

Biology 223

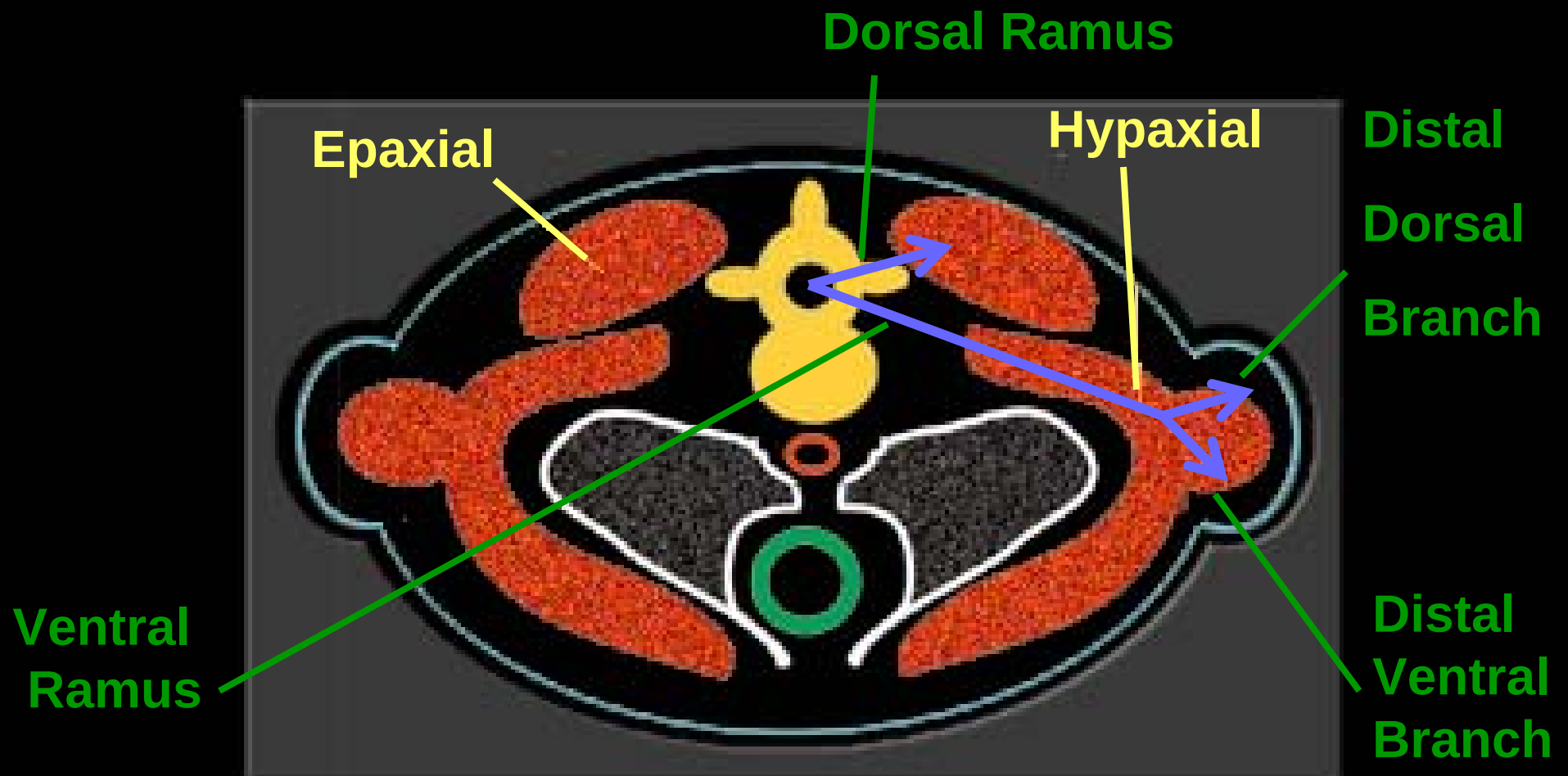
Human Anatomy and Physiology I

Week 6; Lecture 1; Monday

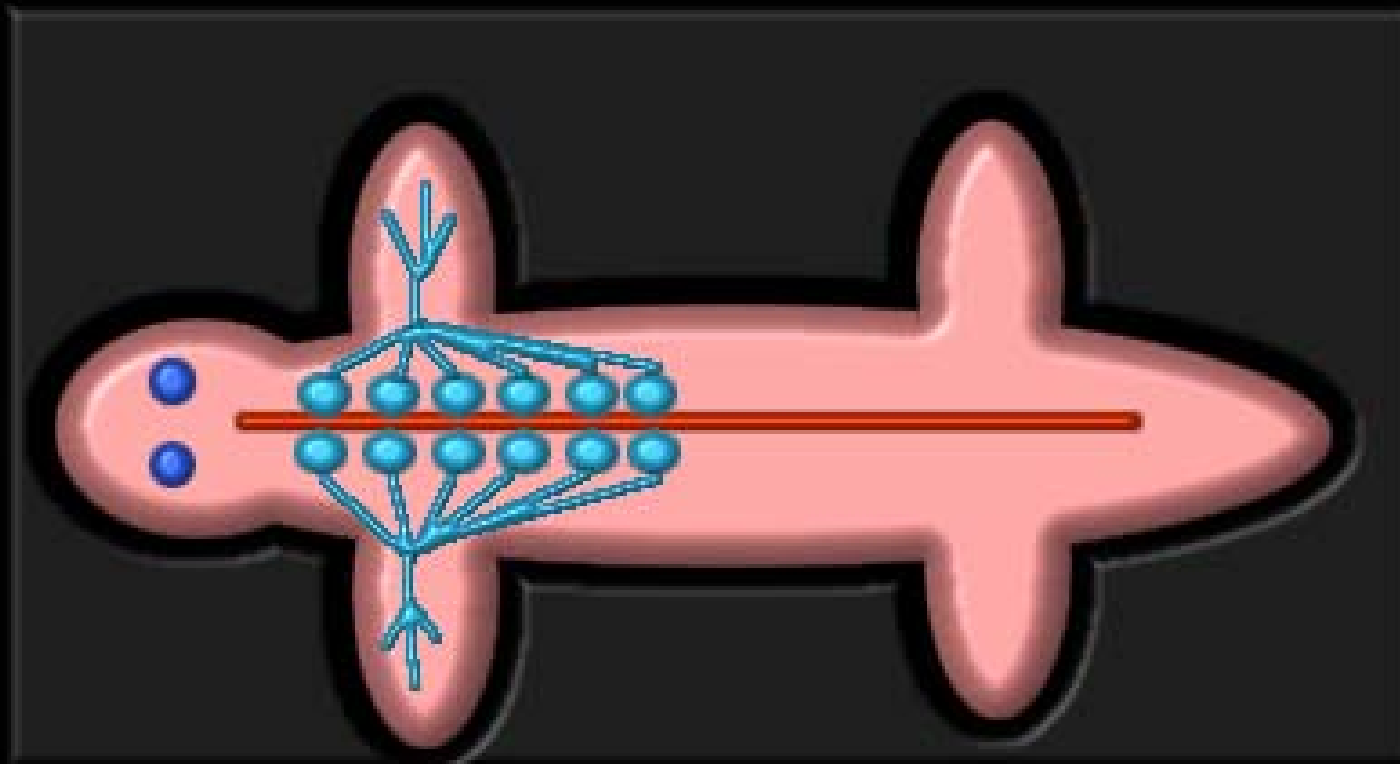
Dr. Stuart S. Sumida

Appendicular Musculature

Innervation:



**Each limb receives more than 1 nerve:
Usually about 6**

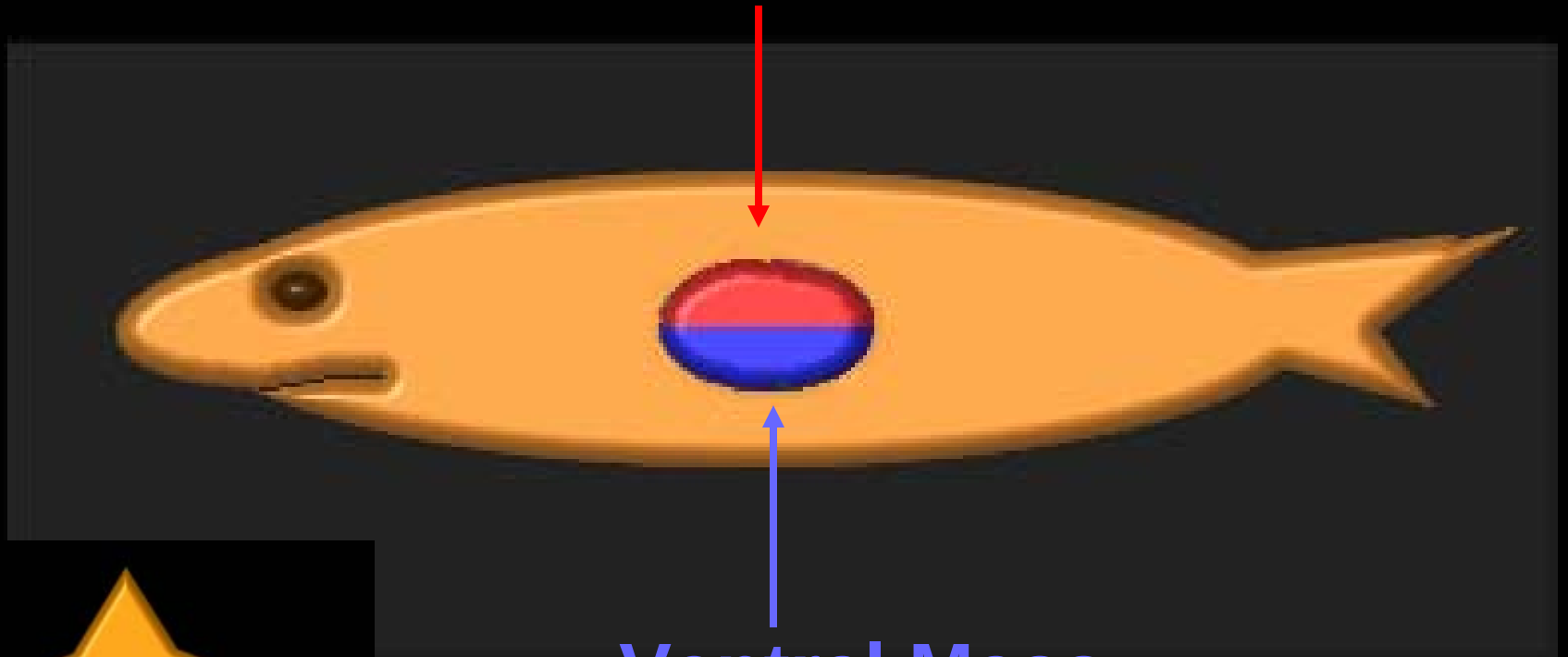


**More Posterior branches extend
more distally**



Limb Quadrants

Dorsal Mass
elevates (extends) limb



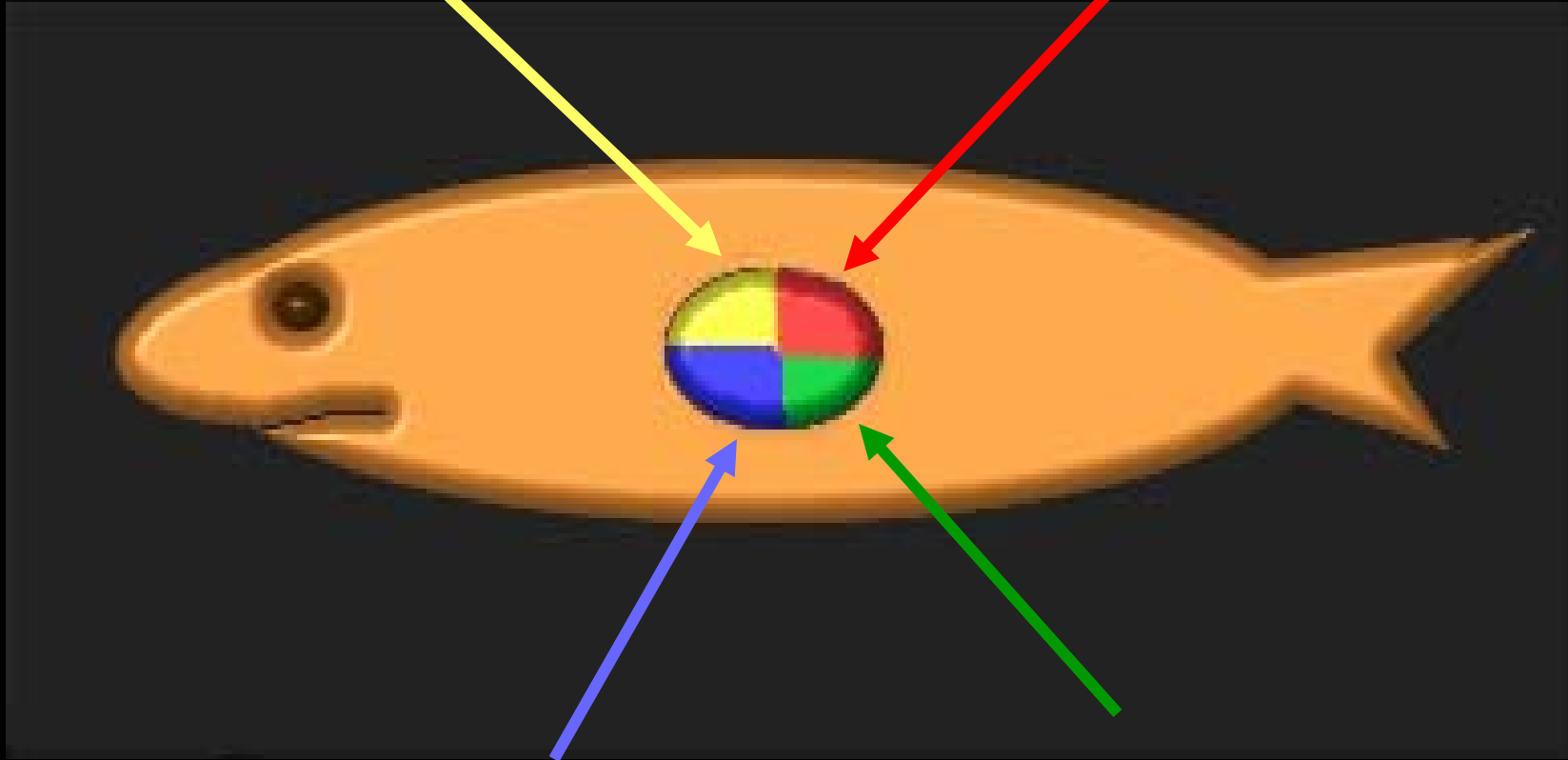
Ventral Mass

depresses (flexes) limb



**Cranial
Dorsal**

**Caudal
Dorsal**



**Cranial
Ventral**

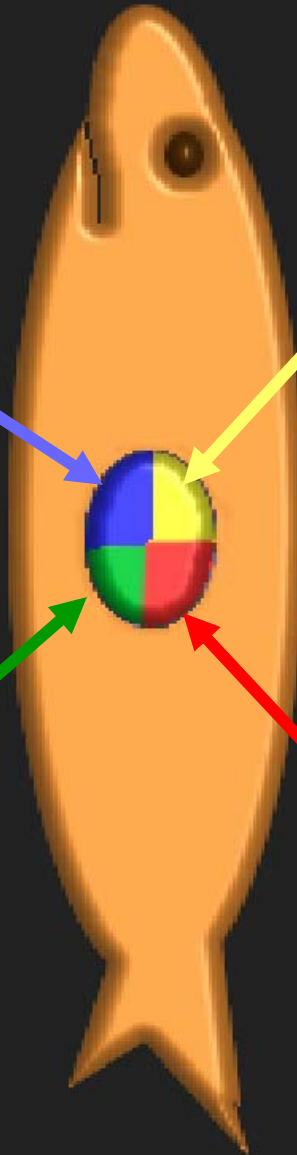
**Caudal
Ventral**

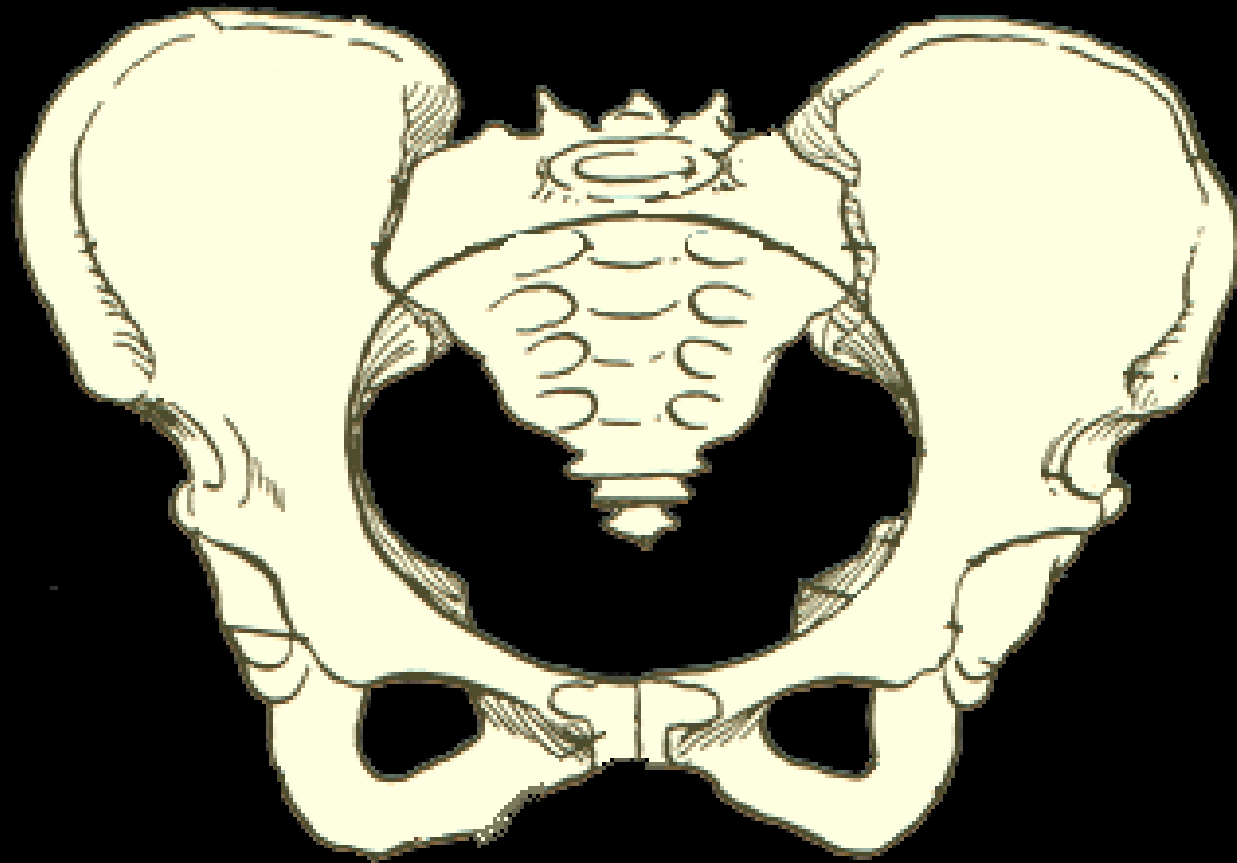
**Cranial (Superior)
Ventral (Anterior)**

**Cranial (Superior)
Dorsal (Posterior)**

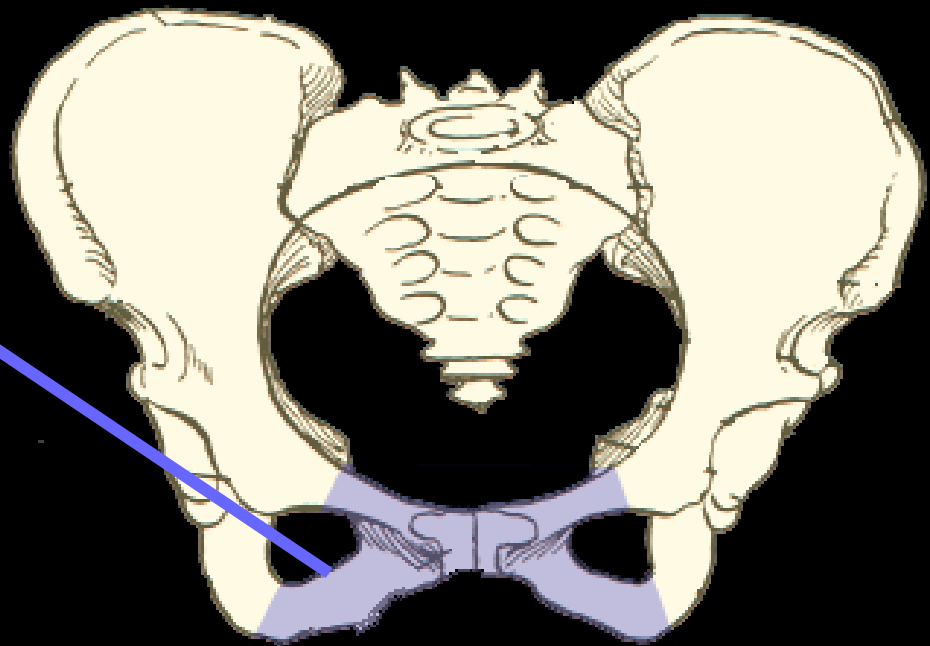
**Caudal (Inferior)
Ventral (Anterior)**

**Caudal (Inferior)
Dorsal (Posterior)**

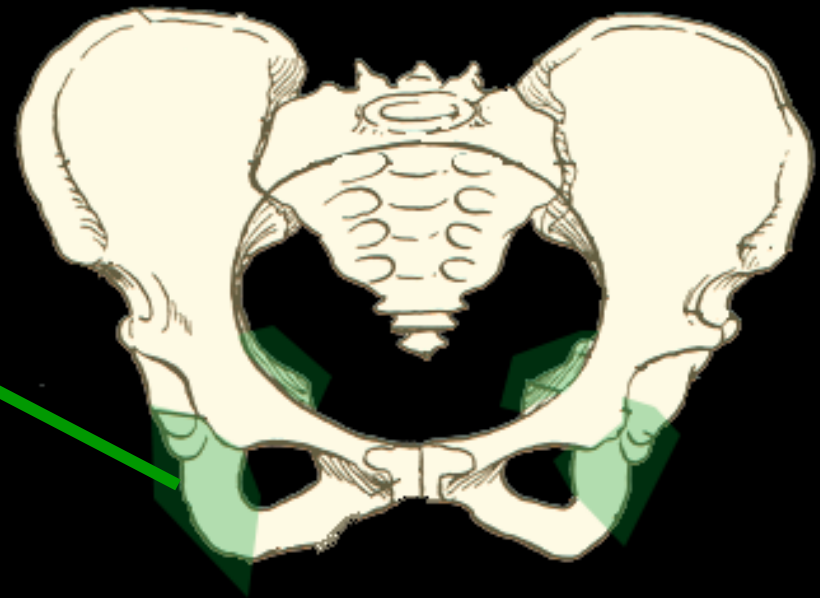




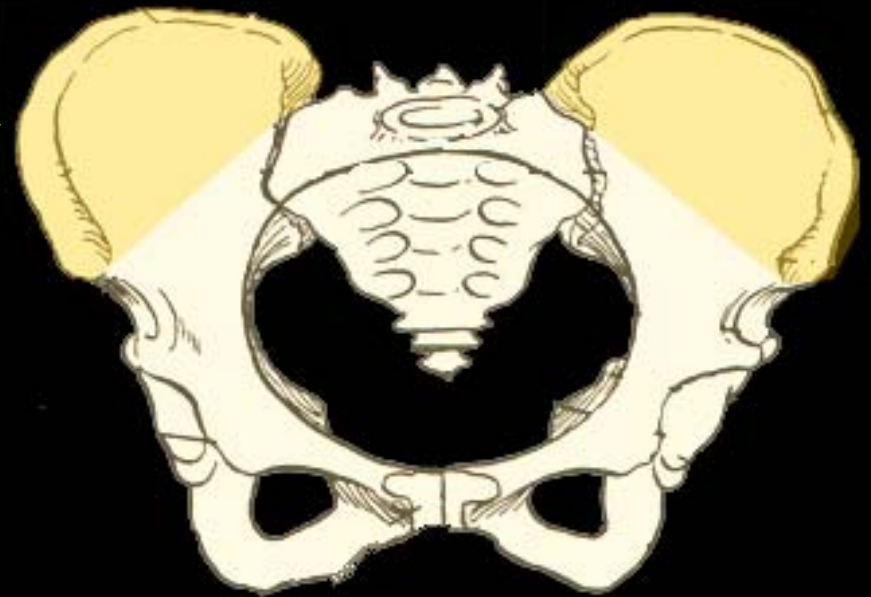
**Cranial/Ventral:
(Superior/Anterior)
Attaches to pubic bone**



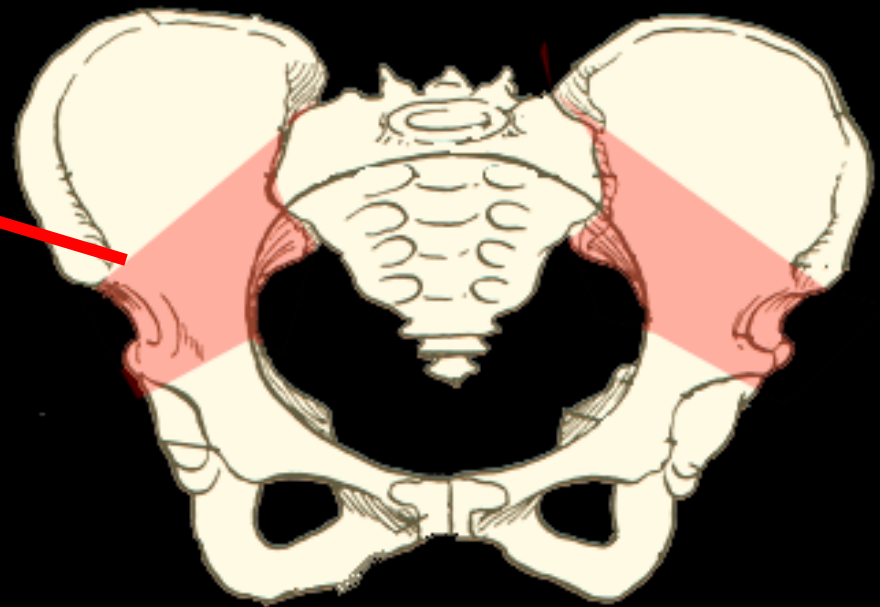
**Caudal/Ventral
Inferior/Anterior):
Attaches to
Ischium**



**Cranial/Dorsal
Superior/Posterior):
Attaches to upper part
of ilium**



**Caudal/Dorsal
Inferior/Posterior):
Attaches to lower part
of ilium**

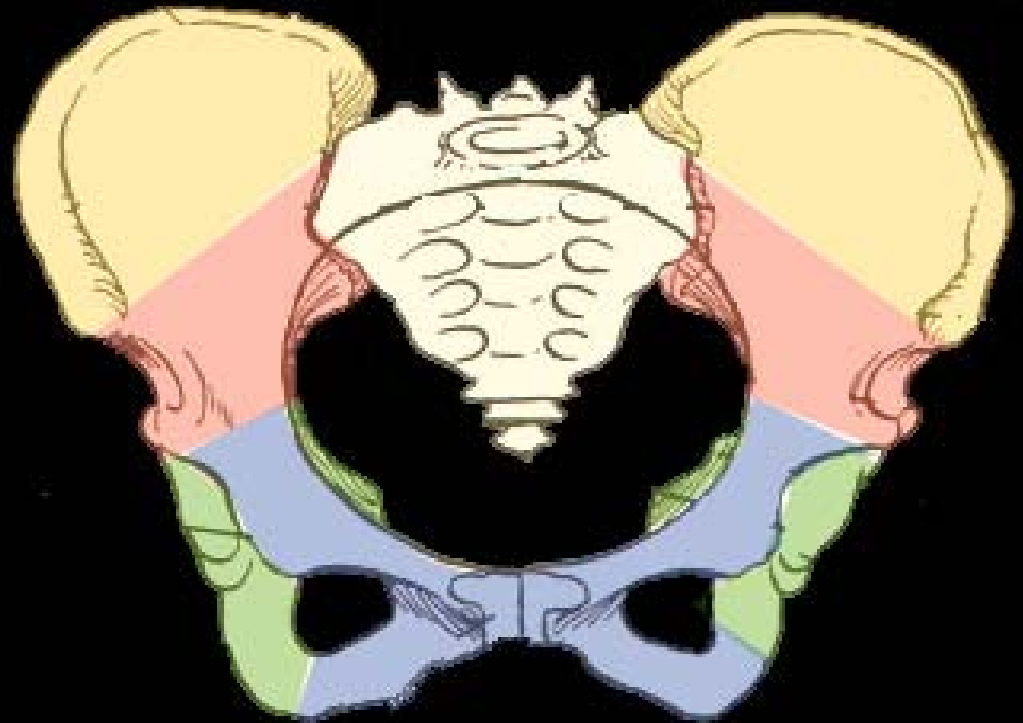


Cranial/Ventral
Superior/Anterior

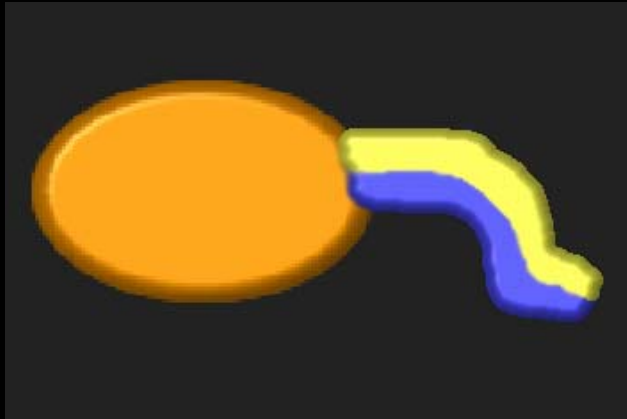
Caudal/Ventral
Inferior/Anterior

Cranial/Dorsal
Superior/Posterior

Caudal/Dorsal
Inferior/Posterior



Caudal view



Ventral view

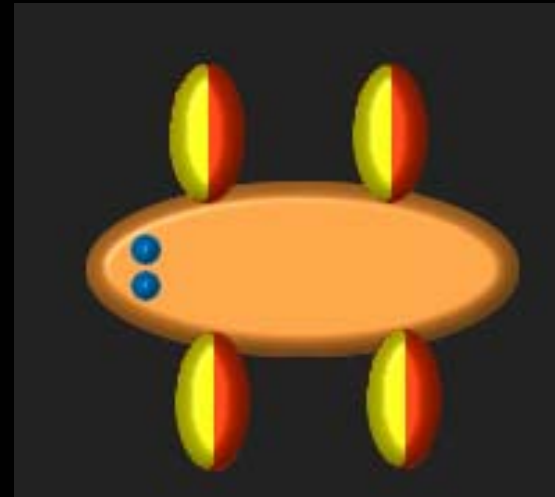
Cranial (Superior)
Ventral (Anterior)

Cranial (Superior)
Dorsal (Posterior)

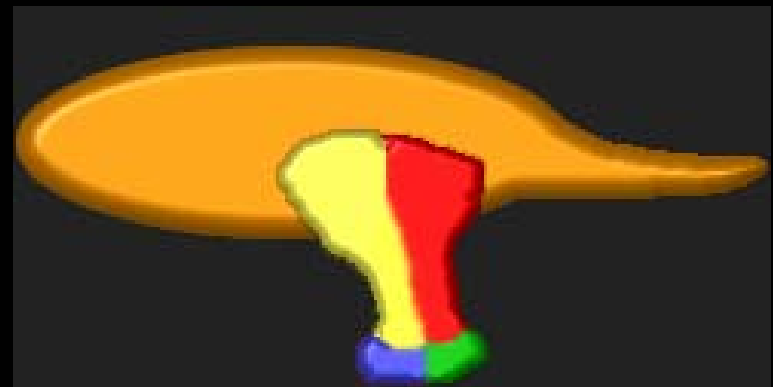
Caudal (Inferior)
Dorsal (Posterior)

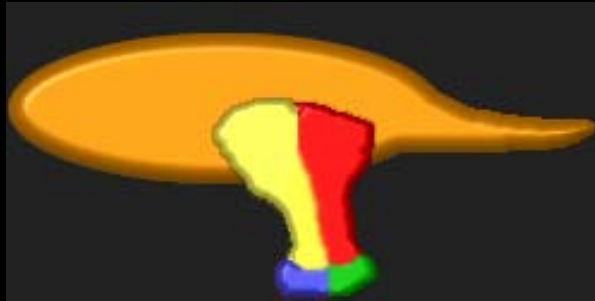
Caudal (Inferior)
Ventral (Anterior)

Dorsal view



Lateral view





Cranial (Superior)
Ventral (Anterior)

Cranial (Superior)
Dorsal (Posterior)

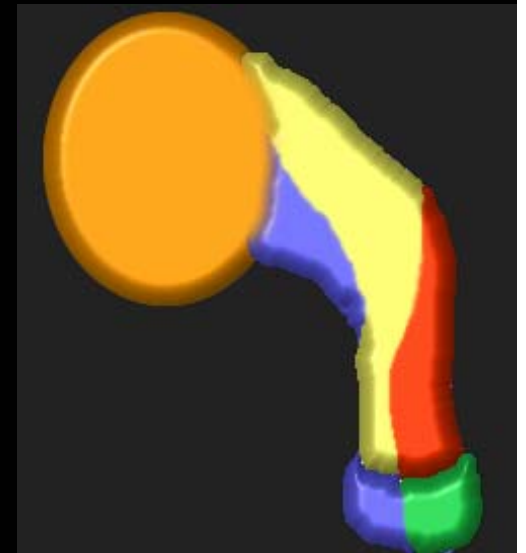
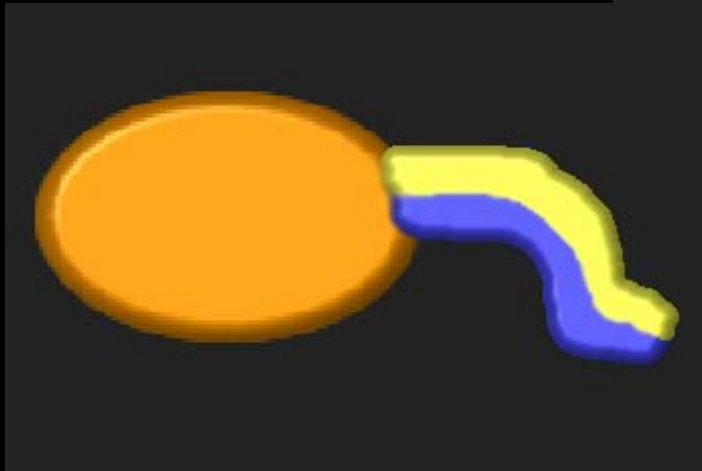
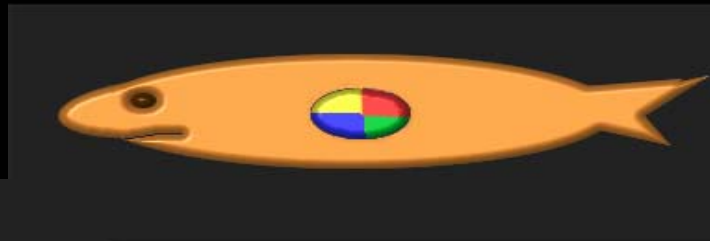
Caudal (Inferior)
Dorsal (Posterior)



Reptiles=
“Sprawling”
Posture

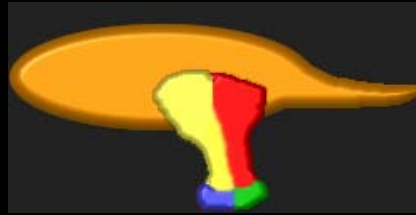
Mammals =
“Non- Sprawling”
Posture

Caudal (Inferior)
Ventral (Anterior)

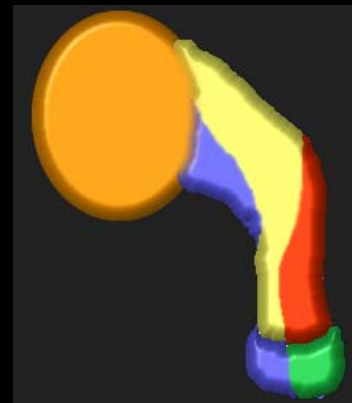
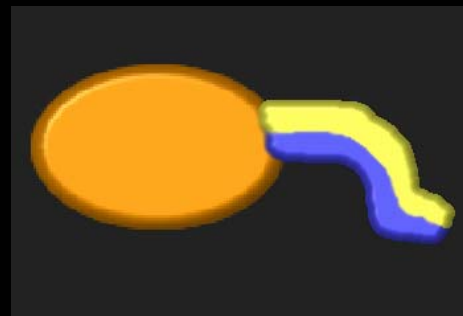
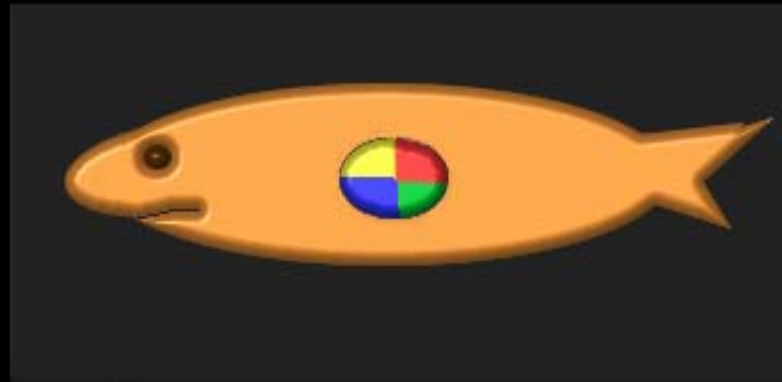




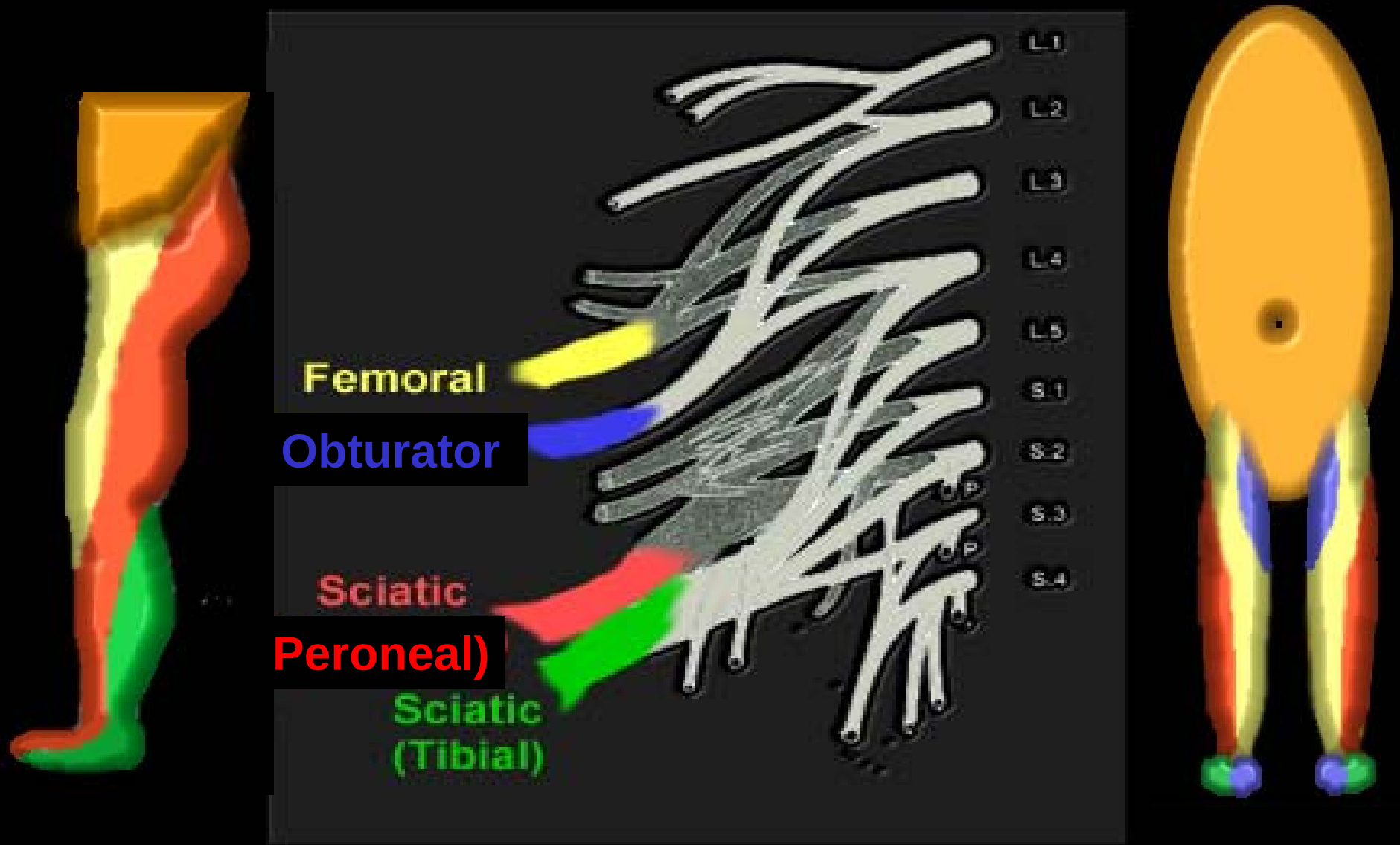
Lateral view



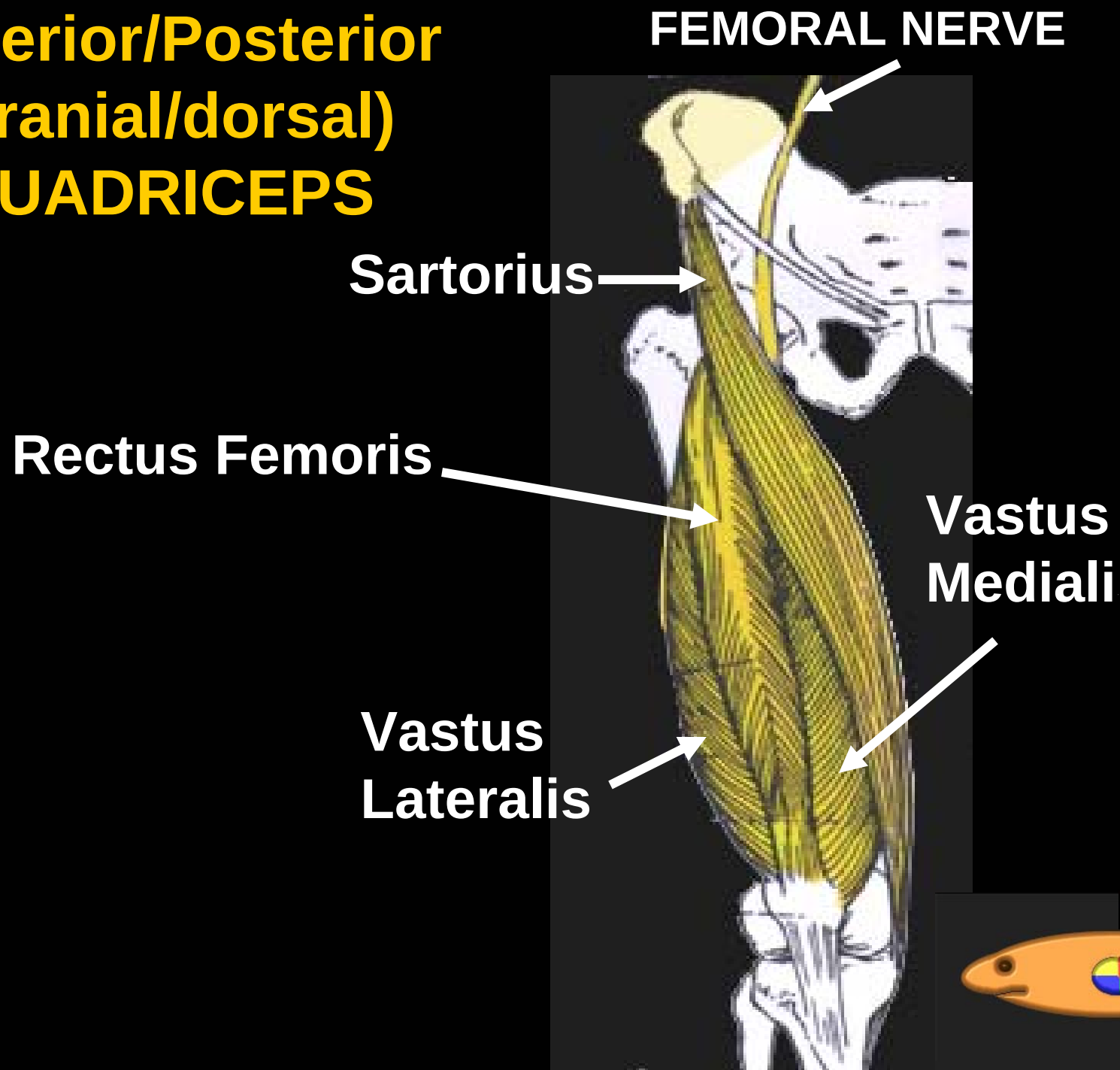
Ventral
(Anterior)
view

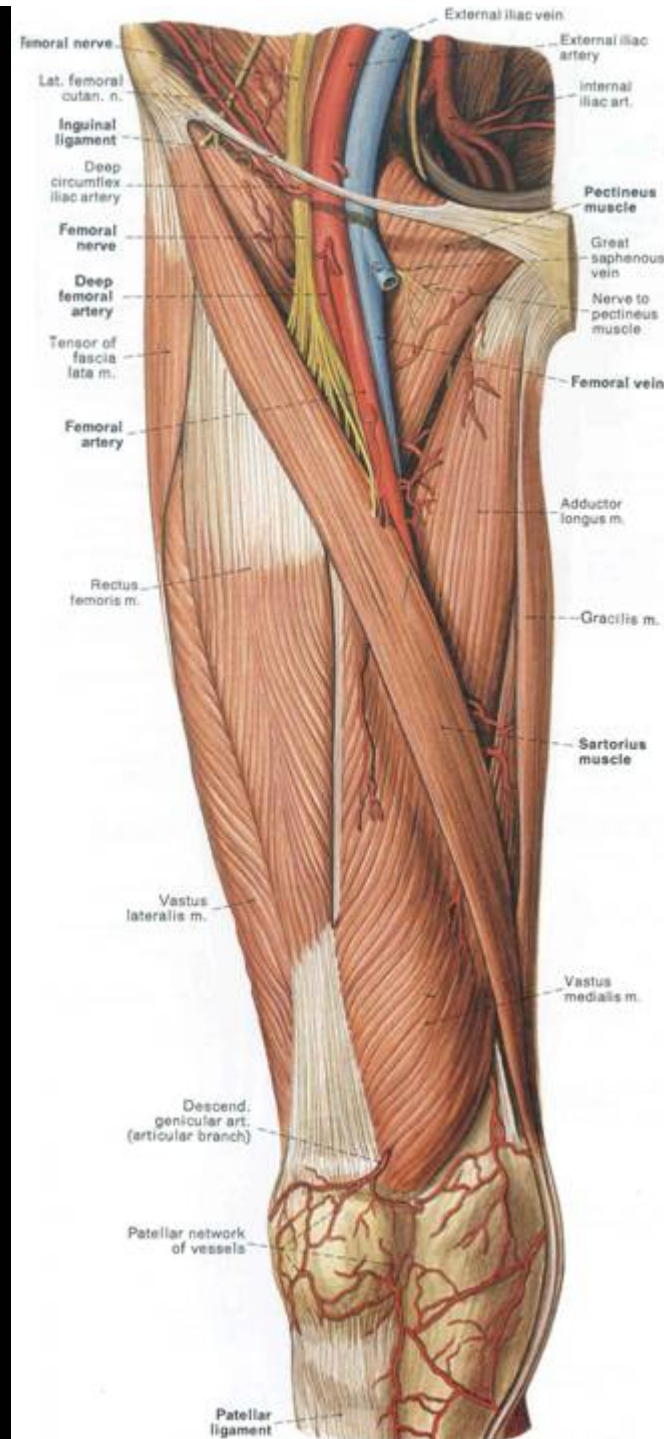
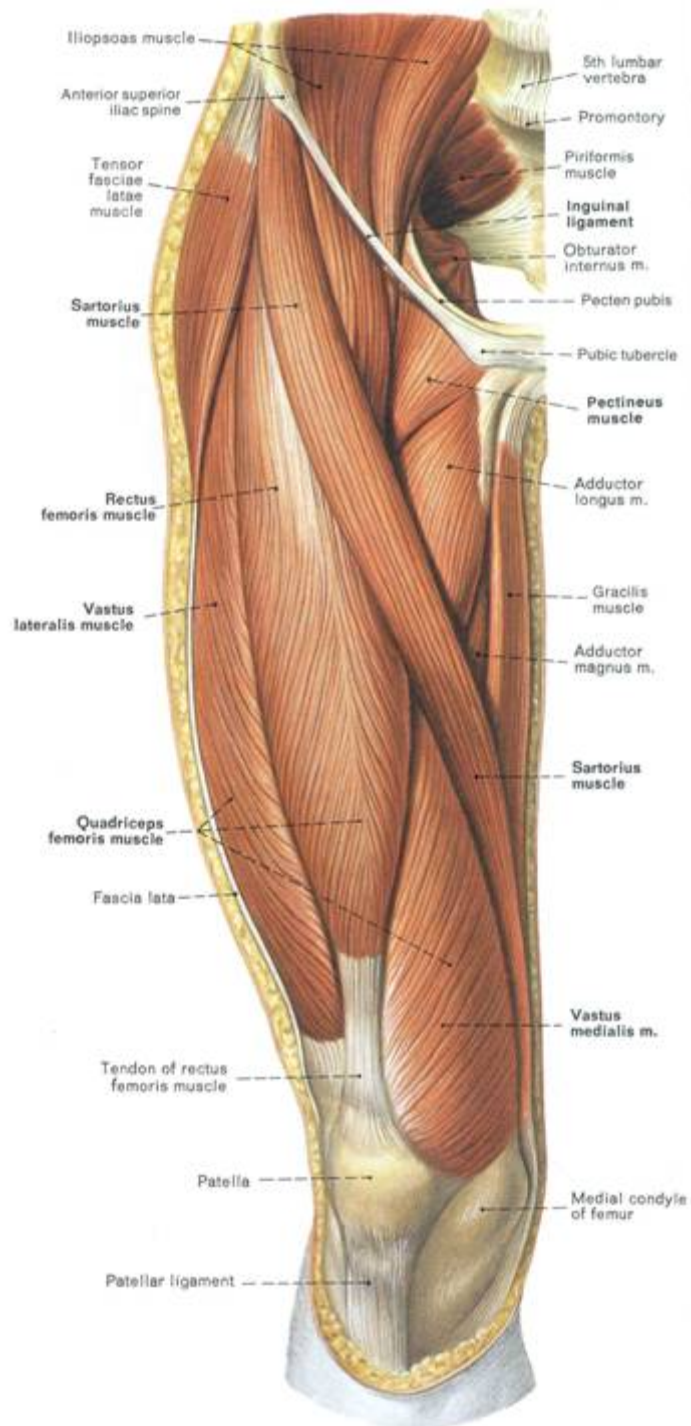


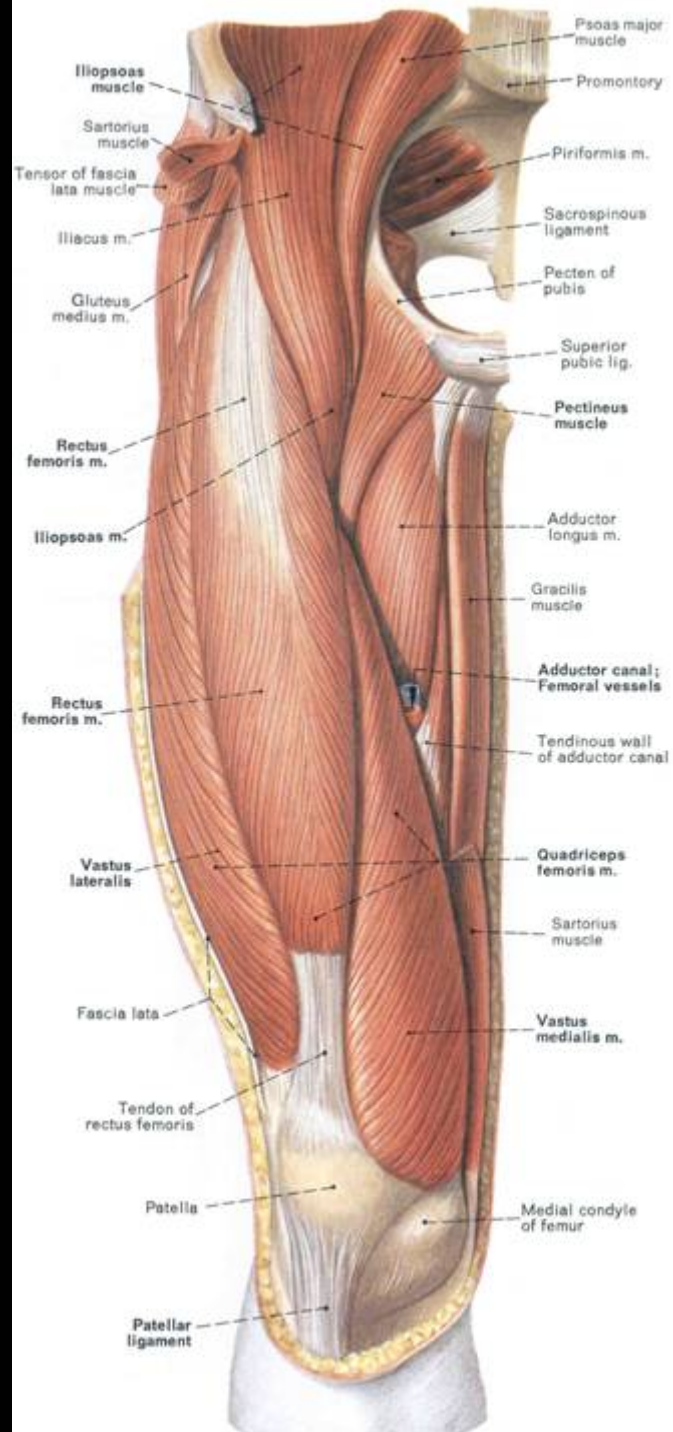
The Lumbosacral Plexus



Superior/Posterior (Cranial/dorsal) QUADRICEPS





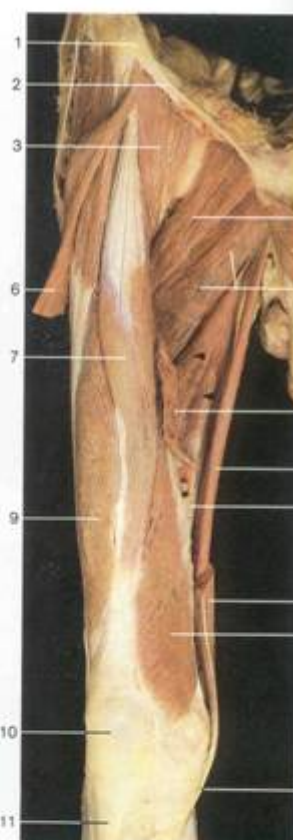




Extensor and adductor muscles of thigh, right thigh (ventral aspect).



Quadriceps femoris and superficial layer of adductor muscles, right thigh (ventral aspect). The sartorius has been divided.



Quadriceps and middle layer of adductor muscles, right thigh (ventral aspect). The sartorius and adductor longus have been divided. Arrowheads: adductor magnus.

- 1 Anterior superior iliac spine
- 2 Inguinal ligament
- 3 Iliopsoas
- 4 Femoral artery
- 5 Tensor fasciae latae
- 6 Sartorius
- 7 Rectus femoris
- 8 Iliotibial tract
- 9 Vastus lateralis
- 10 Patella
- 11 Patellar ligament
- 12 Aponeurosis of external abdominal oblique

- 13 Spermatic cord
- 14 Femoral vein
- 15 Pectineus
- 16 Adductor longus
- 17 Gracilis
- 18 Vastus medialis
- 19 Common tendon of sartorius, gracilis and semitendinosus
- 20 Adductor brevis
- 21 Femoral artery
- 22 Femoral vein
- 23 Saphenous nerve
- 24 Vastoadductory lamina of fascia beneath sartorius

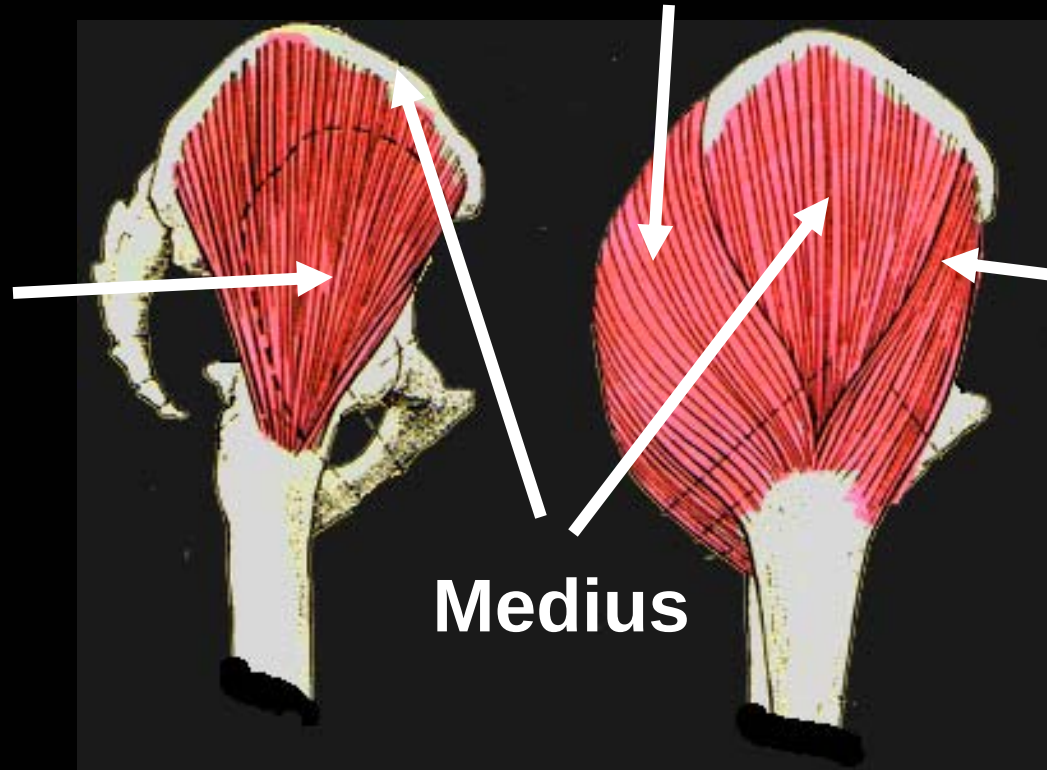
} entering the
adductor canal

**Inferior/Posterior
(Caudal/dorsal)
GLUTEAL GROUP**

SCIATIC NERVE (PERONEAL)

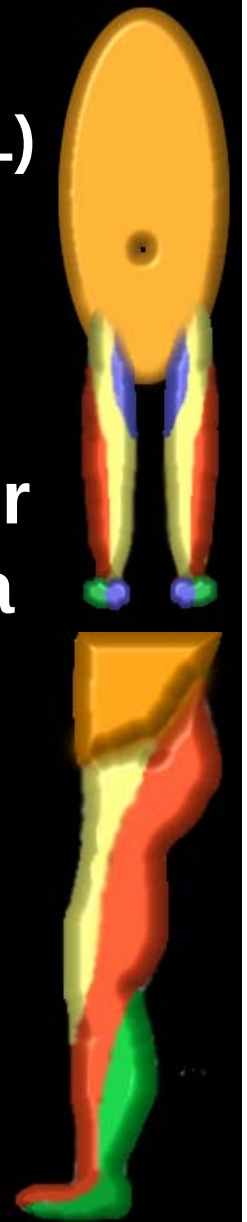
Maximus

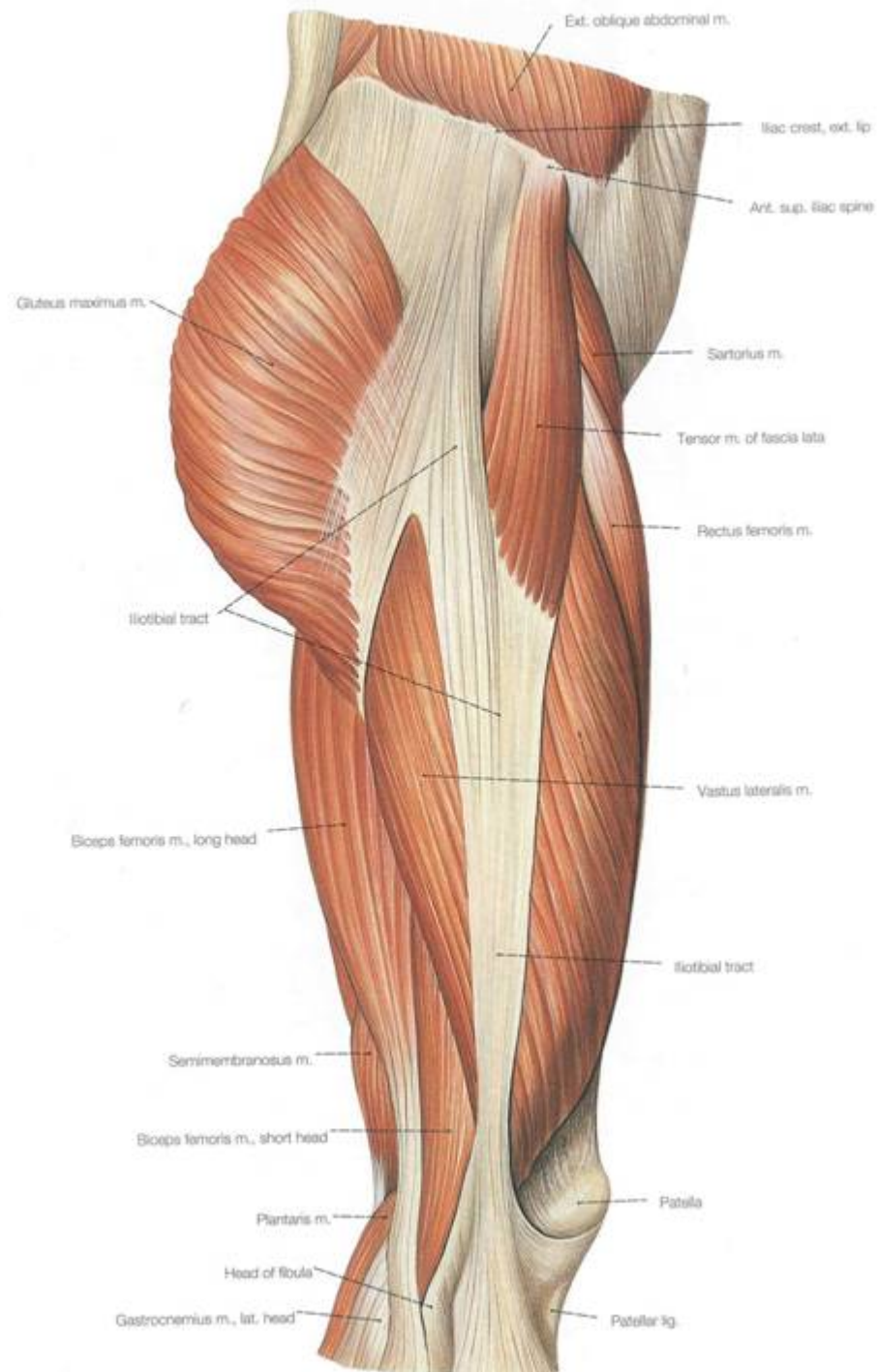
Minimus

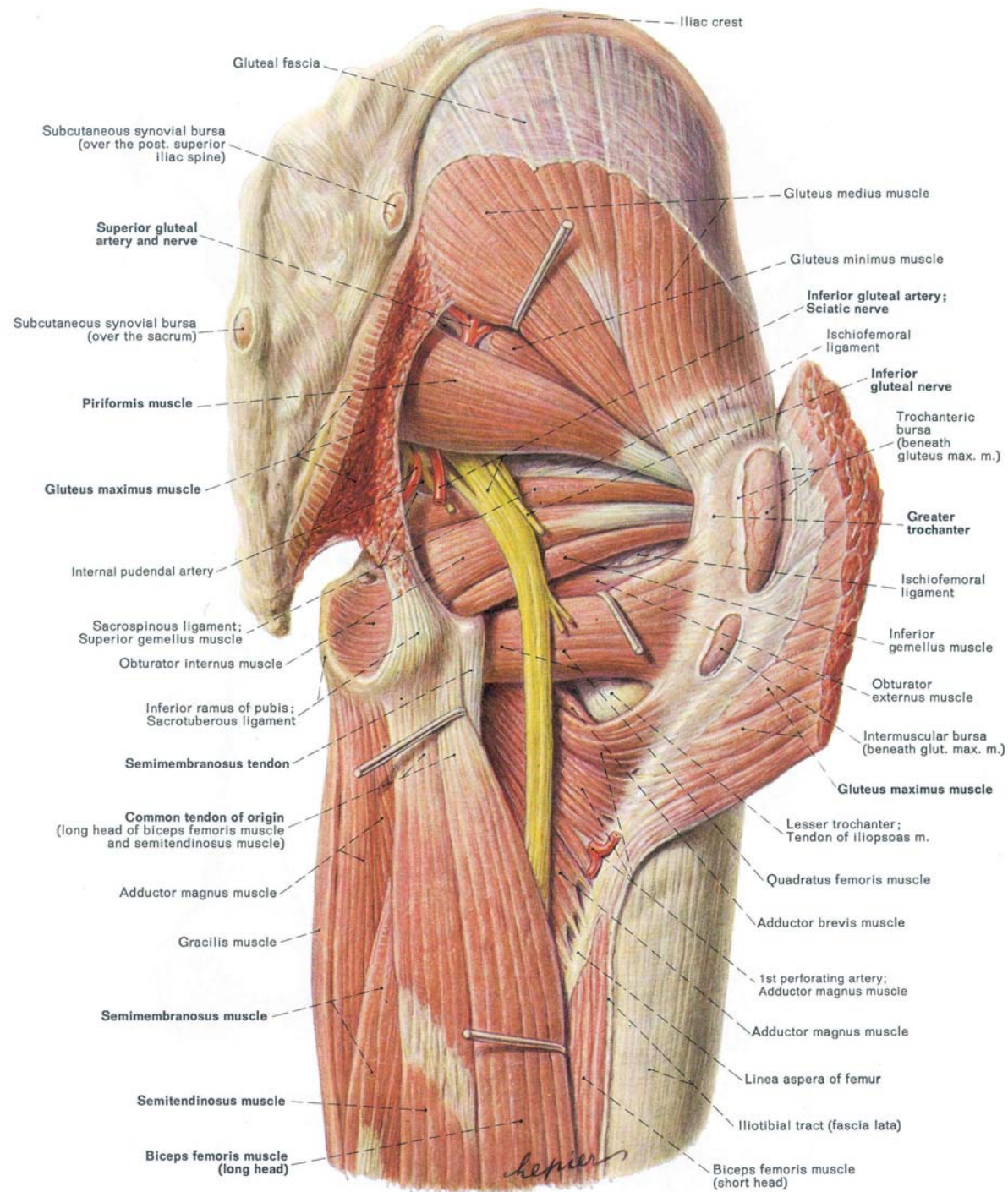


Medius

**Tensor
Fascia
Latae**

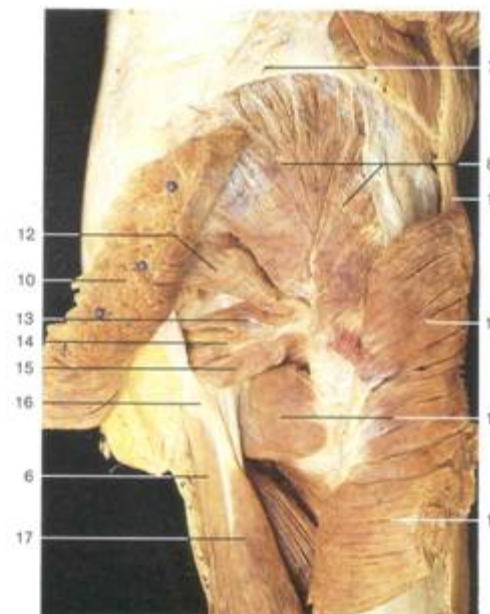




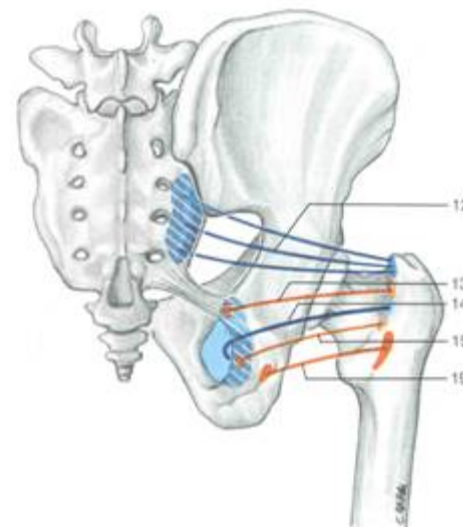
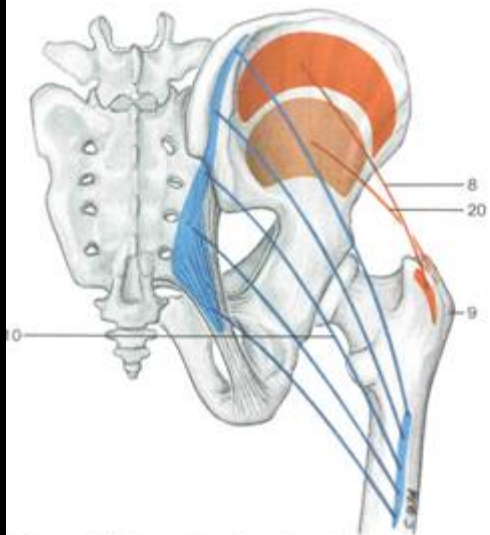




Gluteal muscles, superficial layer (dorsal aspect).



Gluteal muscles, deeper layer (dorsal aspect).



Course of gluteal muscles of superficial (left) and deep layers (right). (Schematic drawing.)

**Inferior/Posterior
(Caudal/dorsal)
ANTERIOR TIBIAL GROUP
PERONEI**

**Peronius
Longus**

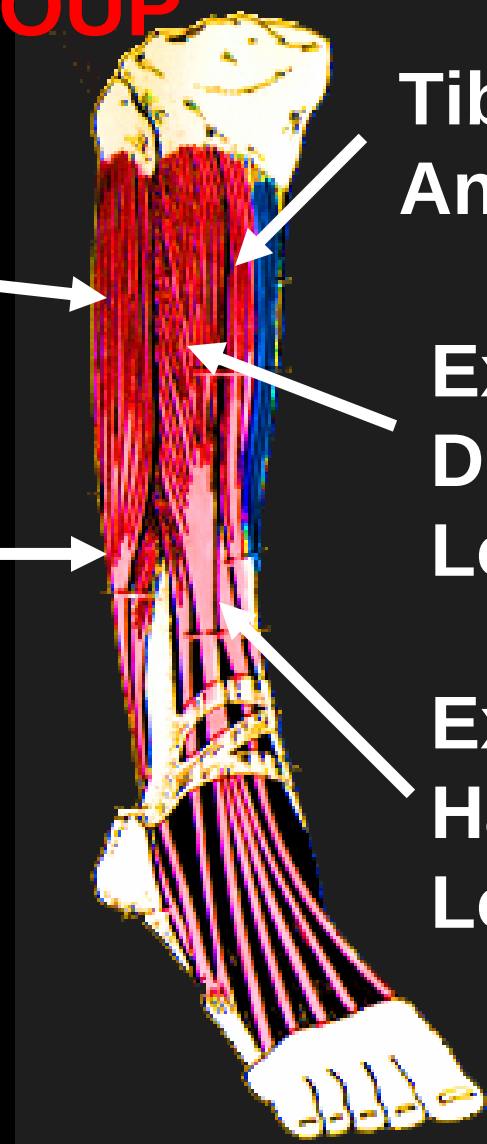
**Peronius
Brevis**

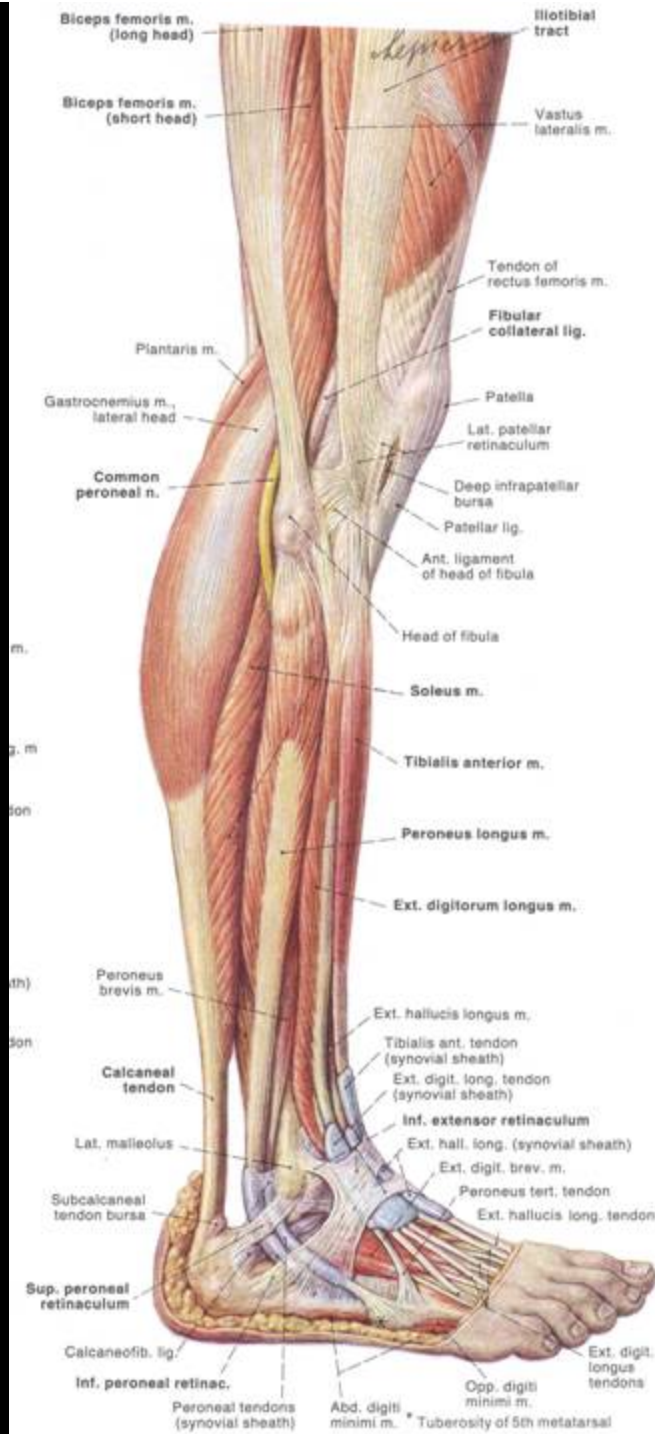
**SCIATIC NERVE
(PERONEAL)**

**Tibialis
Anterior**

**Extensor
Digitorun
Longus**

**Extensor
Hallucus
Longus**





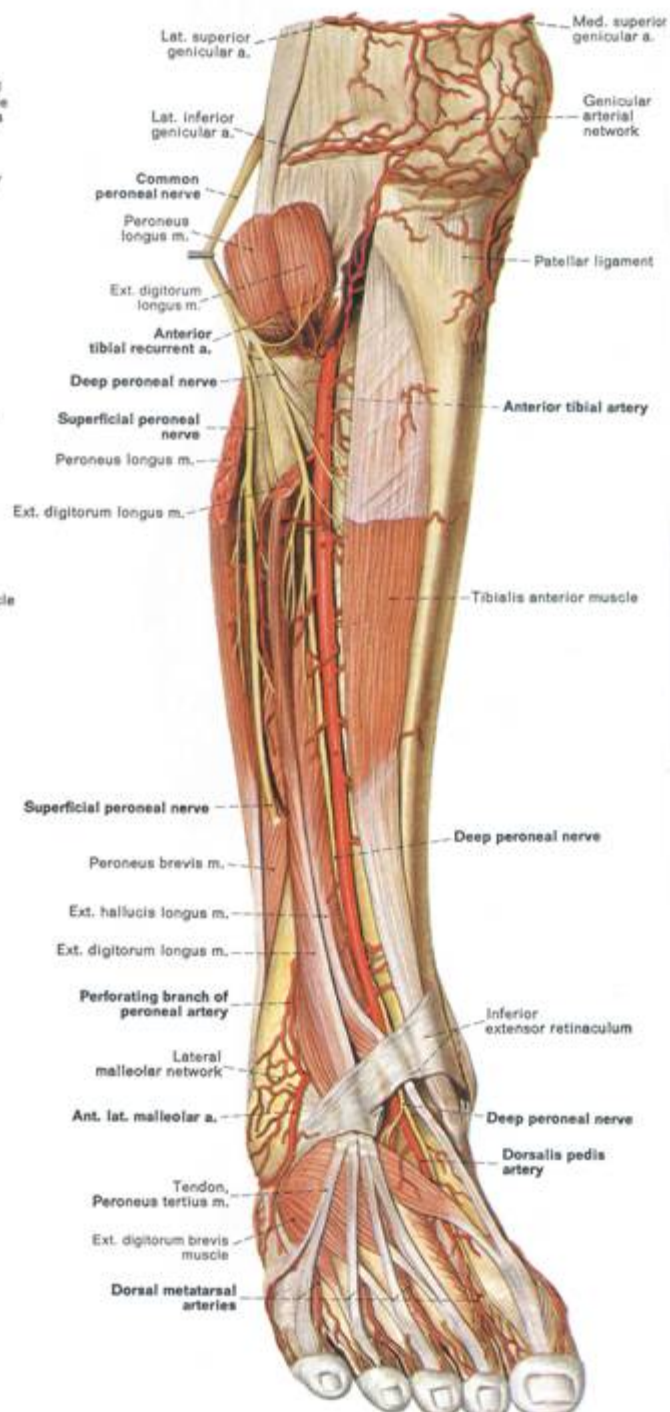
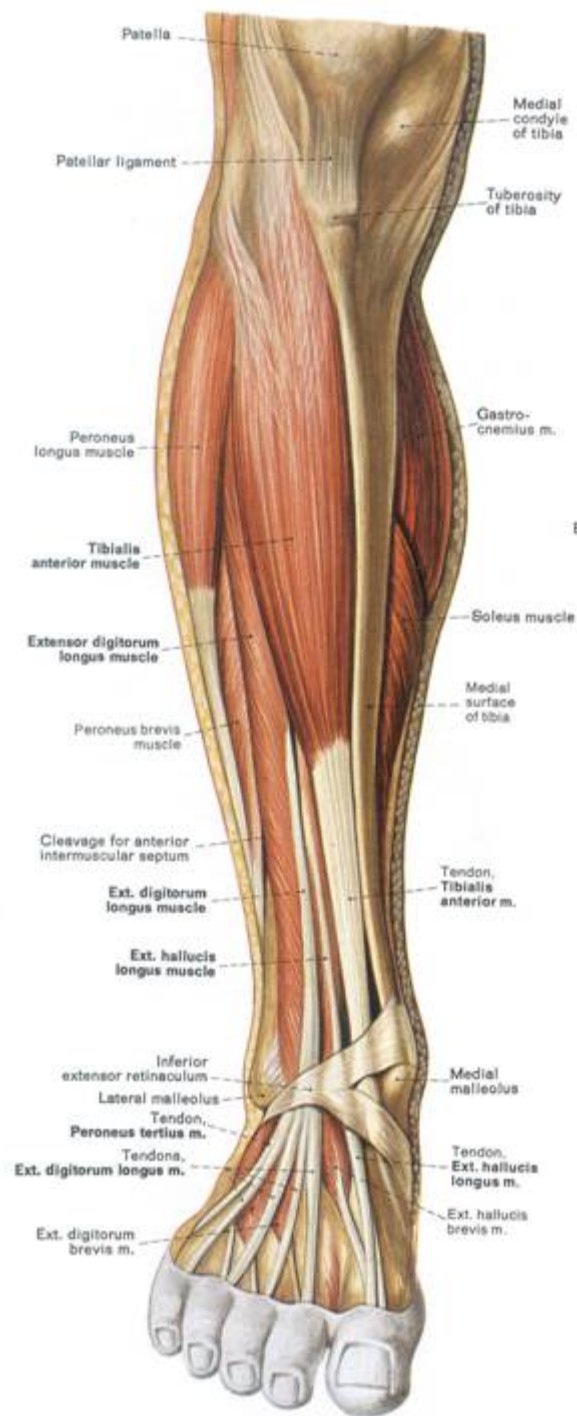


Muscles of right leg and foot (lateral aspect).



Right foot with synovial sheaths of extensor muscles (dorsal aspect). The synovial sheaths have been injected with blue solution.

- 1 Common peroneal nerve
- 2 Head of fibula
- 3 Lateral head of gastrocnemius
- 4 Soleus
- 5 Peroneus longus
- 6 Peroneus brevis
- 7 Calcaneal or Achilles tendon
- 8 Lateral malleolus
- 9 Tendon of peroneus longus
- 10 Extensor digitorum brevis
- 11 Tendon of peroneus brevis
- 12 Patella
- 13 Patellar ligament
- 14 Tuberosity of tibia
- 15 Tibialis anterior
- 16 Extensor digitorum longus
- 17 Superior extensor retinaculum
- 18 Inferior extensor retinaculum
- 19 Tendon of extensor hallucis longus
- 20 Tendons of extensor digitorum longus
- 21 Common synovial sheath of extensor digitorum longus
- 22 Tendon of peroneus tertius to the lateral margin of foot
- 23 Tendons of extensor digitorum brevis
- 24 Medial malleolus
- 25 Synovial sheath of tendon of tibialis anterior
- 26 Tendon of tibialis anterior
- 27 Synovial sheath of tendon of extensor hallucis longus





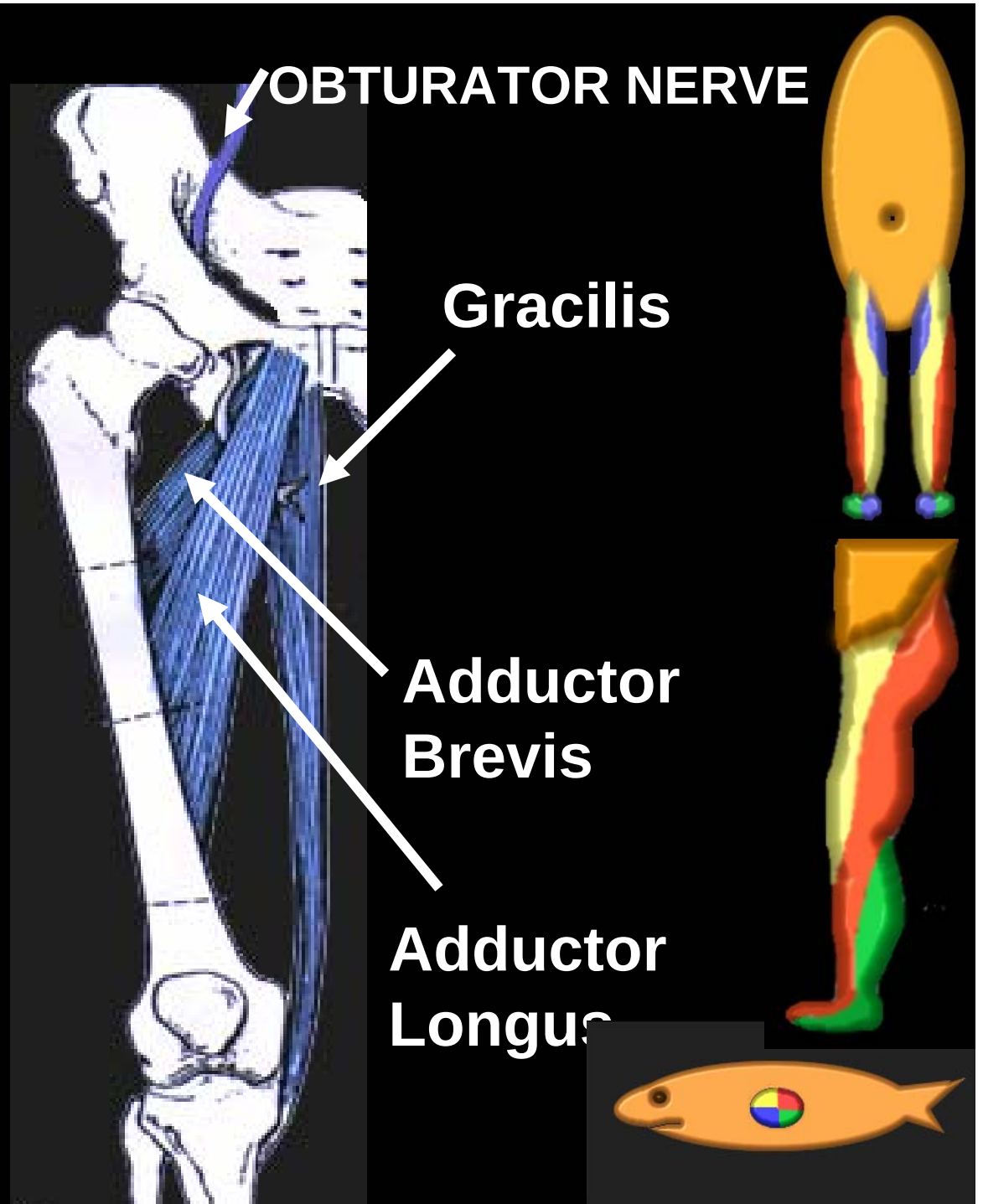
Extensor muscles of right leg and foot
(oblique anterolateral aspect).



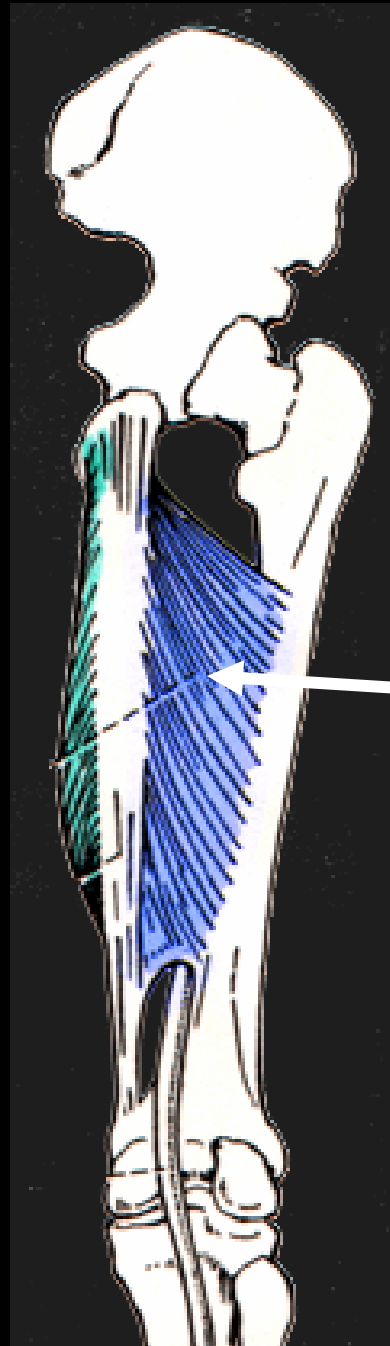
Extensors of the right leg and foot
(anterior aspect). Part of the tibialis anterior has been removed.

- | | | |
|---------------------------------|---|--|
| 1 Patella | 8 Tendon of peroneus tertius | 15 Extensor hallucis brevis |
| 2 Patellar ligament | 9 Extensor digitorum brevis | 16 Tendon of extensor hallucis longus |
| 3 Anterior margin of tibia | 10 Tendons of extensor digitorum longus | 17 Common tendon of gracilis, semitendinosus and sartorius |
| 4 Tibialis anterior | 11 Soleus | 18 Tibia |
| 5 Extensor digitorum longus | 12 Extensor hallucis longus | |
| 6 Superior extensor retinaculum | 13 Medial malleolus | |
| 7 Inferior extensor retinaculum | 14 Tendon of tibialis anterior | |

Superior/Anterior (Cranial/ventral) ADDUCTORS

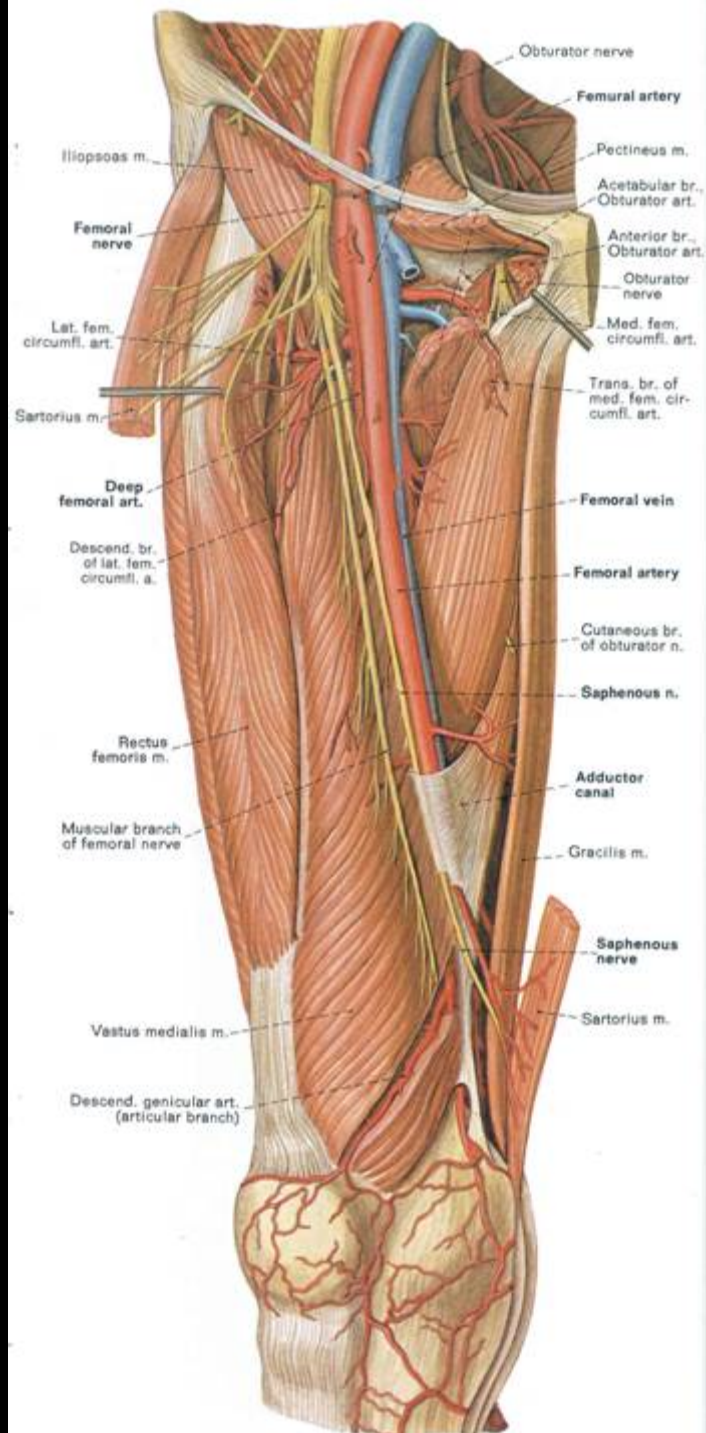


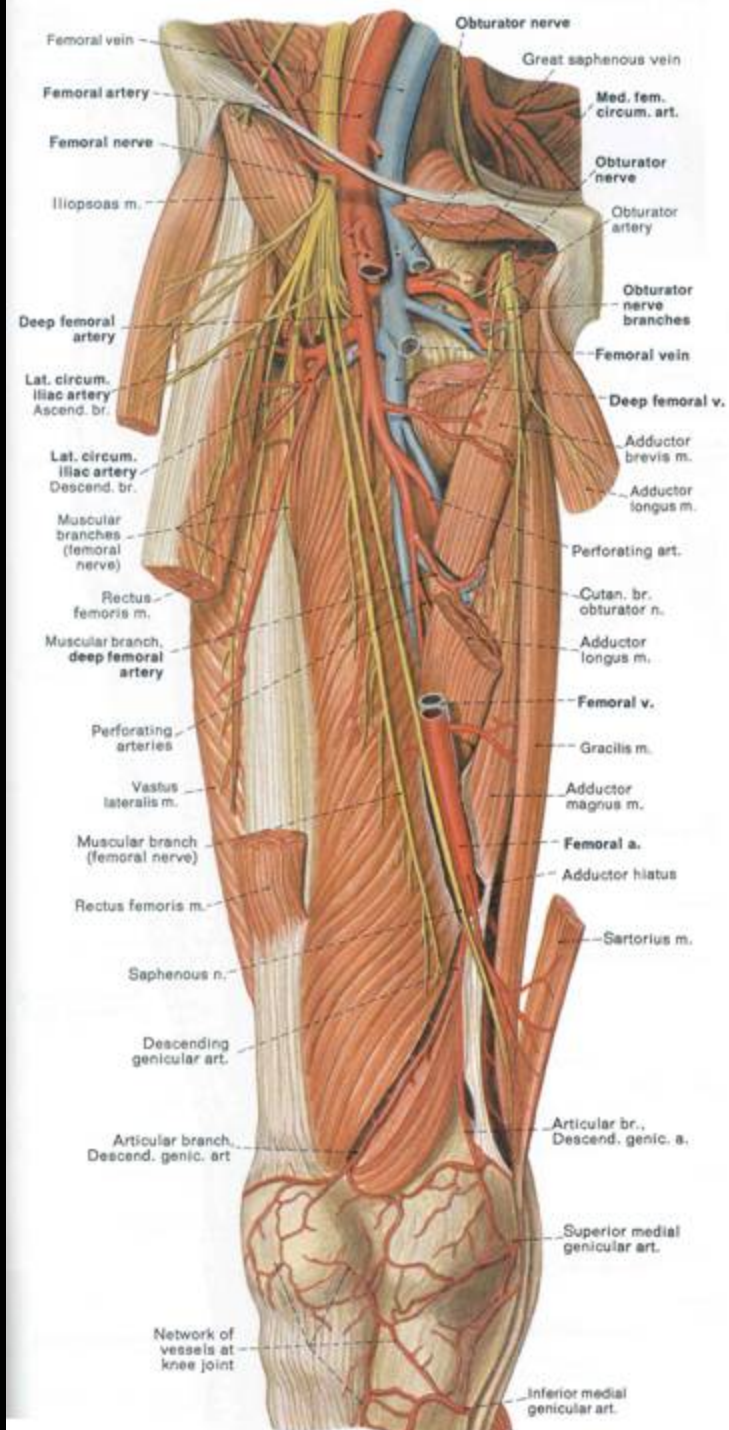
Inferior/Anterior
(Caudal/ventral)

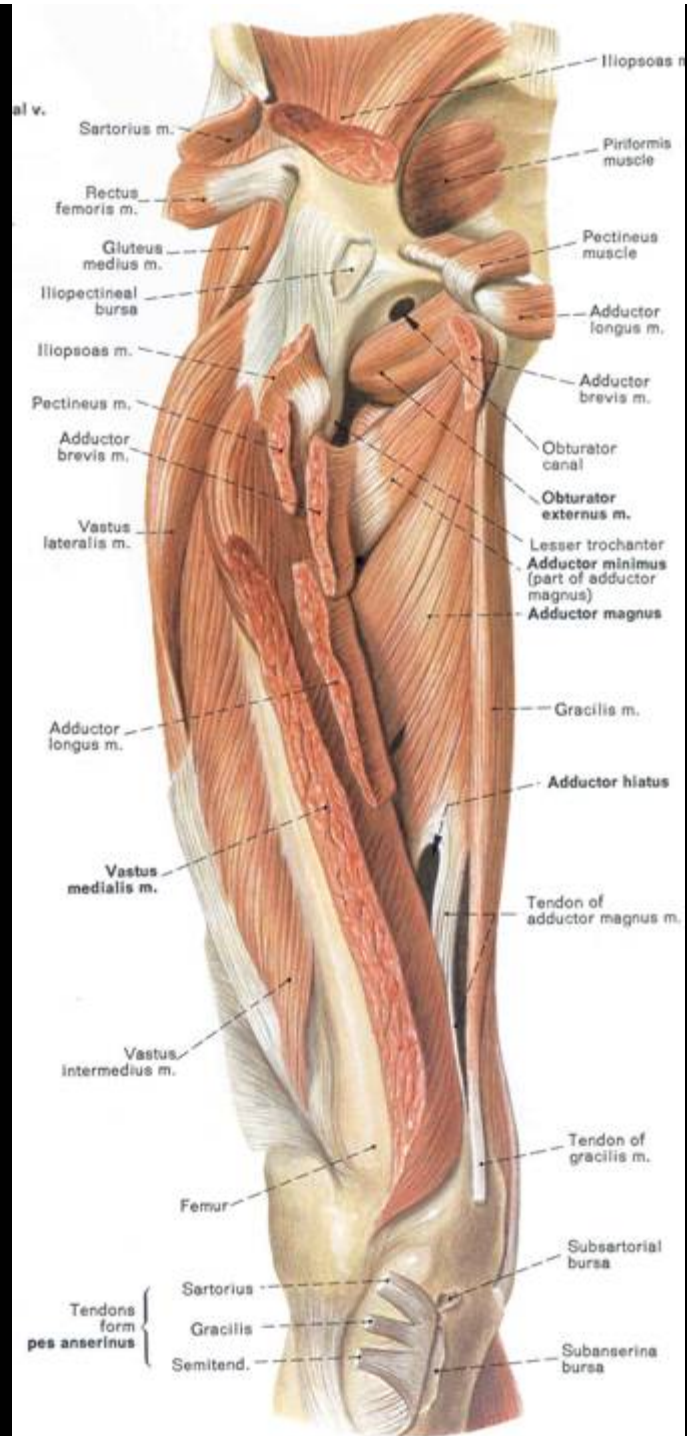


**Adductor
Magnus**
(*adductor
part*)





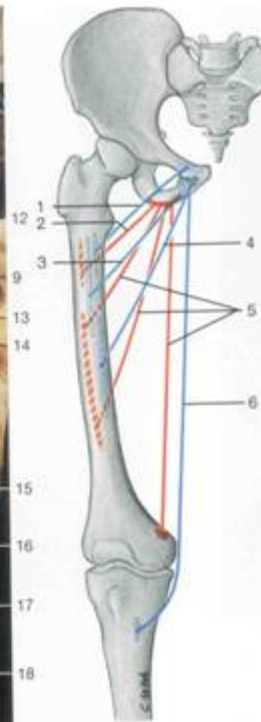






Deep layer of adductor muscles.
Adductor magnus (ventral aspect).
 Pectineus, adductor longus and brevis
 have been divided.

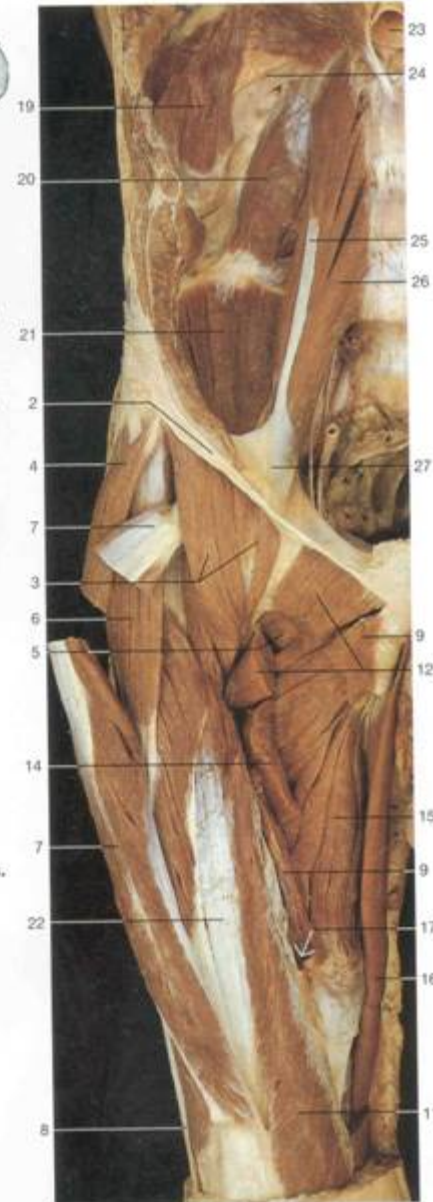
- 1 Anterior superior iliac spine
- 2 Inguinal ligament
- 3 **Iliopectineus muscle**
- 4 Sartorius
- 5 Obturator externus
- 6 Tensor fasciae latae
- 7 Rectus femoris
- 8 Iliotibial tract
- 9 Adductor longus (divided)
- 10 Vastus lateralis
- 11 Vastus medialis
- 12 Pectineus (divided)
- 13 Adductor minimus
- 14 Adductor brevis (divided)



Course of adductor muscles.
 (Schematic drawing.)

- 1 Pectineus (blue)
- 2 Adductor minimus (red)
- 3 Adductor brevis (blue)
- 4 Adductor longus (blue)
- 5 Adductor magnus (red)
- 6 Gracilis (blue)

- 15 **Adductor magnus**
- 16 Gracilis
- 17 Adductor hiatus
- 18 Vastoadductor membrane
- 19 Diaphragm
- 20 Quadratus lumborum
- 21 **Iliacus**
- 22 Vastus intermedius
- 23 Aorta in aortic hiatus
- 24 Twelfth rib
- 25 **Psoas minor**
- 26 **Psoas major**
- 27 Iliopectineal arch

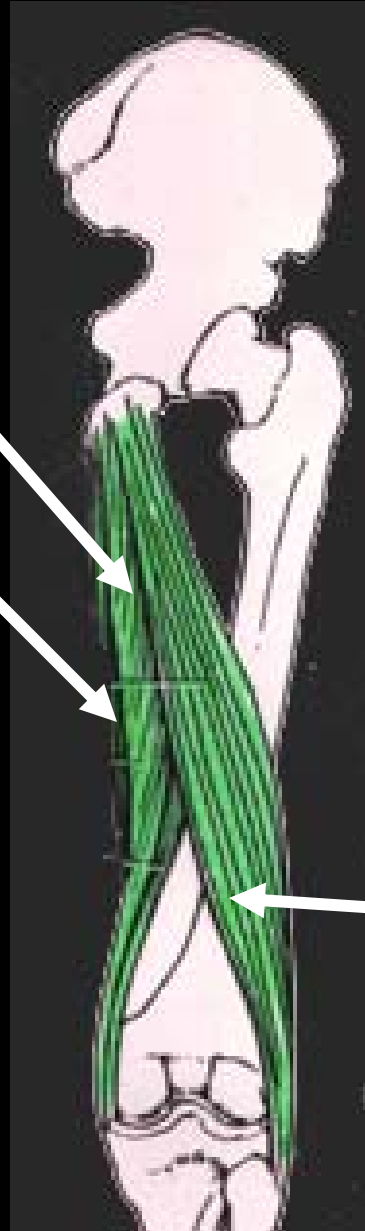


Iliopectineus and adductor muscles; deepest layer
 (ventral aspect). Pectineus, adductor longus and
 brevis, rectus femoris have been divided.

Inferior/Anterior (Caudal/ventral) HAMSTRINGS

Semitendinosus

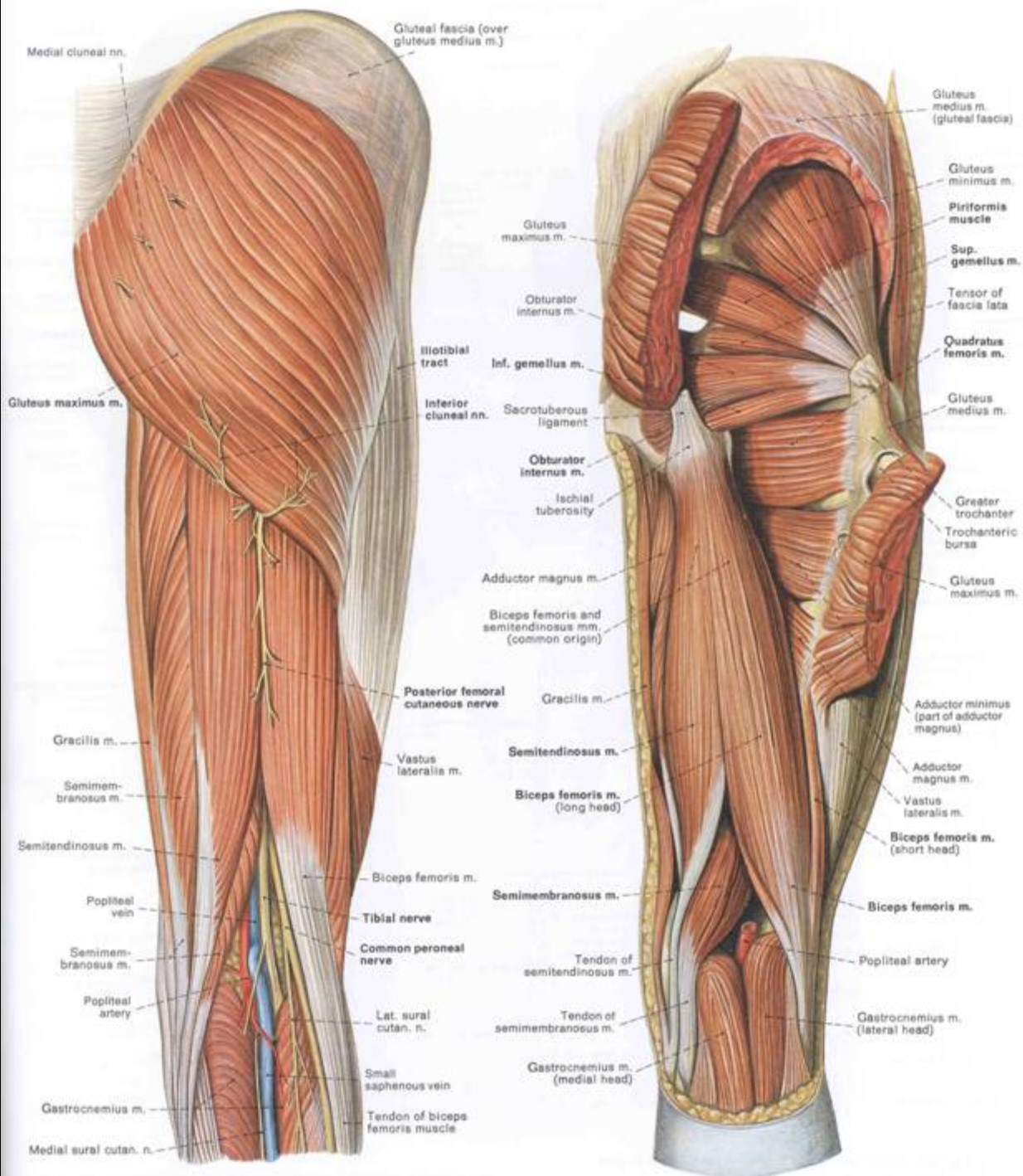
Semimembranosus

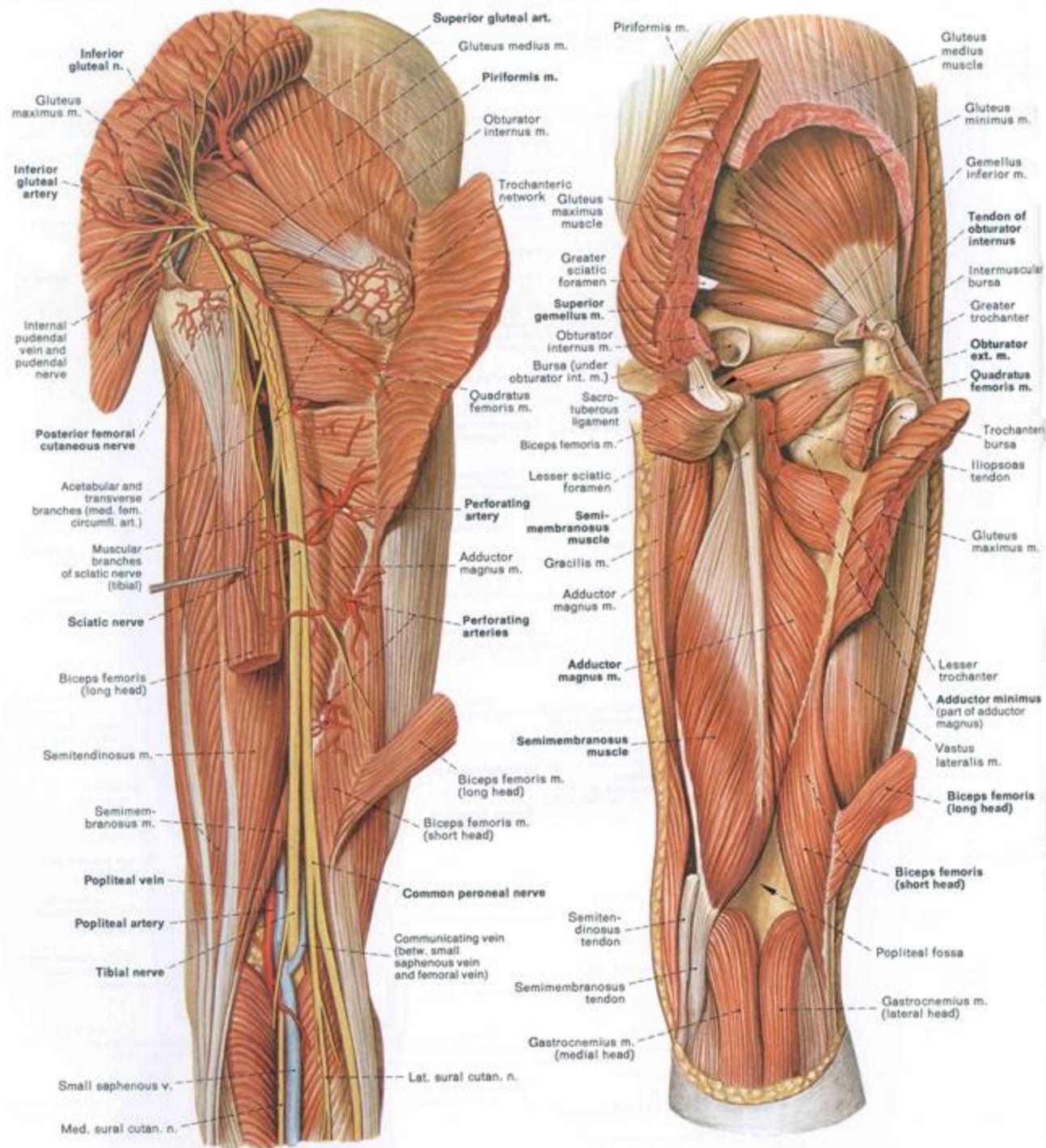


SCIATIC
NERVE
(TIBIAL)

Biceps
Femoris



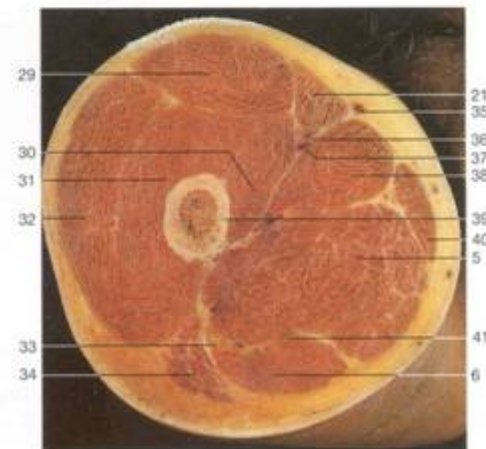






Flexors of the right thigh, superficial layer (dorsal aspect).

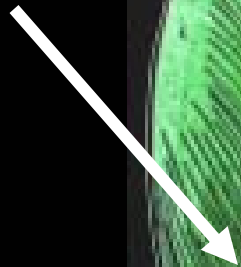
- 1 Thoracolumbar fascia
- 2 Spinous processes of lumbar vertebrae
- 3 Coccyx
- 4 Anus
- 5 Adductor magnus
- 6 Semitendinosus
- 7 Iliac crest
- 8 **Gluteus medius**
- 9 Greater trochanter
- 10 **Gluteus maximus**
- 11 Iliotibial tract
- 12 Piriformis
- 13 Superior gemellus
- 14 Obturator internus
- 15 Inferior gemellus
- 16 Ischial tuberosity
- 17 Biceps femoris
- 18 Tensor fasciae latae
- 19 Quadratus femoris
- 20 **Gluteus minimus**
- 21 Sartorius
- 22 Semimembranosus
- 23 Tendon of gracilis
- 24 Tibial nerve
- 25 Medial head of gastrocnemius
- 26 Common peroneal nerve
- 27 Tendon of biceps femoris
- 28 Lateral head of gastrocnemius
- 29 Rectus femoris
- 30 Vastus medialis
- 31 Vastus intermedius
- 32 Vastus lateralis
- 33 Sciatic nerve
- 34 Gluteus maximus (insertion)
- 35 Great saphenous vein
- 36 Femoral artery
- 37 Femoral vein
- 38 Adductor longus
- 39 Femur
- 40 Gracilis
- 41 Septum between semitendinosus and semimembranosus



Cross section of right thigh (inferior aspect). Ventral side on top.

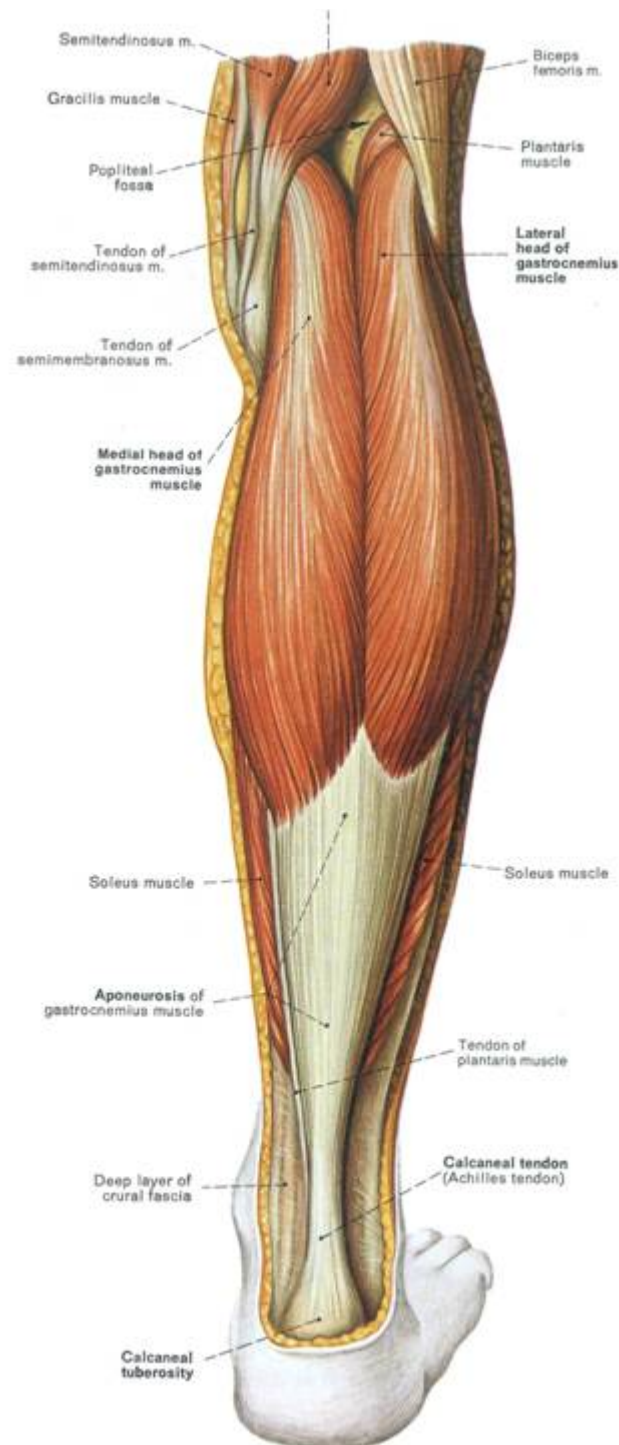
**Inferior/Anterior
(Caudal/ventral)**

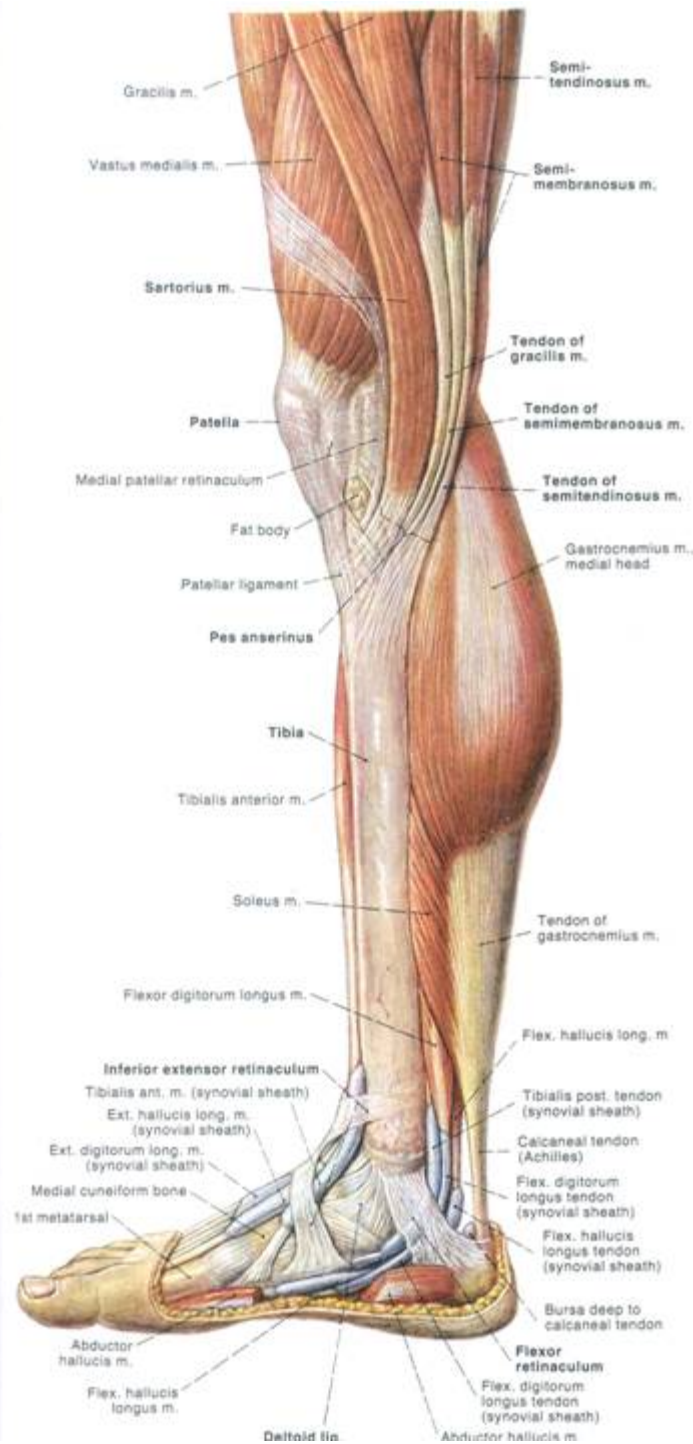
Gastrocnemius



**SCIATIC
NERVE
(TIBIAL)**

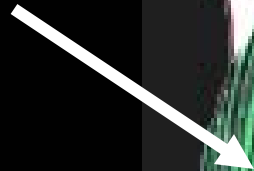






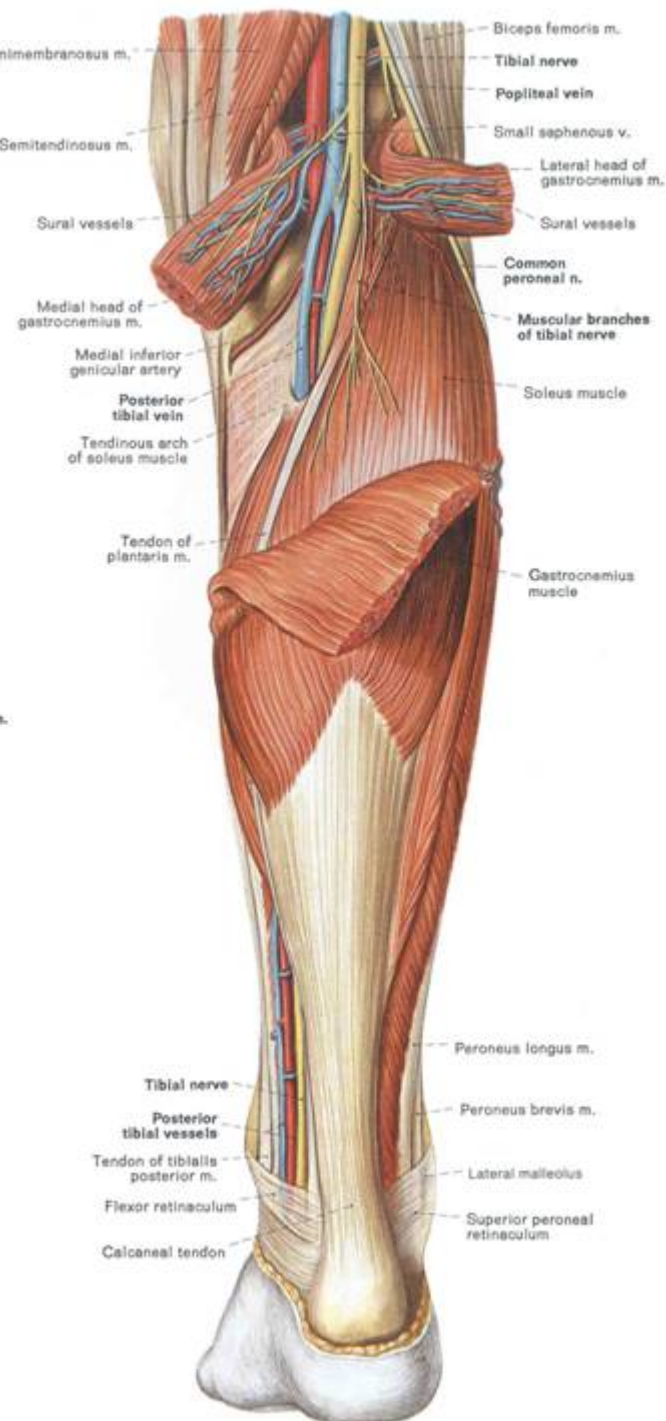
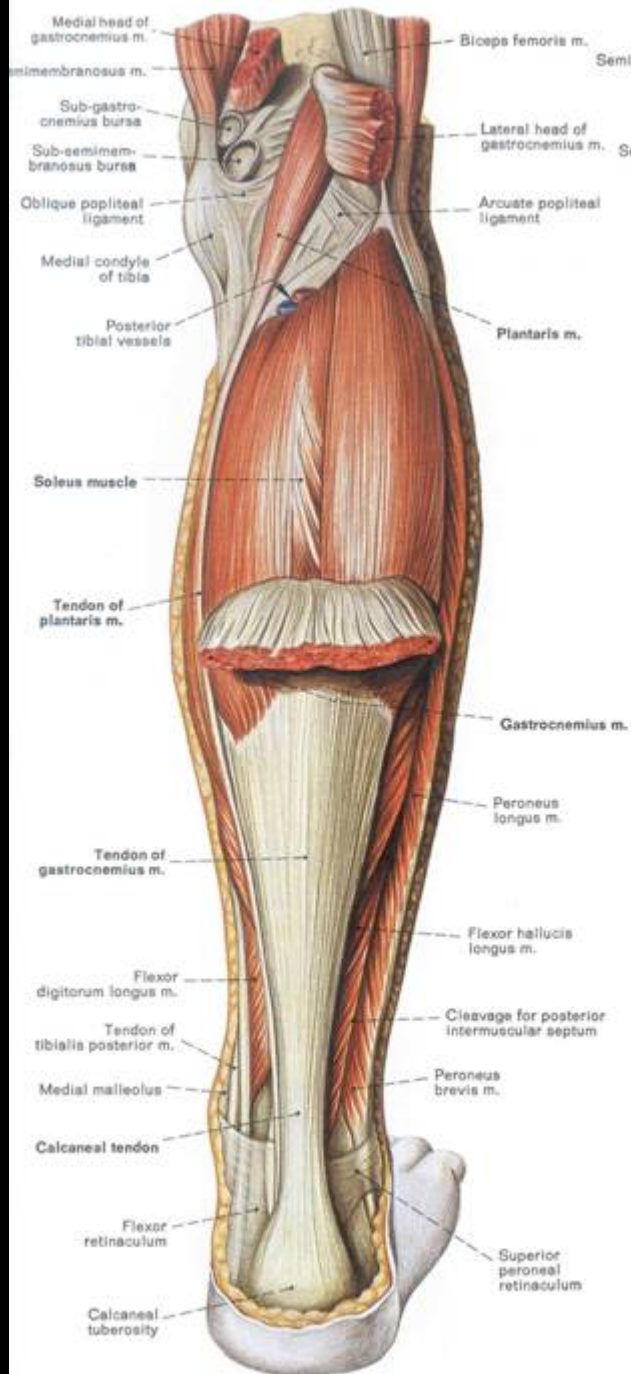
**Inferior/Anterior
(Caudal/ventral)**

Soleus



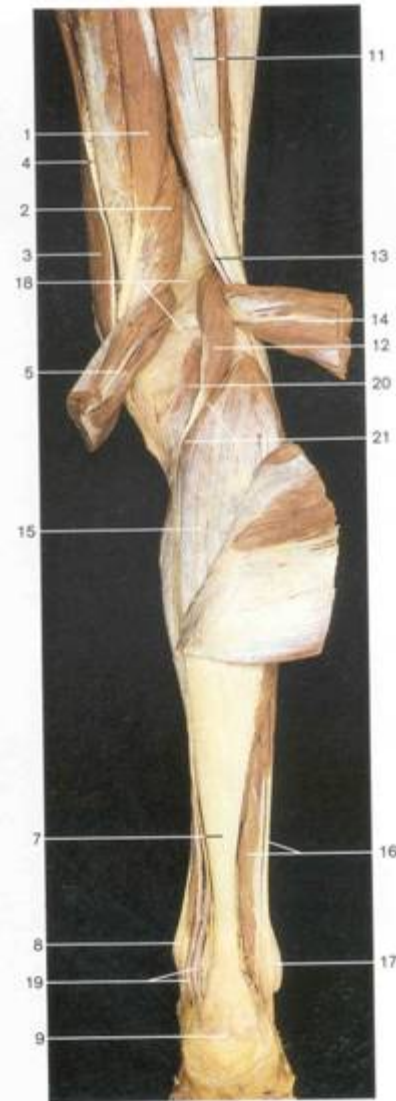
**SCIATIC
NERVE
(TIBIAL)**







Flexor muscles of right leg (dorsal aspect).



Flexor muscles of right leg (dorsal aspect).
Both heads of the gastrocnemius have been divided and reflected.

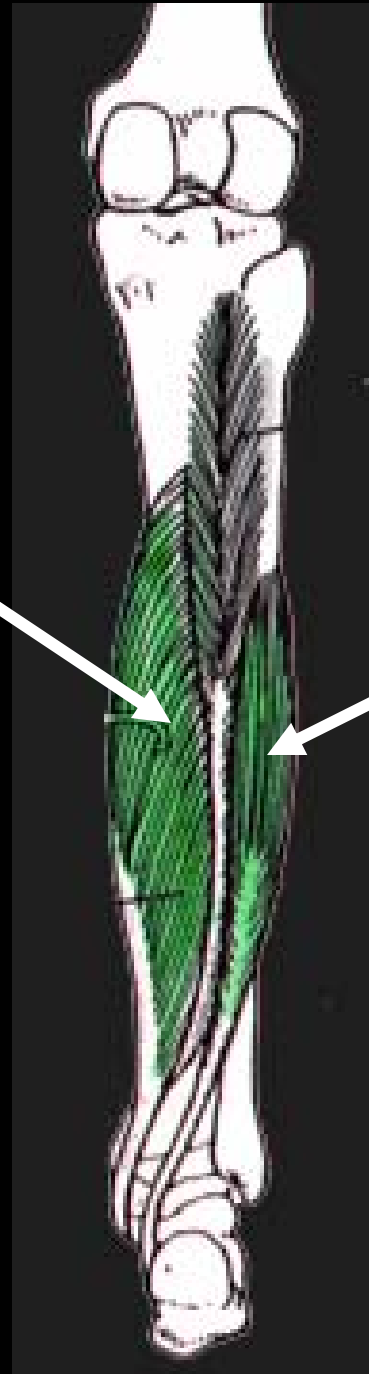
- | | | |
|---|---|---|
| 1 Semitendinosus | 8 Medial malleolus | 16 Peroneus longus and brevis |
| 2 Semimembranosus | 9 Calcaneal tuberosity | 17 Lateral malleolus |
| 3 Sartorius | 10 Tibial nerve | 18 Popliteal fossa |
| 4 Tendon of gracilis | 11 Biceps femoris | 19 Tibial nerve and posterior tibial artery |
| 5 Medial head of gastrocnemius | 12 Plantaris | 20 Popliteus |
| 6 Common tendon of gracilis, sartorius and semitendinosus | 13 Common peroneal nerve | 21 Tendinous arch of soleus |
| 7 Calcaneal or Achilles tendon | 14 Lateral head of gastrocnemius | |
| | 15 Soleus | |

**Inferior/Anterior
(Caudal/ventral)**

**Flexor
Digitorum
Longus**

**SCIATIC
NERVE
(TIBIAL)**

**Flexor
Hallucis
Longus**





Deep flexors of right leg (dorsal aspect).

- 1 Medial condyle of femur
- 2 Popliteus
- 3 Flexor digitorum longus
- 4 Crossing of tendons in leg
- 5 Tendon of tibialis posterior
- 6 Tendon of flexor digitorum longus
- 7 Medial malleolus
- 8 Lateral condyle of femur
- 9 Head of fibula
- 10 Tibialis posterior
- 11 Flexor hallucis longus
- 12 Peroneus longus
- 13 Peroneus brevis
- 14 Tendon of flexor hallucis longus
- 15 Calcaneal tendon (divided)
- 16 Lateral malleolus

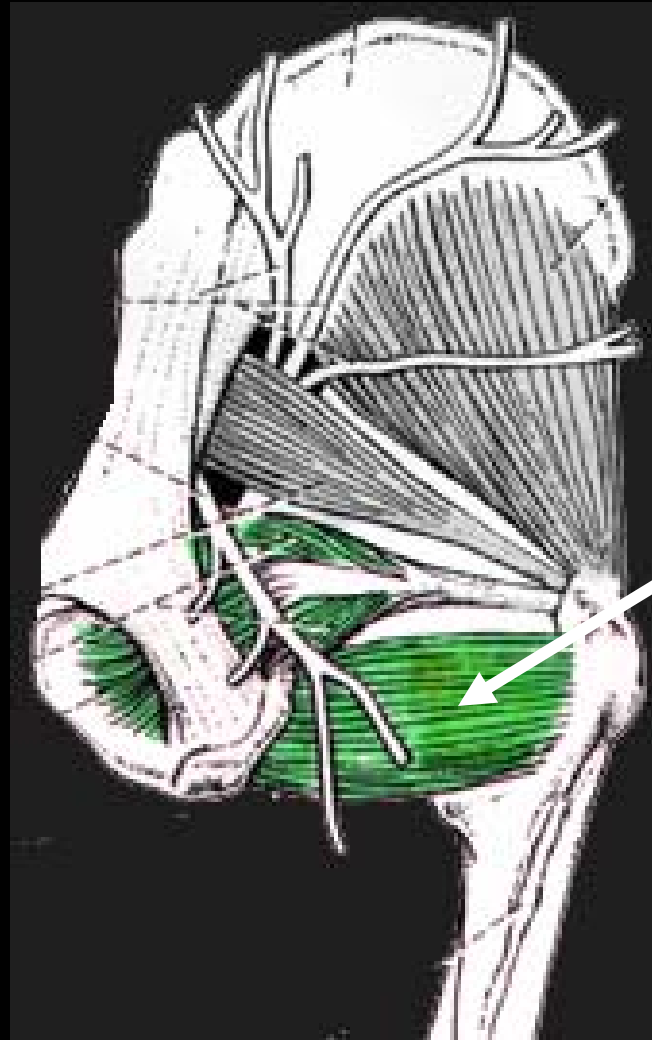


Course of deep flexors of leg. (Schematic drawing.)

- 1 Popliteus (blue)
- 2 Flexor digitorum longus (blue)
- 3 Tibialis posterior (red)
- 4 Crossing of tendons in leg
- 5 Flexor hallucis longus (blue)
- 6 Crossing of tendons in sole

Inferior/Anterior (Caudal/ventral) LATERAL HIP ROTATORS

SCIATIC
NERVE
(TIBIAL)



Quadrat
Femoris



