
Bone Introduction

Warm Up- Monday

1. Happy Halloween!
2. Label your notes with a big heading for unit 3.
3. Set up Cornell Notes using new essential question

Skeleton- (greek for dried up body)

- 206 bones
- 20% of body weight
- Consists of
 - Bones
 - Ligaments- connects bones to bone
 - Cartilage-
 - Joints

Two main divisions:

1. Axial

- a. Skull
- b. Vertebrae
- c. Rib Cage
- d. Hyoid Bone

2. Appendicular (arms & legs)

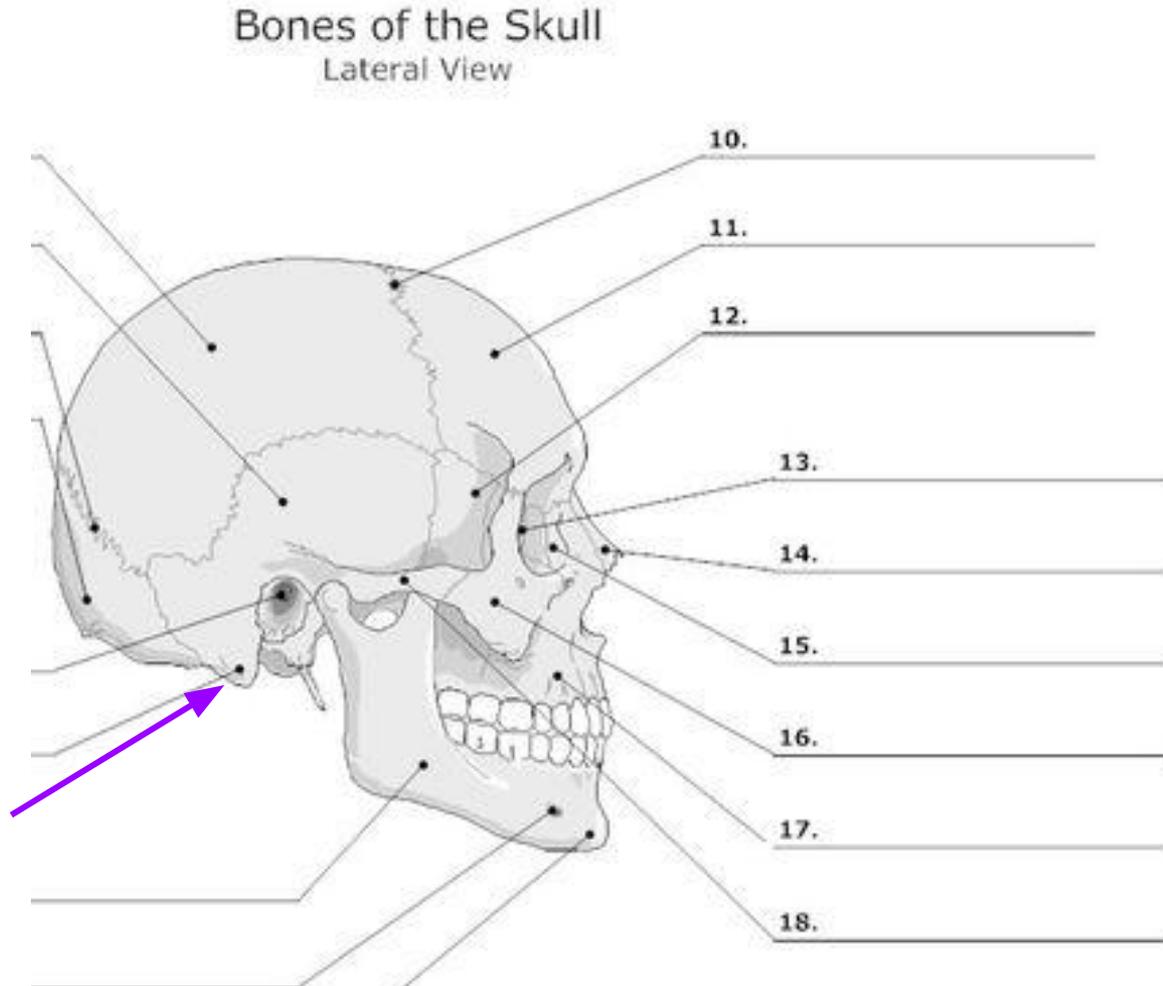
- a. Pectoral girdle and upper limbs
- b. Pelvic girdle and lower limbs

Directions

1. Choose a site of remains
2. Fill in your crime scene sheet
3. Use the informative packet to help you determine gender, race and stature of skeletons
4. When you are finished it will be worth a stamp and a piece of halloween candy :)

Warm Up- write on a left side of notes

1. What is #11, #17, #16 pointing to?
2. What is the arrow pointing at?



Wednesday

Functions

1. Support
2. Protection- encases organs (brain, heart, spine)
3. Movement- levers for muscle attachment
4. Mineral storage- calcium
5. Blood cell production
 - a. Red marrow makes red blood cells (spongy bone)
6. Fat storage
 - a. Yellow marrow used for fat storage (medullary cavity)

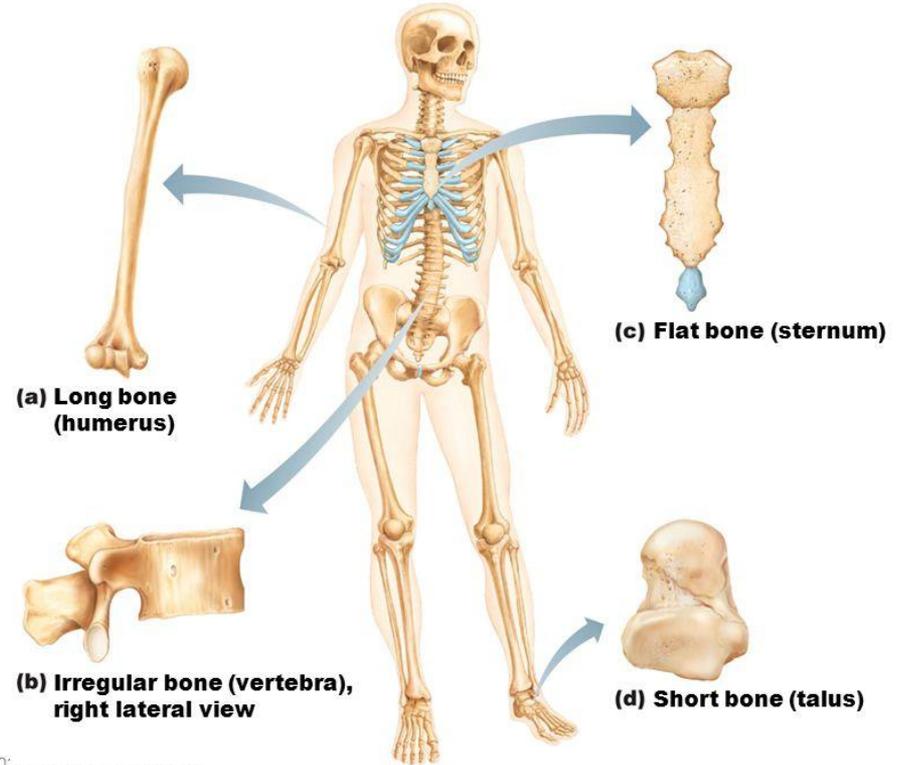
Bone Cells

1. Osteoblast
 - a. Forms bone
 - b. Eventually becomes osteocyte
2. Osteoclast
 - a. Fused white blood cells
 - b. Destroys bone
3. Osteocyte
 - a. Basic bone cell
 - b. Formed when “blasts” become surrounded by bone matrix

Types of Bones

1. Long Bones: longer than wide
2. Short Bones: cubed shapes
3. Flat- thin, flat, can be curved
4. Irregular- all others

Figure 6.2 Classification of bones on the basis of shape.



Bone Textures

1. Compact- dense outer layer
2. Spongy (lattice-like)-honeycomb like, small needle pieces called trabeculae

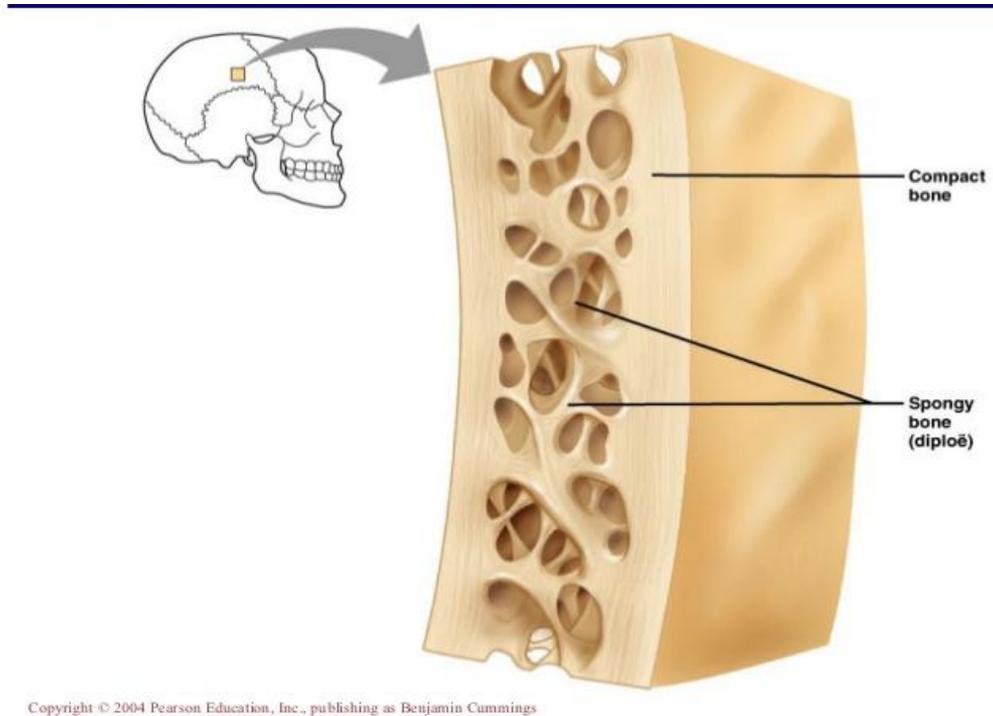


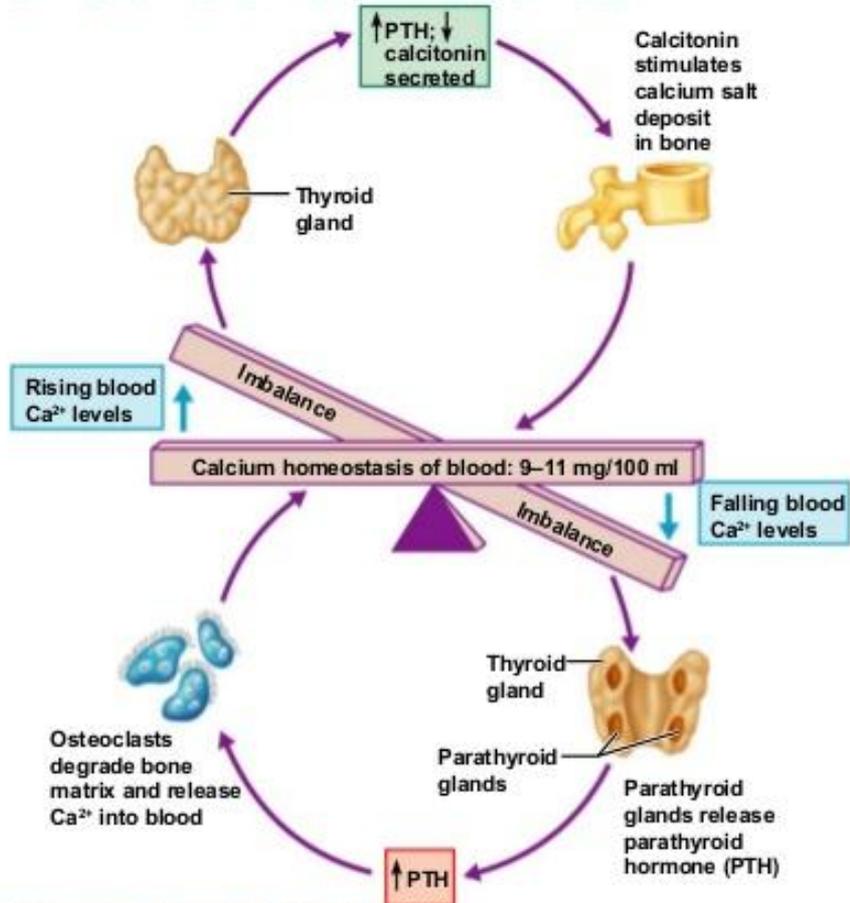
Figure 6.4

Bone Remodeling

Two mechanisms

1. Controlled by hormones
2. Stresses placed on bones

Hormonal Control of Blood Ca



Calcium in the blood plays a role in your brain sending messages to your muscles. When calcium too low-hyperexcitable. OR when too high-nonresponsive

Bone Shape reflects function

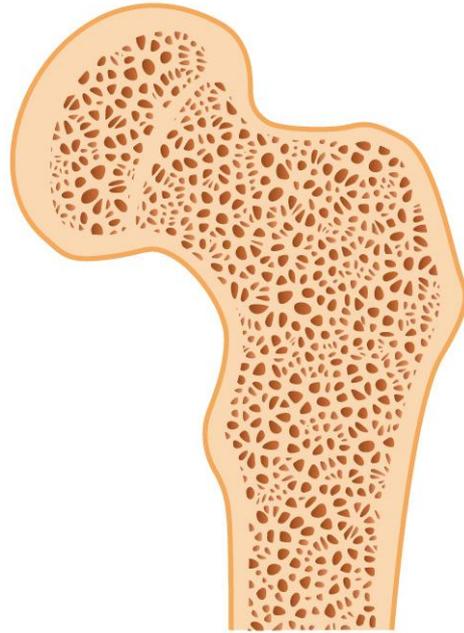
- Types of stress applied to bones:
 - Compression
 - Tension
- Trabeculae form along stress lines to help transfer force
- Exercise & the bone: bones will strengthen by being thicker and stronger when stress placed on them
 - Opposite occurs when bones are not being used

Osteoporosis

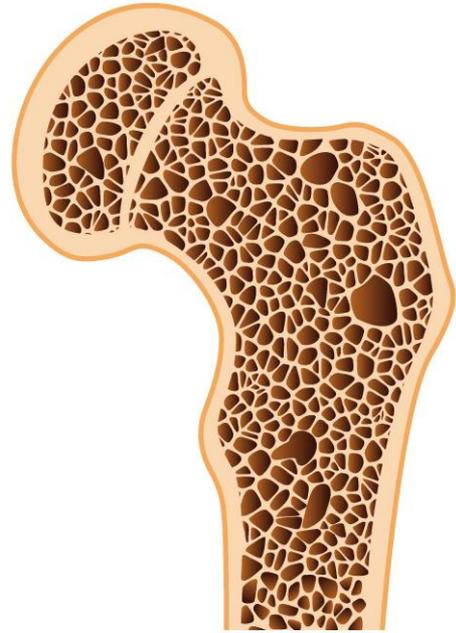
-Bone Thinning

-Effects mostly light skinned, postmenopausal women. Why?

1. Low dietary intake of calcium
2. Lack of exercise
3. Decrease in estrogen
4. Heavy alcohol or cigarette use



Healthy bone



Osteoporosis

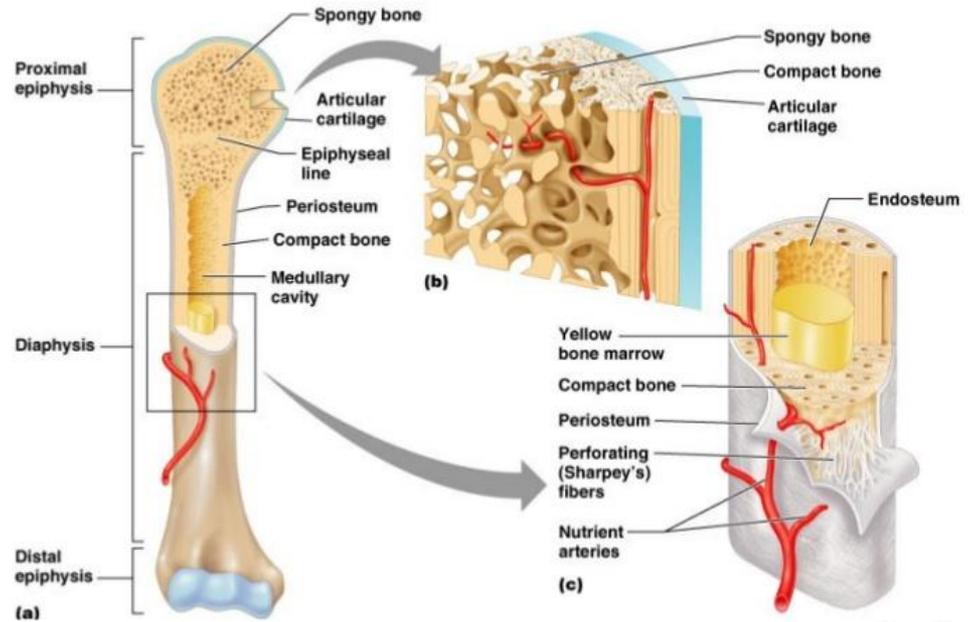
The rest of class period:

- Practice identifying bones → bone competition Monday
- Make a table like the one shown below across from your notes. Classify all of the bones from our labeling sheet.

Long	Short	Flat	Irregular

Long Bone Structure

- Diaphysis: Shaft
- Epiphysis: ends
- Epiphyseal (growth) plate: layer of hyaline cartilage allows bone growth in length.
 - Stops 18- 21, cartilage replaced with bone
- Medullary cavity: hollow, contains yellow bone marrow

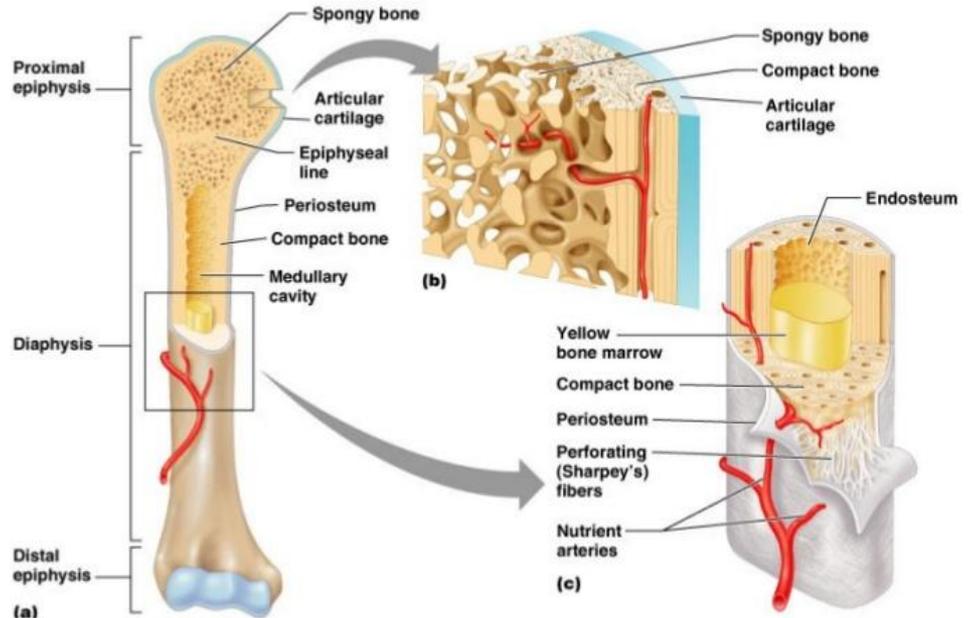


Copyright © 2004 Pearson Education, Inc., publishing as Benjamin Cummings

Figure 6.3

Long Bone Structure

- Articular cartilage: thin layer of hyaline cartilage that covers ends
 - Reduces friction
- Membranes
 - Periosteum: covers external surface of bone, connective tissue
 - Endosteum: covers internal, spongy bone



Copyright © 2004 Pearson Education, Inc., publishing as Benjamin Cummings

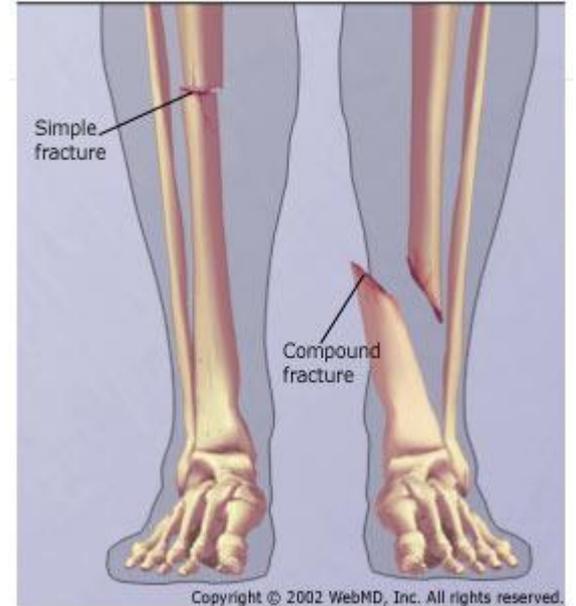
Figure 6.3

Fractures- Simple vs Compound

Compound (or Open): Broken ends break through skin.

Simple: does not break skin.

Bone Fractures



Fractures- Comminuted

Bone is splintered and crushed.



Fracture- greenstick

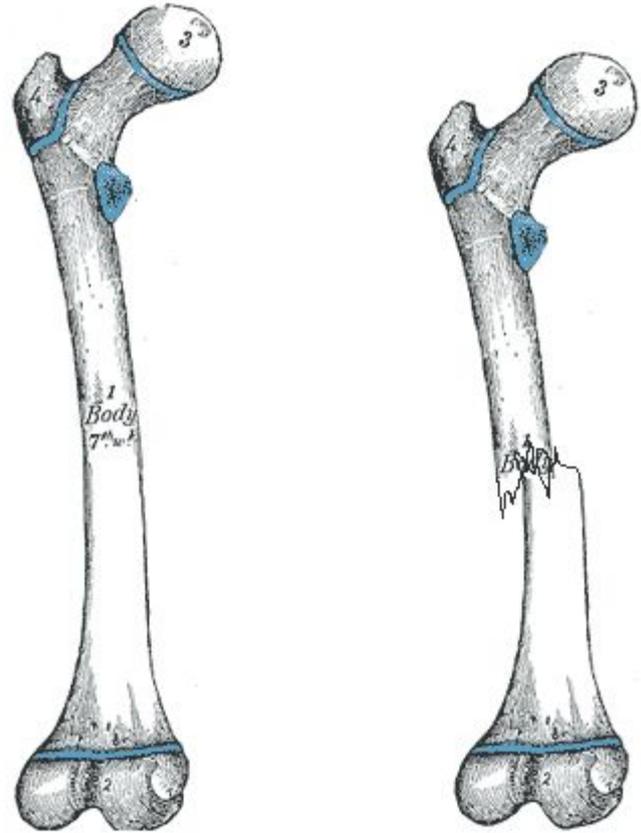
Partial fracture, one side breaks other bends.

Only occurs in children, bones not completely ossified.



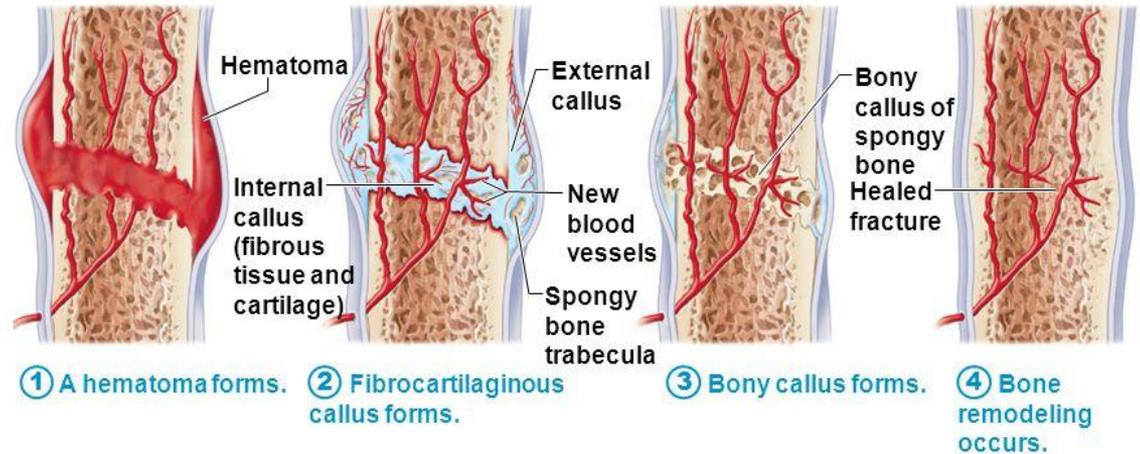
Fracture- Impacted

One end of bone forcefully driven into interior of the other.



Repairing a fracture:

1. Damage to blood vessels causes a hematoma (clot & bruising)
2. 1-2 days, osteoblasts from periosteum spongy bridge
3. Osteoclasts reabsorb bone fragments
4. Callus is formed, eventually reabsorbed so bone returns to normal



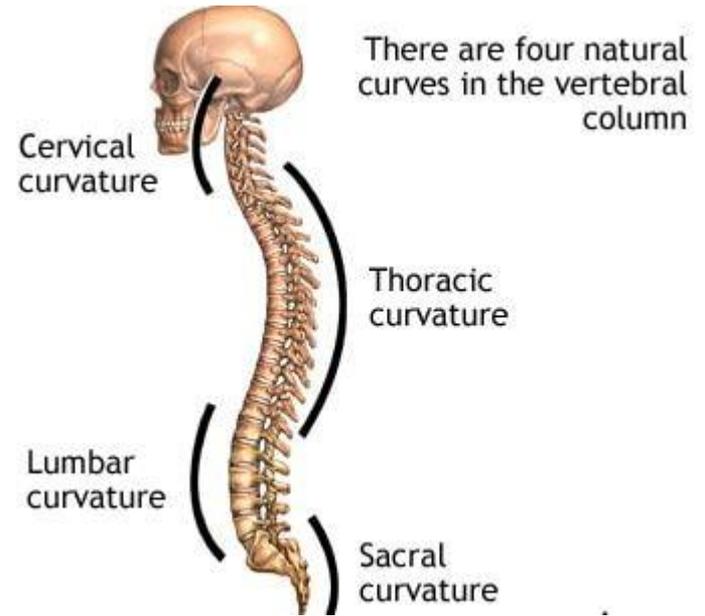
Vertebral Column

- 26 irregular bones
- Separated by discs
- Movement allowed
 - flexion/ extension (anterior/ posterior)
 - Lateral flexion (left/ right)
 - Rotation
- Divisions
 - Cervical- first 7 vertebrae
 - Thoracic- 12 vertebrae
 - Lumbar- 5 vertebrae
 - Sacral- 5 fused
 - Coccyx- 4 fused

Curvatures of the Spine

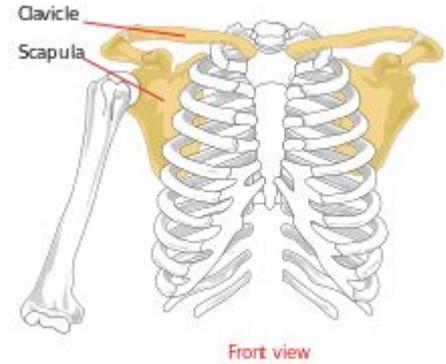
- Cervical
- Thoracic
- Lumbar
- Sacral

→ Functions as a spring due to the “S” curve



Pectoral Girdle (shoulder)

- Attaches upper limbs
- Includes the clavicle and scapula



Pelvic Girdle- Hip

- Strongly attached to axial skeleton (sacrum)
- Deep sockets
- More stable than pectoral girdle
- Less freedom of movement
- Made up of paired bones

Pelvis- Hip Bone

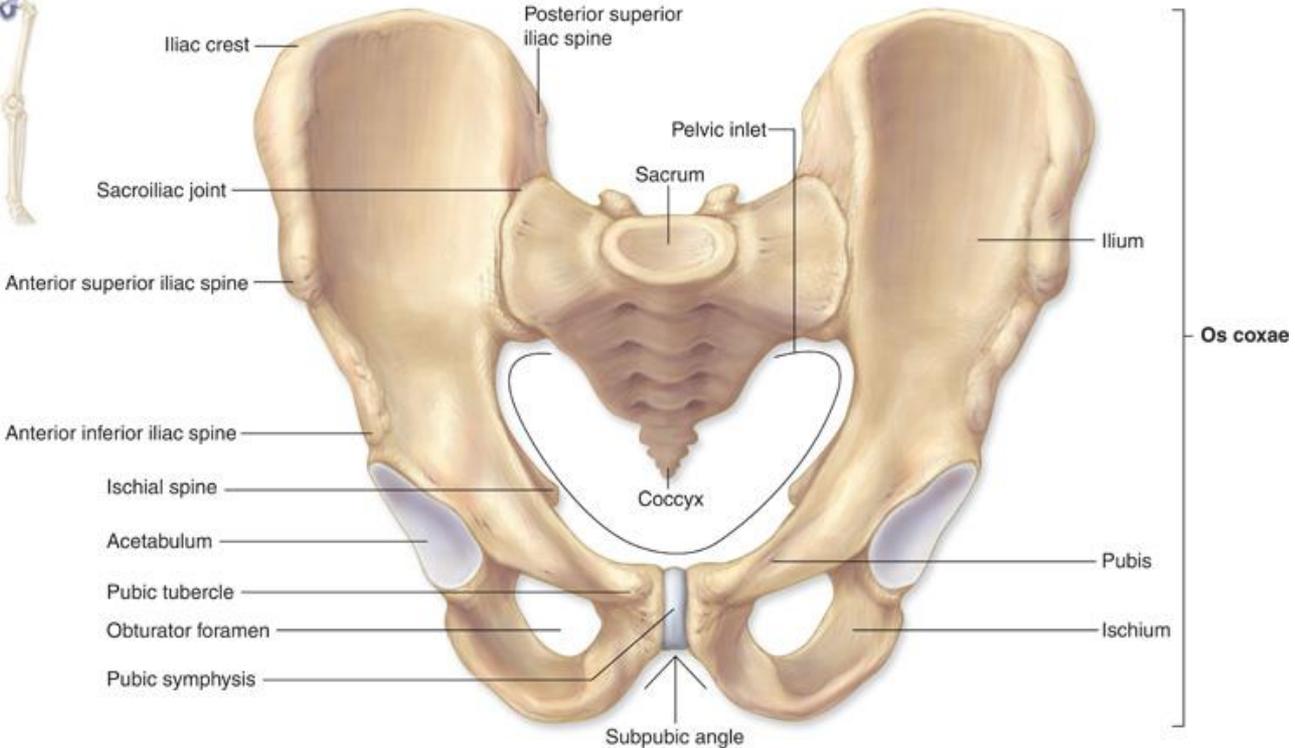
Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.



Ilium

Ischium

Pubis



The Hyoid Bone

- The only bone with no direct articulation with any other bone
- Acts as a moveable base for the tongue

