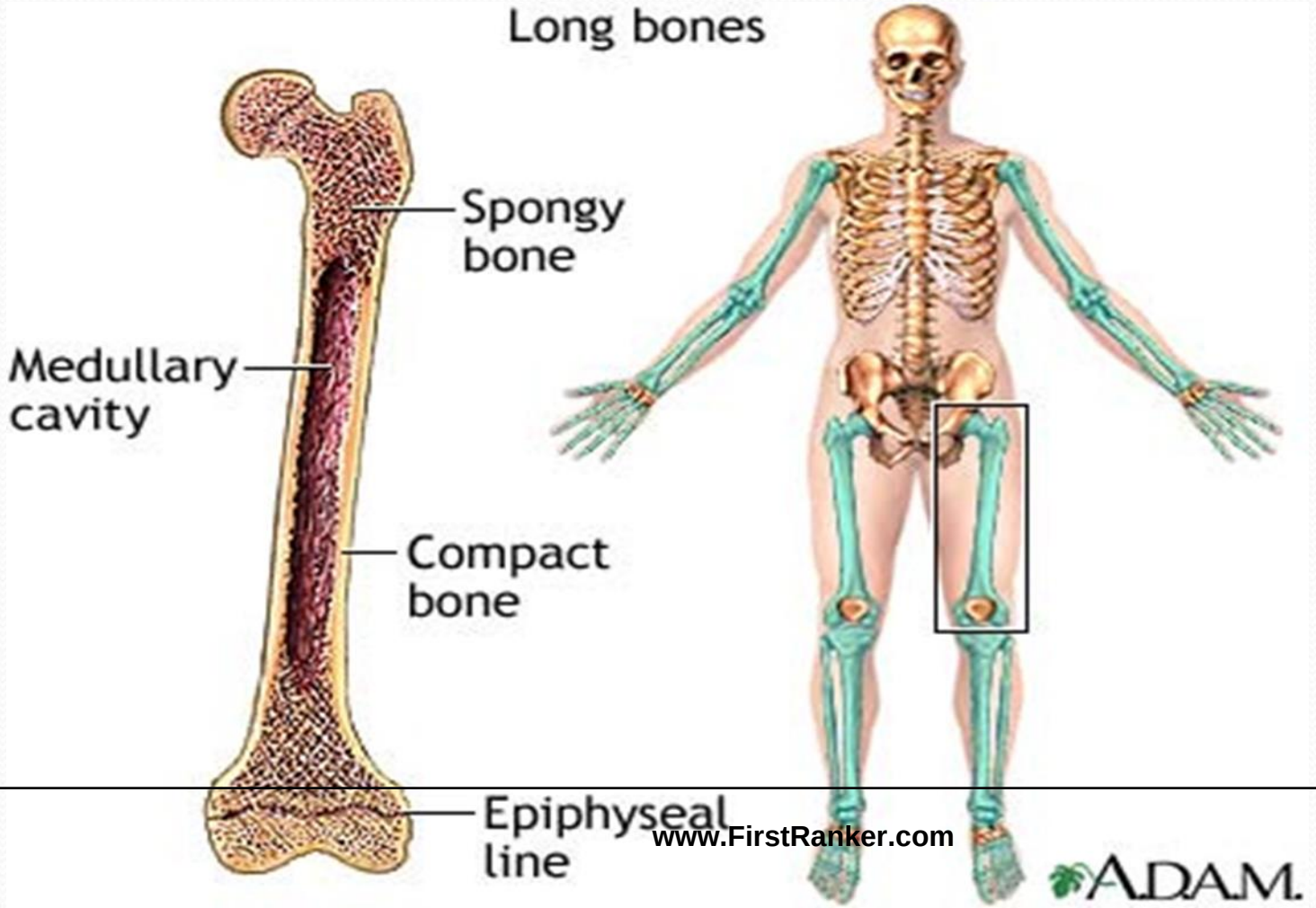
BONE

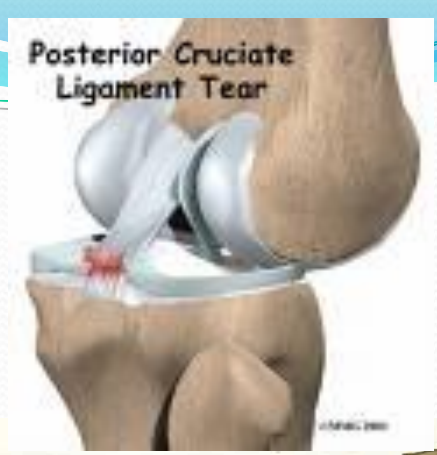


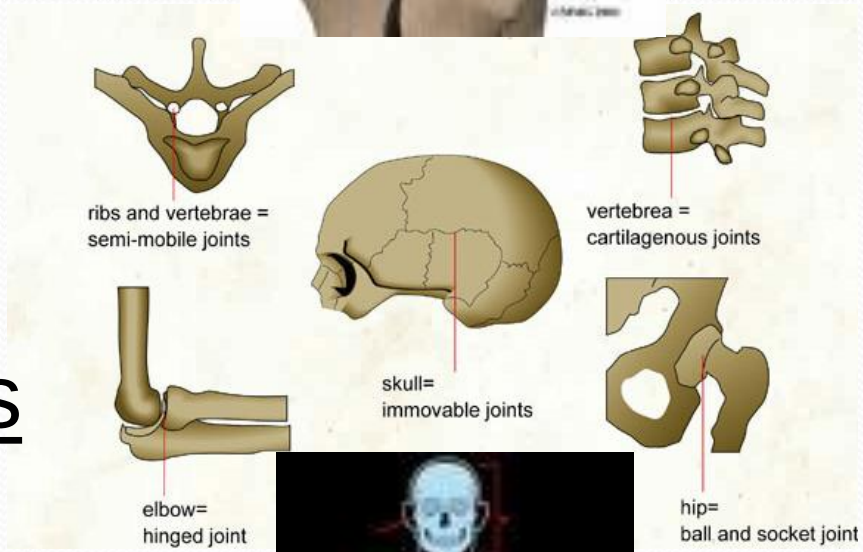
Parts of the skeletal system

- Bones (skeleton)
- Joints
- Cartilages
- Ligaments

Divided into 2 divisions

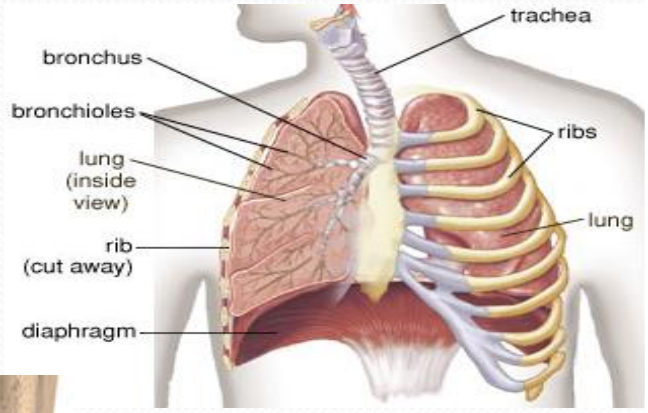
- Axial skeleton
- Appendicular skeleton

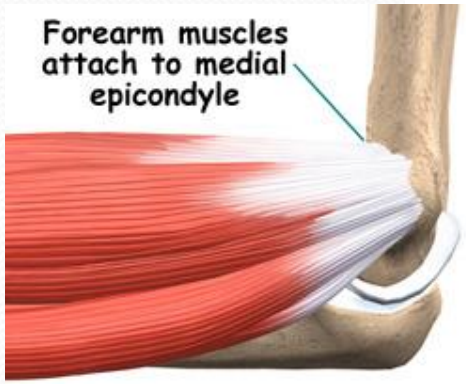


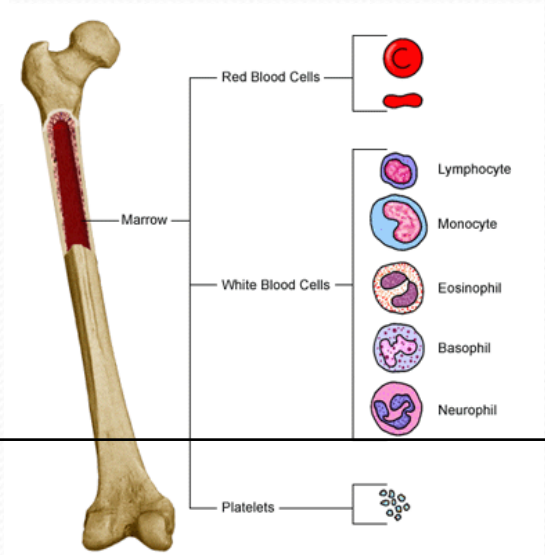


Functions of Bones

- Support body
- Protect soft organs
- Movement due to attached skeletal muscles
- Storage of minerals and fats
- Blood cell formation







Types of Bone

Two types of bone tissue

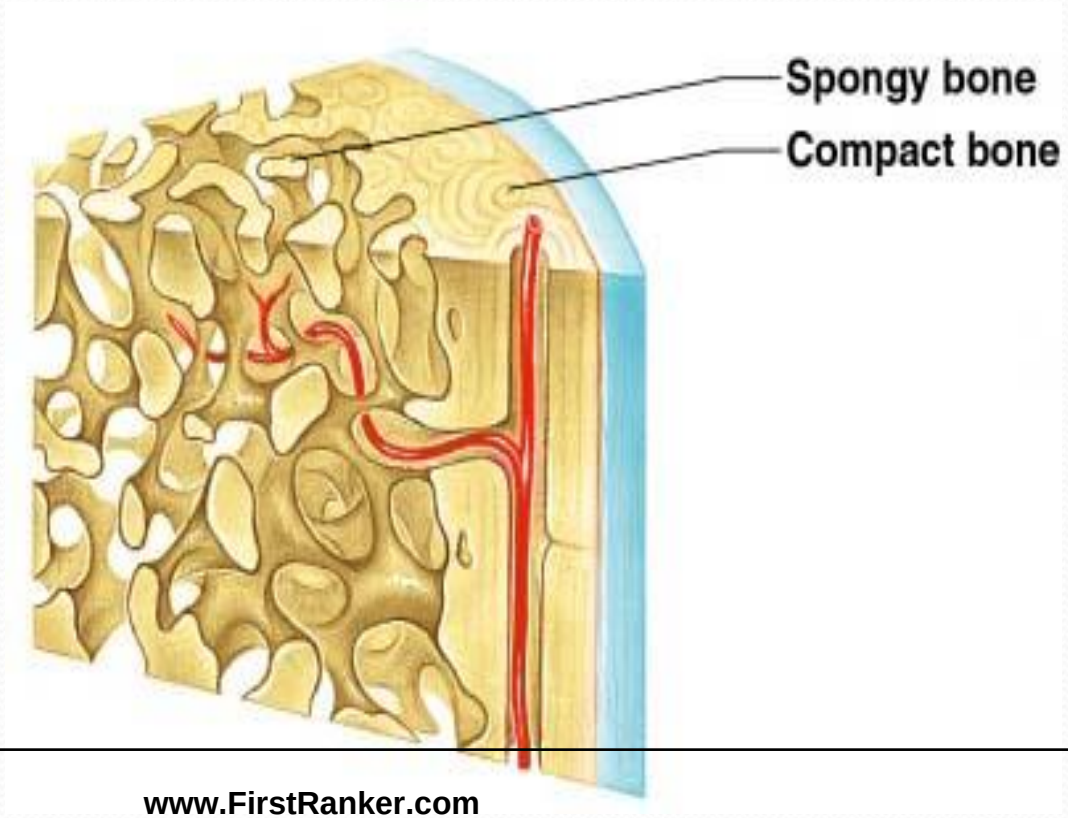
- Compact bone

  - Homogeneous

- Spongy bone

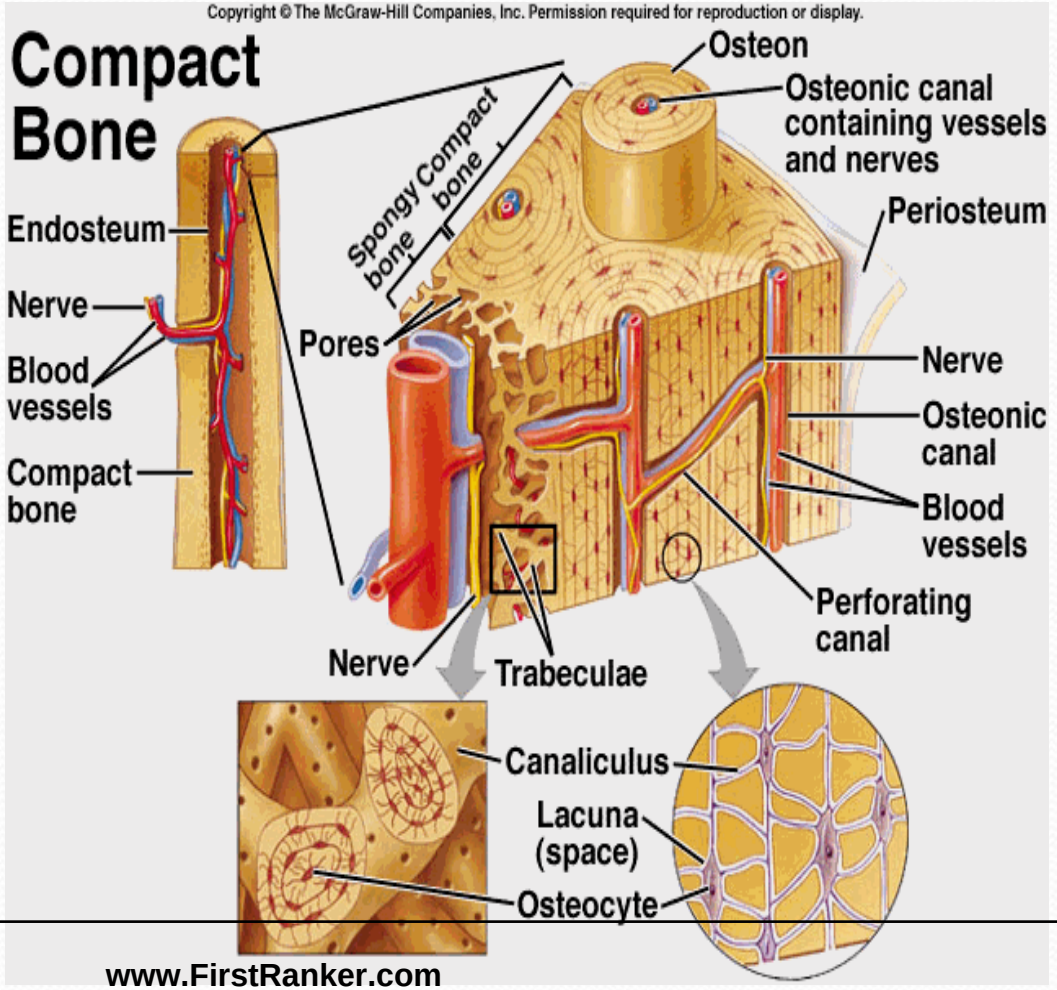
  - Small needle-like pieces of bone

  - Many open spaces



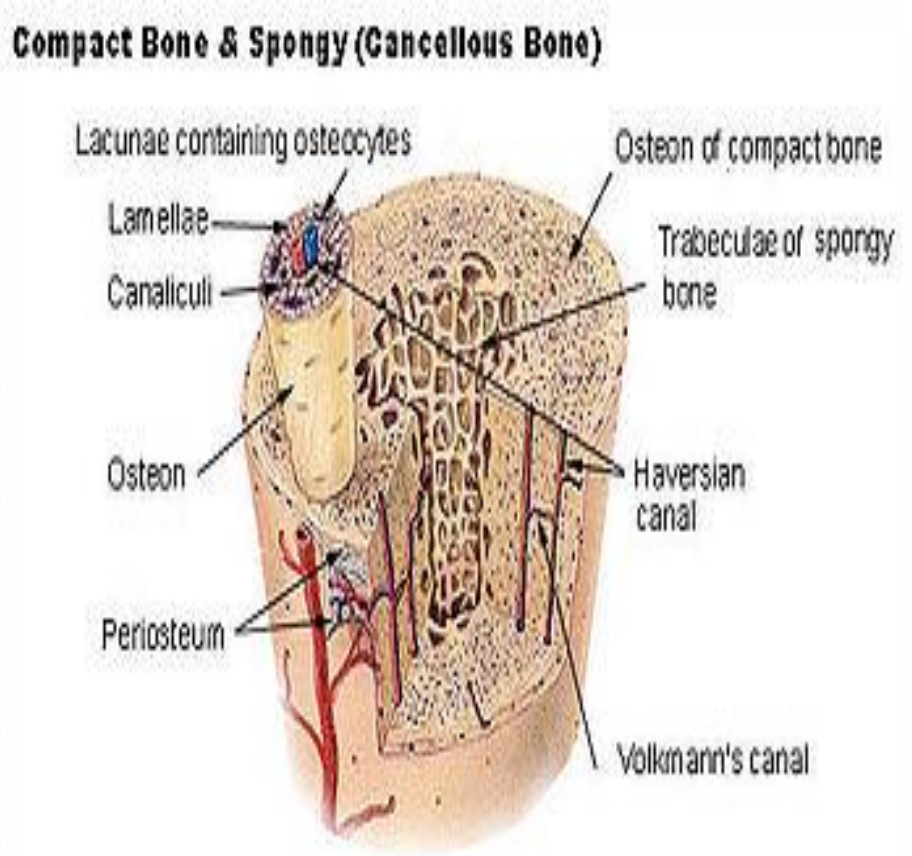
Compact Bone

- the hard outer layer of bone
- causing the white appearance of bone.



Trabecular Bone

- this is the inner aspect of the bone
- is open and has a network like appearance



Parts of Bone

- **Epiphysis**

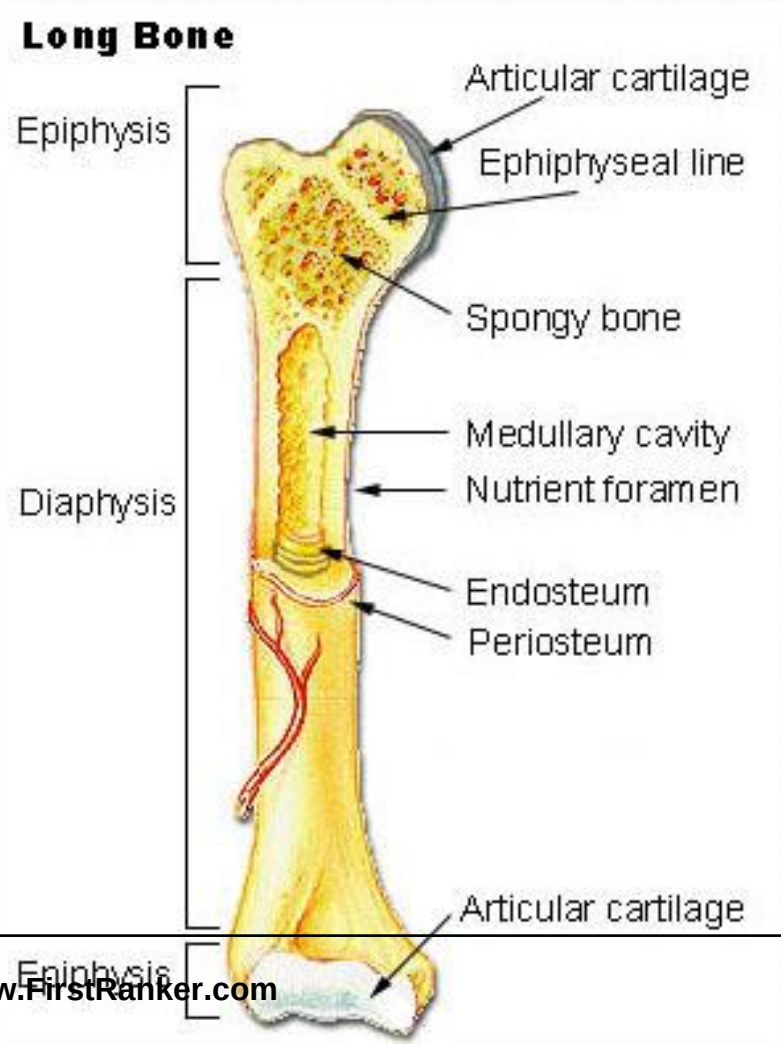
The ends of long bones

- **Metaphysis**

The area of bone between the epiphysis and diaphysis

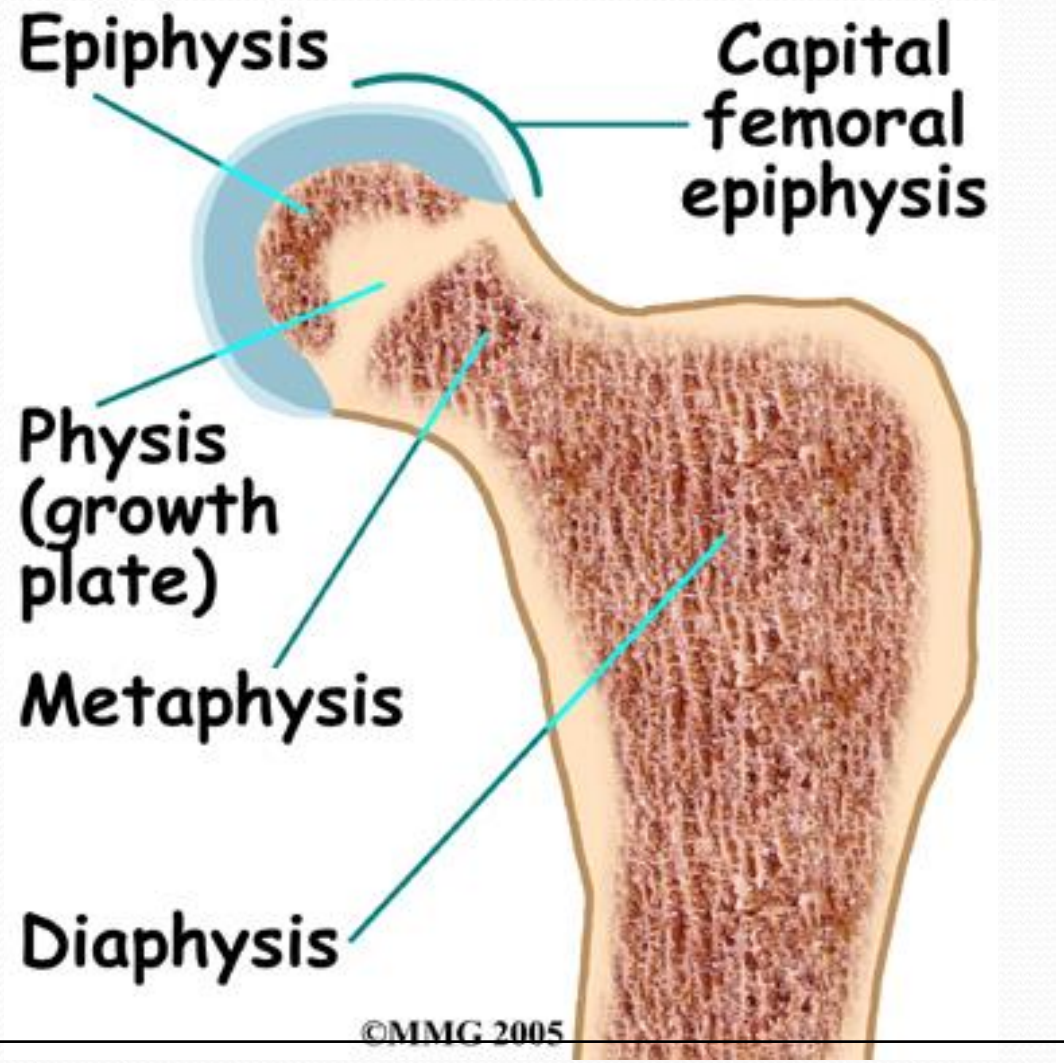
- **Diaphysis**

This is the main body of the bone – long region



Epiphyseal Plate -

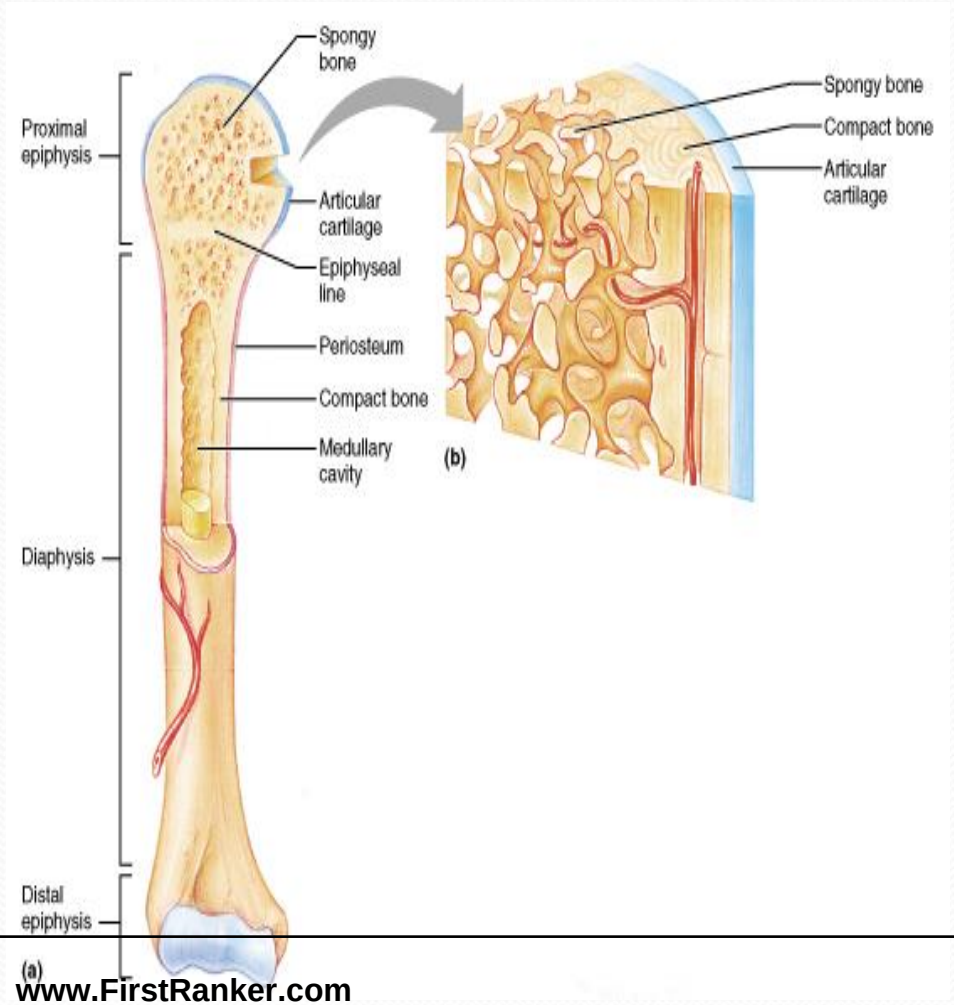
Growth plate – in between epiphysis and metaphysis



Periosteum

First covering .

Covering a long bone in all area, except the articular surfaces, is Periosteum.



Periosteum

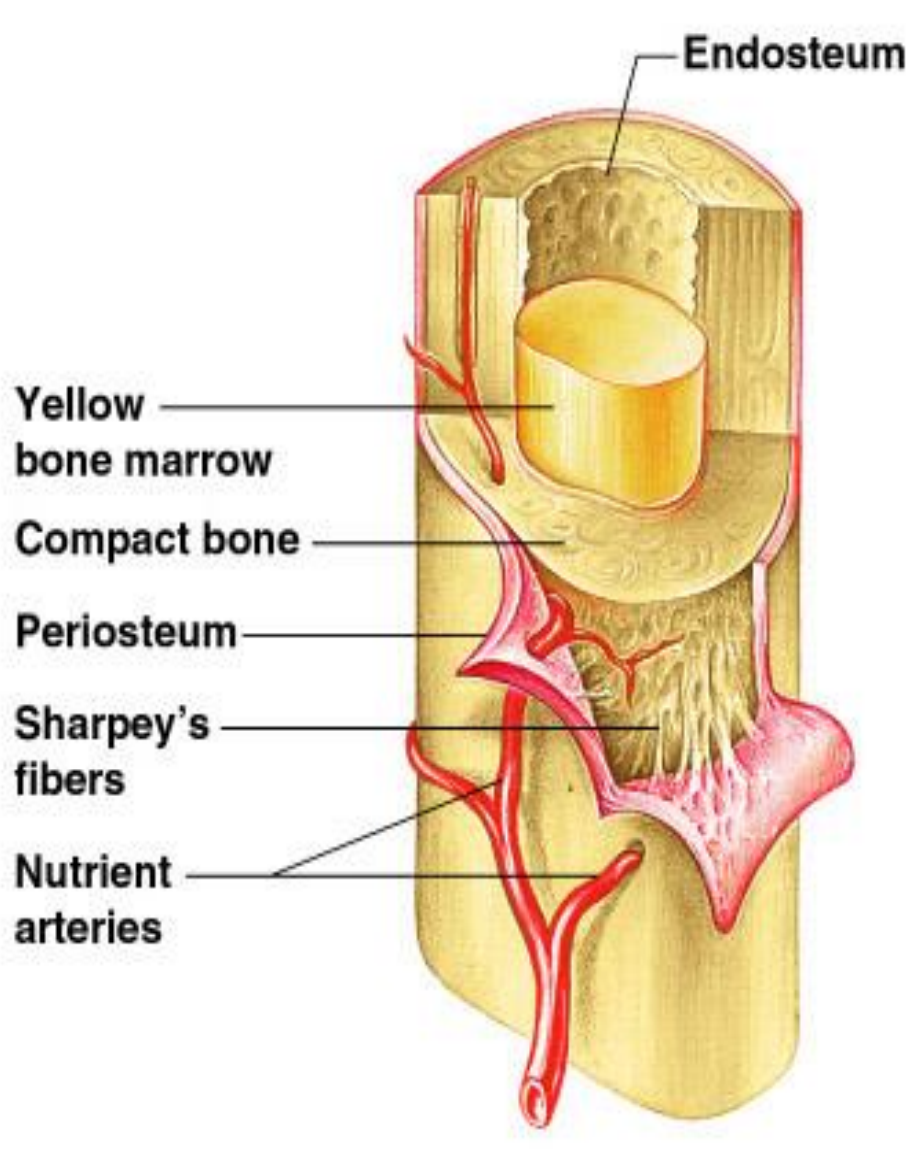
- Outside covering of diaphysis
- Fibrous connective tissue membrane

Sharpey's fibers

- Secure periosteum to bone

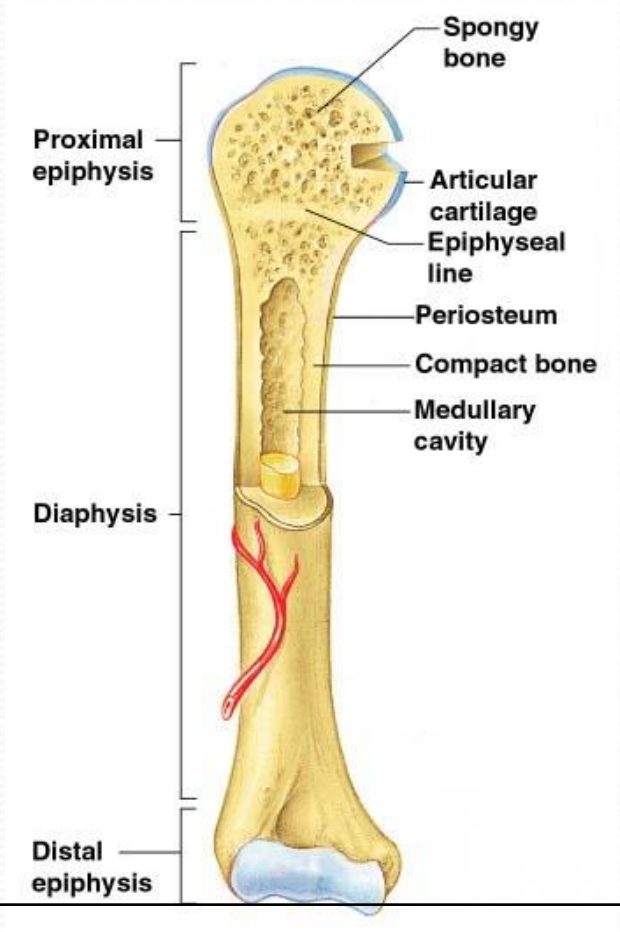
Arteries

- Supply bone cells with nutrients



Medullary Cavity

- In the diaphysis of the long bone deep to the compact bone is the medullary cavity.
in an adult it is full of yellow bone marrow.
- The medullary cavity is lined with endosteum.



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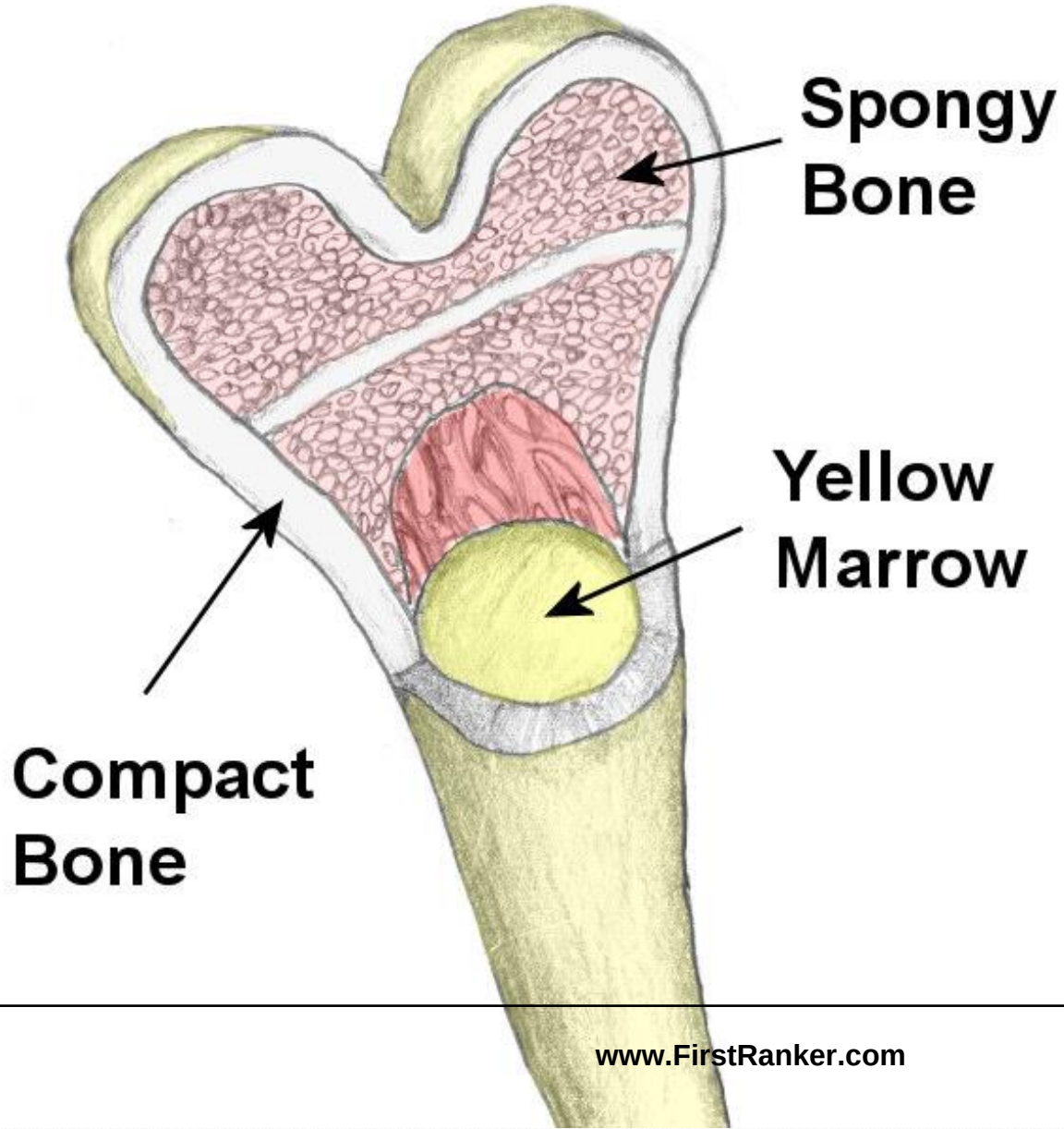

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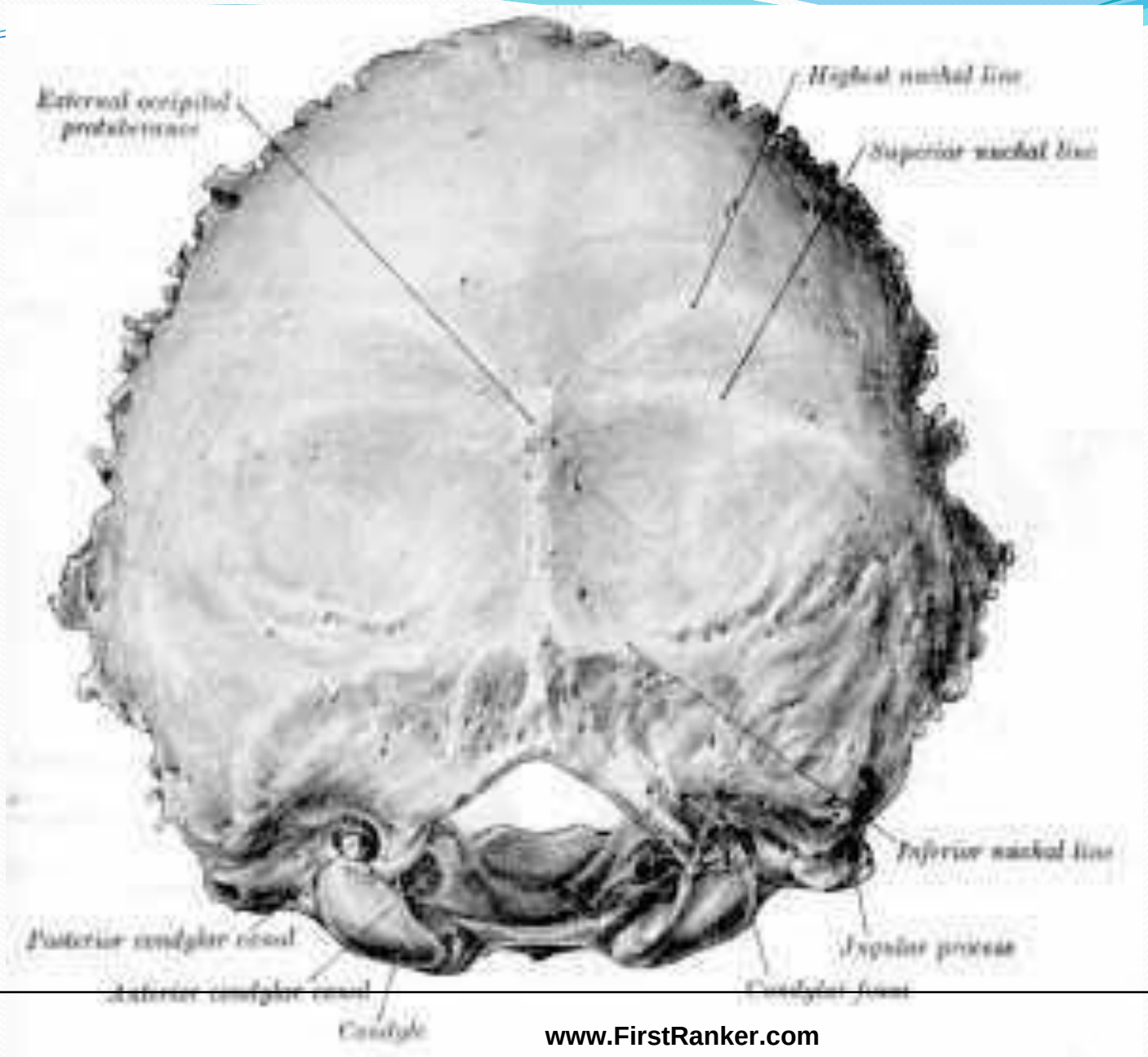
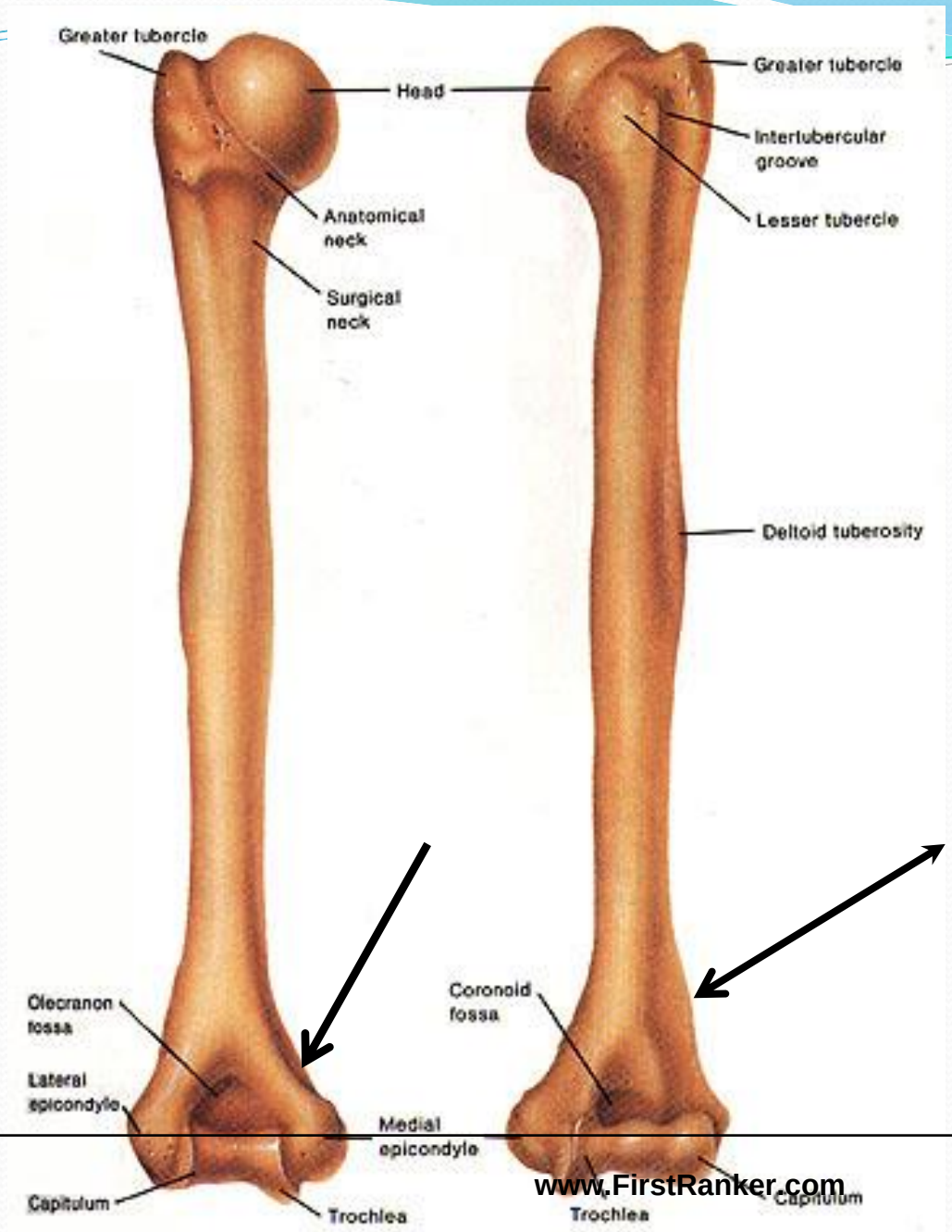
Surface Markings

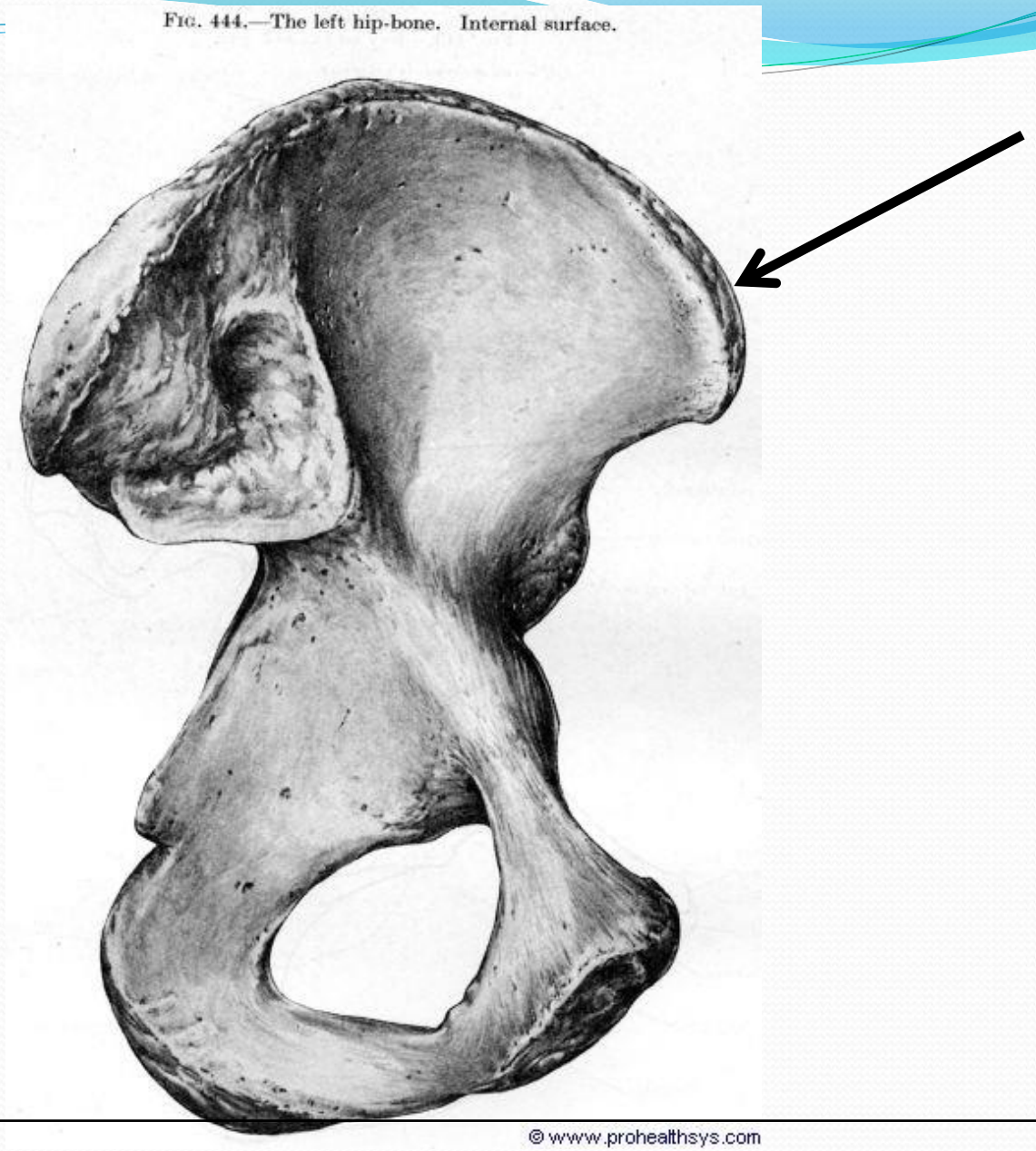
- Linear elevation
- Line
- Ridge
- Crest
- Rounded elevation
- Sharp elevation
- Spine
- Styloid process

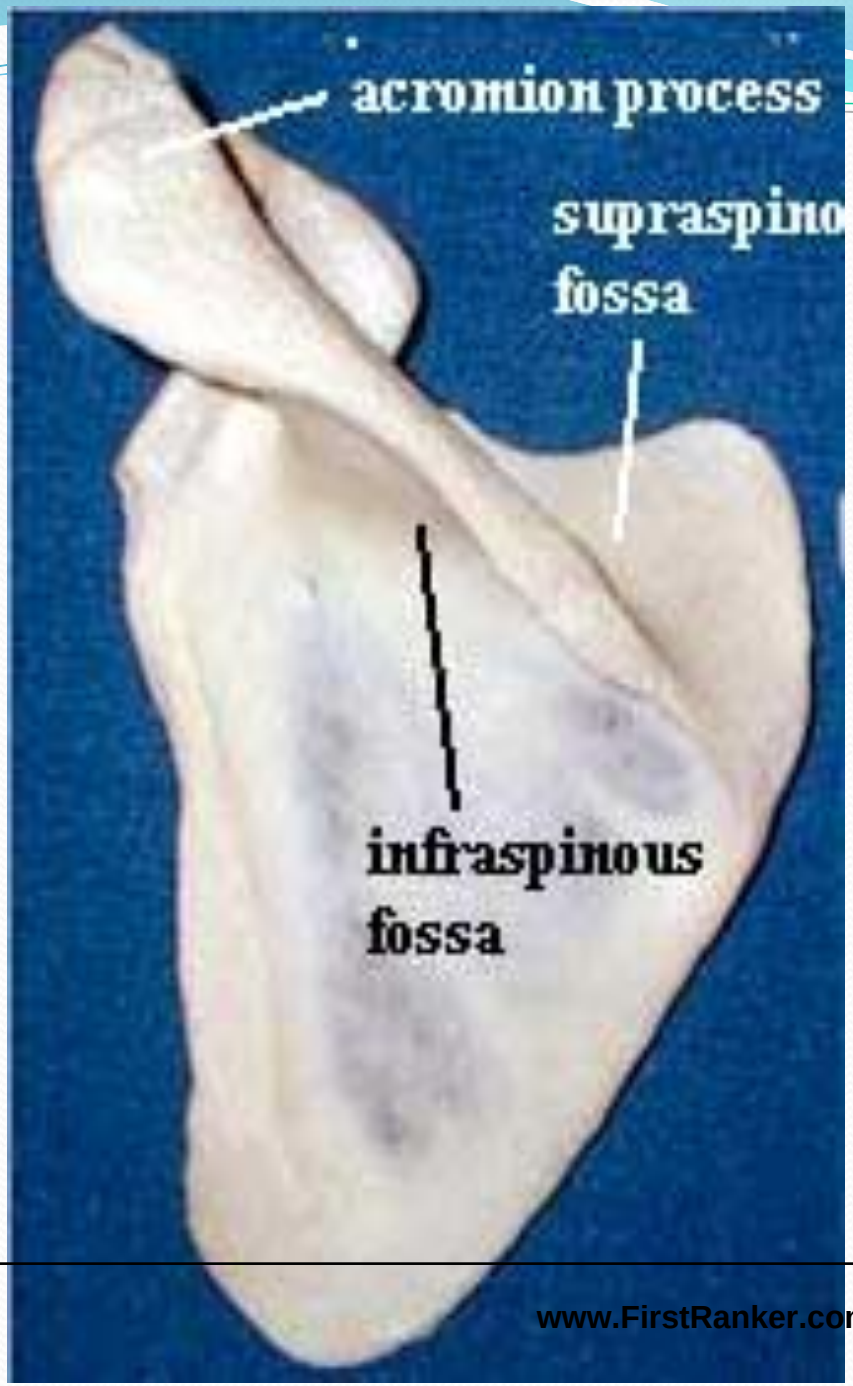




Medial and lateral supra condylar ridges

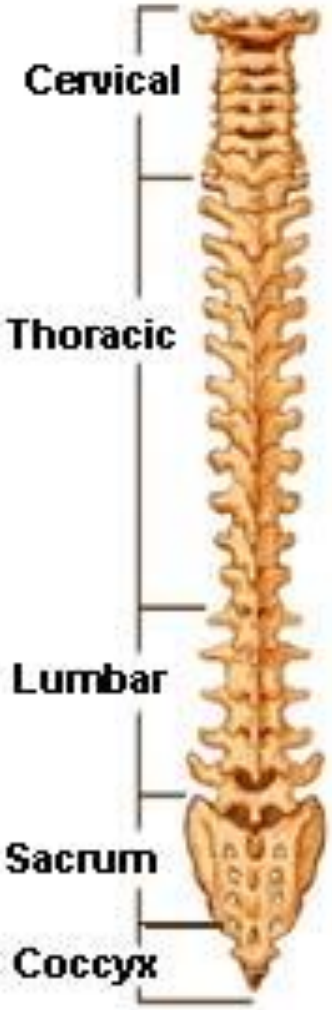
FIG. 444.—The left hip-bone. Internal surface.

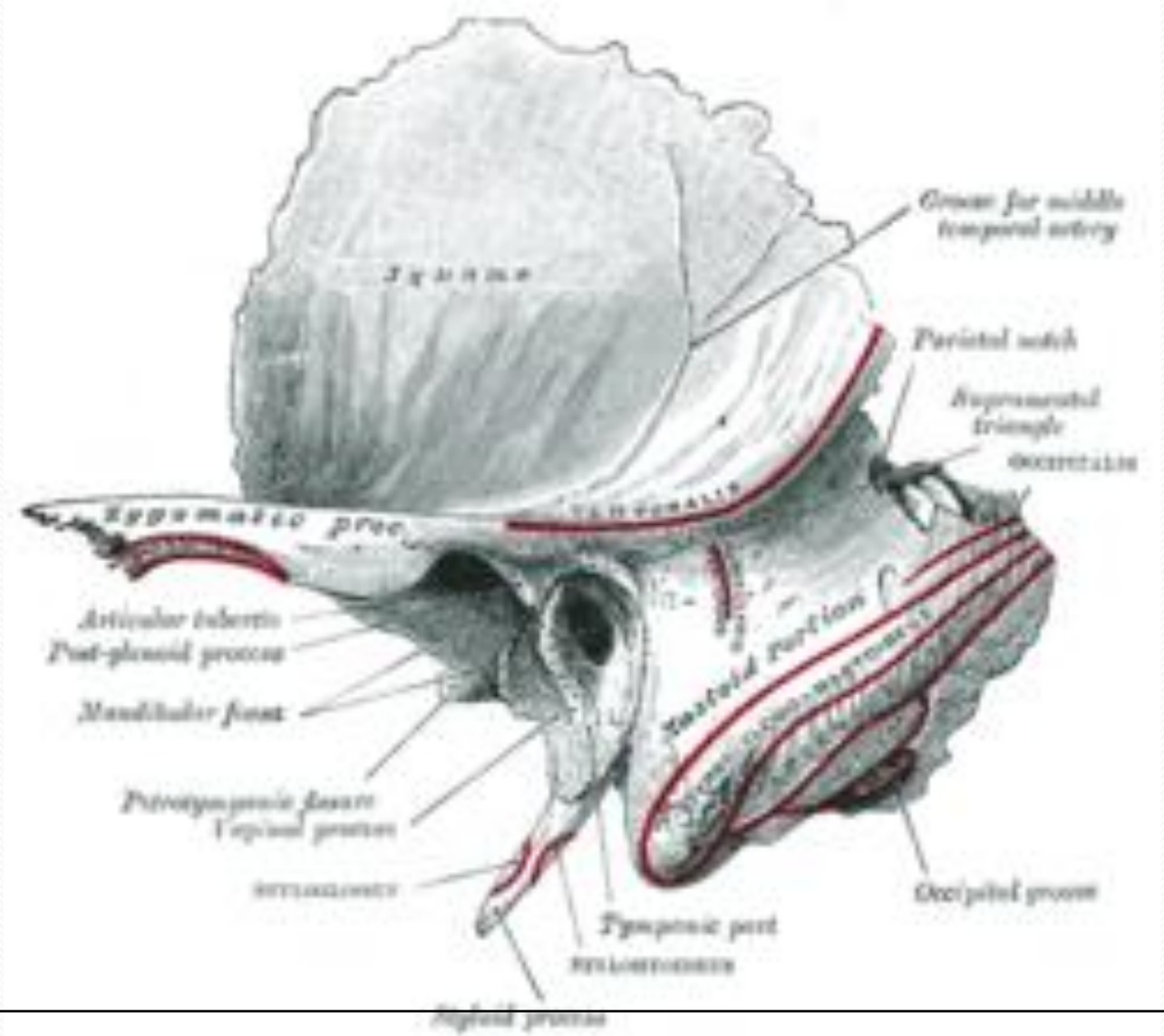




Lateral (Side) Spinal Column

Posterior (Back) Spinal Column

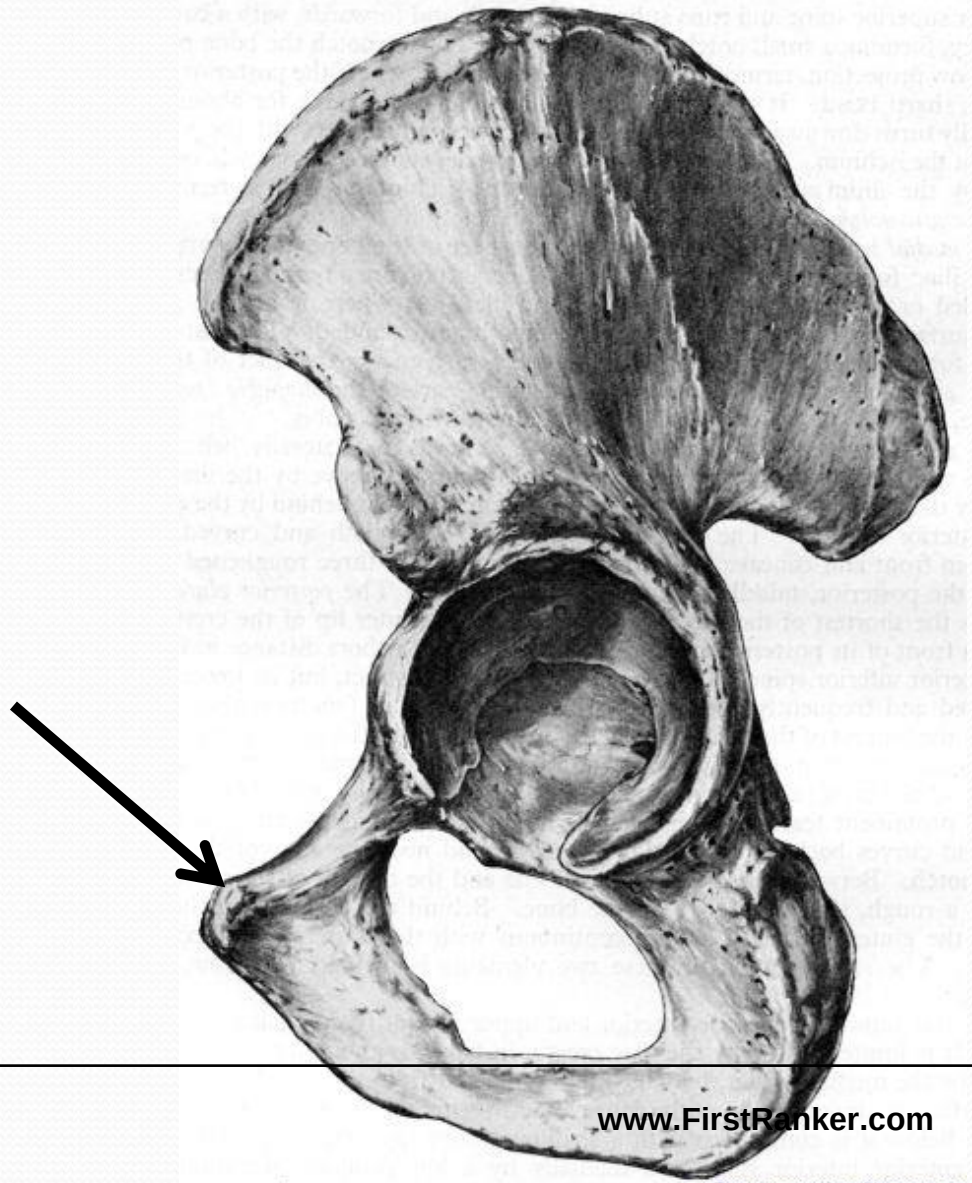


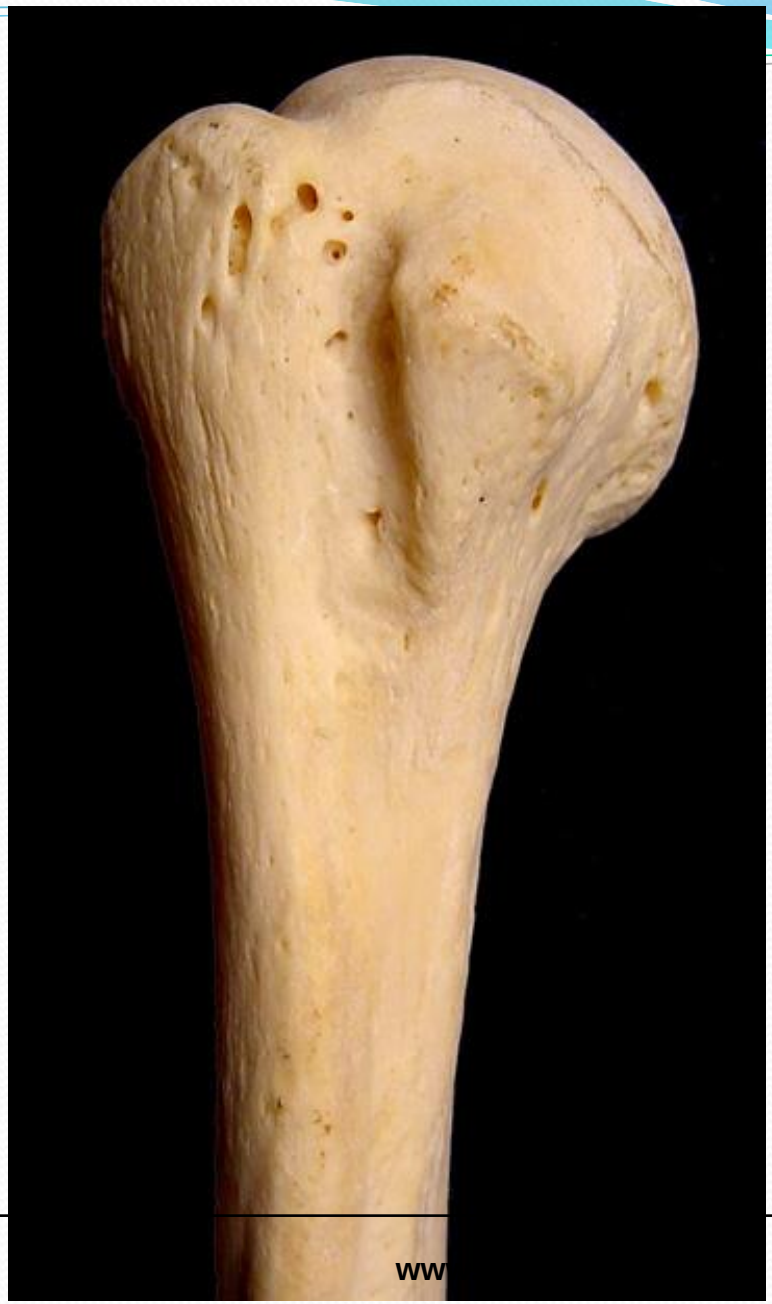


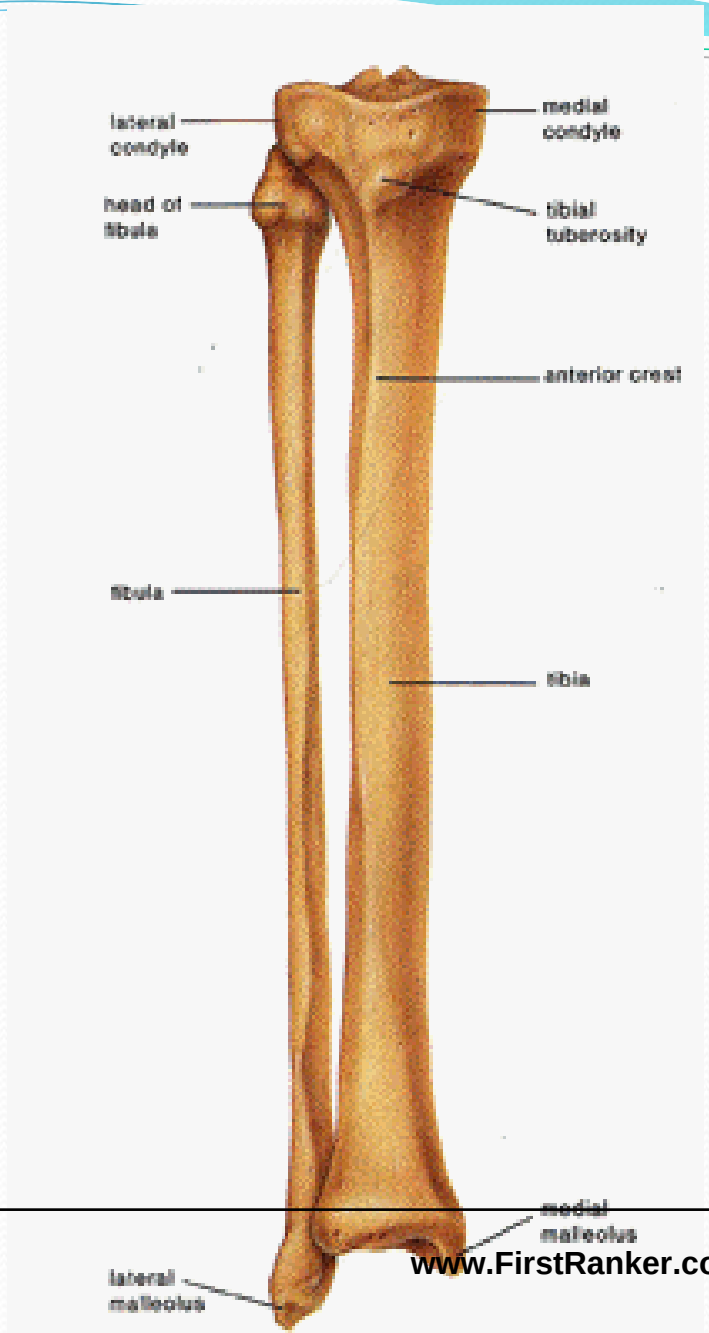
Rounded Elevation

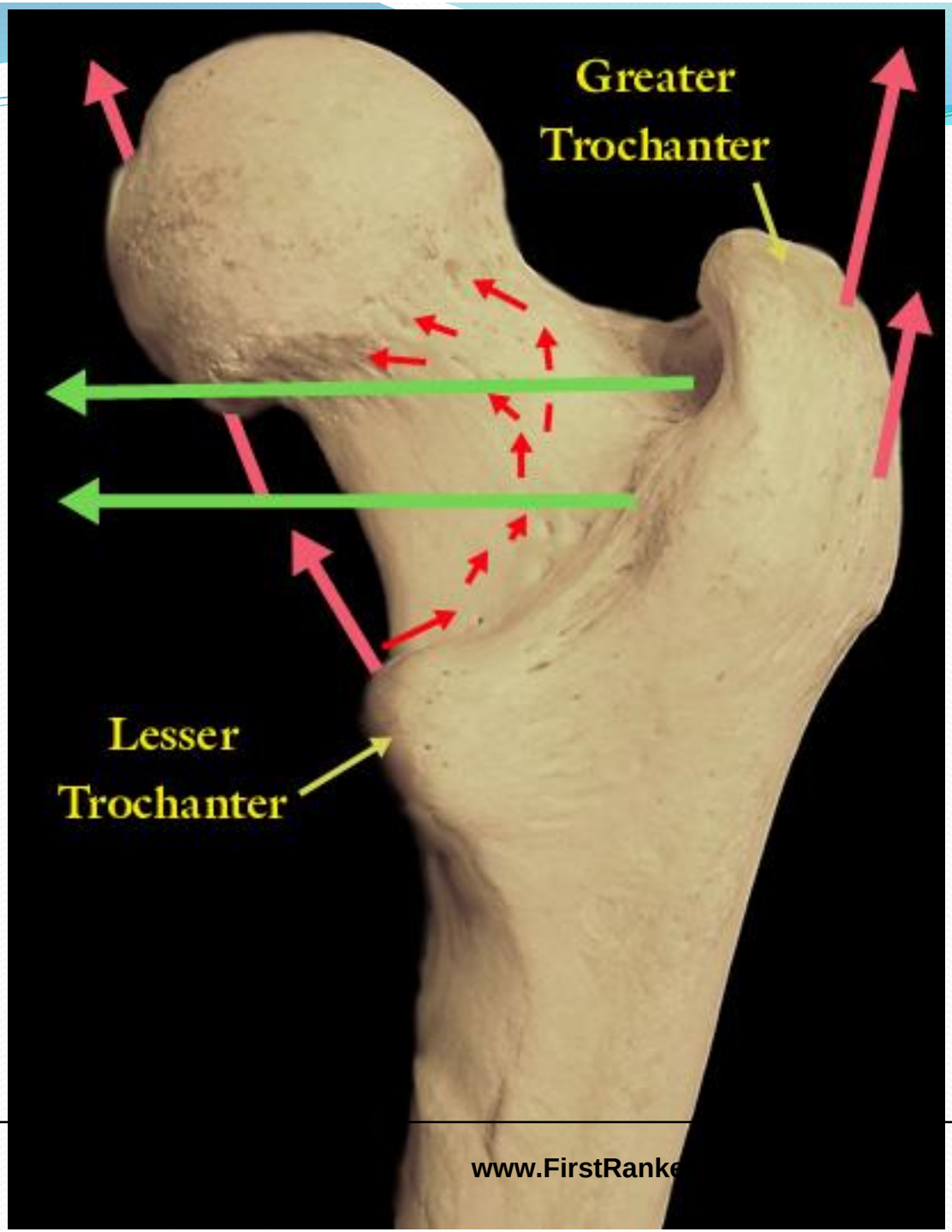
- Tubercle
- Tuberosity
- Malleolus
- Trochanter

FIG. 442.—The left hip-bone. External surface.



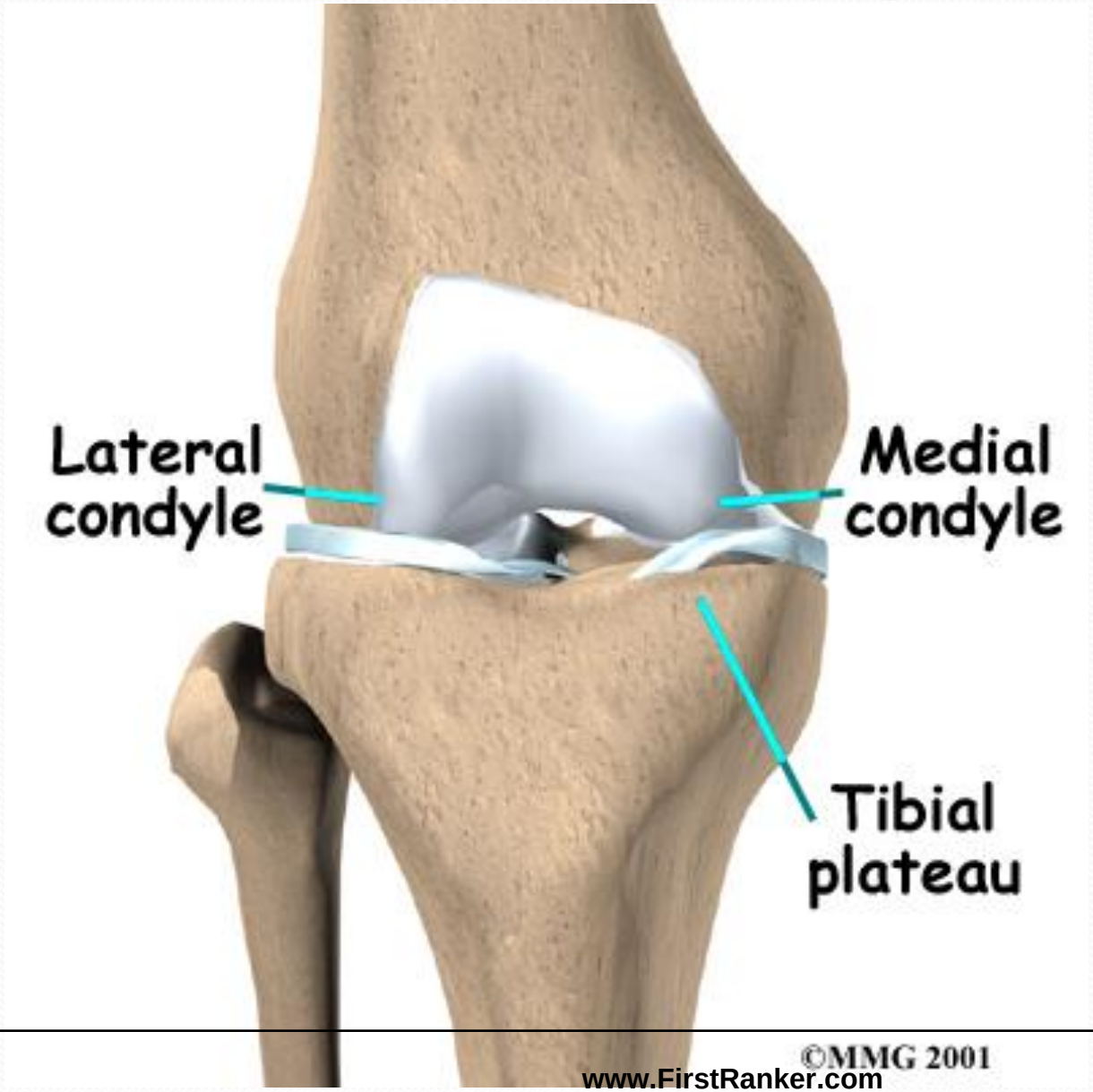


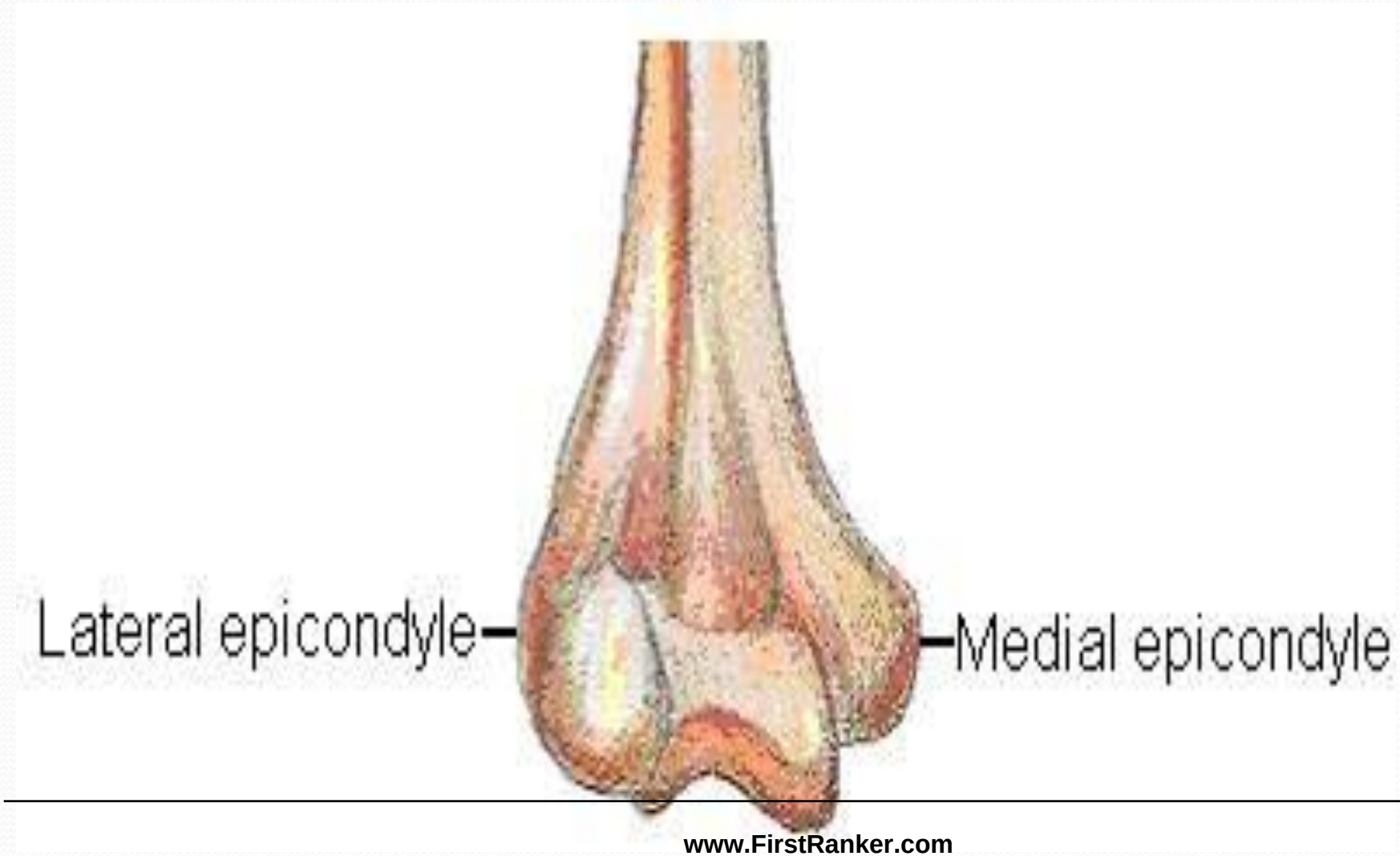




Expanded ends for Articulation

- Head
- Condyle
- Epicondyle



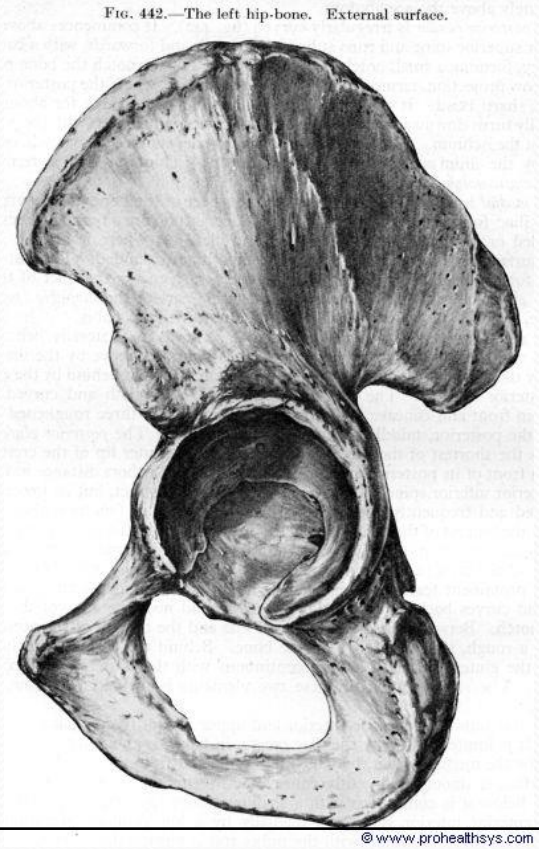


Small Area for Articulation

- Facet

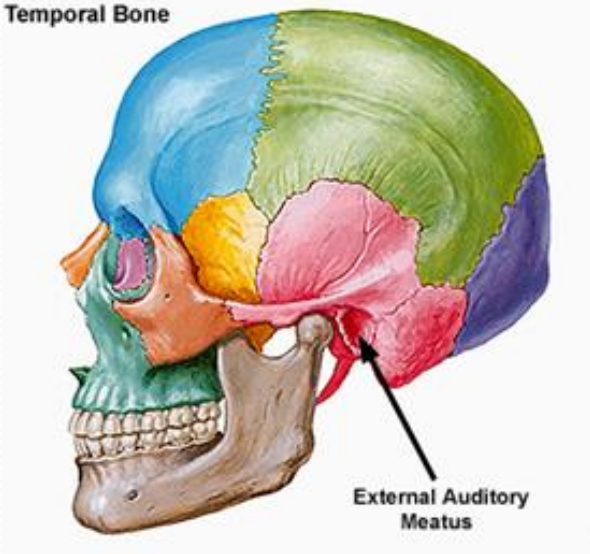
Depressions

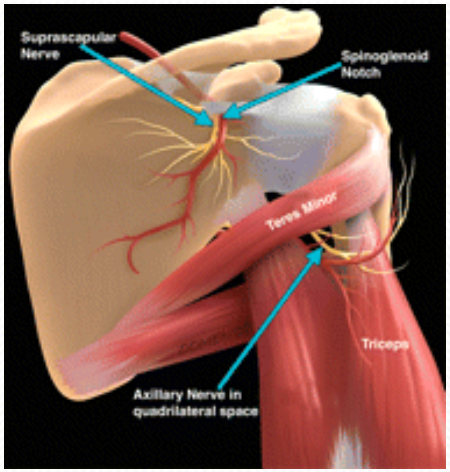
- Notch
- Groove
- Fossa

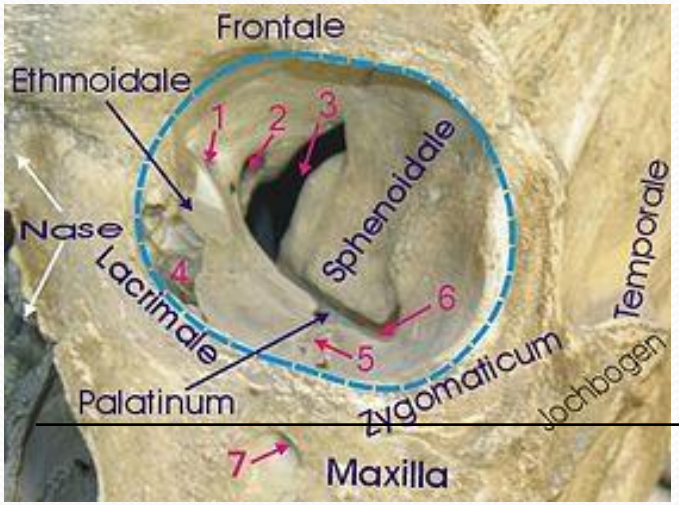


Openings

- Fissure
- Foramen
- Canal
- Meatus







Blood Supply

- Epiphyseal arteries
- Metaphyseal arteries
- Diaphyseal arteries

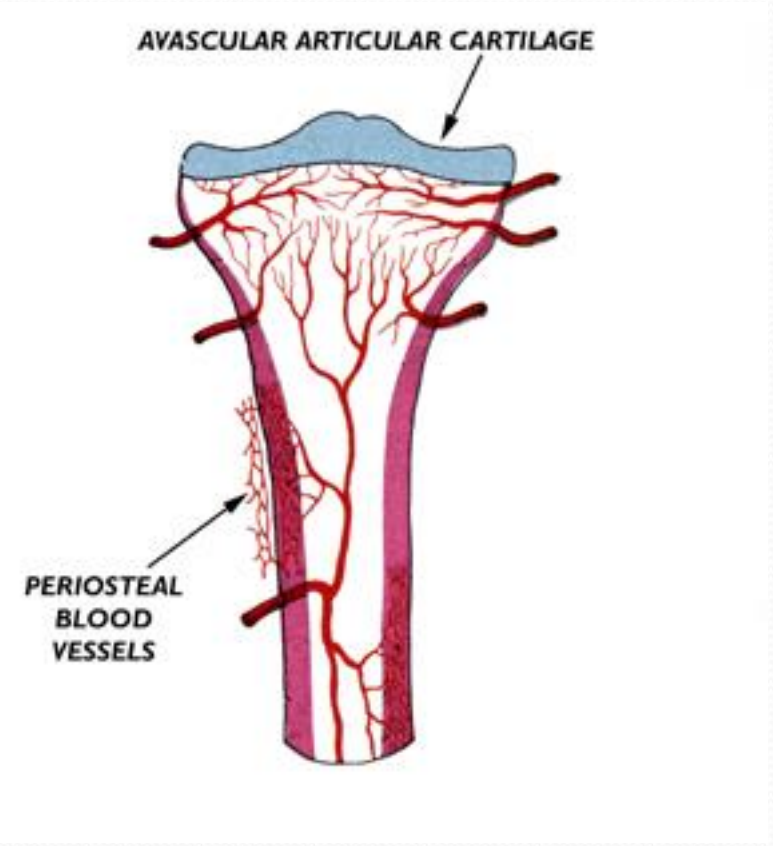
Nutrient artery

Usually one (or two) artery enters the shaft obliquely through an opening called nutrient foramen, which leads into a nutrient canal.

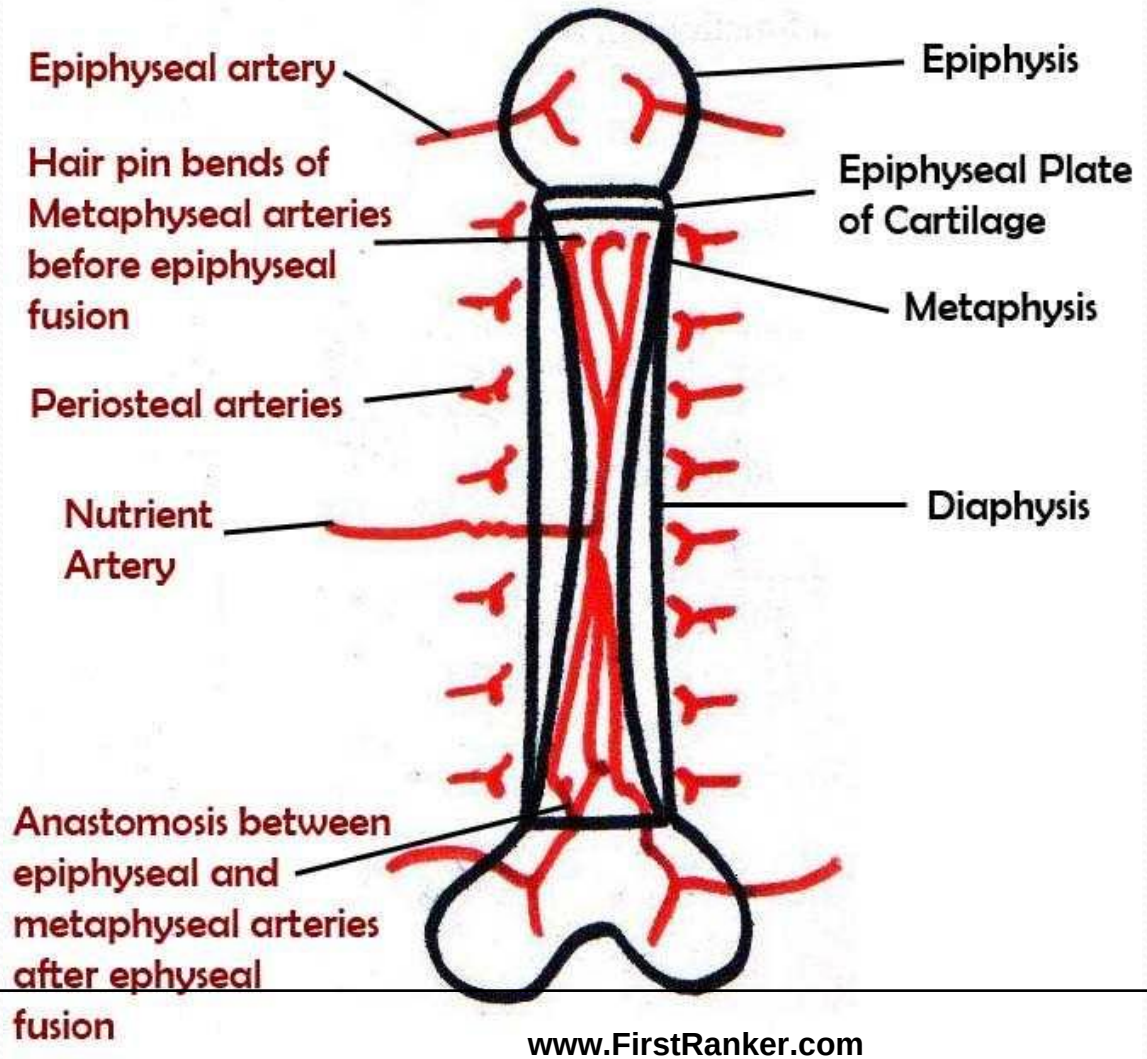
In upper limbs, the direction is towards elbow joint, whereas in lower limbs, it is away from the knee joint.

Periosteal Arteries

- Derived from arteries present in the muscles attached to periosteum
- Form vascular arcades

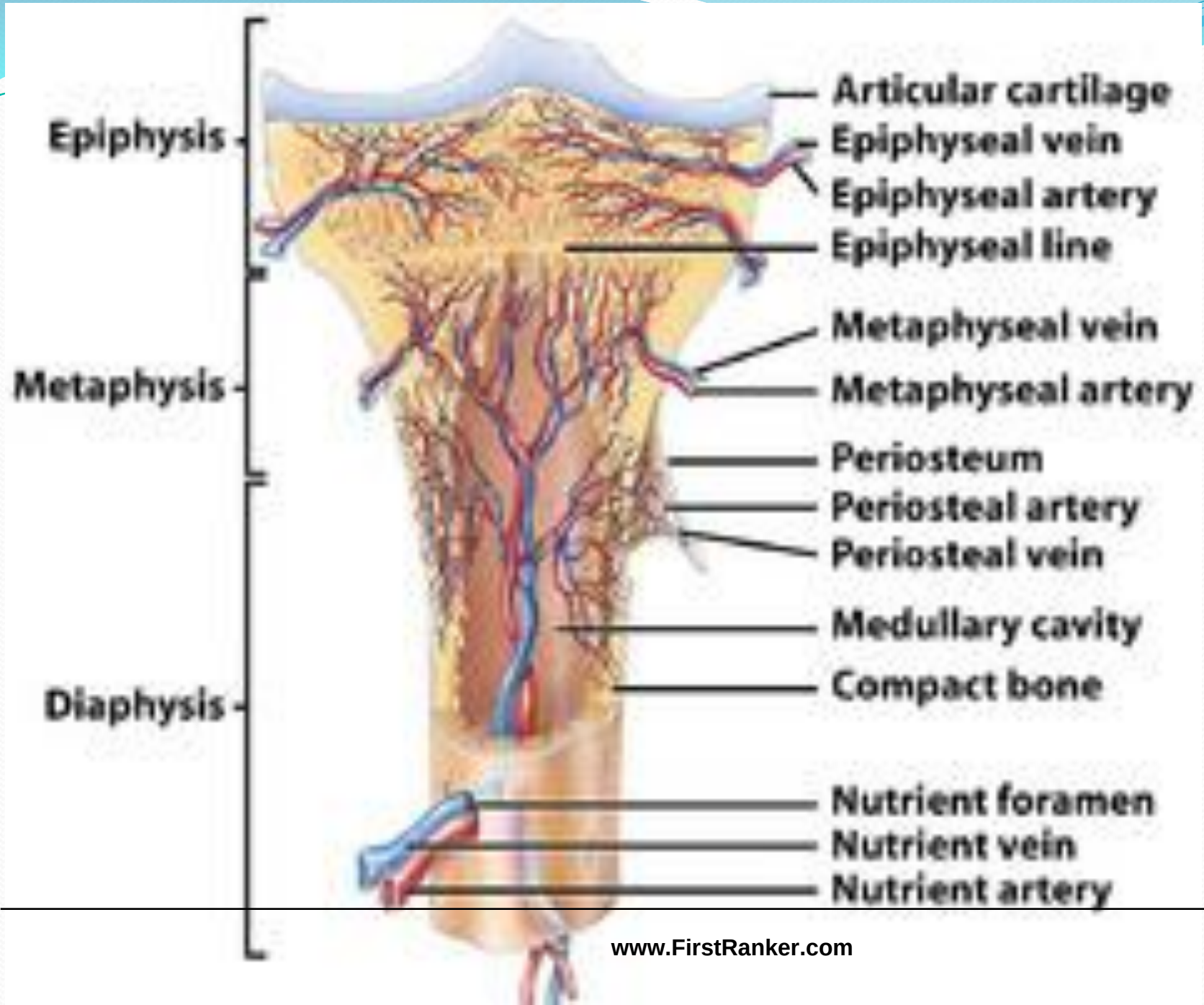


Blood Supply of Long Bones (by: Ahsan Iqbal)



Metaphyseal and Epiphyseal Arteries

- Arise from periosteal arteries and anastomose with each other and diaphyseal arteries.

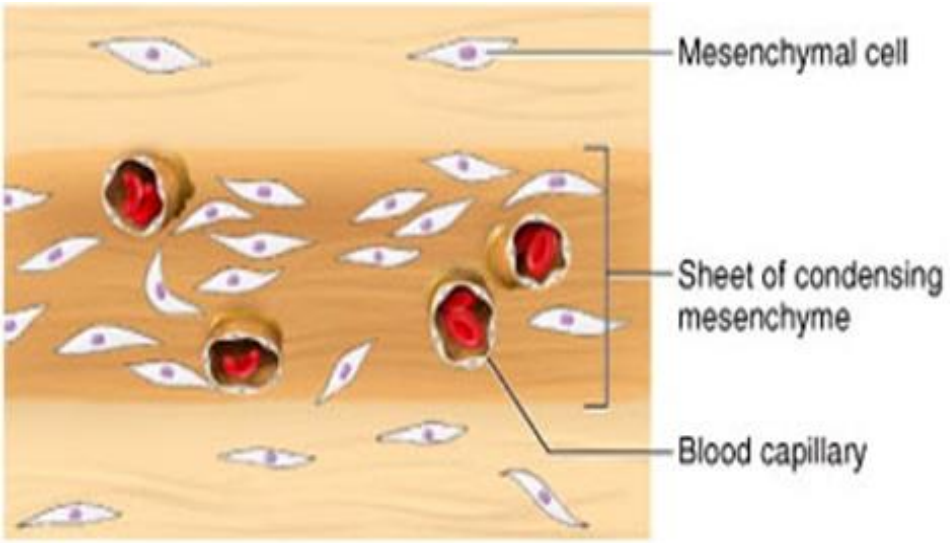


LYMPH DRAINAGE OF BONE

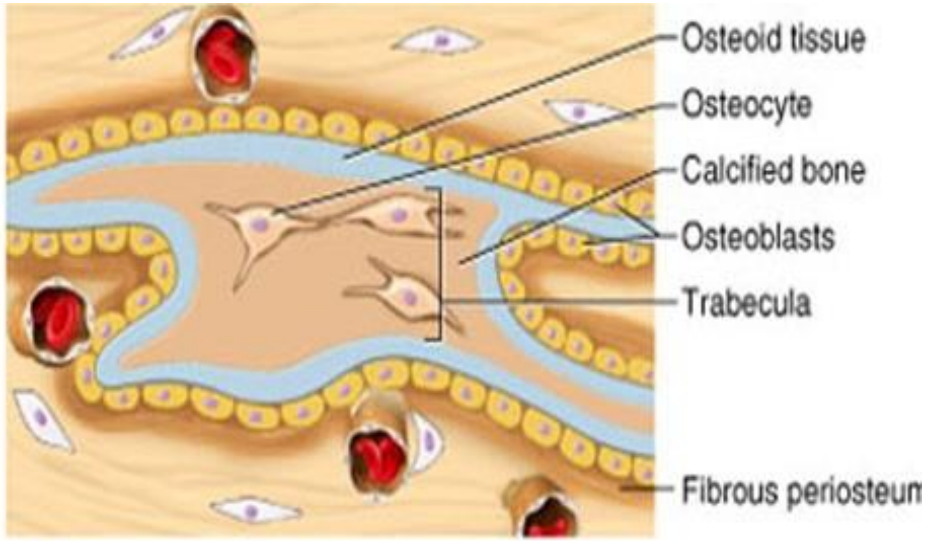
- Lymph vessels are found along the periosteal vessels but they are not present within the substance of the bone.

NERVE SUPPLY OF BONES

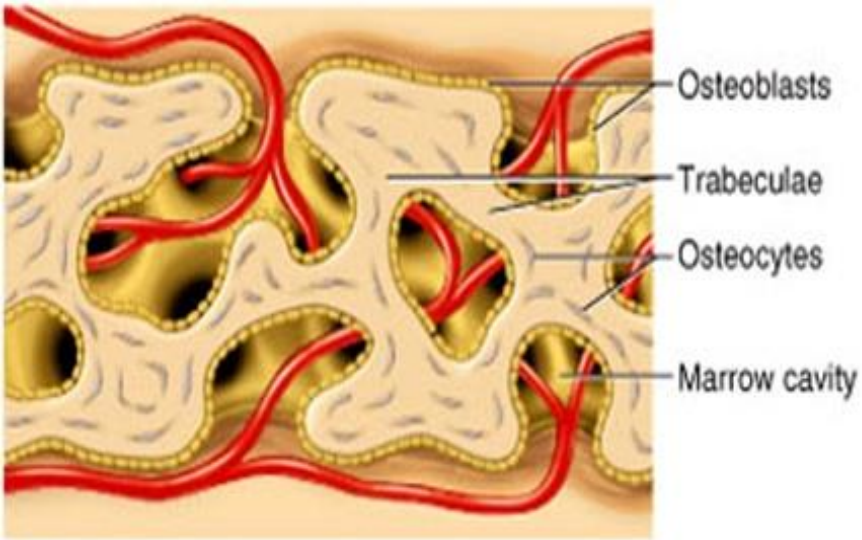
- Nerves accompany the blood vessels. They are distributed freely in periosteum. These periosteal nerves carry sensations of pain. As a result it is very sensitive to tearing or increases in tension. For this reason, we have severe pain if the bone is fractured



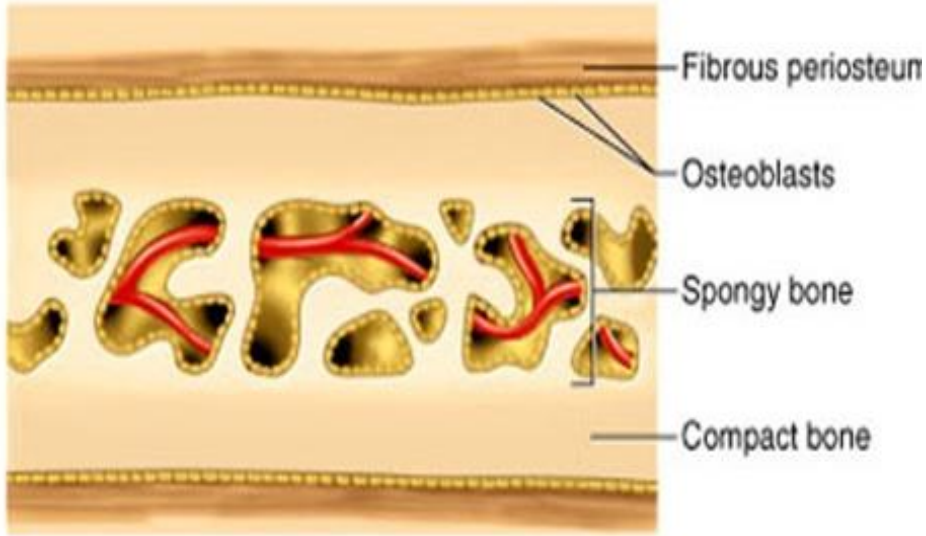
1 Condensation of mesenchyme into soft sheet permeated with blood capillaries



2 Deposition of osteoid tissue by osteoblasts on mesenchymal surface; entrapment of first osteocytes; formation of periosteum

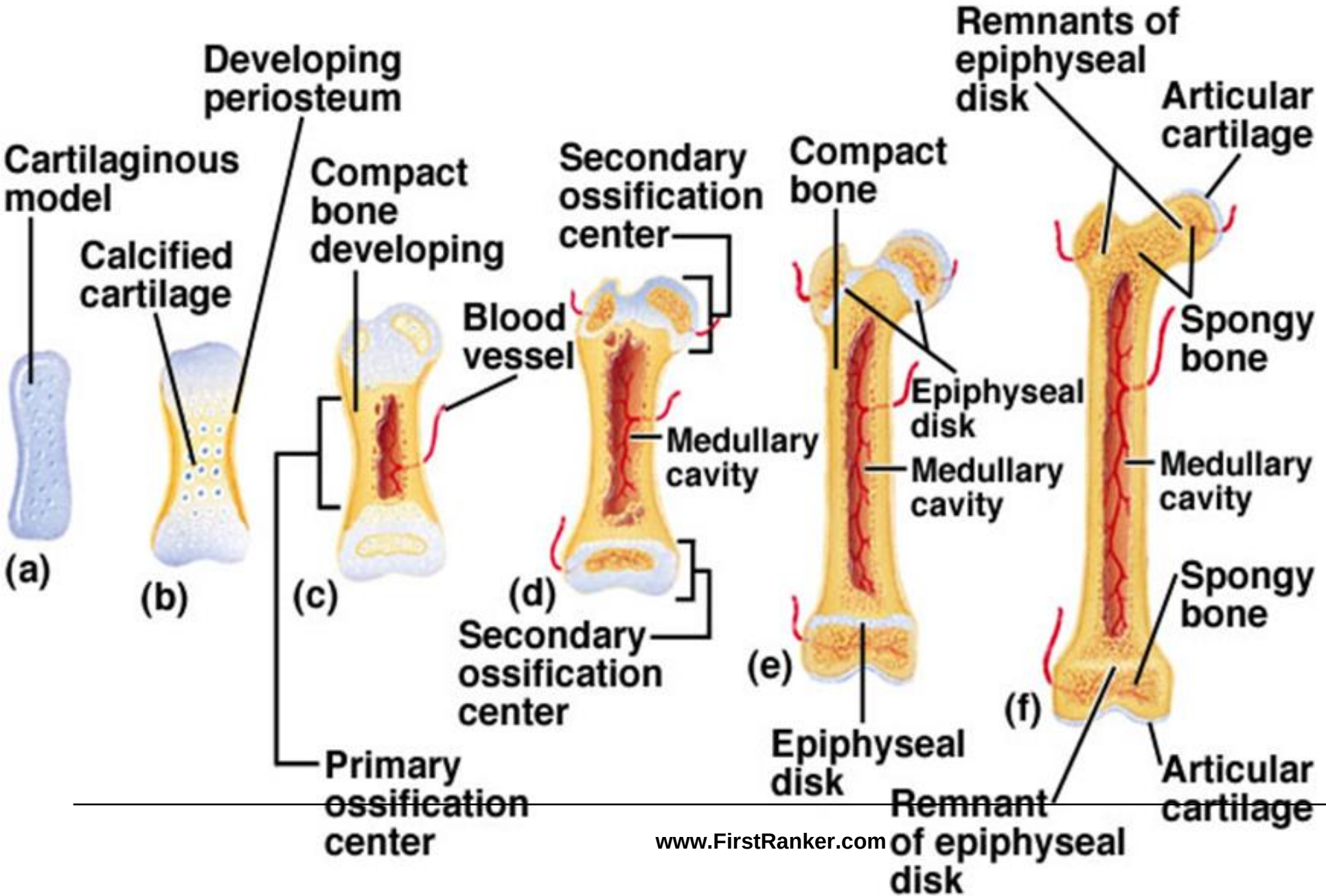


3 Honeycomb of bony trabeculae formed by continued mineral deposition; creation of spongy bone



4 Surface bone filled in by bone deposition, converting spongy bone to compact bone. Persistence of spongy bone in the middle layer.

Endochondral Bone Development



Thank You