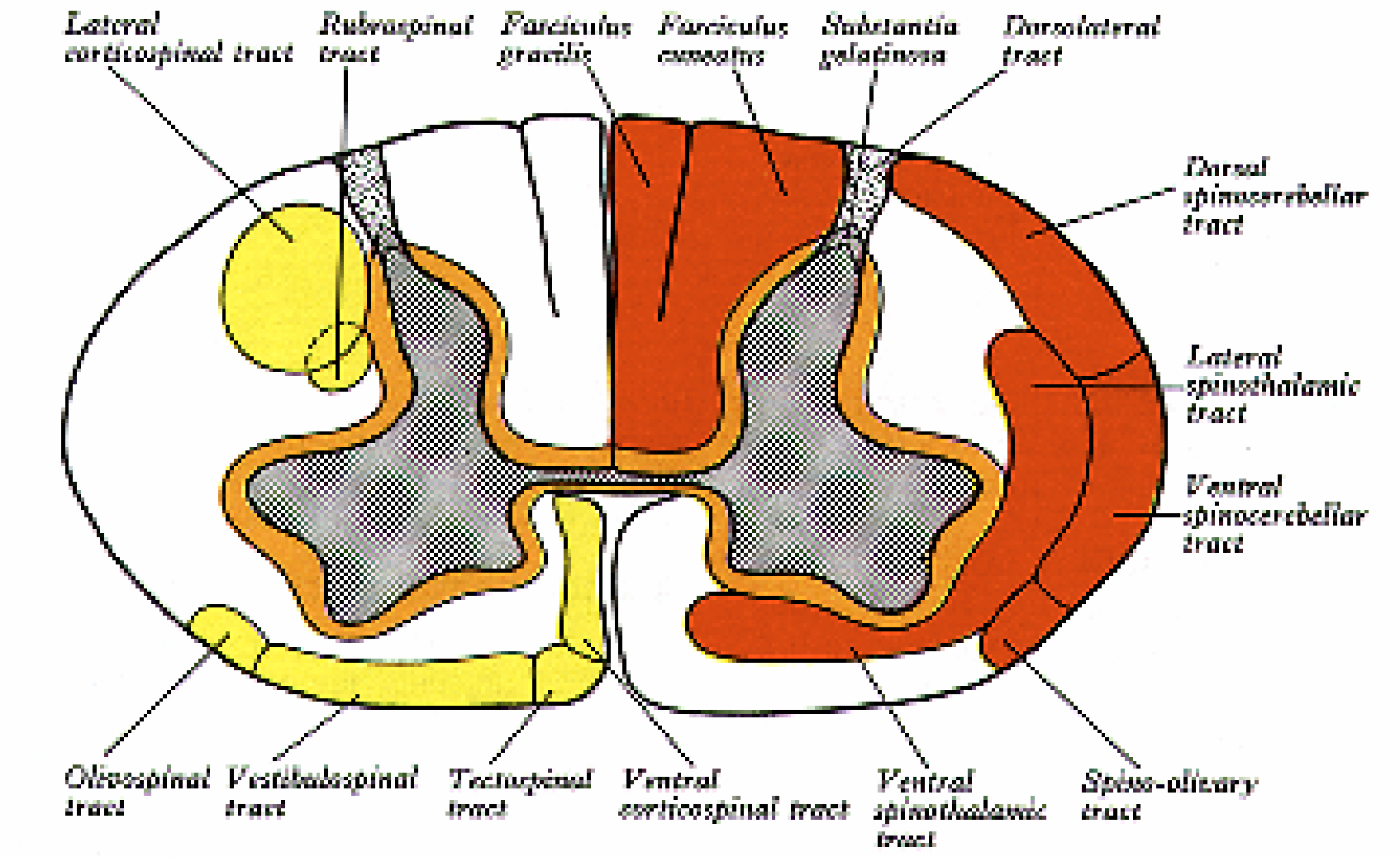
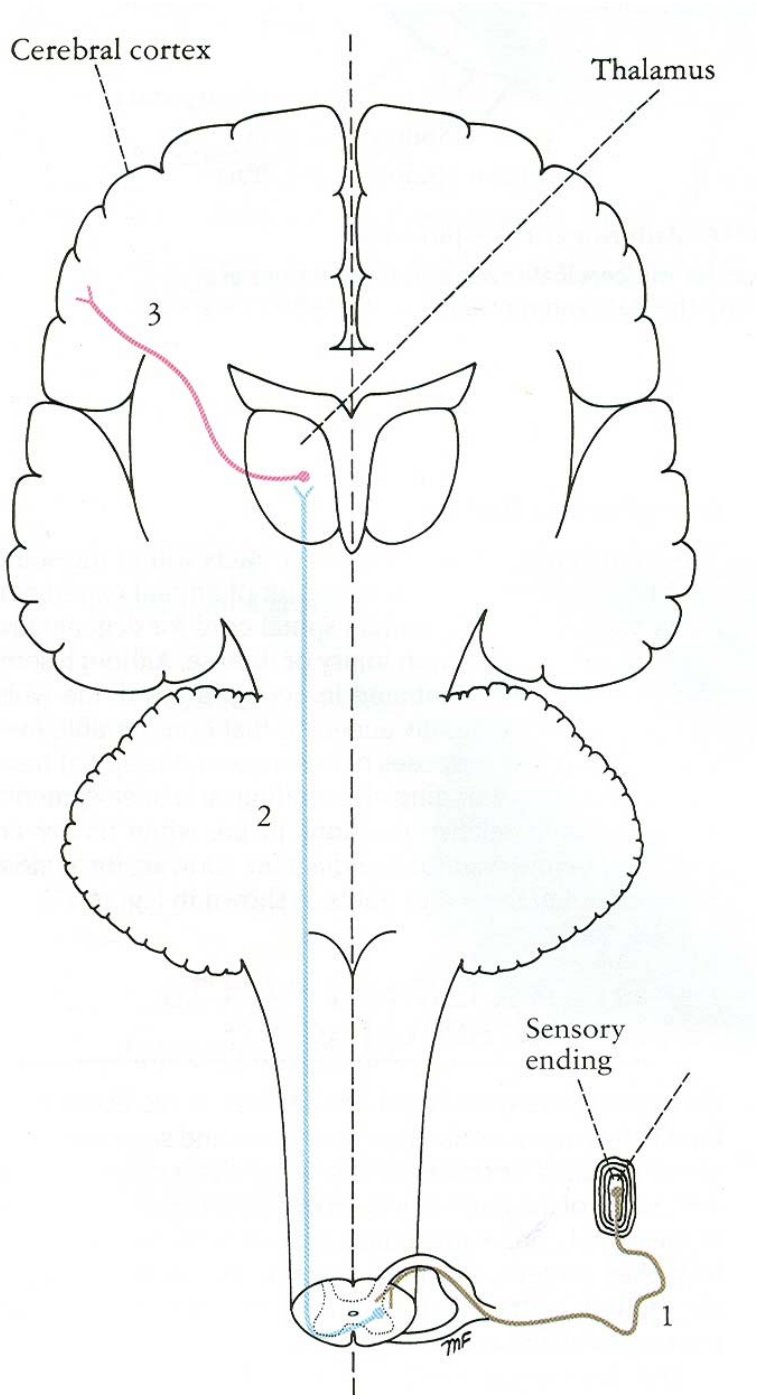
ASCENDING TRACTS



Anatomical organisation of ascending sensory pathway



Posterior column

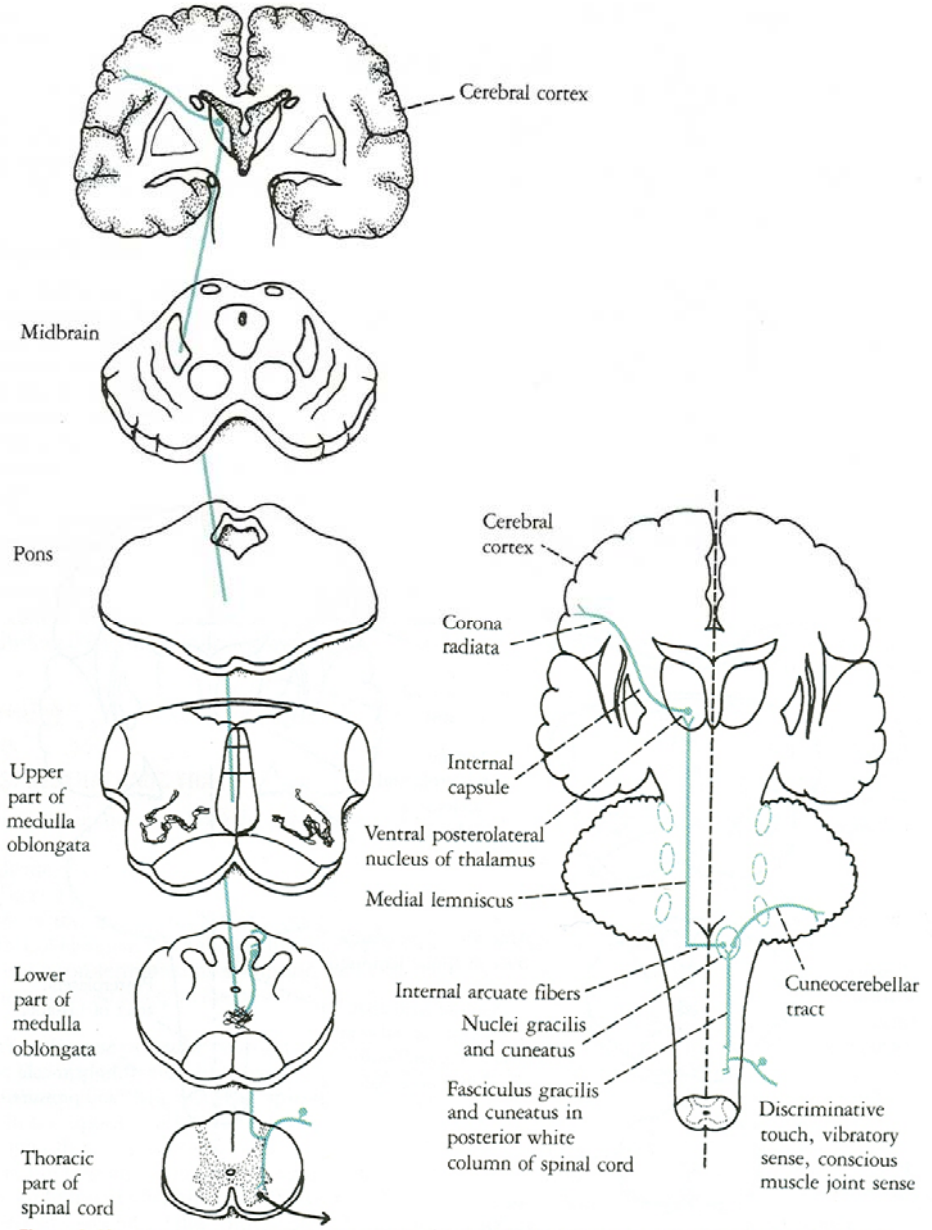
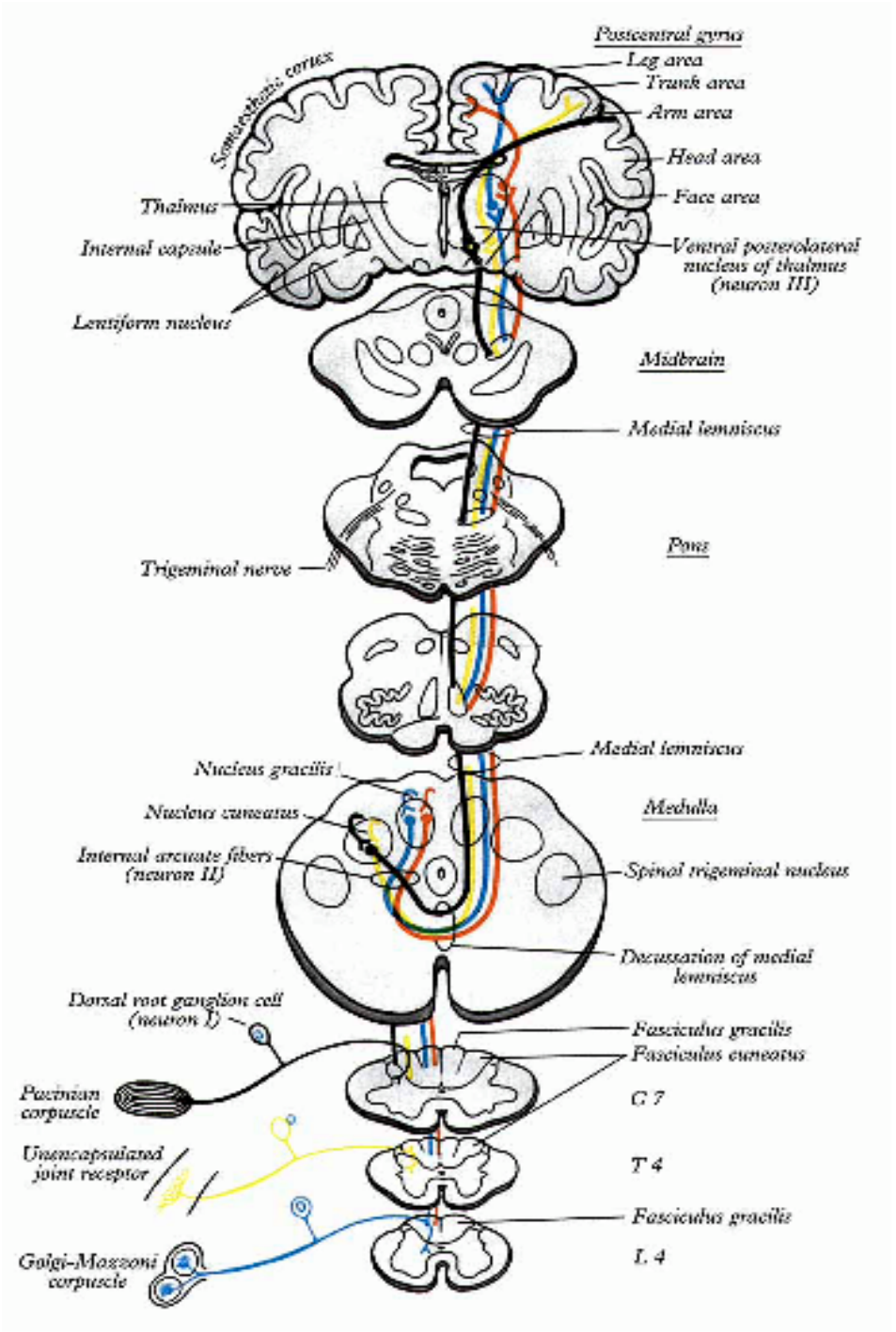
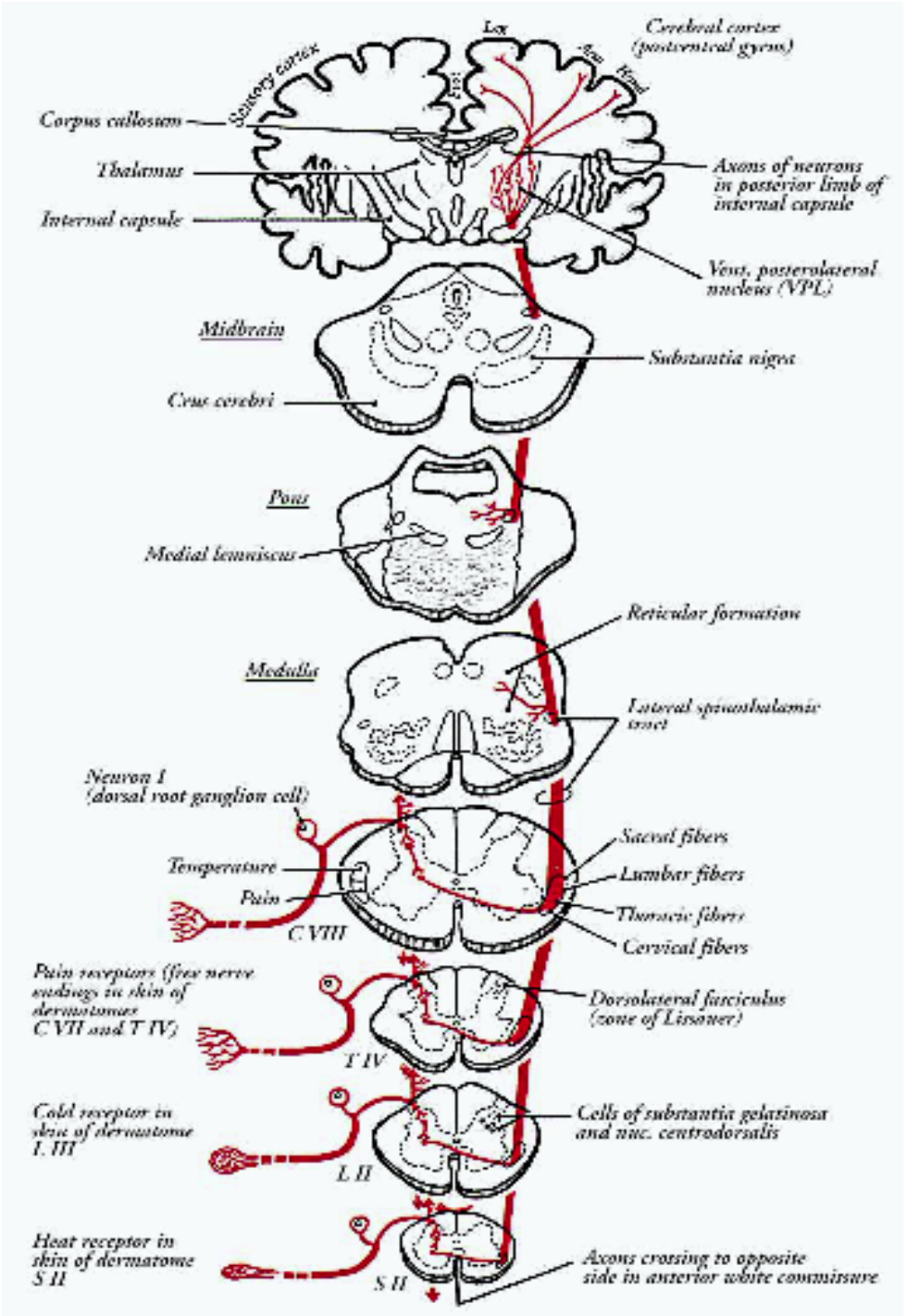


Figure 4–12 Discriminative touch, vibratory sense, and conscious muscle joint sense pathways.

Posterior column (medial lemniscus) tracts



Lateral
spinothalamic tract



Lateral spinothalamic tract

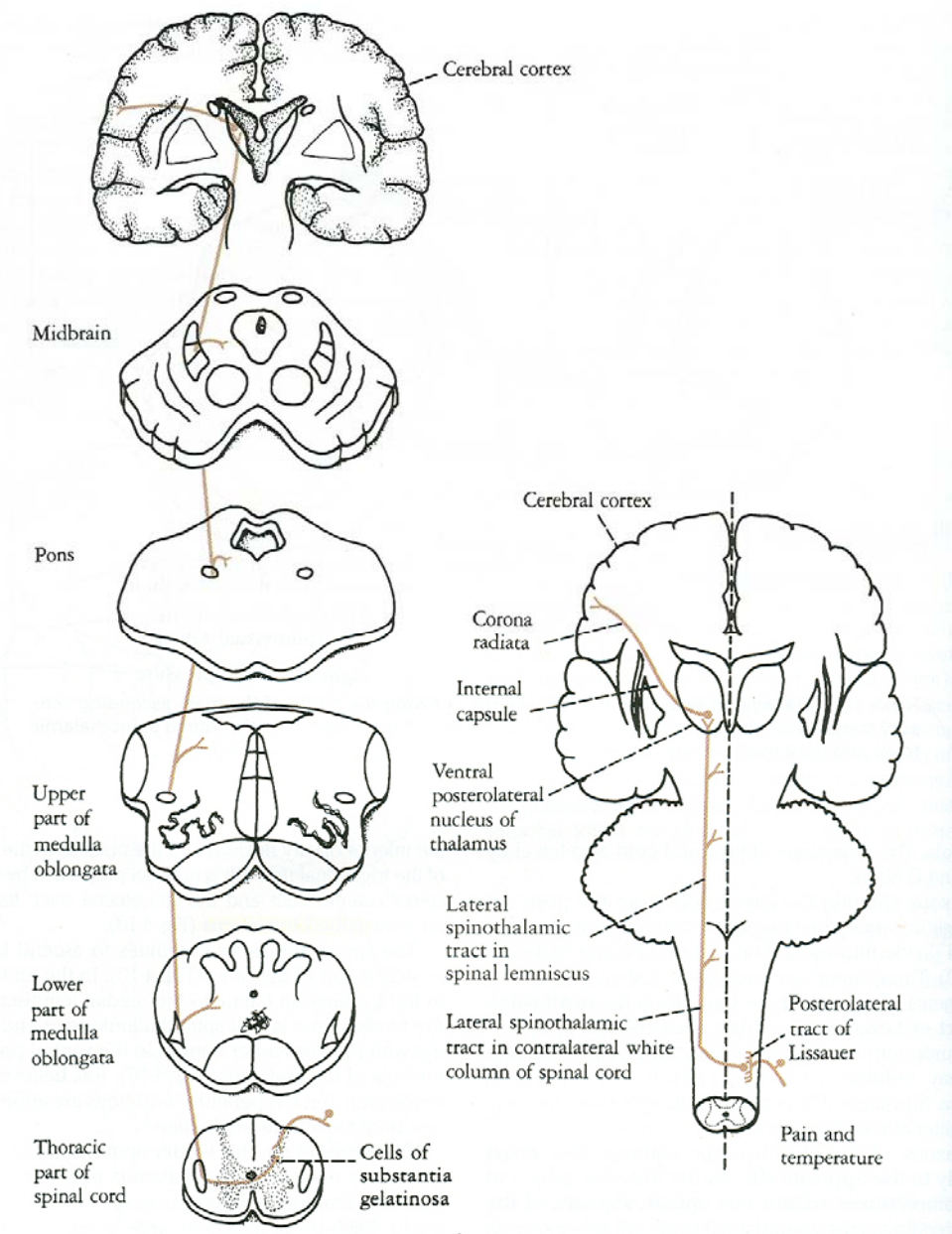


Figure 4–10 Pain and temperature pathways.

Anterior spinothalamic tract

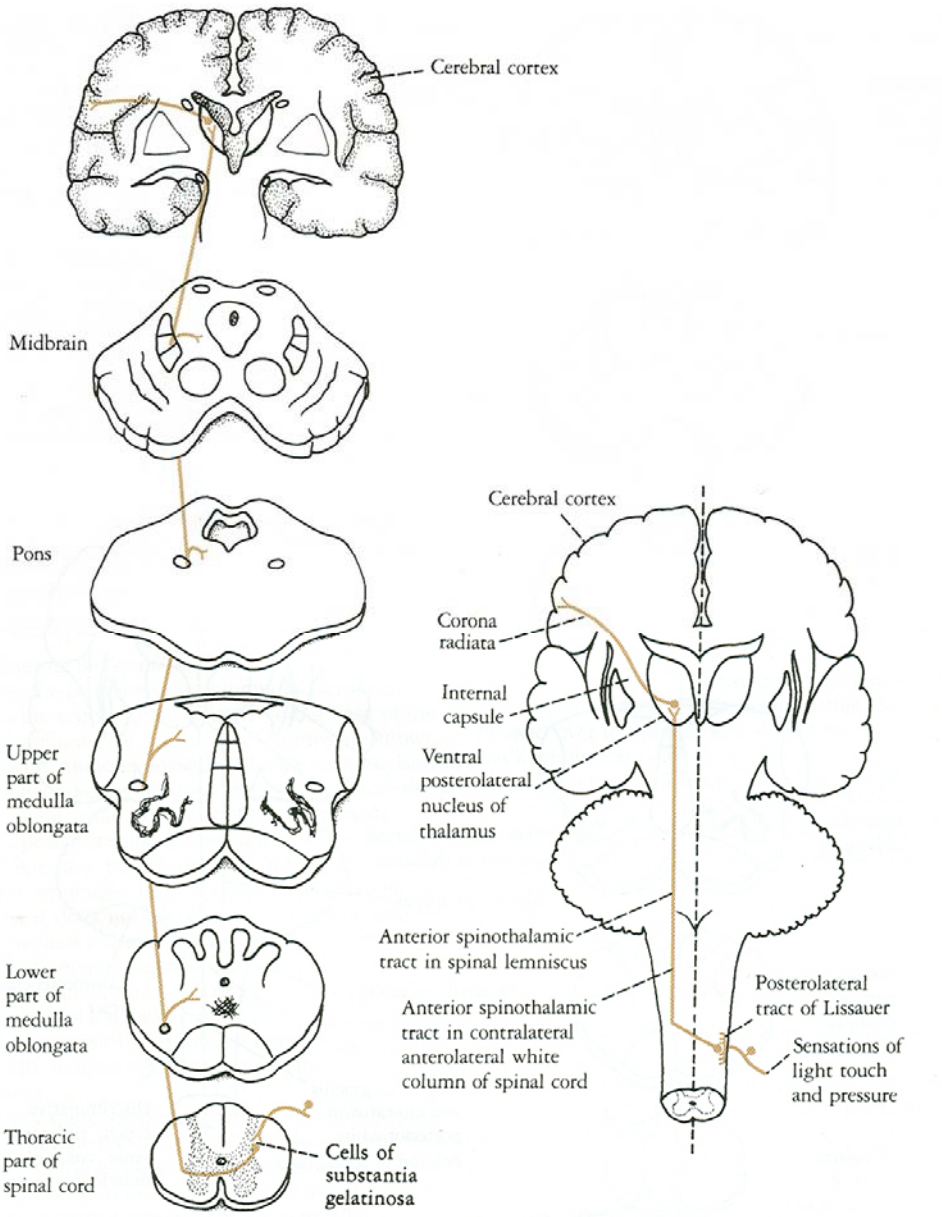
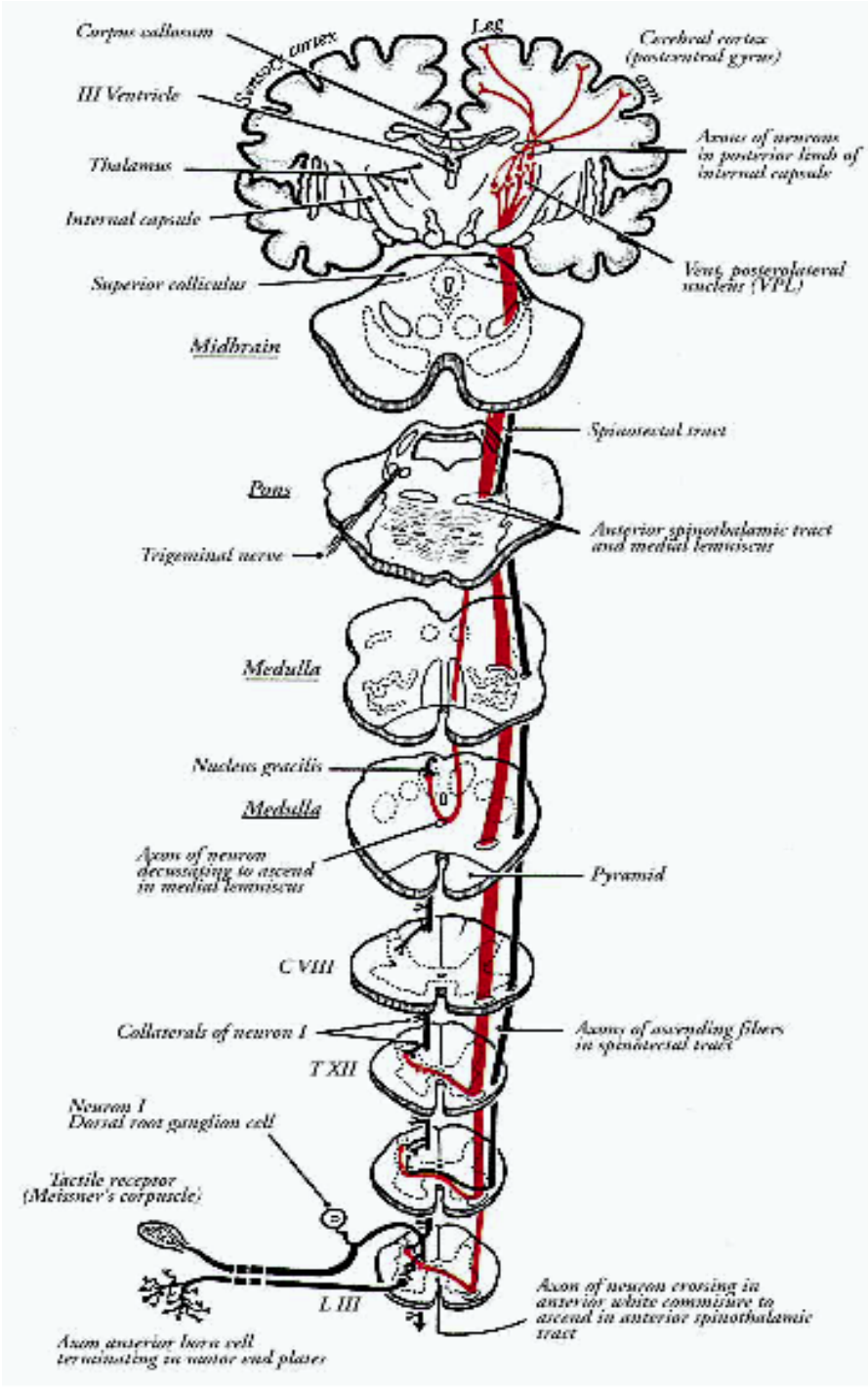
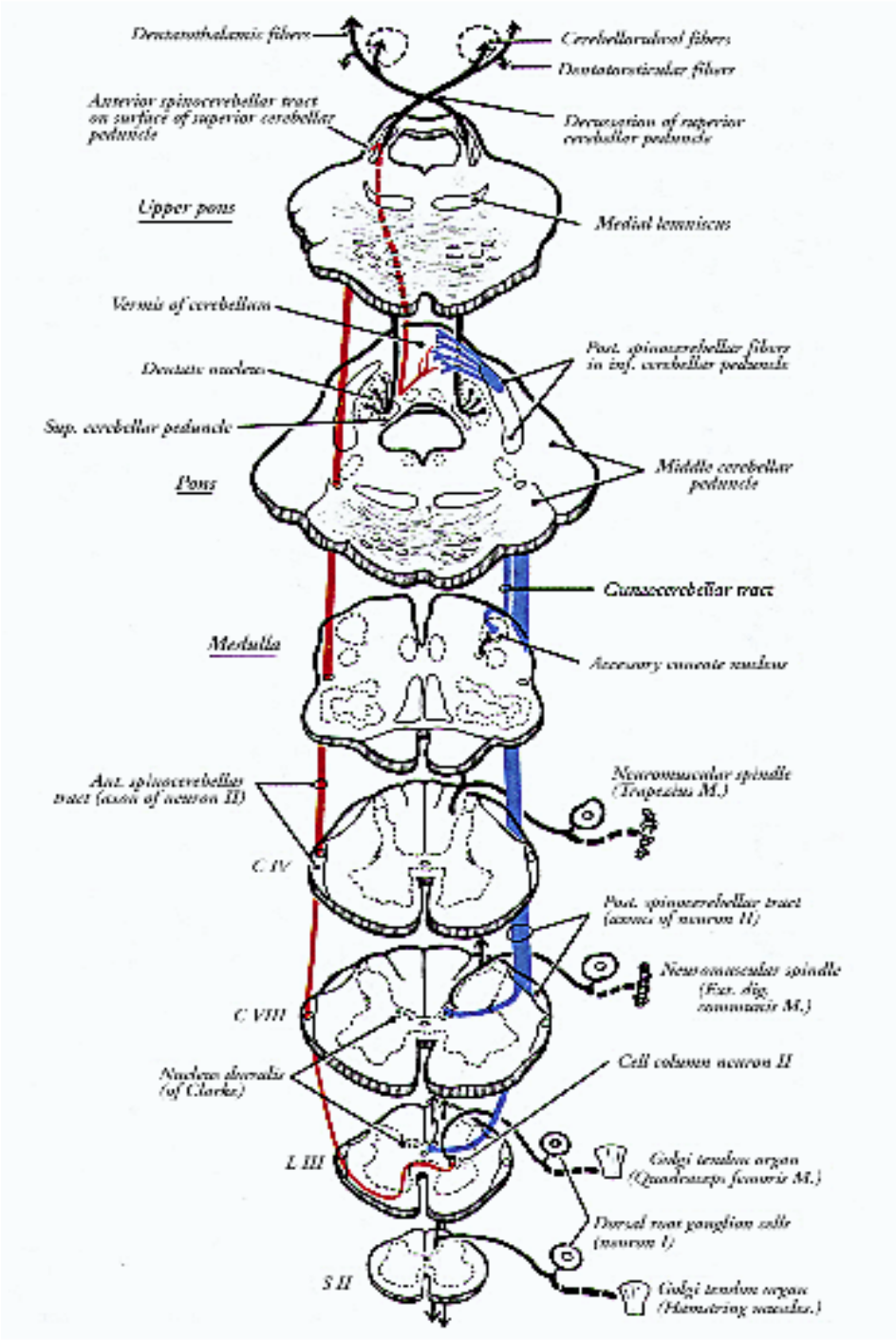


Figure 4–11 Light touch and pressure pathways.

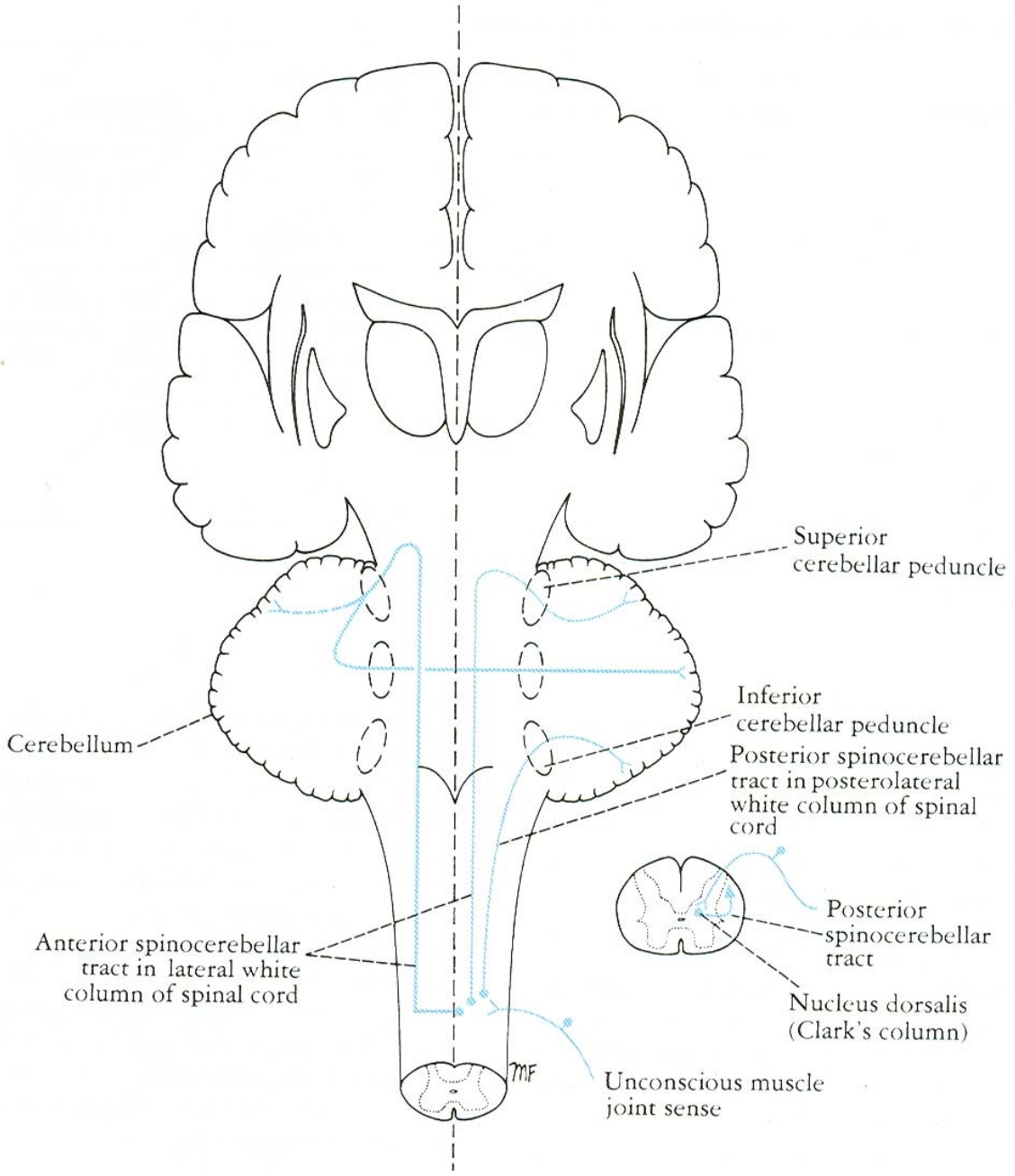
Anterior
spinothalamic tracts

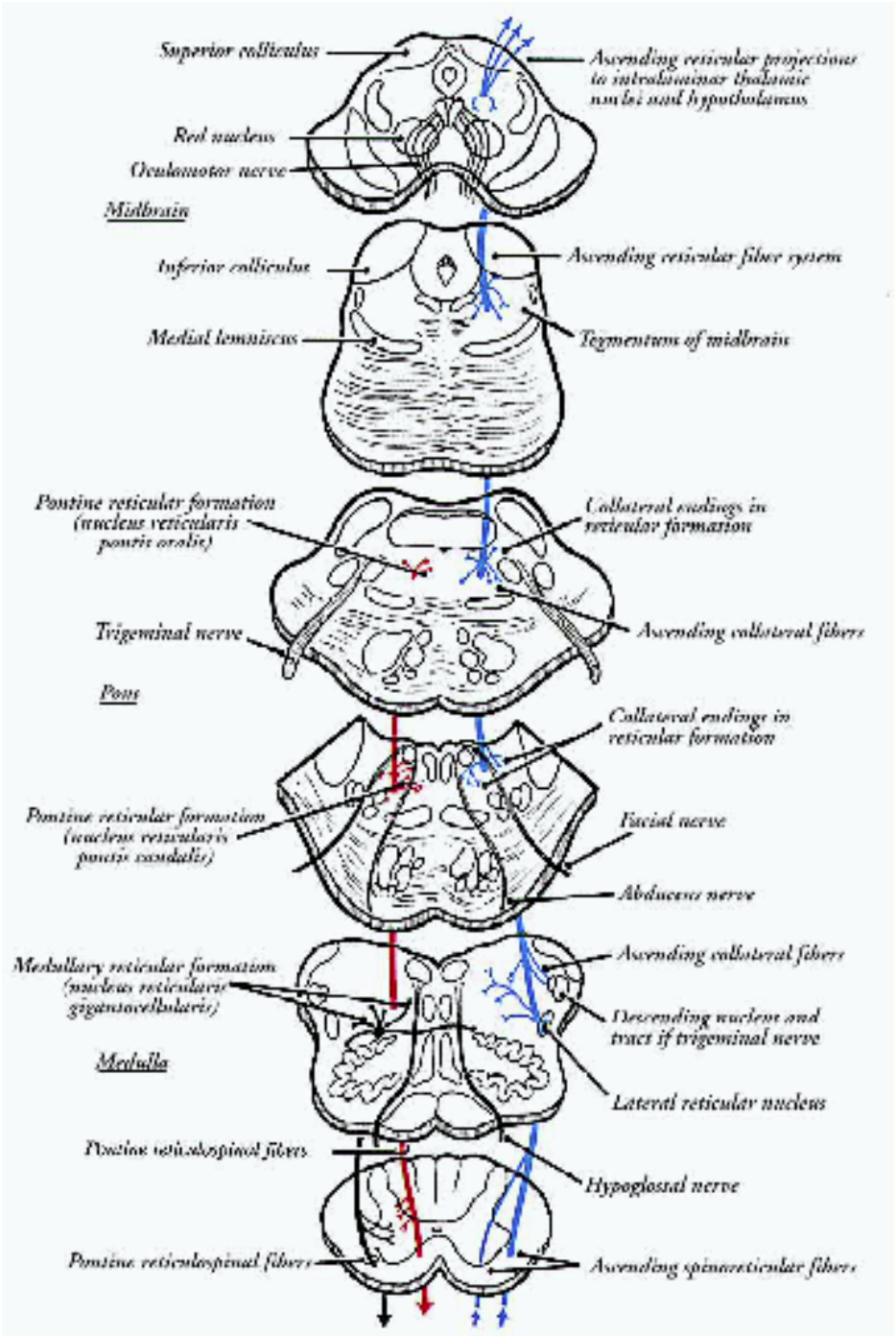


Cuneo-cerebellar tract

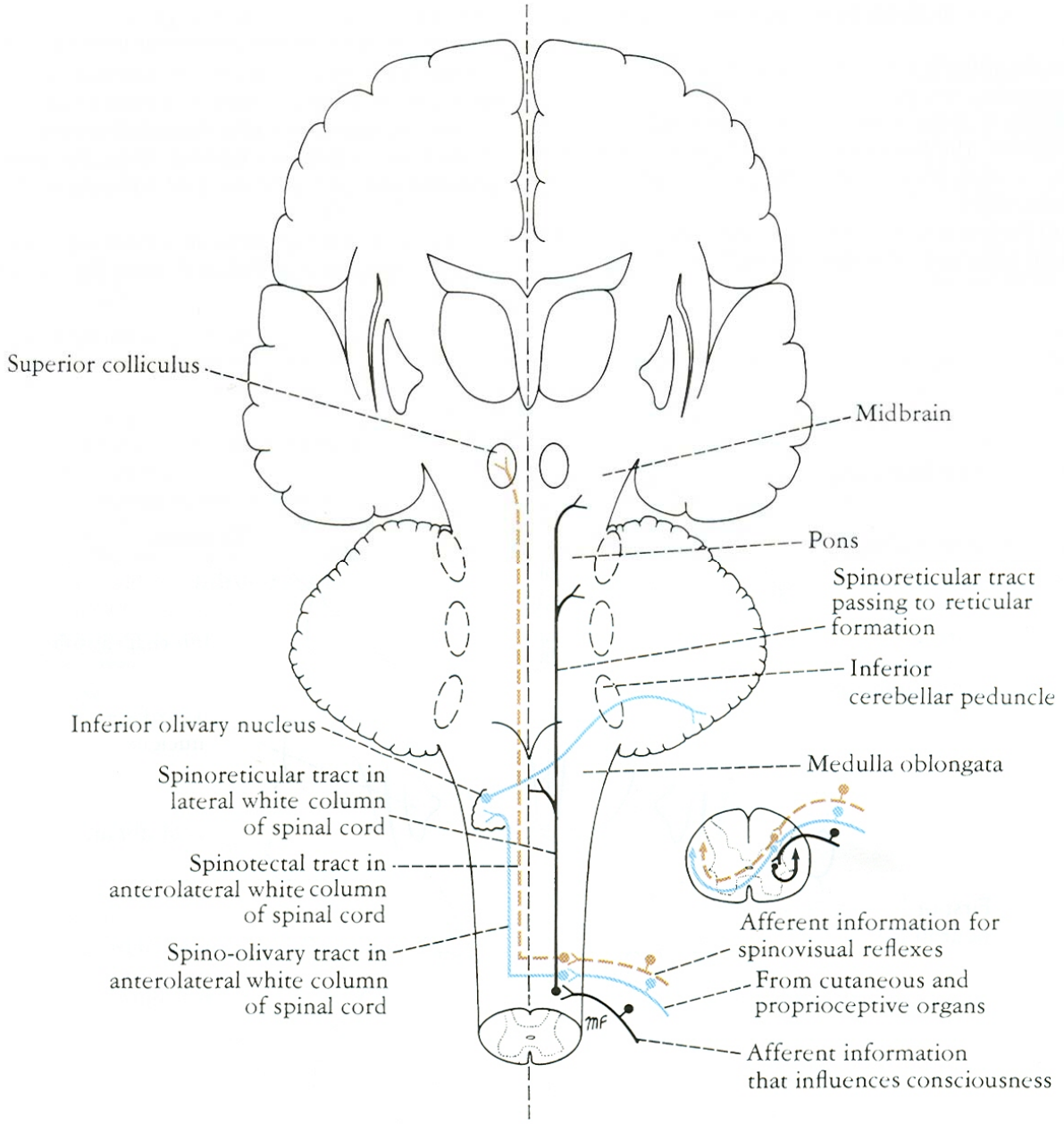


Spinocerebellar tracts

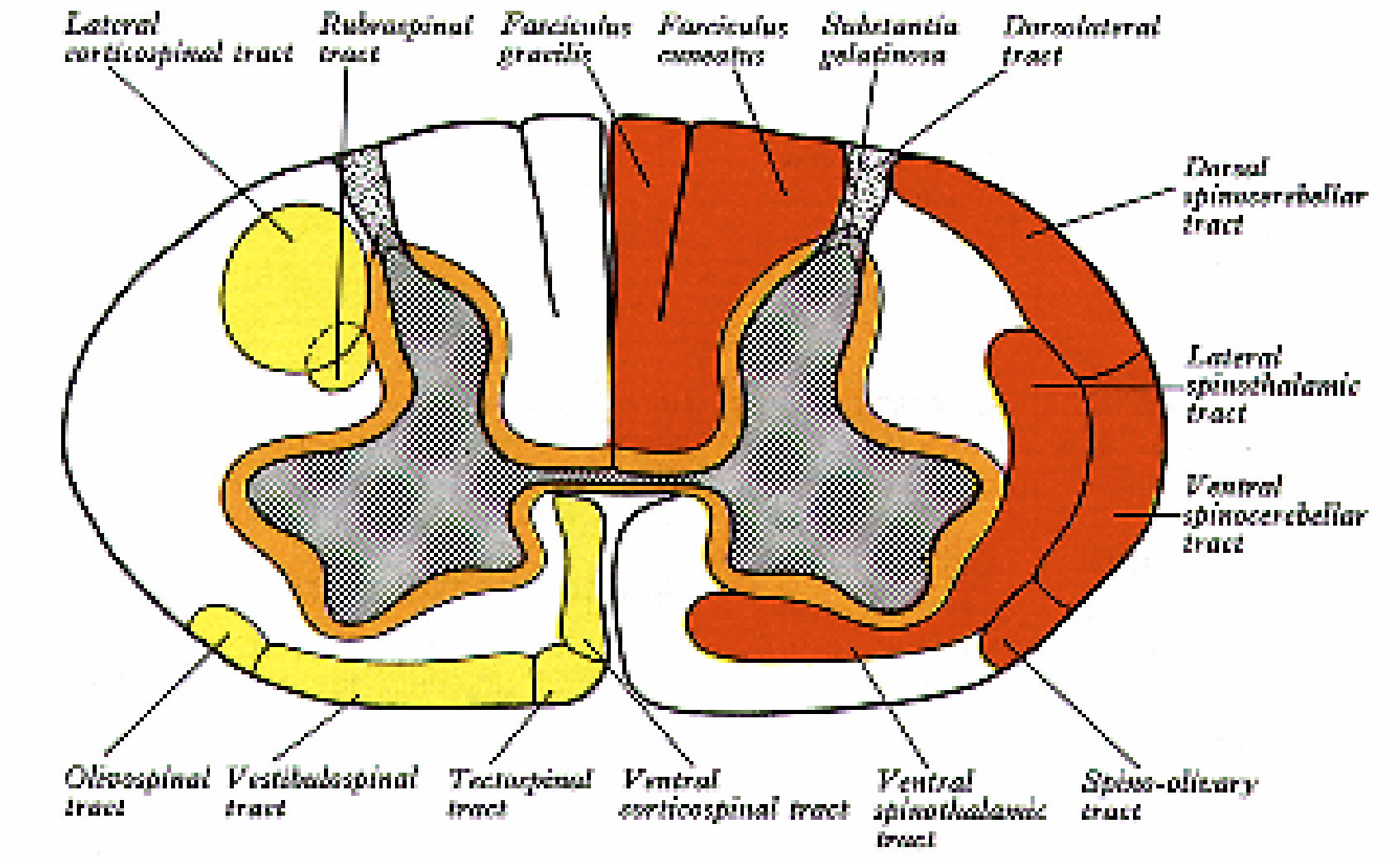



Superior colliculus
Ascending reticular projections to intralaminar thalamic nuclei and hypothalamus
Red nucleus
Oculomotor nerve
Midbrain
Inferior colliculus
Ascending reticular fiber system
Medial lemniscus
Tegmentum of midbrain
Pontine reticular formation (nucleus reticularis pontis oralis)
Collateral endings in reticular formation
Trigeminal nerve
Ascending collateral fibers
Pons
Collateral endings in reticular formation
Pontine reticular formation (nucleus reticularis pontis caudalis)
Facial nerve
Abducens nerve
Medullary reticular formation (nucleus reticularis gigantocellularis)
Ascending collateral fibers
Descending nucleus and tract if trigeminal nerve
Medulla
Lateral reticular nucleus
Pontine reticulospinal fibers
Hypoglossal nerve
Pontine reticulospinal fibers
Ascending spinoreticular fibers

Other ascending tracts



DESCENDING TRACTS



Descending motor pathway

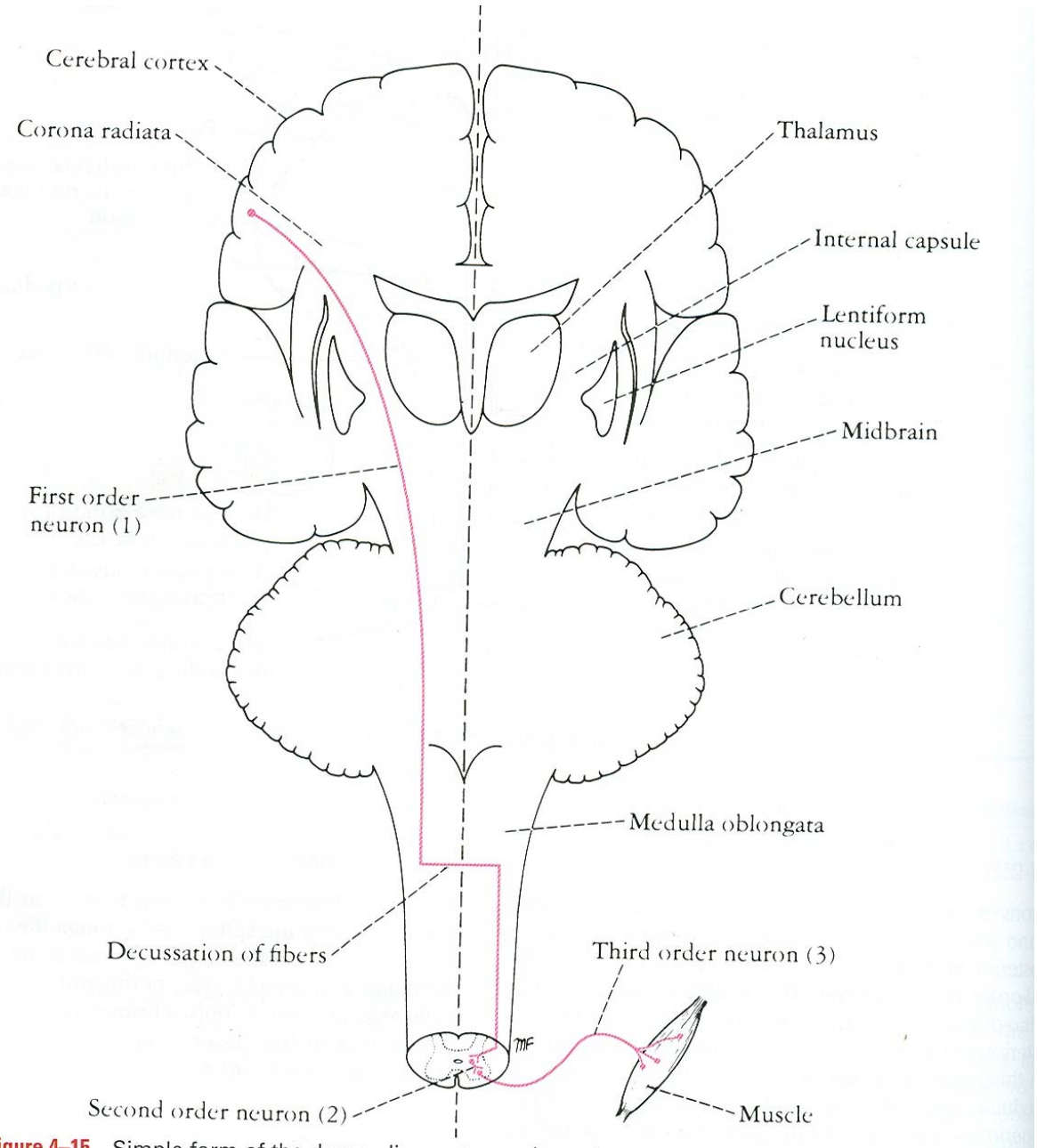
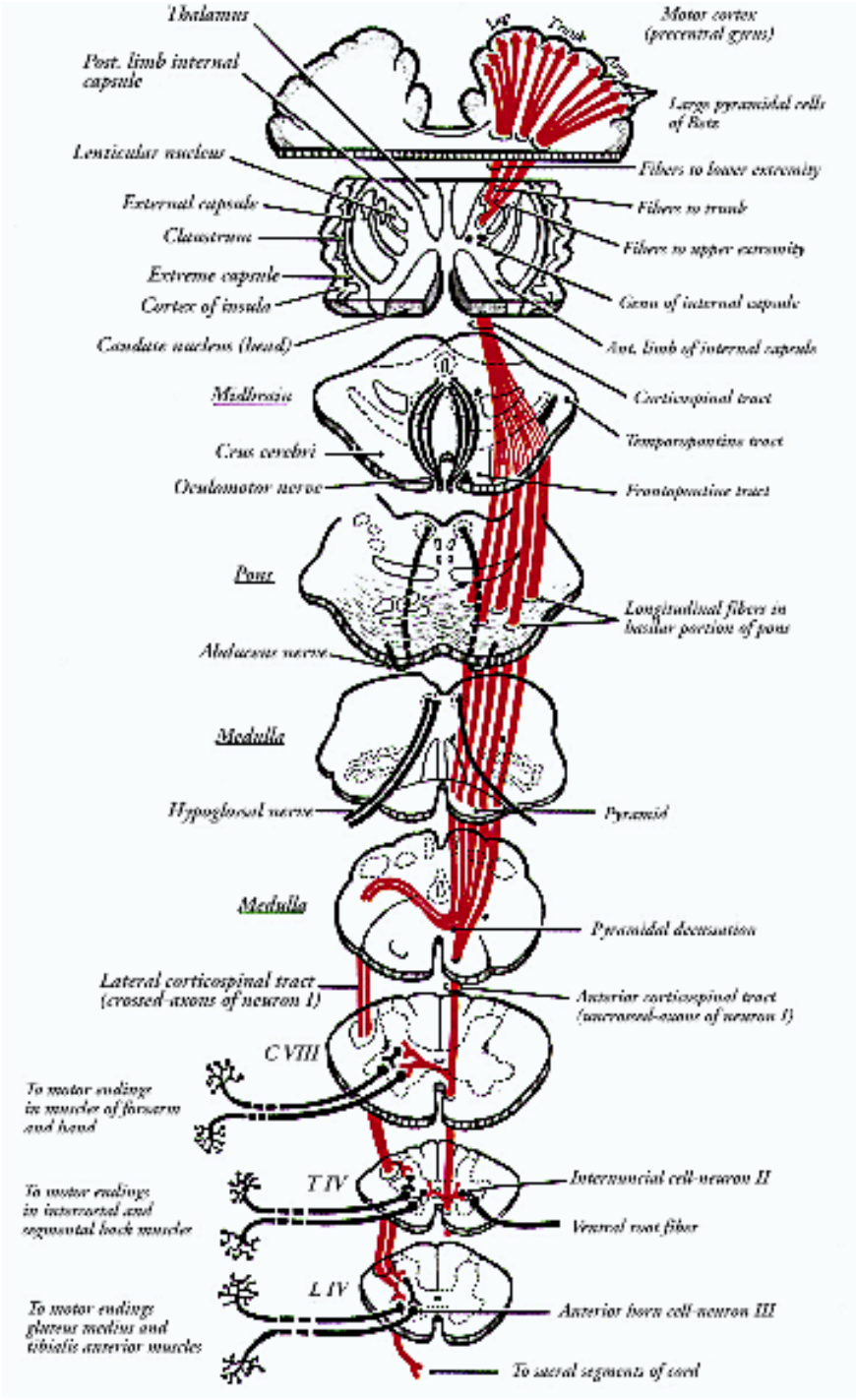
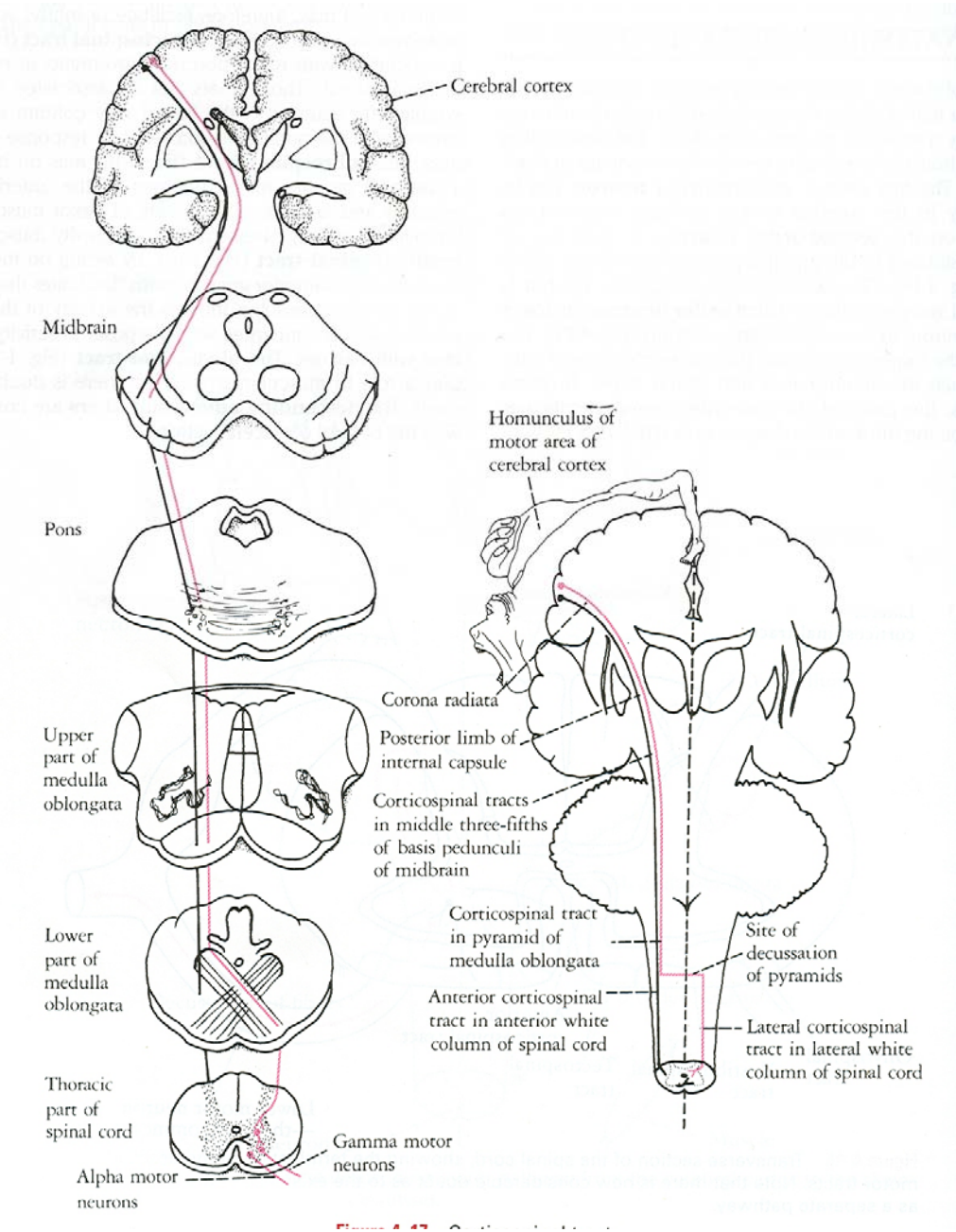


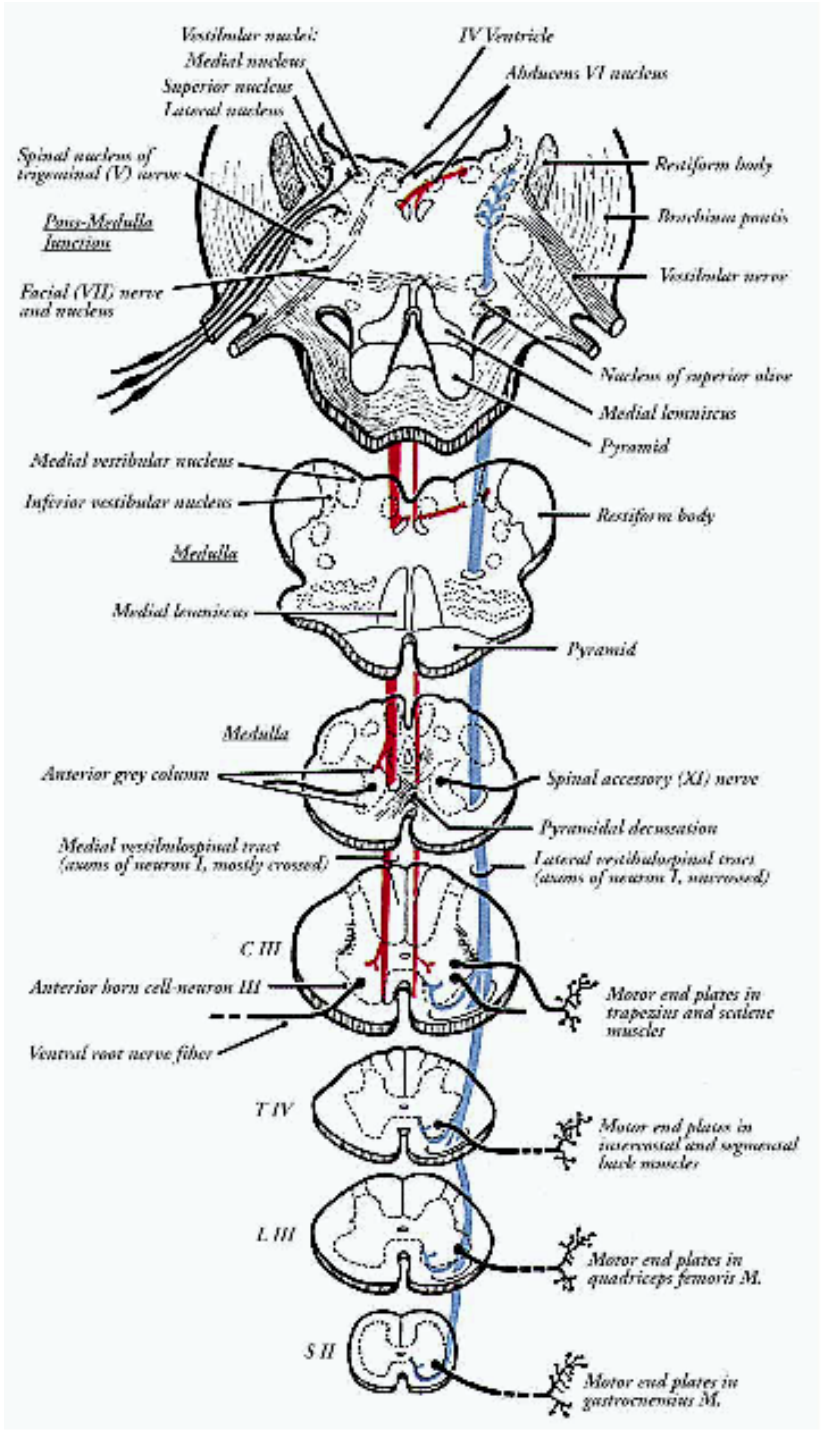
Figure 4–15 Simple form of the descending motor pathway from the cerebral cortex to the skeletal muscle. Note the three neurons involved.

Corticospinal tract

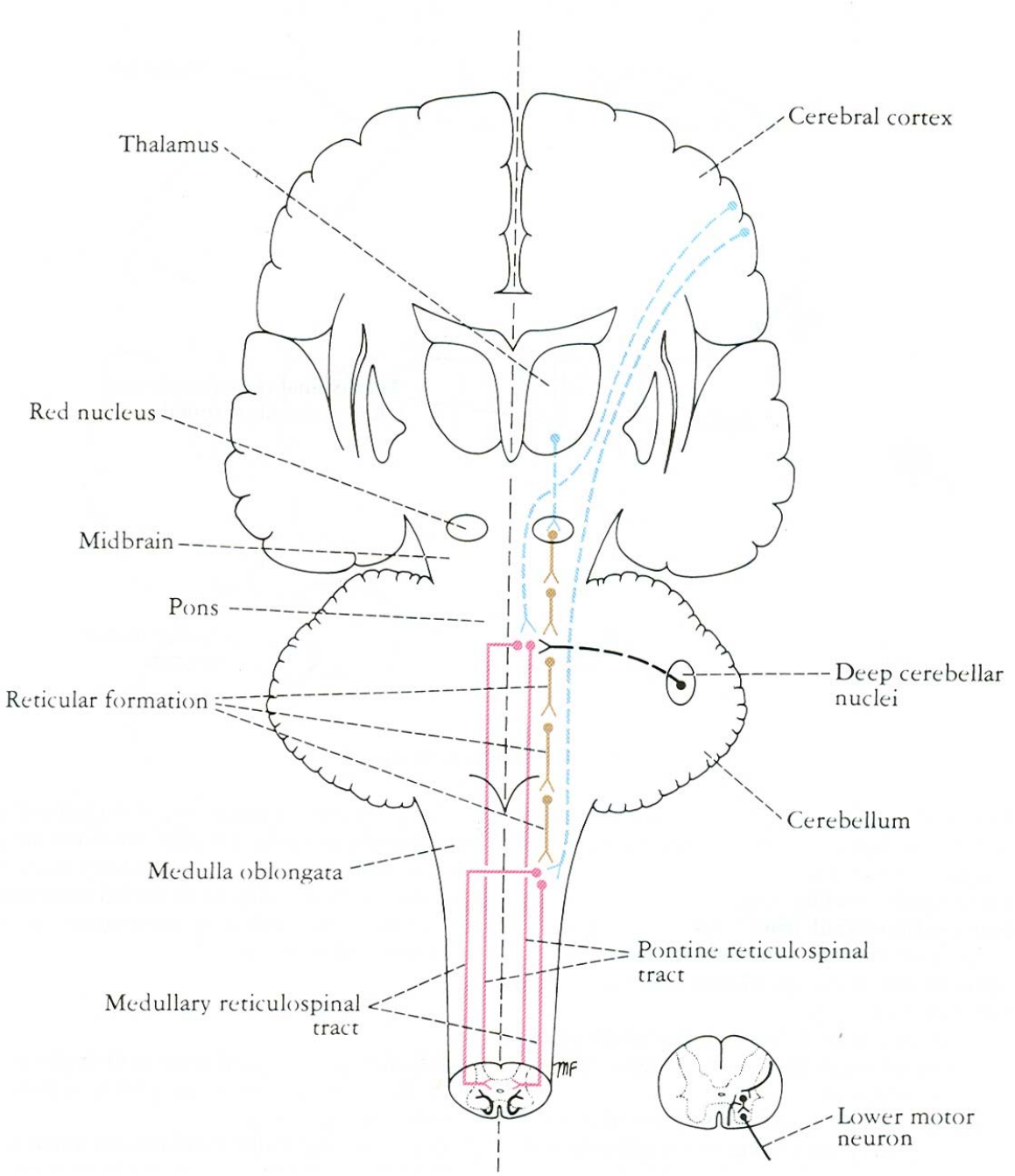


Corticospinal tract

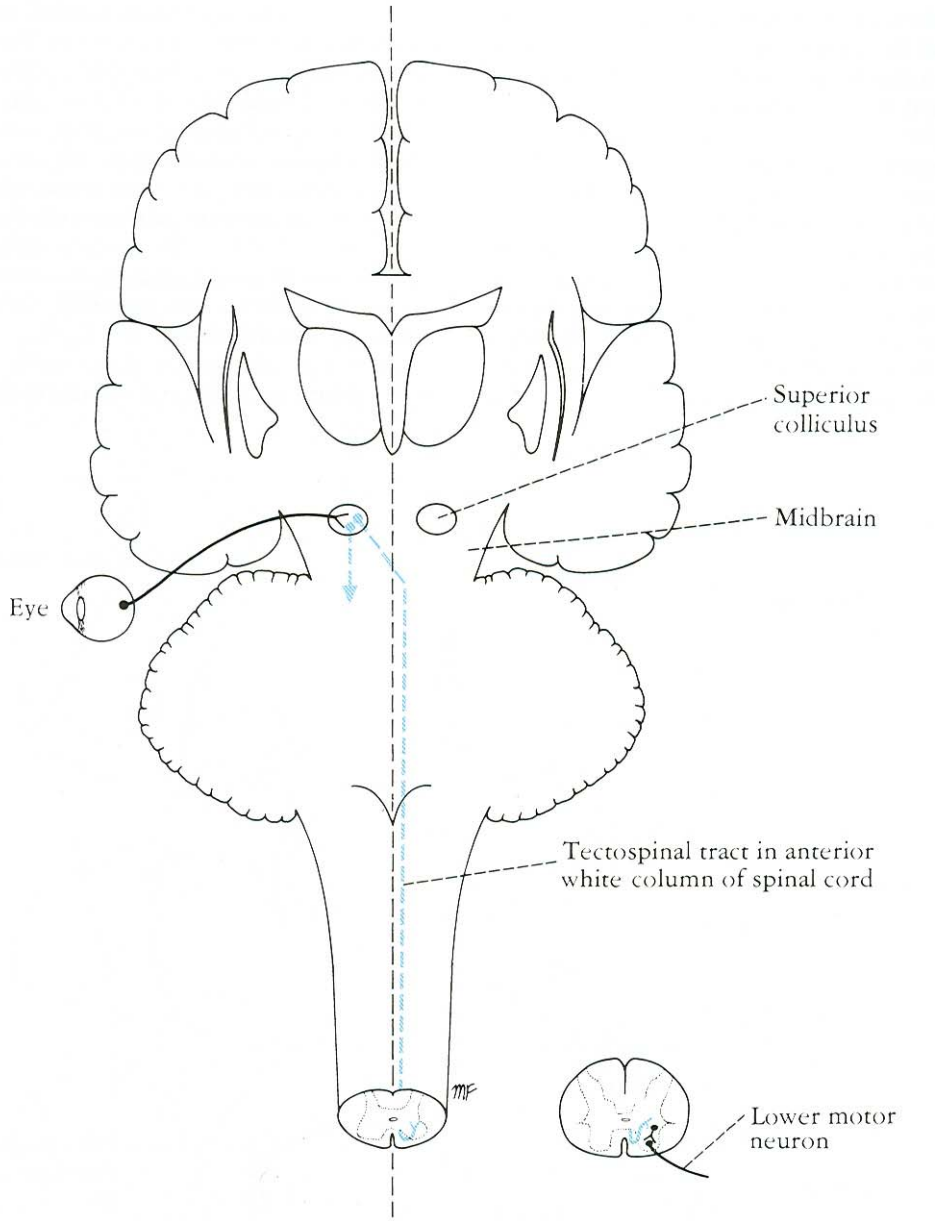



Vestibular nuclei:
Medial nucleus
Superior nucleus
Lateral nucleus
IV Ventricle
Abducens VI nucleus
Spinal nucleus of trigeminal (V) nerve
Pons-Medulla Junction
Facial (VII) nerve and nucleus
Restiform body
Brachium pontis
Vestibular nerve
Nucleus of superior olive
Medial lemniscus
Pyramid
Medial vestibular nucleus
Inferior vestibular nucleus
Medulla
Restiform body
Medial lemniscus
Pyramid
Medulla
Anterior grey column
Spinal accessory (XI) nerve
Pyramidal decussation
Medial vestibulospinal tract (axons of neuron I, mostly crossed)
Lateral vestibulospinal tract (axons of neuron I, uncrossed)
C III
Anterior horn cell-neuron III
Motor end plates in trapezius and scalene muscles
Ventral root nerve fiber
T IV
Motor end plates in intercostal and segmental back muscles
L III
Motor end plates in quadriceps femoris M.
S II
Motor end plates in gastrocnemius M.

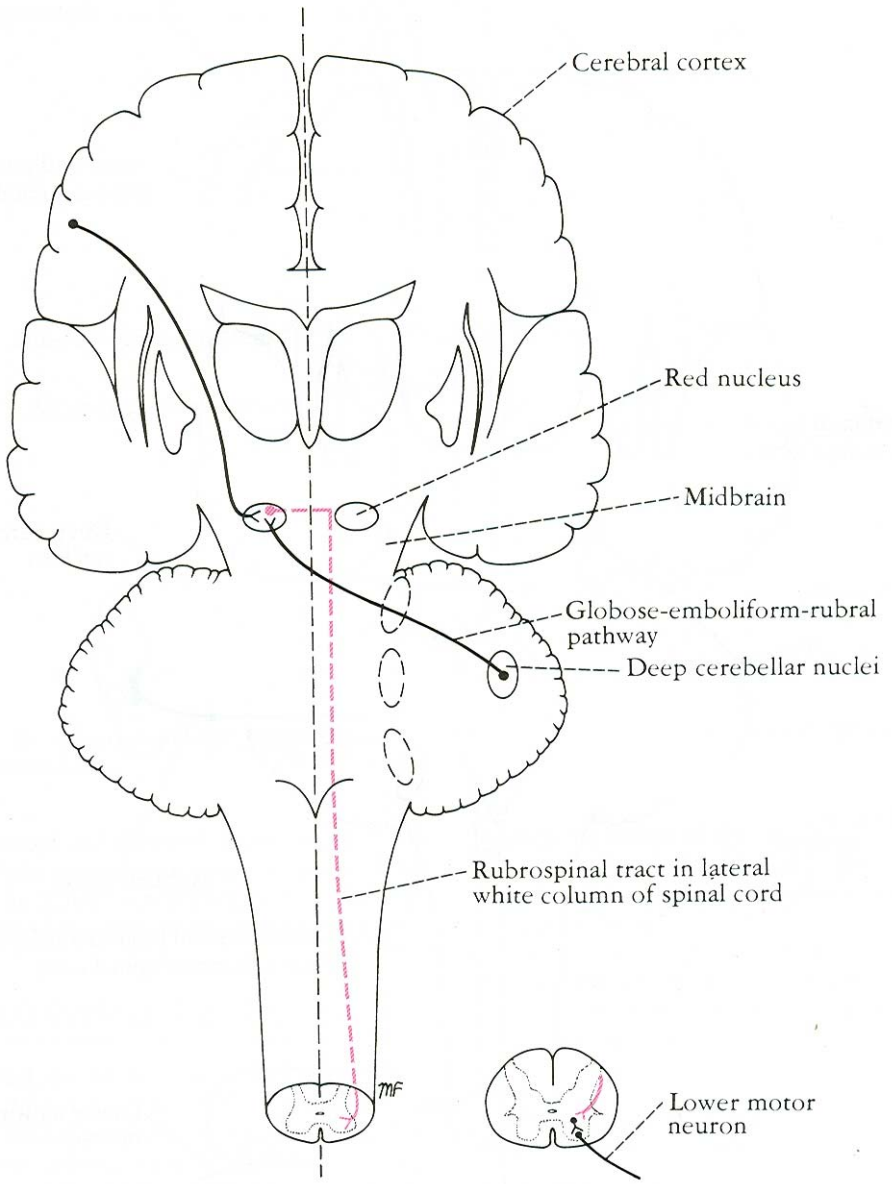
Reticulospinal tract



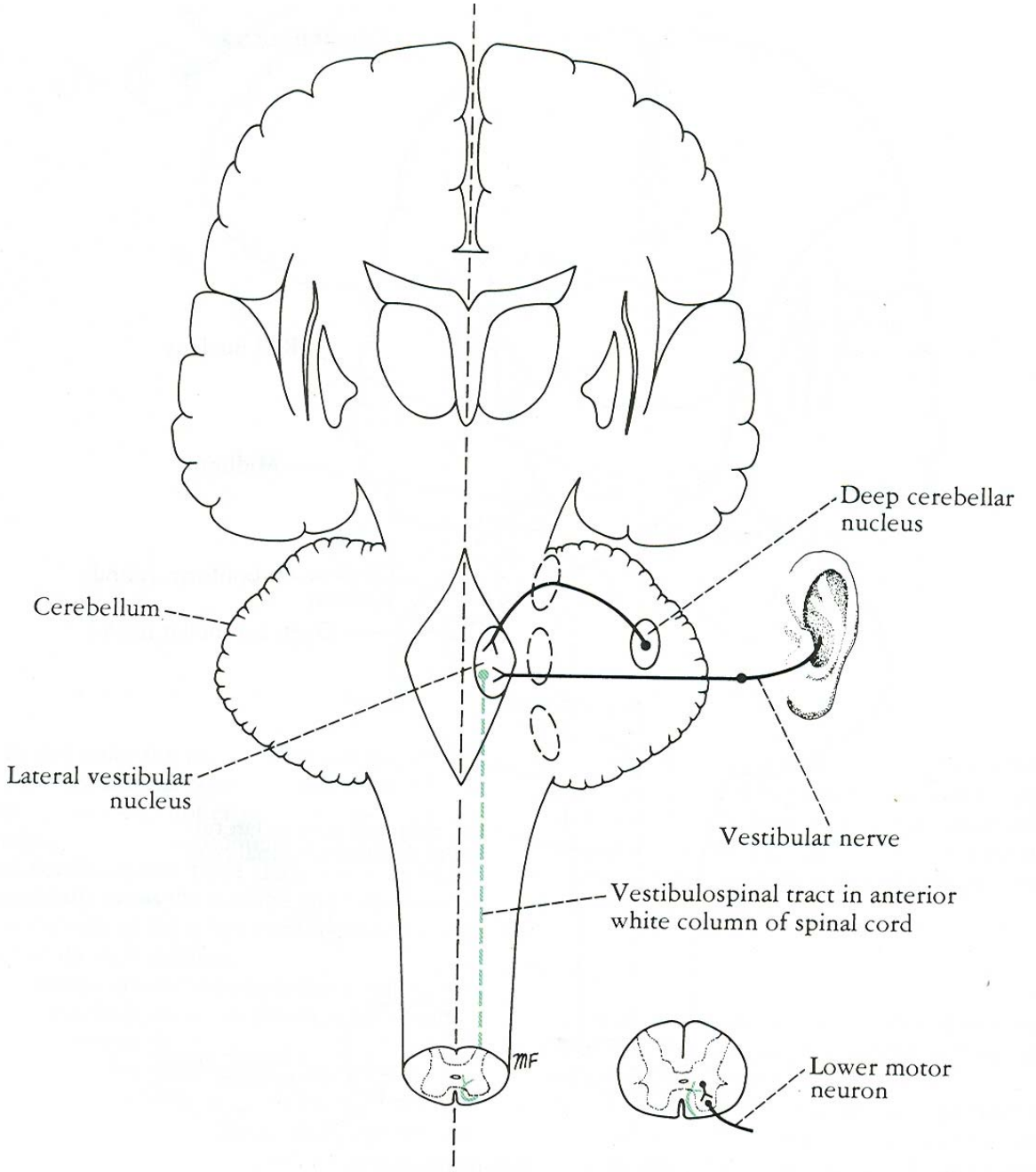
Tectospinal tract



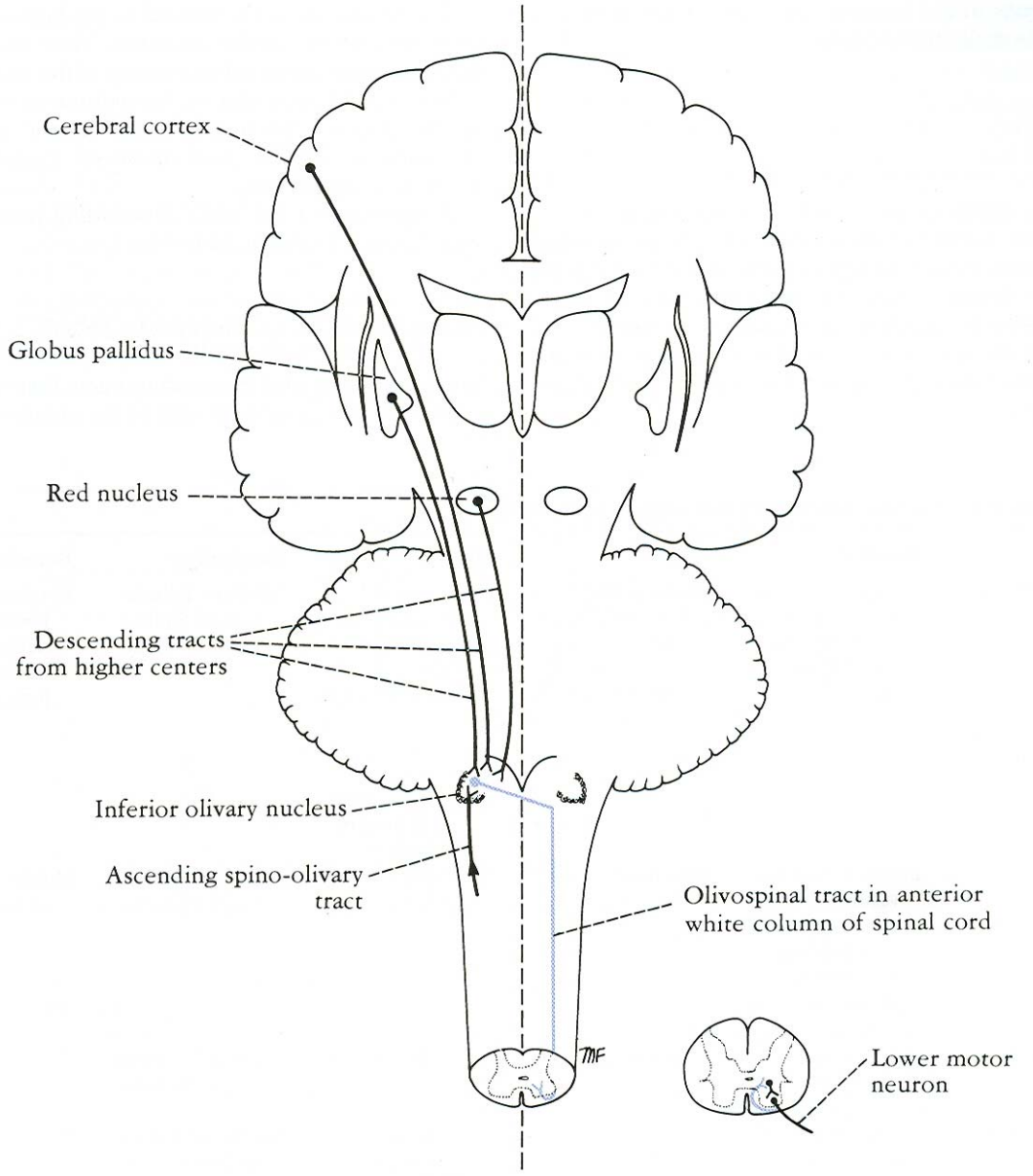
Rubrospinal tract



Vestibulospinal tract



Olivospinal tract



Applied anatomy

- **Upper motor neuron disease:**

  if lesion is above pyramid, effect is contralateral; if below pyramid –ipsilateral

  Sudden: flaccid hemiplegia

  spastic hemiparesis involving loss of tendon reflex, muscle tone.

  After effects: Muscle tone increases progressively

  Spasticity (hyperflexia)

  Absence of abdominal reflexes

- **Lower motor neuron disease**:

  Weakness

  Wasting

  Loss of tendon reflex

  Fasciculation

  Fibrillations