A&P 1
The Appendicular Skeleton

See lab handouts for the complete listing of what you need to know. Use this to help you study only

APPENDICULAR Skelton

The human appendicular skeleton consists mainly of the four appendages of the human body - plus, the shoulder girdle and the pelvic girdle by which the limbs are inter-connected with the axial skeleton.

Here the bilateral symmetry of the bones becomes important to pay attention to. So be careful looking between pictures and bones as left and right are mirror images. Look at the labels in the following pictures to help you understand how the structures relate to this.

You are **required to know** the difference between left and right for the following bones only: Scapula, Humerus, Coxal, Femur, and Tibia.

Use the lab Manual and PAL to learn to identify the bones, **structures, specific bones,** that are on the handout. Again if it is not on the handout you do not need to know it.

Pectoral Girdle

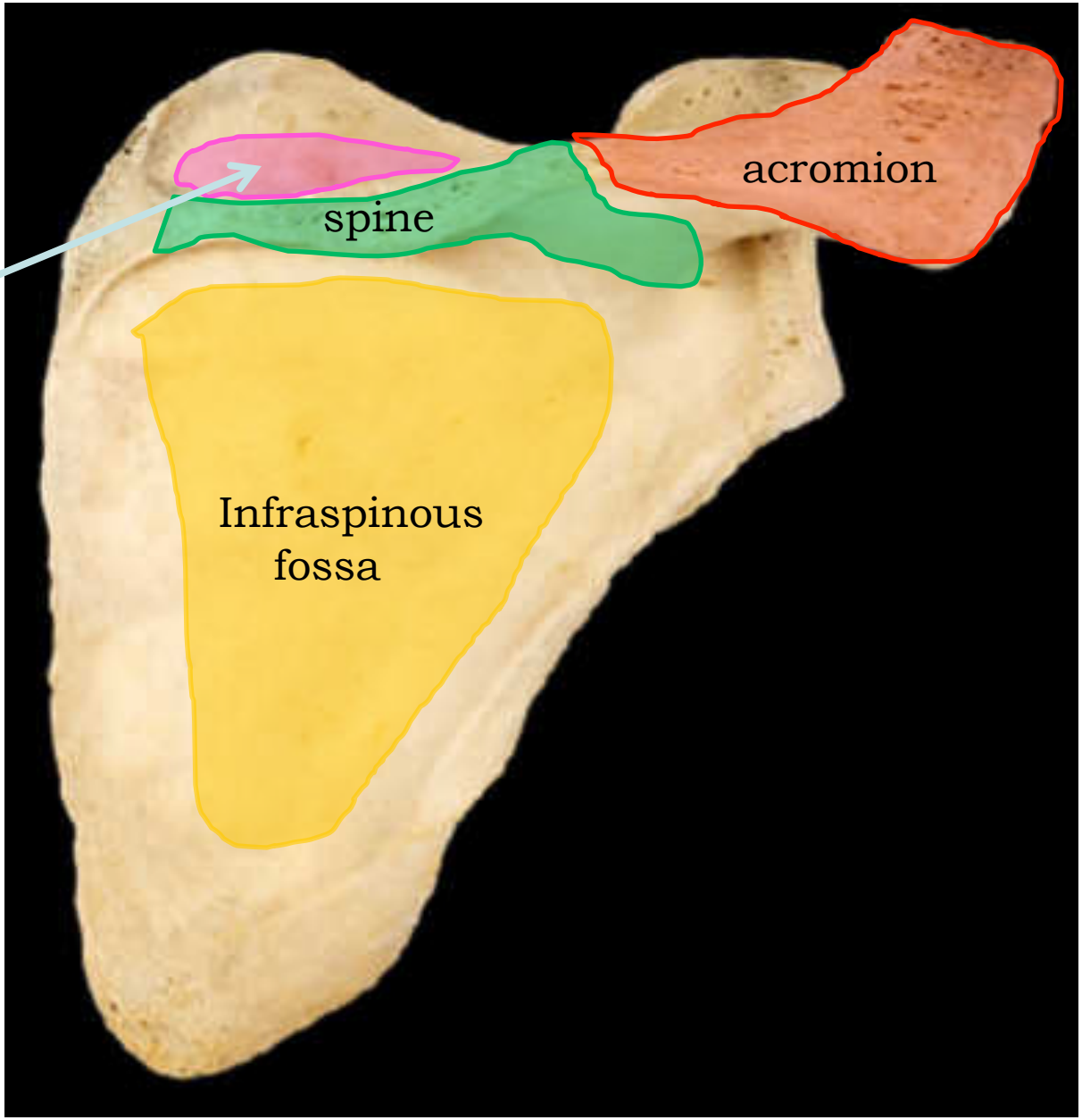
Clavicle

Scapula

Pectoral Girdle

Structures of the Scapula

Acromion
Spine
supraspinous fossa
infraspinous fossa



Posterior Viw, so the spine you see here is what you can feel prodruding from your back.

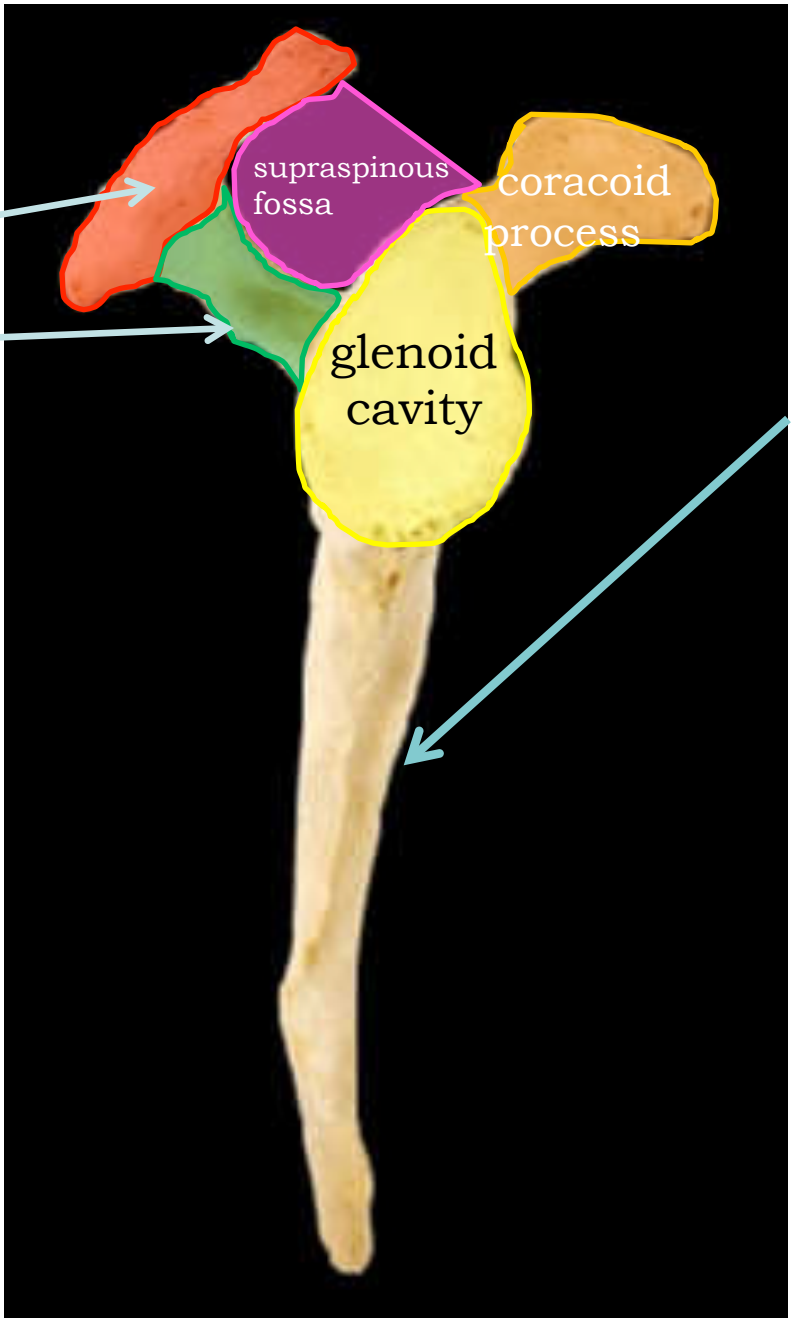
Right

Pectoral Girdle

Structures of the Scapula

acromion
spine
supraspinous fossa

coracoid process
glenoid cavity (fossa)
subscapular fossa



Right

subscapular fossa: The dip on the anterior side of the scapula

Lateral View, so the glenoid cavity you see here is where your arm attaches to the body

Pectoral Girdle

Scapula: **Posterior**

Left

Right

You will need to be able to identify Left and right Scapula. Use the Spine and the glenoid cavity to help you

Upper Limb

People get all the limb bones confused, spend time learning basic shapes here and naming them in lab

Upper Limb

Right

Left

Humerus: Anterior

You will need to be able to identify Left and right Humerus. Use the head and the Olecranon fossa to help you

Upper Limb

Left

Right

Anterior

Posterior

Structures of the Humerus

Greater tubercle

Upper Limb

Left

Right

Anterior

Posterior

Structures of the Humerus

Lesser tubercle

Upper Limb

Left

Right

Anterior

Posterior

Structures of the Humerus

Head of humerus

Upper Limb

Left

Right

Anterior

Posterior

Structures of the Humerus

Radial fossa remember fossa are dips in the bone

Upper Limb

Left

Right

Anterior

Posterior

Structures of the Humerus

Coronoid fossa remember fossa are dips in the bone

Upper Limb

Left

Right

Anterior

Posterior

Structures of the Humerus

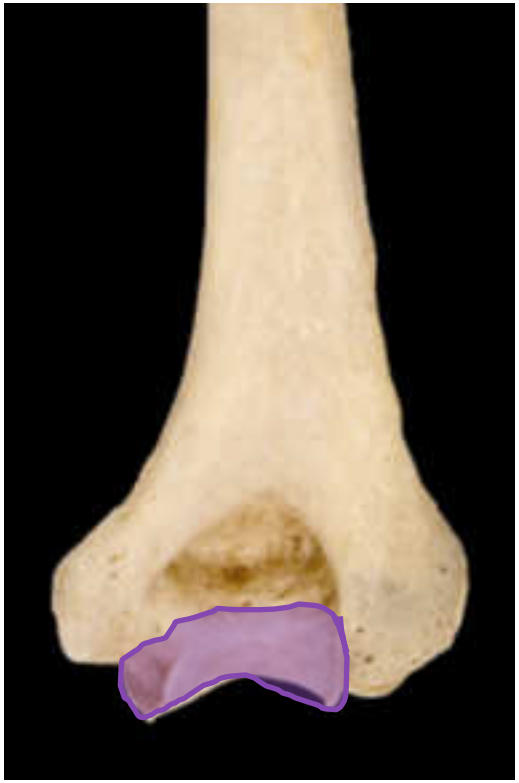
Capitulum

Upper Limb

Left

Right

Anterior



Posterior

Structures of the Humerus

Trochlea

Upper Limb

Left

Right

Anterior

Posterior

Structures of the Humerus

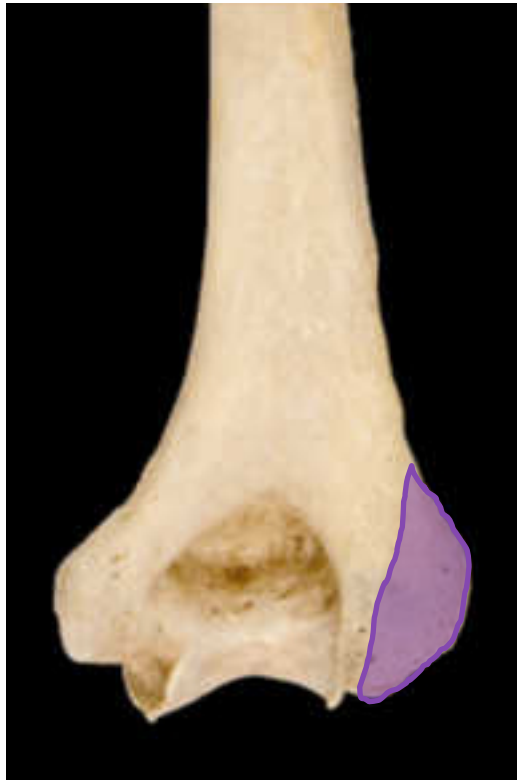
Medial epicondyle

Upper Limb

Left

Right

Anterior



Posterior

Structures of the Humerus

Lateral epicondyle

Upper Limb

Left

Right

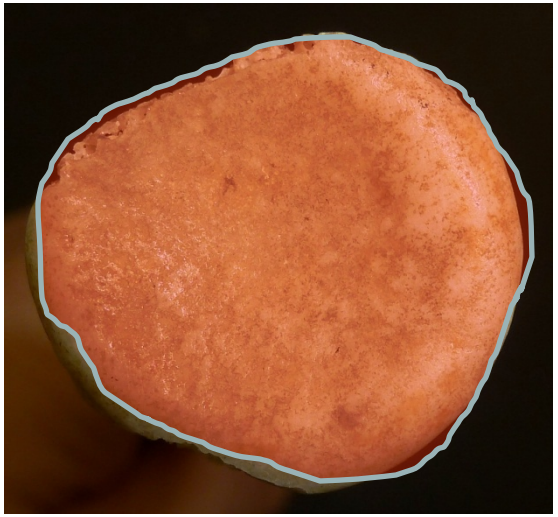
Anterior

Posterior

Structures of the Humerus

Olecranon fossa

Upper Limb



Note the circle on the top of the Radius
Best way to tell it from the other bones

Structures of the Radius

Head of radius

Upper Limb

Structures of the Radius

Neck of radius

Structures of the Radius

Styloid process of radius

Upper Limb

Structures of the Ulna

Olecranon process

Upper Limb

Structures of the Ulna

trochlear notch

Upper Limb

Structures of the Ulna

coronoid process

Structures of the Ulna

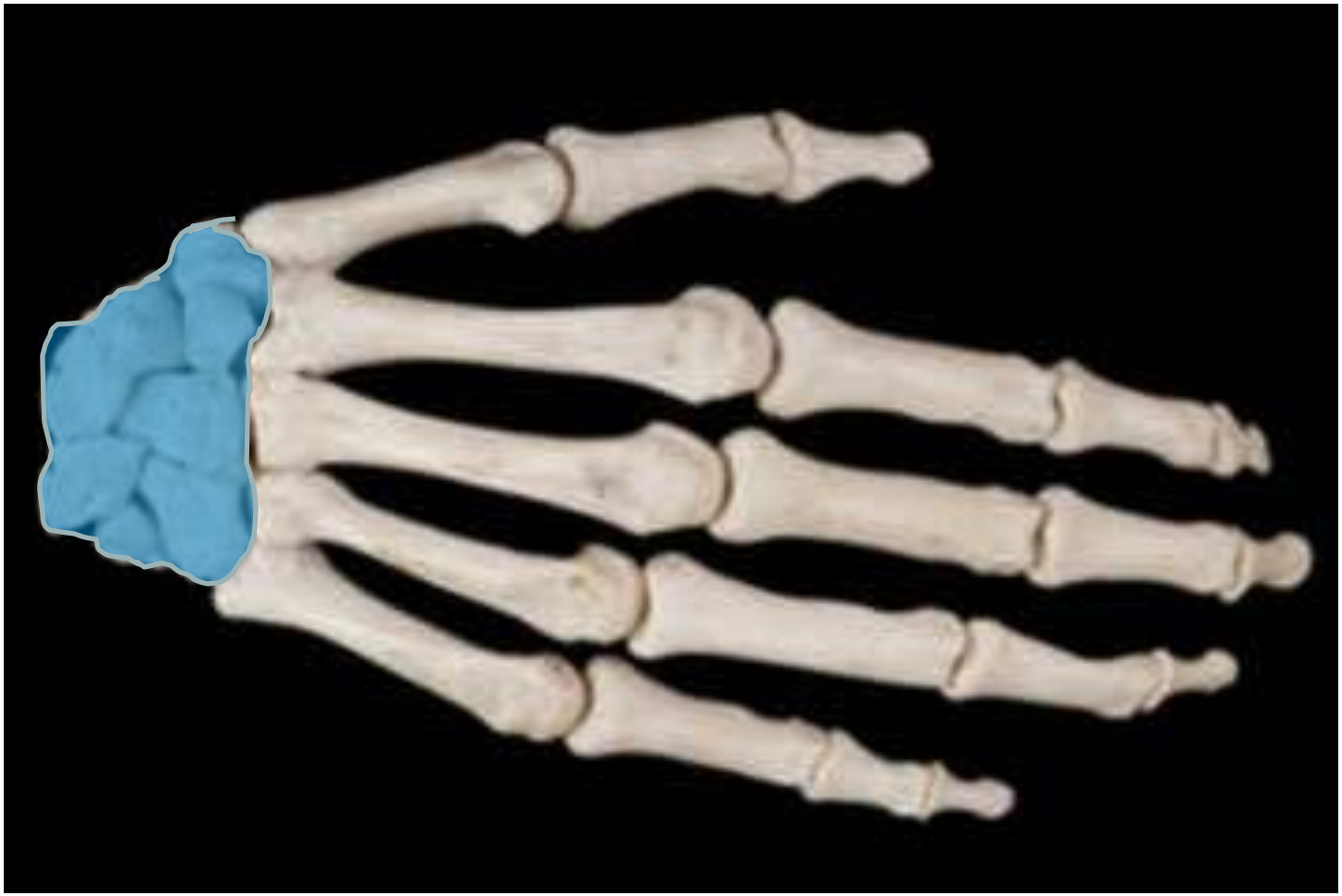
head of ulna

Structures of the Ulna

styloid process of ulna

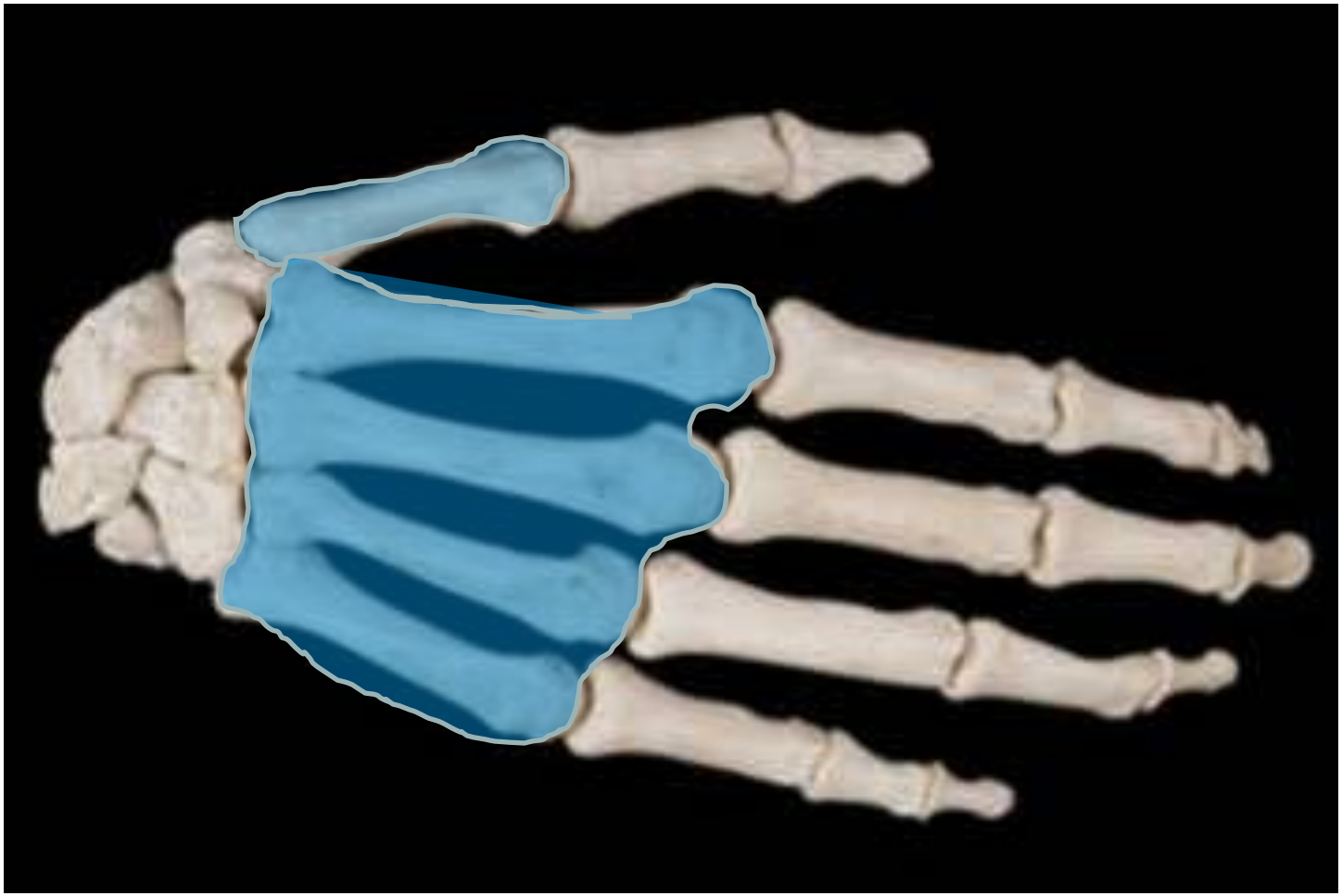
Upper Limb

Right Hand



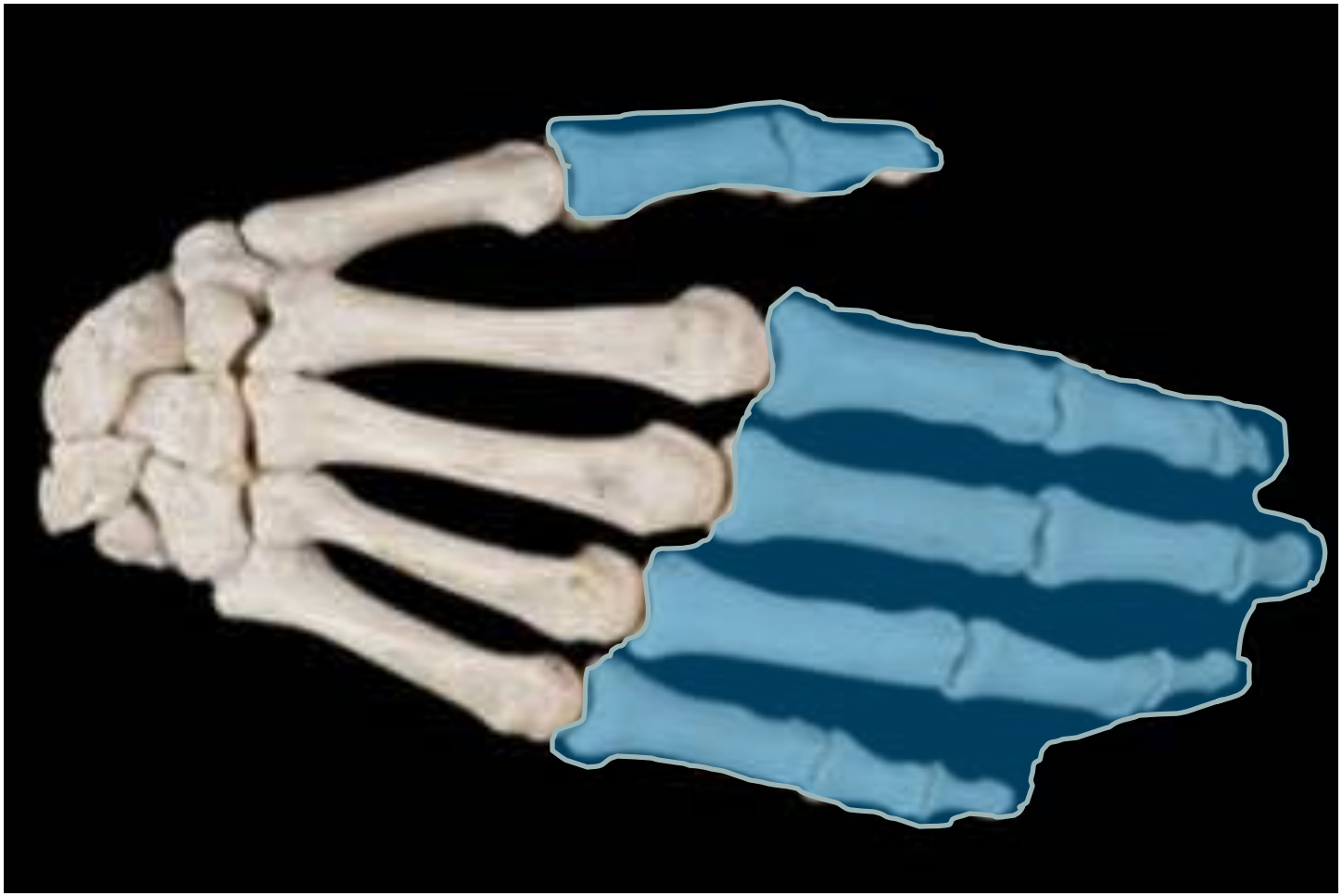
Carpals

Right Hand



Metacarpals

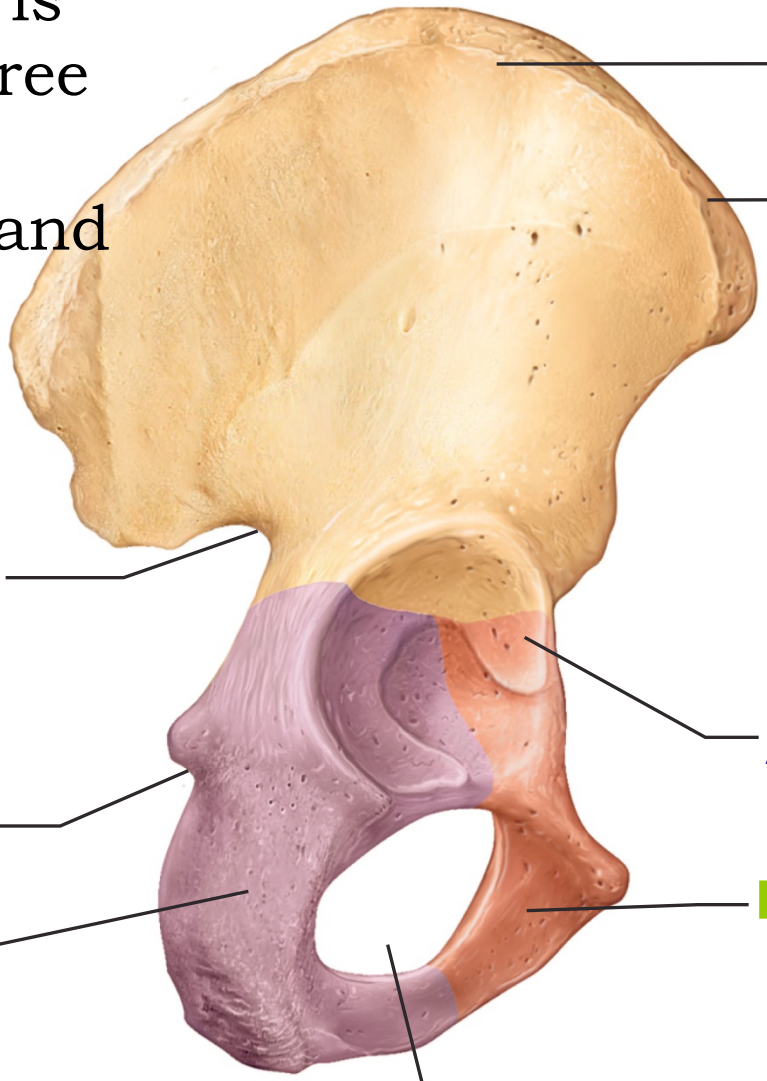
Right Hand



Phalanges

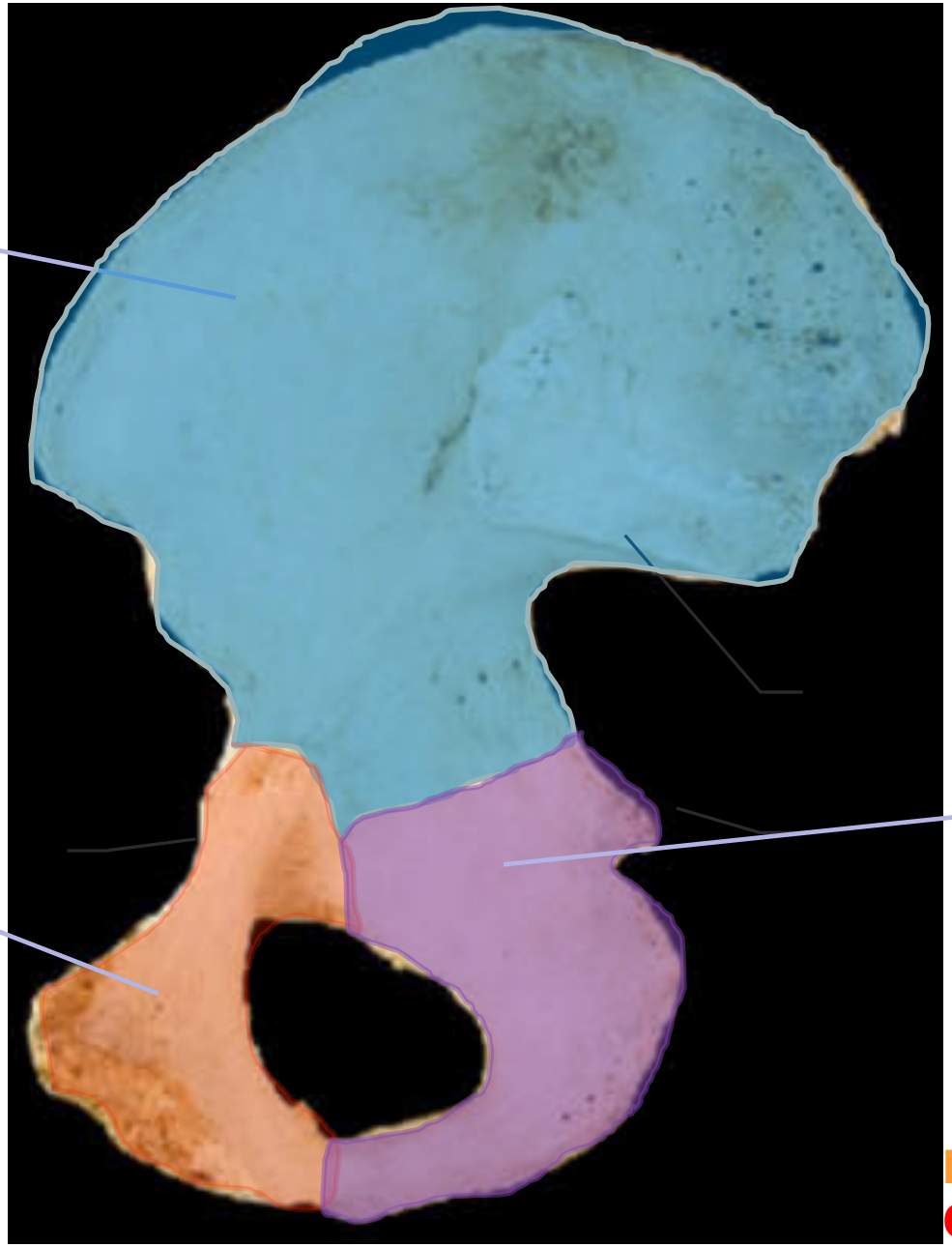
Pelvic Girdle

The Coxal bone is comprised of three **specific** bones fused together, and has several structures:



Lateral view, right coxal bone

Pelvic Girdle



So be sure to read the question carefully:

Bone:
Coxal

Specific bones:

Or
Structure

Medial view, right Coxal bone

Pelvic Girdle

Right **Lateral**

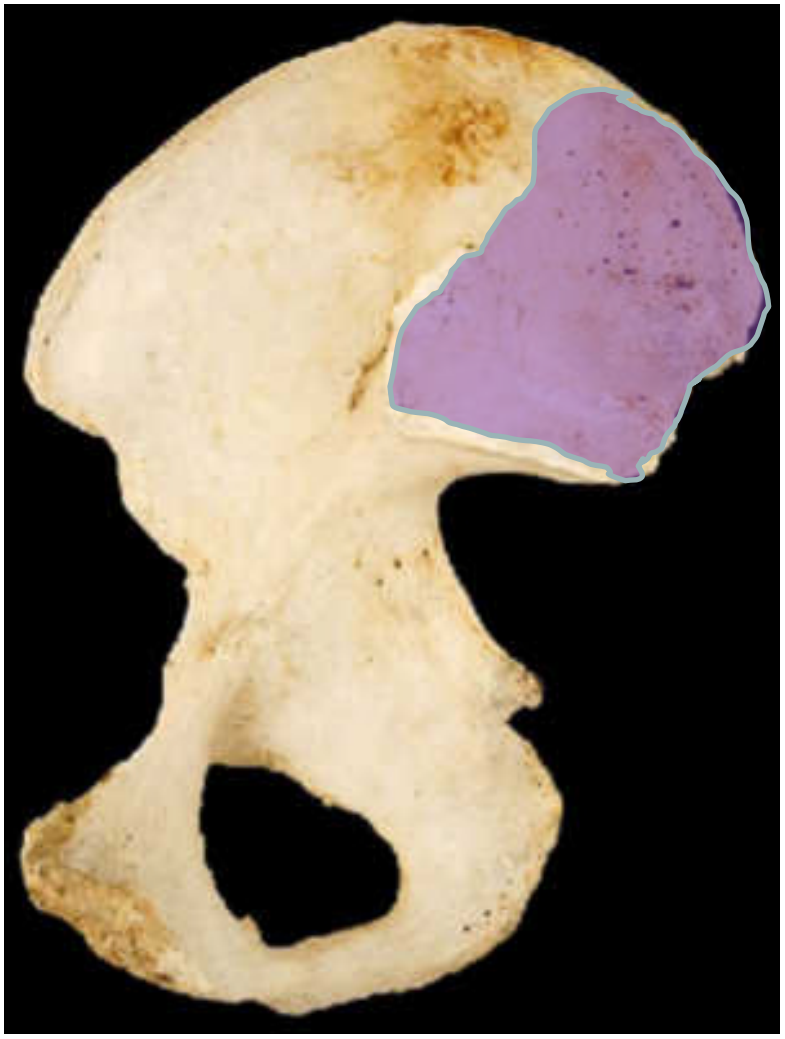
Right **Medial**

Structures of the Coxal bone

iliac crest

Pelvic Girdle

Right **Lateral**



Right **Medial**

Structures of the Coxal bone

auricular surface

Pelvic Girdle

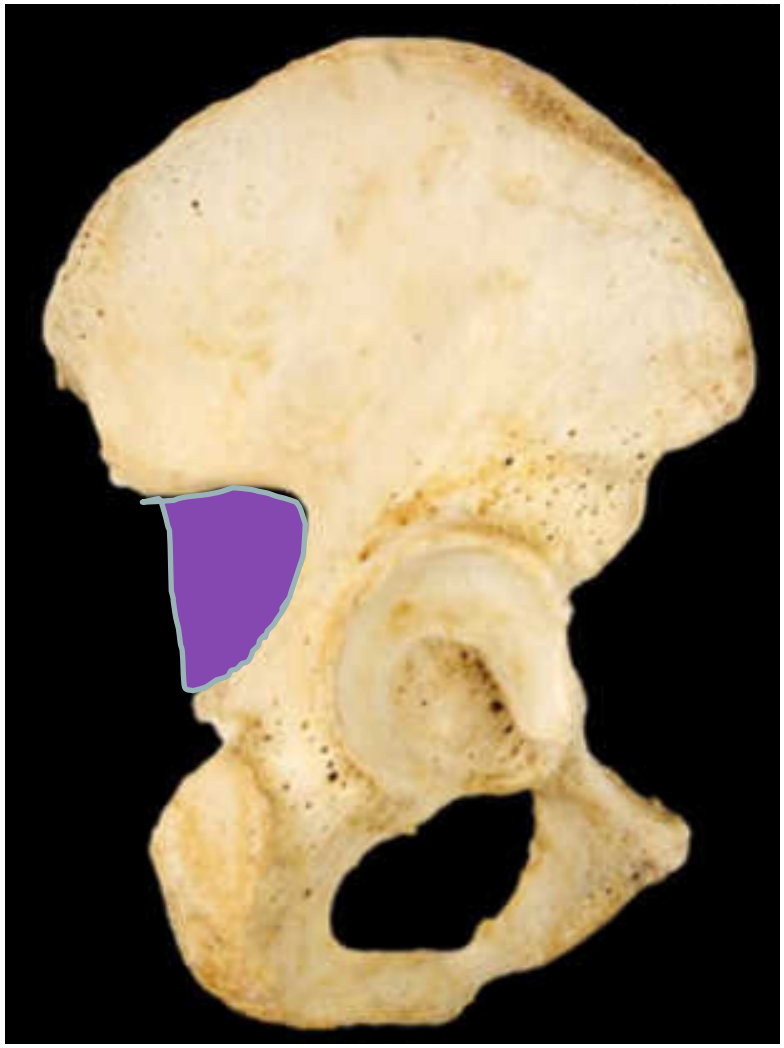
Right **Lateral**

Right **Medial**

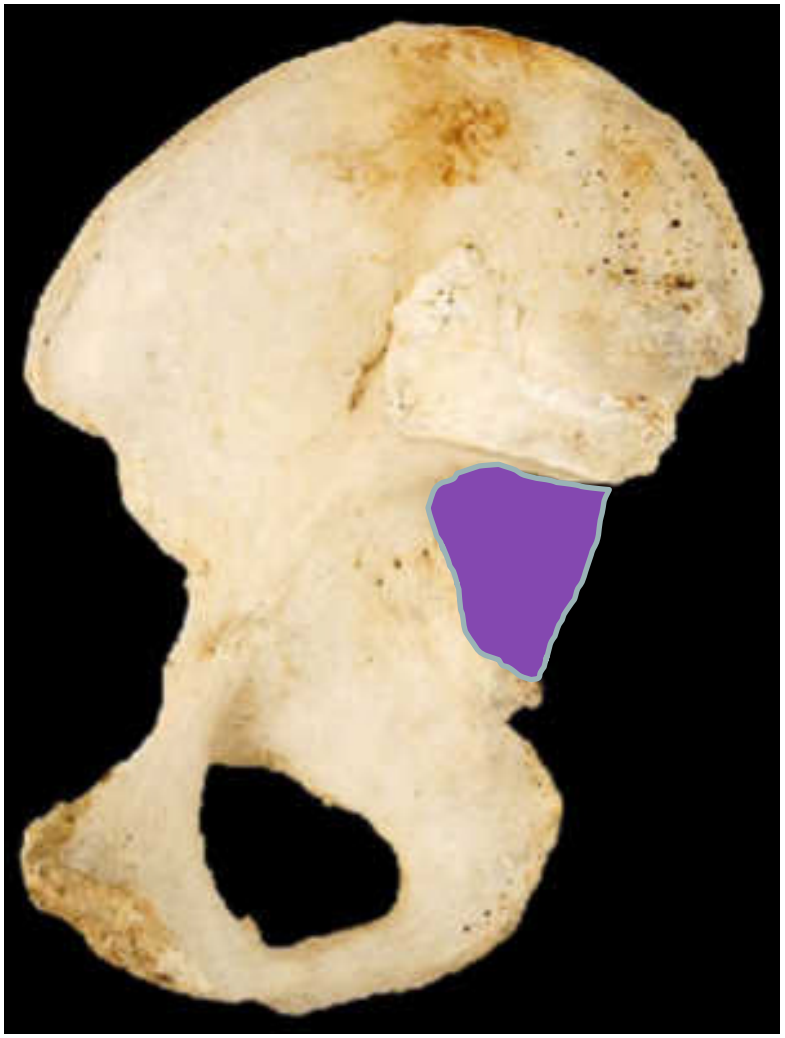
Structures of the Coxal bone

acetabulum

Pelvic Girdle



Right **Lateral**



Right **Medial**

Structures of the Coxal bone

greater sciatic notch

Pelvic Girdle

Right **Lateral**

Right **Medial**

Structures of the Coxal bone

lesser sciatic notch

Pelvic Girdle

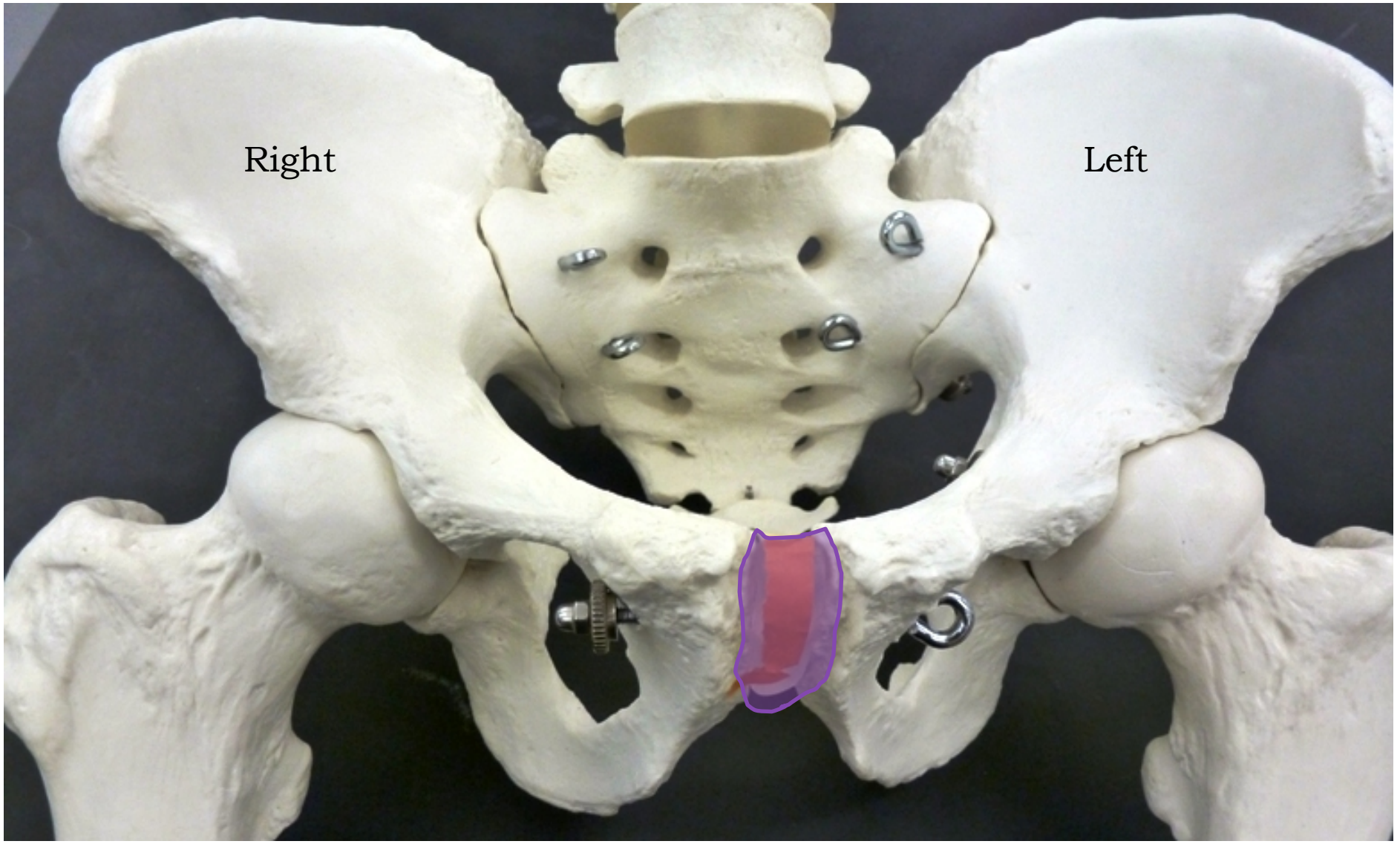
Right **Lateral**

Right **Medial**

Structures of the Coxal bone

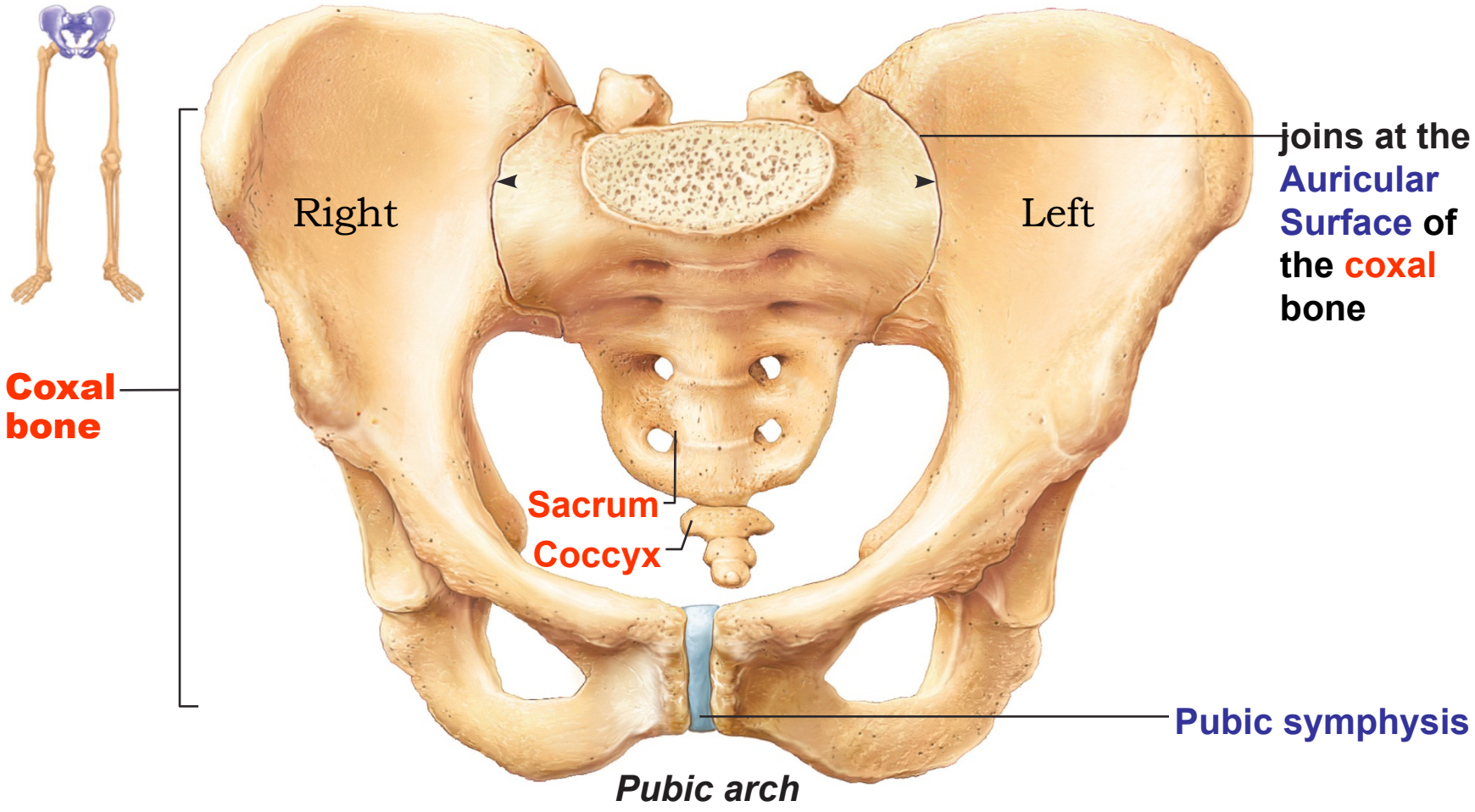
obturator foramen

Pelvic Girdle



Structures of the Coxal bone

pubic symphysis



You will need to be able to tell if a given coxal bone is a left or a right bone. The best way to know how they fit into the body is to try it on. So the pubic symphysis should be in the front, and the Auricular surface should be facing up and medially. Also learn the phone trick in lab.

Pelvic Girdle

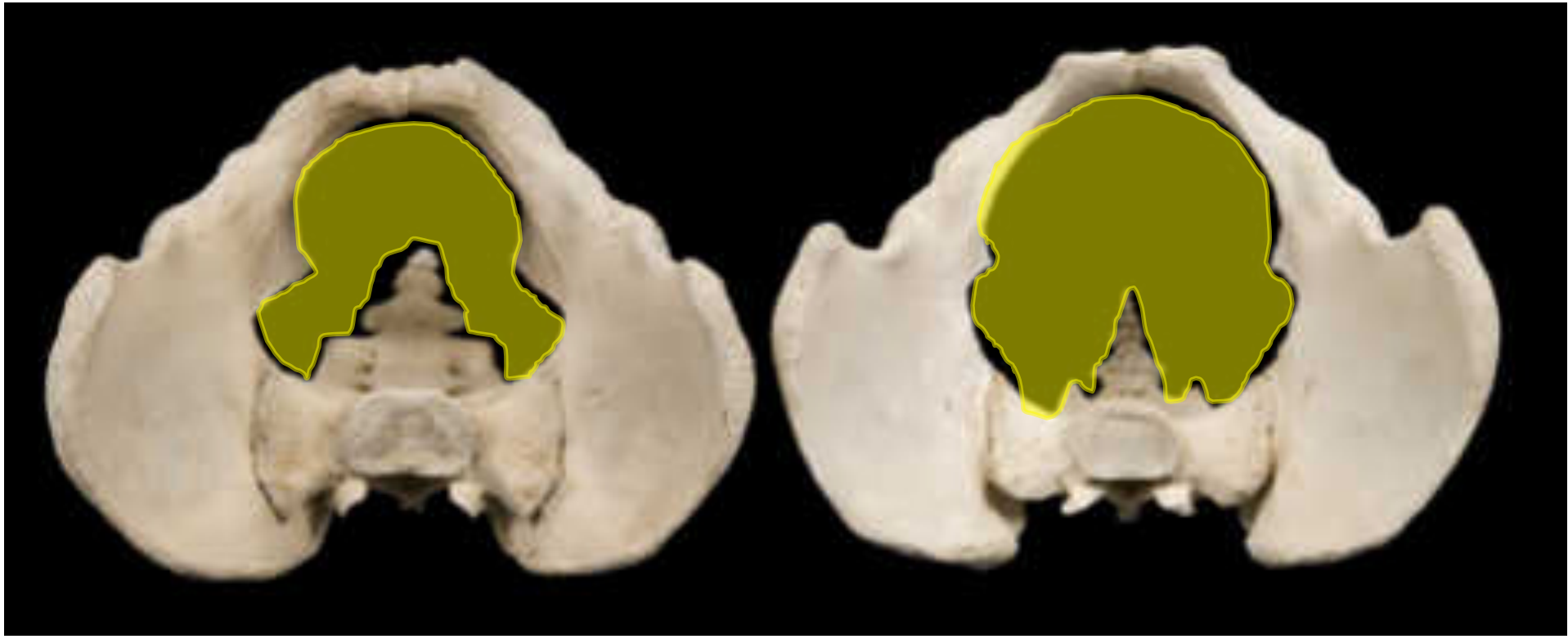
Male

Female

You will also need to be able to distinguish between a male and female pelvis.

The pubic arch is less than 90 degrees in the males, and over 90 degree in females.

Pelvic Girdle



Male

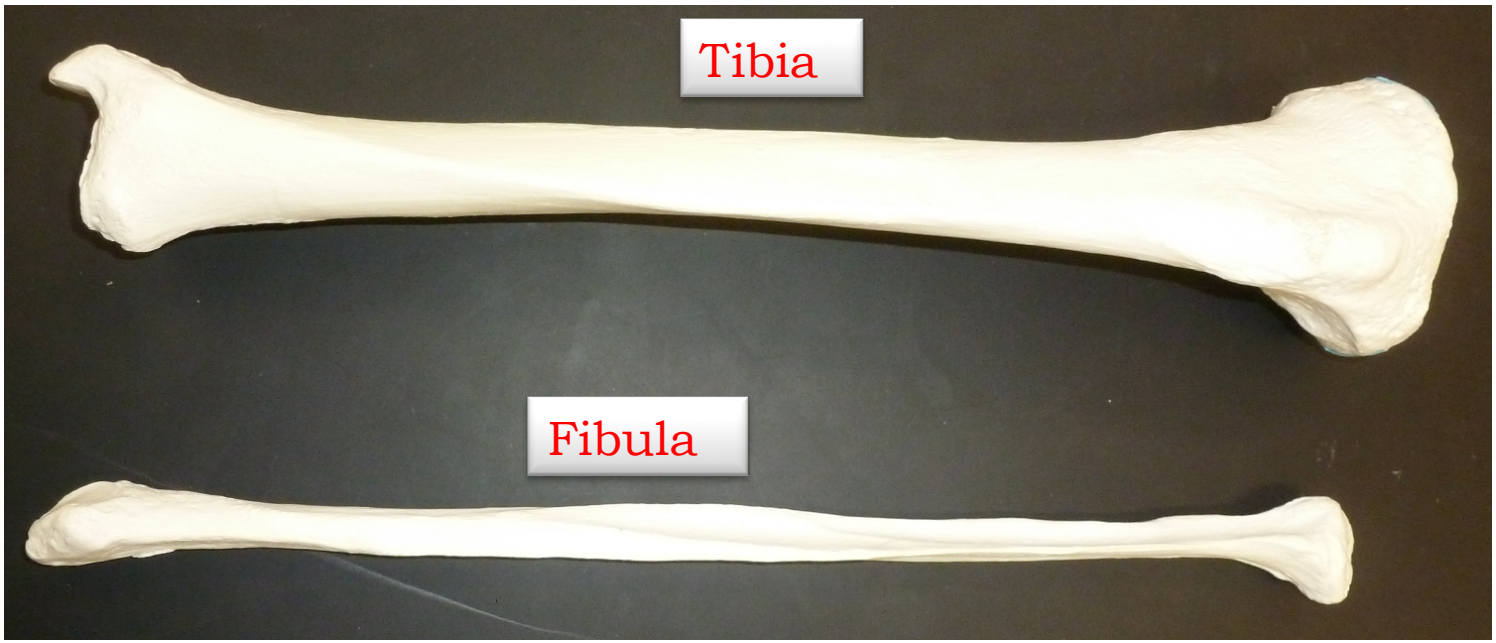
Female

Coccyx curves into the pelvic brim in males, the female brim is more open allowing babies though.

Lower Limb

Patella

Foot



Lower Limb

Femur: Anterior

You will need to be able to identify Left and right Femurs. Use the head and the intercondylar notch to help you

Right

Left

Lower Limb

Femur: Anterior

Structures of the Femur

head of femur

Right

Left

Lower Limb

Femur: Anterior

Structures of the Femur

neck of femur

Right

Left

Lower Limb

Femur: Anterior

Structures of the Femur

greater trochanter

Right

Left

Lower Limb

Femur: Anterior

Structures of the Femur

lesser trochanter

Right

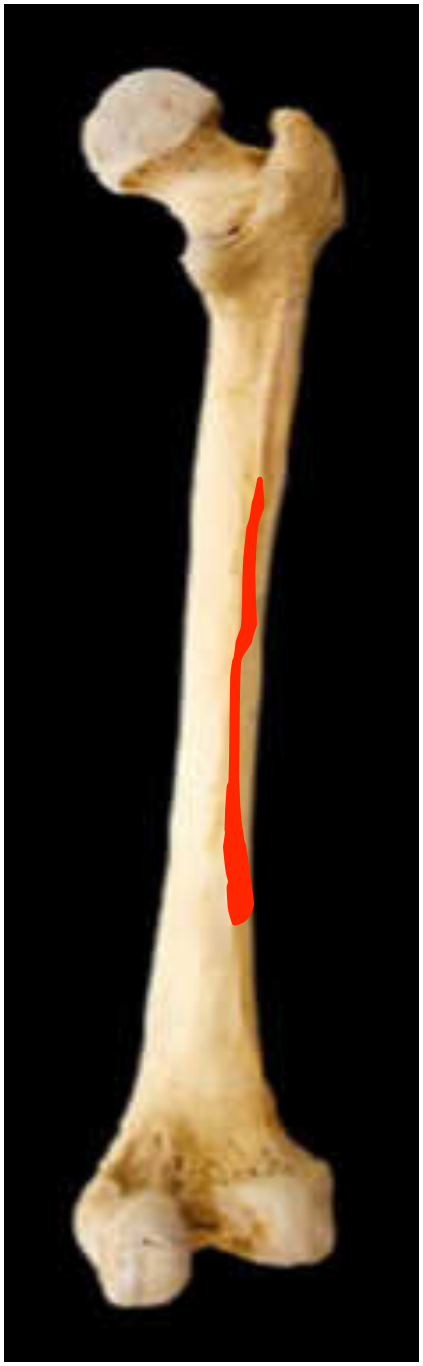
Left

Lower Limb

Femur: **Posterior**

Structures of the Femur

linea aspera



Right

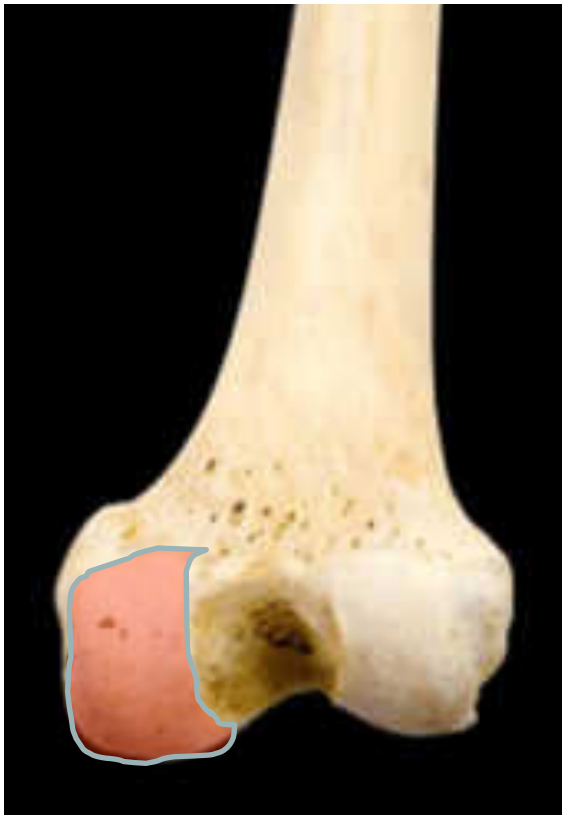
Lower Limb

Left

Anterior

Anterior

Posterior



Right

Structures of the Femur

medial condyle

Lower Limb

Left

Anterior

Anterior

Posterior

Right

Structures of the Femur

lateral condyle

Lower Limb

Left

Anterior

Anterior

Posterior

Right

Structures of the Femur

lateral epicondyle

Lower Limb

Left

Anterior

Anterior

Posterior

Right

Structures of the Femur

medial epicondyle

Lower Limb

Left

Anterior

Anterior

Posterior

Right

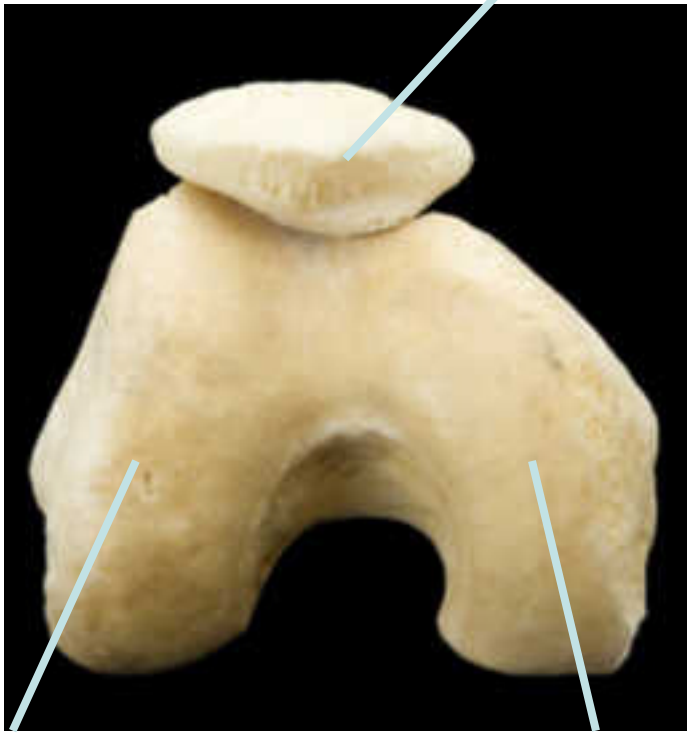
Structures of the Femur

intercondylar notch (fossa)

Patella

Anterior

Patella
articulated



lateral condyle
of right femur

medial condyle
of right femur

Lower Limb

Right

Left

Tibia: Anterior

You will need to be able to tell left from right tibia. Uses the **medial** malleolus tibial tuberosity to help you.

Lower Limb

Left
Anterior

Anterior

Posterior

Right

Structures of the Tibia

medial condyle

Lower Limb

Left
Anterior

Anterior

Posterior

Right

Structures of the Tibia

lateral condyle

Lower Limb

Left
Anterior

Anterior

Posterior

Right

Structures of the Tibia

Intercondylar eminence

Lower Limb

Right

Left

Tibia: Anterior

Structures of the Tibia

tibial tuberosity

Lower Limb

Right

Left

Tibia: Anterior

Structures of the Tibia

medial malleolus

Lower Limb

Fibula: Anterior

Lower Limb

Fibula: Anterior

Structures of the Fibula

head of fibula

Lower Limb

Fibula: Anterior

Structures of the Fibula

lateral malleolus

Lower Limb

Right Foot

Tarsals

Lower Limb

Right Foot

Metatarsals

Lower Limb

Right Foot

Phalanges

Don’t confuse :

Manubrium

Patella

Don’t confuse :

Hand

Foot

Articulations:

These are the connections where two bones meet, and are also referred to as joints. There are 10 types of articulations that **you need to know**, and they are defined by the way the bones come together. Each of these types also has a functional and a structural classification.

Functional Classification divides articulations into 3 classifications according to the amount of movement they allow.

Generally Synarthrotic : immovable

Generally Amphiarthrotic: slightly movable

Diarthrotic: freely movable.

Structural classification divides articulations into 3 classifications according to how the bones are connected to each other.

fibrous - joined by fibrous connective tissue

cartilaginous - joined by cartilage

synovial - not directly joined—lubricated with synovial fluid

Articulations:

Type of Articulation	Functional Classification	Structural classification	Some examples / Articulating bones of each type
Sutures	Generally Synarthrotic	Fibrous	All Sutures
Syndesmoses	Generally Amphiarthrotic	Fibrous	Distal ends tibia & fibula
Synchondroses	Generally Synarthrotic	Cartilaginous	costal cartilage between rib 1 & sternum
Symphyses	Generally Amphiarthrotic	Cartilaginous	Pubic Symphyses, Intervertebral disk
Plane	Diarthrotic	Synovial	Between vertebral articular processes; Scapula & clavicle; adjacent carpals, Carpal & metacarpals of fingers; adjacent tarsals, Patella & femur; Sacrum & coxal bone; Tarsals & metatarsals,
Hinge	Diarthrotic	Synovial	Ulna&Humerus (elbow); Adjacent phalanges; Tibia & tarsal
Pivot	Diarthrotic	Synovial	radius & ulnar; C1&C2,
Condyloid	Diarthrotic	Synovial	Occipital bone & atlas; Radius & carpals; Metacarpal & phalange; Metatarsals & phalange
Saddle	Diarthrotic	Synovial	Sternum & clavicle; carpal & metacarpal of thumb and big toe
Ball and Socket	Diarthrotic	Synovial	Humerus & scapula , Femur & pelvis

Note: All moveable Diathrotic articulations are Synovial and All synovial articulations are Diathrotic

Questions on articulations will be asked by marking a particular articulation from the examples in the table, on the bones.

You could be asked **type**, **structural classification** or **functional classification** of the articulation indicated.

Make sure you read the question and answer with the proper name or classification.

So if you were asked to give the type of articulation indicated by the orange tape…

First– what articulation is this?

The **Distal** (farther from center) end of the joint between the tibia and the fibula.

So the type is: Syndesmoses

If asked:
The structural classification is:
Fibrous
And the functional classification is
Amphiarthrotic

Now follow your lab handout to complete the lab

Use PAL to get other views of the bones and even rotate many of them around

Have Fun