Chapter 17

Integumentary

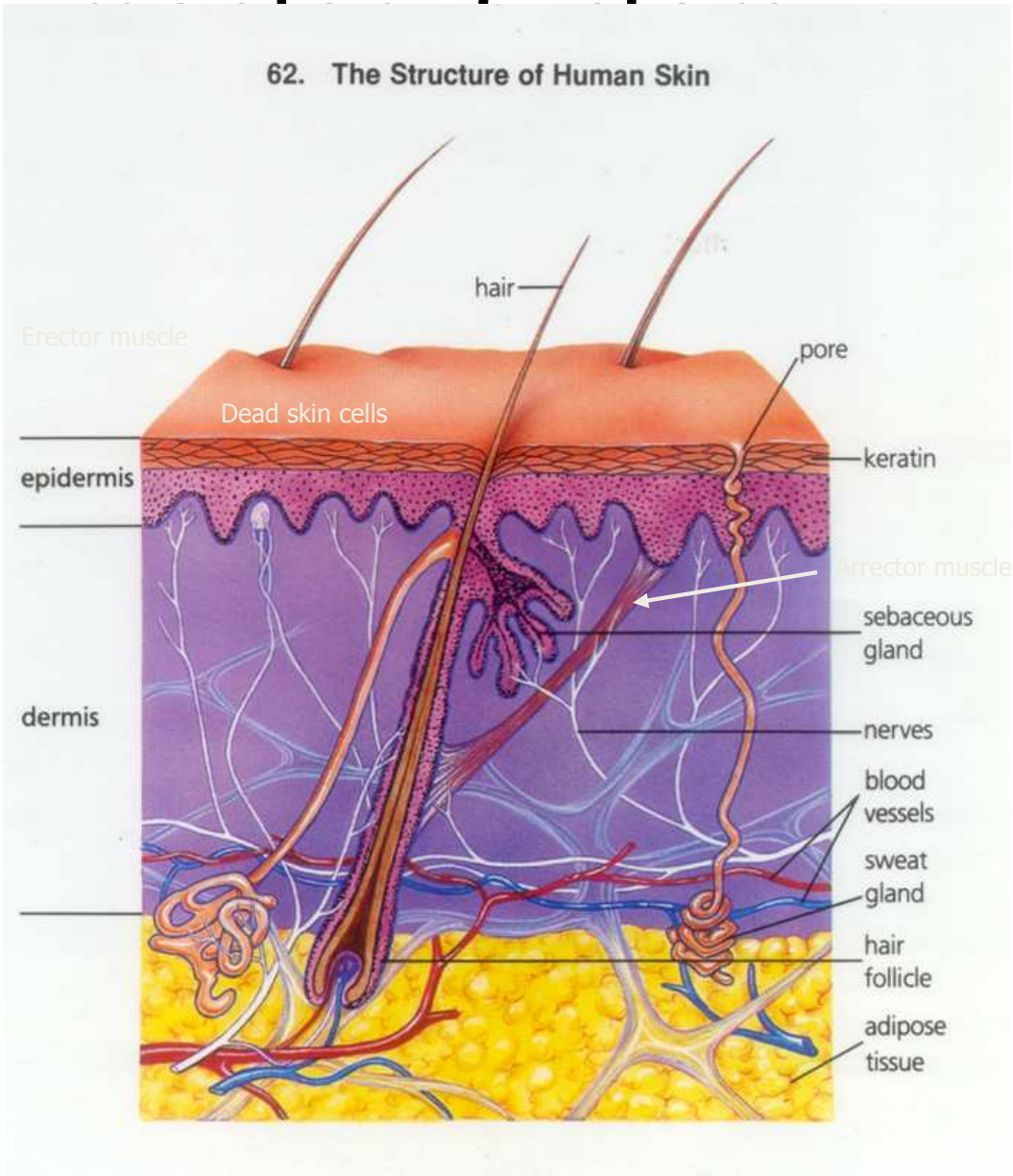
&

Skeletal

Systems

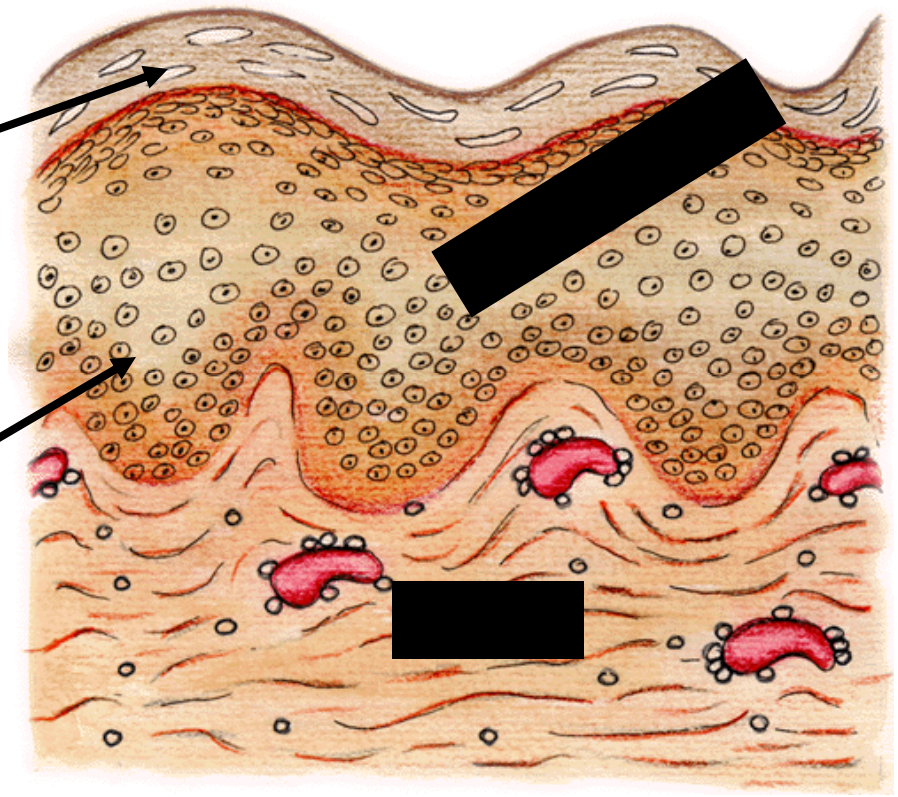
The Integ

- Includes:
  - Epithelial cells make up skin & linings of digestive & respiratory Systems
  - Skin, hair and nails
- Functions of the Skin:
  - Protect from UV rays
  - Regulate body temp
  - Waste removal
  - Barrier from infection
  - Sensory receptor
- Two Main Layers & lower layer
  - Epidermis
  - Dermis
  - Hypodermis
    - AKA adipose tissue & subcutaneous layer



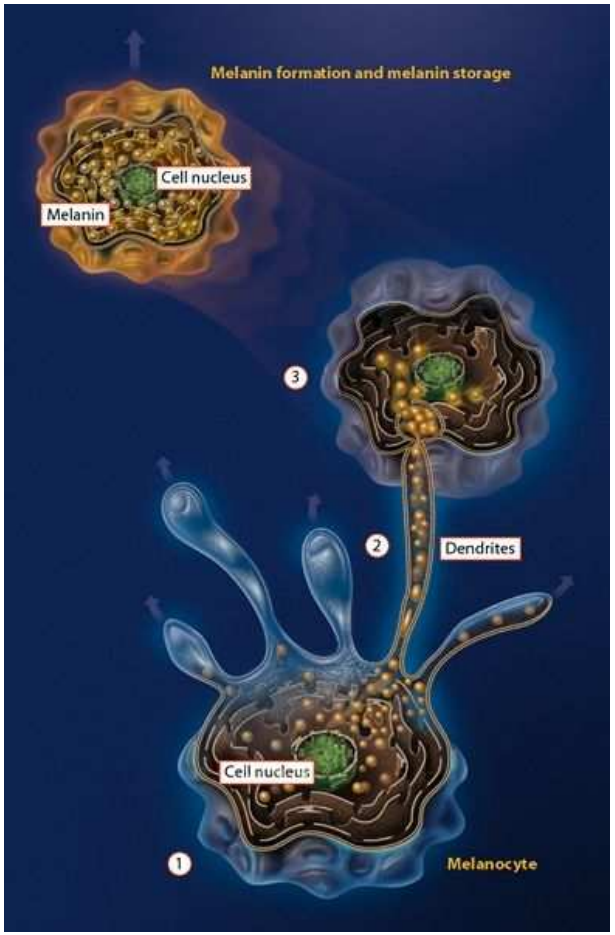
The Integumentary System

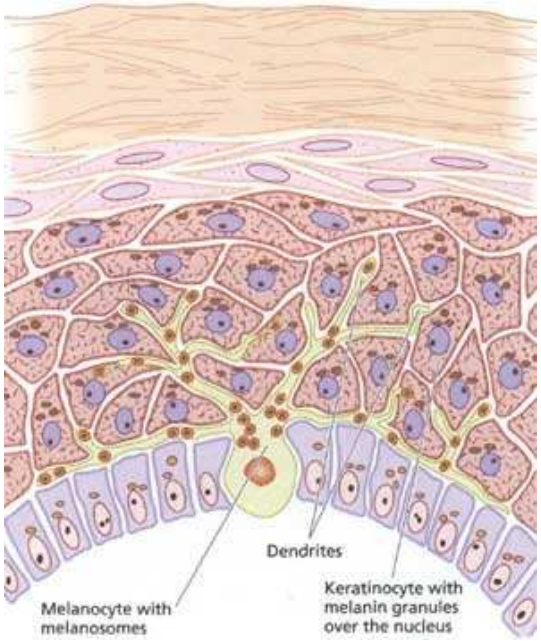
- **The Epidermis**
  - Two Main Layers
  - Top layer is made of dead cells
  - Rapid cell division – entire skin is replaced every 4 weeks
  - Bottom layer is the basal layer
  - Skin Color from Melanin
    - Produced in melanocytes located in the basal layer of the epidermis

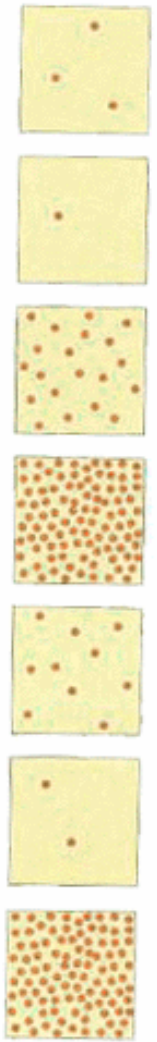


Melanocytes

- Melanocytes have many “fingers” that permeate through the dermis.
- Packets of Melanin migrate thru these fingers and absorb the harmful UV rays from the sun.
- The more melanin – the darker the skin

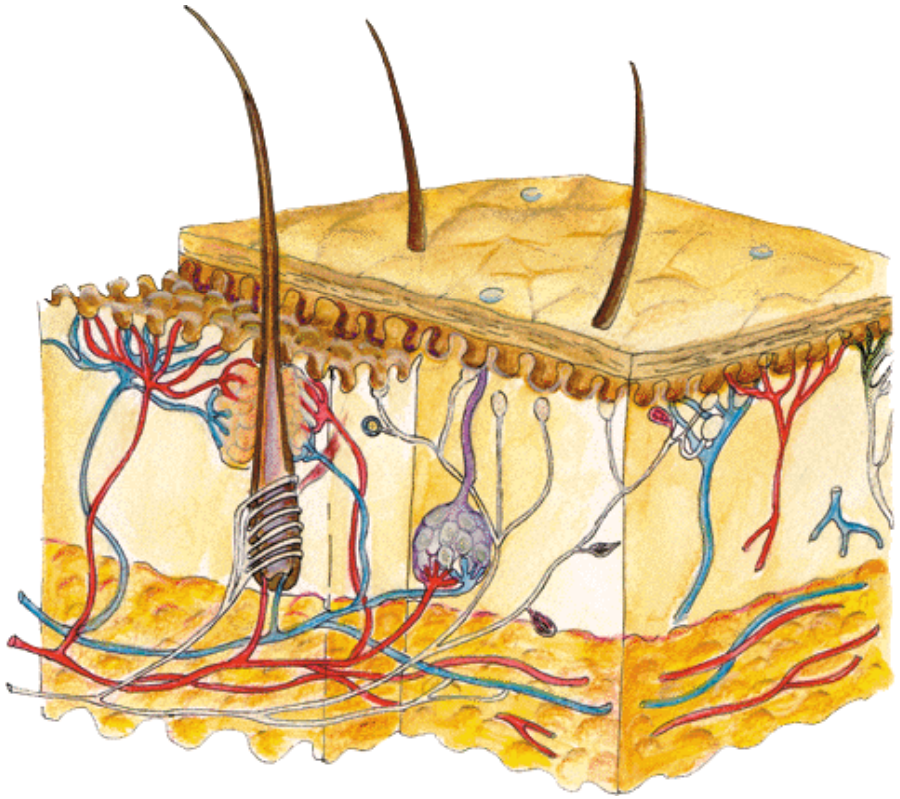






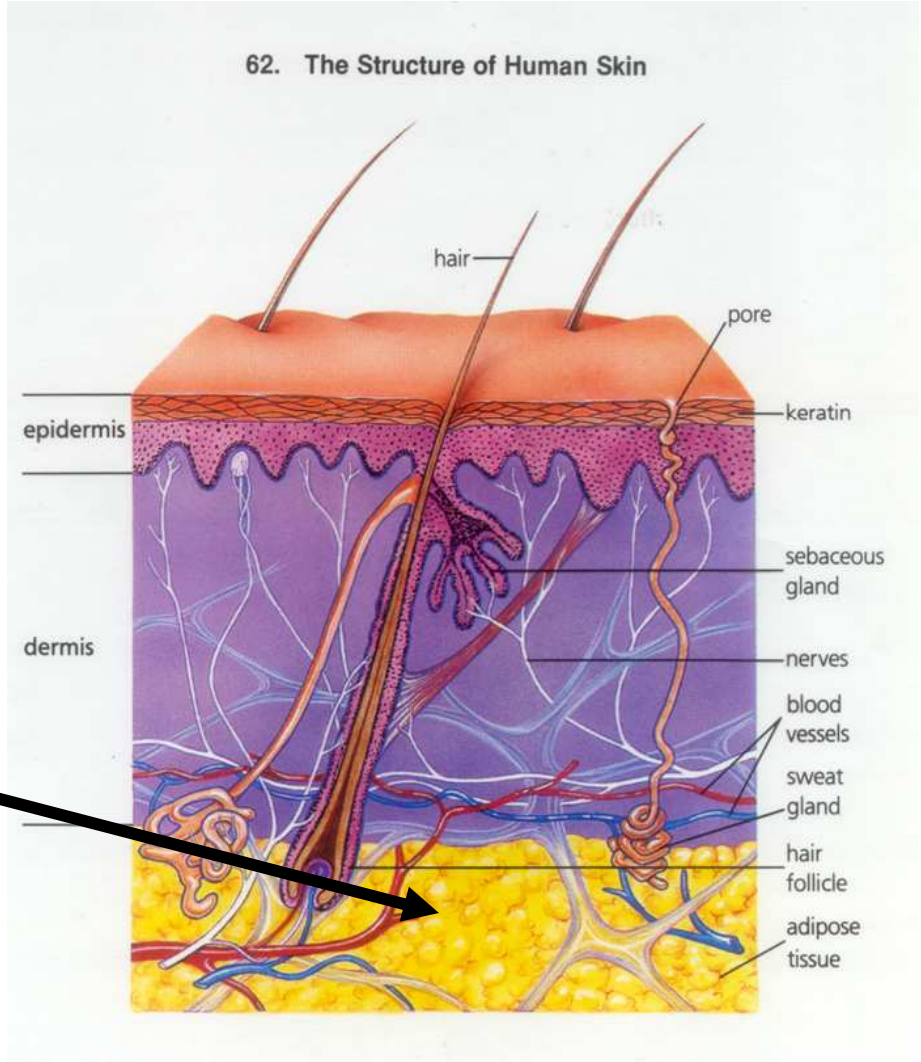
The Skin – The Dermis Layer

- **The Dermis**
  - Composed mainly of Epithelial Cells
  - Specialized Epithelial Cells form hair & nails
  - 2 types of glands
    - sebaceous (oil) – secretes oil to protect skin & moisturize
    - sweat glands (perspiration)– help control body temp removes salts & wastes.
  - Hair Follicles
  - Arrector muscle
  - Capillaries
  - Nerve endings sense – heat, cold, pressure, pain
  - Wrinkles occur here.

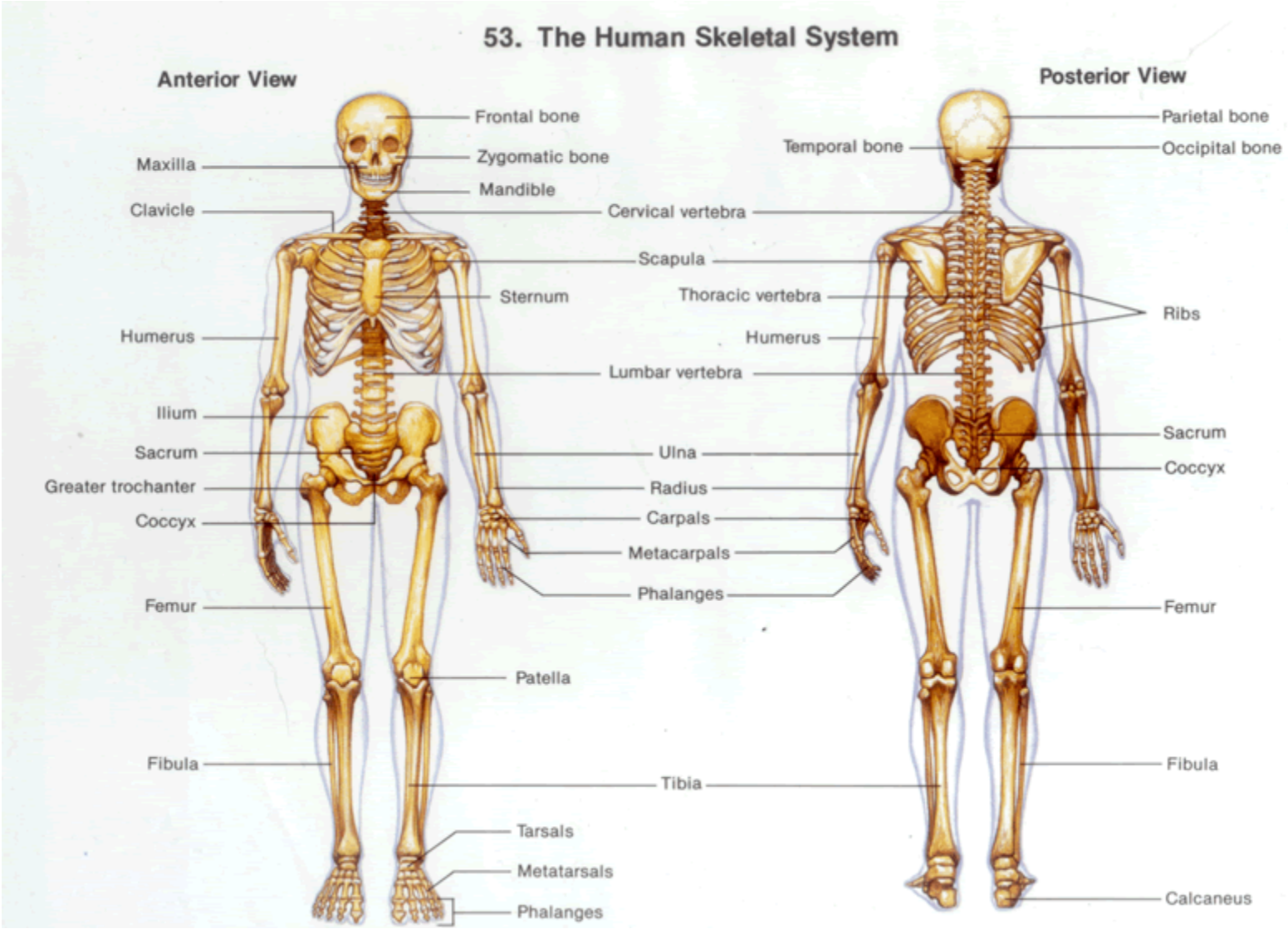


The Skin - Hypodermis

- Also known as (AKA):
  - Subcutaneous Layer
  - Adipose Layer
- Fatty tissue serves to insulate, protect and add form



The Skeletal System

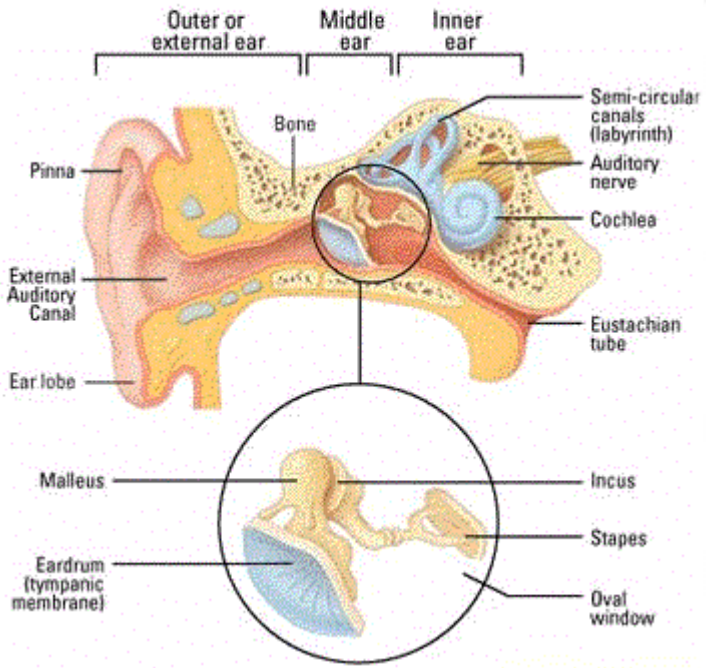


Skeletal System

- **Main Function**
  - **Support the body**
  - **Anchor point for muscle attachment**
  - **Protect vital organs**
- 206 bones in the body
- ½ are in the hands and feet
- 2 main parts
  - Axial Skeleton
  - Appendicular
  - Skeleton

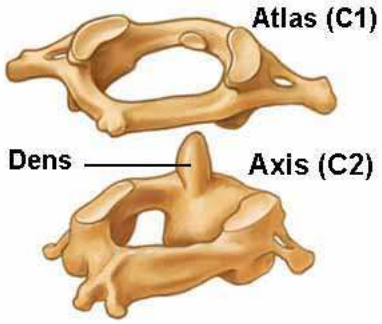
- 6 smallest in the middle ear :Malleus, Incus, Stapes

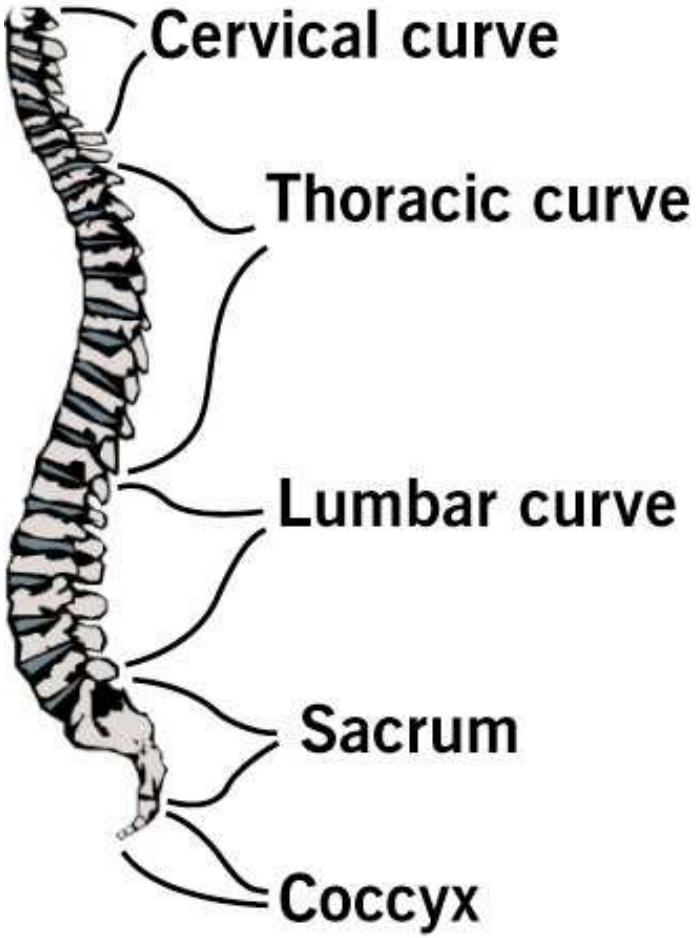
(hammer anvil & stirrup)

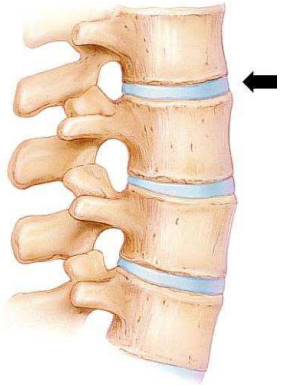


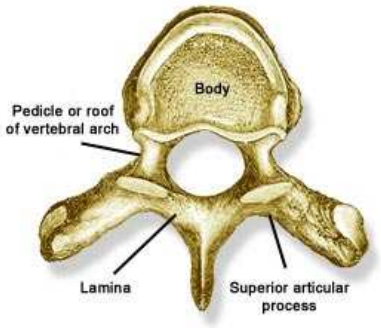
The Axial Skeleton

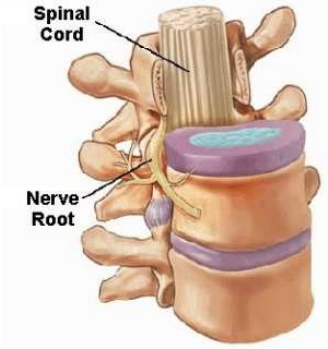
- Bones of the head & trunk
  - Skull, Spine & Rib Cage
  - Vertebral column – 33-34 bo
    in 5 regions
  - Separated by cushioning
    cartilaginous disks
  - Cervical Region
    - 7 vertebrae
    - 1st vertebrae called the Atlas
    - 2nd Vertebrae called the Axis





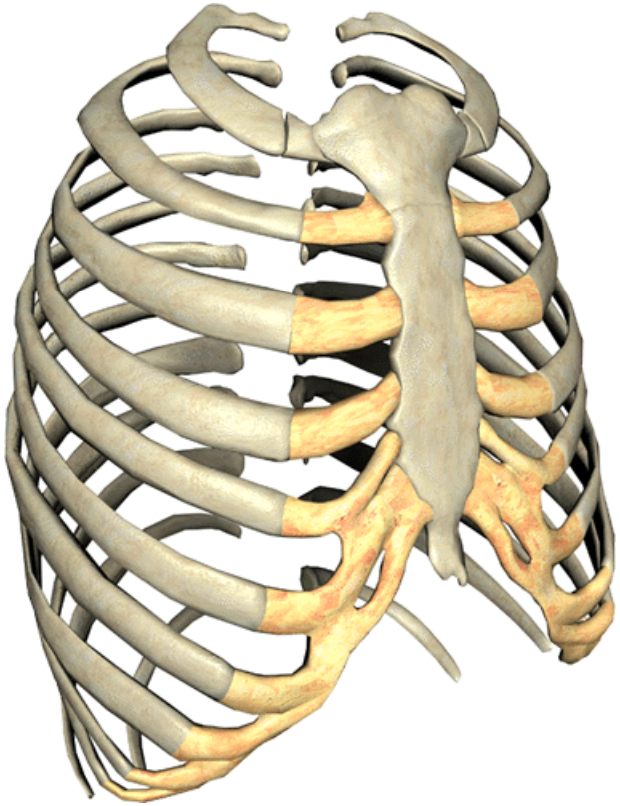






The Axial Skeleton

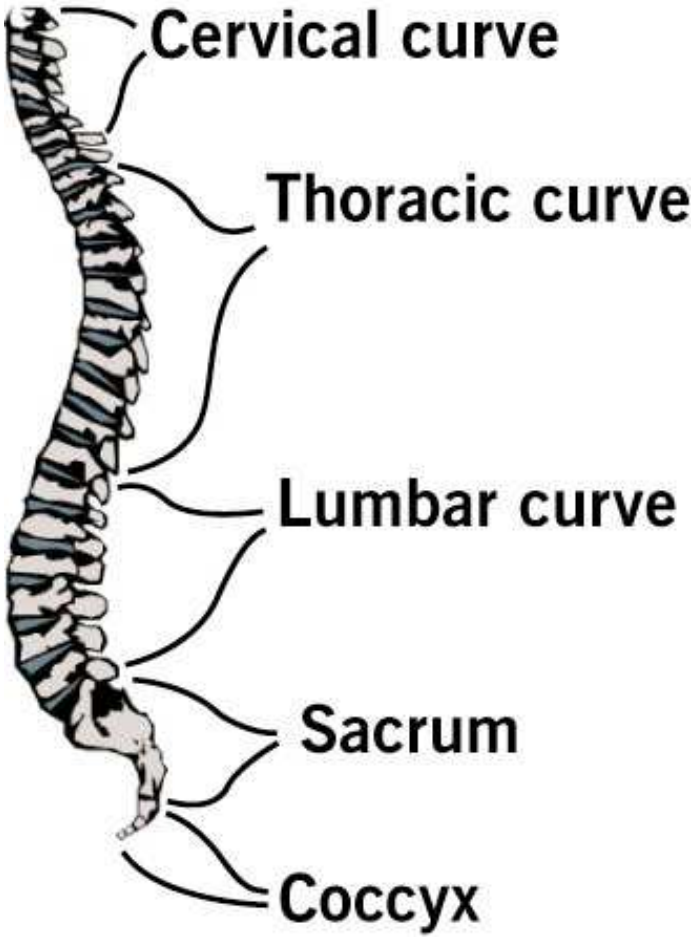
- Bones of the head & trunk
  - Thoracic Region



- 12 vertebrae w rib pairs attached
- 1st 7 are true ribs – connected to the sternum
- Next 3 have false ribs – attached to the last true rib w/ cartilage
- Last 2 vertebrae have floating ribs attached
- Sternum (Breast Bone)
- Xiphoid process

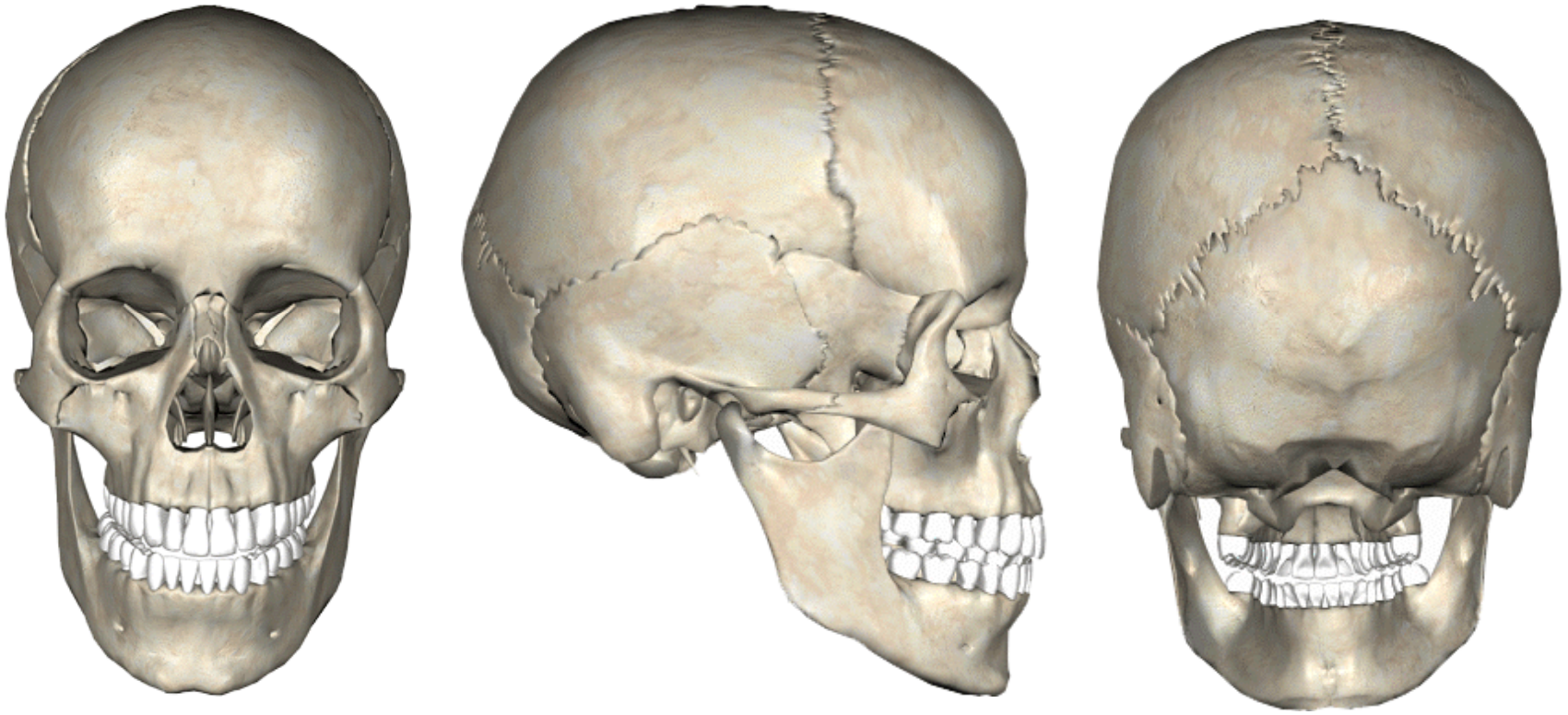
The Axial Skeleton

- Bones of the head & trunk
  - Lumbar Region – (lower back) w/ 5 ribs
  - Sacrum – 4-5 fused to help make up the pelvis
  - Coccyx Region – the “tail bone” – made up of 4 fused vertebrae



The Axial Skeleton

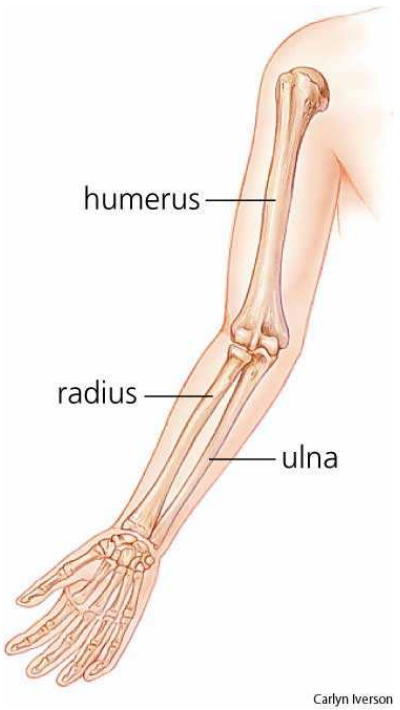
- The Cranium (Skull) – about 22 bones

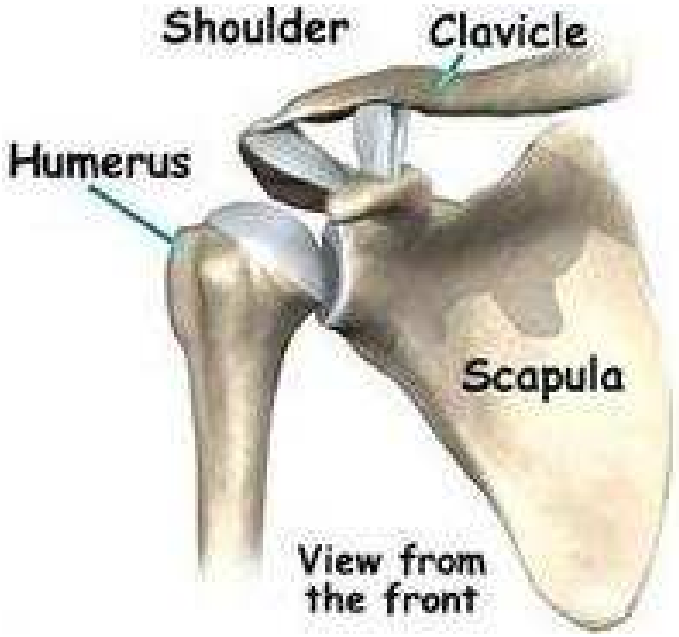


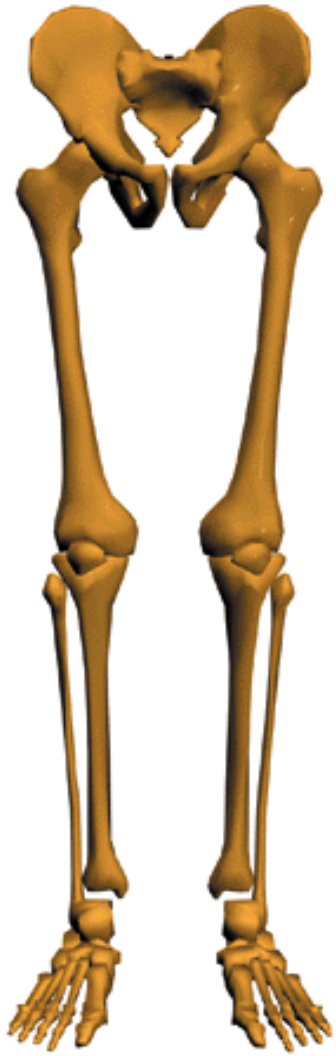
Know these bones: **Frontal Bone, Parietal, Occipital, Temporal, Nasal, Maxilla, Mandible, Zygomatic,**

The Appendicular Skeleton

- The arms, legs, hands, feet, pectoral and pelvic girdles

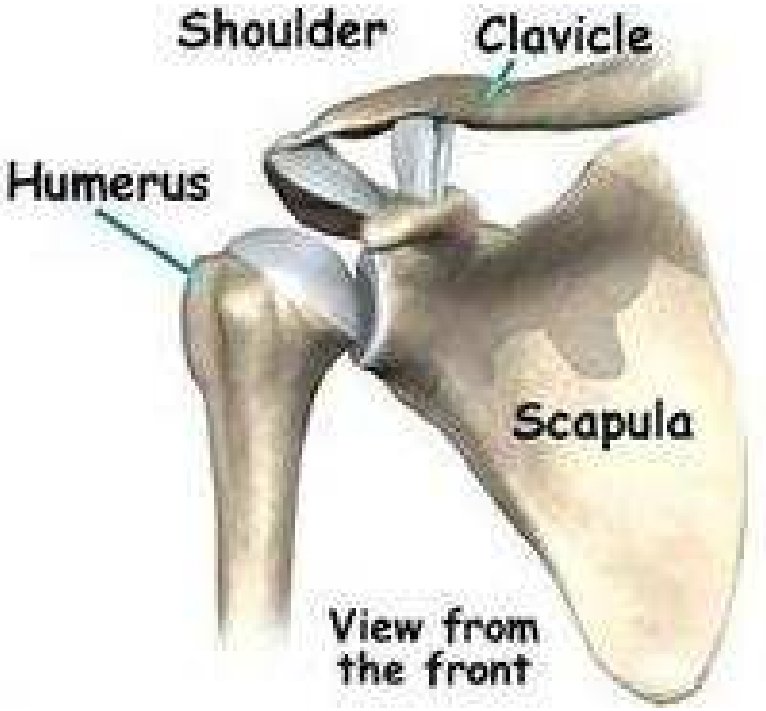


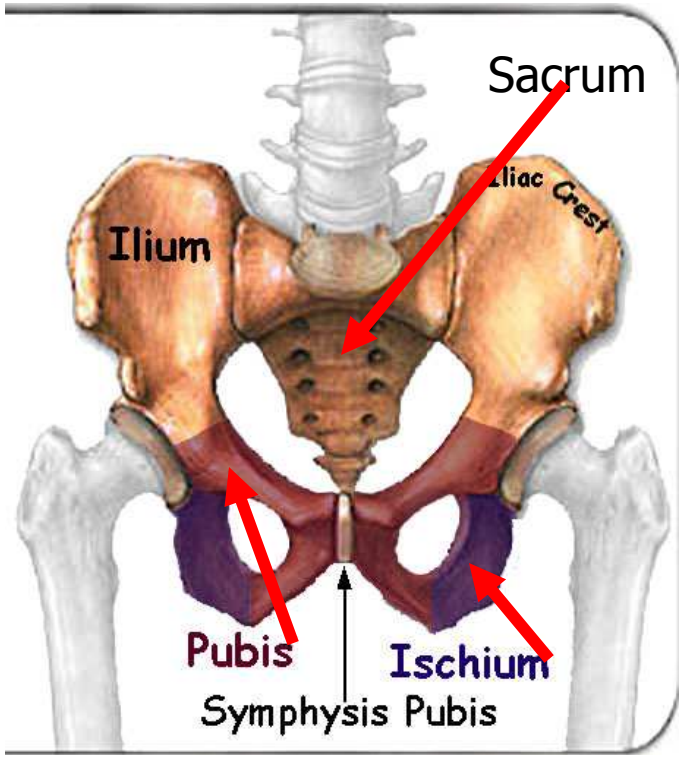




The Appendicular Skeleton

- The pectoral and pelvic girdles





Know these bones:

Pectoral Girdal: **Scapula, Clavicle, head of the Humerus,**

Pelvic Girdal**: Illium, Ischium, pubis, Sacrum, head of Femur**

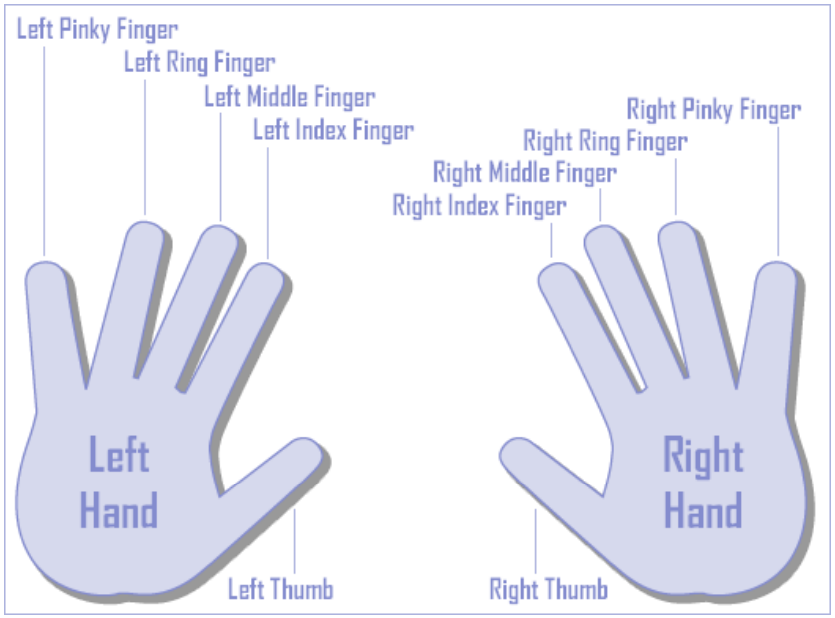
The Appendicular Skeleton

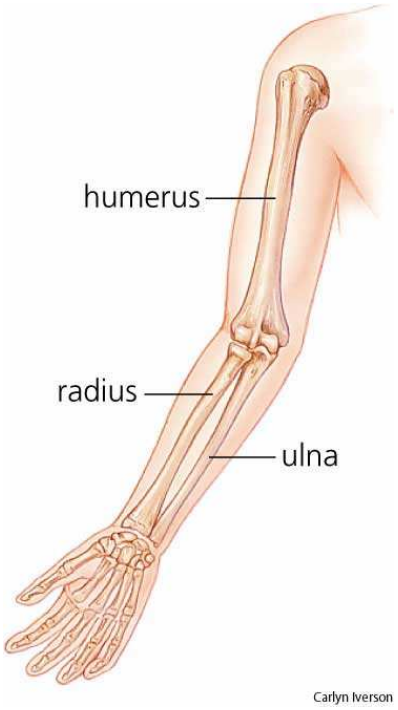
- The arms and hands

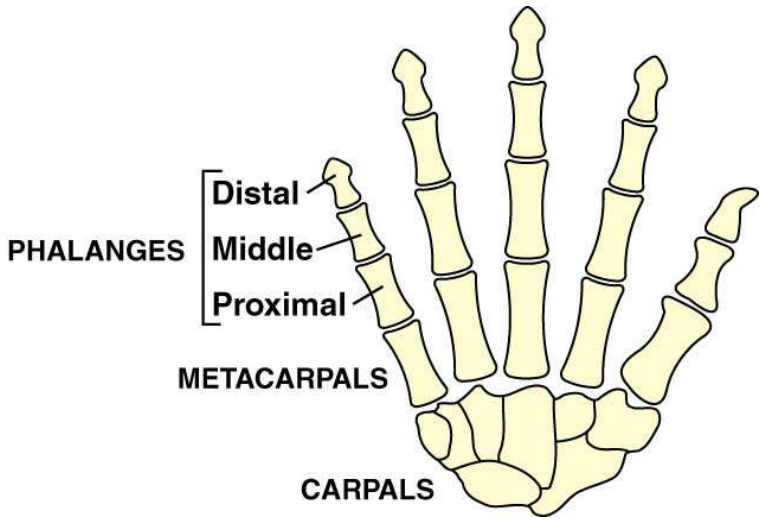
Know these bones:

Humerus, Ulna, Radius, Carpals, Metacarpals and phalanges.

Know how to name the fingers so you can identify the individual phalanges of each hand.





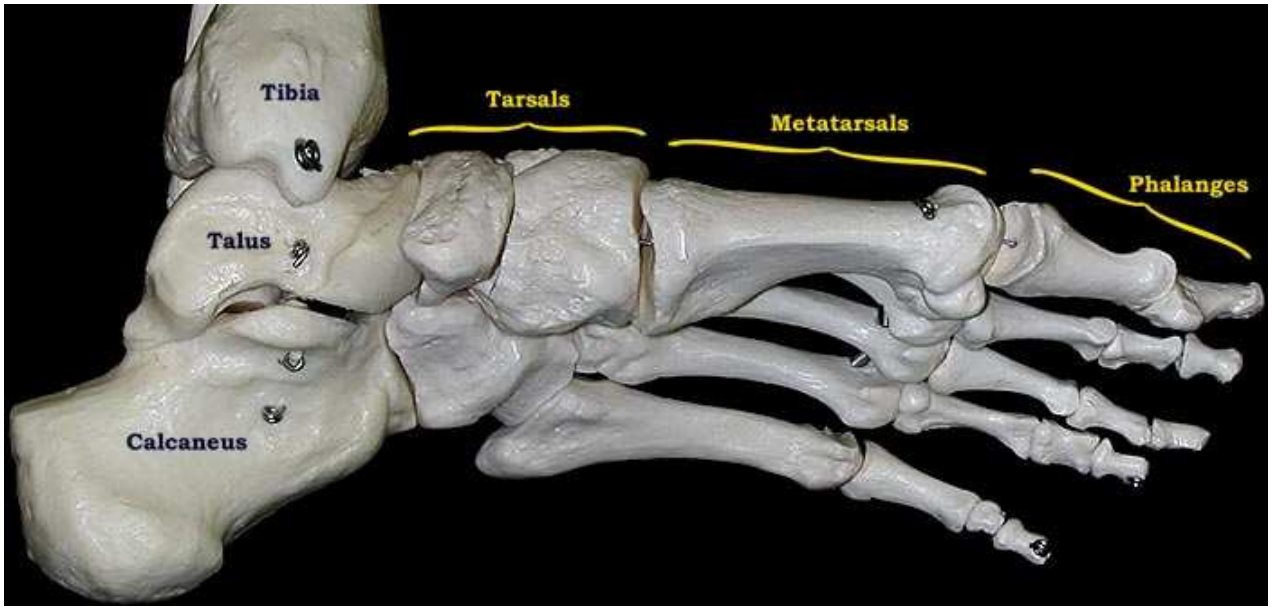


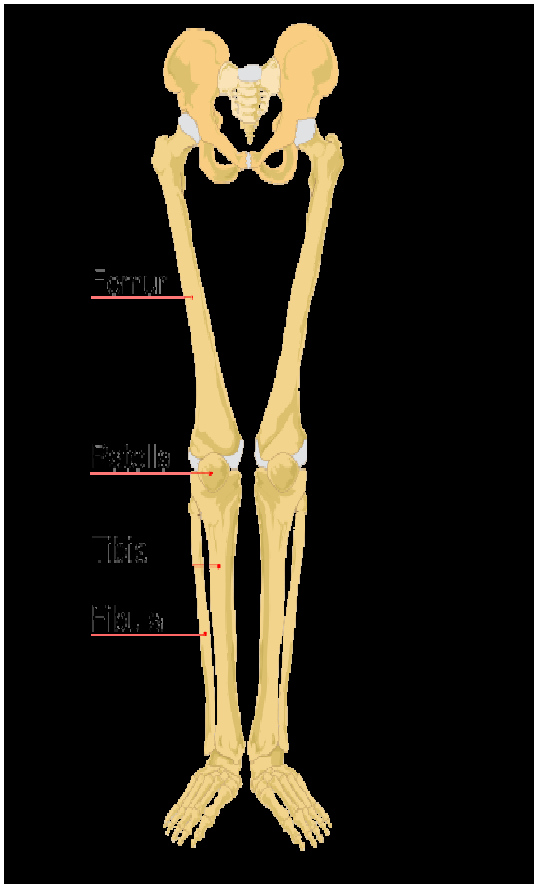
The Appendicular Skeleton

- The Legs and Feet

Know these bones:

Femur, Tibia, Fibula, Patella, Tarsals, Metatarsals, Phalanges, Talus, Calcaneus





The Structure of Bone

- The Legs and Feet

Know these structures:

Periosteum, shaft, compact bone, spongy bone, Osteocyte, Haversian Canals, Lamella, red marrow, yellow marrow

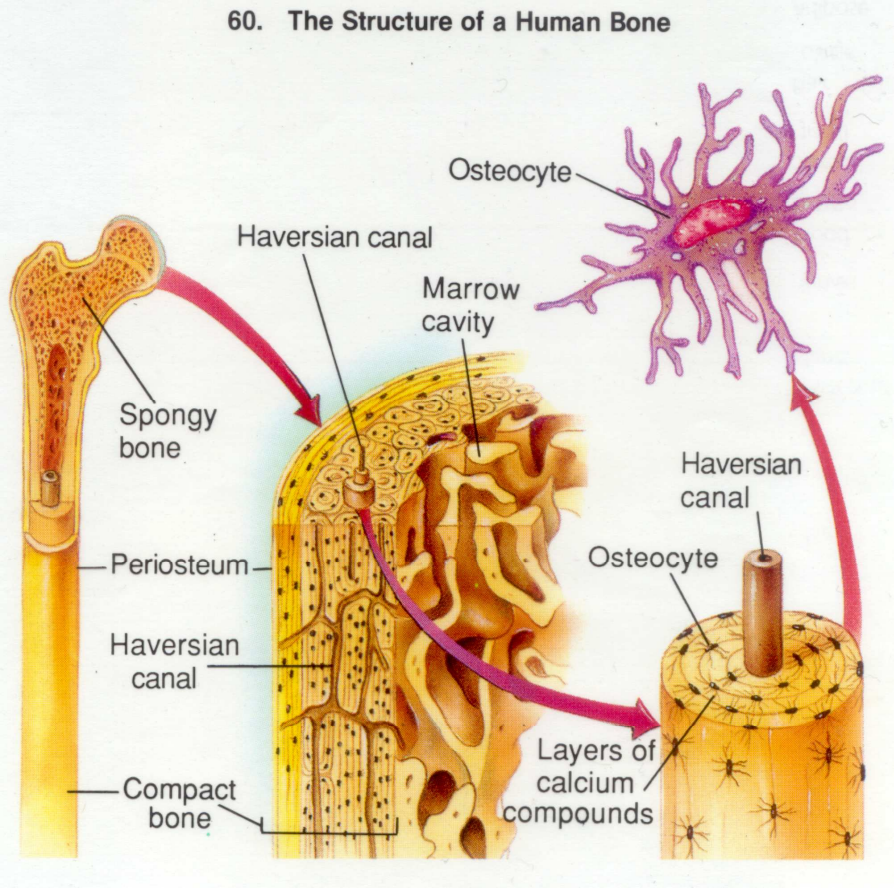
Periosteum – tough covering which supplies blood vessels, nutrients and oxygen to the bone

Compact Bone – dense strong hard bone, makes up the shaft of long bones

Spongy Bone – porous bone filled w/ Marrow

red marrow – contains & makes red and white blood cells

Yellow marrow – contains fat and nerve cells



The Structure of Bone

- The Legs and Feet

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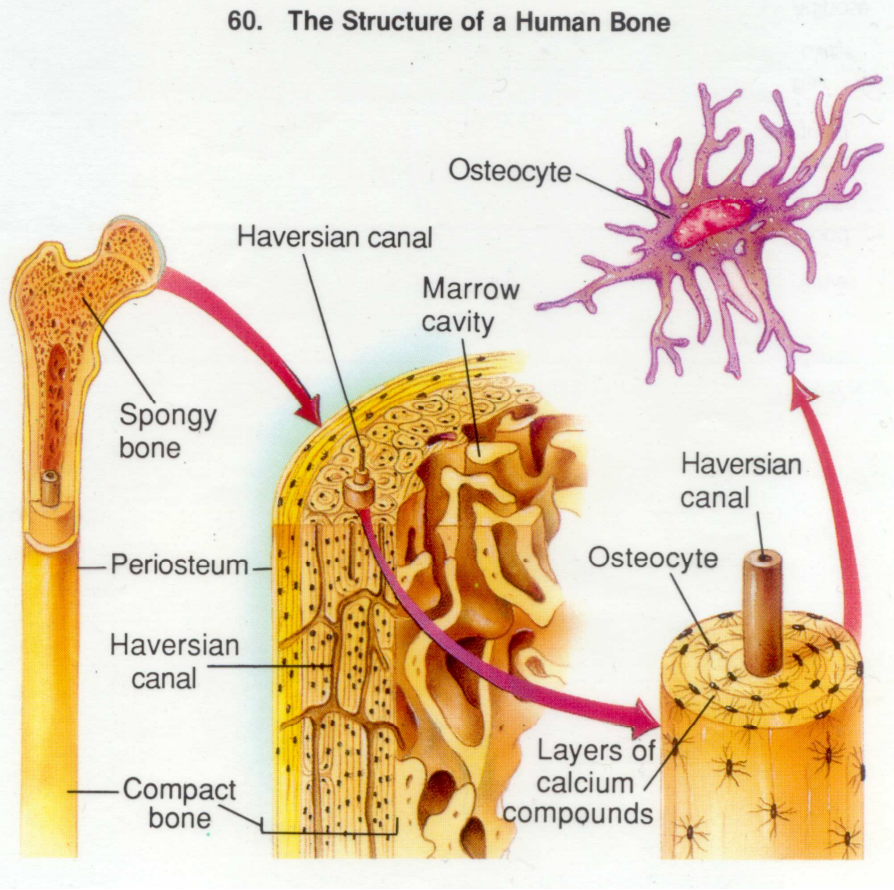
Periosteum, shaft, compact bone, spongy bone, Osteocyte, Haversian Canals, Lamella, red marrow, yellow marrow

Osteocyte – cells that manufacture bone cells- embedded in compact and spongy layers. Deposits Calcium to make the bone

Haversian Canals: network of tubes filled w/ vessels and nerves that supply marrow w/ materials

Lamella – Circular layers of bone make up compact hard bone



The Structure of Bone

- Growth & Connections

Know these structures and terms:

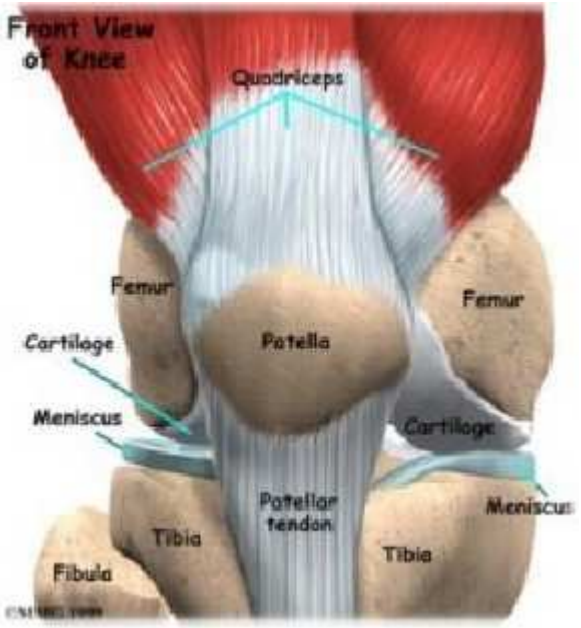
Epiphyseal plate, cartilage, ligament, tendons, joint, suture, immovable, pivot, hinge, ball & socket, gliding

Epiphyseal Plates – area of growth in long bones

Cartilage: flexible yet strong cushioning connective tissue usually between bones

Tendon – connects muscle to bone

Ligament – connect bone to bone



The Structure of Bone

- Growth & Connections

Know these structures and terms:

Epiphyseal plate, cartilage, ligament, tendons, joint, suture, immovable, pivot, hinge, ball & socket, gliding

Joint – place where two bones come together

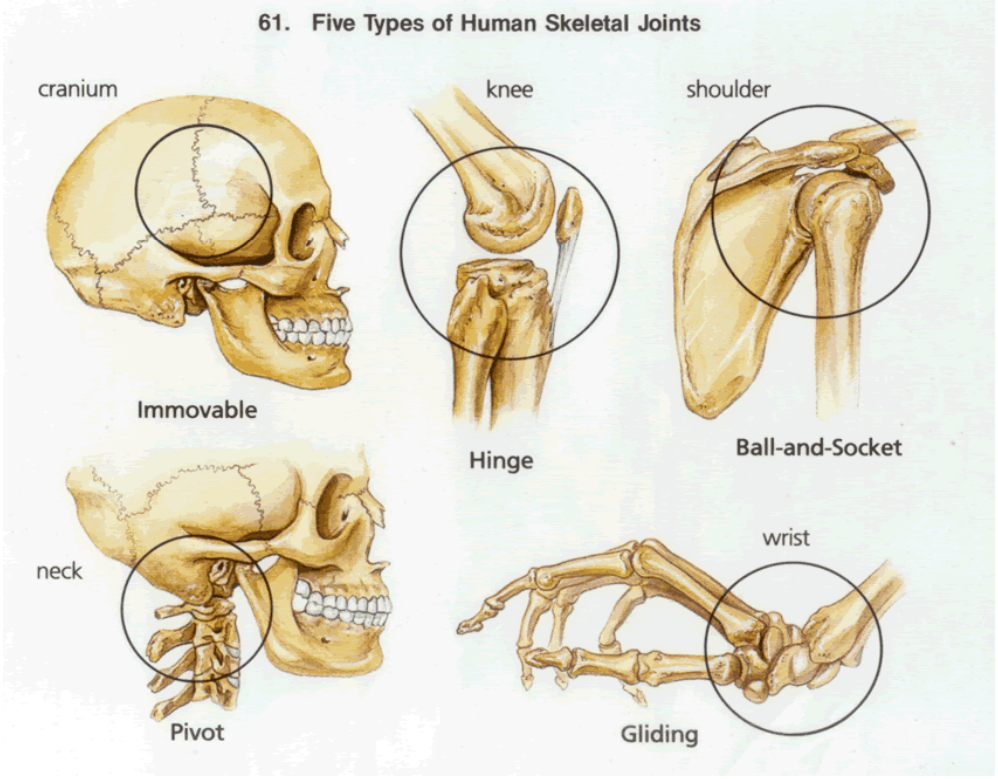
Immovable: joints in the cranium

Hinge – Elbow & knee

Ball & Socket – Widest range of motion, Circular type movement shoulder & hip

Pivot – Allows side-to-side and up-and-down movement Vertebrae, radius/ulna

Gliding – some bending and twisting: wrist & ankle, fingers & toes



Chapter 17

Integumentary
& Skeletal Systems

That’s all folks!!