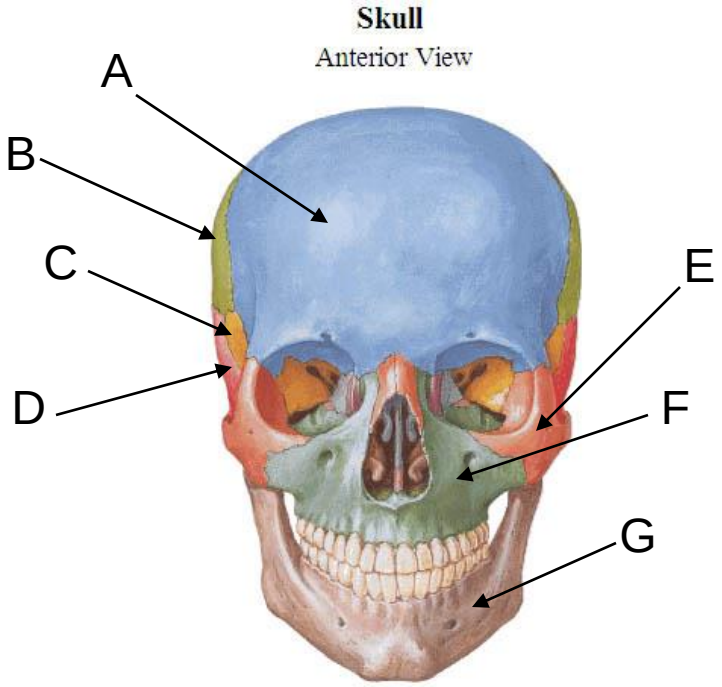
# Anatomy and Physiology II

Face and Head

Review

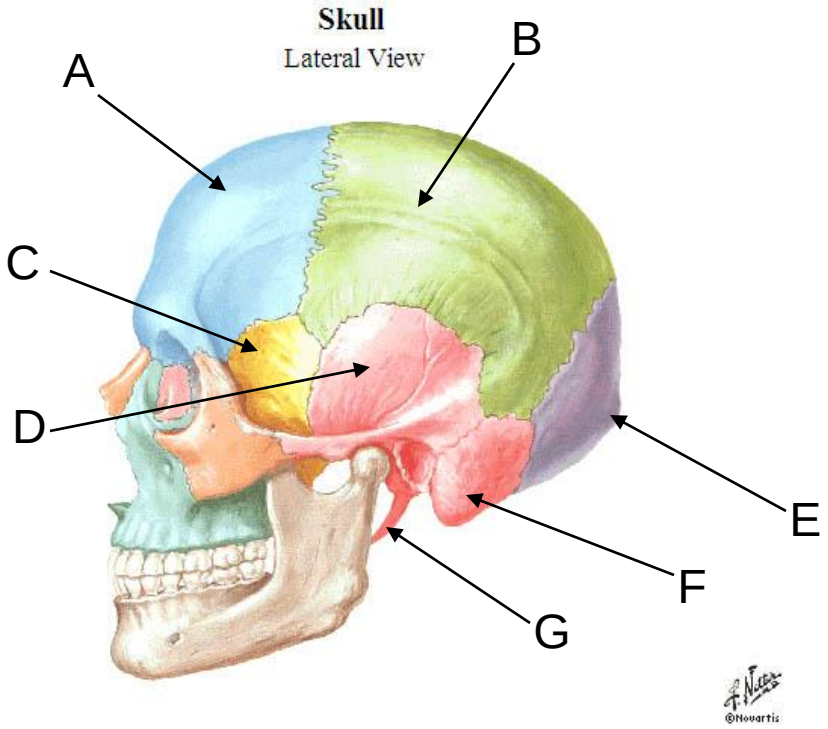
# Name the following bones

- A - Frontal bone
- B - Parietal bone
- C - Sphenoid bone
- D - Temporal bone
- E - Zygomatic bone
- F - Maxilla
- G - Mandible



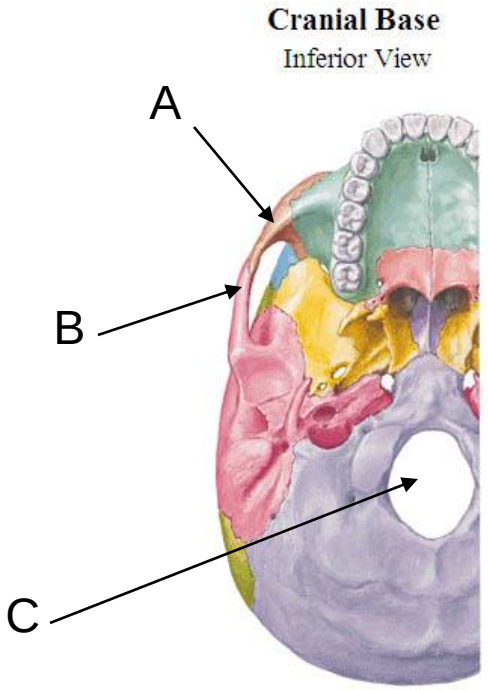
# Name the following bones and landmarks

- Bones
- A – Frontal bone
- B – Parietal bone
- C – Sphenoid bone
- D – Temporal bone
- E – Occipital bone
- Landmarks
- F – Mastoid process of temporal bone
- G – Styloid process of temporal bone



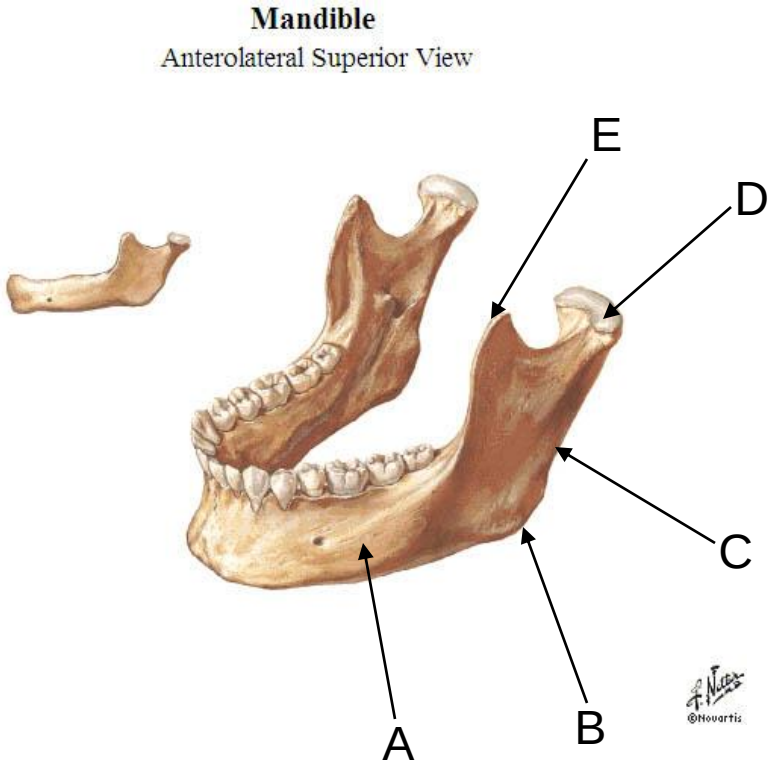
# Name the following landmarks

- A – Temporal process of the zygomatic bone
- B – zygomatic process of the temporal bone
- These are collectively referred to as the zygomatic arch
- C – Foramen magnum



# Name the following landmarks and regions of the mandible

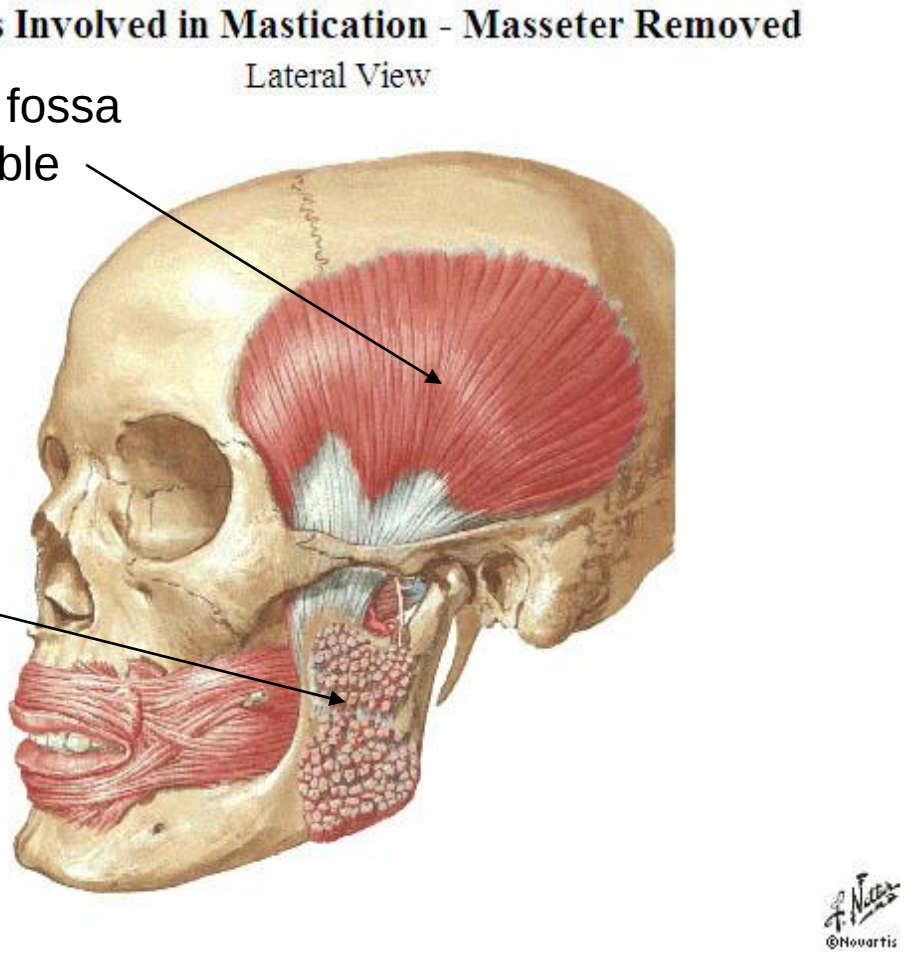
- What muscle of mastication has an attachment at E?
  - Temporalis
  - Other attachment is at temporal fossa
- What muscle of mastication has an attachment at B
  - Masseter
  - Other attachment at zygomatic arch
- What are the other two muscles of mastication?
  - Lateral and medial pterygoids
- Which has an attachment at the condylar process
  - Lateral pterygoids



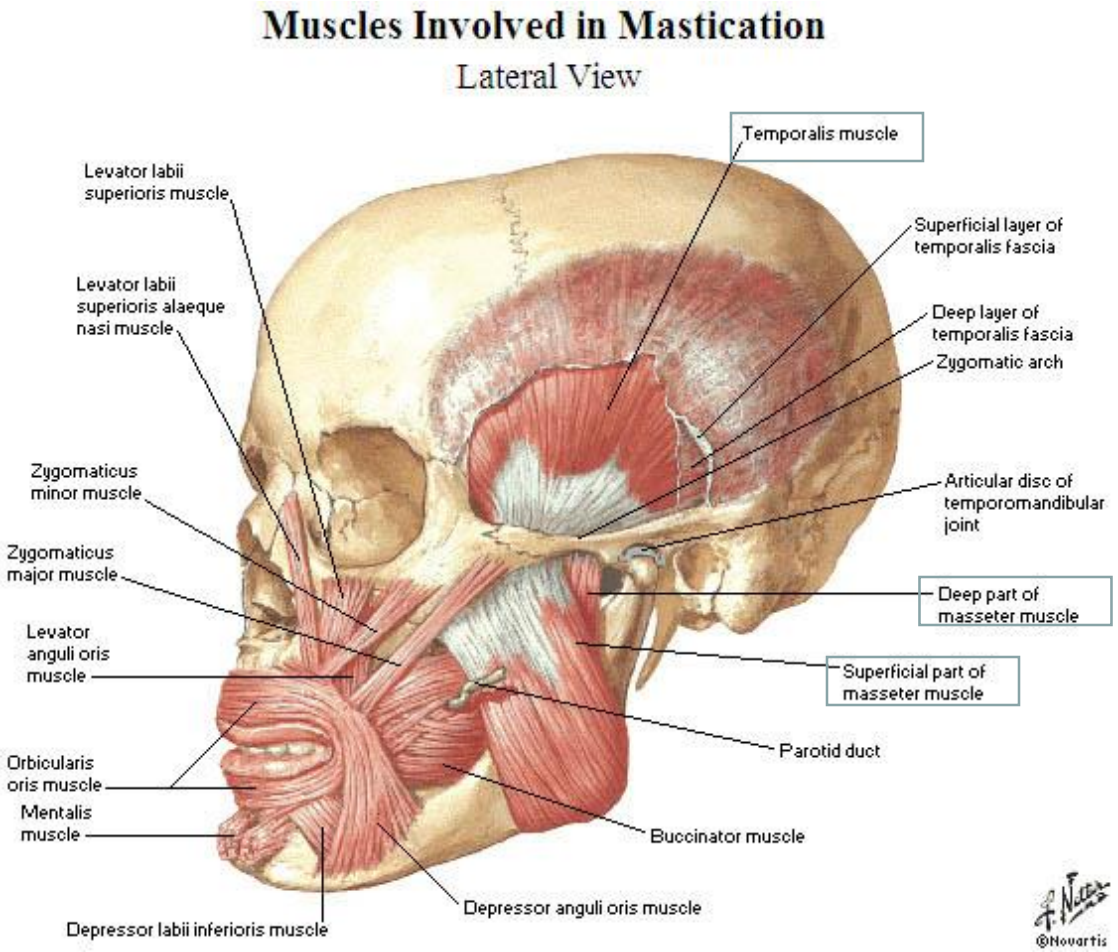
# Muscles of Mastication

Temporalis attaching to the temporal fossa *to the* coranoid process of the mandible

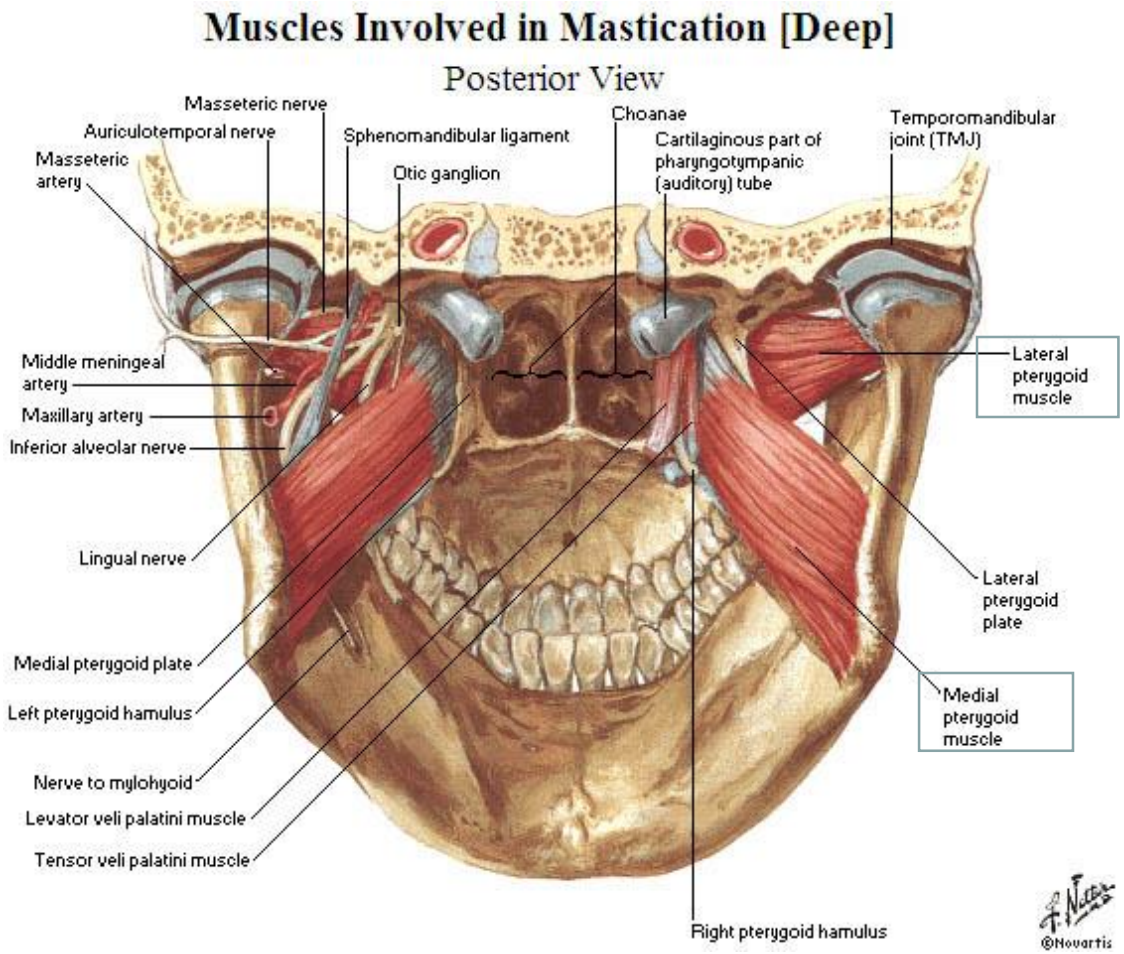
Masseter *(cut)*



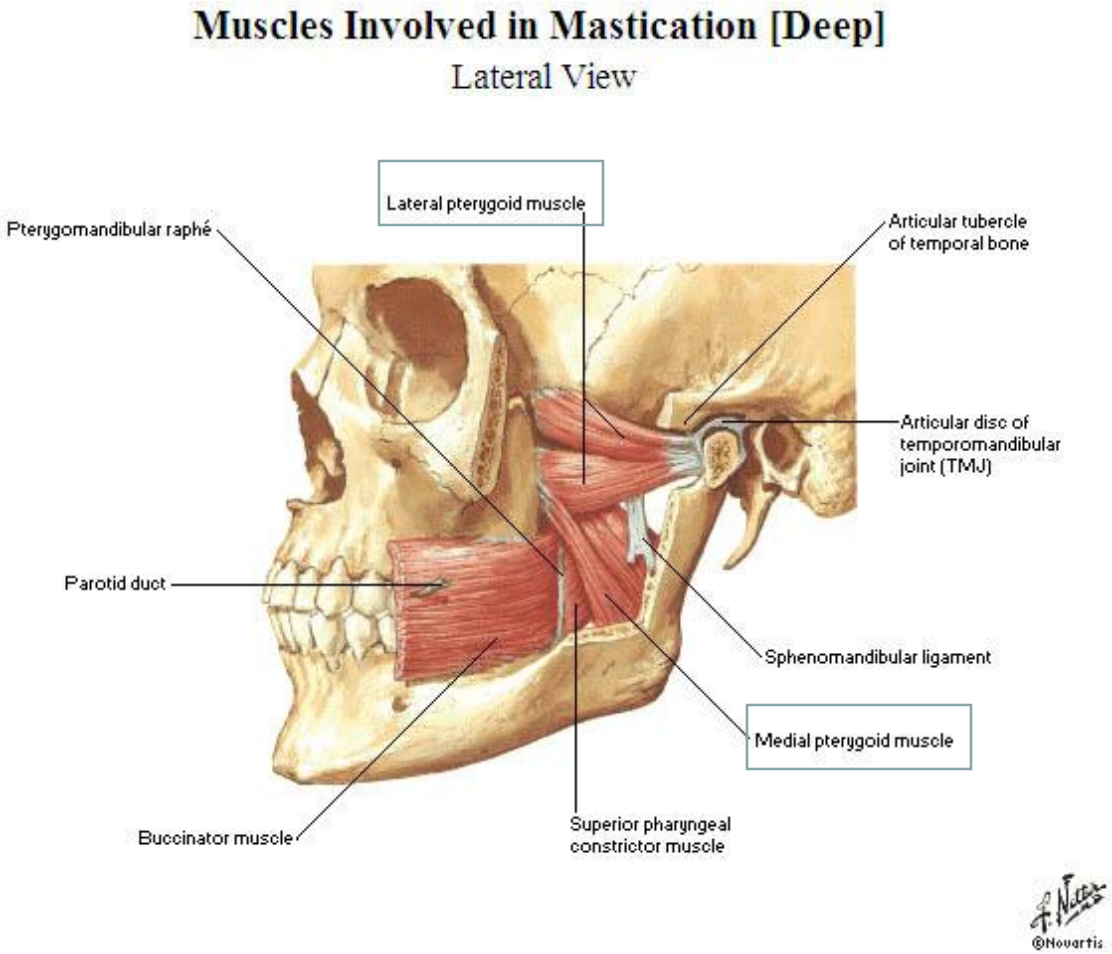
# Muscles of Mastication



# Muscles of Mastication



# Muscles of Mastication



# Anatomy and Physiology II

Pelvis

# Bones

- The Pelvis includes the sacrum, coccyx, and the coxal bone
  - We will focus on the sacrum and coccyx when we look at the lumbar spine
- The Hip joint includes the coxal bone and the femur
- Coxal Bone
  - Aka Os Coxa or Innominate Bone
  - Three bones that fuse together
    - Ilium
    - Ischium
    - Pubis
- Femur

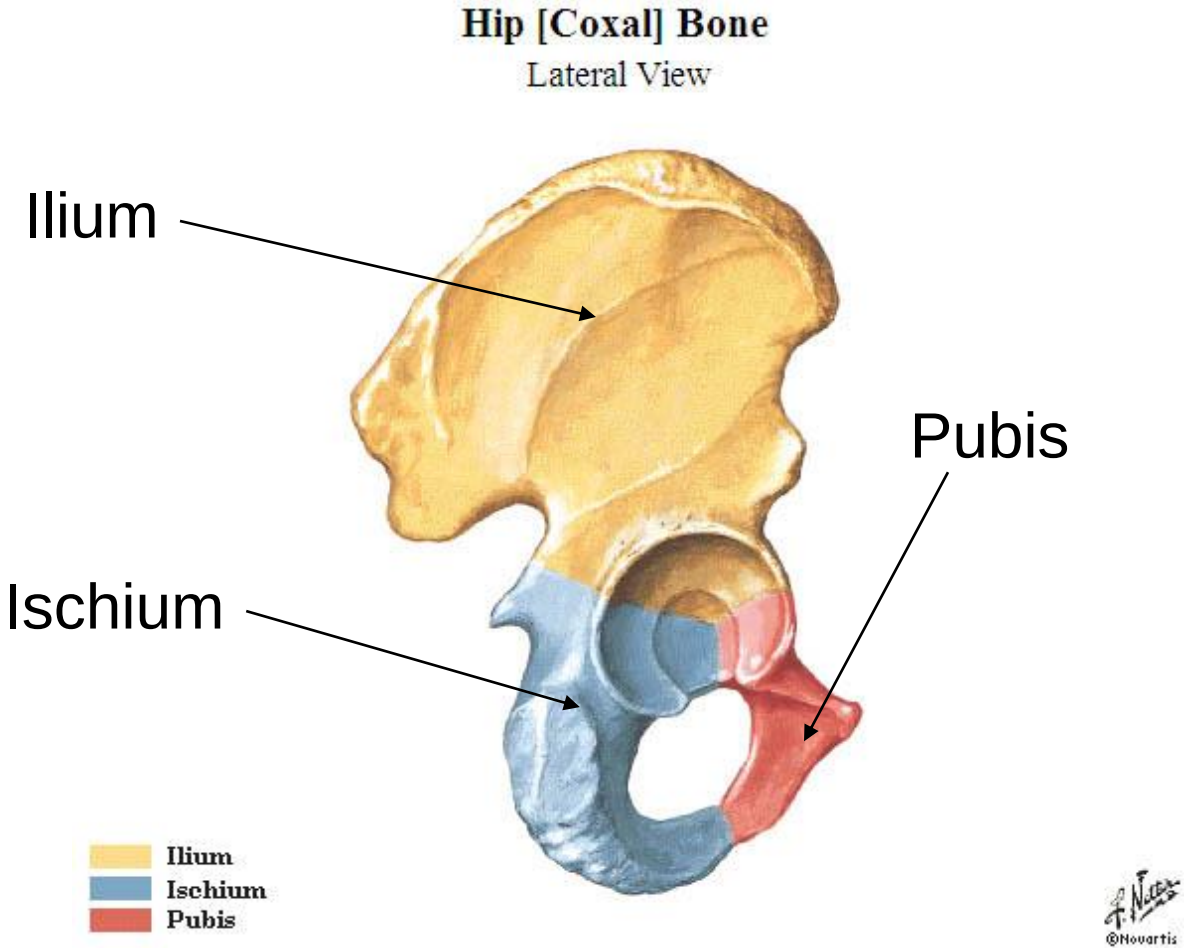
# Bony Landmarks

- Coxal Bone
  - Acetabulum
  - Sciatic notch
  - Ilium
    - Iliac crest
    - ASIS
    - AIIS
    - PSIS
    - PIIS
    - Posterior, anterior and inferior gluteal lines
  - Ishium
    - Ischial spine
    - Ischial tuberosity
    - Ischial ramus
  - Pubis
    - Pubic ramus
    - Pubic tubercle
    - *Pectineal Line*

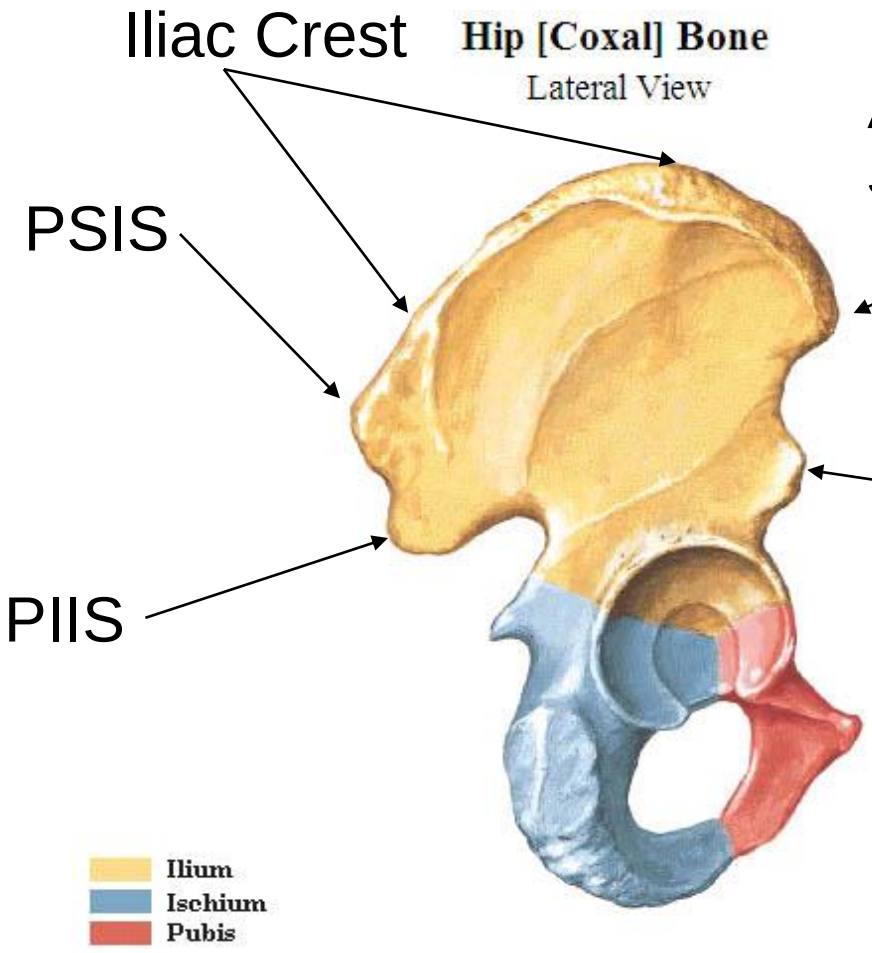
# Bony Landmarks

- Femur
  - Head
  - Great Trochanter
  - Lesser Trochanter
  - Gluteal Tuberosity
  - Linea Aspera
- Tibia and Fibula (review for next class)
  - Listed as some muscles attach from coxal bone to tibia and fibula
  - Tibial tuberosity
  - Medial and lateral condyle of tibia
  - Pes anserinus
  - Fibular head

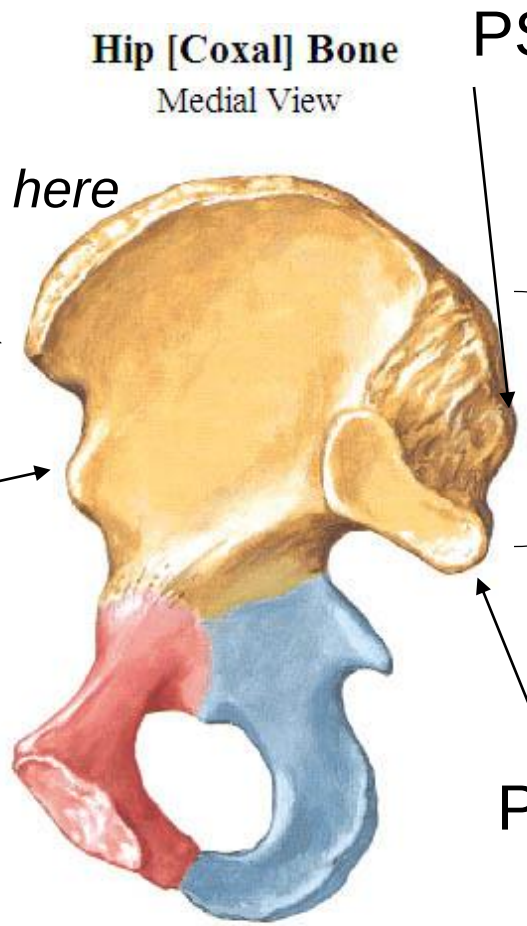
# Coxal Bone - Lateral View



# Coxal Bone - Lateral View



# Coxal Bone – Medial View




PSIS

ASIS

*Sartorius and TFL attach here*

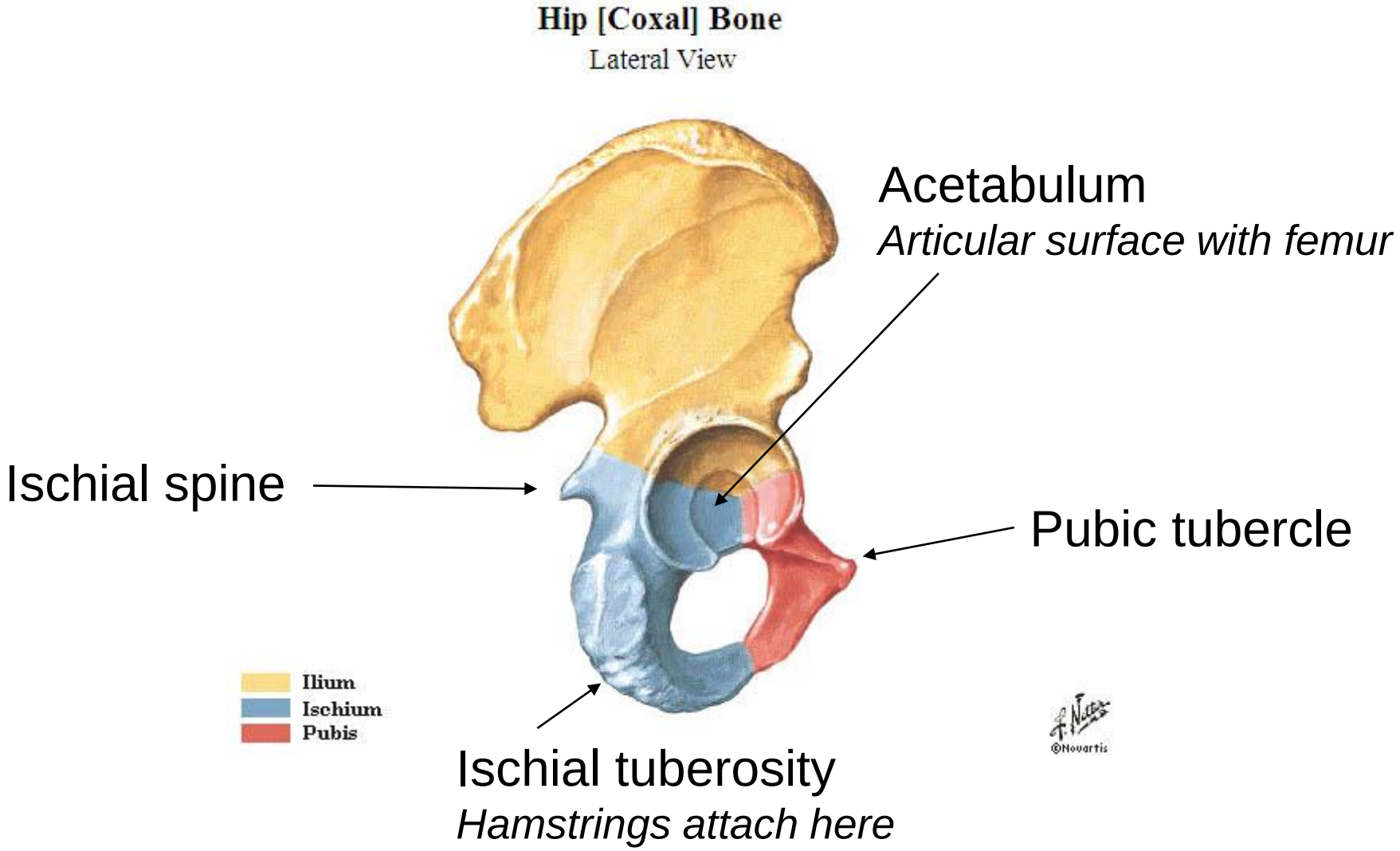
Iliac articular surface with sacrum (forming the SI joint)

AIIS

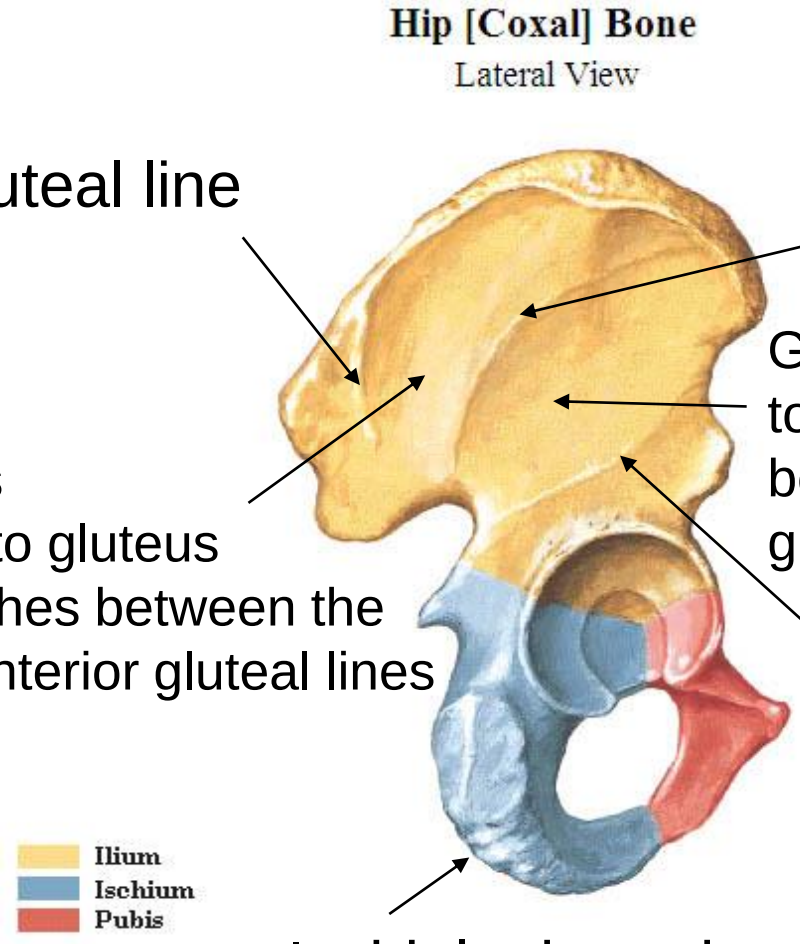
*Rectus femoris attaches here*

PIIS

# Coxal Bone - Lateral View



# Coxal Bone - Lateral View




Posterior gluteal line

Anterior gluteal line

Gluteus minimus (which is deep to gluteus medius) attaches between the ant. and inf. gluteal lines

Gluteus medius (which is deep to gluteus maximus) attaches between the posterior and anterior gluteal lines

Inferior gluteal line

Ischial tuberosity

*Hamstrings attach here*

# Proximal Femur – Anterior View


Greater Trochanter (many muscles attach here)

Head of Femur

Lesser Trochanter (iliopsoas attaches here)

# Proximal Femur – Posterior View


Head of Femur

Greater Trochanter

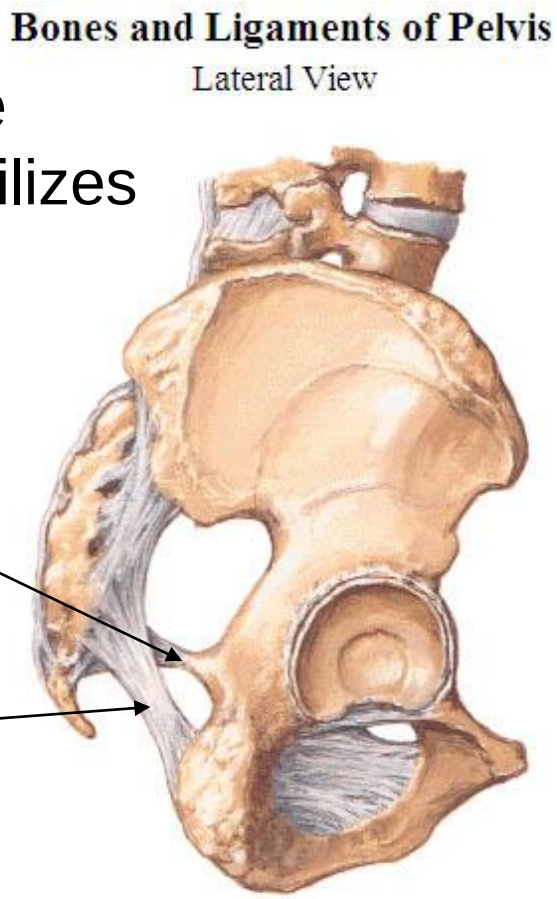
Lesser Trochanter

Gluteal Tuberosity
*(Glute. max attaches here), it also attaches to the ITB*

# Pelvis Bone – Lateral View

Sacrospinous ligament (links the ischial spine to the sacrum, stabilizes the sacrum during trunk flexion)

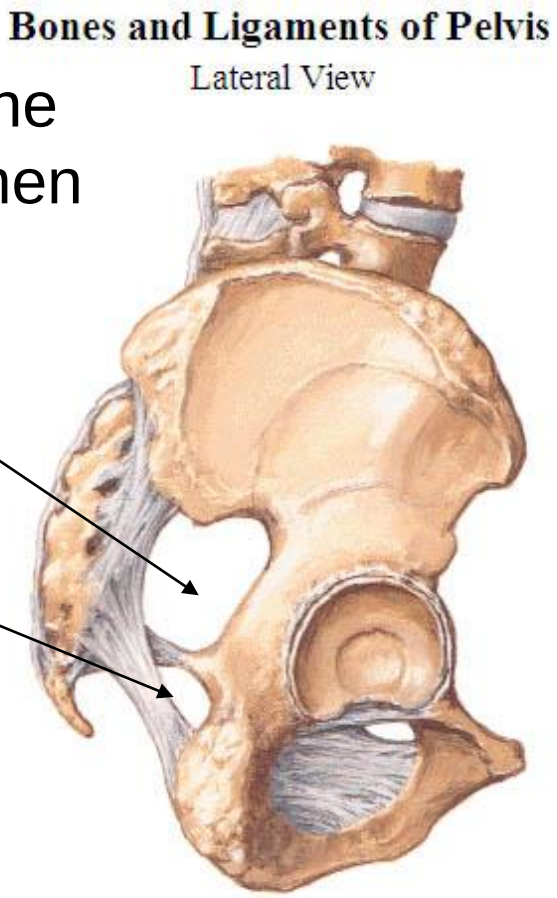
Sacrotuberous ligament (links the ischial tuberosity to the sacrum)



# Pelvis – Lateral View

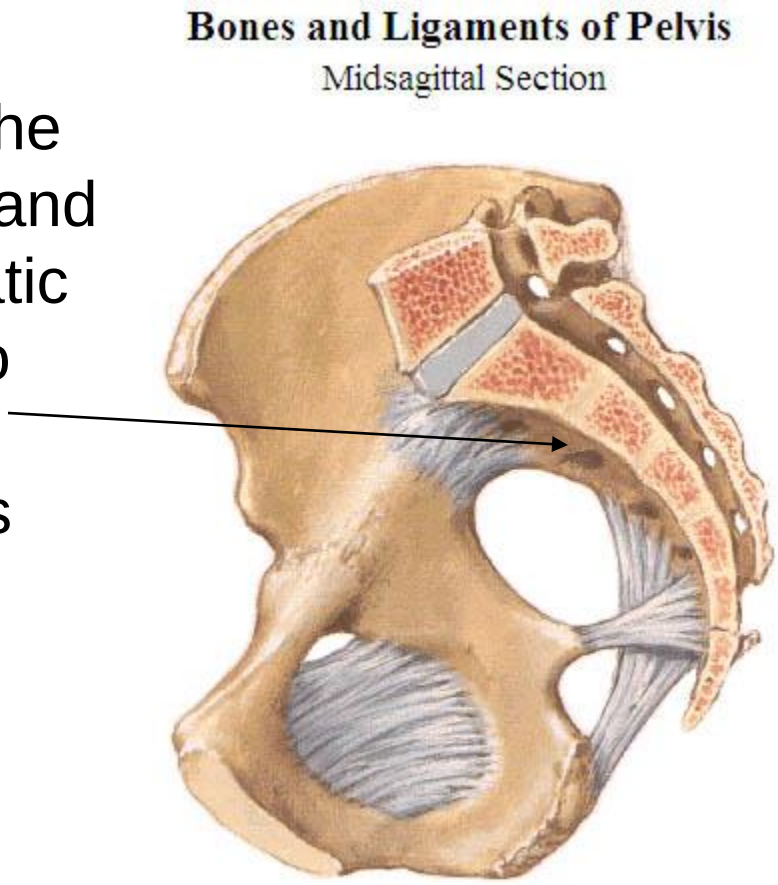
The ligaments along with the bone
Creates the greater sciatic foramen

And lesser sciatic foramen

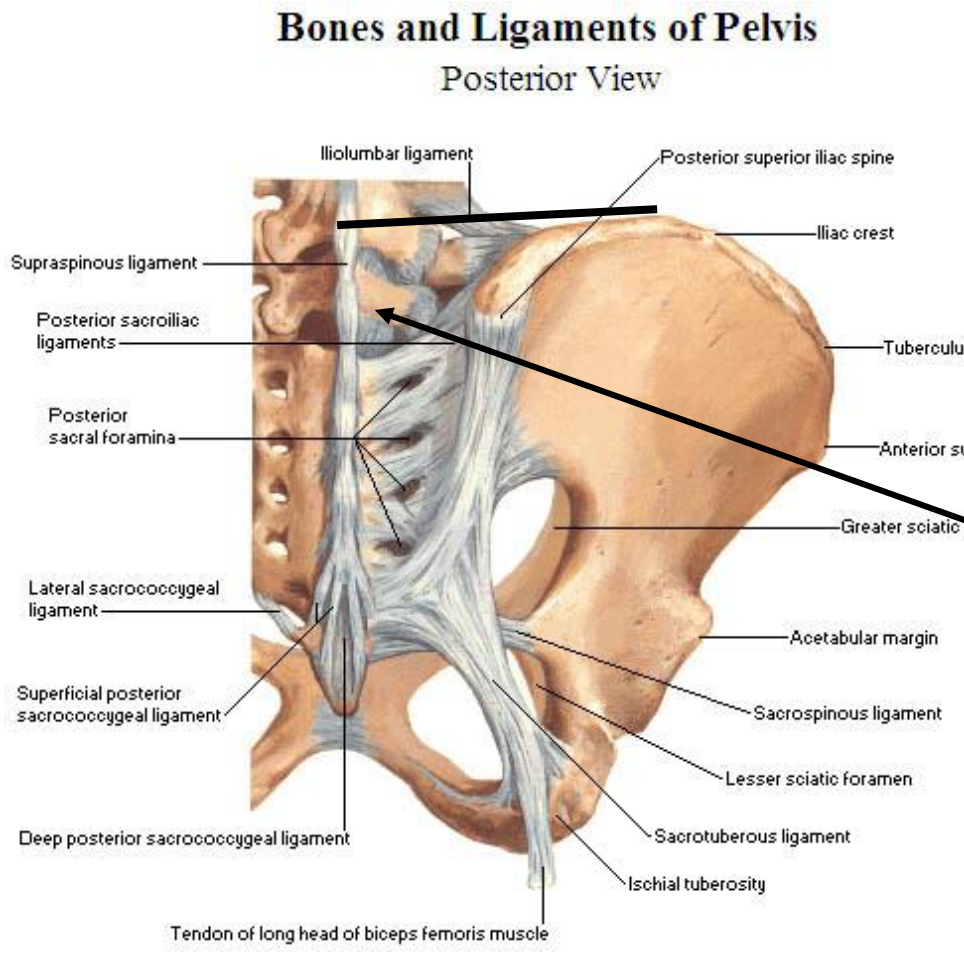


# Pelvis – Medial View

The piriformis muscle (a deep lateral hip rotator) attaches to the anterior surface of the sacrum and travels through the greater sciatic foramen. The sciatic nerve also travels through this foramen (usually inferior to the piriformis muscle. Variations exist in the population



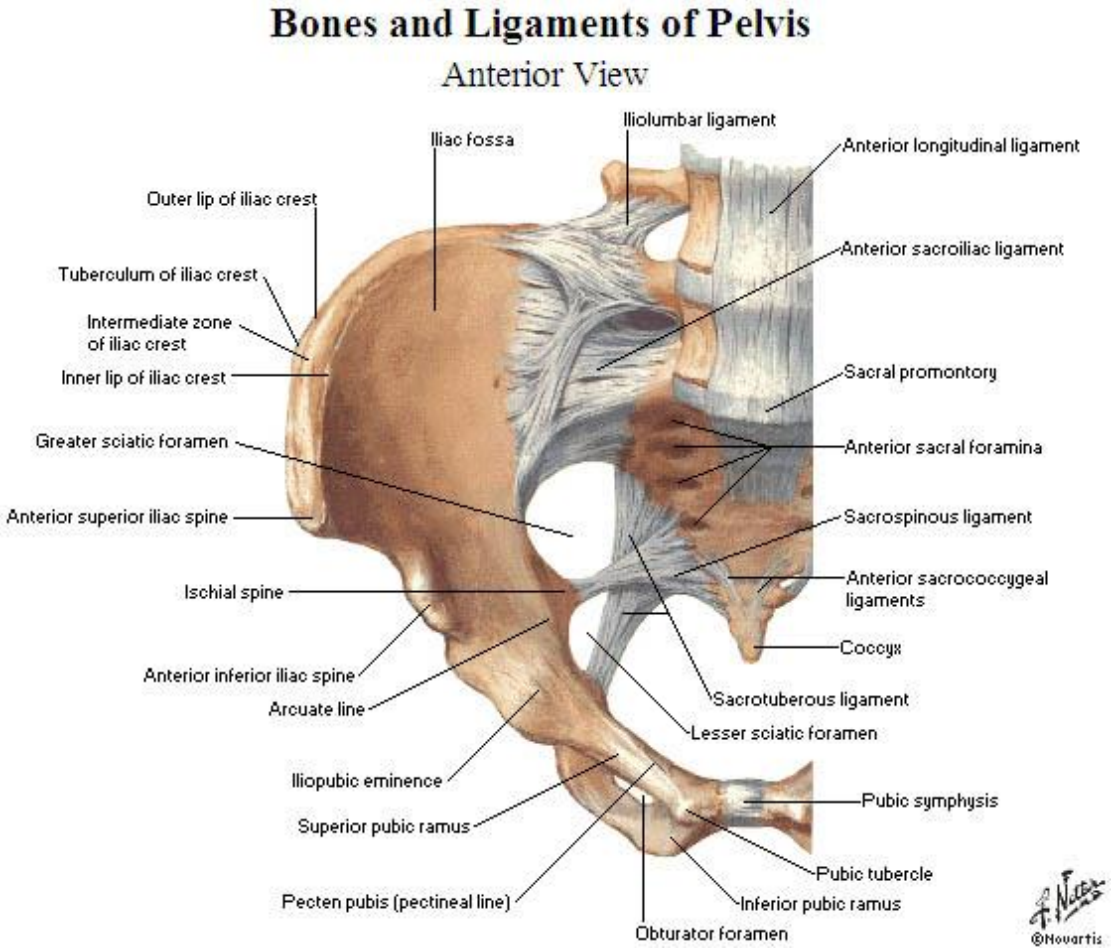
# Pelvis – Posterior View




Lower border of L4 is about level with the high point of the iliac crest (maybe slightly inferior) – Deadman is confused about this

Lower border of L5 is about 20% from PSIS

# Pelvis – Anterior View

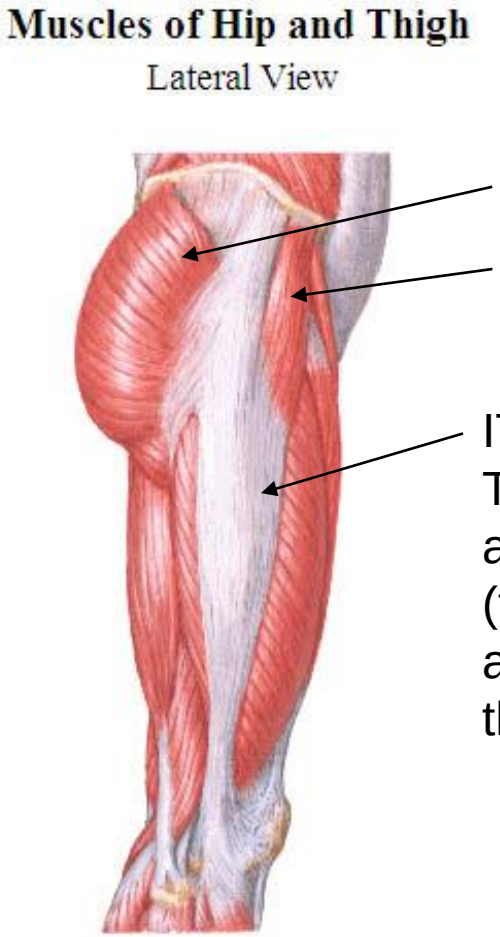


# Muscles of the Pelvis and Hip

From Superficial to Deep

# Gluteus Maximus

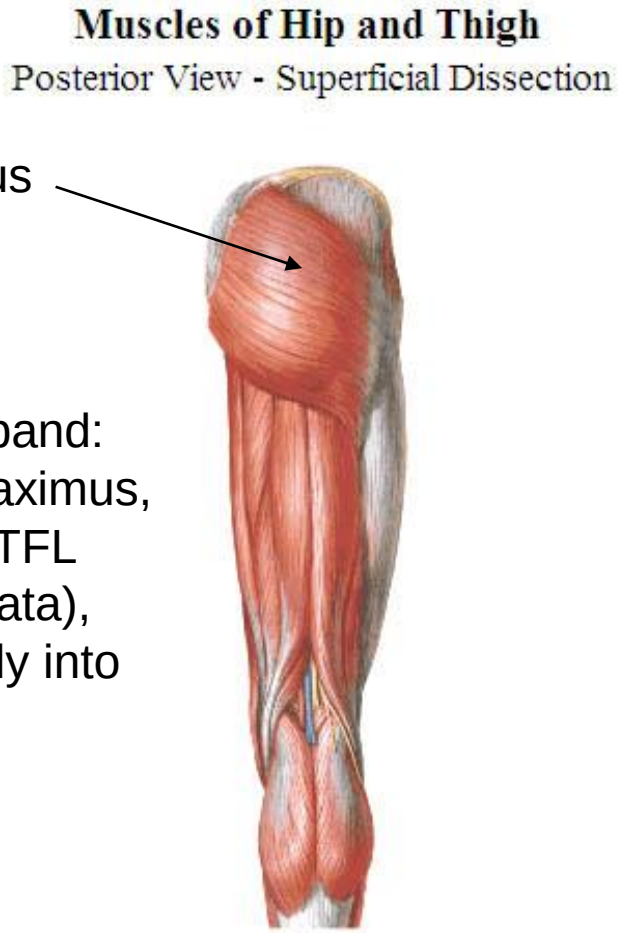
Post. Iliac crest, sacrum, coccyx – gluteal tuberosity of femur, ITB




Glut. maximus

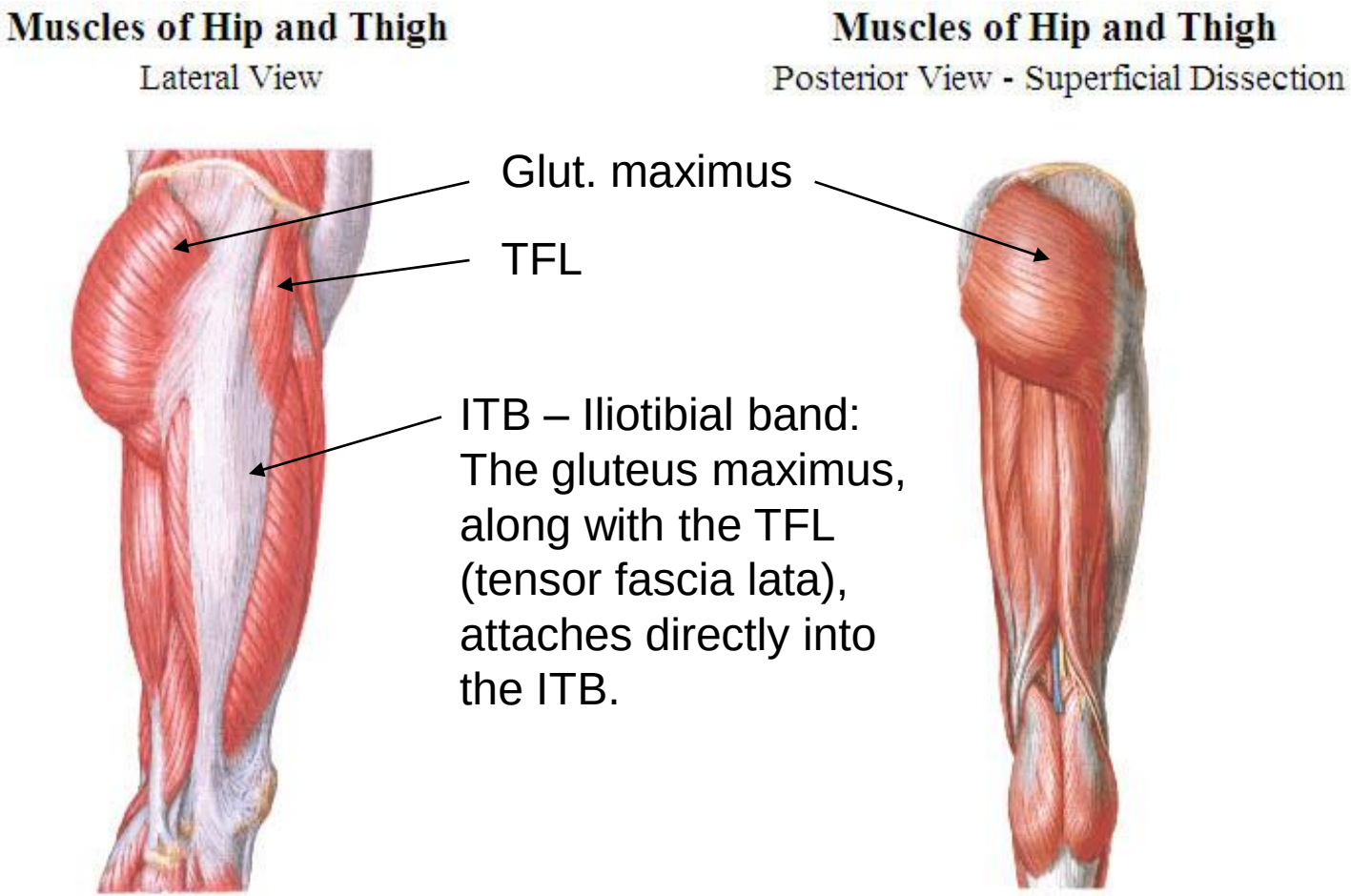
TFL

ITB – Iliotibial band: The gluteus maximus, along with the TFL (tensor fascia lata), attaches directly into the ITB.



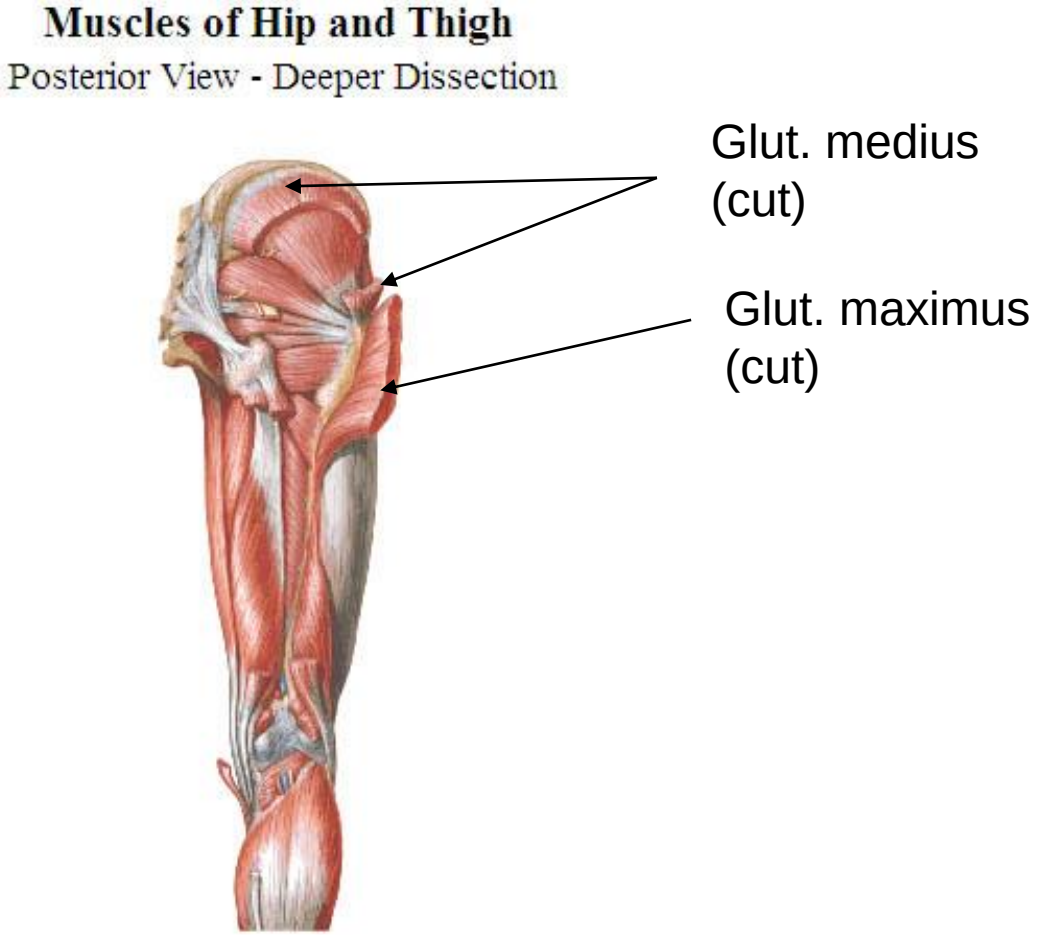
# Tensor Fascia Lata (TFL)

ASIS and anterior iliac crest – ITB



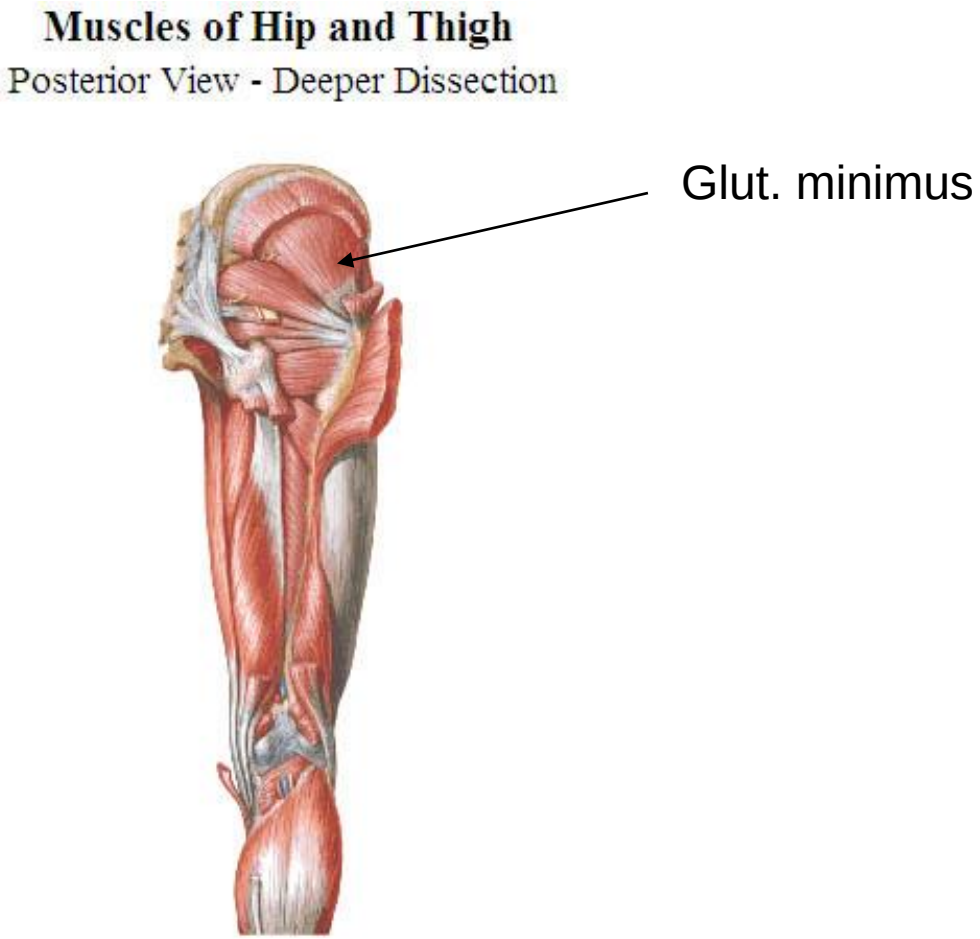
# Gluteus Medius

Lateral surface of ilium (between post. and ant. gluteal line) – Greater trochanter



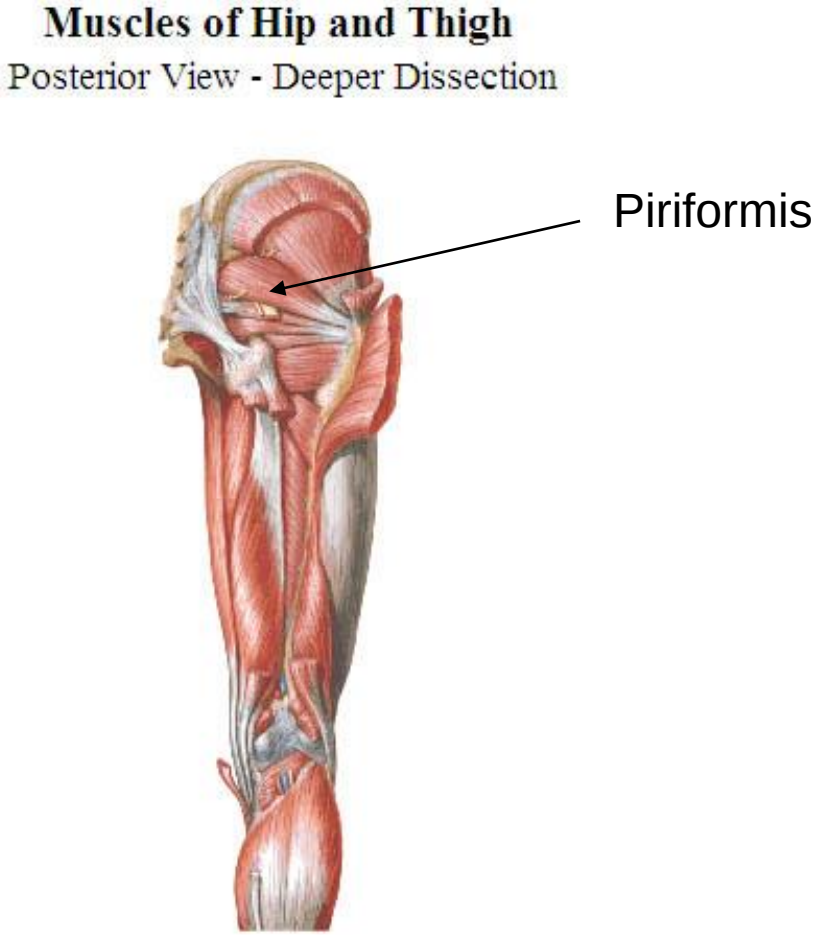
# Gluteus Minimus

Lateral surface of ilium (between ant. and inf. gluteal line) – Greater trochanter

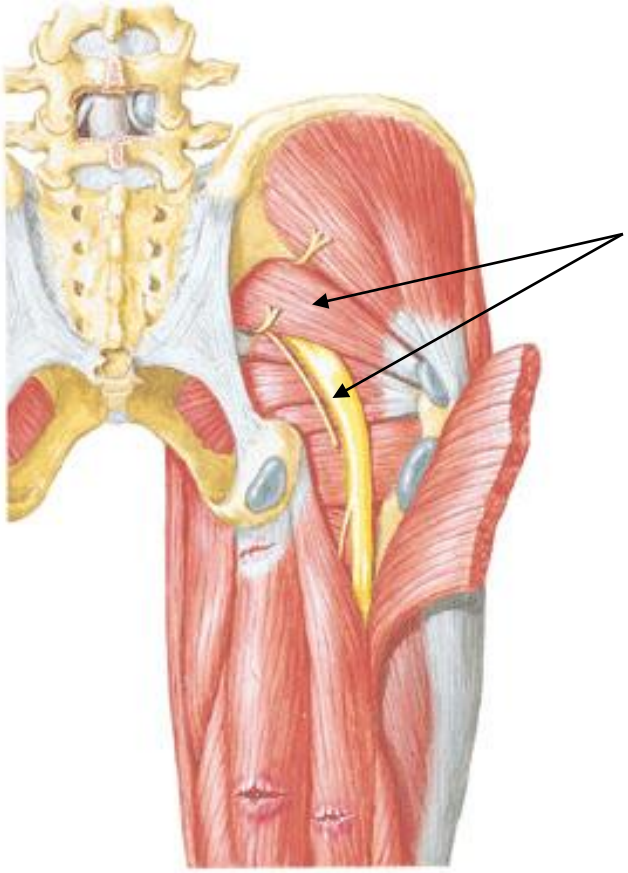


# Piriformis

## Anterior surface of sacrum – Greater trochanter



# Muscles of the Posterior Gluteal Region



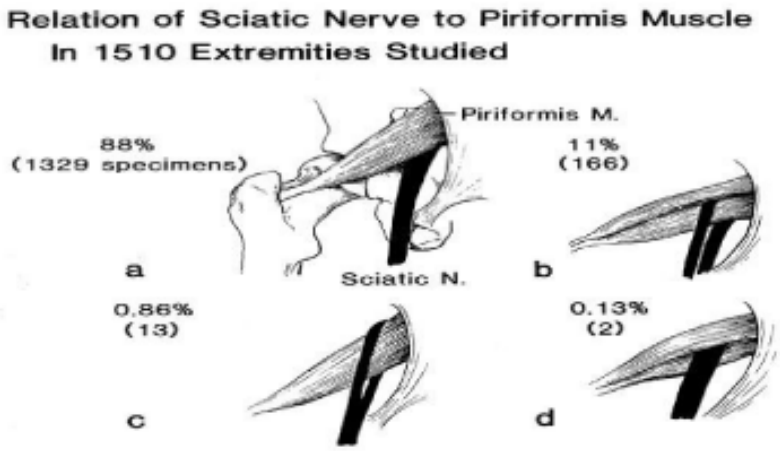
Note the relationship of the piriformis to the
sciatic nerve. Both exit from the greater sciatic
foramen. This is an entrapment site for the
sciatic nerve and is a type of ‘sciatic’ that is
Specifically called piriformis syndrome.

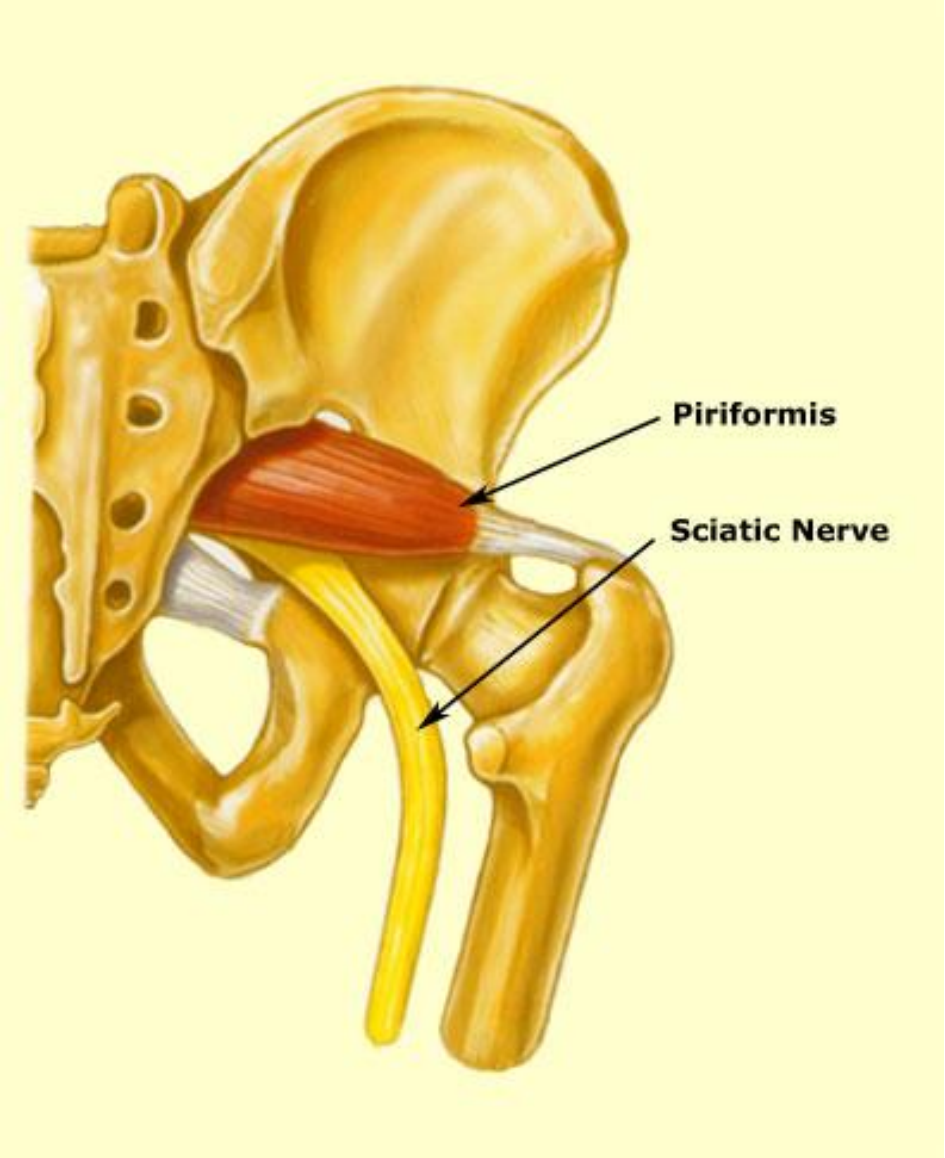
# Piriformis Syndrome

- Piriformis syndrome is not a consistently used term and may be used to indicate tightness in the piriformis which can put pressure on the sciatic nerve exiting the greater sciatic notch
- The sciatic nerve usually exits the greater sciatic foramen below piriformis
- In 11% of the population, the sciatic nerve penetrates through the piriformis, increasing the likelihood for paresthesia with a hypertonic piriformis

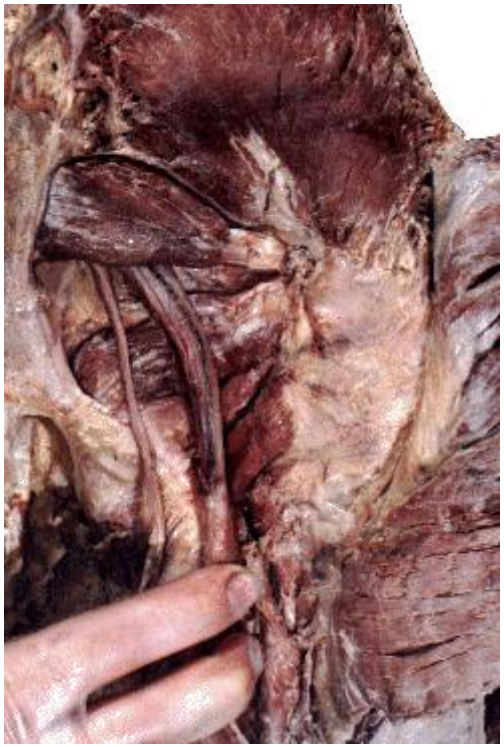
# Assessment of Piriformis Syndrome

- Assessment involves ruling out other pathology
- Assessment is to see if a shortened piriformis is causing sciatic nerve entrapment.
- Note the variations in the sciatic nerve to the piriformis muscle.




Piriformis
Sciatic Nerve

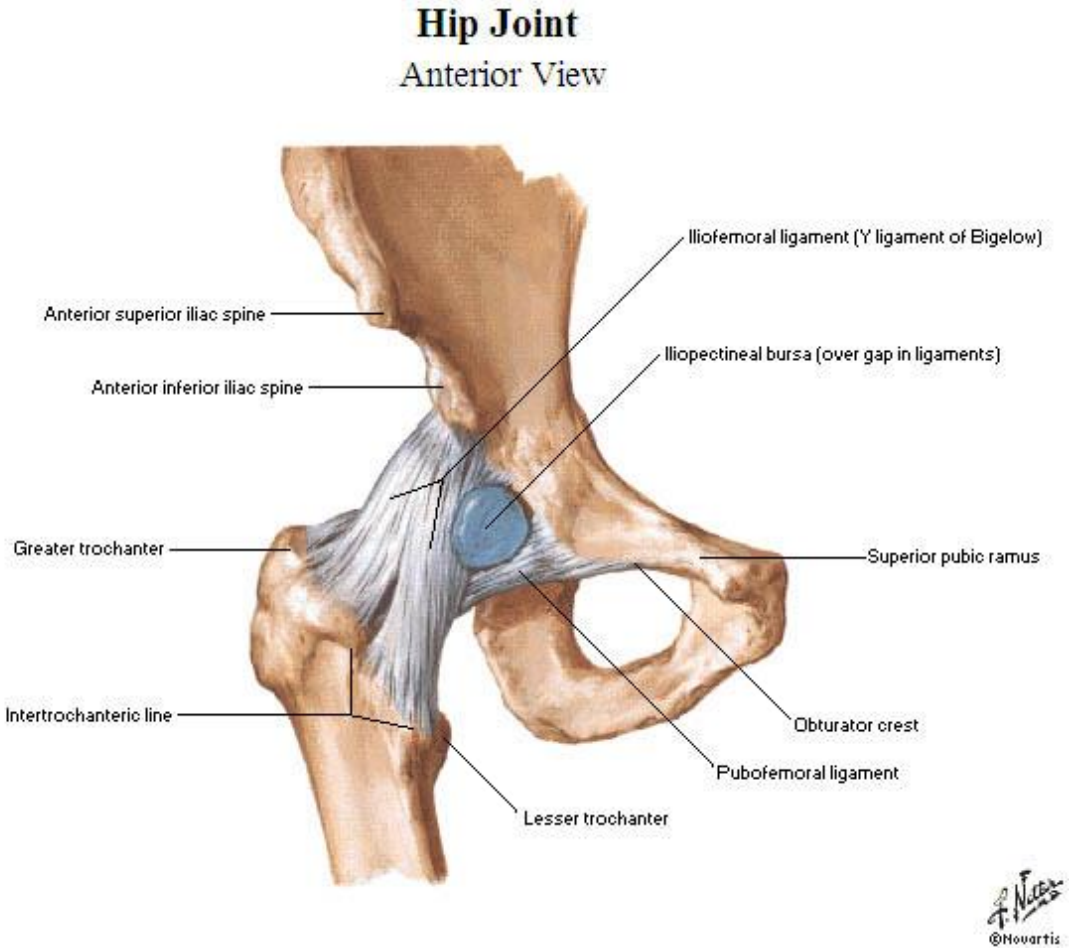
# Warning: Cadaver Images



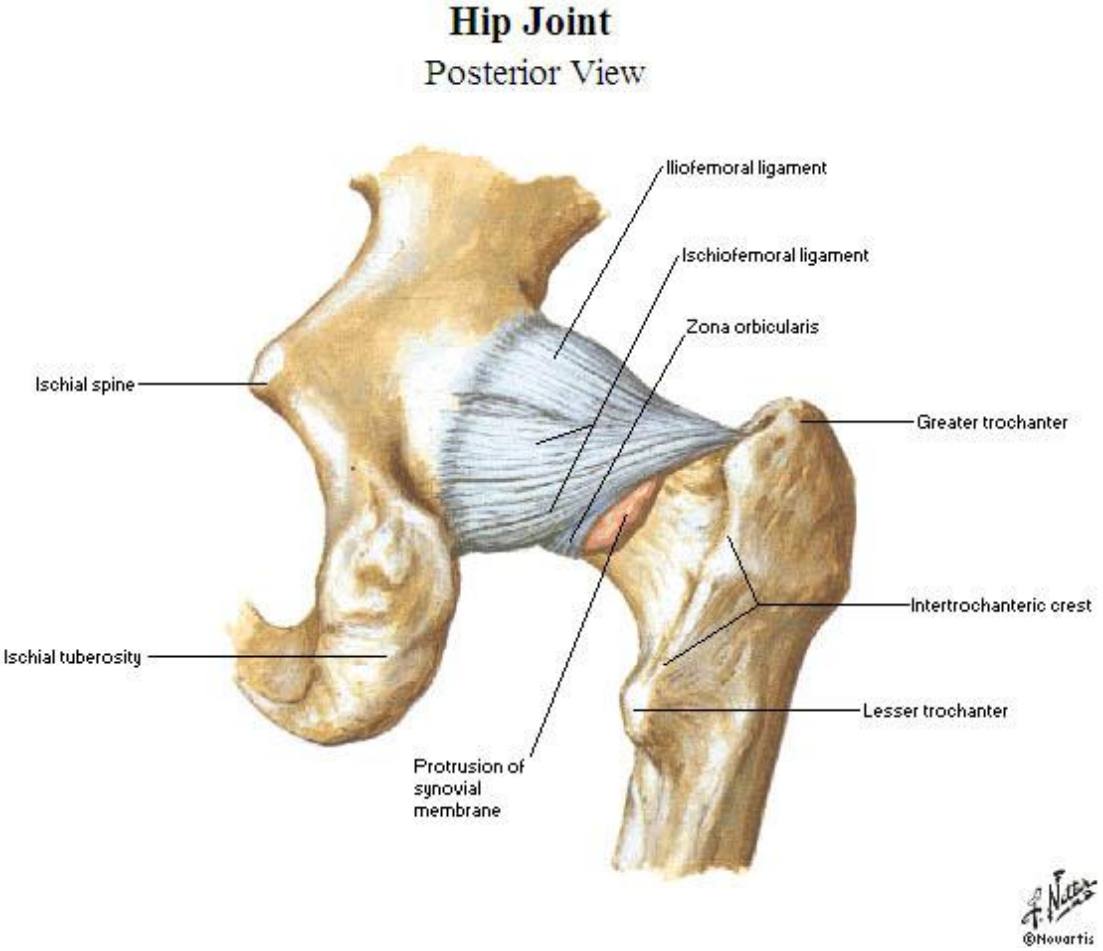
# Ligaments of Hip and Pelvis

- Ligaments (know the bold ligaments)
  - Ligaments from femur to coxal bone
    - Iliofemoral ligament
    - Ischiofemoral ligament
    - Pubofemoral ligament
  - Ligaments from sacrum to coxal bone
    - **Sacrotuberous ligament**
    - **Sacrospinous ligament**
    - Sacroiliac ligaments
  - Ligament from lumbar spine to ilium
    - Iliolumbar ligament
  - Ligament from ASIS to pubic tubercle
    - **Inguinal ligament**

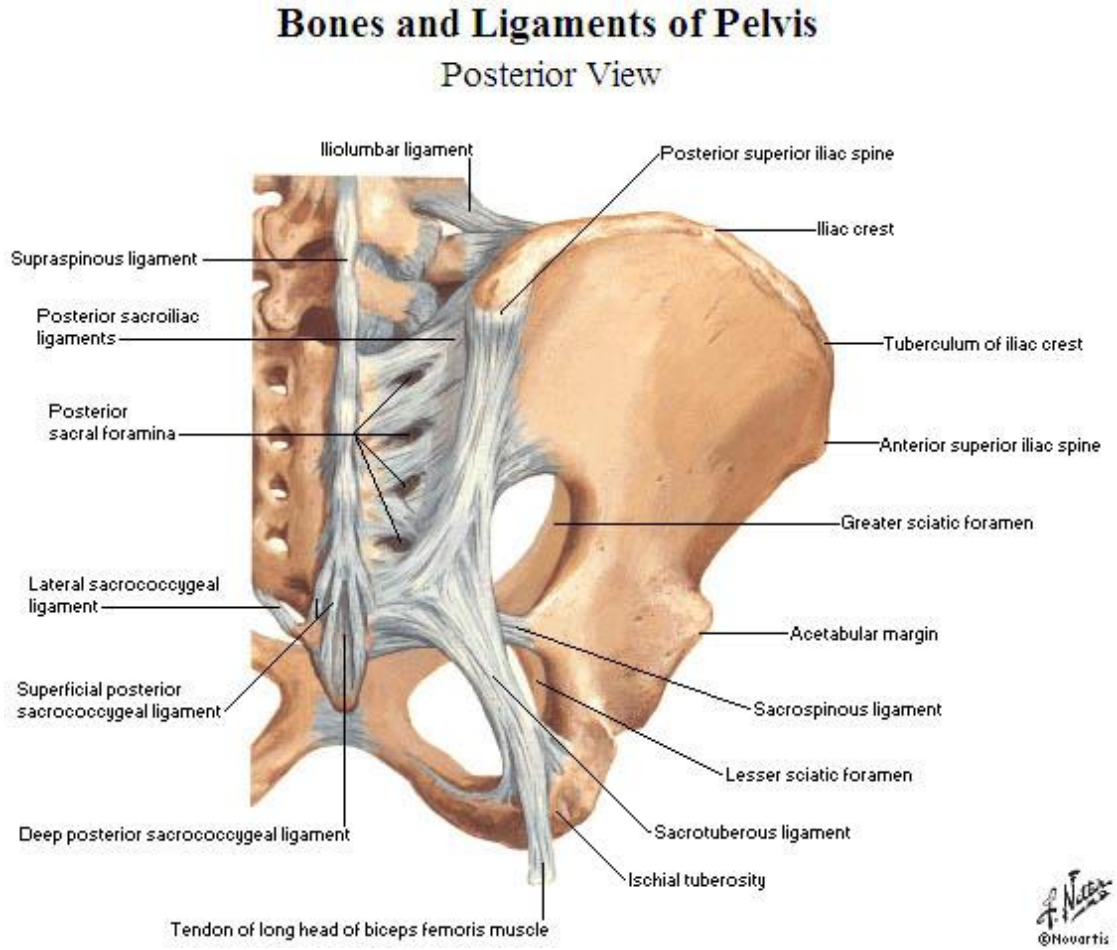
# Ligaments from Femur to Coxal Bone



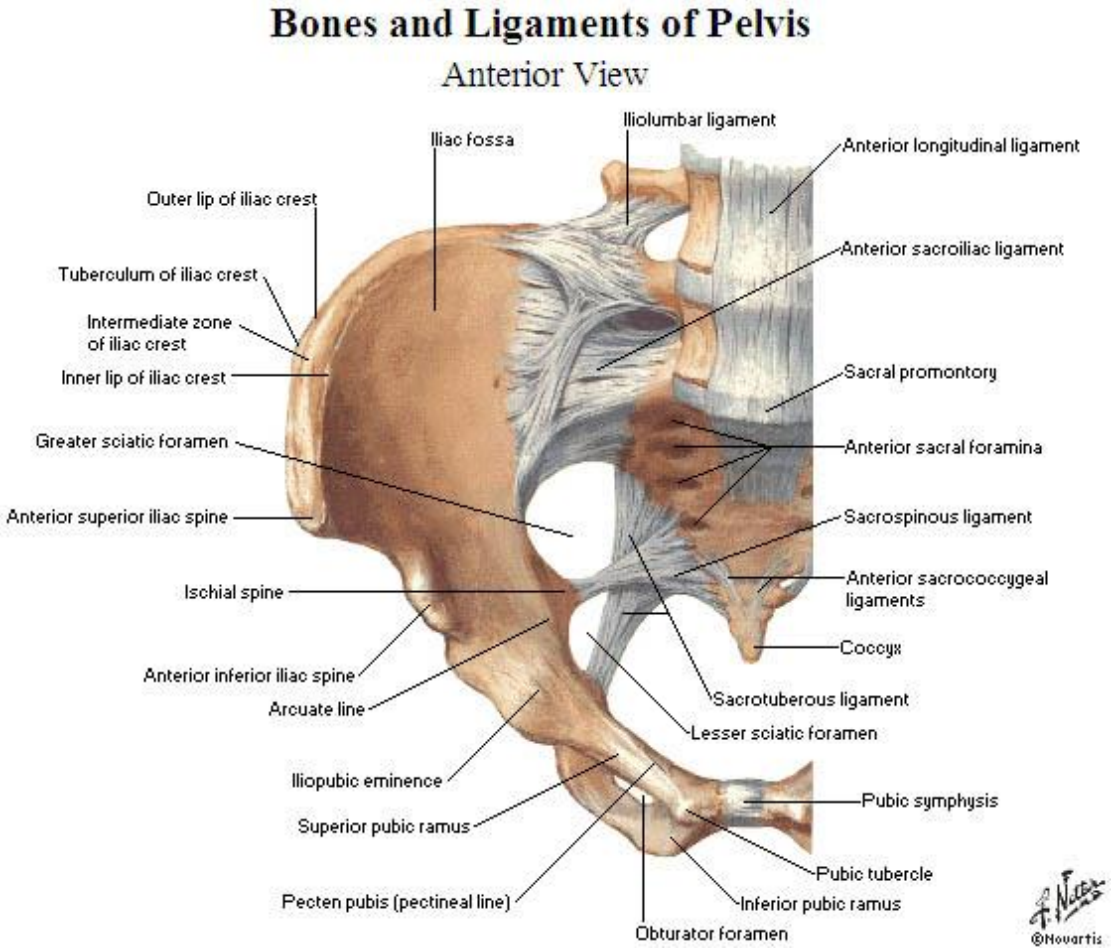
# Ligaments from Femur to Coxal Bone



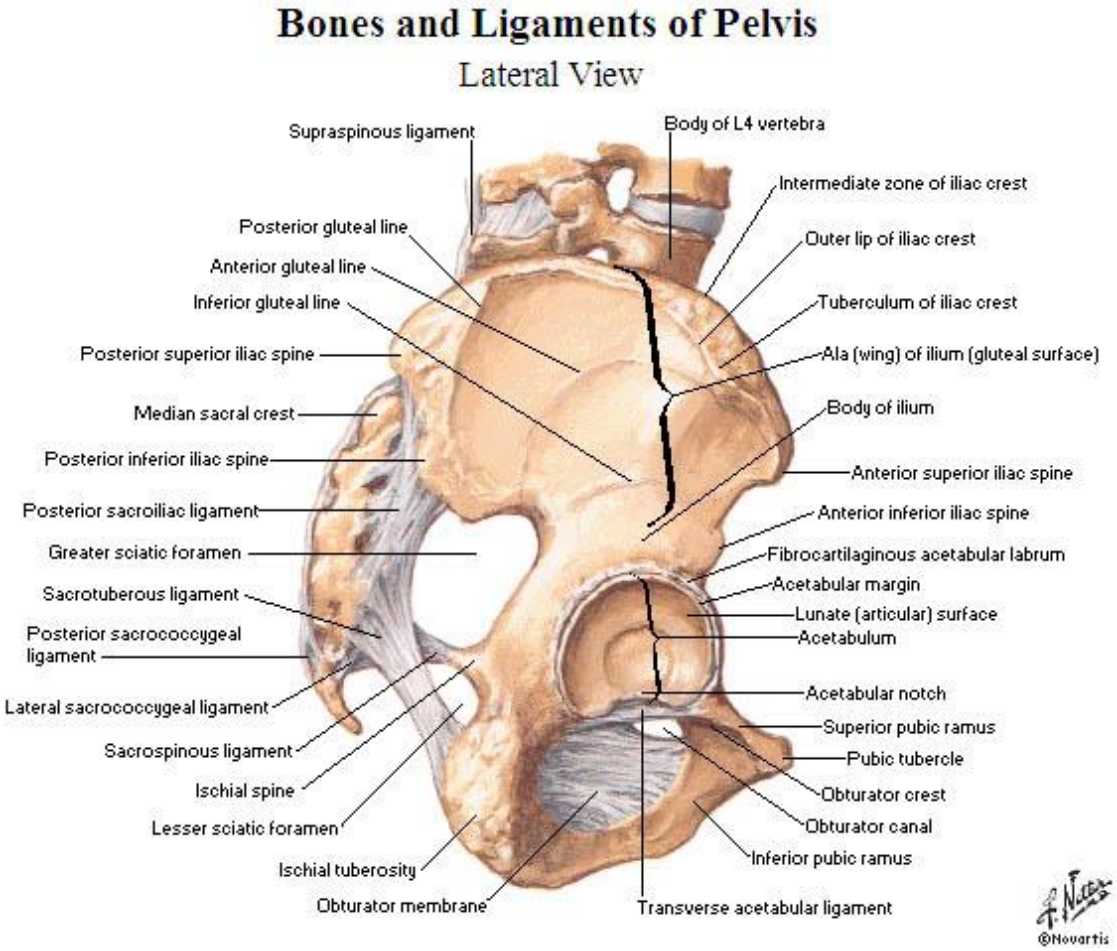
# Ligaments from Sacrum to Coxal Joint



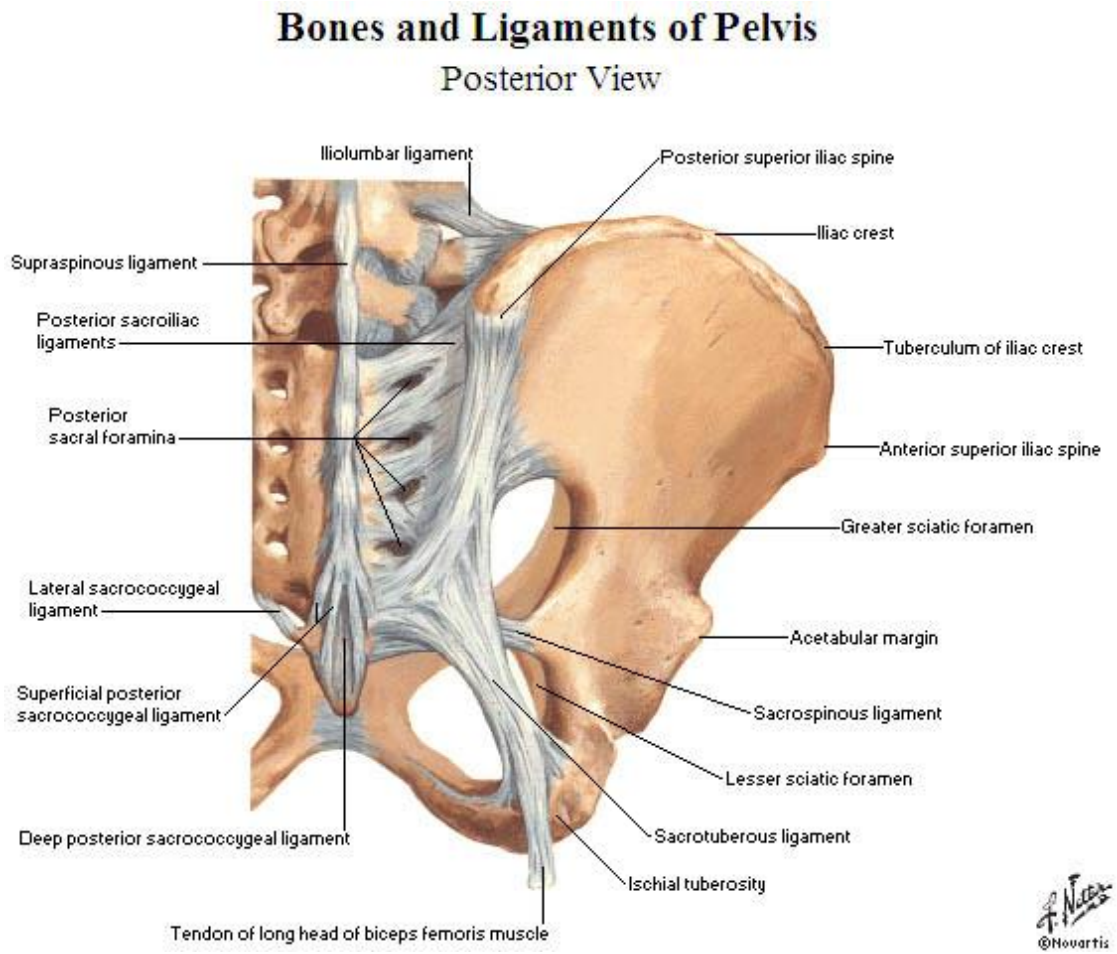
# Ligaments from Sacrum to Coxal Joint



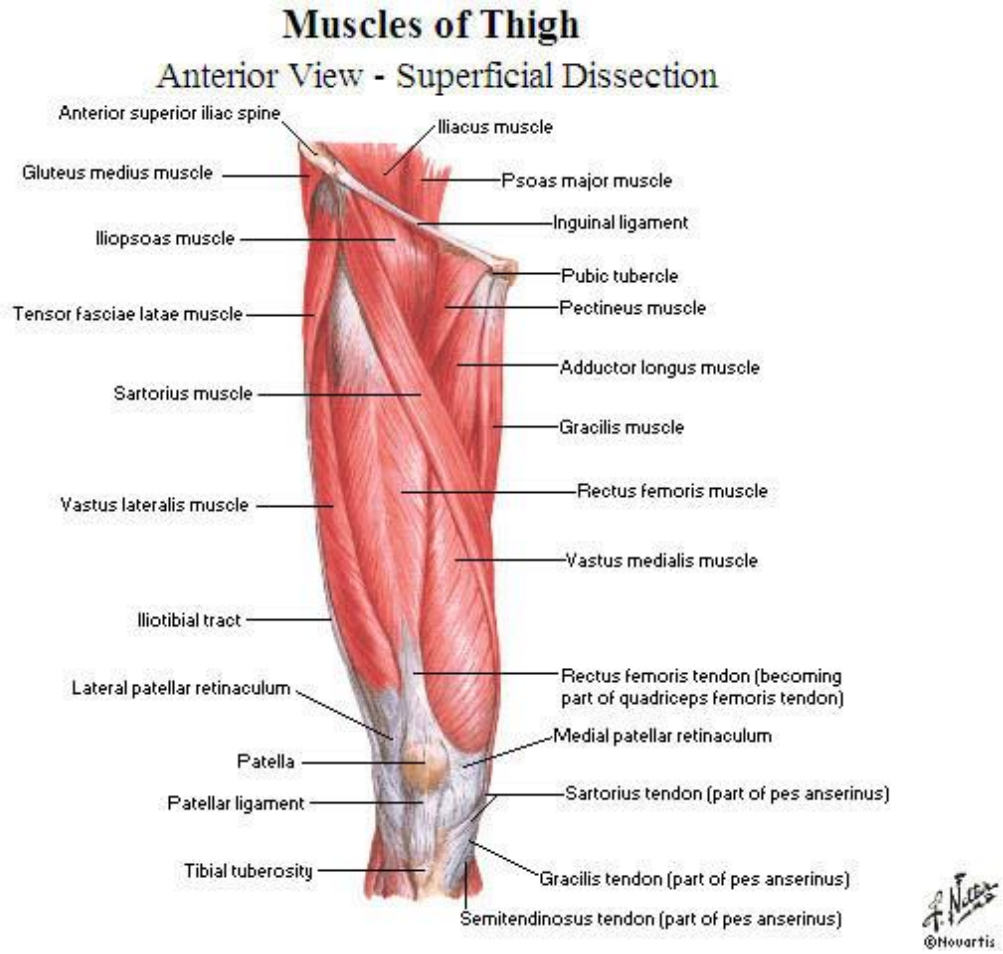
# Ligaments from Sacrum to Coxal Joint



# Ligaments from Lumbar Spine to Ilium



# Ligaments from ASIS to Pubic Bone – Inguinal Ligament



# For Next Week – Review the Following Muscles

- Anterior Thigh
  - Quadriceps (4 muscles)
    - Rectus femoris
    - Vastus medialis
    - Vastus intermedius
    - Vastus lateralis
- Posterior Thigh
  - Hamstrings (3 muscles – 1 with 2 heads)
    - Biceps femoris
    - Semitendinousus
    - Semimebranosus
- Hip extensor
  - Gluteus maximus
- Hip abductors
  - Gluteus medius
  - Gluteus minimus
  - Tensor fascia lata (TFL)
    - Also know Iliotibial band (IT Band)

# For Next Week – Review the Following Muscles

- Hip Adductors
  - *Several, not responsible for*
- Six Deep Lateral Hip Rotators (know bold)
  - **Piriformis**
  - Gemellus superior
  - Obturator internus
  - Gemellus inferior
  - Obturator externus
  - Quadratus femoris
- Hip Flexors
  - Iliacus
  - Psoas major