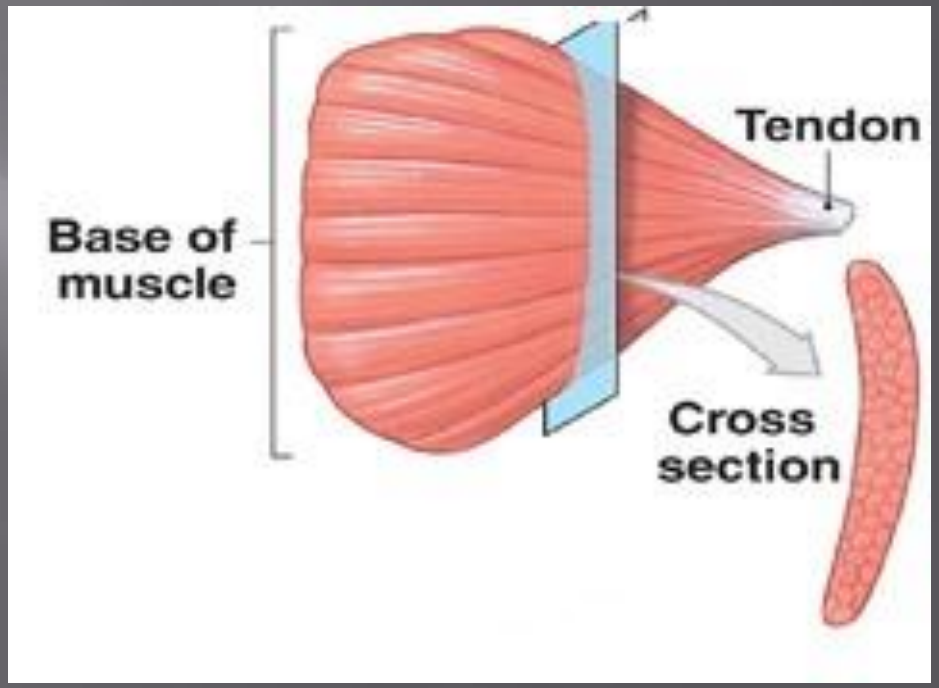
- A **raphe** is an interdigitation of the tendinous ends of fibers of flat muscles





Internal Structure of Skeletal Muscle

- The muscle fibers are bound together with delicate areolar tissue
- fibers of a muscle are arranged either parallel or oblique to the long axis of the muscle
- muscles whose fibers run parallel to the line of pull will bring about a greater degree of movement compared with fibers run obliquely

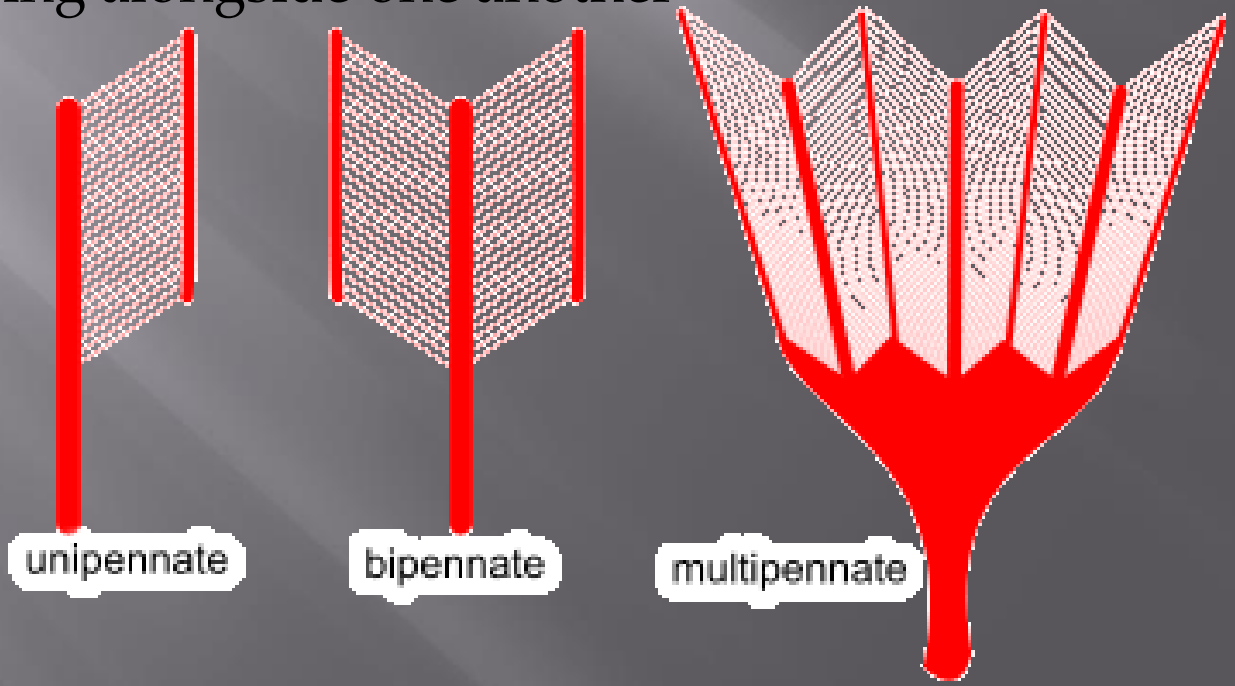


Muscles with oblique fibers are referred to as **pennate muscles** (resemble a feather)

A **unipennate muscle** tendon lies along one side of the muscle and the muscle fibers pass obliquely to it

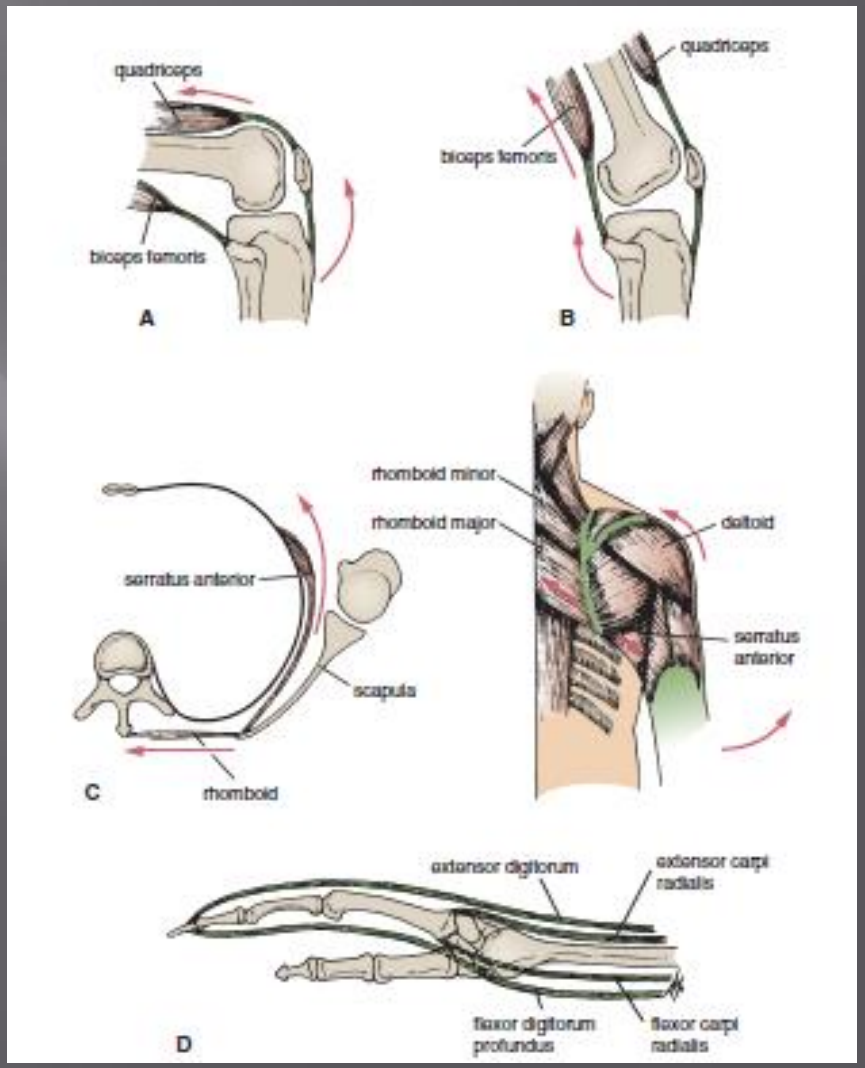
A **bipennate muscle** is one in which the tendon lies in the center of the muscle and the muscle fibers pass to it from two sides

A **multipennate muscle** may be arranged as a series of bipennate muscles lying alongside one another



skeletal muscle action

1. **Prime mover:** responsible for a particular movement
2. Antagonist: opposes the action of the prime mover
3. Fixator: fixator contracts isometrically (i.e., increases the tone but does not produce movement) to stabilize the origin of the prime mover so that it can act efficiently
4. Synergist: in some locations the prime mover crosses several joints before it reaches the joint at which its main action takes place. To prevent unwanted movements in an intermediate joint, groups of muscles called **synergists** contract and stabilize the intermediate joints



Nerve supply:

Motor :60 %
Sensory : 40%

The nerve enters the muscle at about the midpoint on its deep surface, often near the margin; the place of entrance is known as the motor point. This arrangement allows the muscle to move with minimum interference with the nerve trunk

Smooth muscles:
long, spindle-shaped cells closely arranged in bundles or sheets

Digestive system
Urinary tract and uterus
wall of blood vessels

Regulators:
1. Local stretching of the fibers
2. Nerve impulse from autonomic nervous system
3. Hormonal stimulation

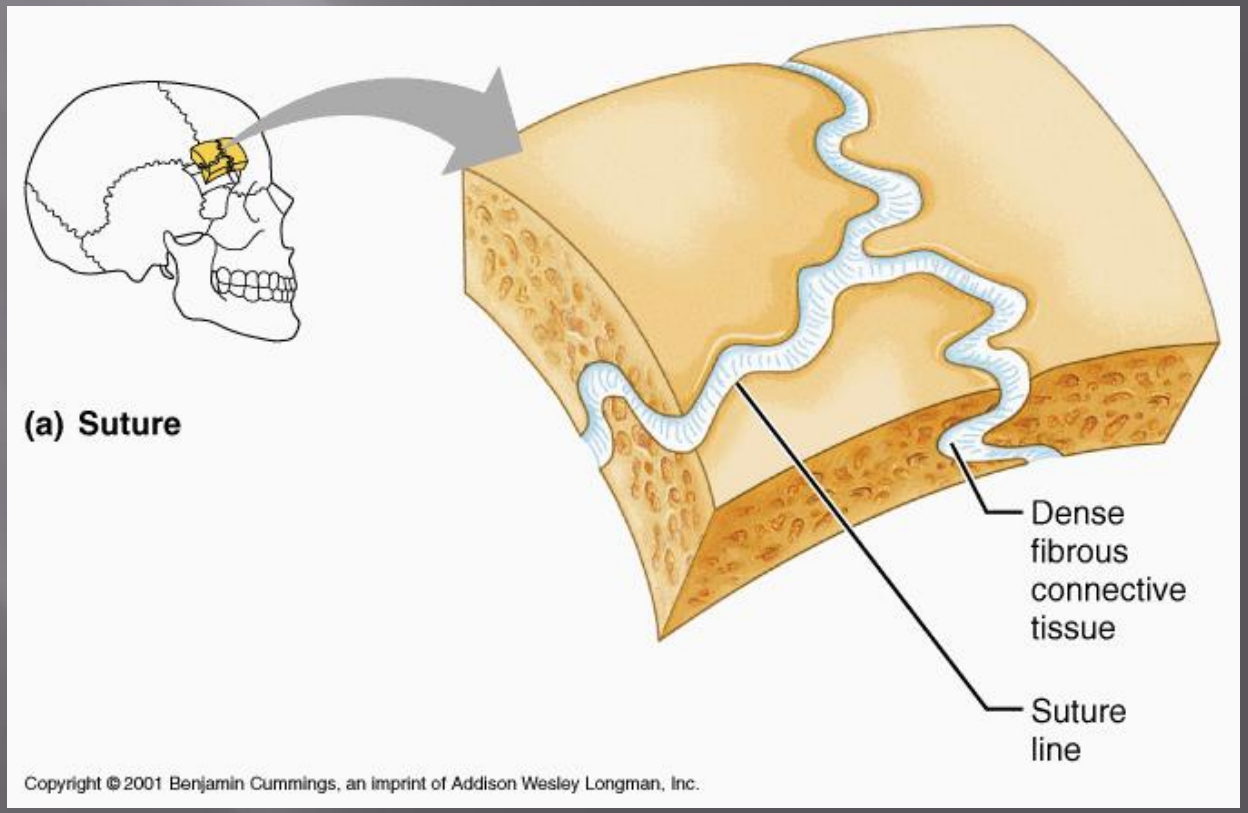
Cardiac Muscle

Cardiac muscle consists of striated muscle fibers that branch and unite with each other. It forms the myocardium of the heart. Its fibers tend to be arranged in whorls and spirals, and they have the property of **spontaneous and rhythmic contraction**. Specialized cardiac muscle fibers form the conducting system of the heart. Cardiac muscle is supplied by autonomic nerve fibers that terminate in the nodes of the conducting system and in the myocardium.

Joints:

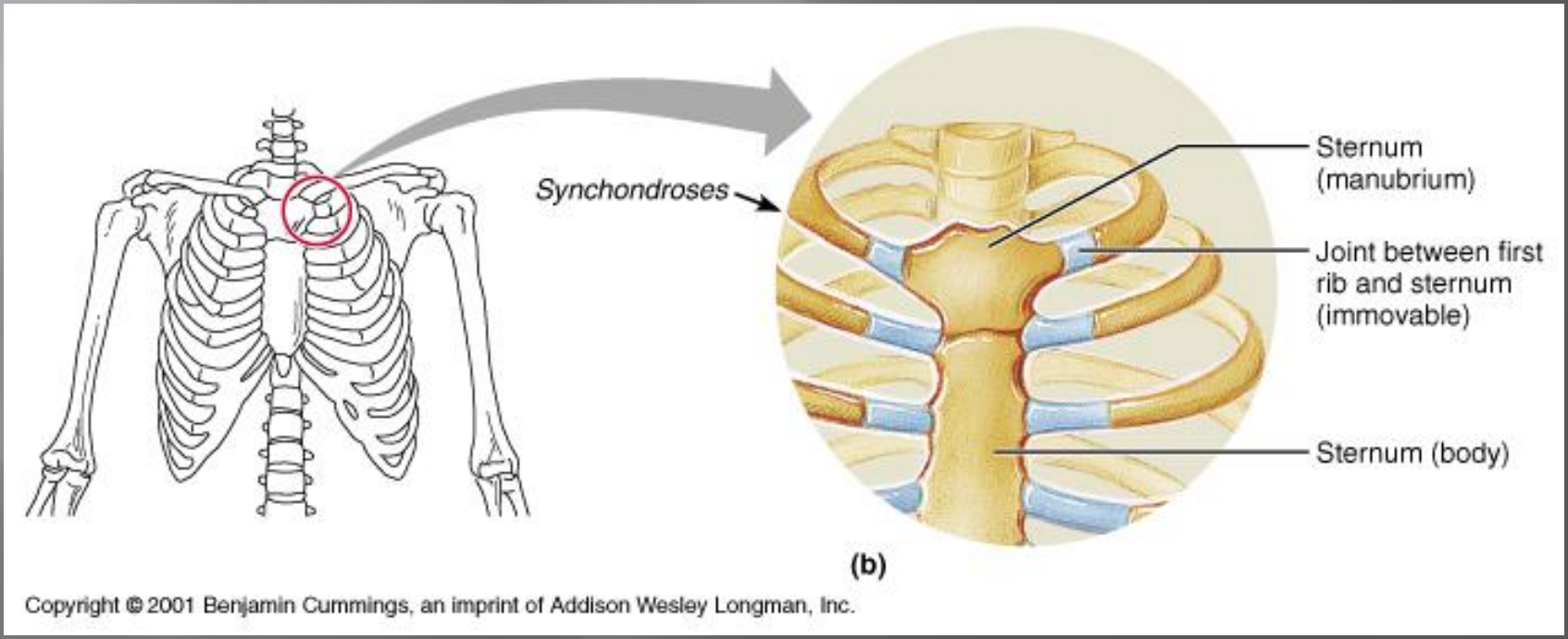
1. Fibrous

- articulating surfaces of the bones are joined by fibrous tissue
- Very little movement is possible



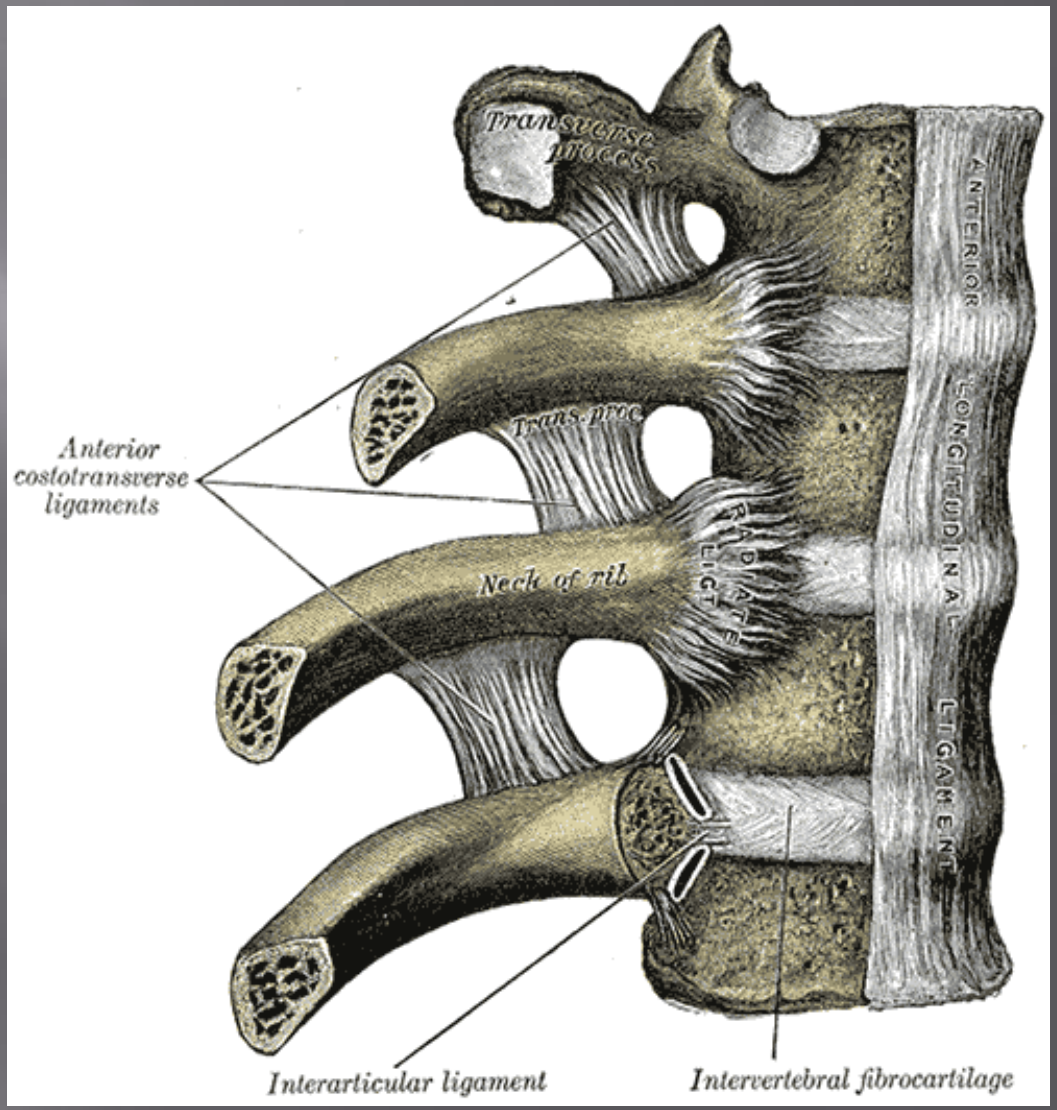
2. Cartilaginous Joints

- Primary: bones are united by a plate or a bar of hyaline cartilage.(immovable)



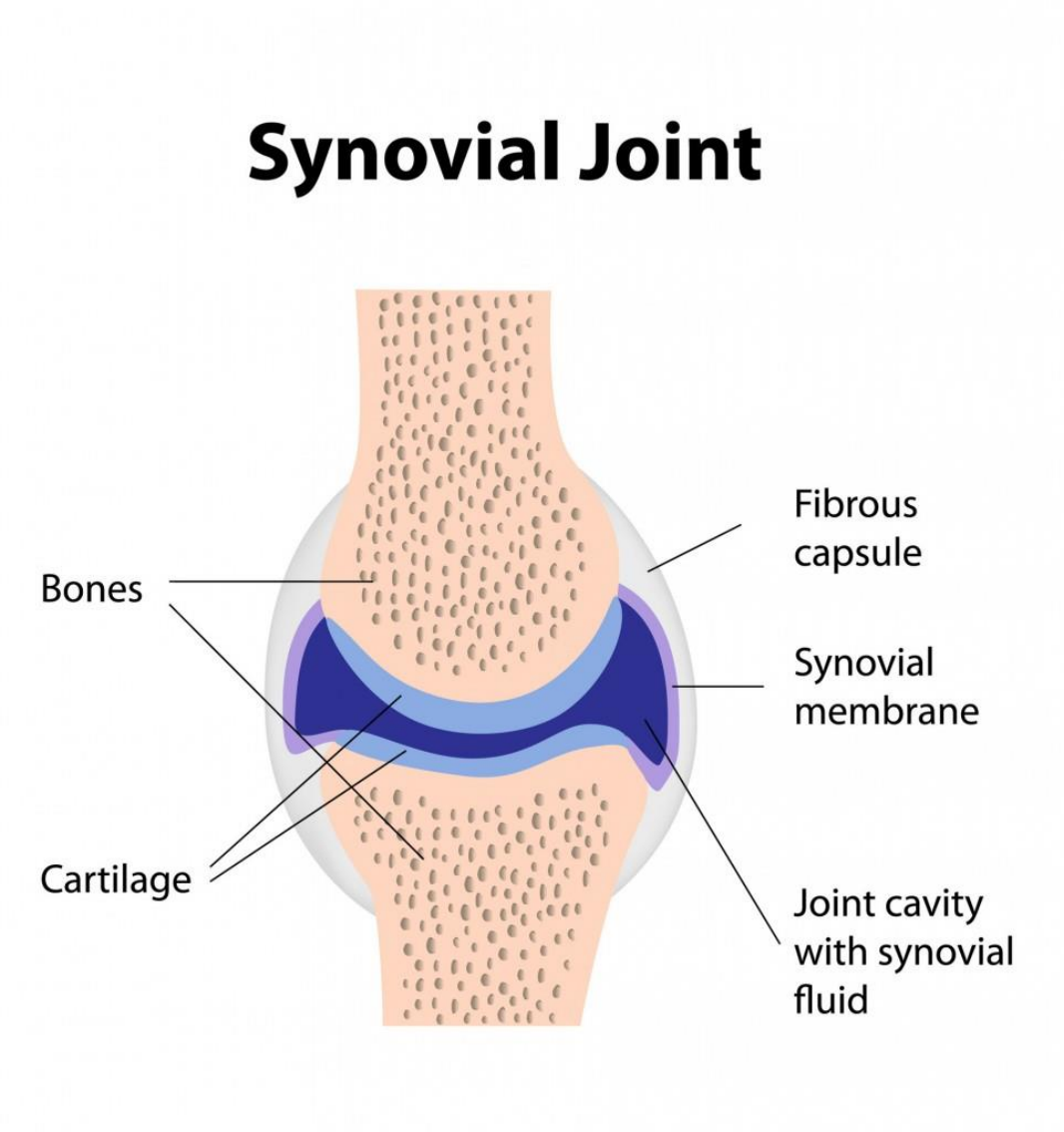
Cartilaginous Joints

Secondary: bones are united by a plate of fibrocartilage and the articular surfaces of the bones are covered by a thin layer of hyaline cartilage.(little movement is possible)



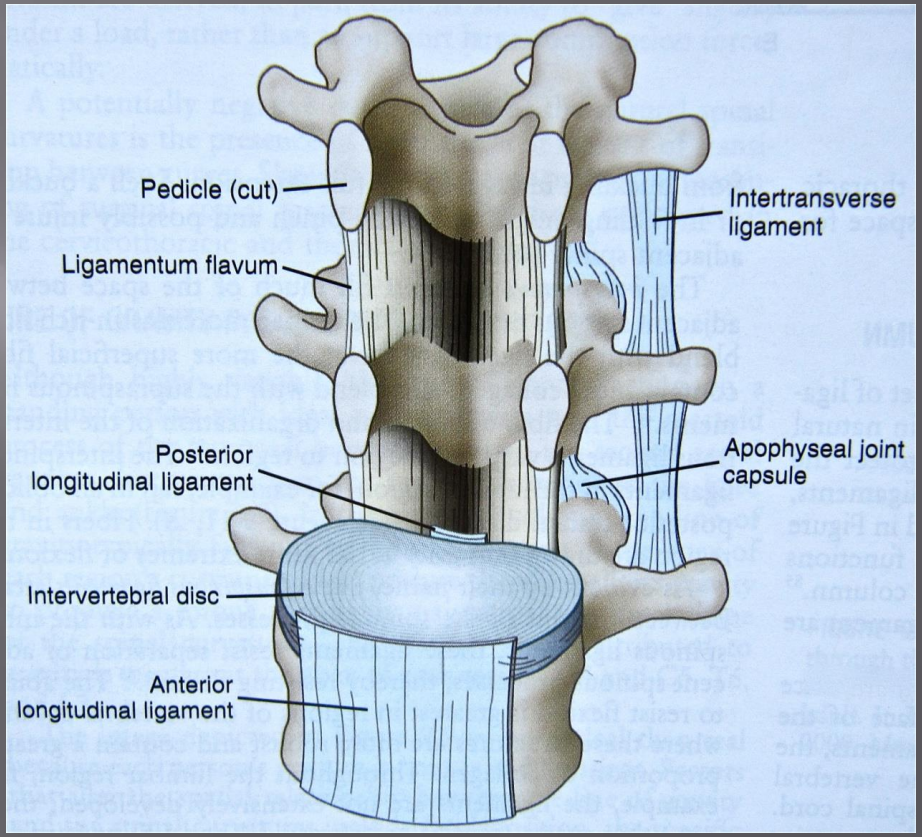
3. Synovial Joints

- articular surfaces of the bones are covered by a thin layer of hyaline cartilage separated by a joint cavity
- Contain synovial fluid
- lined by synovial membrane
- protected on the outside by a tough fibrous membrane (the capsule)
- permits a great degree of movement



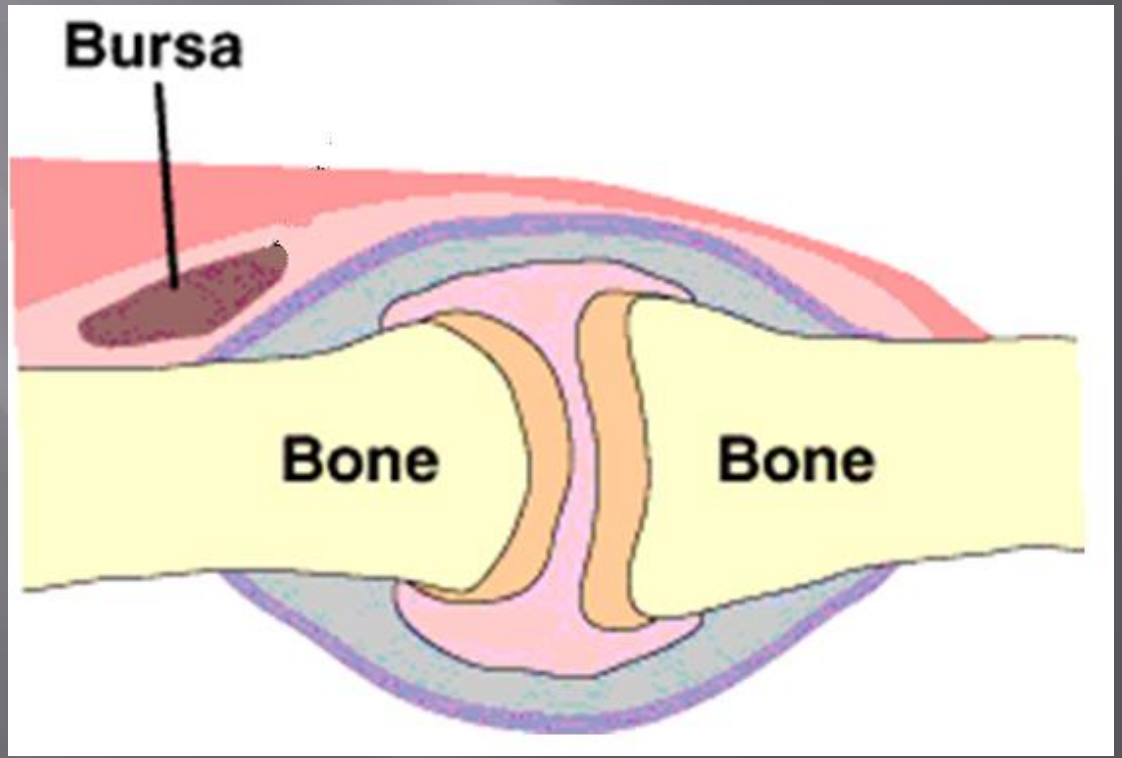
ligament

- ligament is a cord or band of connective tissue uniting two structures.
- Commonly found in association with joints, ligaments



Bursa:

- a lubricating device consisting of a closed fibrous sac lined with a delicate smooth membrane.
- Its walls are separated by a film of viscous fluid.
- Bursae are found wherever tendons rub against bones, ligaments, or other tendons.

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