Anatomy
first year dental students

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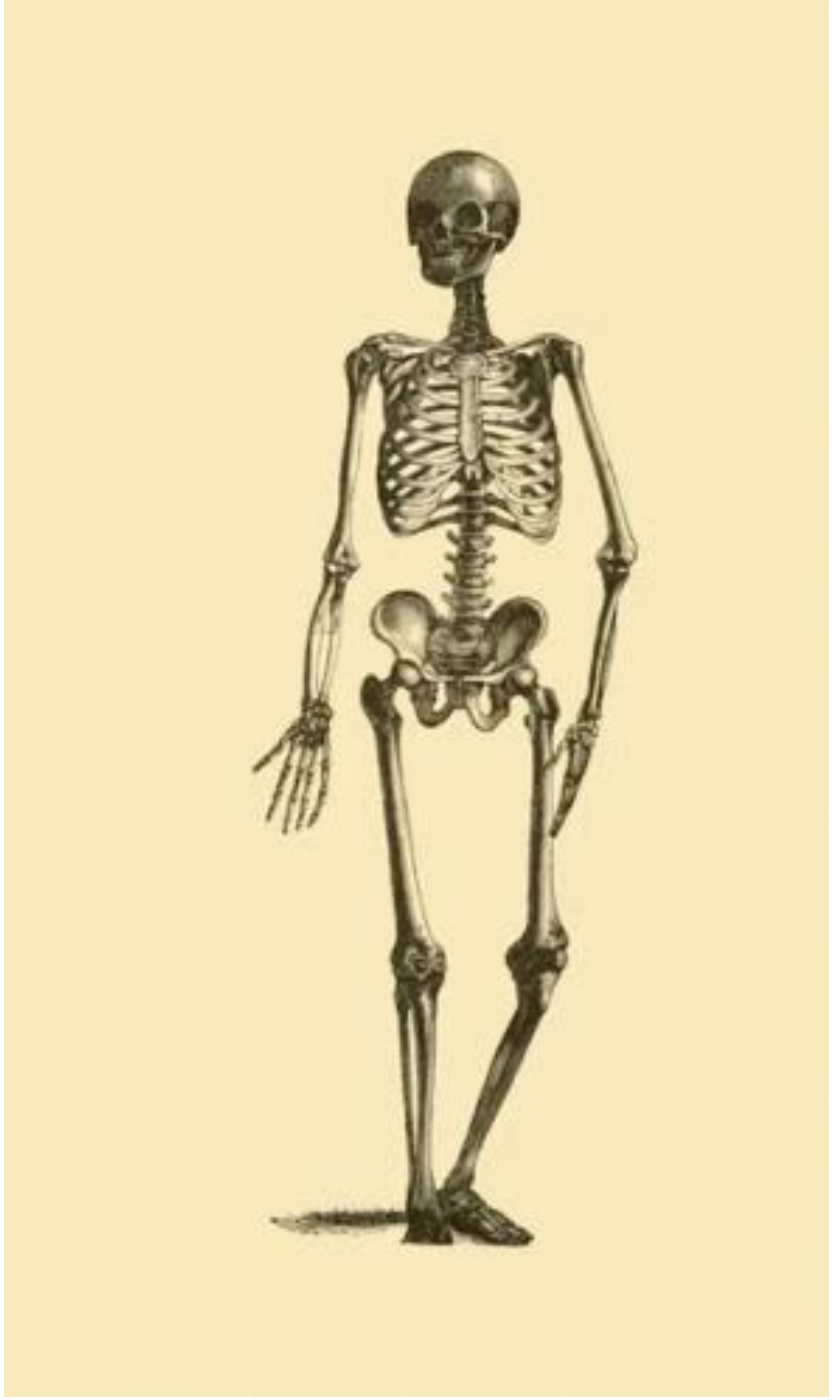
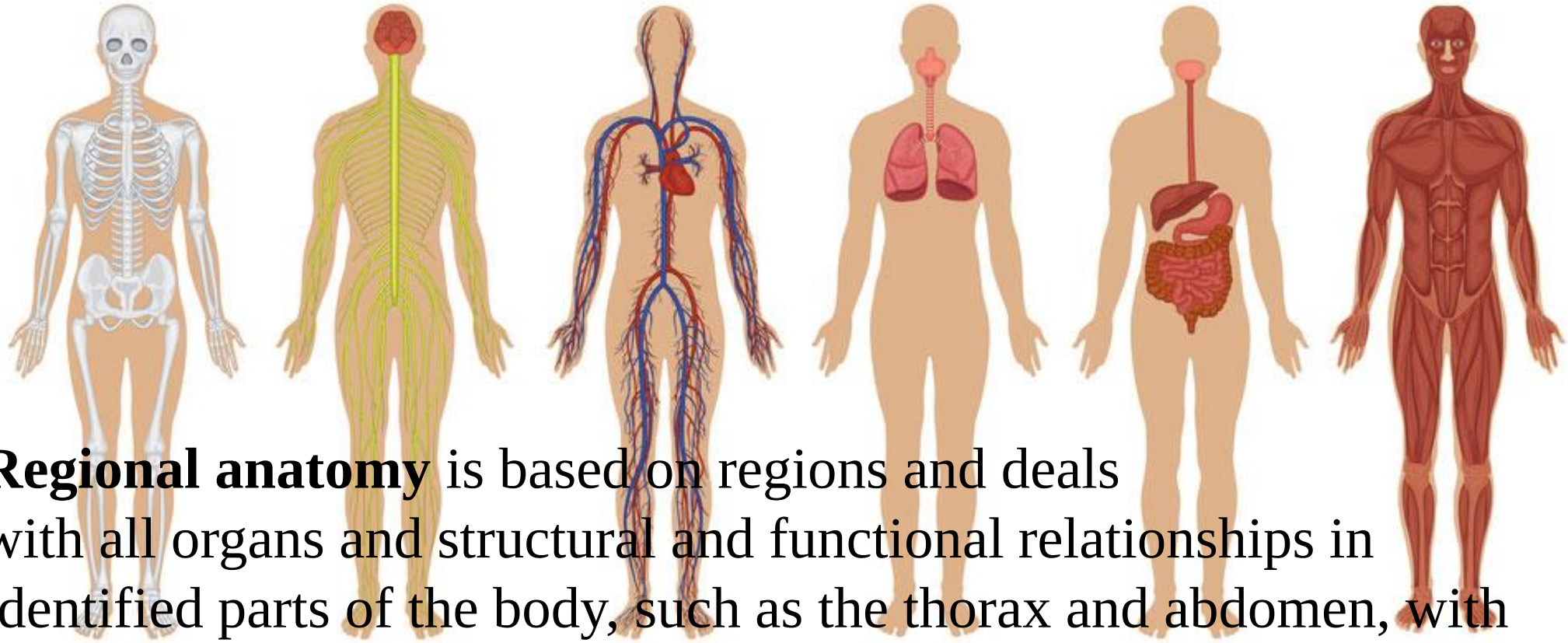
23/2/2025



Gross anatomy can be approached through the study of body systems, by regions, or through clinically significant anatomic concepts.

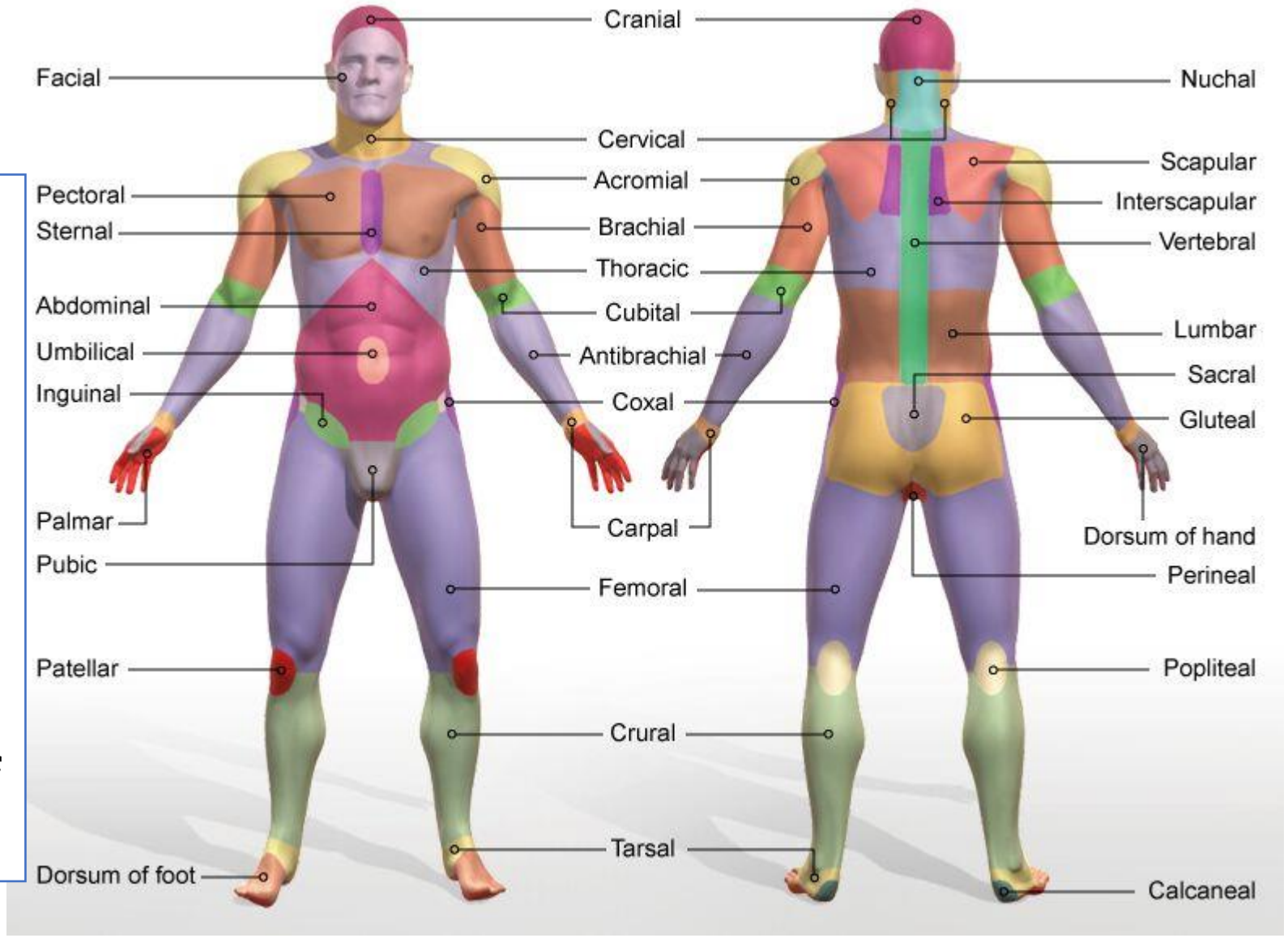
Gross anatomy is the study of anatomy at the visible or macroscopic level. The counterpart to gross anatomy is the field of histology, which studies microscopic anatomy.
The **word** is derived from the Greek ana-, up; and tome-, a cutting. As might be suspected from its **etymology**, **anatomy** depe nds heavily on dissection

Systemic anatomy relates structure to function by organ systems, such as the respiratory, digestive, or reproductive systems.



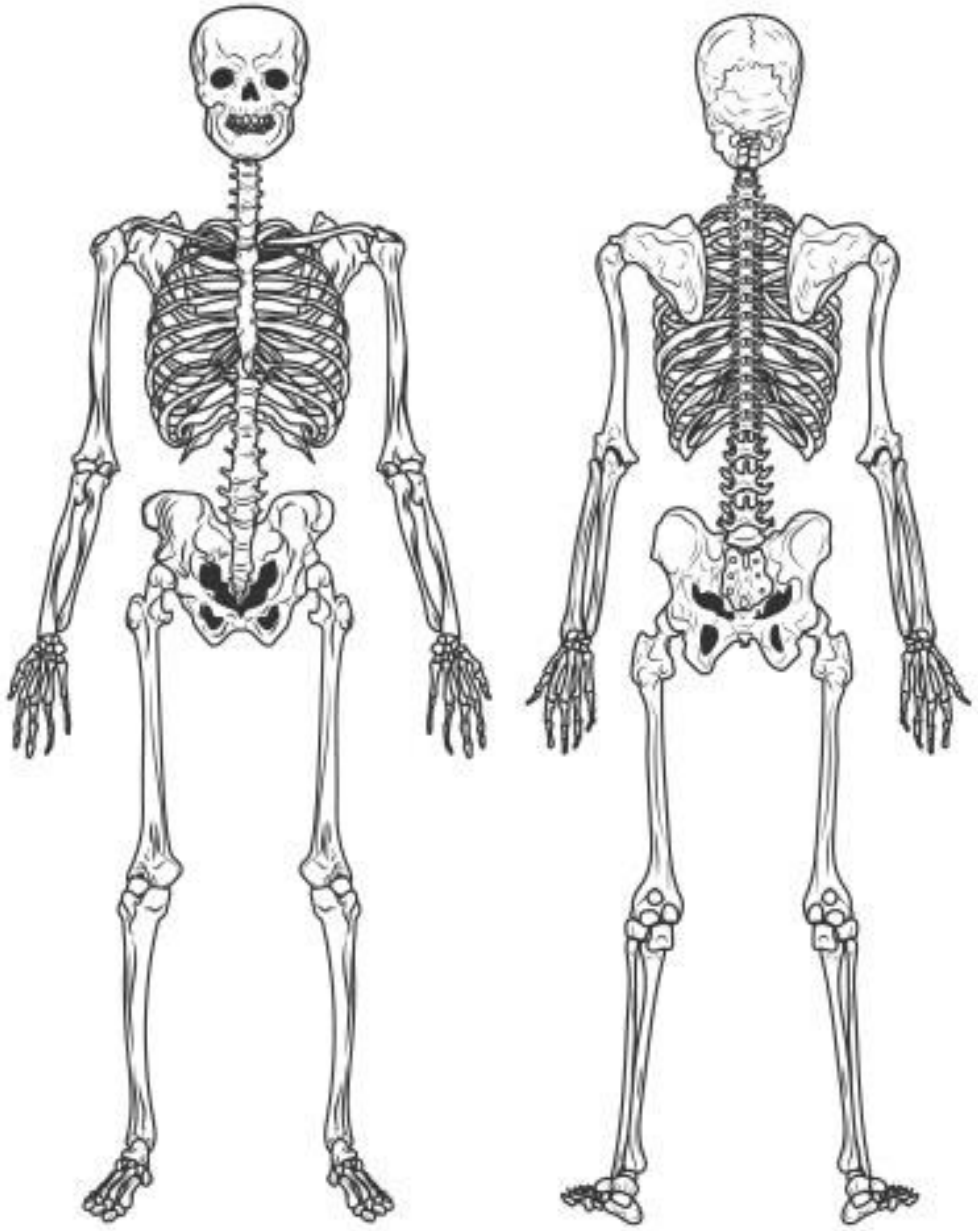
Regional anatomy is based on regions and deals with all organs and structural and functional relationships in identified parts of the body, such as the thorax and abdomen, with emphasis on skeletal elements, muscles, organs, nerves, and blood vessels.

Anatomy is best when reinforced by relating it to clinical medicine, and thus **clinical anatomy** emphasizes the practical application of anatomic knowledge to the solution of clinical problems. Long-term, this has a real pertinence to the practice of medicine.



Skeletal system

- Consists of the **axial skeleton** (bones of the head, vertebral column, ribs, and sternum)
- and the **appendicular skeleton** (bones of the extremities).

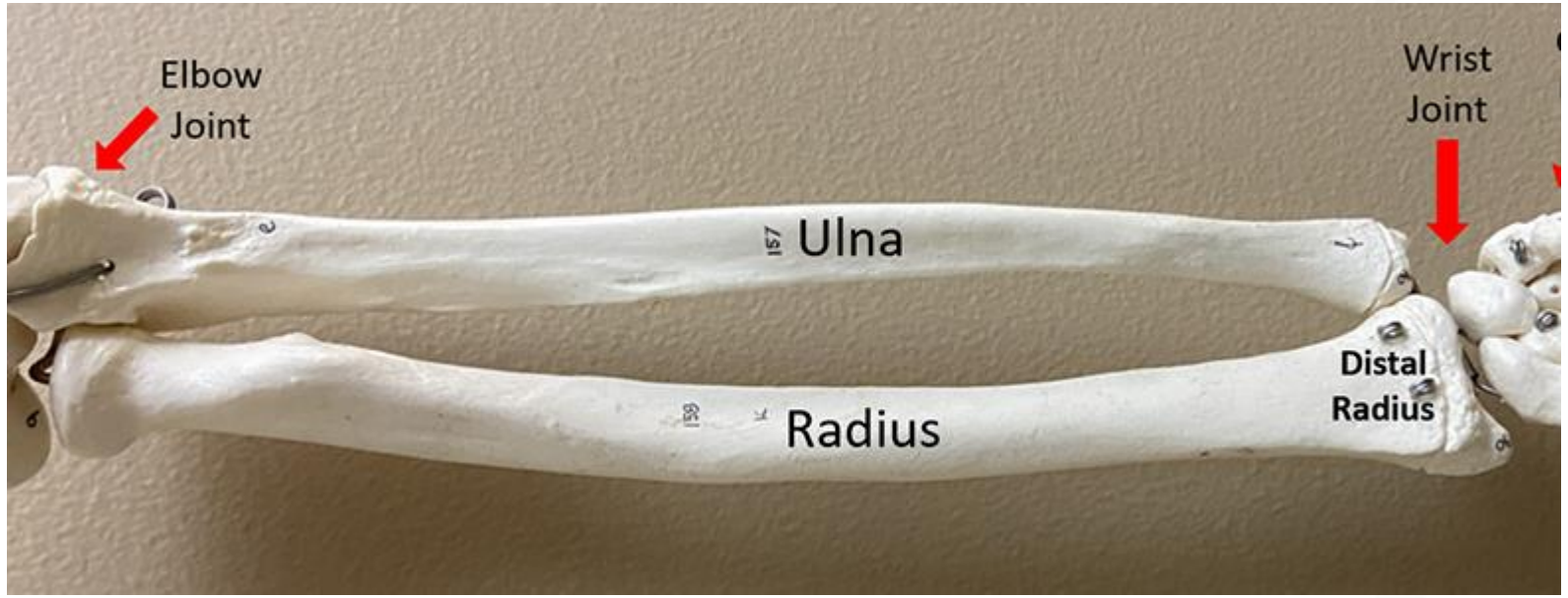


BONES

Are classified into:

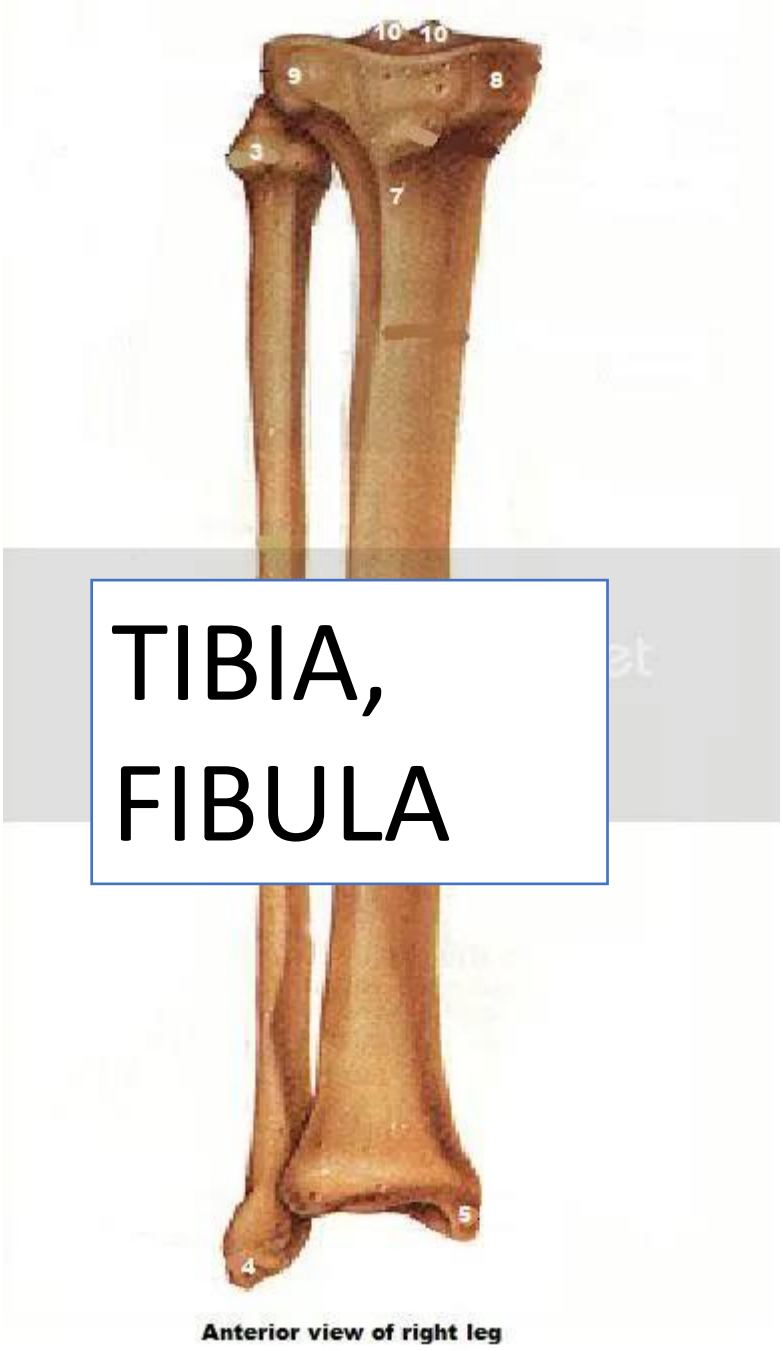
- ✓Long
- ✓Short
- ✓ Flat
- ✓Irregular
- ✓Sesamoid bones

Long bones examples



HUMERUS


FEMUR


10
10
9
8
3
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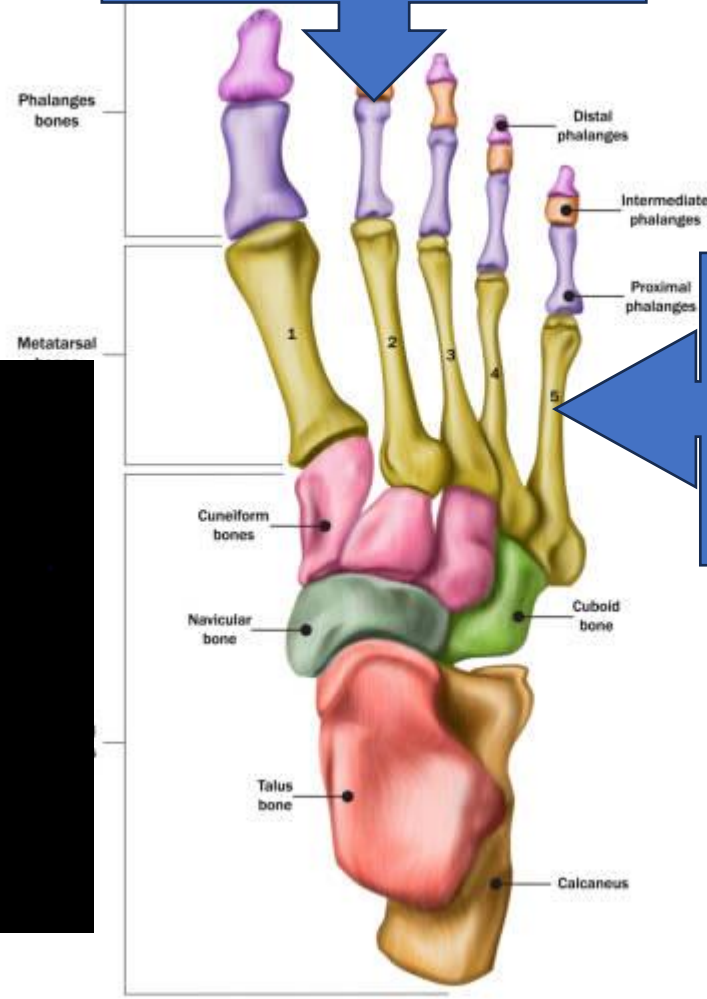
5
4
TIBIA,
FIBULA
Anterior view of right leg

Metacarpals & phalanges.

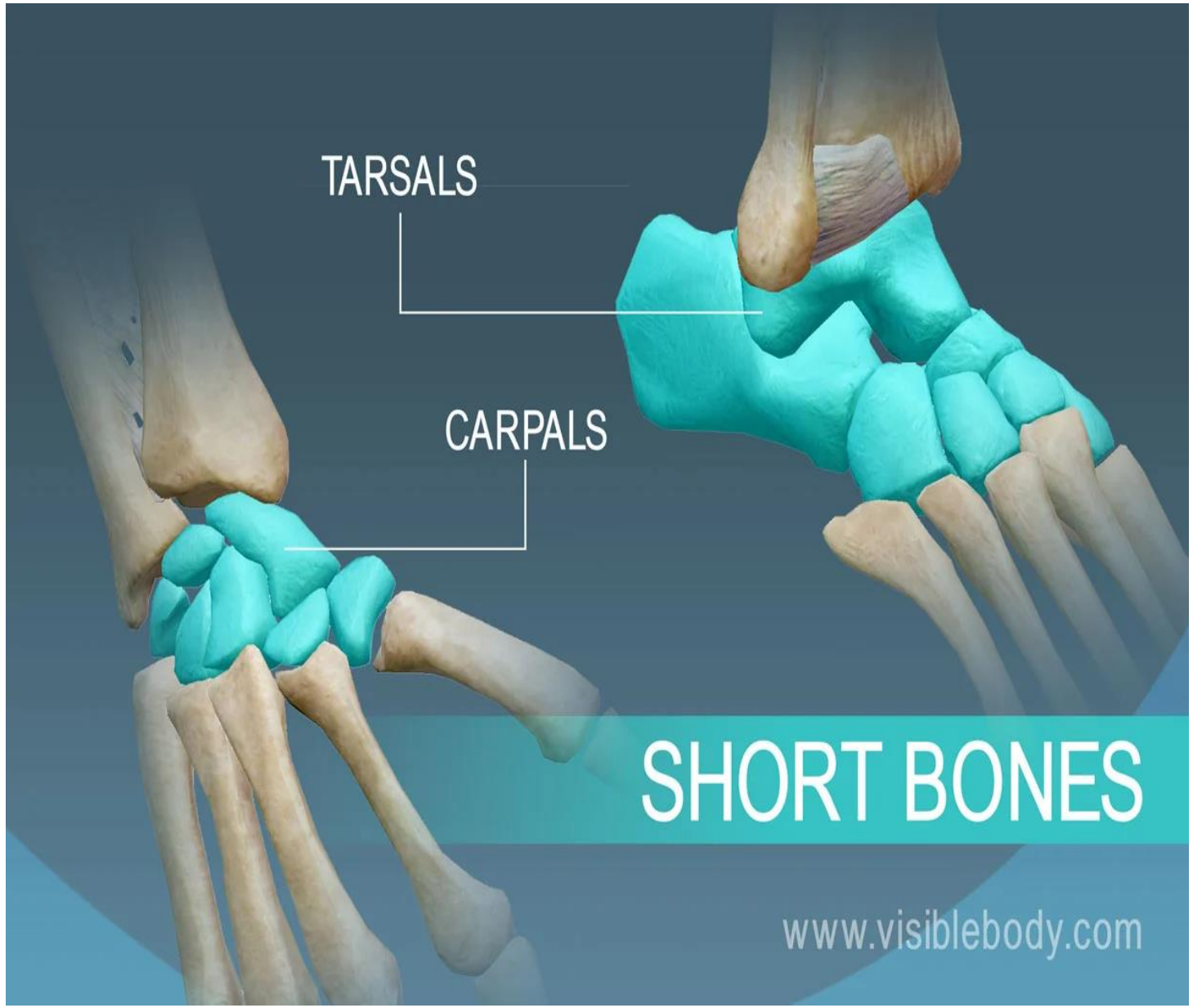
Clavicle

phalanges

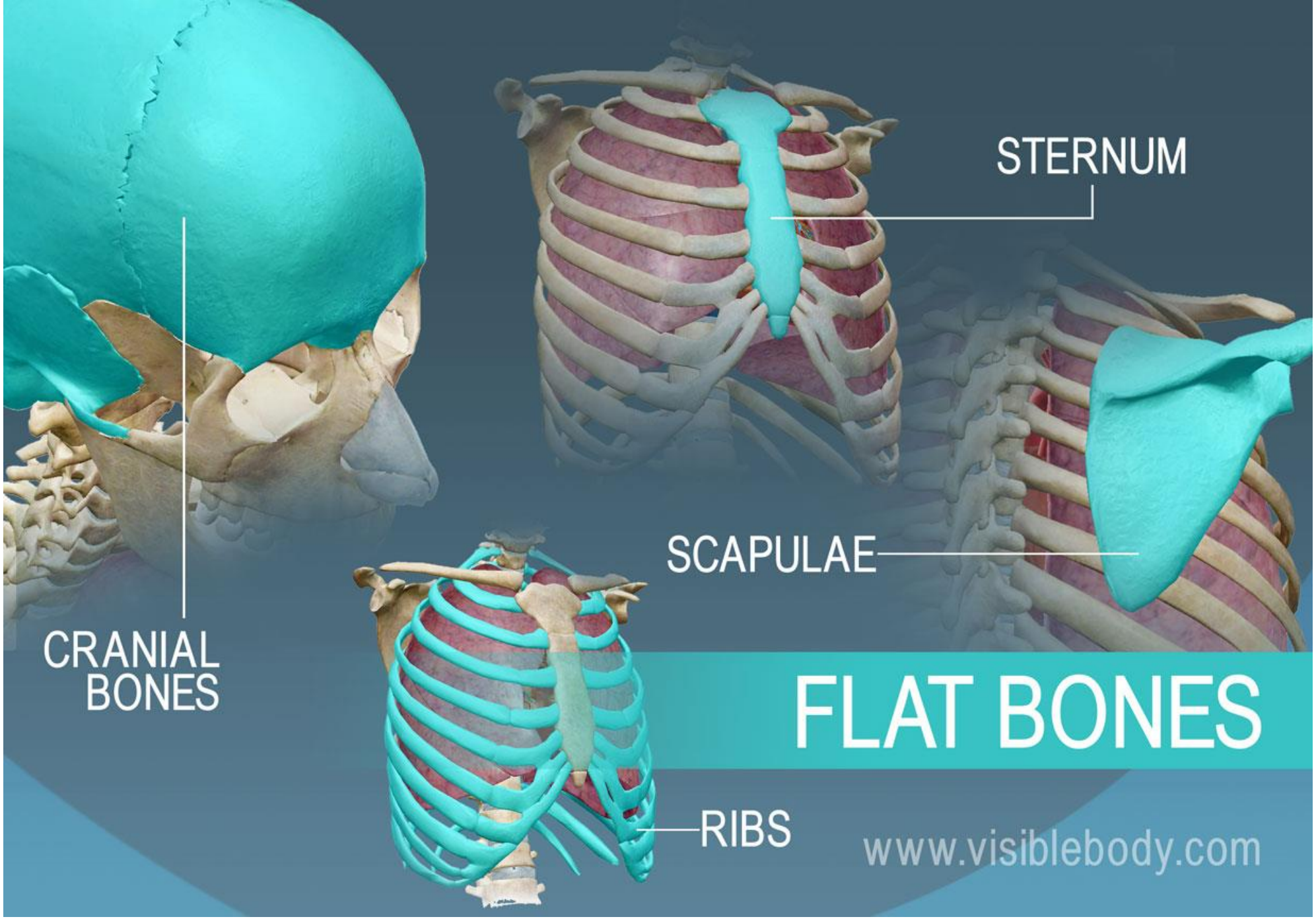


Metatarsal

Short bones examples


TARSALS
CARPALS
SHORT BONES
www.visiblebody.com

Flat bones examples


STERNUM
SCAPULAE
CRANIAL BONES
RIBS
FLAT BONES
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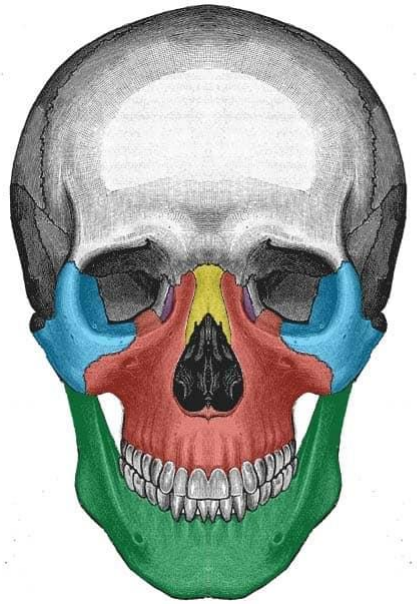
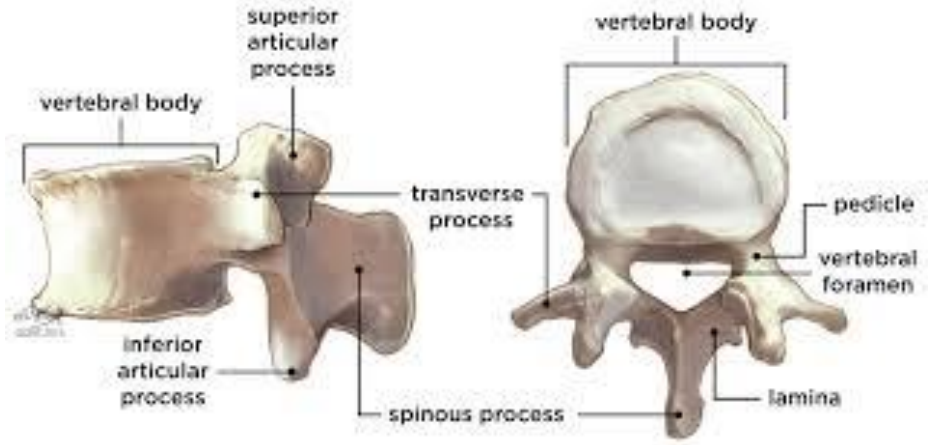
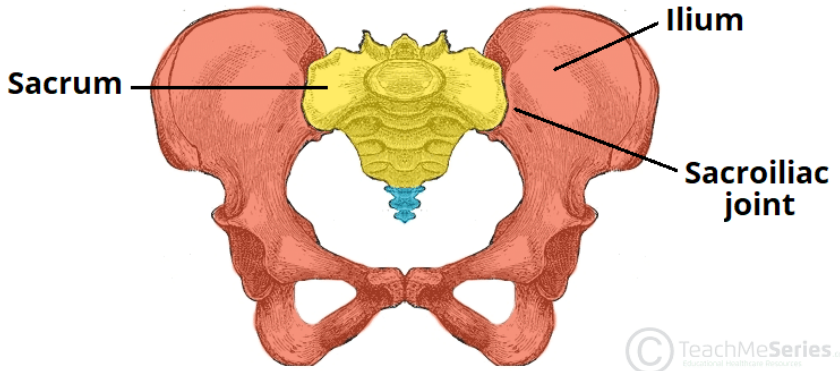
irrigular bones examples

irregular bones Include bones of mixed shapes, such as bones of the face, vertebrae, and pelvis.







Sesamoid bones

• Develop in certain tendons and reduce friction on the tendon

• Examples:

❖ in the wrist (i.e., pisiform)

❖ The largest sesamoid bone is the patella in the knee.


SHORT
LONG
FLAT
SESAMOID
IRREGULAR
BONE TYPES
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II. JOINTS

- **Are places of union between two or more bones**.
- Are innervated as follows: the nerve supplying a joint also supplies the muscles that move the joint and the skin covering the insertion of such muscles (Hilton law).
- Are classified based on their structural features into fibrous, cartilaginous, and synovial types.

A. Fibrous joints (synarthroses)

Are joined by fibrous tissue, have no joint cavities, and permit little movement.

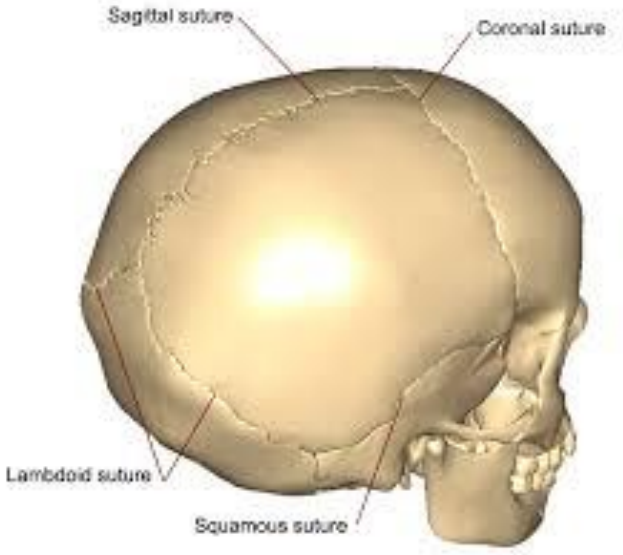
1. Sutures

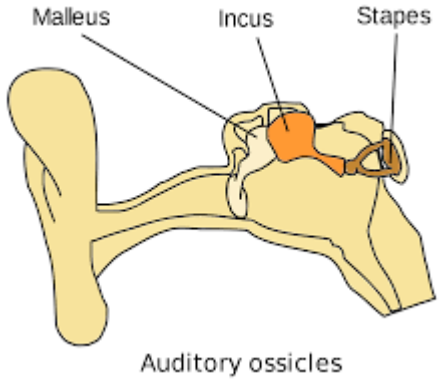
Are connected by fibrous connective tissue, such as the fibrous continuities between the flat bones of the skull.

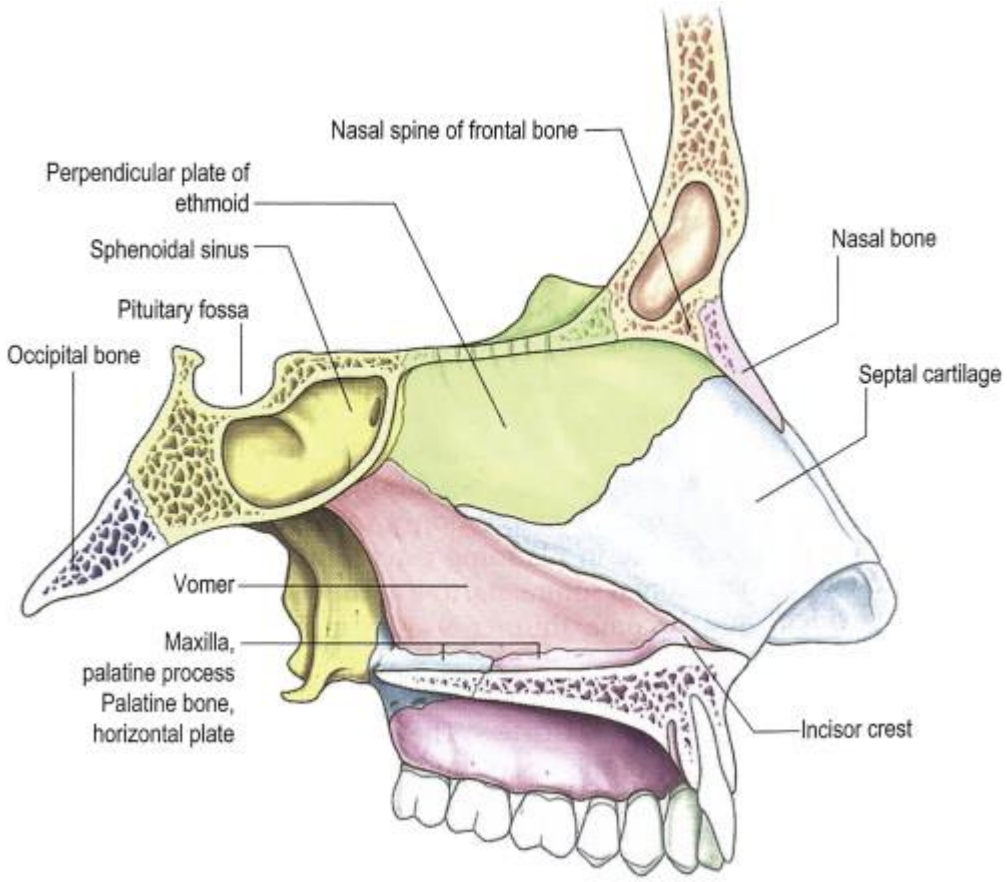
2. Syndesmoses

Are connected by dense fibrous connective tissue.

Occur as the inferior tibiofibular syndesmoses and tympanostapedial syndesmoses (between the foot plate of the stapes and the oval window in the middle ear).







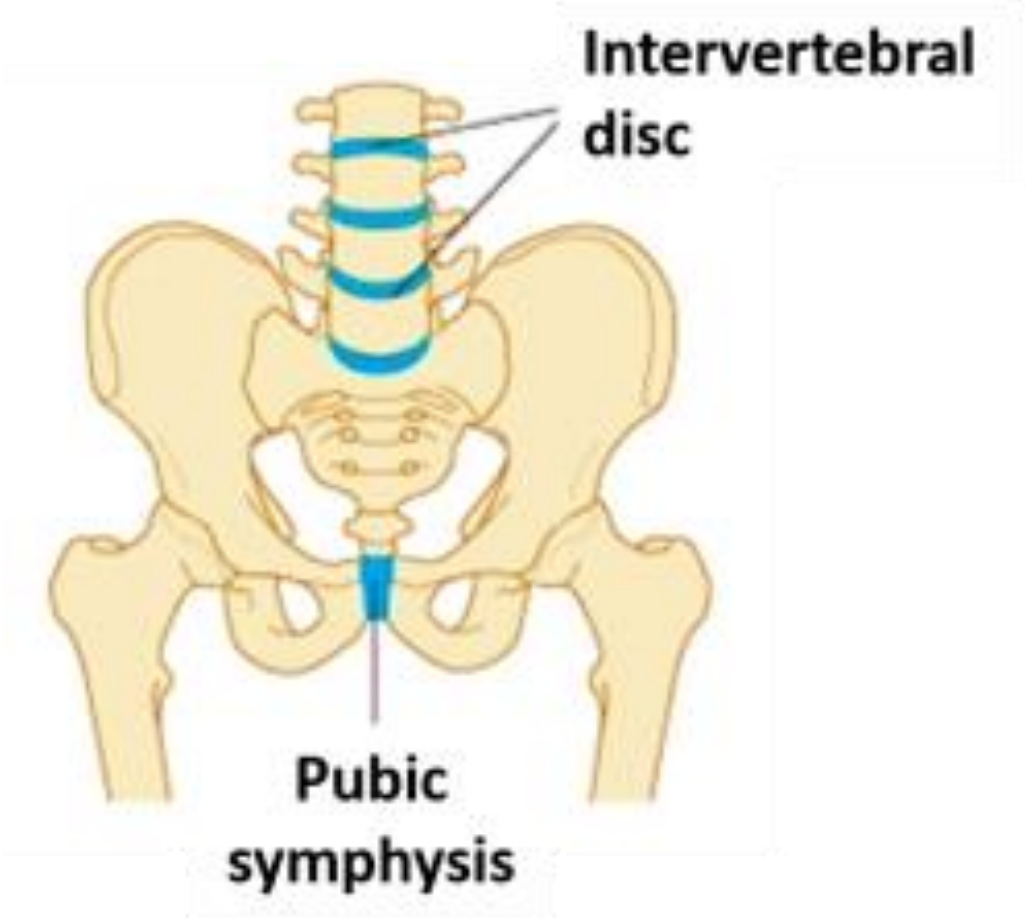
B. Cartilaginous joints

Are united by cartilage and have no joint cavity.

1. Primary cartilaginous joints (synchondrosas)

Are united by hyaline cartilage and permit little to no movement but allow for growth in length during childhood and adolescence.

Include epiphyseal cartilage plates (the union between the epiphysis and the diaphysis of a growing bone) and spheno-occipital and manubriosternal synchondroses.



2. Secondary cartilaginous joints (symphyses)

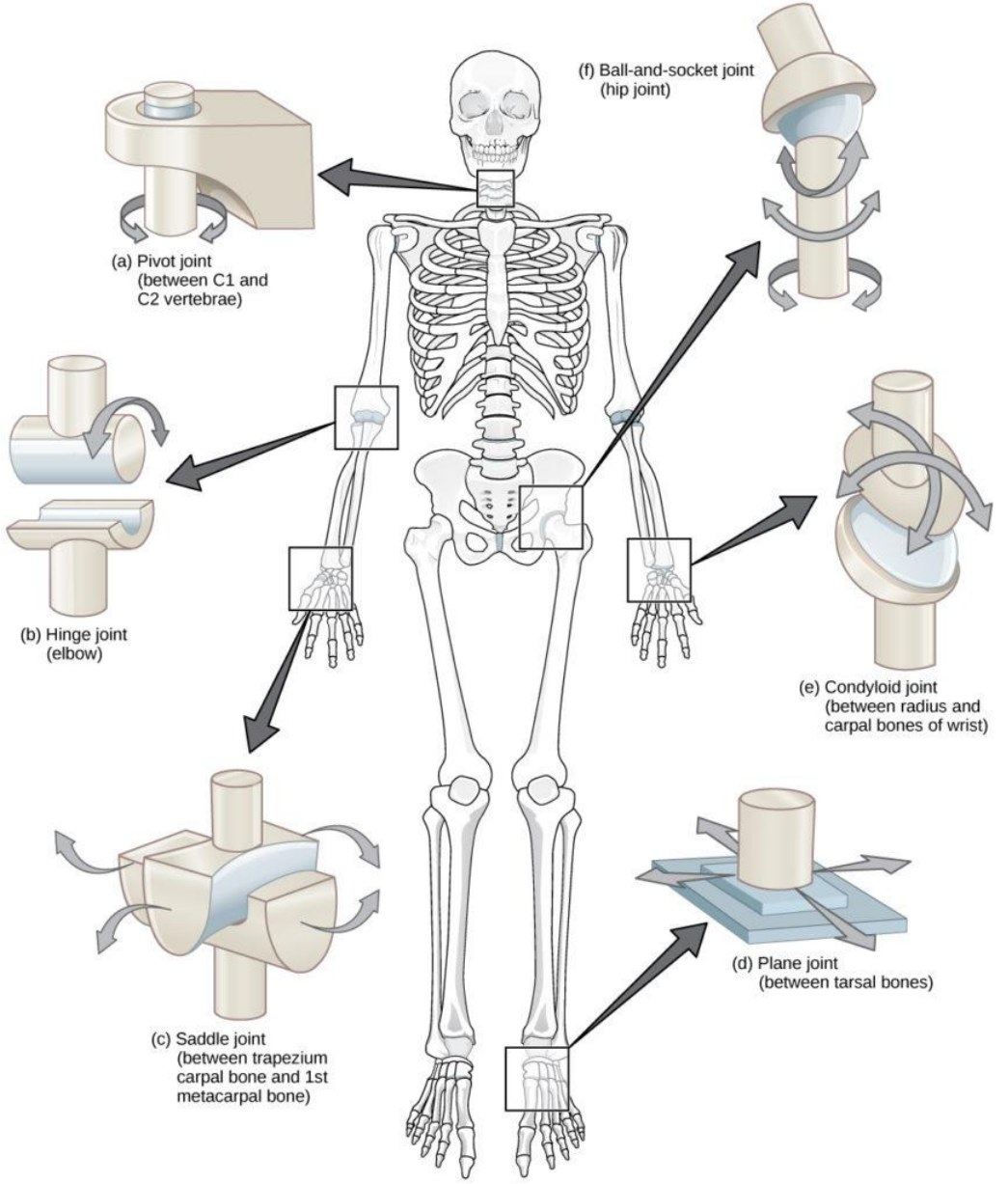
Are joined by fibrocartilage and are slightly movable joints.

Are all located in the median plane and include the pubic symphysis and the intervertebral disks.

JOINTS

c. Synovial (diarthrodial) joints

- ❖ Are found between two separate skeletal elements
- ❖ and permit certain degrees of movement according to the shape of the articulation and/ or the type of movement.
- ❖ Are characterized by four structural features:
- ✓ joint cavity or space,
- ✓ articular (hyaline) cartilage,
- ✓ synovial membrane, which produces synovial fluid,
- ✓ and articular capsule.



GLIDING JOINT

- Also known as a plane joint or planar joint
- Is a common type of synovial joint formed between bones that meet at flat or nearly flat articular surfaces.
- Gliding joints allow the bones to glide past one another in any direction along the plane of the joint – up and down, left and right, and diagonally.
- Slight rotations can also occur at these joints, but are limited by:1. the shape of the bones and the elasticity of the joint capsule surrounding them.
- Unlike most synovial joints, the angle formed between the bones at a gliding joint does not change significantly – just their position relative to one another.

EXAMPLES

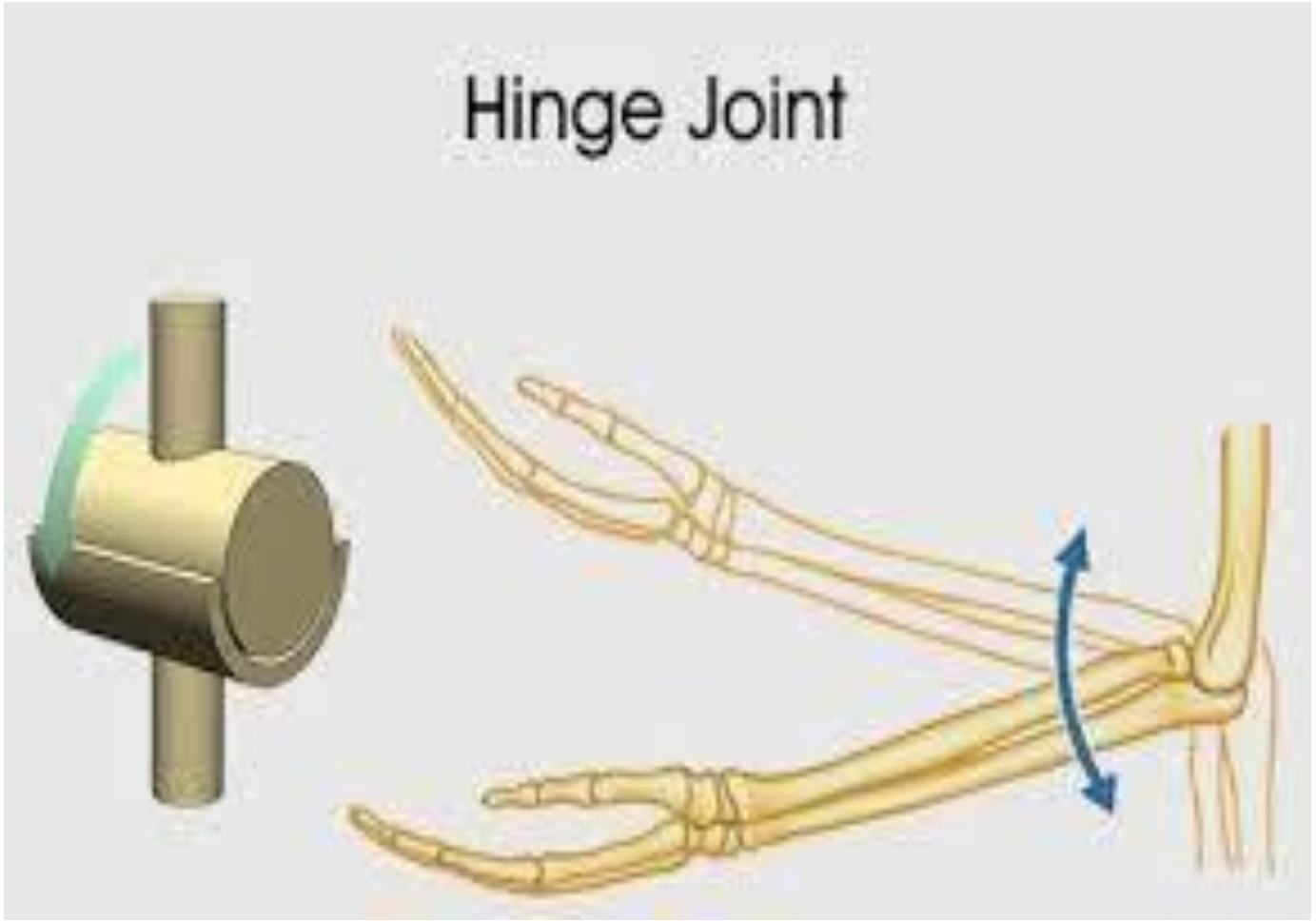
THE TWO MAIN EXAMPLES OF GLIDING JOINTS

✓The lower leg to the ankle joint

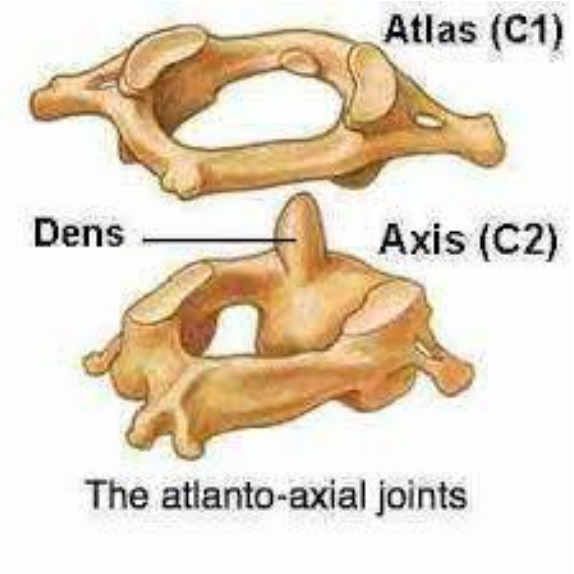
✓ The forearm to wrist joint

JOINTS

2. Hinge (ginglymus) joints
Resemble door hinges
and allow only flexion and extension.
Occur in the elbow, ankle, and interphalangeal joints.



JOINTS

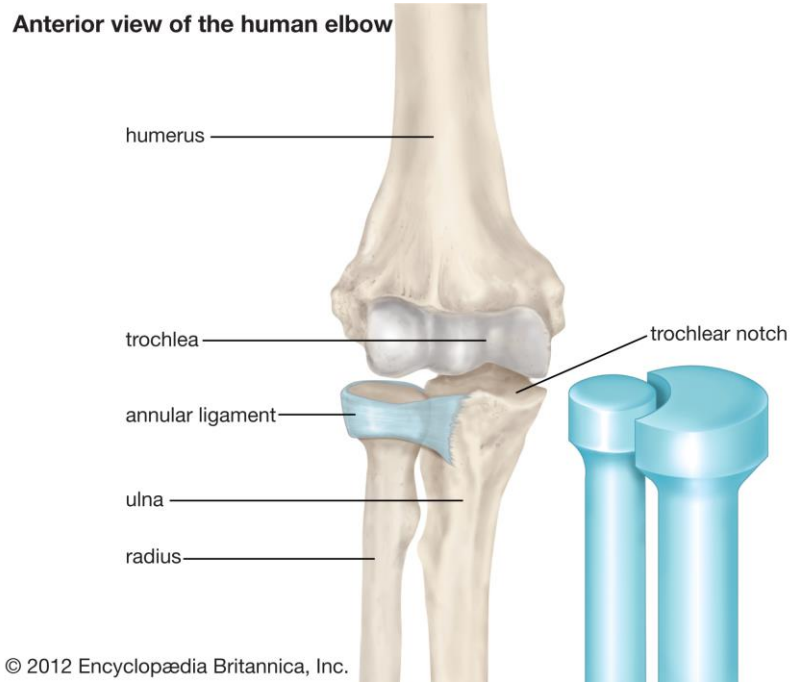


3. Pivot (trochoid) joints

- Are formed by a central bony pivot turning within a bony ring
- Allow only rotation

(movement around a single longitudinal axis).

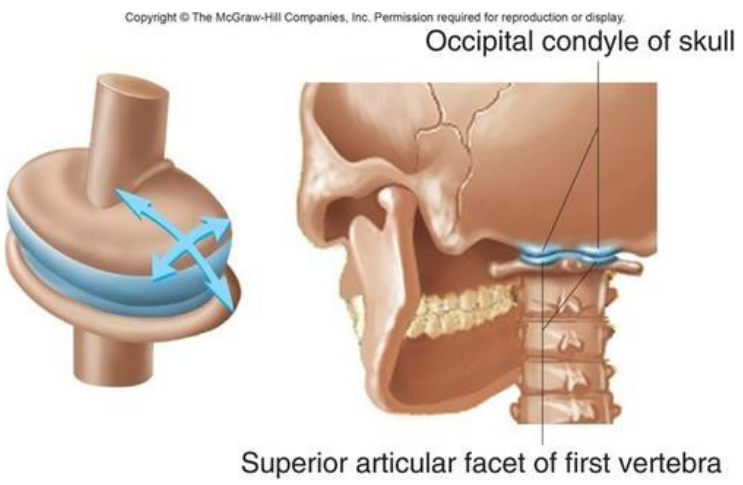
- Occur in :
- the superior and inferior radio ulnar joints
- and in the atlantoaxial joint.



JOINTS

4**. Condylar (ellipsoidal) joints**

- Have two convex condyles articulating with two concave condyles. (The shape of the articulation is ellipsoidal.)
- Allow flexion and extension
- and occur in the wrist (radiocarpal), metacarpophalangeal,
- knee (tibiofemoral),
- and atlanto-occipital joints.

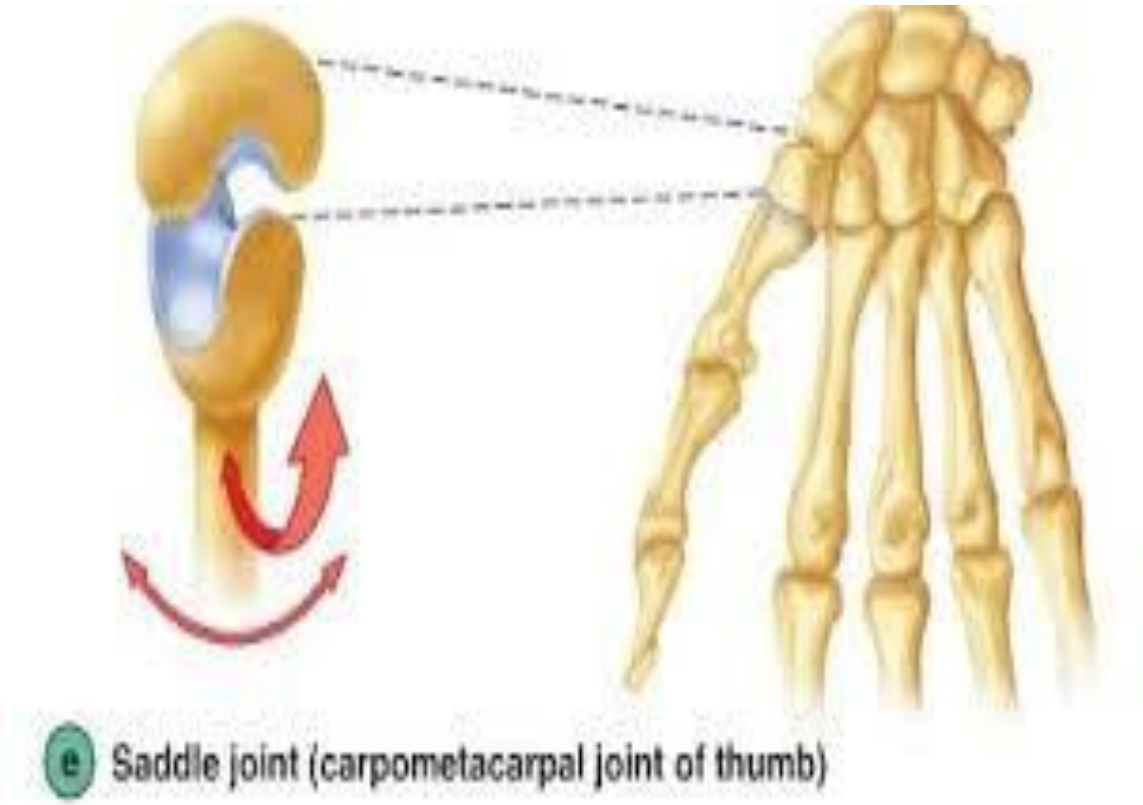


JOINTS

5. Saddle (sellar) joints
Resemble the shape of a horse's saddle
Occur in the carpometacarpal joint of the thumb and between the femur and patella.

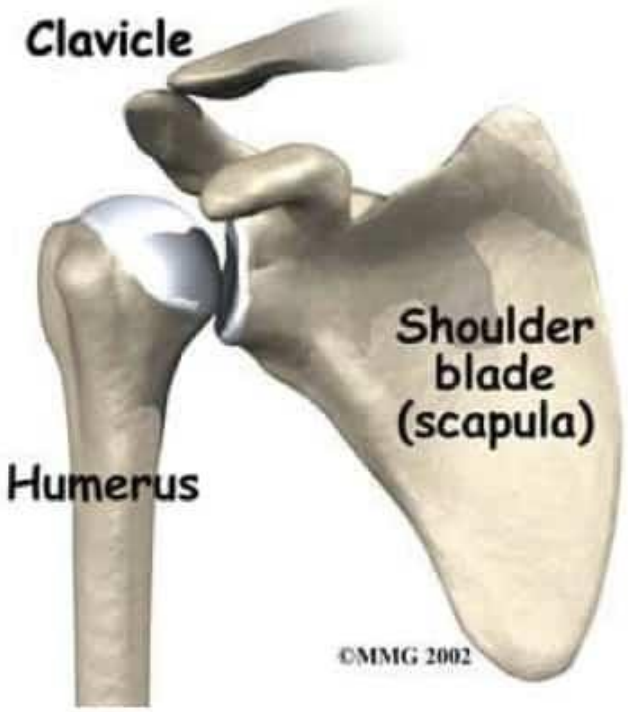
Allow:

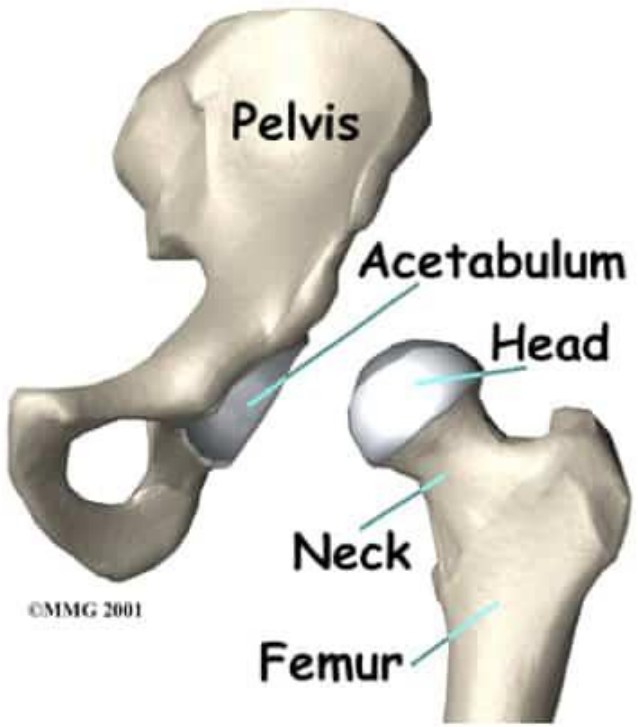
- **flexion/extension,**
- **abduction/adduction,**
- **and circumduction, but no axial rotation.**

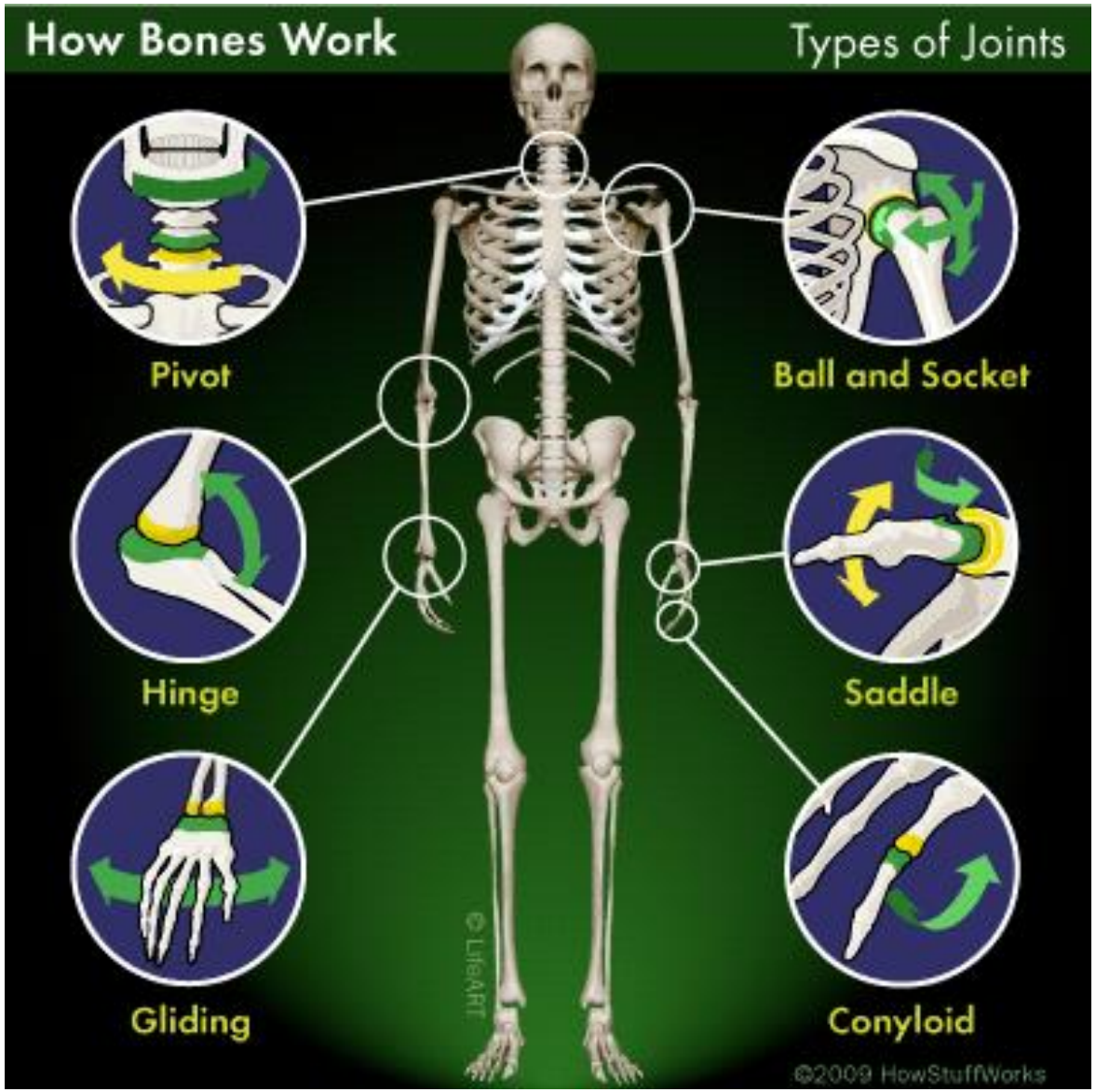


JOINTS

6. Ball-and-socket (spheroidal or cotyloid) joints
Are formed by the reception of a globular (ball-like) head into a cup-shaped cavity and allow movement in many directions.
Allow flexion and extension, abduction and adduction, medial and lateral rotations, and circumduction and occur in the shoulder and hip joints.






How Bones Work
Types of Joints
Pivot
Ball and Socket
Hinge
Saddle
Gliding
Conyloid
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