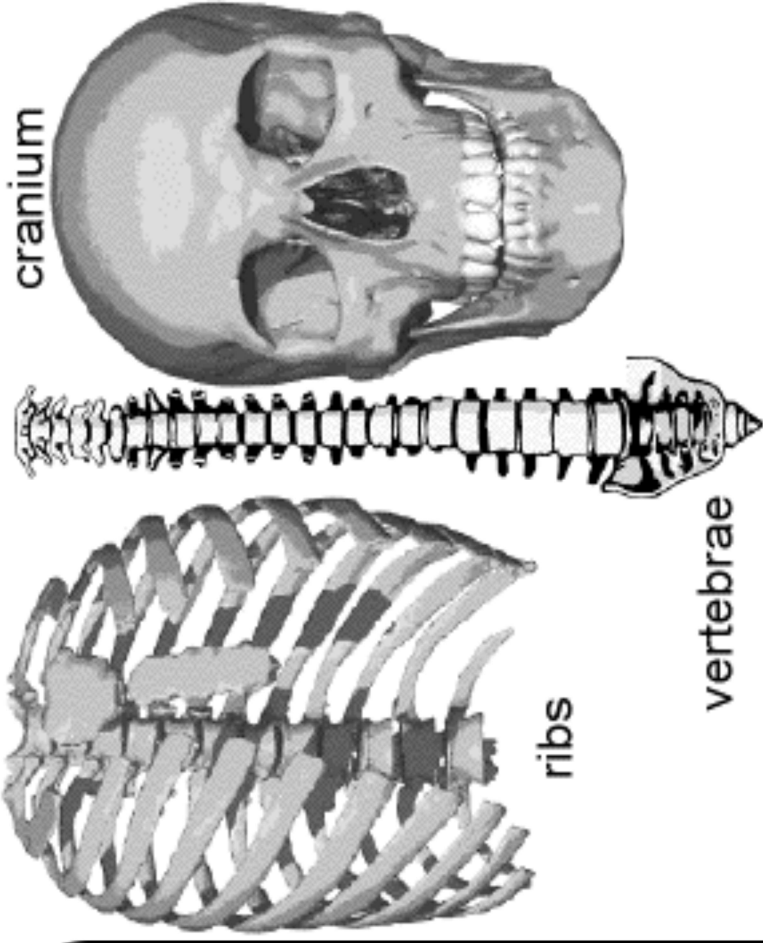
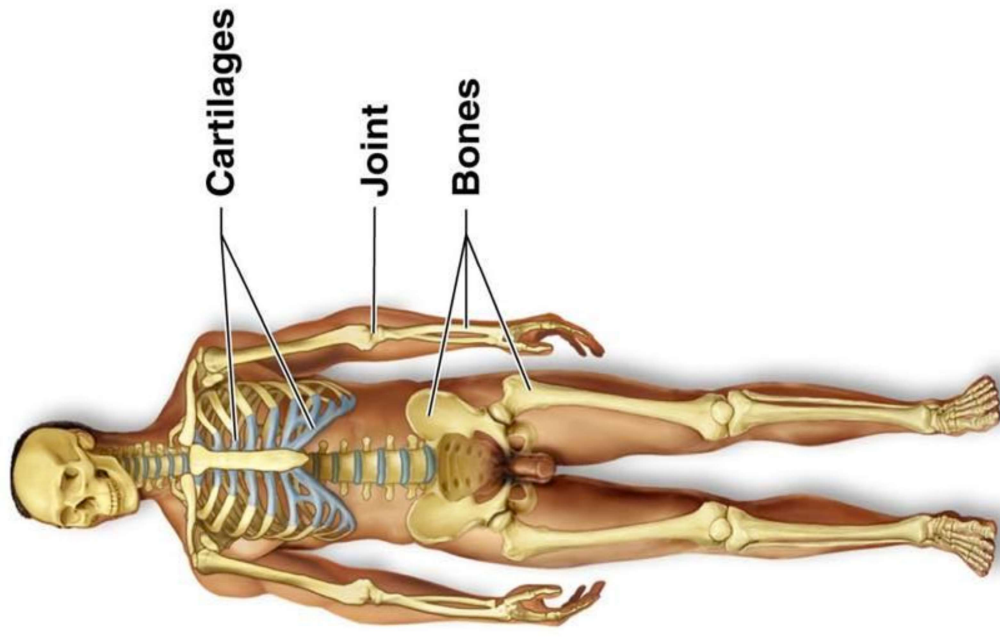


SKELLETAL SYSTEM



Parts of the Skeletal System

- Bones
- Joints
- Cartilages
- Ligaments (bone to bone) and tendons (bone to muscle)

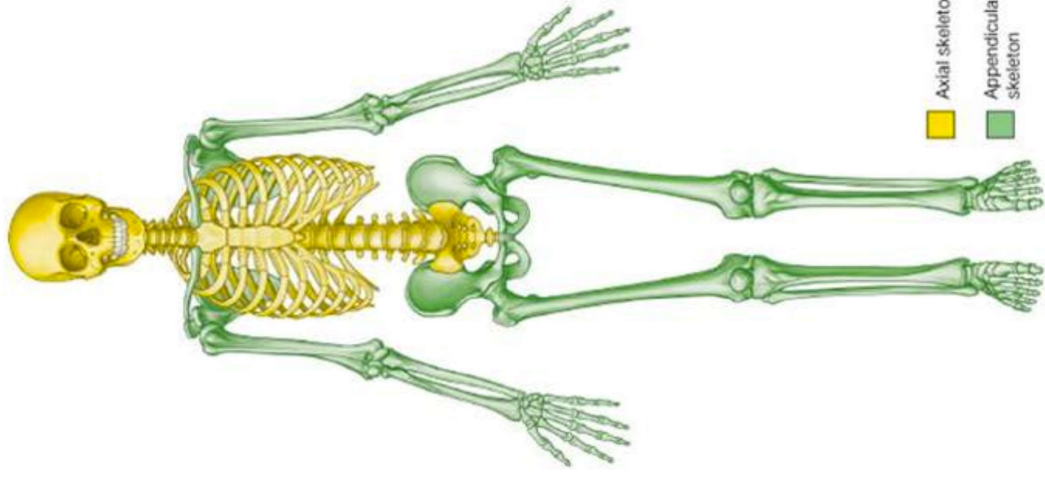


Functions of the Skeletal System

1. Movement
2. Support
3. Protection
4. Make blood cells
5. Store minerals



2 Major Parts of Skeleton



1. Axial Skeleton

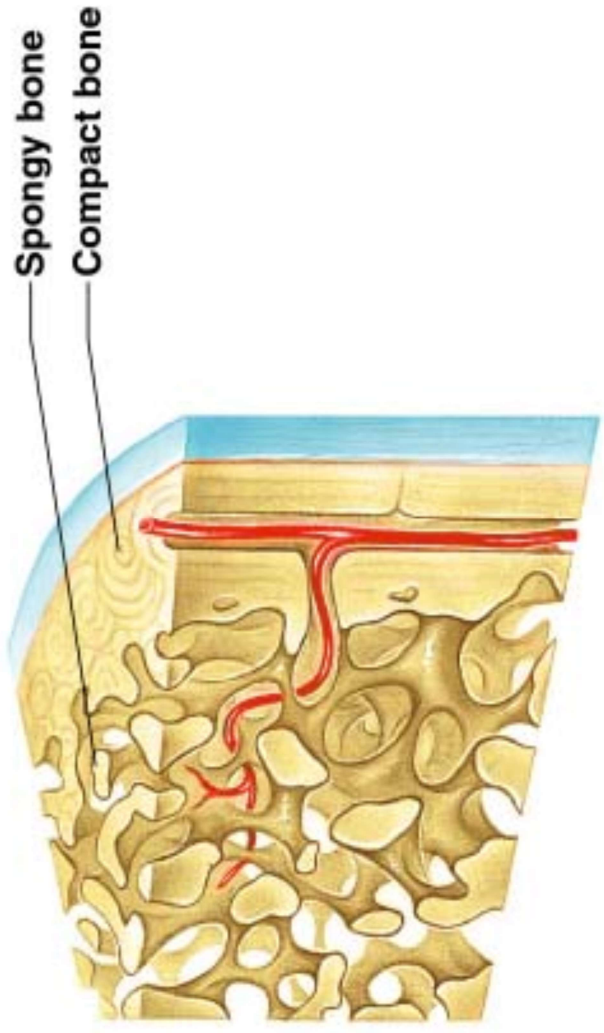
- Includes skull, spine, ribs, sternum

2. Appendicular Skeleton

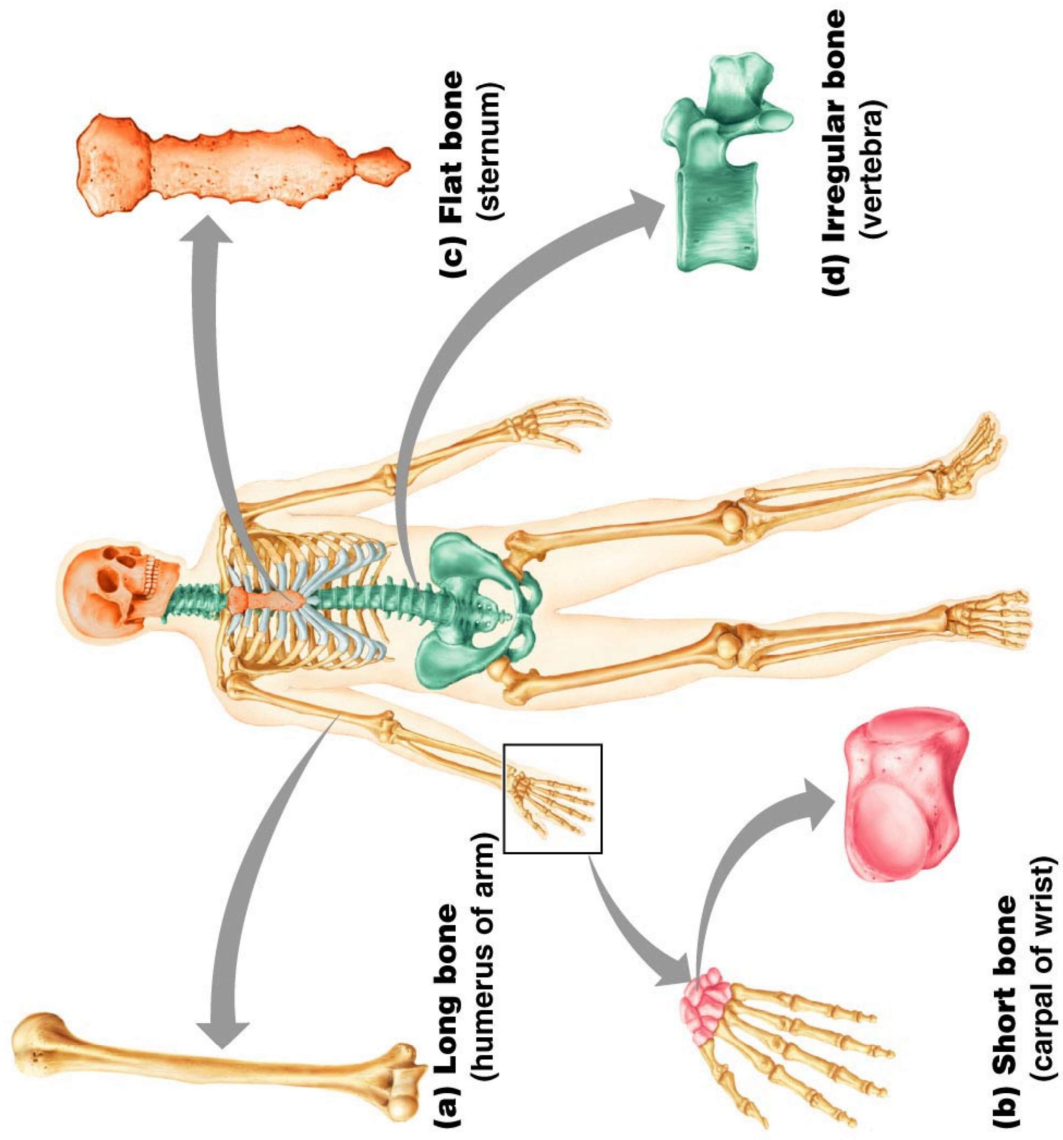
- Includes appendages of the body (shoulders, arms, hips, and legs)

Bones

- Adult skeleton has 206 bones
- Two basic types of bone tissue:
 1. **Compact bone**- dense throughout
 2. **Spongy bone**- many open spaces

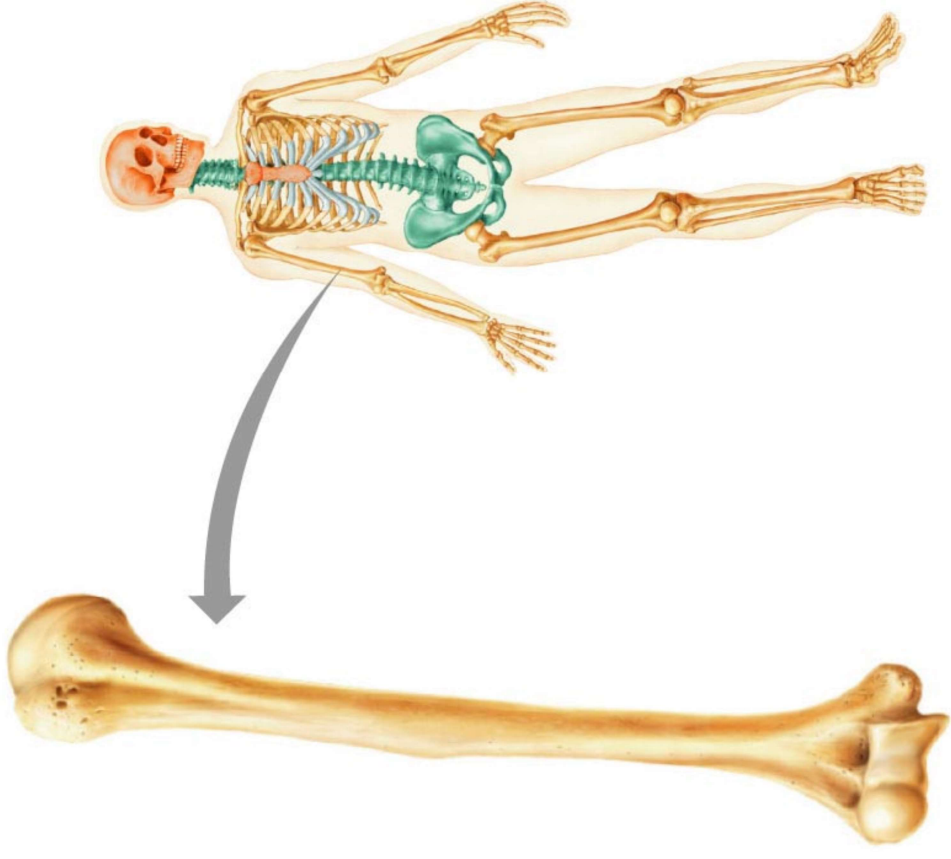


Classification of Bones



Long Bones

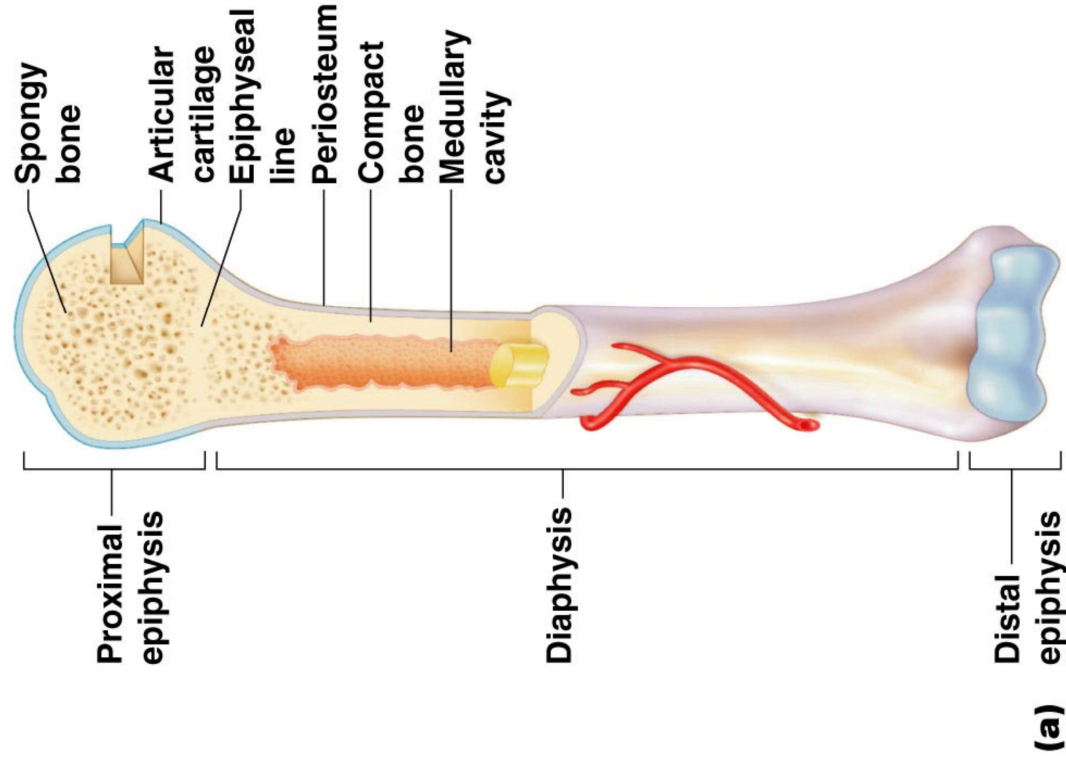
- Long in shape
- Shaft with heads at both ends
- Mostly compact bone
- Example: Femur, humerus



(a) Long bone
(humerus of arm)

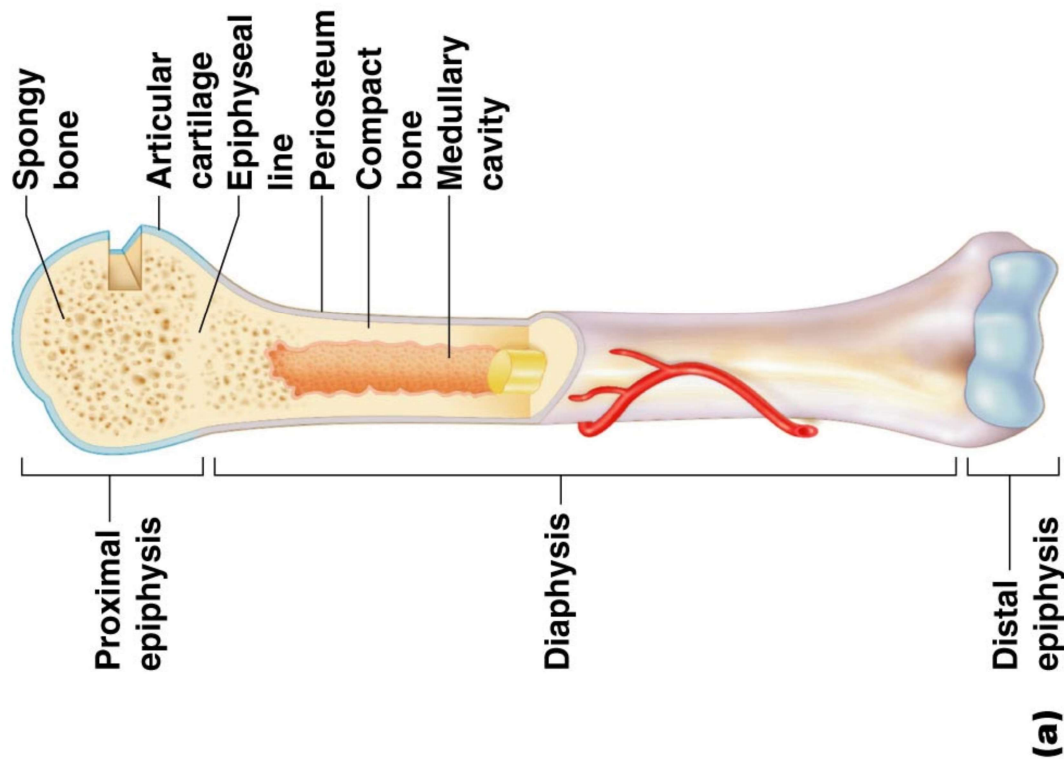
Anatomy of Long Bones

- **Diaphysis**- Length of bone made of compact bone
- **Epiphysis**- Ends of bone made of mostly spongy bone
- **Epiphyseal line/plate**- In the epiphysis, where bone grows from
- **Articular cartilage**- covers surface of epiphysis to reduce friction



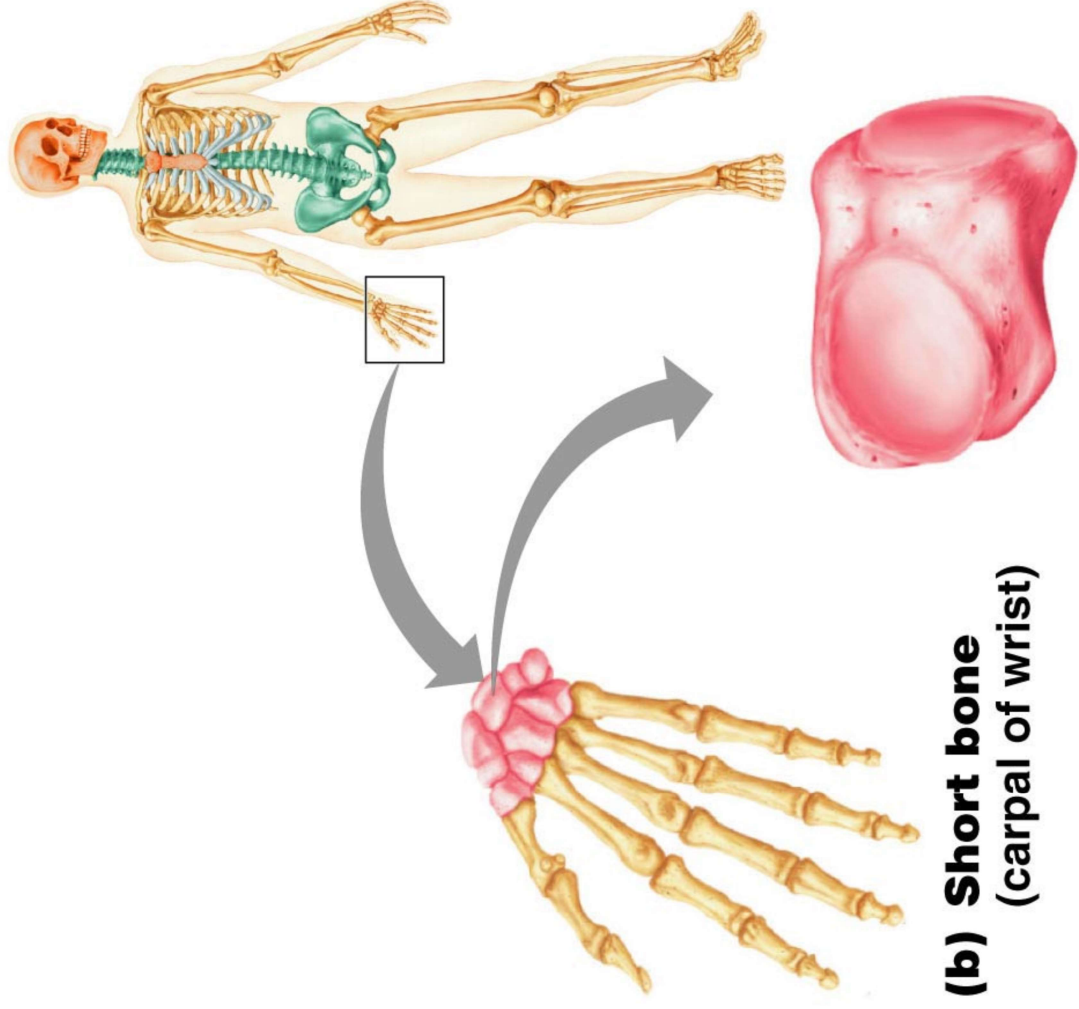
Anatomy of Long Bones

- **Periosteum**- covers diaphysis
- **Endosteum**- lines the inside of diaphysis
- **Medullary cavity**- cavity inside the shaft; contains yellow marrow (fat) and red marrow (for blood cell formation)



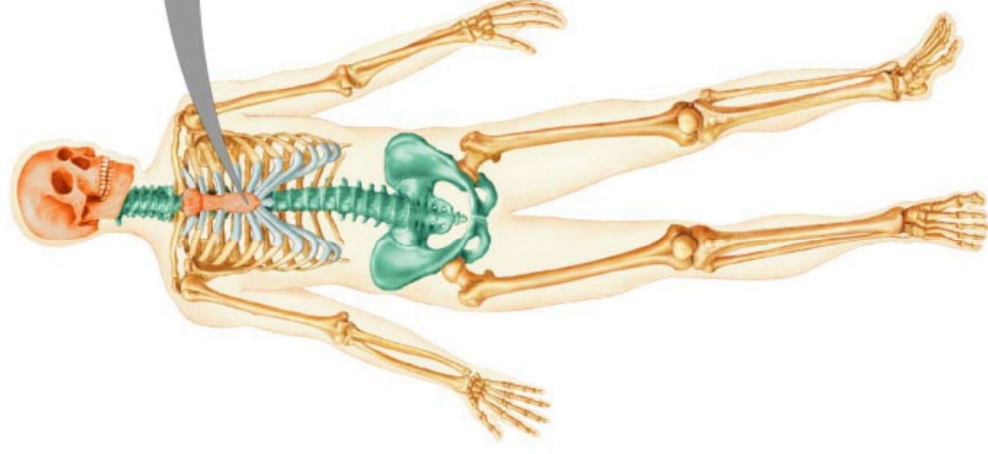
Short Bones

- Cube-shape
- Mostly spongy bone
- Example: carpals, tarsals



Flat Bones

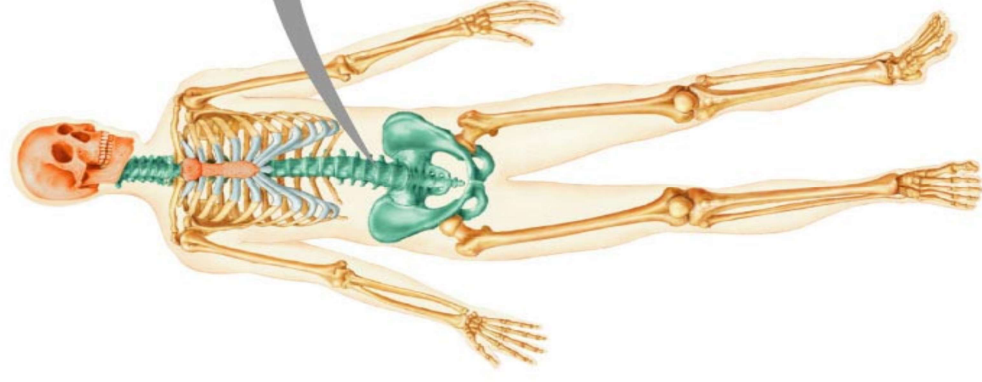
- Thin, flat, usually curved
- Two thin layers of compact bone on outside
- Layer of spongy bone on inside
- Example: skull, ribs, sternum



**(c) Flat bone
(sternum)**

Irregular Bones

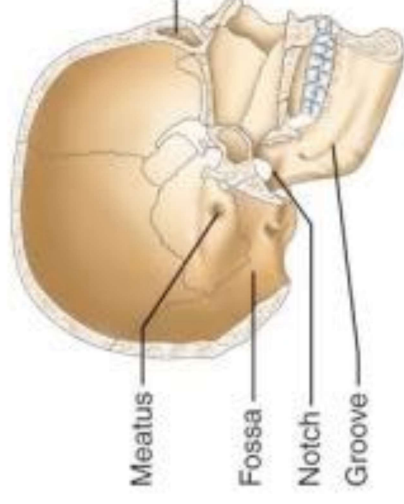
- Irregular shape
- Don't fit into other bone categories
- Example: hip bones, vertebrae



**(d) Irregular bone
(vertebra)**

Bone Markings

- Bone markings are features of bones where muscles, tendons, a ligaments can attach, as well as passages for nerves and blood vessels.
- **Projection/Process**- Grow out from the bone surface
- **Depression/Cavity**- Indentations in the bone

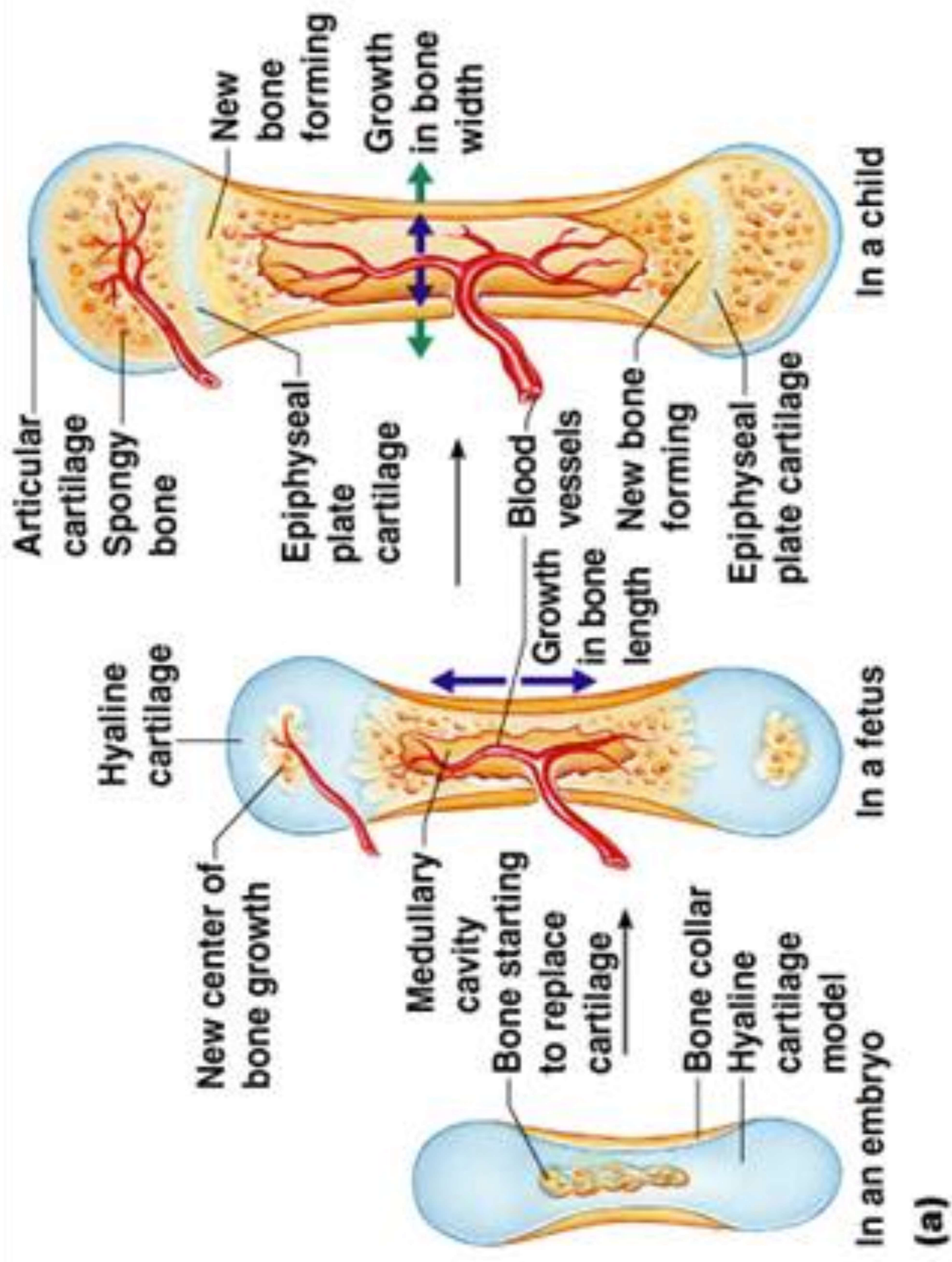


Bone Growth & Development

- **Ossification-** The process of forming the bones of the body
- BIRTH- bones are mostly cartilage; soft
- INFANTS & CHILDREN- Calcium and phosphorus are laid down to form bone.
- TEENS- bones grow longer; occurs at growth (epiphyseal) plates
- EARLY 20s- Growth stops (earlier for females)
- 20s & ON- Bone does not grow longer, but will continue to break down and form new bone

Bone Growth Steps Summary

- Cartilage from early years is broken down
- Bone replaces cartilage- **ossification**
 - Growth of long bones from **epiphyseal plates**
- Bone remodeling happens throughout life
due to:
 - Calcium levels in blood
 - Pull of gravity and muscles on the bones



(a)

Bone Cells

- **Osteocytes**- Mature bone cells
- **Osteoblasts**- Bone-forming cells
- **Osteoclasts**- Bone-destroying cells. Break down bone matrix for remodeling and release of calcium

