INTRODUCTION TO NEUROANATOMY

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OBJECTIVES

1. State the role of the nervous system
2. Outline the divisions and subdivisions of the nervous system
3. Functional categories of peripheral nerves
4. Review of functional domains of a neuron
5. Familiarize with terms used to describe cell bodies and axons
6. Basic parts of the brain and spinal cord

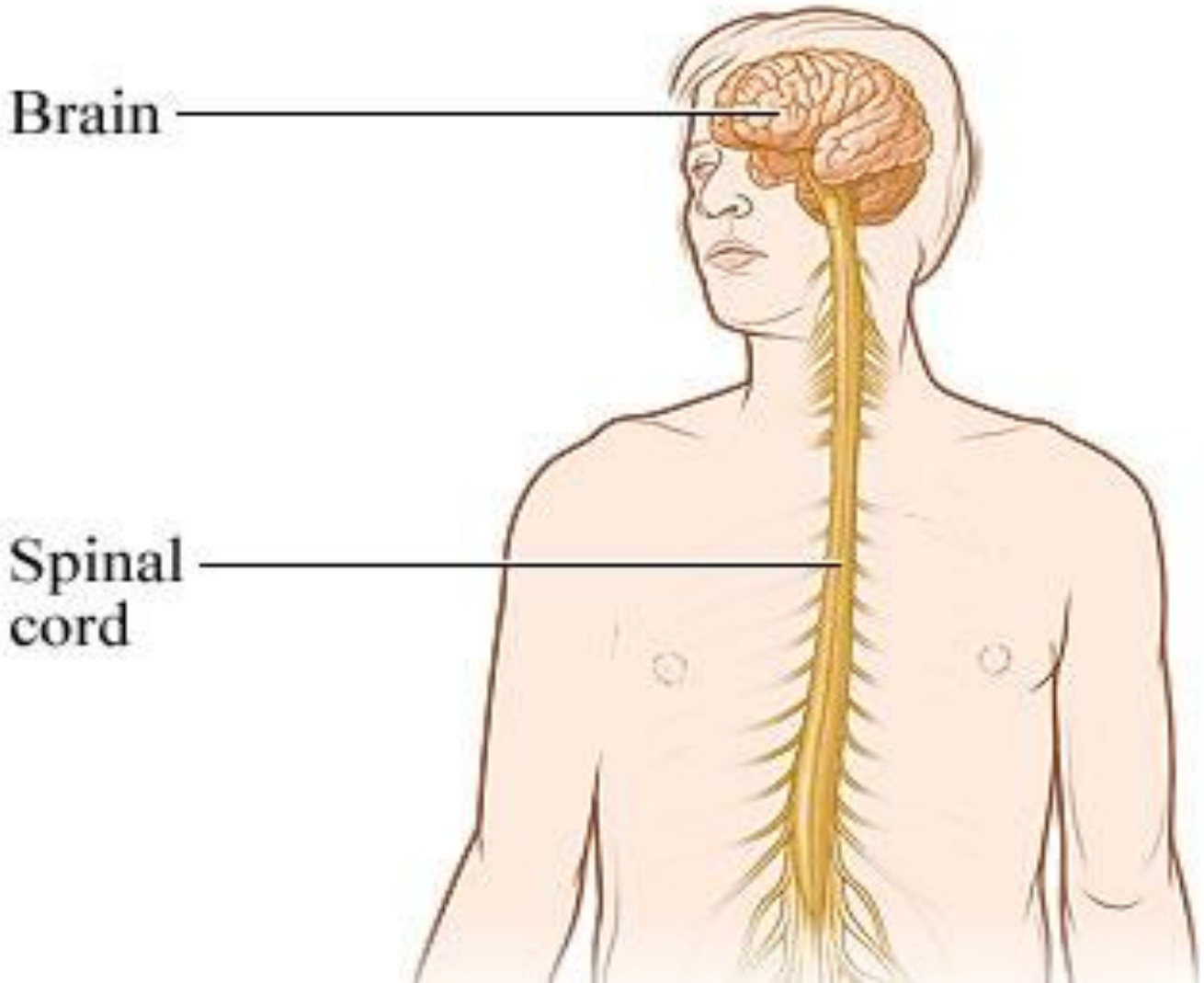
THE ROLE OF THE NERVOUS SYSTEM?

- Coordination and Integration

DIVISIONS OF THE NERVOUS SYSTEM

- Central Nervous System
- Peripheral Nervous System

CENTRAL NERVOUS SYSTEM?



PERIPHERAL NERVOUS SYSTEM

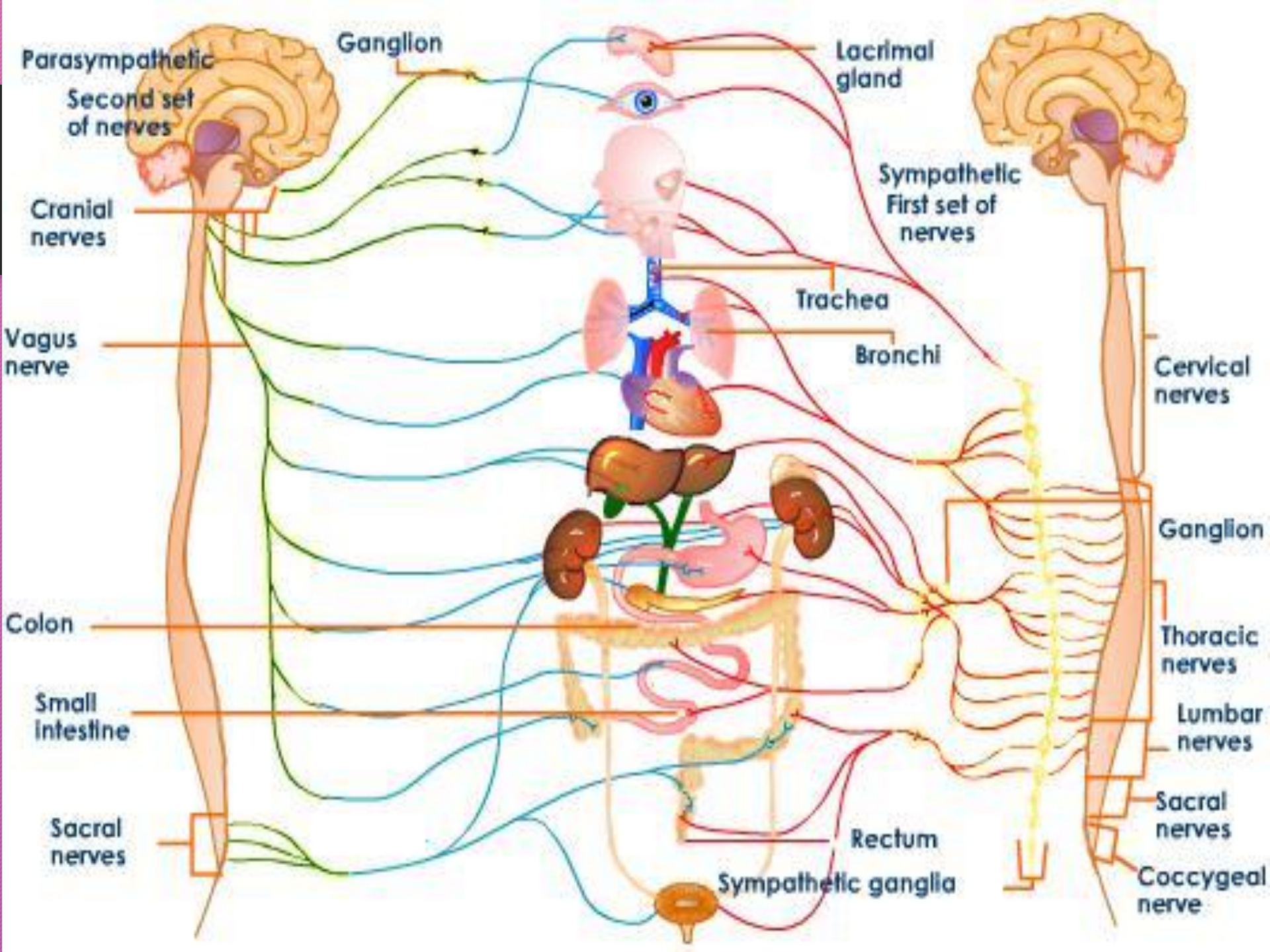
- Anatomically – origin
  - Cranial (12 Pairs)
  - Spinal Nerves (31 Pairs)

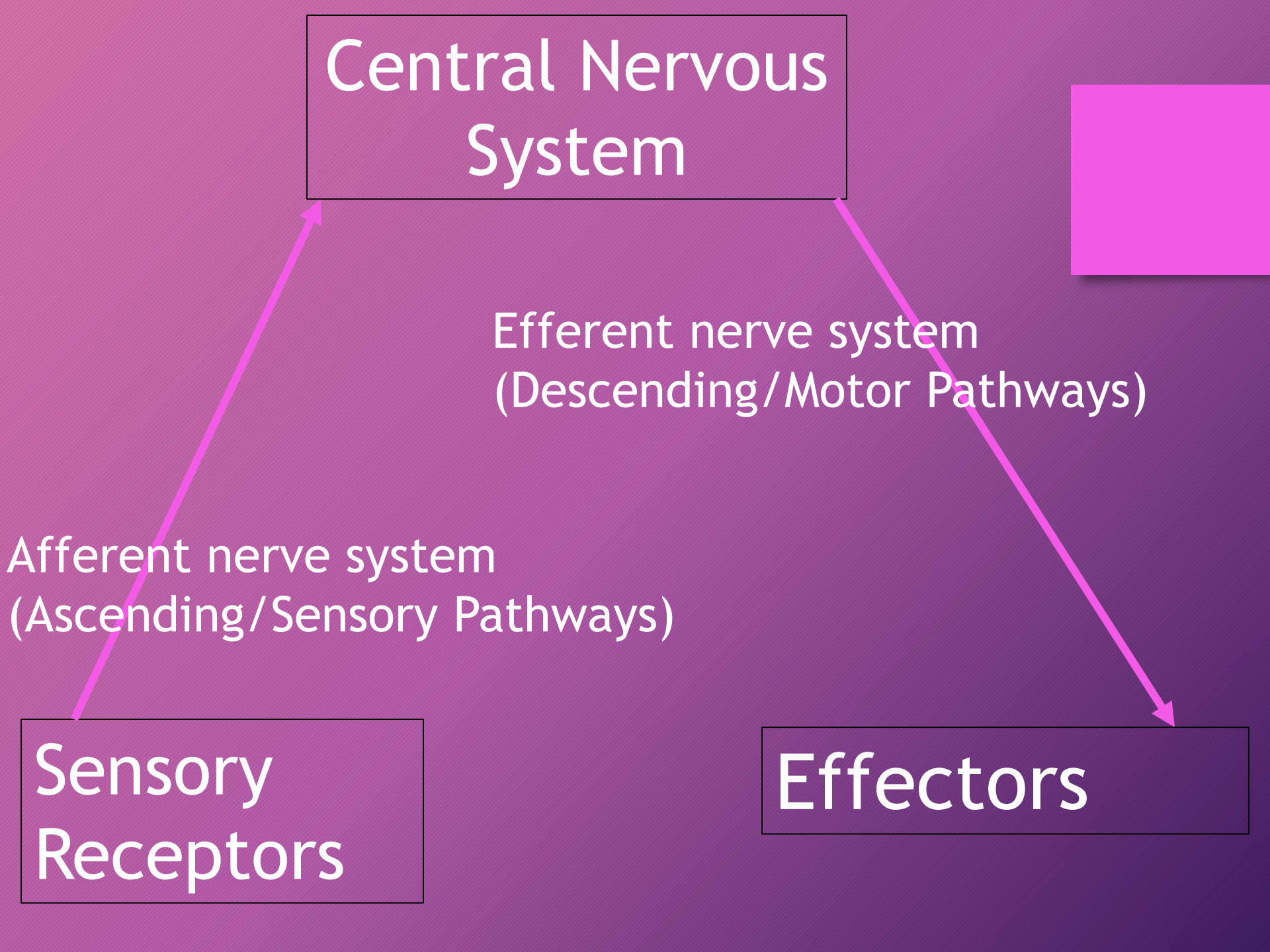
Functional classification

- Impulse direction
  - Afferent (Sensory)
  - Efferent (Motor)

EFFERENT (MOTOR) SYSTEM

- Somatic Nervous System
- Autonomic Nervous System


Parasympathetic
Second set of nerves
Ganglion
Lacrimal gland
Sympathetic First set of nerves
Cranial nerves
Trachea
Vagus nerve
Bronchi
Cervical nerves
Ganglion
Colon
Thoracic nerves
Small intestine
Lumbar nerves
Sacral nerves
Rectum
Sacral nerves
Sympathetic ganglia
Coccygeal nerve


Central Nervous System
Efferent nerve system
(Descending/Motor Pathways)
Afferent nerve system
(Ascending/Sensory Pathways)
Sensory Receptors
Effectors

Functional modalities of peripheral nerves

1. General/Special
2. Somatic/Visceral
3. Afferent/Efferent

Functional modalities of peripheral nerves

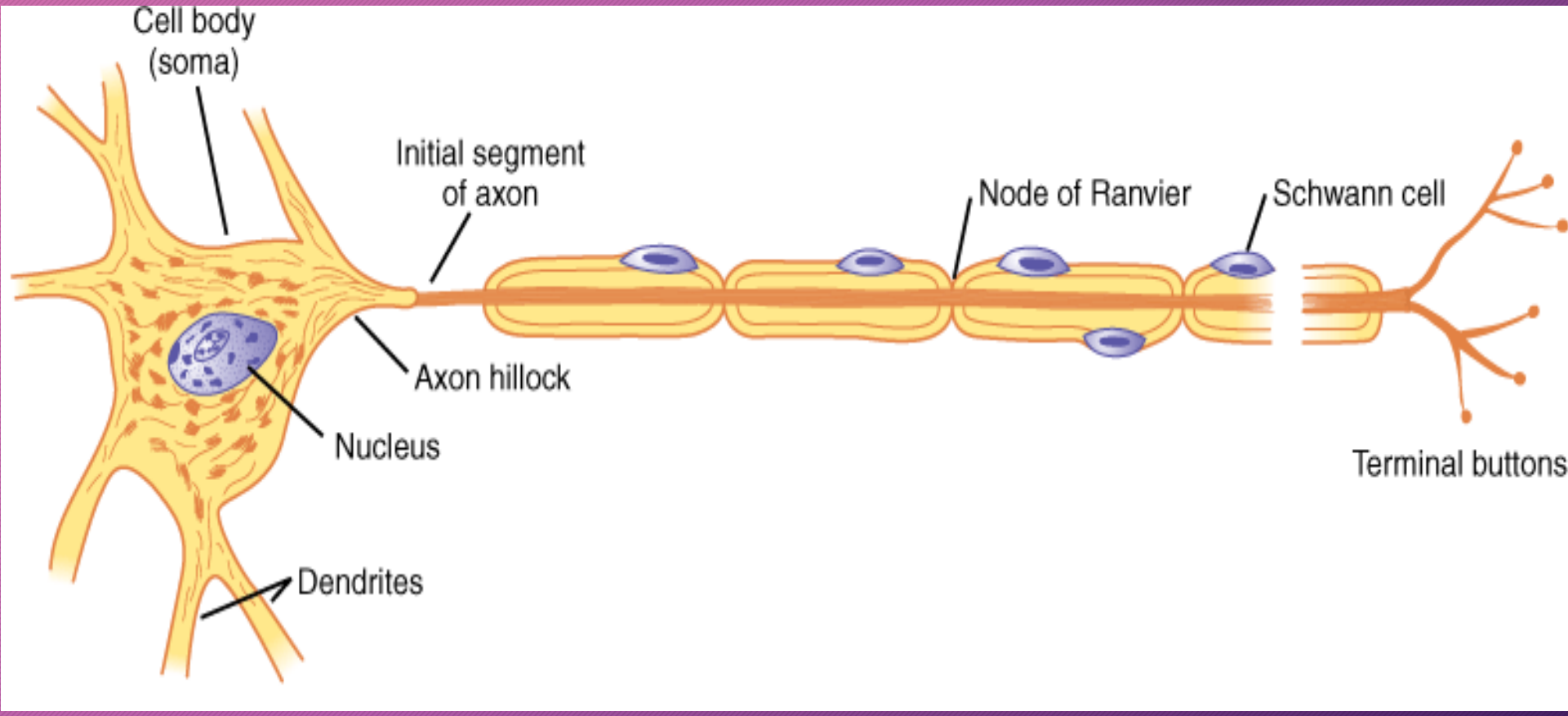
1. GSE
2. GSA
3. GVE
4. GVA
5. SVE
6. SVA
7. SSA

COMPONENTS OF NERVOUS TISSUE

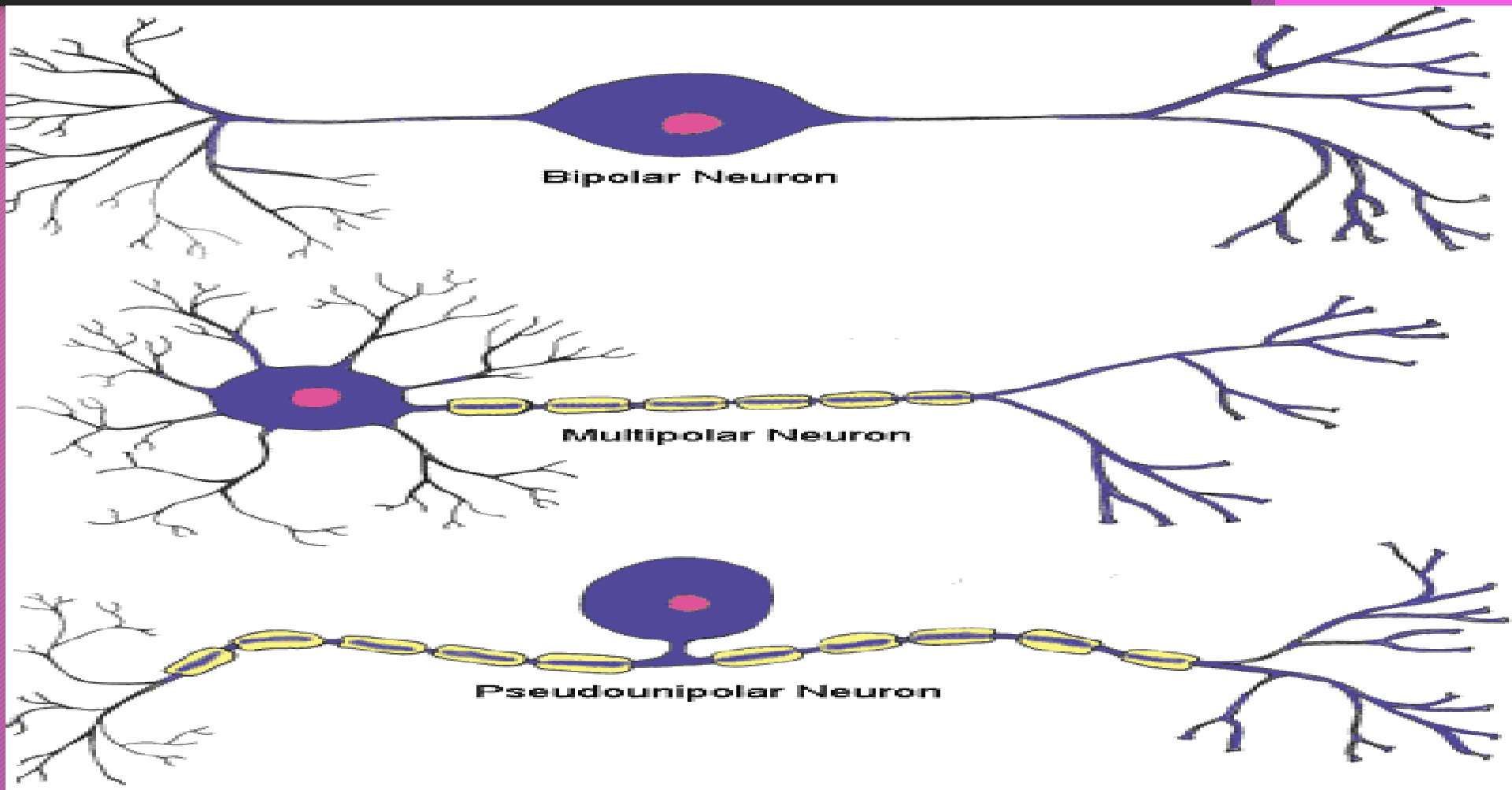
- Functional Cells
  - Neurons or Nerve Cells
- Supporting Cells
  - Various Types of Glial Cells

FUNCTIONAL DOMAINS:

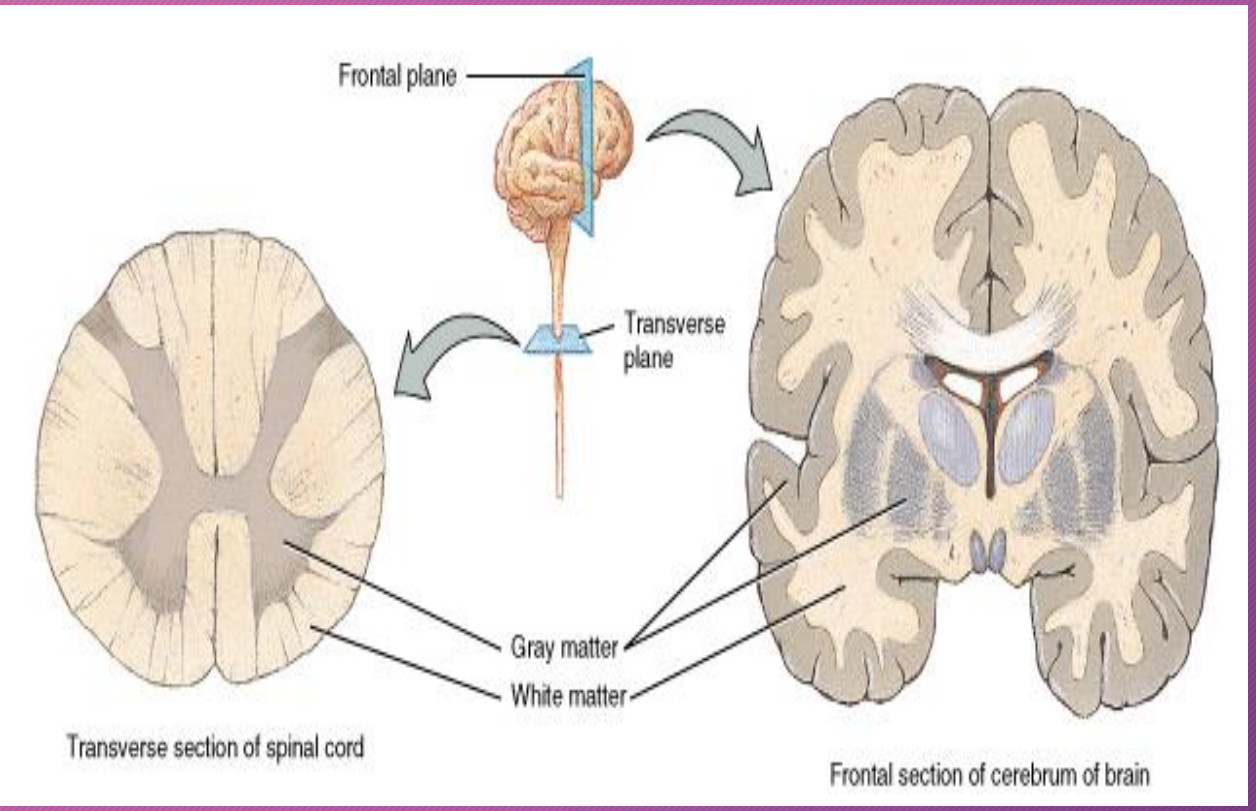
Receptive, Integration, Transmission



STRUCTURAL CLASSIFICATION

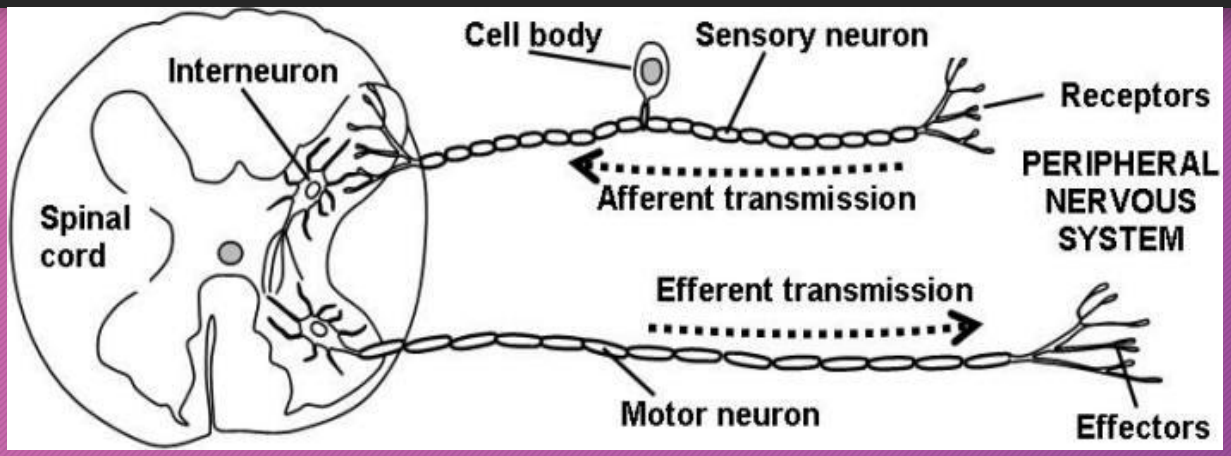


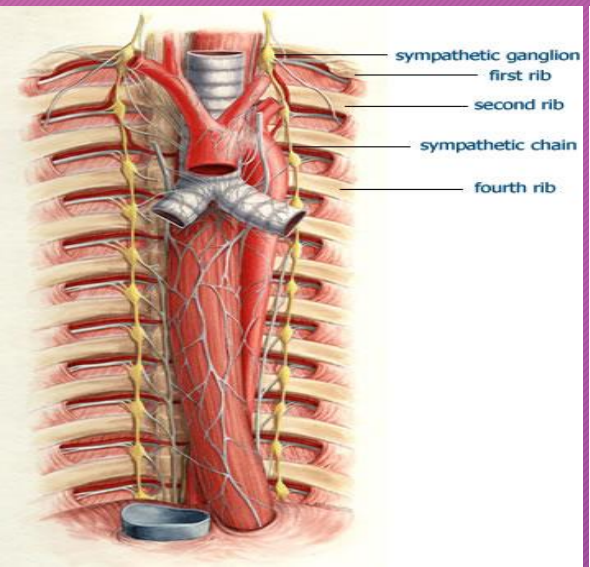
Terms used to describe cell bodies

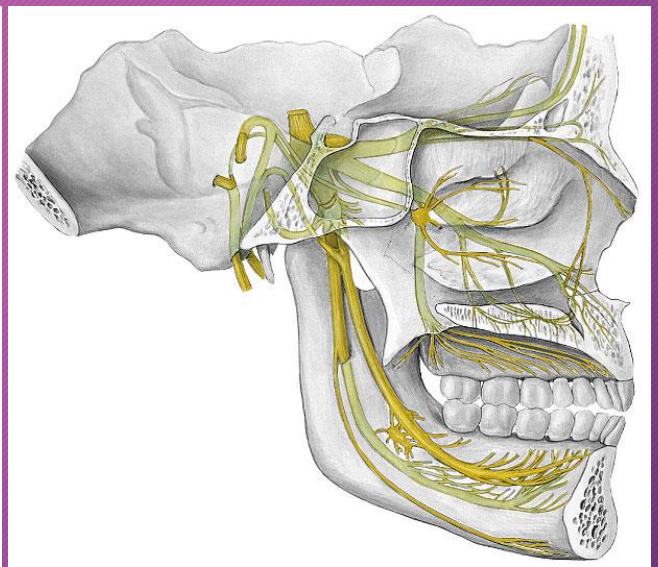


- Grey Matter
- Cortex
- Nucleus
- Ganglion

Terms used to describe cell bodies

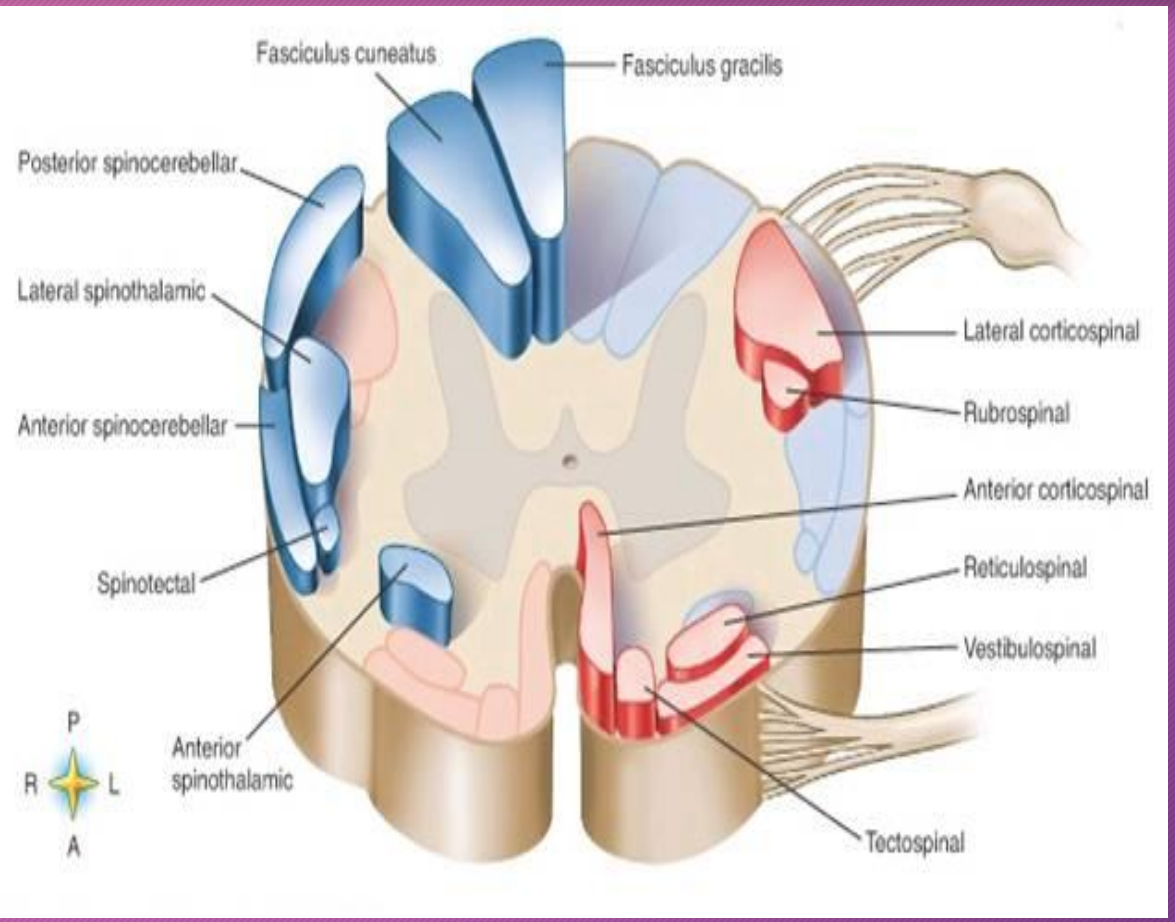






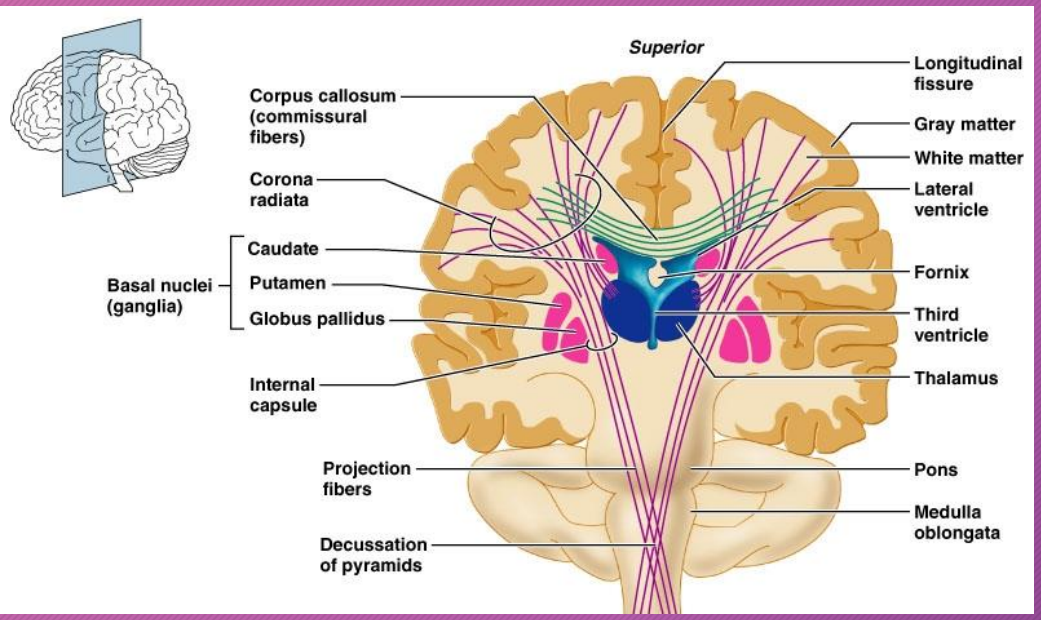
- Grey Matter
- Cortex
- Nucleus
- Ganglion

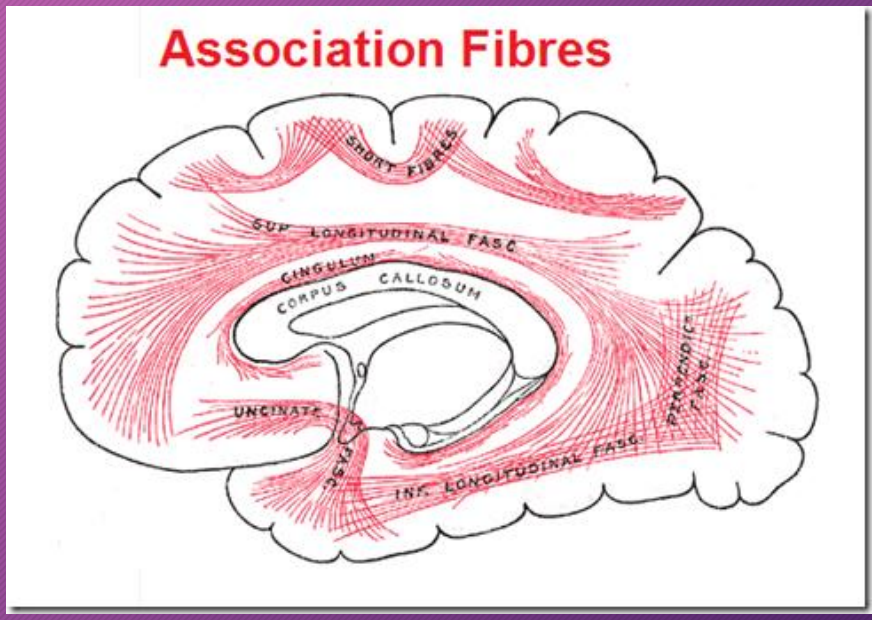
Terms used to describe axons:

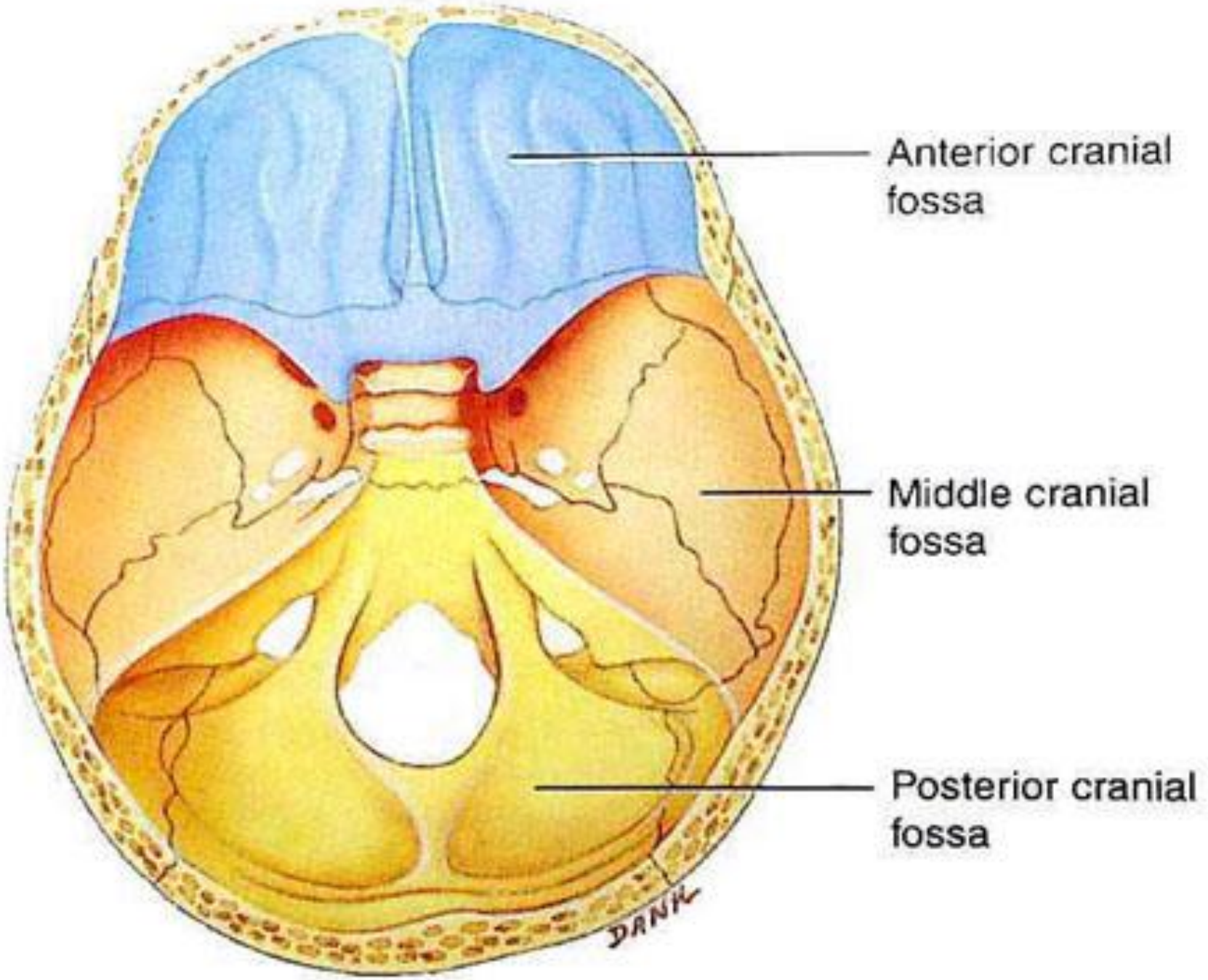


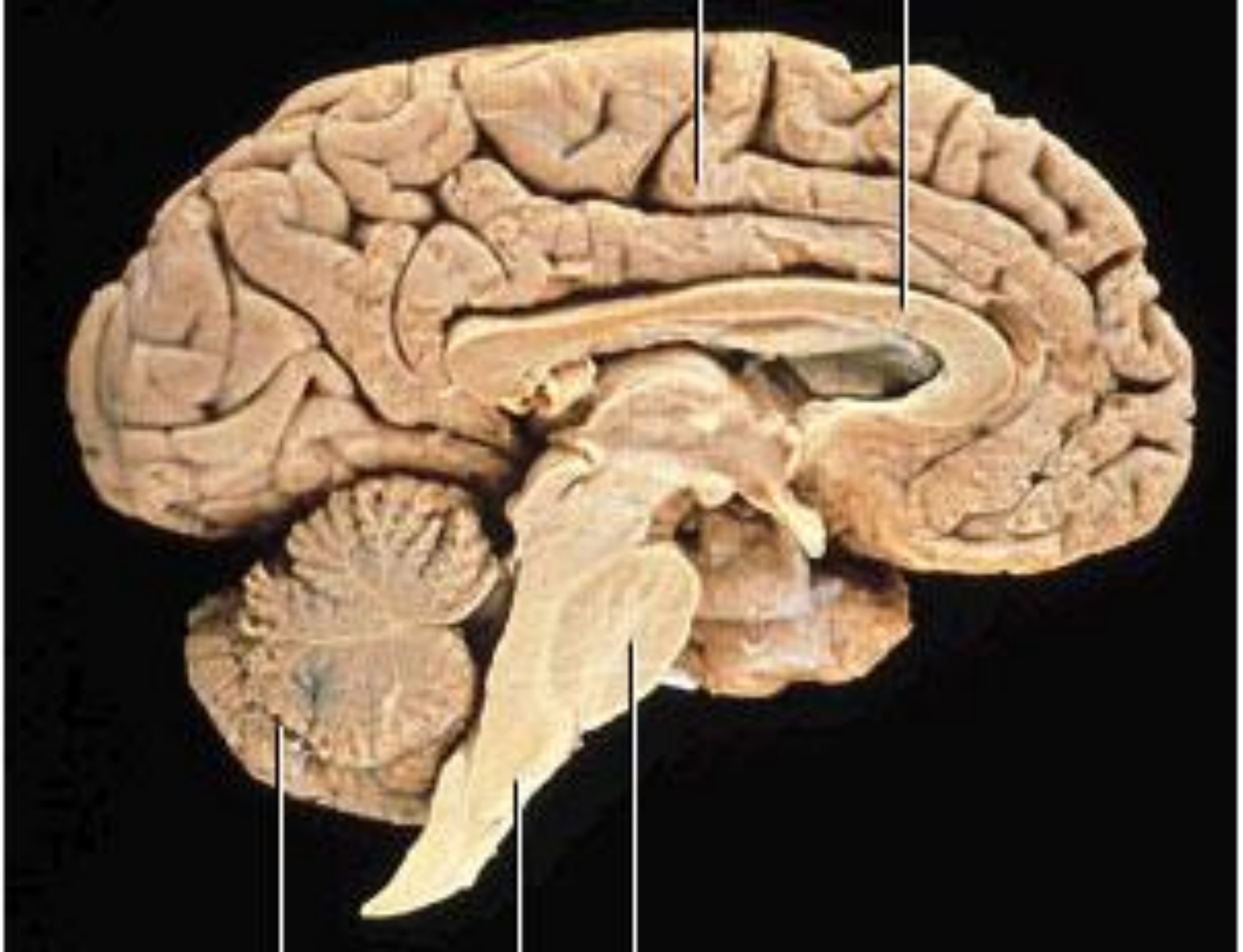
- Fibers
- Tract
- Fasciculus
- Funiculus
- Lemniscus
- Peduncle

Fiber types of the cerebral cortex

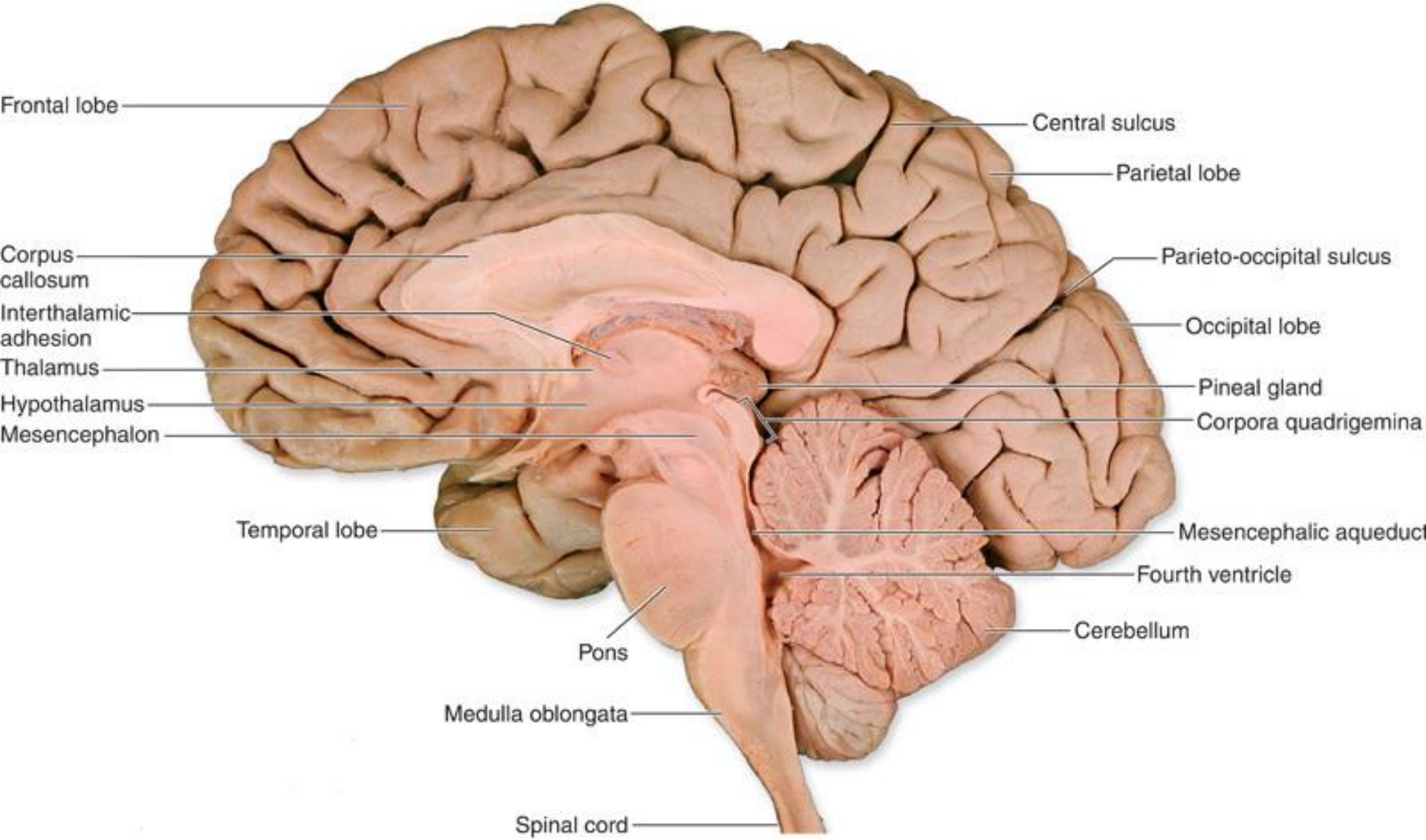




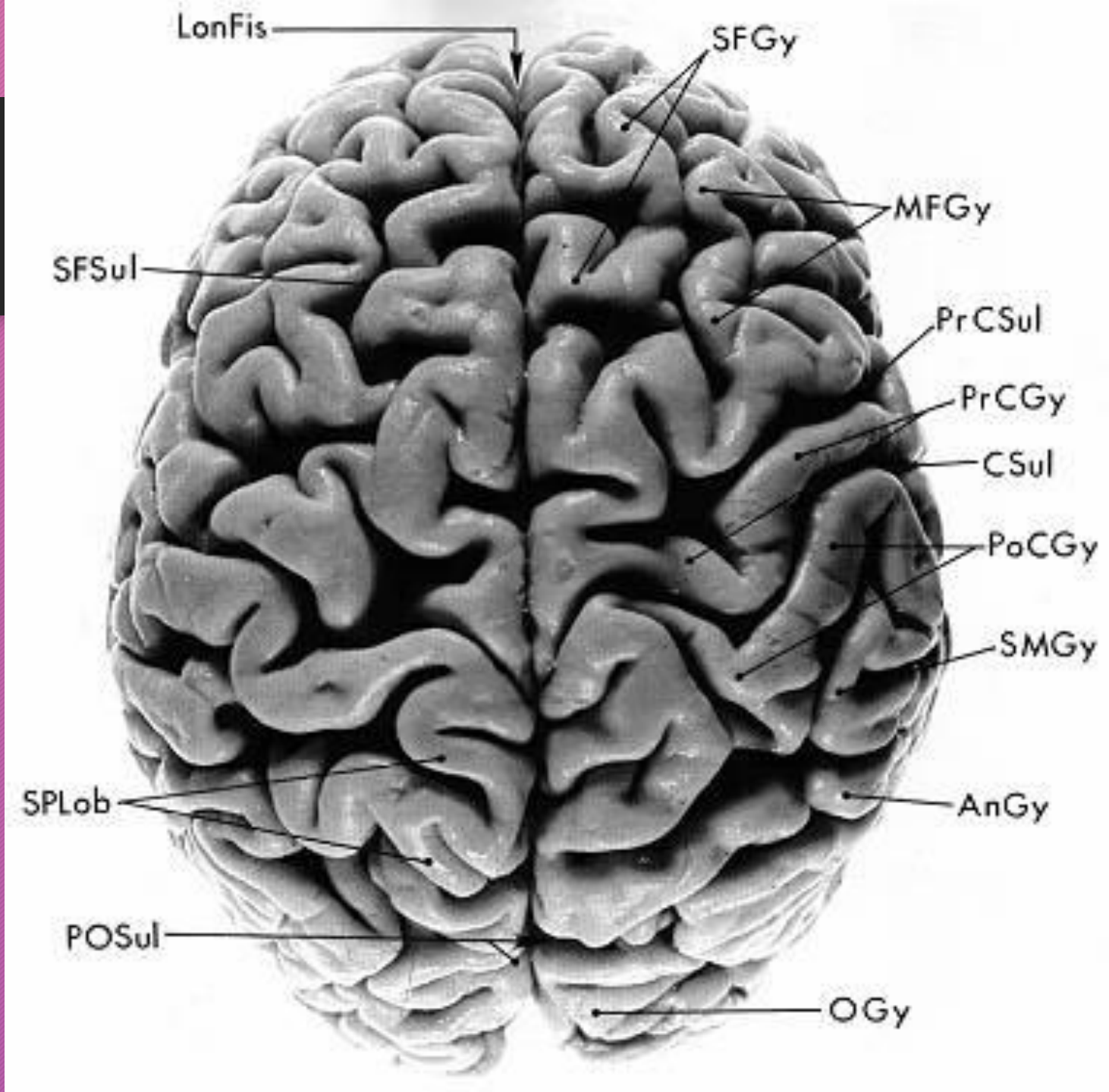

Anterior cranial fossa
Middle cranial fossa
Posterior cranial fossa
DANK

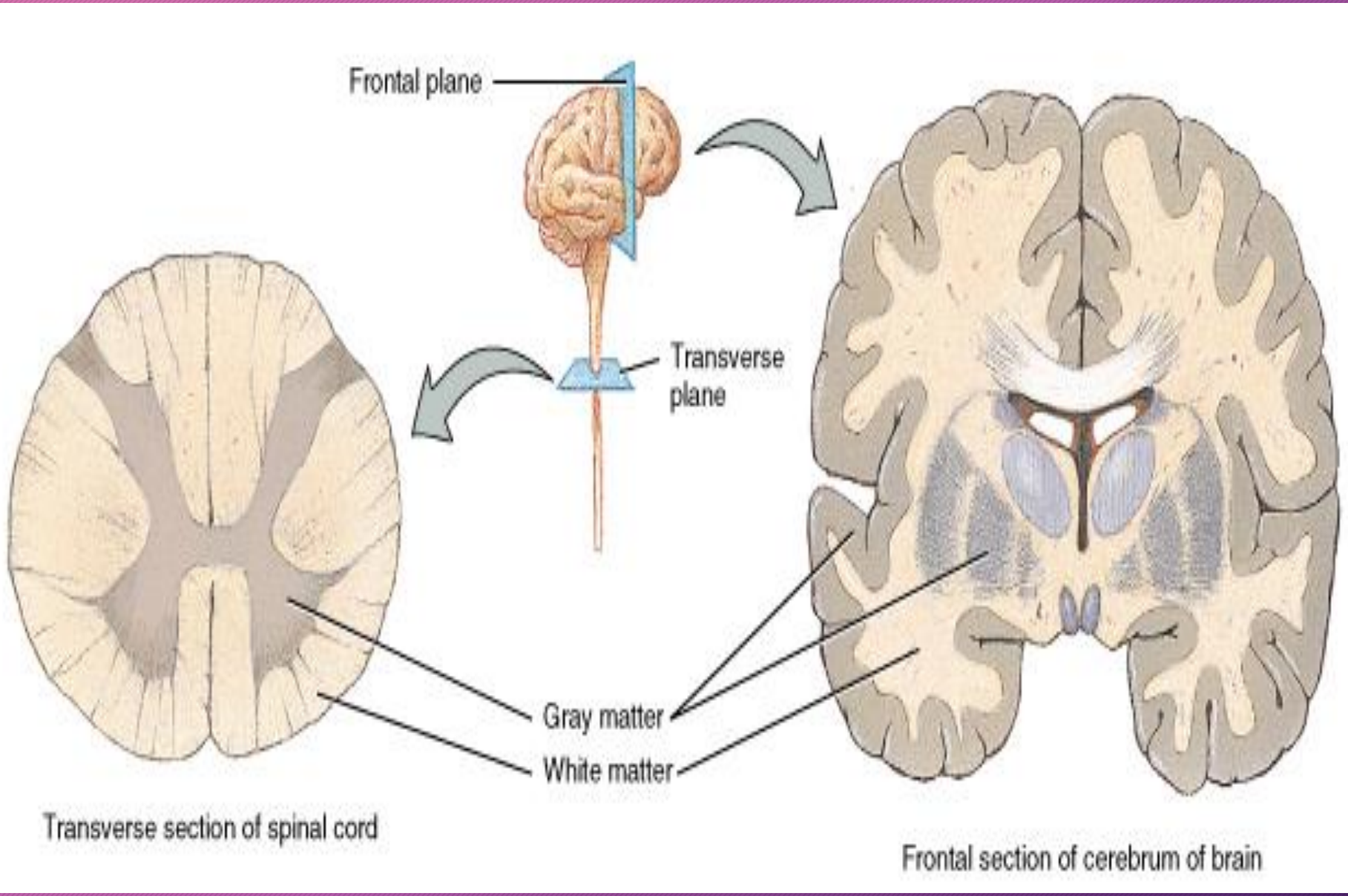


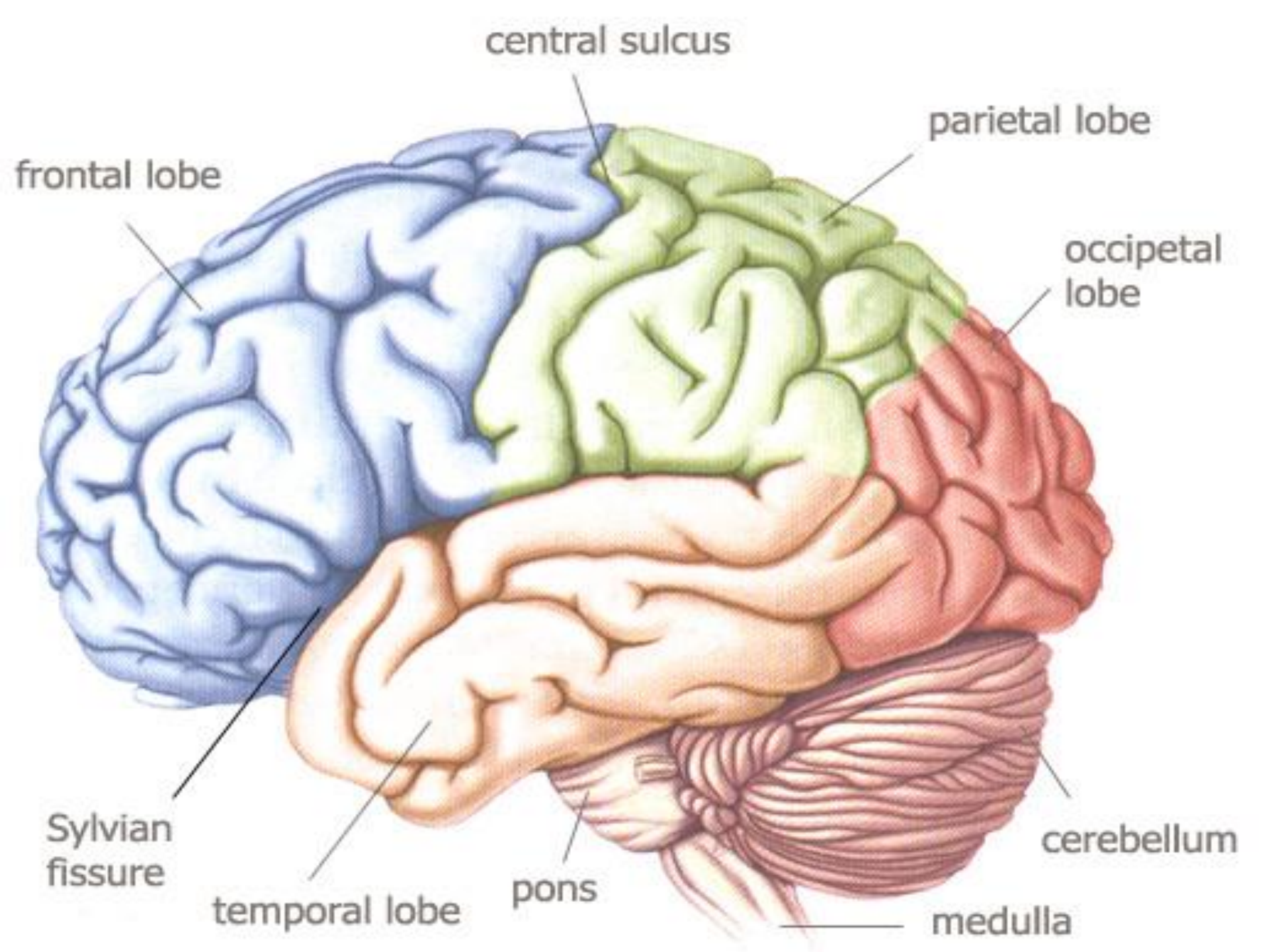
DIENCEPHALON

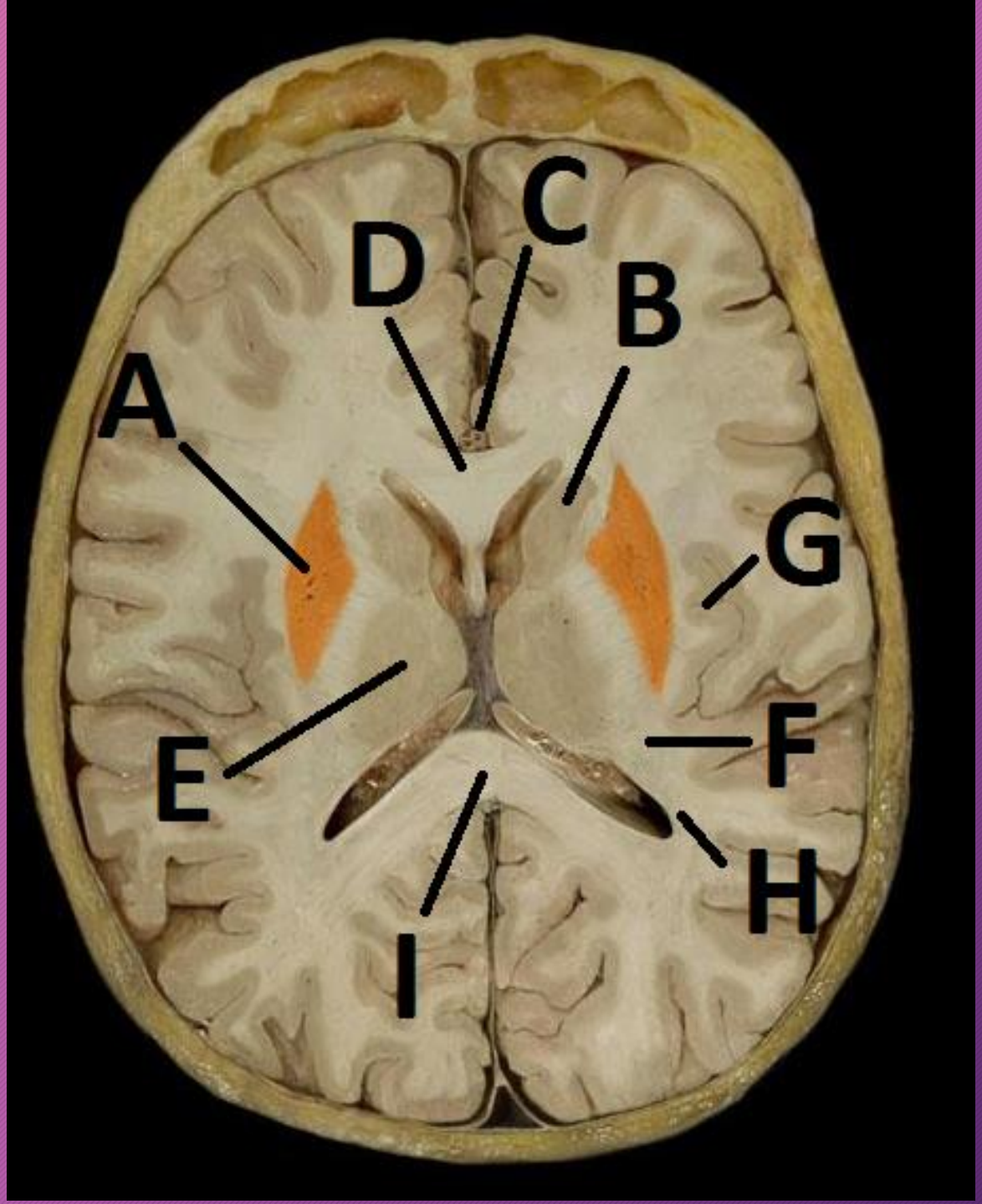


(c) Midsagittal view


LonFis
SFGy
MFGy
SFSul
PrCSul
PrCGy
CSul
PoCGy
SMGy
SPLob
AnGy
POSul
OGy


Frontal plane
Transverse plane
Gray matter
White matter
Transverse section of spinal cord
Frontal section of cerebrum of brain


central sulcus
parietal lobe
frontal lobe
occipetal lobe
Sylvian fissure
temporal lobe
pons
cerebellum
medulla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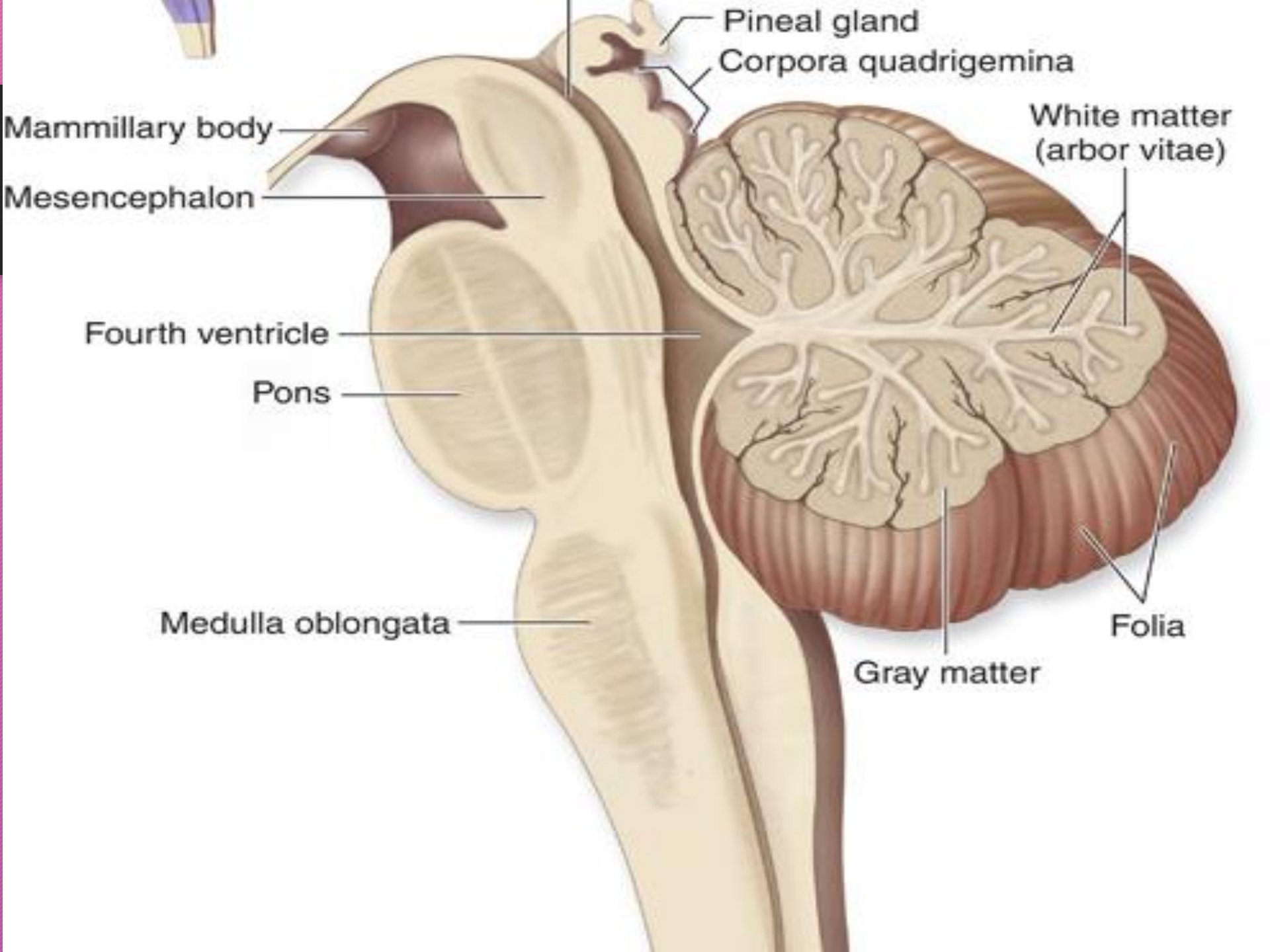
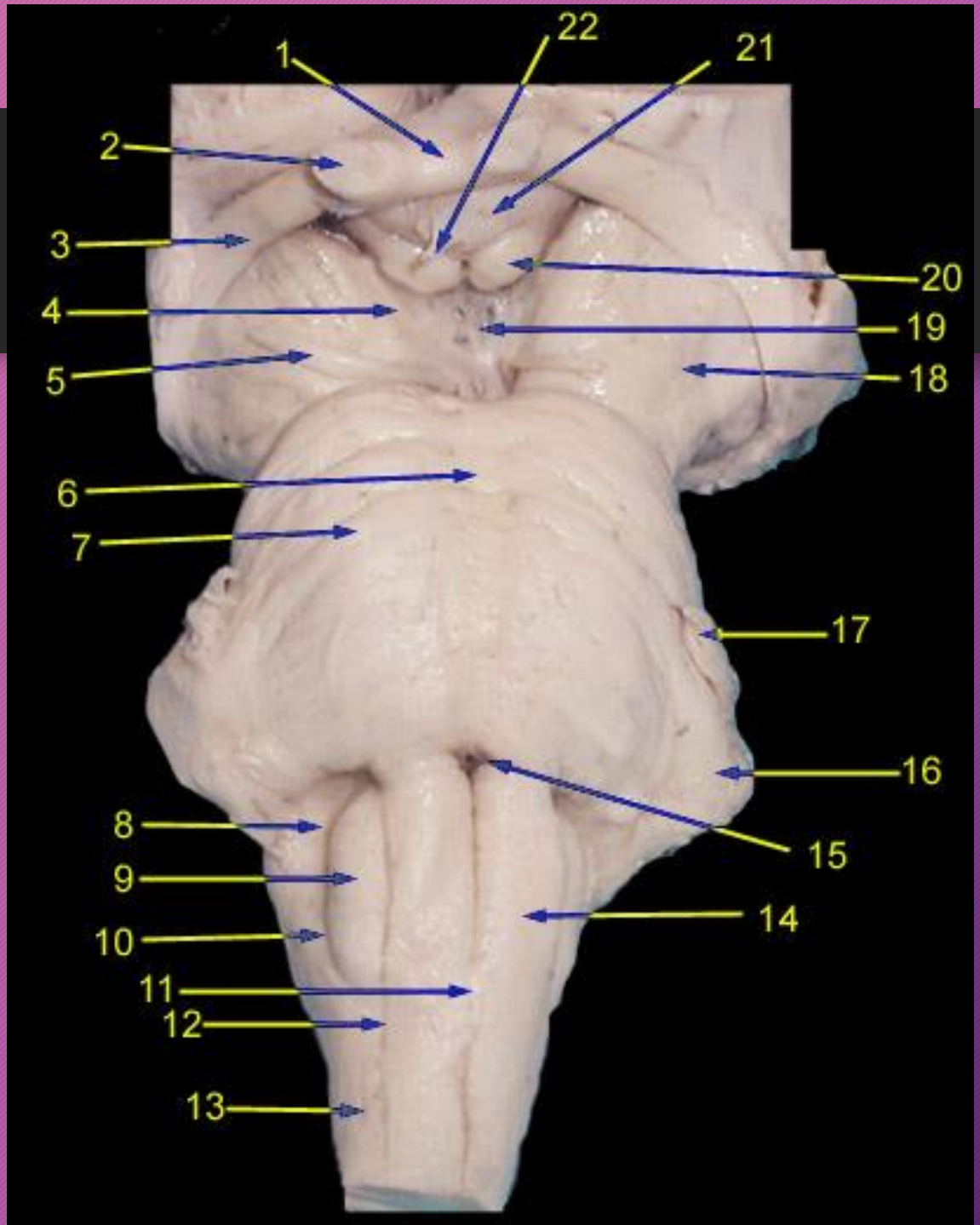

Pineal gland
Corpora quadrigemina
Mammillary body
Mesencephalon
White matter
(arbor vitae)
Fourth ventricle
Pons
Medulla oblongata
Folia
Gray matter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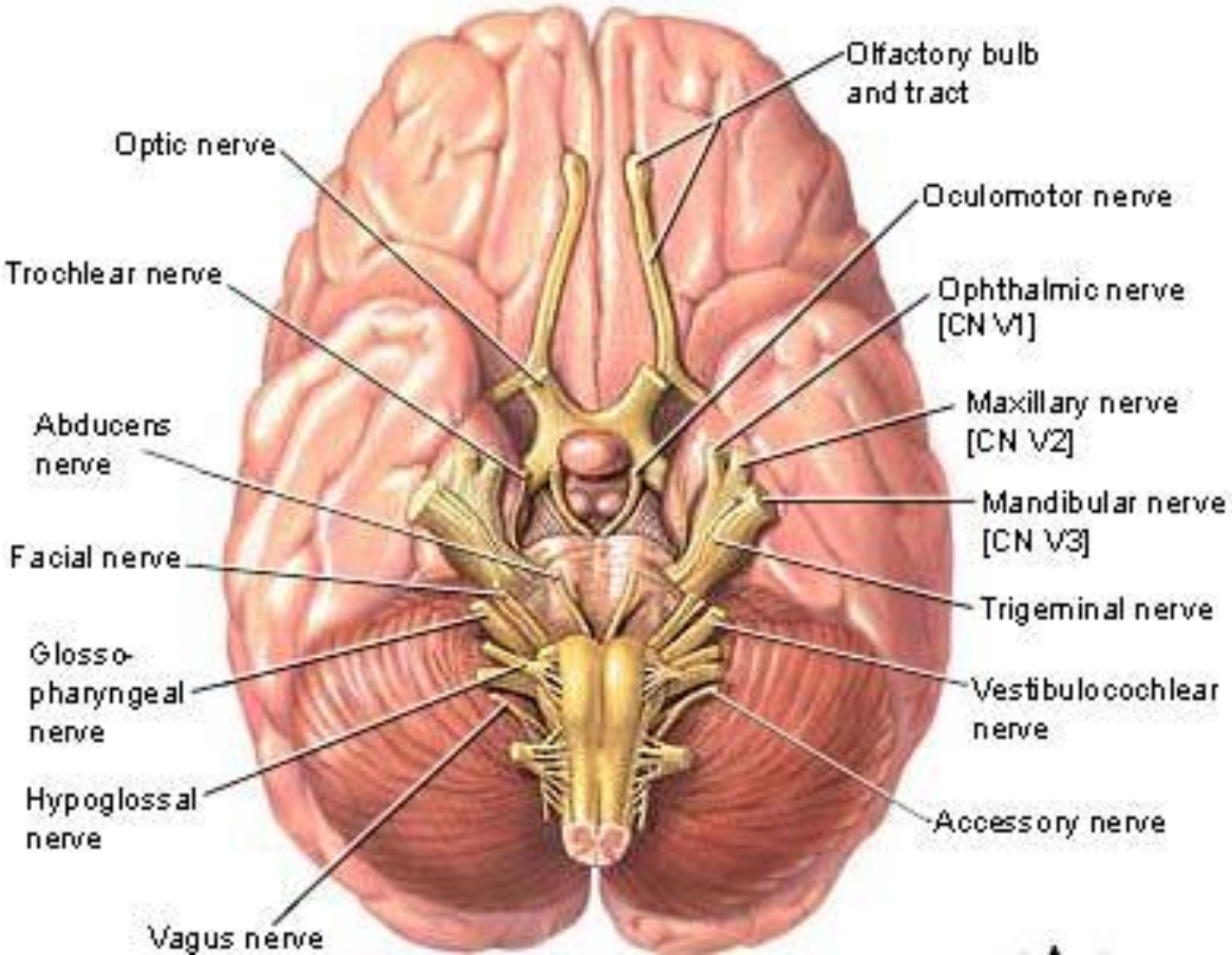
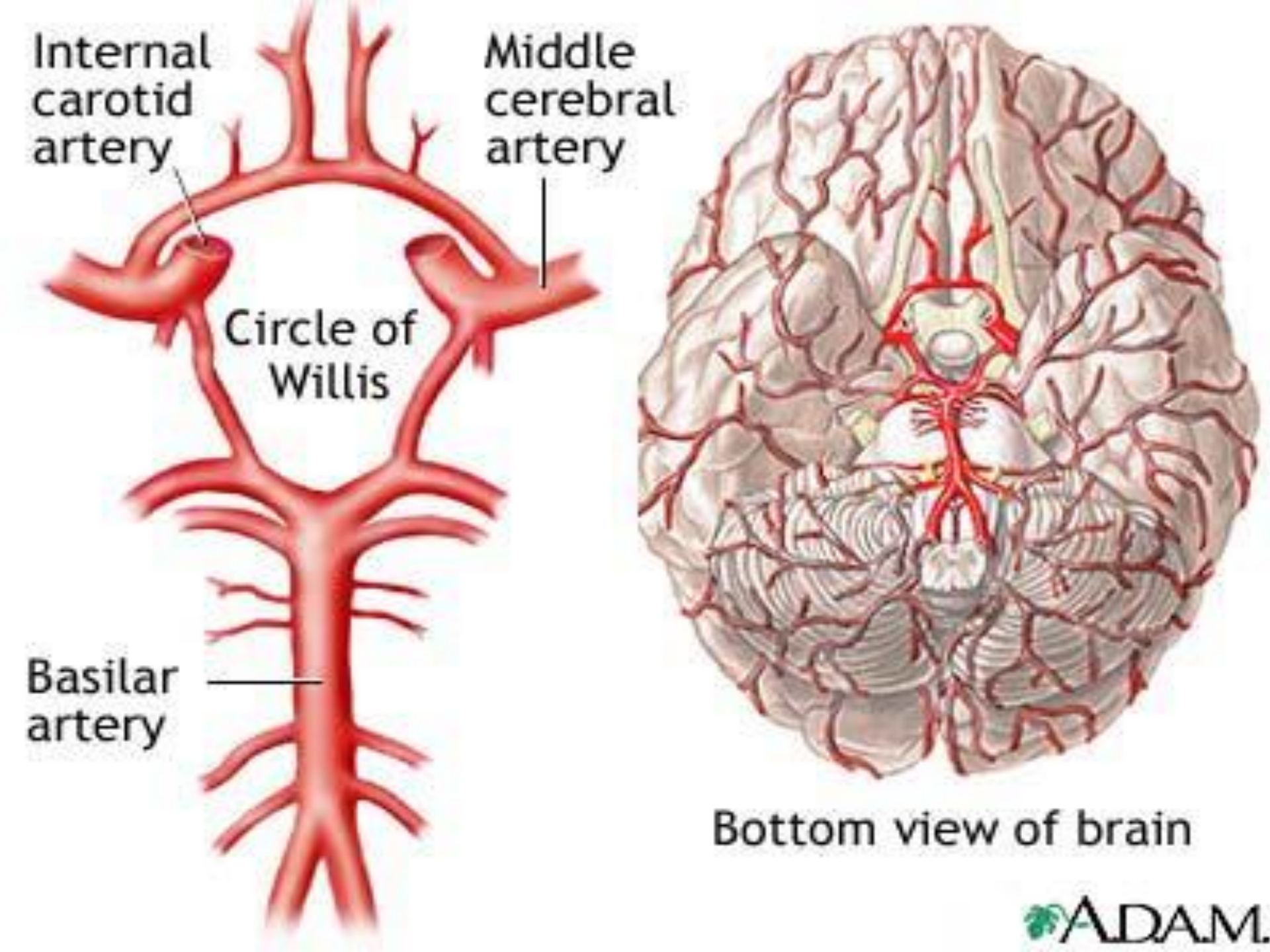
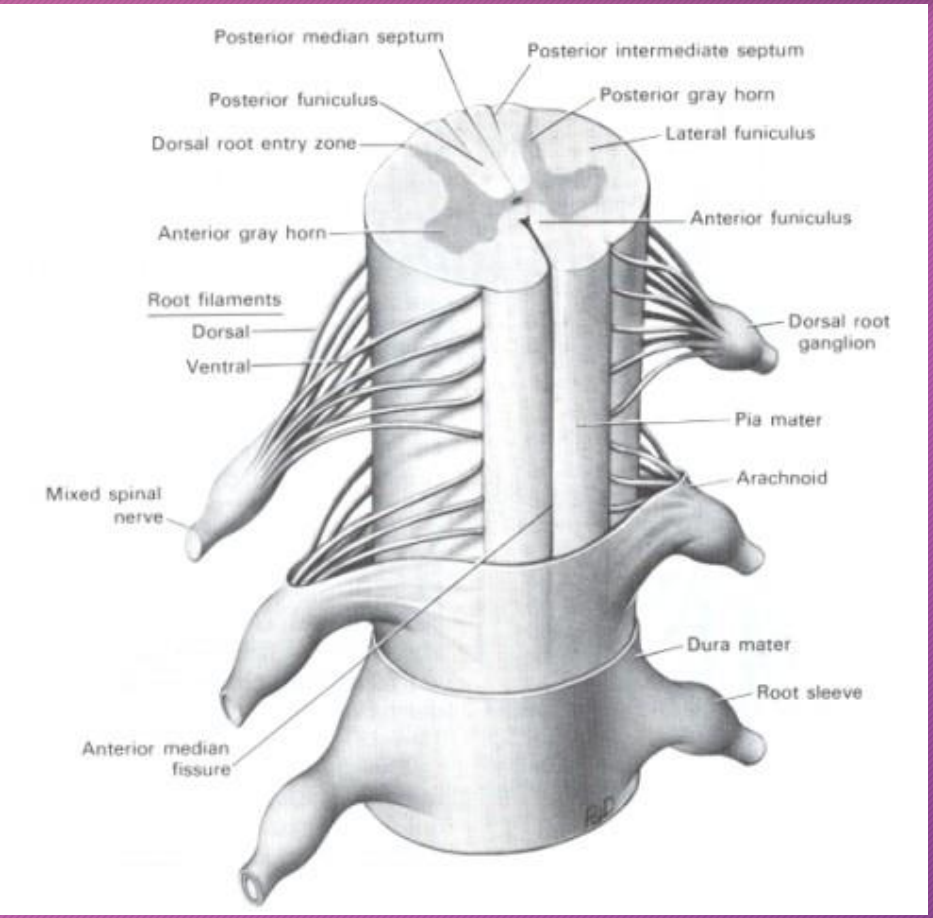

Olfactory bulb and tract
Optic nerve
Oculomotor nerve
Trochlear nerve
Ophthalmic nerve [CN V1]
Maxillary nerve [CN V2]
Abducens nerve
Mandibular nerve [CN V3]
Facial nerve
Trigeminal nerve
Glosso-pharyngeal nerve
Vestibulocochlear nerve
Hypoglossal nerve
Accessory nerve
Vagus nerve

Cranial nerve anatomy

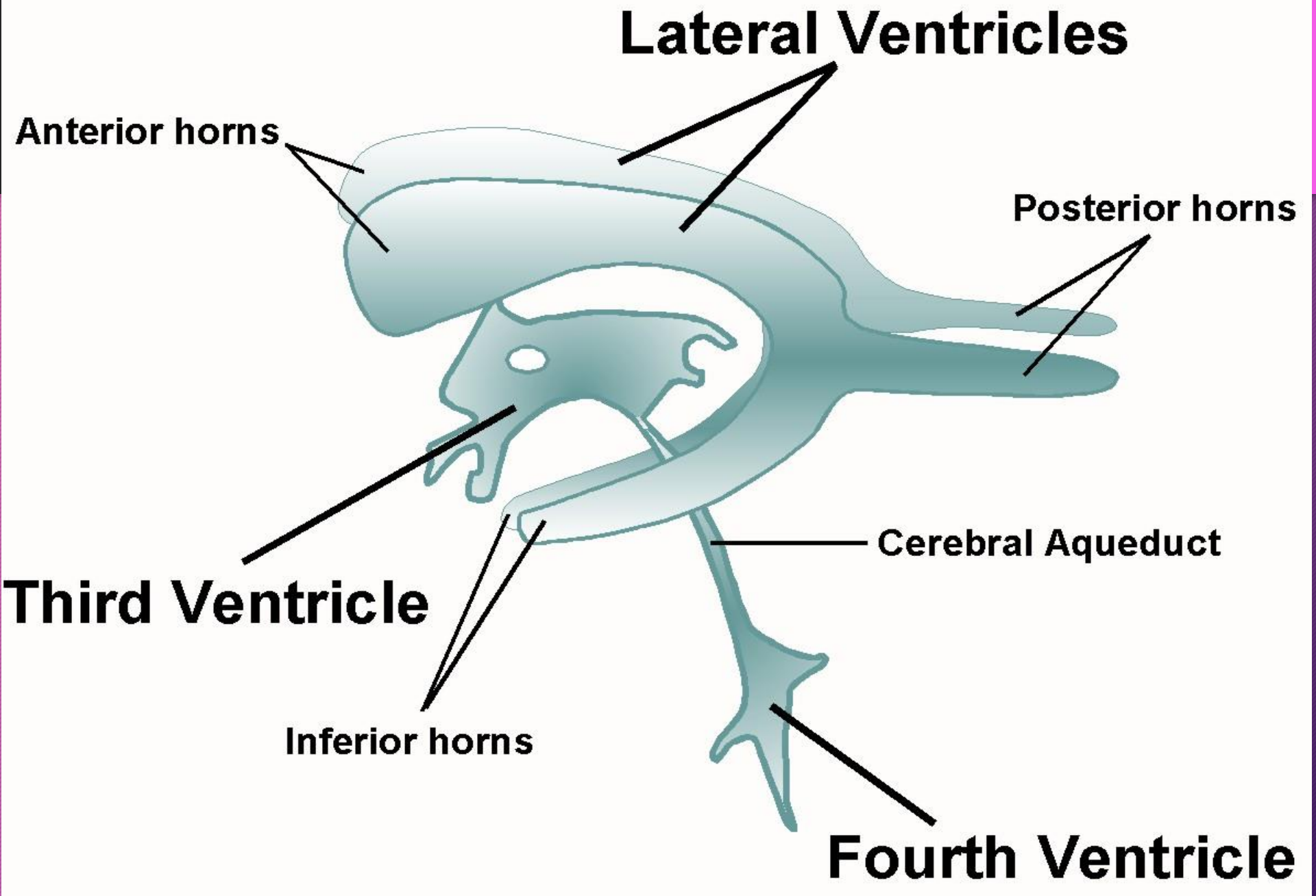
1. Origin/Central connection (Nuclei)
2. Functional components
3. Brainstem attachment/exit
4. Course (intracranial; foramen; extracranial)
5. Branches and distribution
6. Clinical anatomy (sites and effects of injury)


Internal carotid artery
Middle cerebral artery
Circle of Willis
Basilar artery
Bottom view of brain
A.D.A.M.

Spinal cord


Posterior median septum
Posterior intermediate septum
Posterior funiculus
Posterior gray horn
Dorsal root entry zone
Lateral funiculus
Anterior funiculus
Anterior gray horn
Root filaments
Dorsal
Ventral
Dorsal root ganglion
Pia mater
Arachnoid
Mixed spinal nerve
Dura mater
Root sleeve
Anterior median fissure

VENTRICULAR SYSTEM



THANK YOU