NERVES OF THE LOWER LIMB

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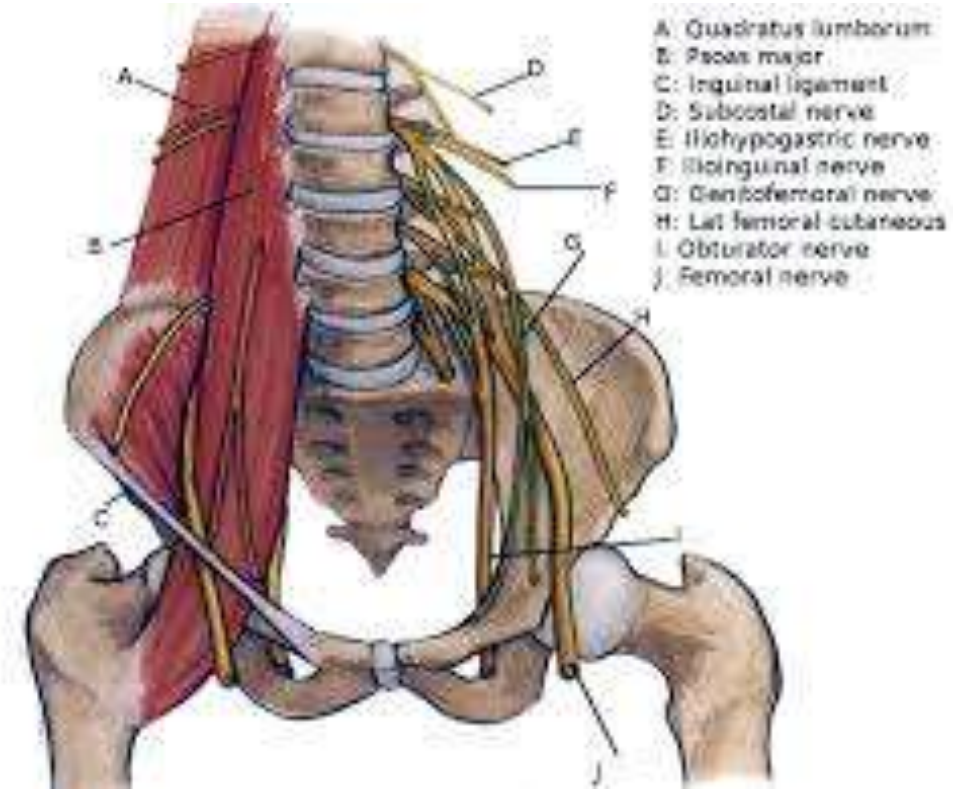
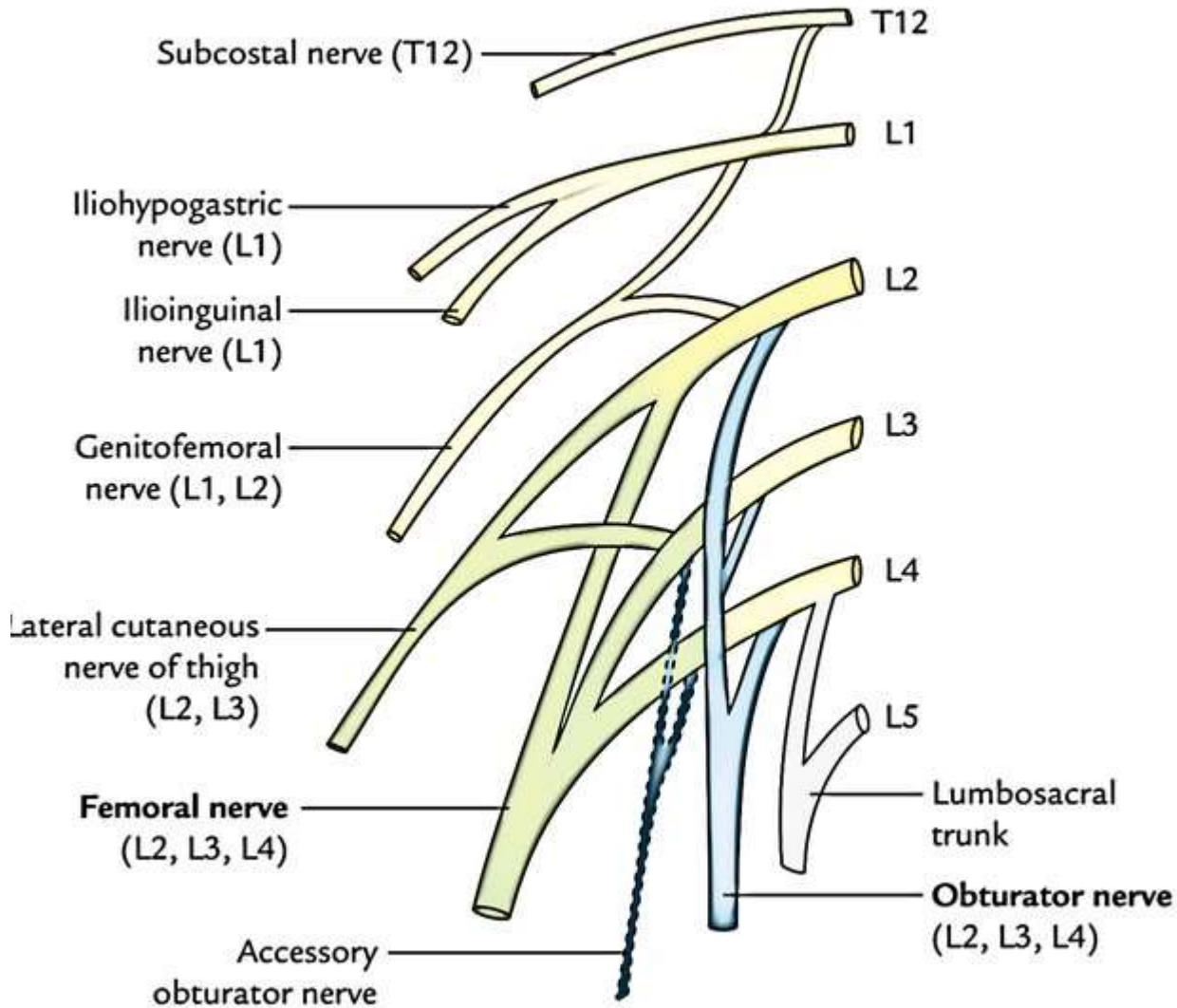
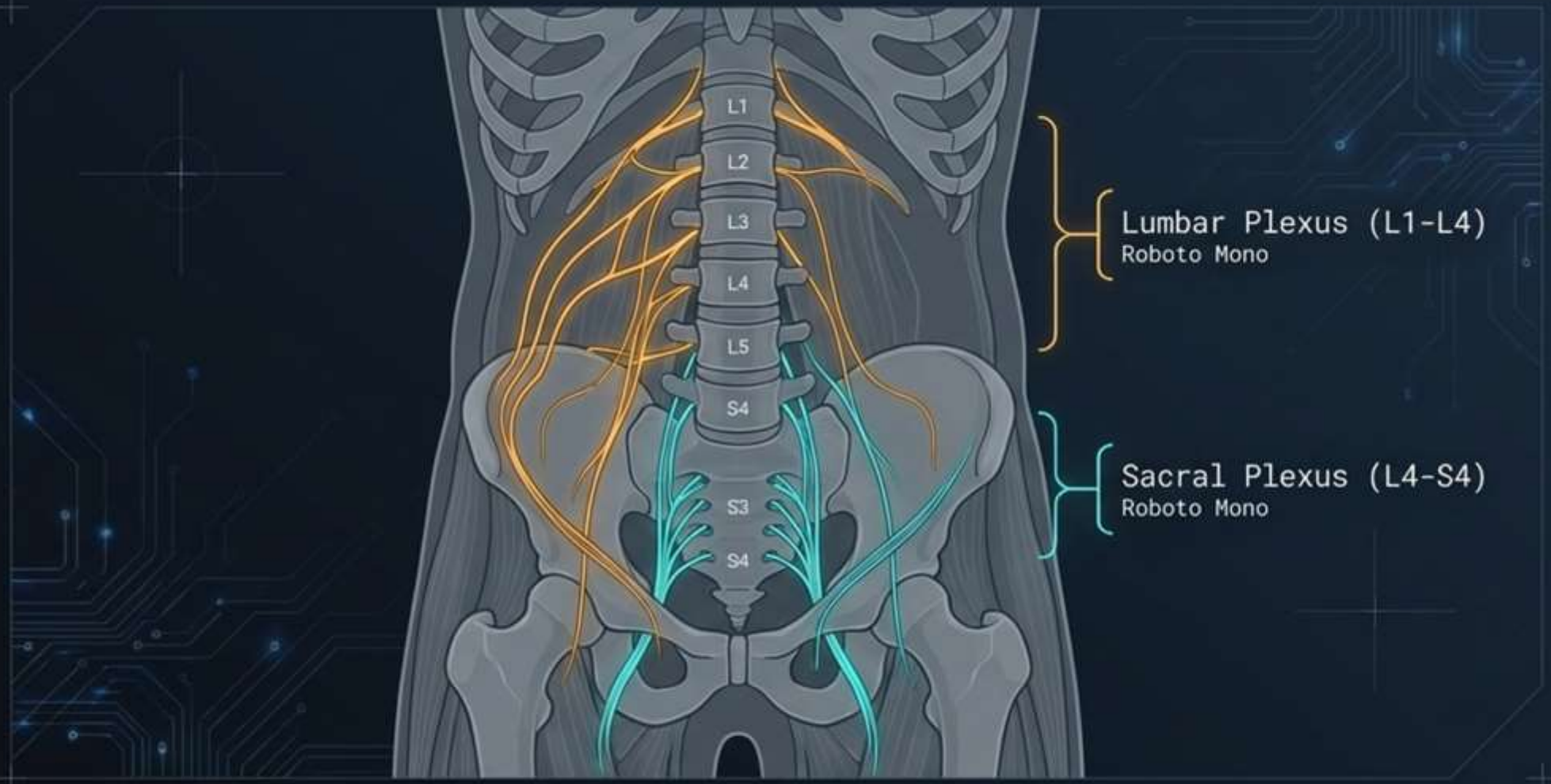
Lumbar plexus

- START: Is formed by the union of the ventral rami of the first three lumbar nerves and a part of the fourth lumbar nerve.
- Lies anterior to the transverse processes of the lumbar vertebrae within the substance of the psoas muscle.




Subcostal nerve (T12)
T12
L1
Iliohypogastric nerve (L1)
Ilioinguinal nerve (L1)
L2
Genitofemoral nerve (L1, L2)
L3
Lateral cutaneous nerve of thigh (L2, L3)
L4
L5
Femoral nerve (L2, L3, L4)
Lumbosacral trunk
Obturator nerve (L2, L3, L4)
Accessory obturator nerve

The Lower Limb Command Center



Unlike the Brachial Plexus, the Lumbosacral network lacks formal ‘Trunks’ and ‘Cords.’ Instead, it relies on **direct division splits embedded** deep within protective muscle, leading to massive nerve consolidations built to drive the body forward.

Obturator nerve

Arises from the lumbar plexus and enters the thigh through the obturator foramen.

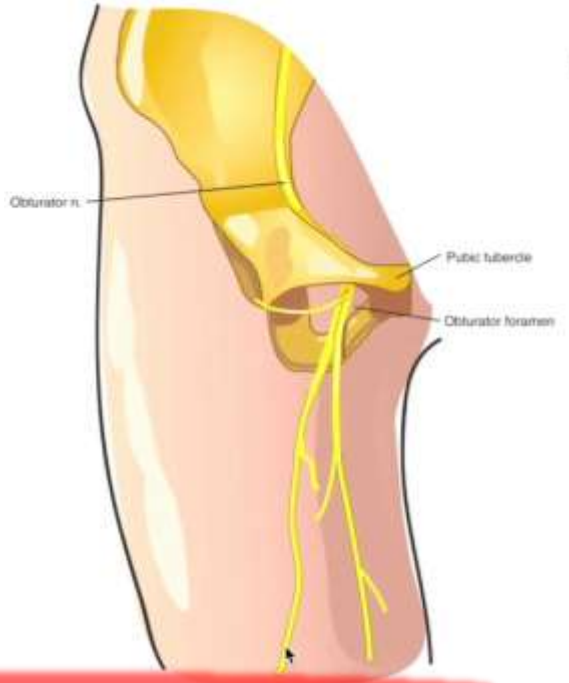
❖Divides into anterior and posterior branches.

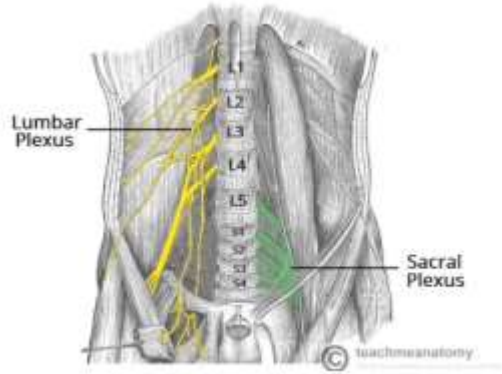
1. Anterior branch

Innervates the adductor longus, adductor brevis, Gracilis, and pectineus muscles.

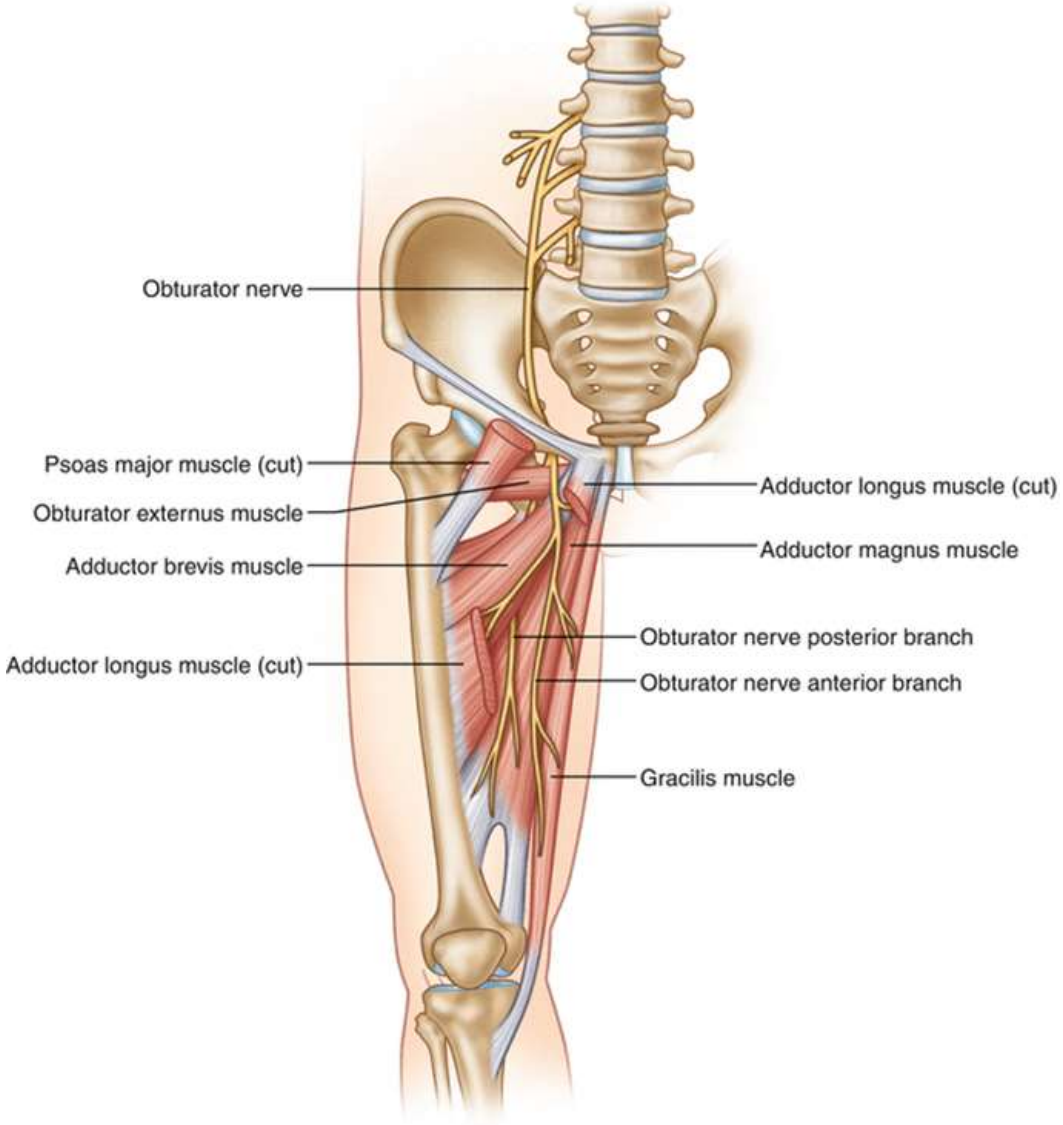
2. Posterior branch

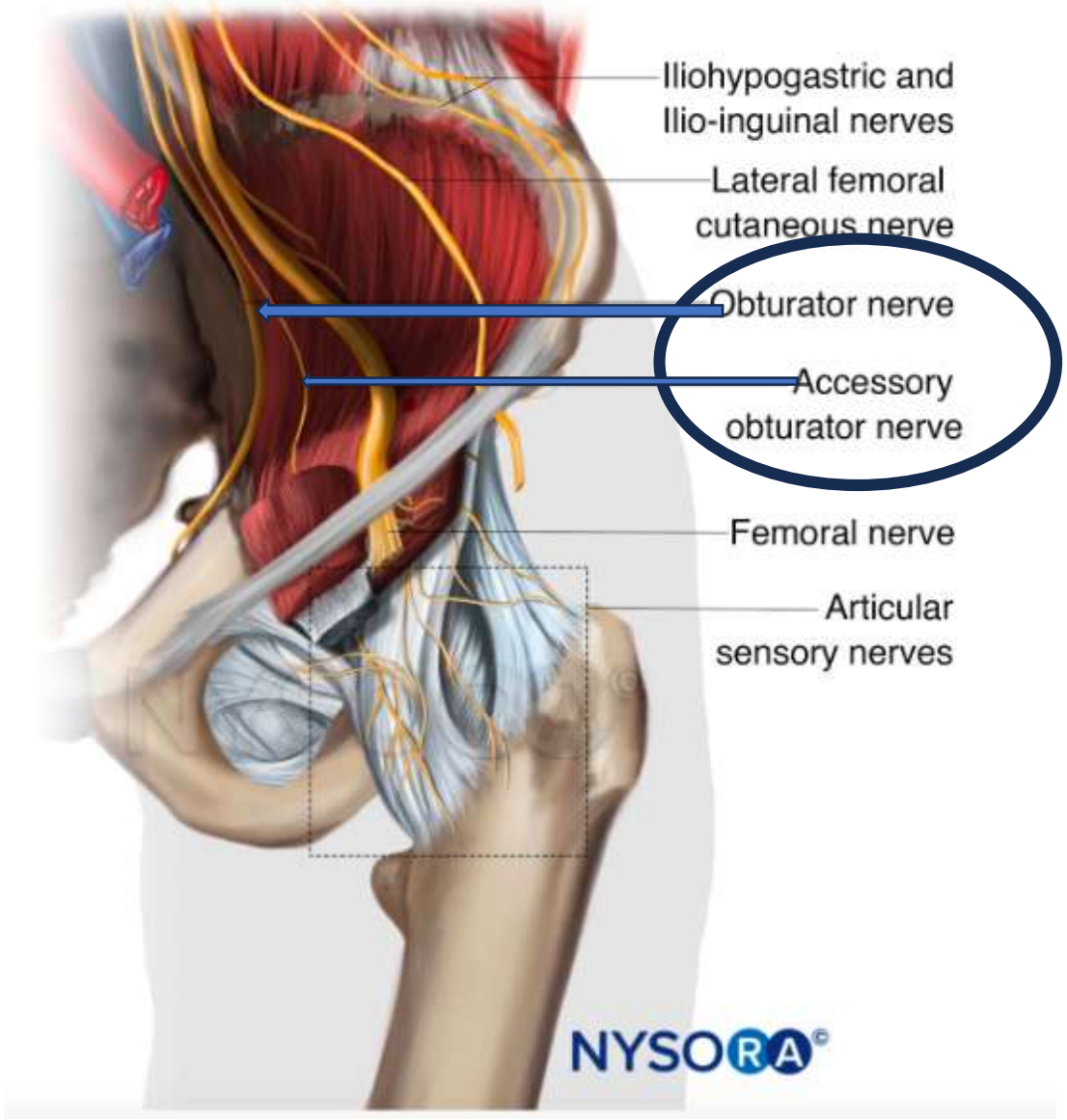
Innervates the anterior obturator externus, adductors brevis and magnus, as well as the knee joint.





An accessory obturator nerve (L3, L4) is present, almost 10% of the time.

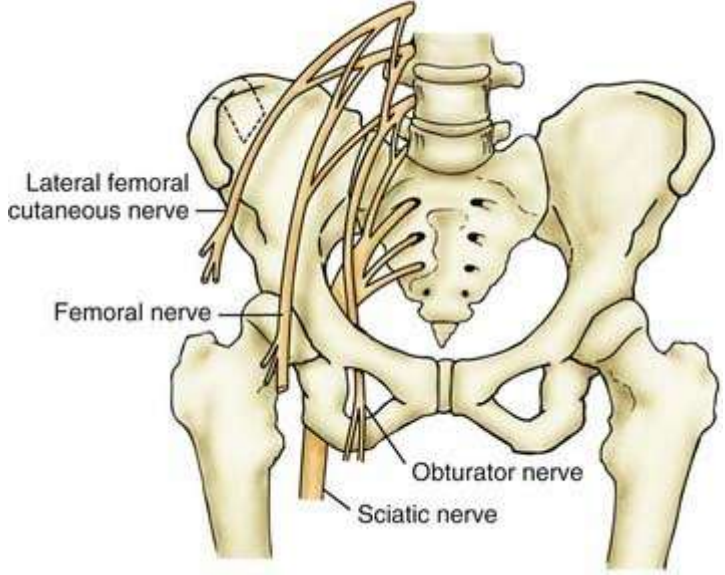

Obturator nerve
Psoas major muscle (cut)
Obturator externus muscle
Adductor brevis muscle
Adductor longus muscle (cut)
Adductor longus muscle (cut)
Adductor magnus muscle
Obturator nerve posterior branch
Obturator nerve anterior branch
Gracilis muscle


Iliohypogastric and
Ilio-inguinal nerves
Lateral femoral
cutaneous nerve
Obturator nerve
Accessory
obturator nerve
Femoral nerve
Articular
sensory nerves
NYSORA

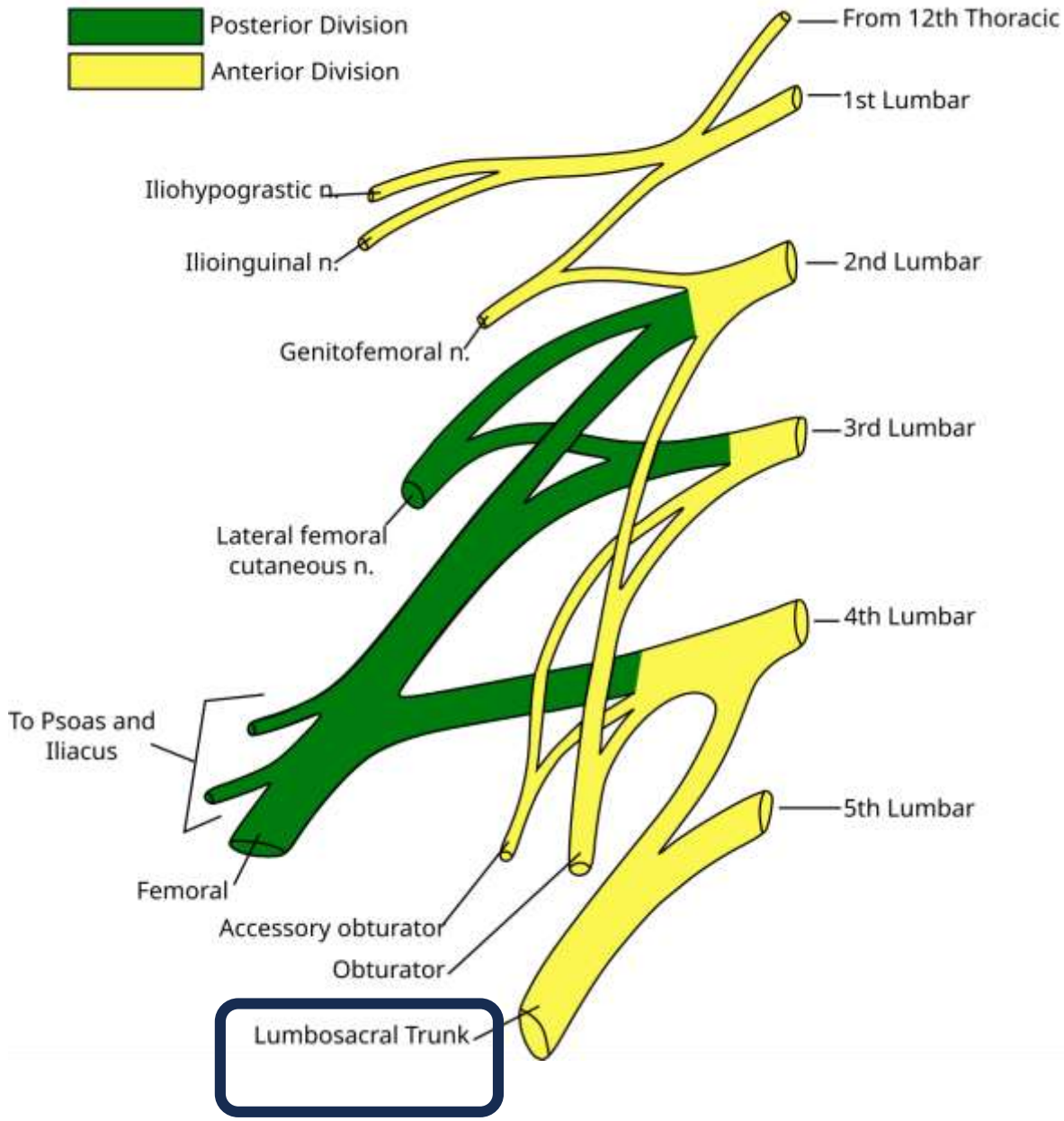
Femoral nerve

- Arises from the lumbar plexus within the substance of the psoas major
- Gives rise to

✓ Muscular branch
✓ Articular branch to the hip and knee joints
✓ Cutaneous branches including:
✓ the anterior femoral cutaneous nerve
✓ the saphenous nerve

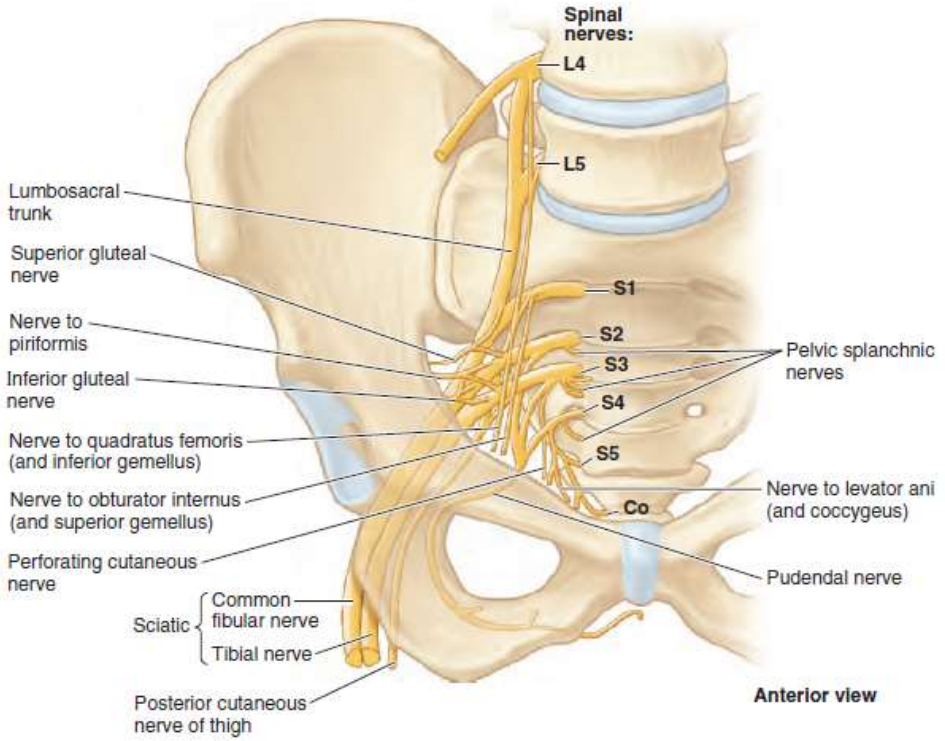


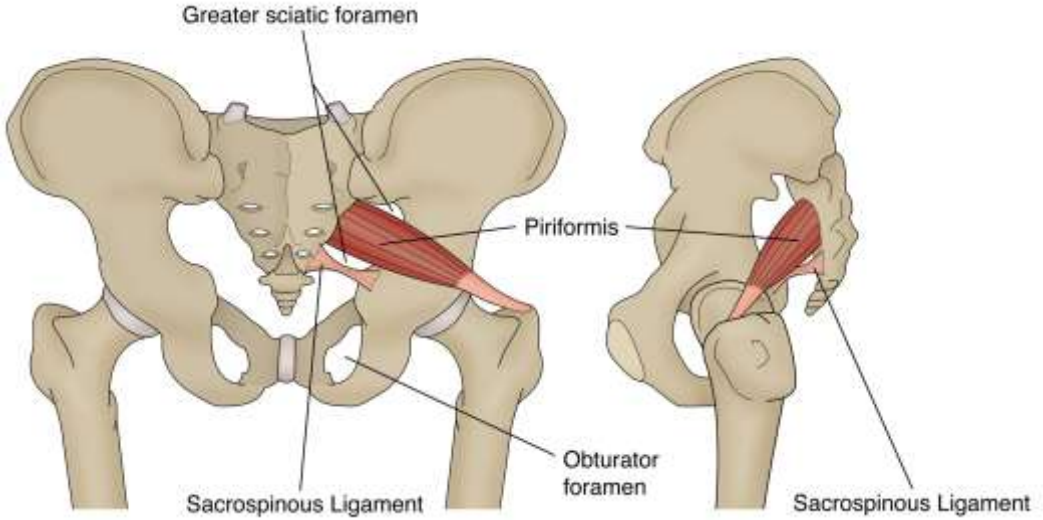
The lumbosacral trunk (L4, L5) passes over the ala (wing) of the sacrum and descends into the pelvis to participate in the formation of the sacral plexus with the anterior rami of S1–S4 nerves

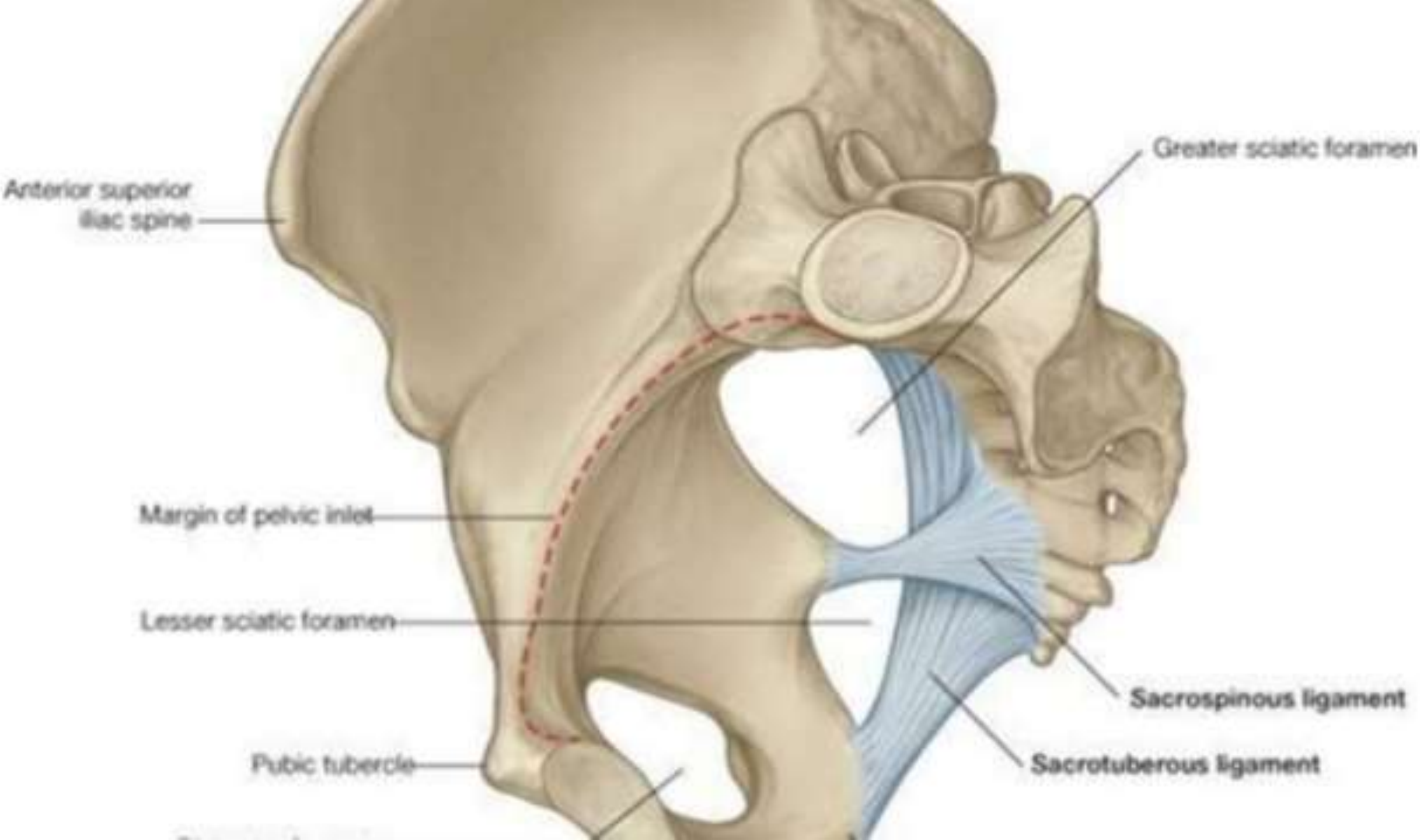


Sacral plexus

- The **sacral plexus** is located on the posterolateral wall of the lesser pelvis.
- Most branches of the sacral plexus leave the pelvis through the *greater sciatic foramen*
- *Roots: ventral rami of L4- S3 (or S4)*

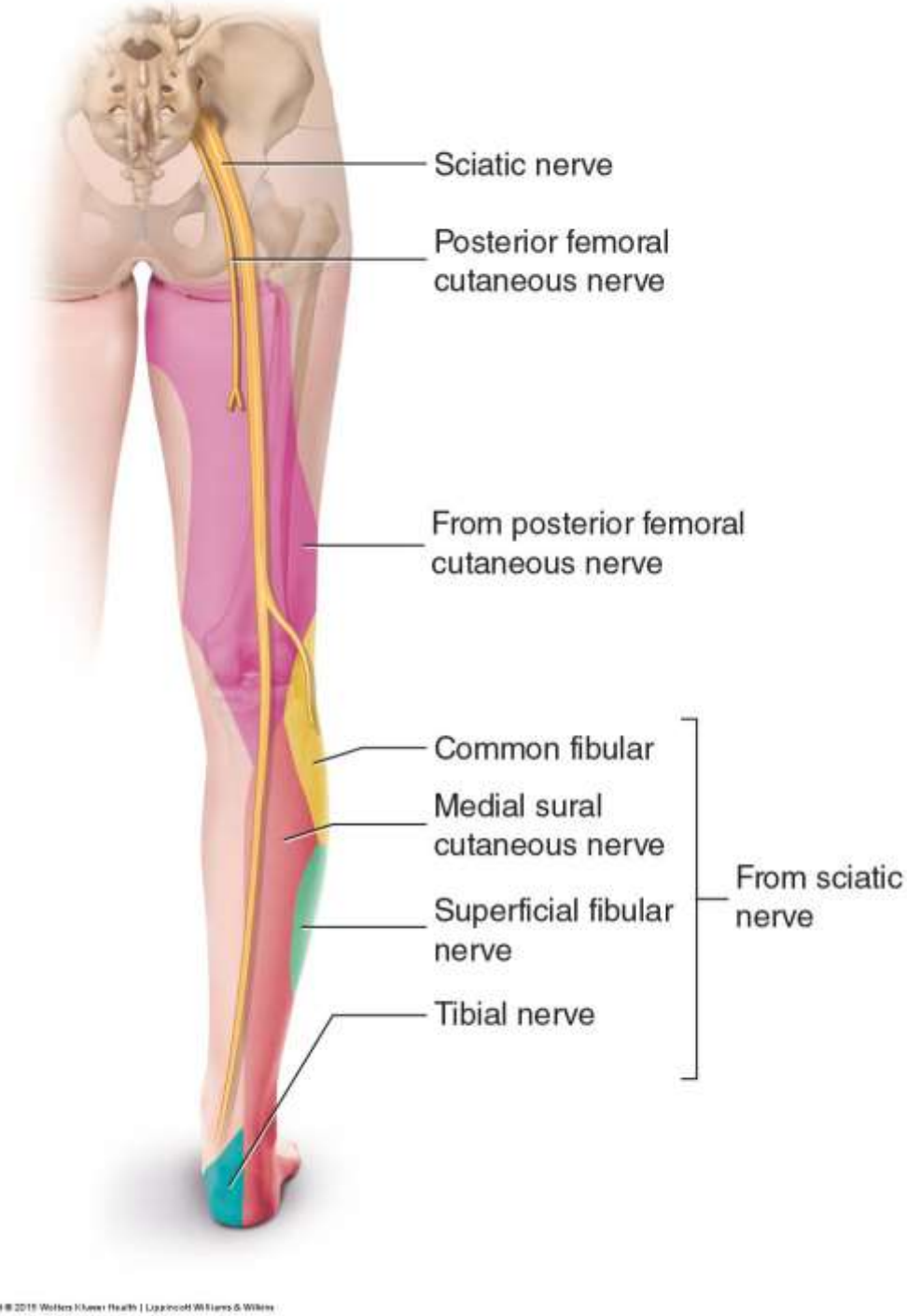





Anterior superior iliac spine
Greater sciatic foramen
Margin of pelvic inlet
Lesser sciatic foramen
Pubic tubercle
Sacrospinous ligament
Sacrotuberous ligament

Posterior femoral cutaneous nerve (S1-S3)

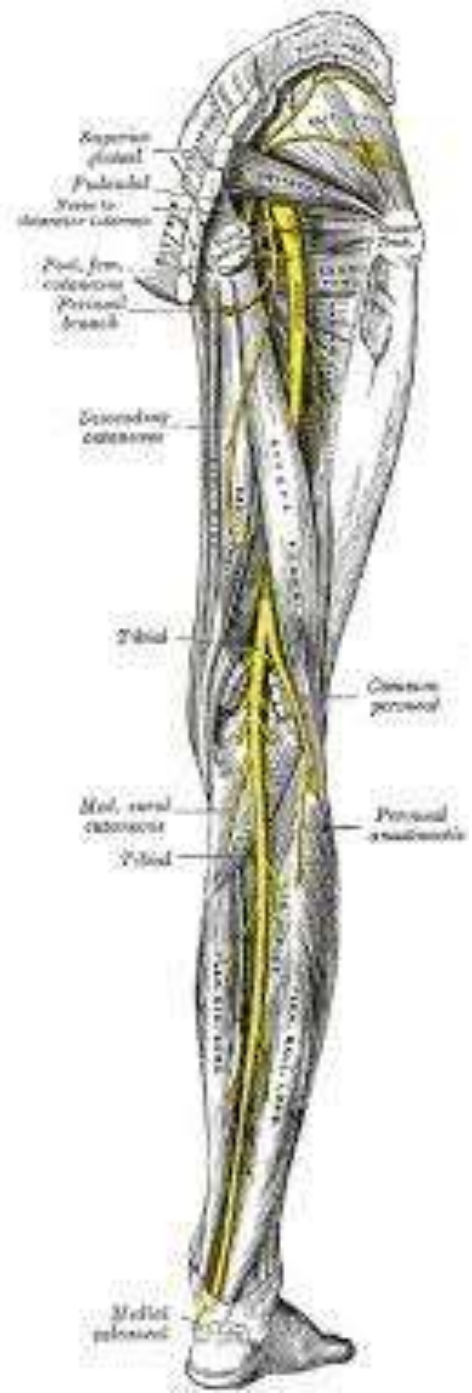
- Arises from the sacral plexus and enters the buttock through the greater sciatic foramen below the piriformis.
- Descends on the posterior thigh.
- Innervates the skin of the buttock. thigh, and calf as well as the scrotum or labia majora.



SCIATIC NERVE (L4-S3)

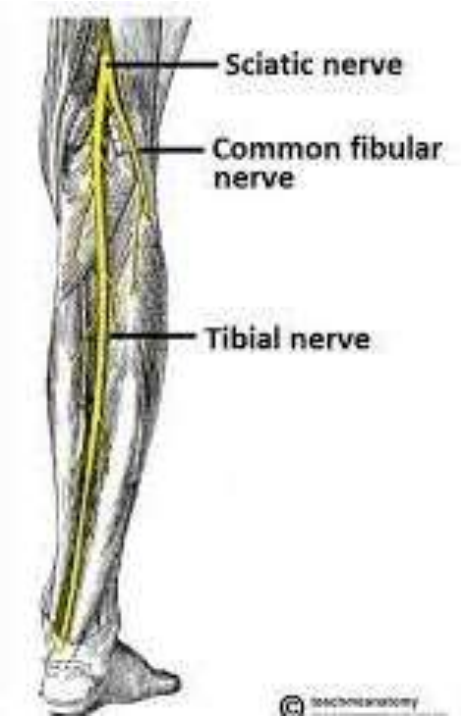
• Arises from the sacral plexus and is the largest nerve in the body.

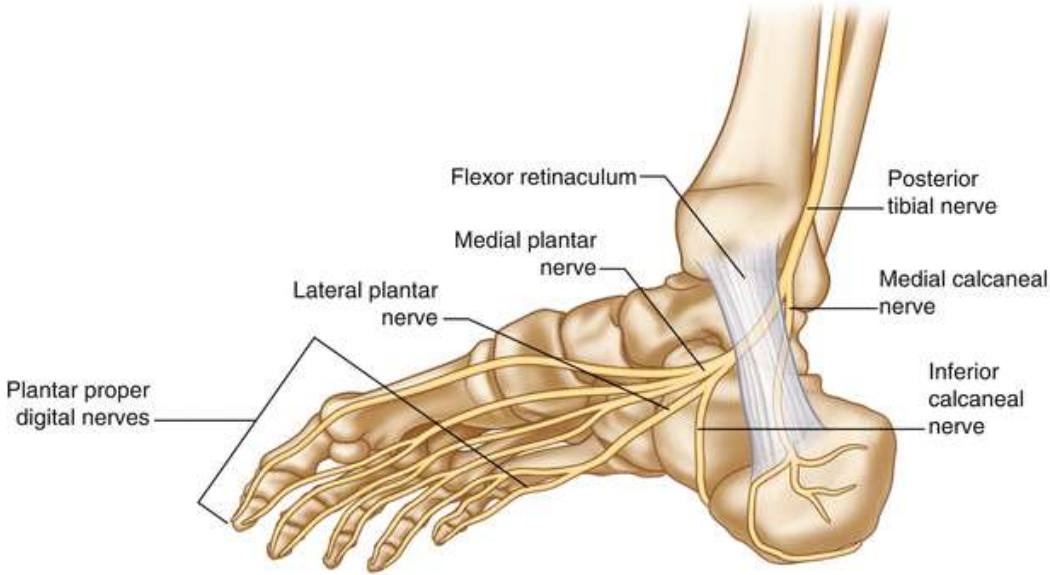
- Enters the buttock through the greater sciatic foramen INFERIOR to the piriformis.
- Divides at the superior border of the popliteal fossa into the:
- **TIBIAL NERVE**
- **THE COMMON FIBULAR NERVE**



Tibial nerve

- ❑ Descends through the popliteal fossa and then lies on the posterior surface of the popliteus muscle.
- ❑ Gives rise to three articular branches to the knee joint.
- ❑ Gives rise to muscular branches to almost all posterior muscles' compartments of the thigh and leg.
- ❑ Gives rise to:
  - ✓ **THE MEDIAL SURAL CUTANEOUS NERVE**
  - ✓ **THE MEDIAL CALCANEAL BRANCH** to the skin of the heel and sole,
  - ✓ **THE ARTICULAR BRANCHES TO THE ANKLE JOINT**.
- ❑ Terminates deep to the flexor retinaculum where it divides into the **MEDIAL AND LATERAL PLANTAR NERVES.**



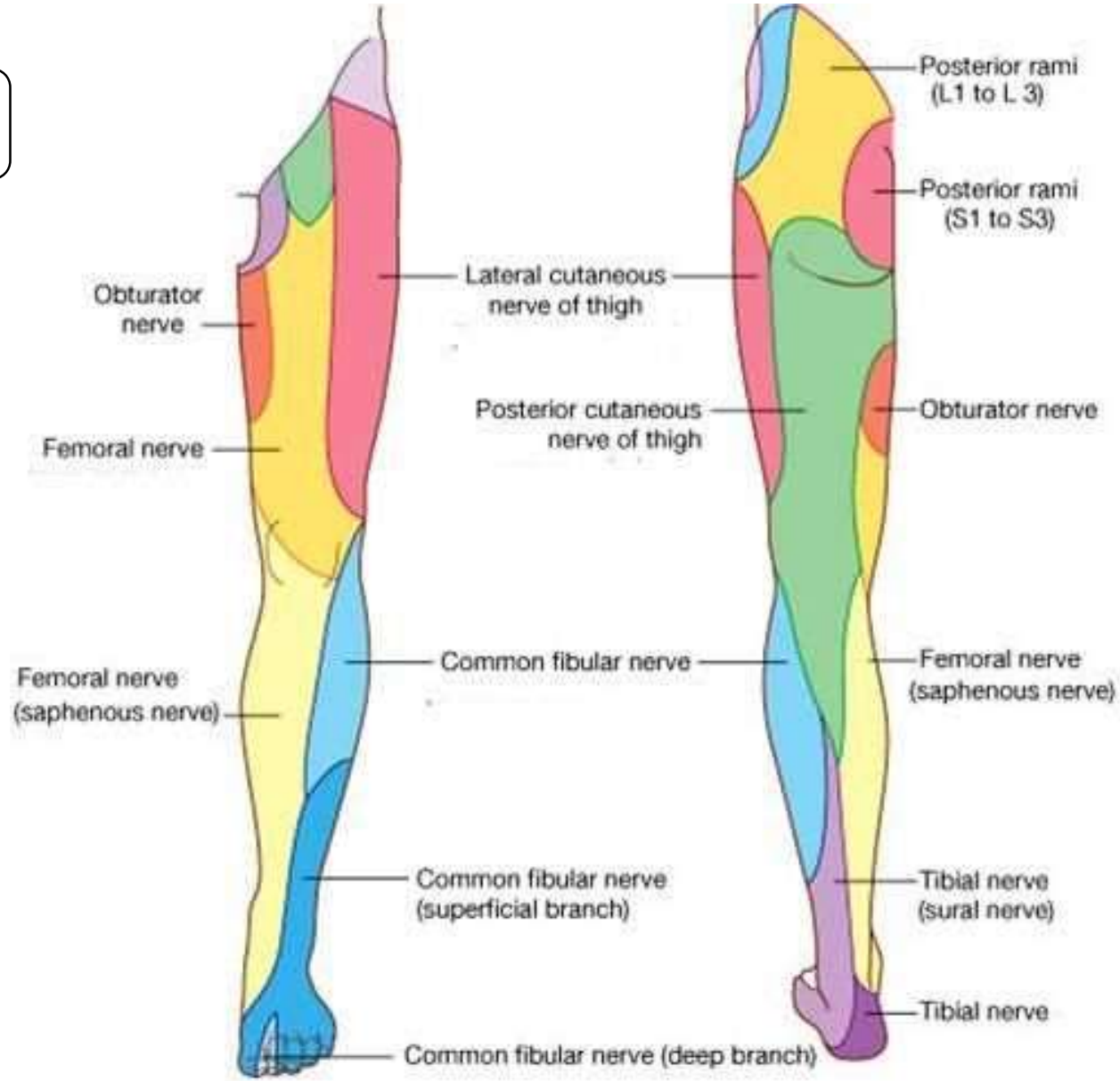


COMMON FIBULAR(PERONEAL) NERVE (L4-S2)

- ❑ Arises as the **smaller terminal** portion of the sciatic nerve at the apex of the popliteal fossa, descends through the fossa, and superficially crosses the lateral head of the gastrocnemius muscle.
- ❑ Passes behind the head of the fibula, then winds laterally around the neck of the fibula,
- ❑ pierces the **fibularis longus**, where it divides into the **DEEP** fibular and **SUPERFICIAL** fibular nerves.

- ✓ Gives rise to the lataral sural cutaneous nerva, which supplies the skin on the lateral part of the back of the leg, and the recurrent articular branch to the knee Joint

CUTANEOUS INNERVATION



The Architectural Matrix

	Brachial Plexus	Lumbar Plexus	Sacral Plexus
Root Origins	C5-T1	L1-L4	L4-S4
Primary Gateway	Scalene Triangle / Axillary Artery	Psoas Muscle / Inguinal Ligament	Greater Sciatic Foramen
Structural Hierarchy	Complex 5-stage sorting (Trunks/Cords)	Direct division splits, no trunks	Massive root consolidation
Evolutionary Goal	High Multi-axial Mobility	Core Stability & Adduction	Maximum Propulsion & Power