

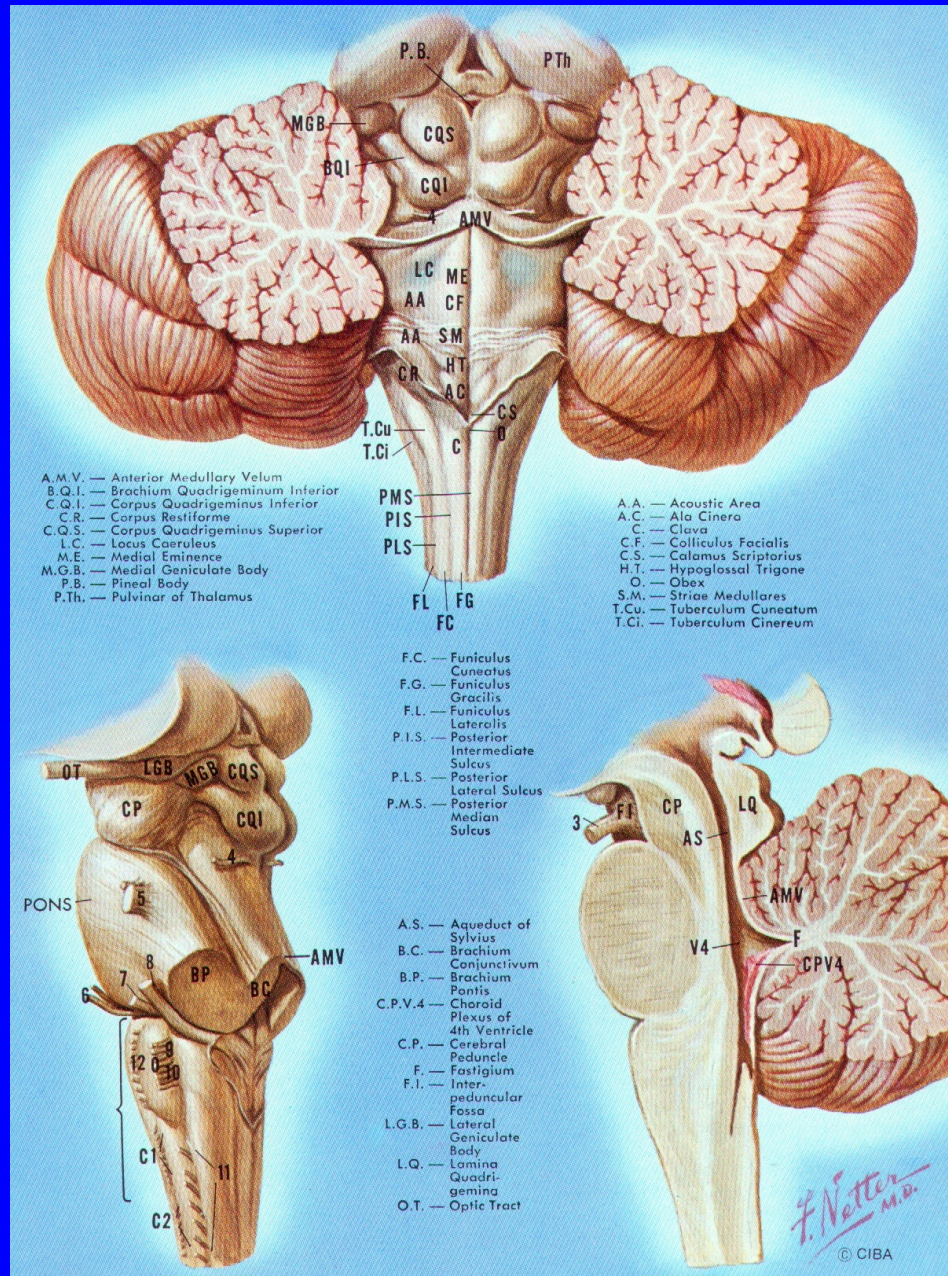
BRAIN STEM CRANIAL NERVES

Prof. M. Gavriiuc,

*Department of Neurology, Medical
and Pharmaceutical Nicolae
Testemitsanu State University,
Republic of Moldova*

ANATOMY of the BRAIN STEM:

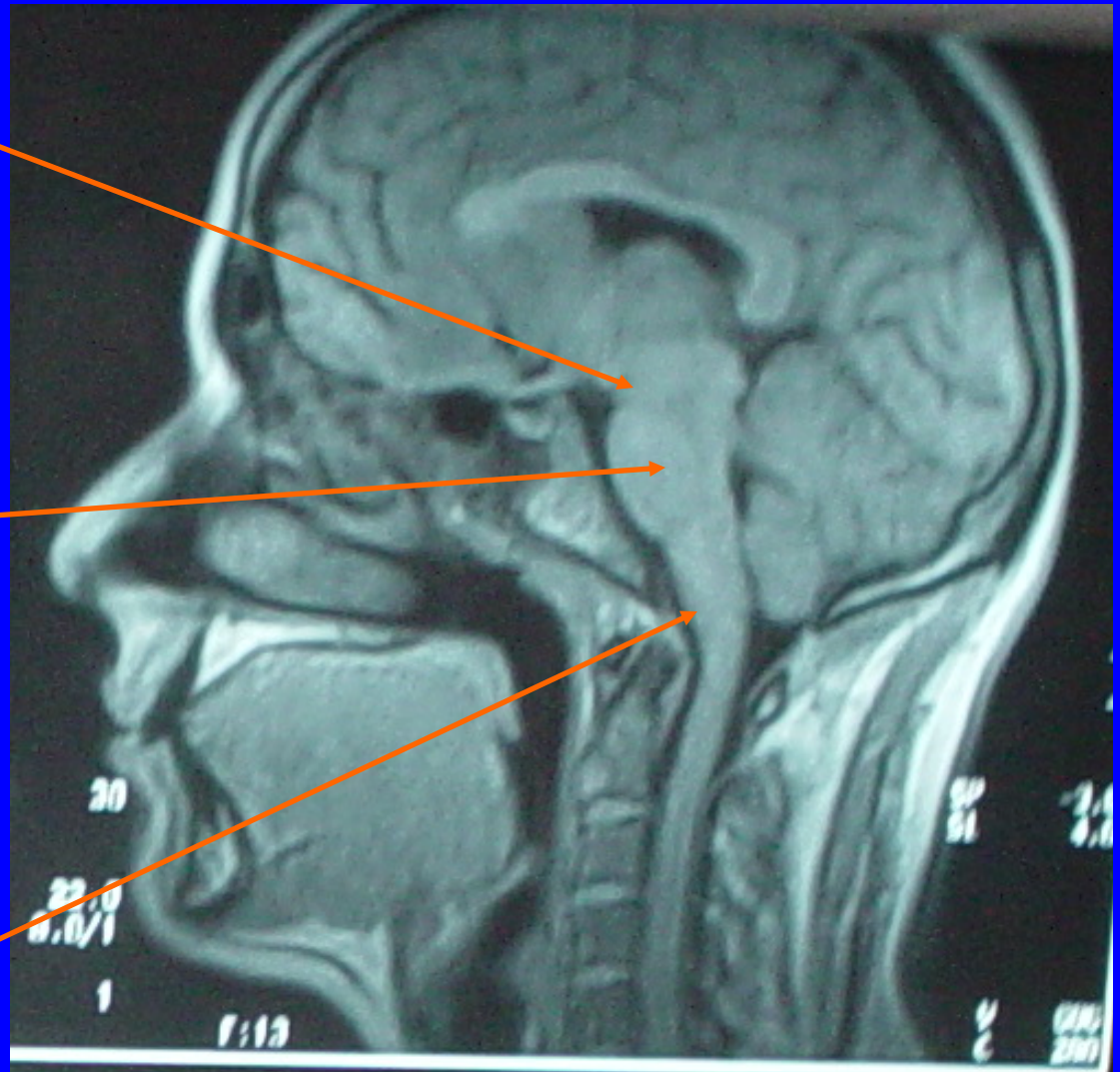
- Medulla,
- Pons, and
- Midbrain



3. Midbrain
(mesencephalon)

2. Pons, and
(metencephalon)

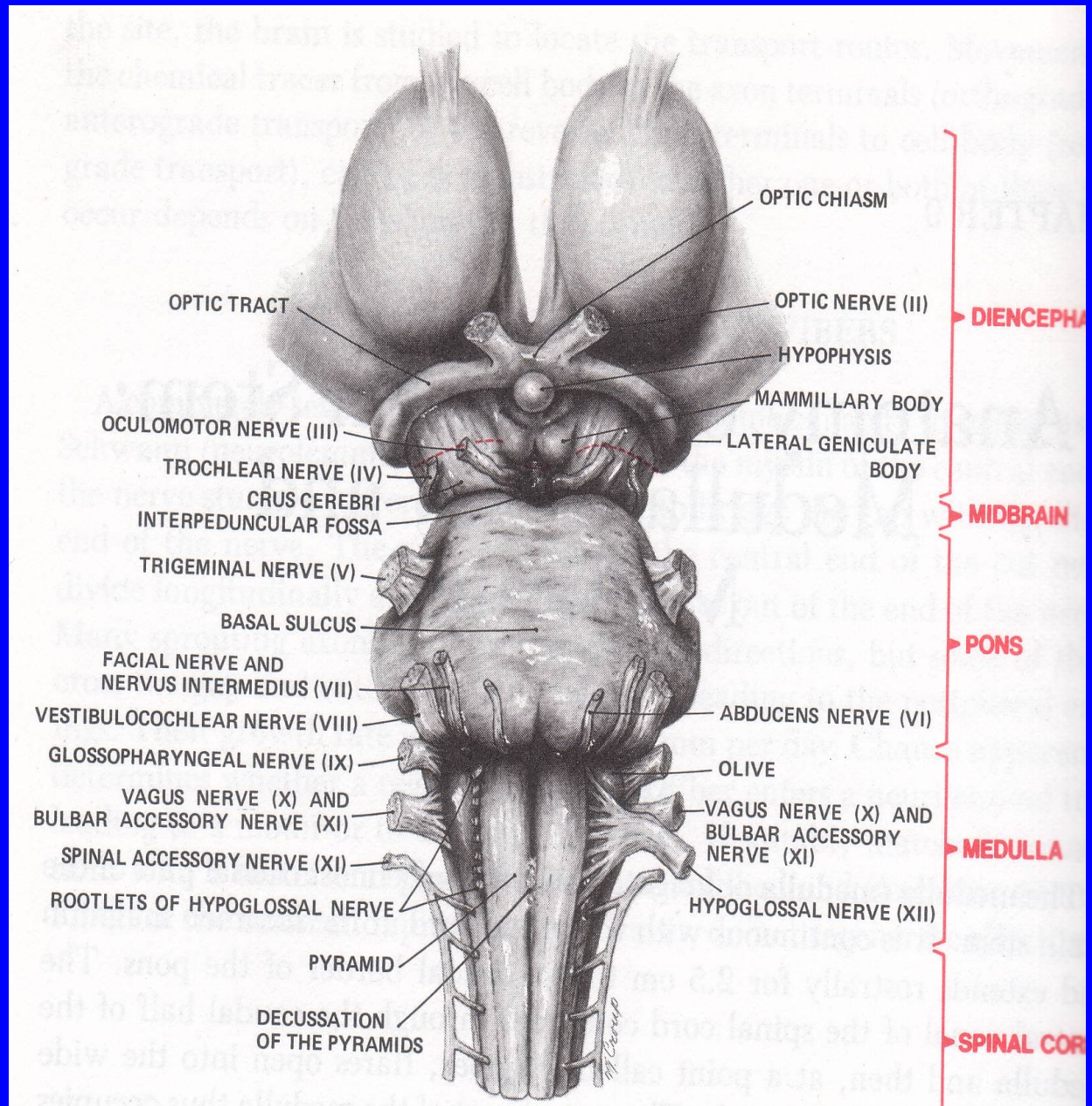
1. Medulla,
(myelencephalon)



BRAIN STEM : ANATOMY

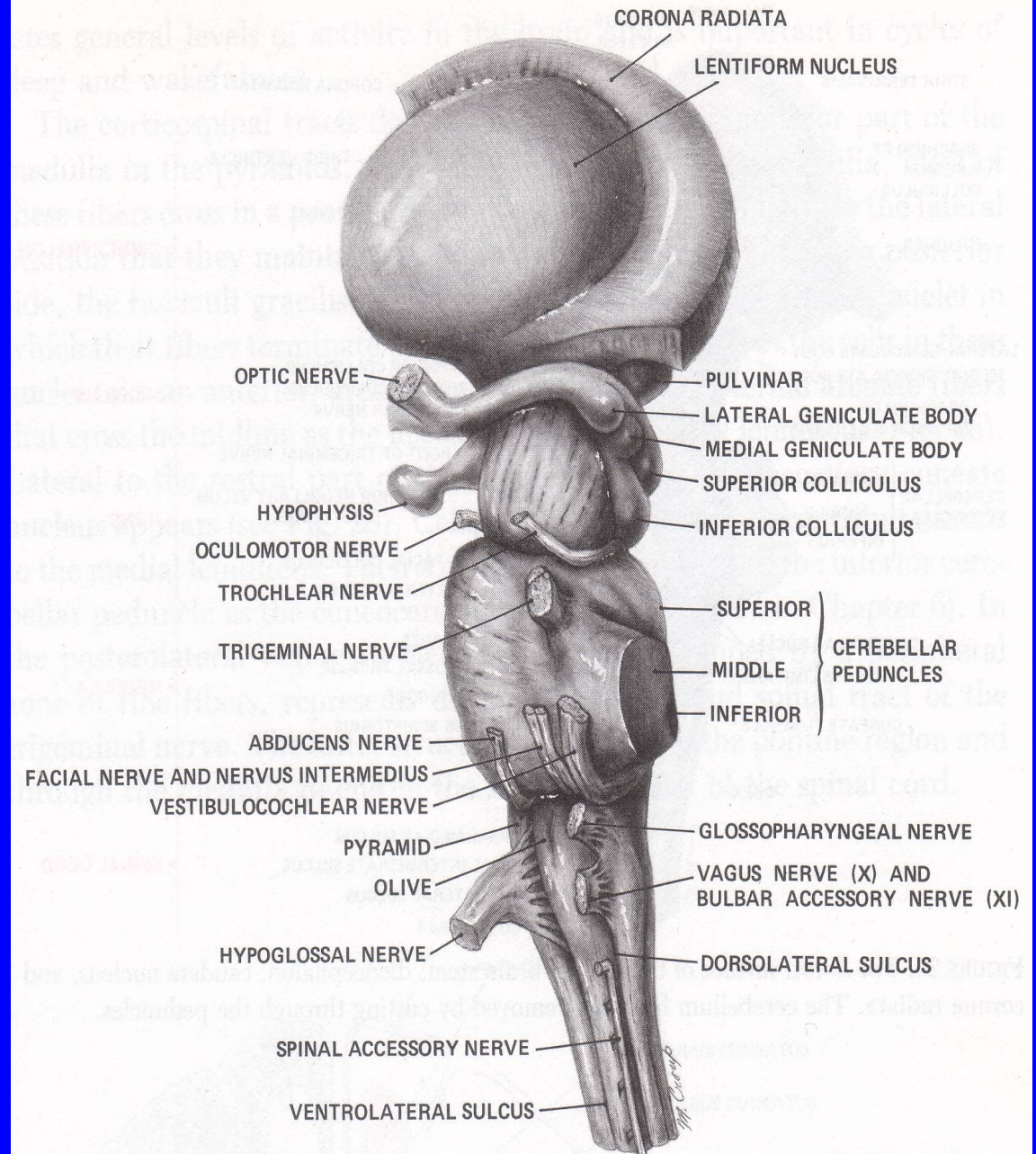
ANATOMY of the BRAIN STEM:

- Medulla,
- Pons, and
- Midbrain



ANATOMY of the BRAIN STEM:

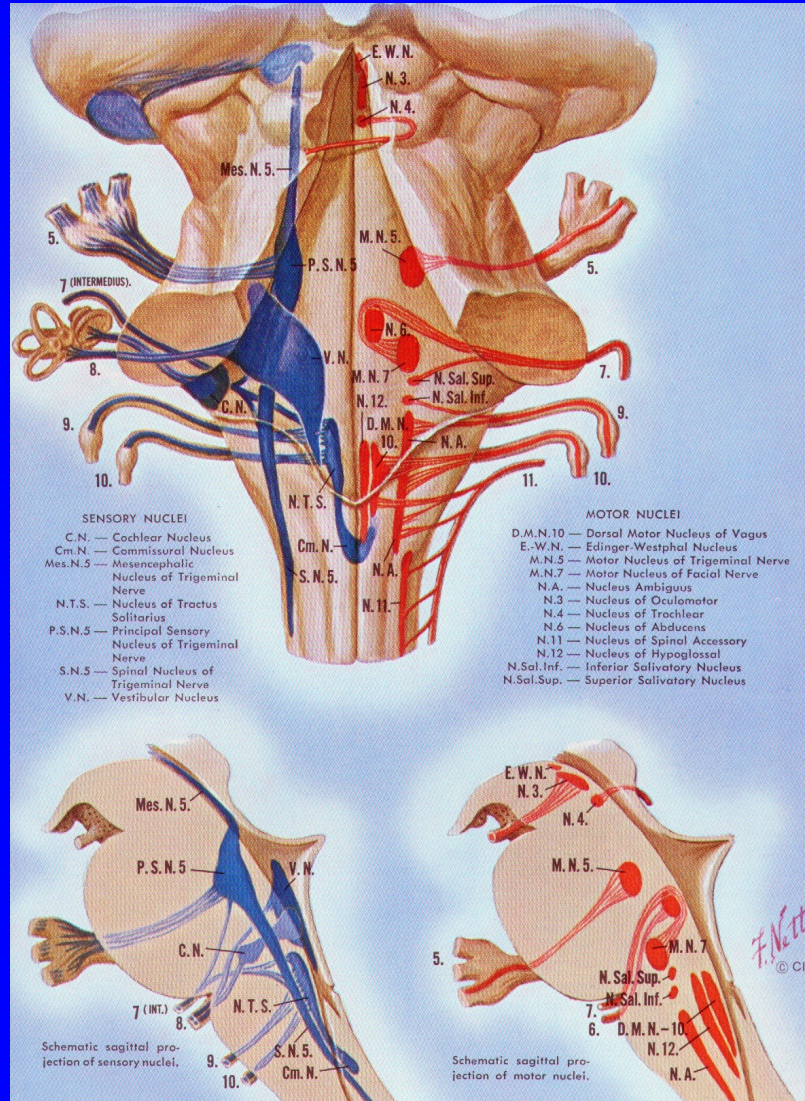
- Medulla,
- Pons, and
- Midbrain



INTERNAL STRUCTURES THE BRAIN STEM:

OF

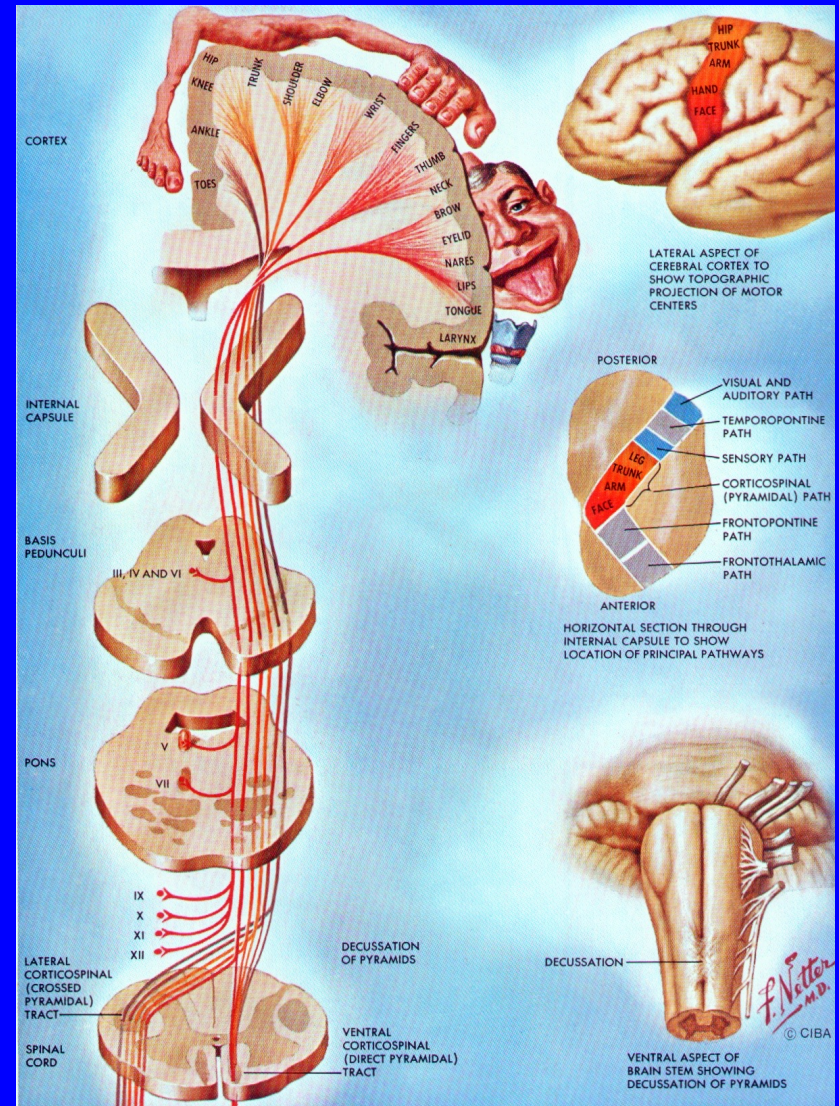
1. The segmentar apparatus.



INTERNAL STRUCTURES THE BRAIN STEM:

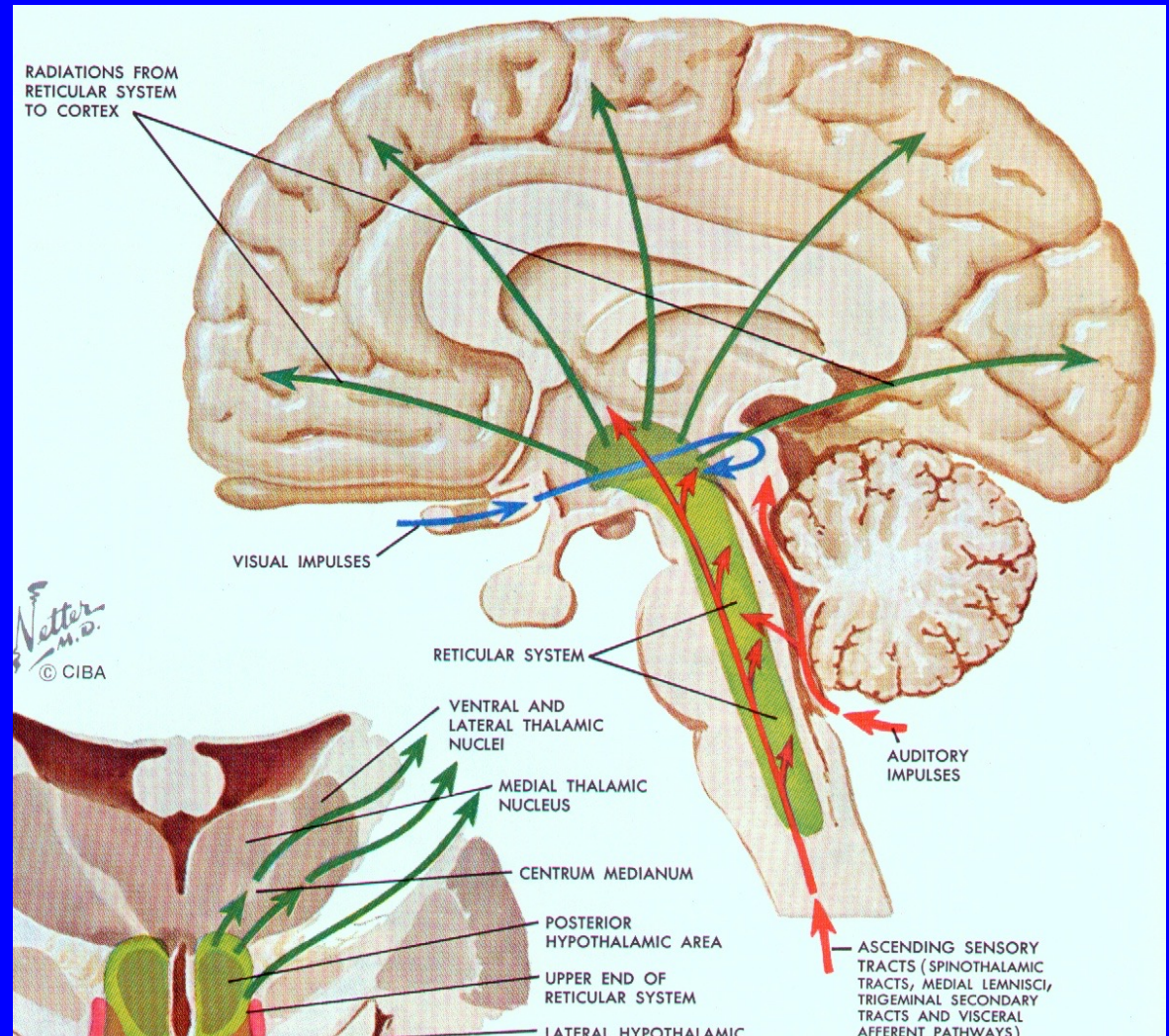
OF

2. Long and short fiber tracts (ascending pathways, including spinothalamic tracts, spinal tract of the trigeminal nerve, *lemniscus lateralis*, *tractus spino-cerebellares dorsalis et ventralis*, *pontocerebellar tract* etc; descending pathways, including *tractus cortico-spinalis*, *tractus cortico-nuclearis*, *tractus rubro-spinalis*, *tractus vestibulo-spinalis*, *tractus reticulo-spinalis*, *tractus tecto-spinalis* etc).



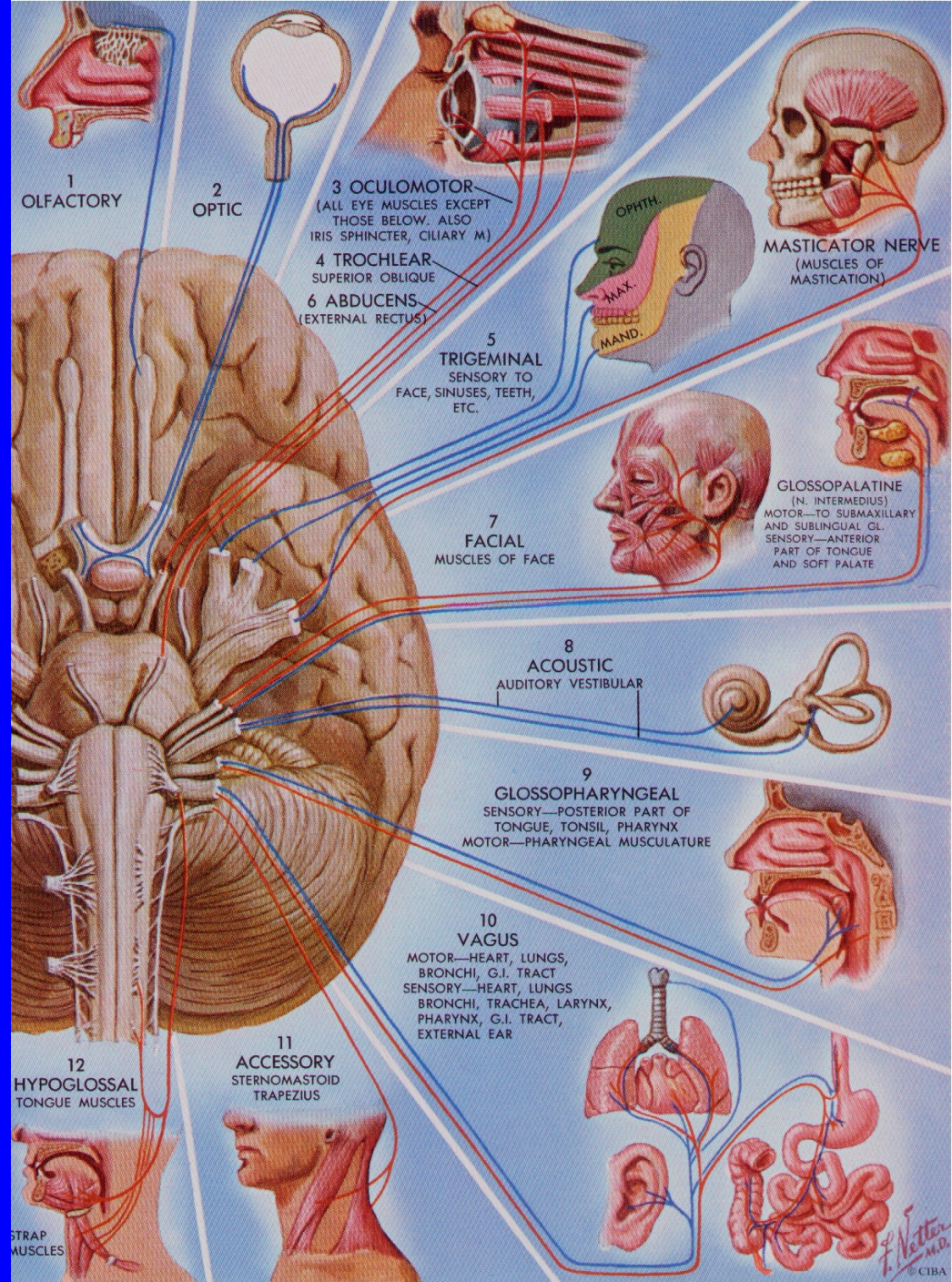
INTERNAL STRUCTURES OF THE BRAIN STEM:

3. Special Structures of the Brain Stem (reticular formation, cuneate and gracilis nuclei, red nuclei, *substantia nigra*, autonomic nervous system formation etc).



CRANIAL NERVES

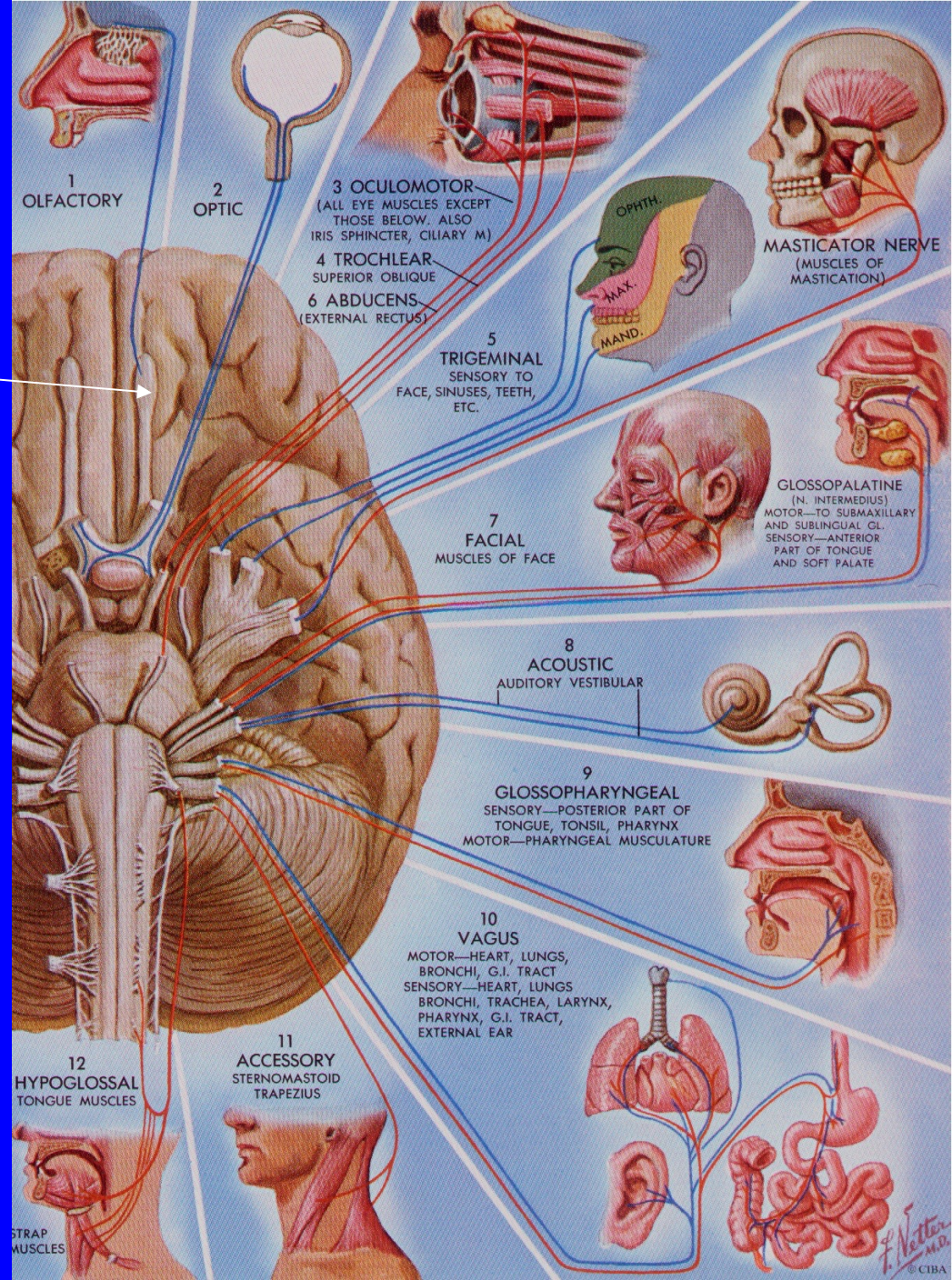
Terminologica Anatomica:



CRANIAL NERVES

Terminologica Anatomica:

I. Olfactory Nerve

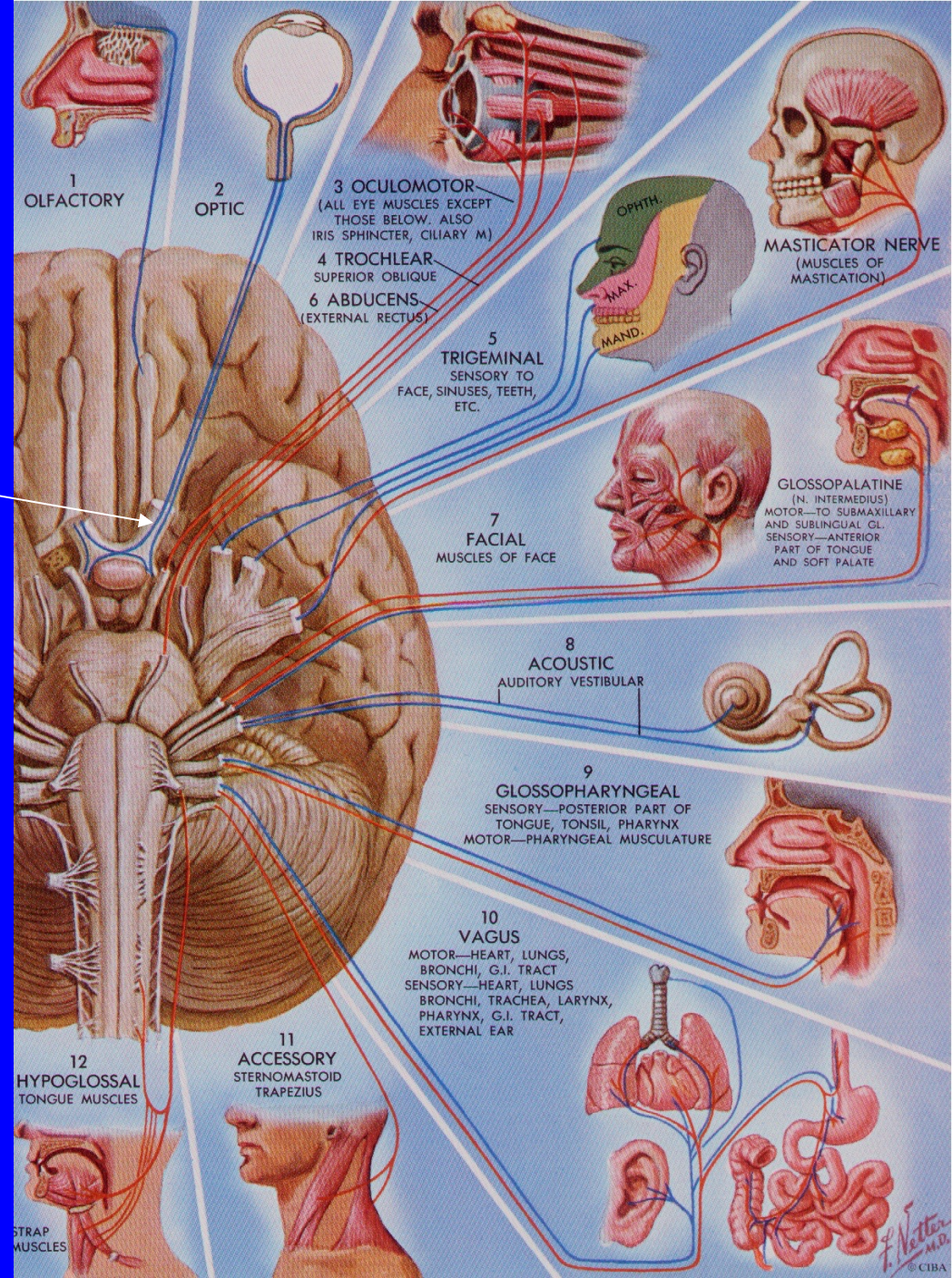


CRANIAL NERVES

Terminologica Anatomica:

I. Olfactory Nerve

II. Optic Nerve



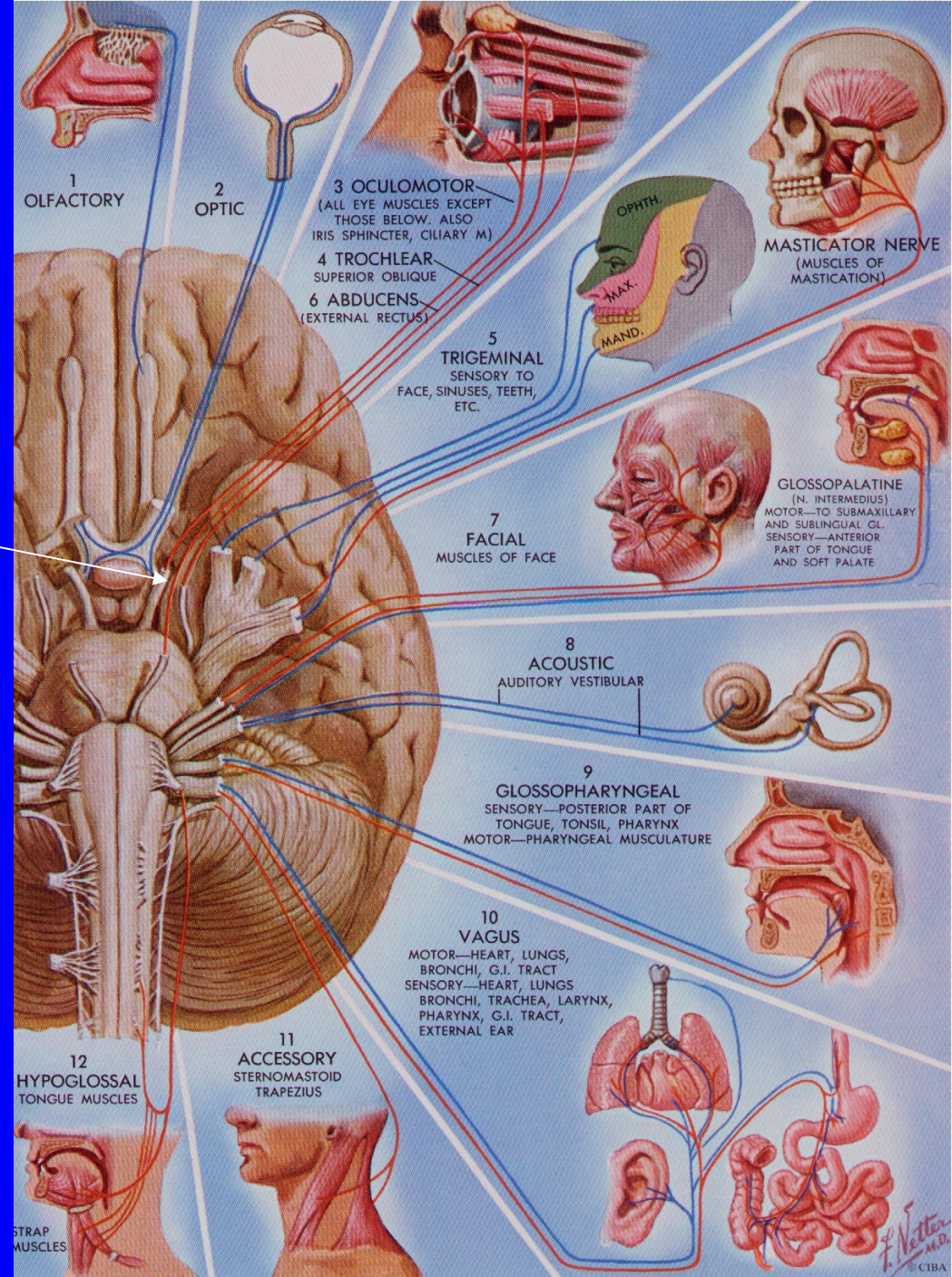
CRANIAL NERVES

Terminologica Anatomica:

I. Olfactory Nerve

II. Optic Nerve

III. Oculomotor Nerve



CRANIAL NERVES

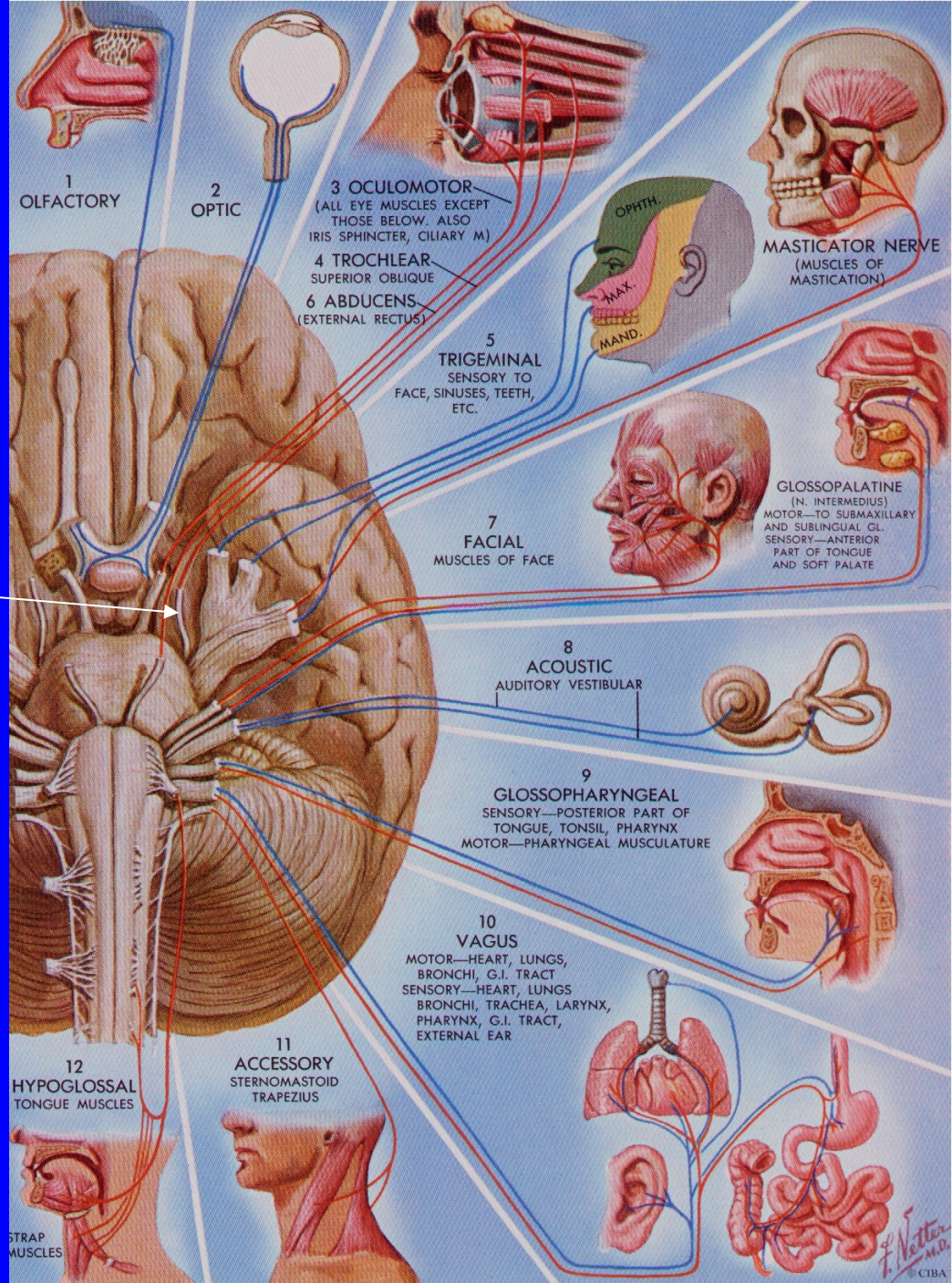
Terminologica Anatomica:

I. Olfactory Nerve

II. Optic Nerve

III. Oculomotor Nerve

IV. Trochlear Nerve



CRANIAL NERVES

Terminologica Anatomica:

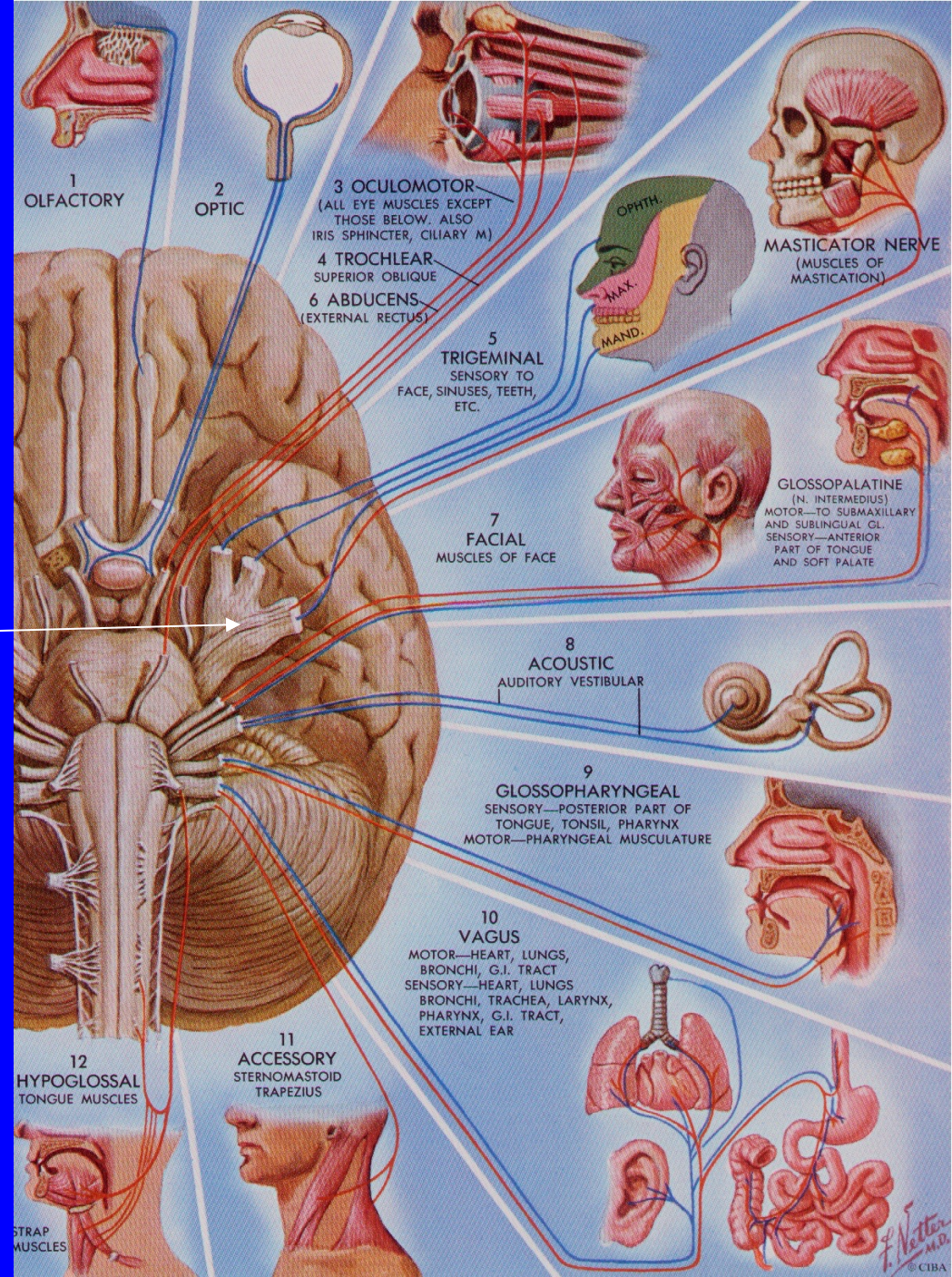
I. Olfactory Nerve

II. Optic Nerve

III. Oculomotor Nerve

IV. Trochlear Nerve

V. Trigeminal Nerve



CRANIAL NERVES

Terminologica Anatomica:

I. Olfactory Nerve

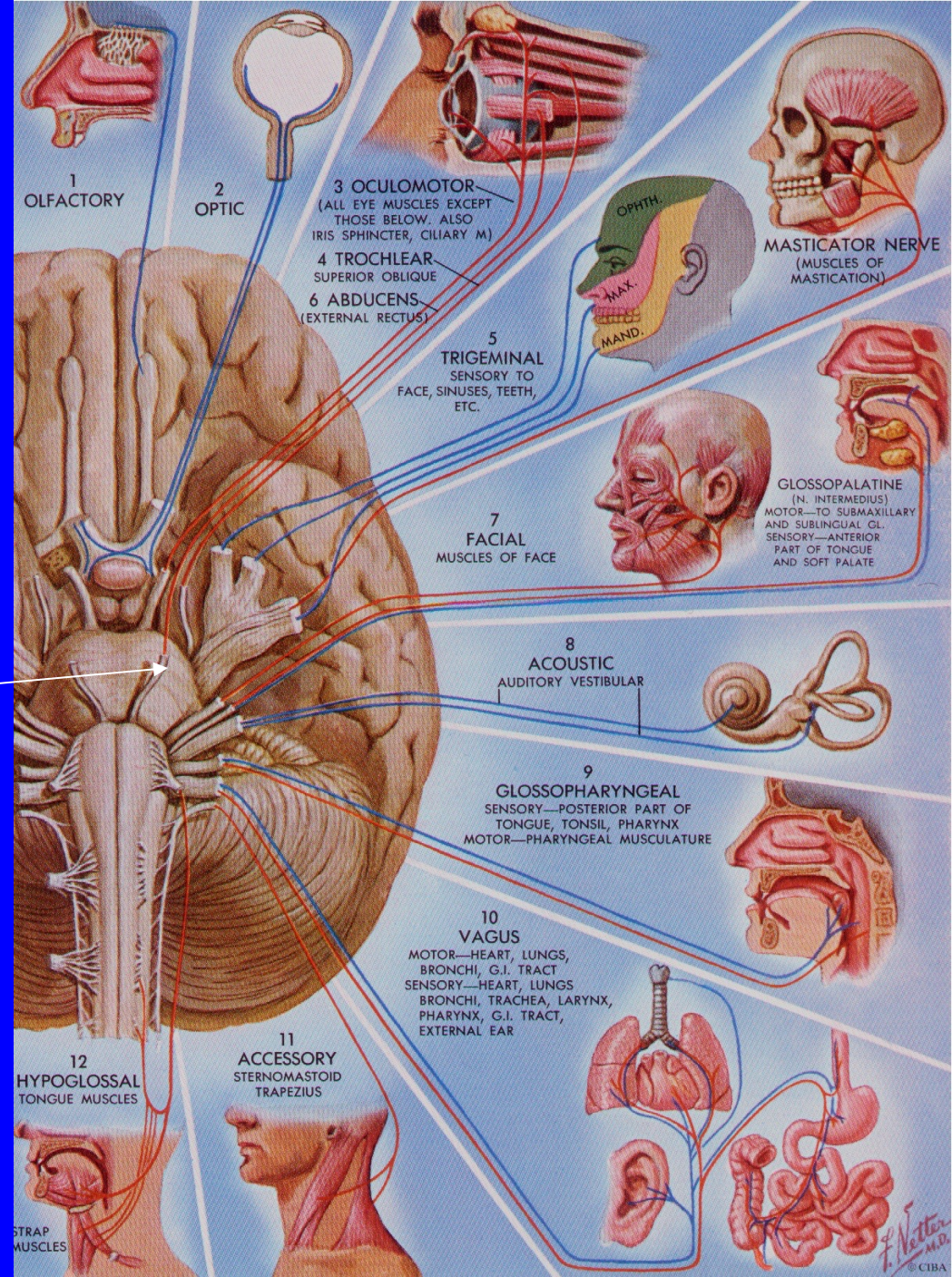
II. Optic Nerve

III. Oculomotor Nerve

IV. Trochlear Nerve

V. Trigeminal Nerve

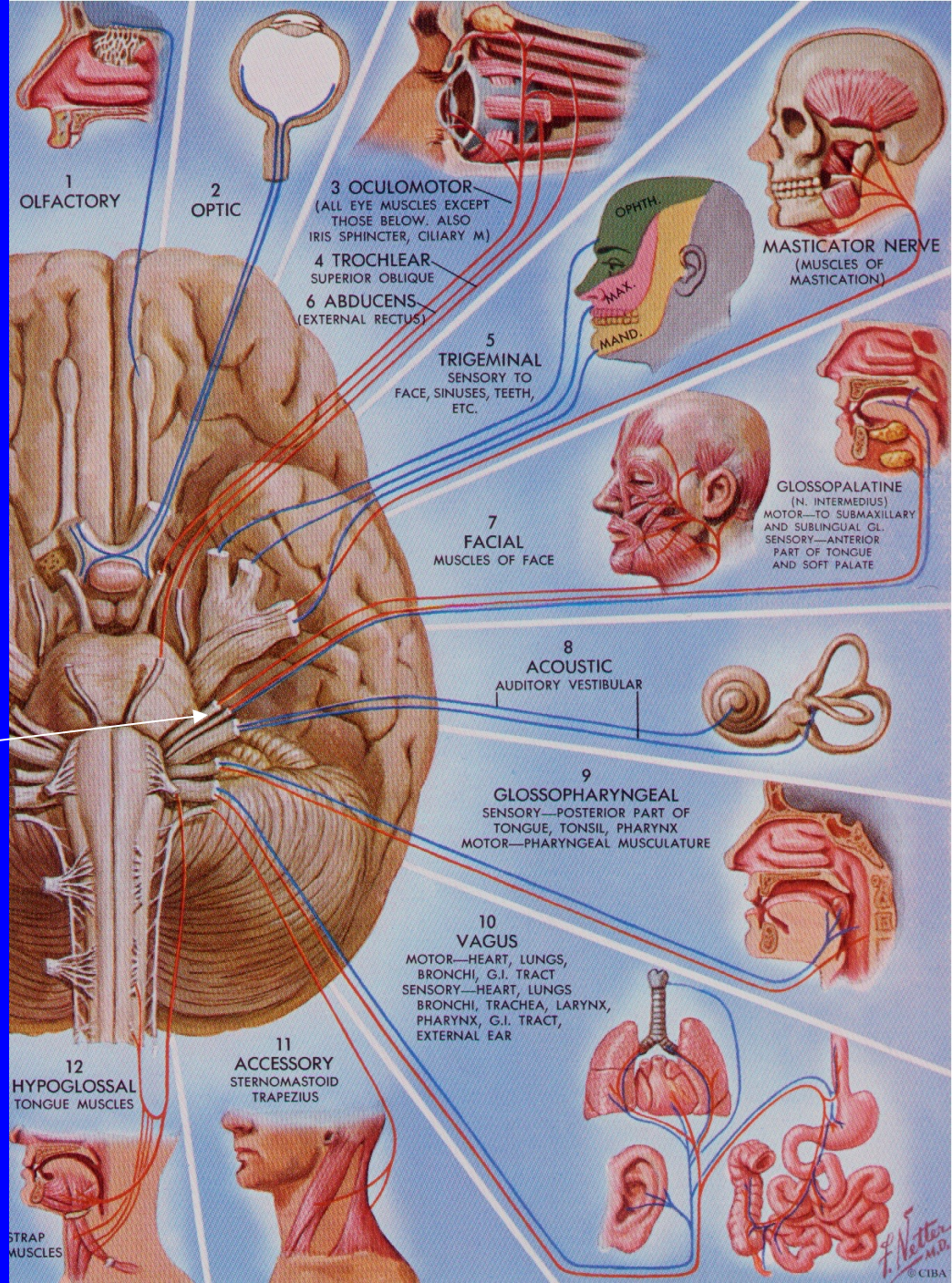
VI. Abducens Nerve



CRANIAL NERVES

Terminologica Anatomica:

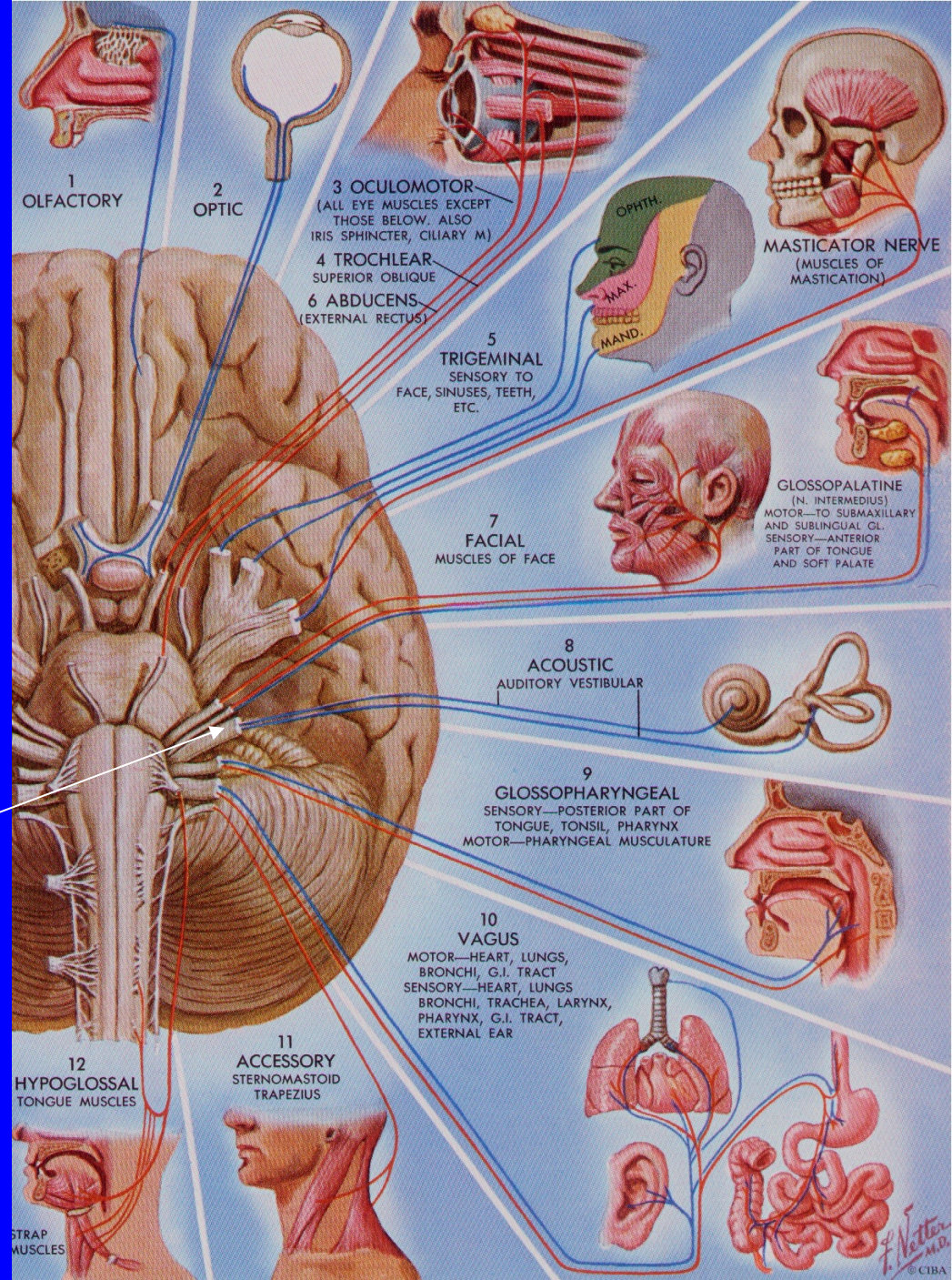
- I. Olfactory Nerve
- II. Optic Nerve
- III. Oculomotor Nerve
- IV. Trochlear Nerve
- V. Trigeminal Nerve
- VI. Abducens Nerve
- VII. Facial Nerve



CRANIAL NERVES

Terminologica Anatomica:

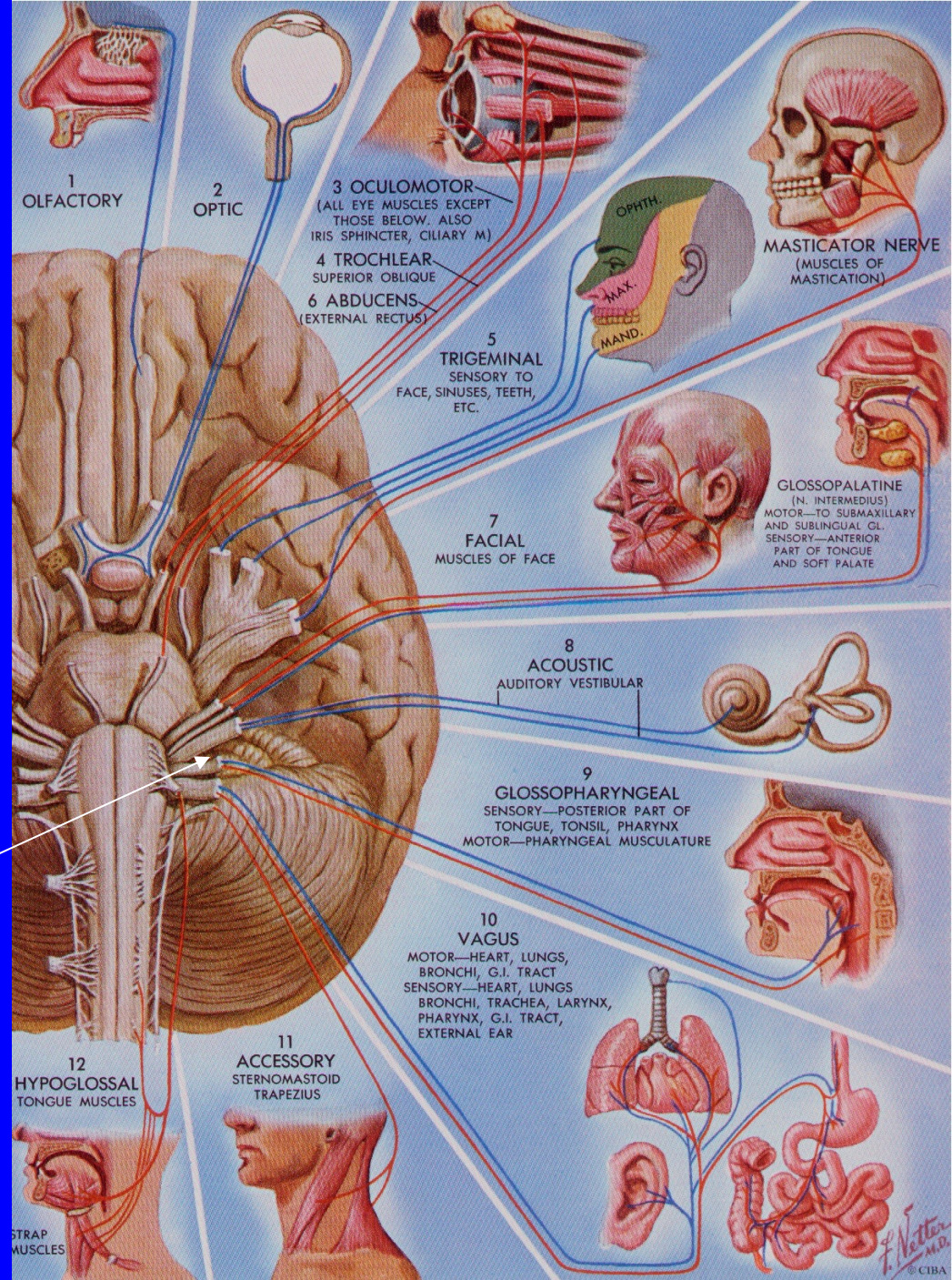
- I. Olfactory Nerve
- II. Optic Nerve
- III. Oculomotor Nerve
- IV. Trochlear Nerve
- V. Trigeminal Nerve
- VI. Abducens Nerve
- VII. Facial Nerve
- VIII. Vestibulocochlear Nerve



CRANIAL NERVES

Terminologica Anatomica:

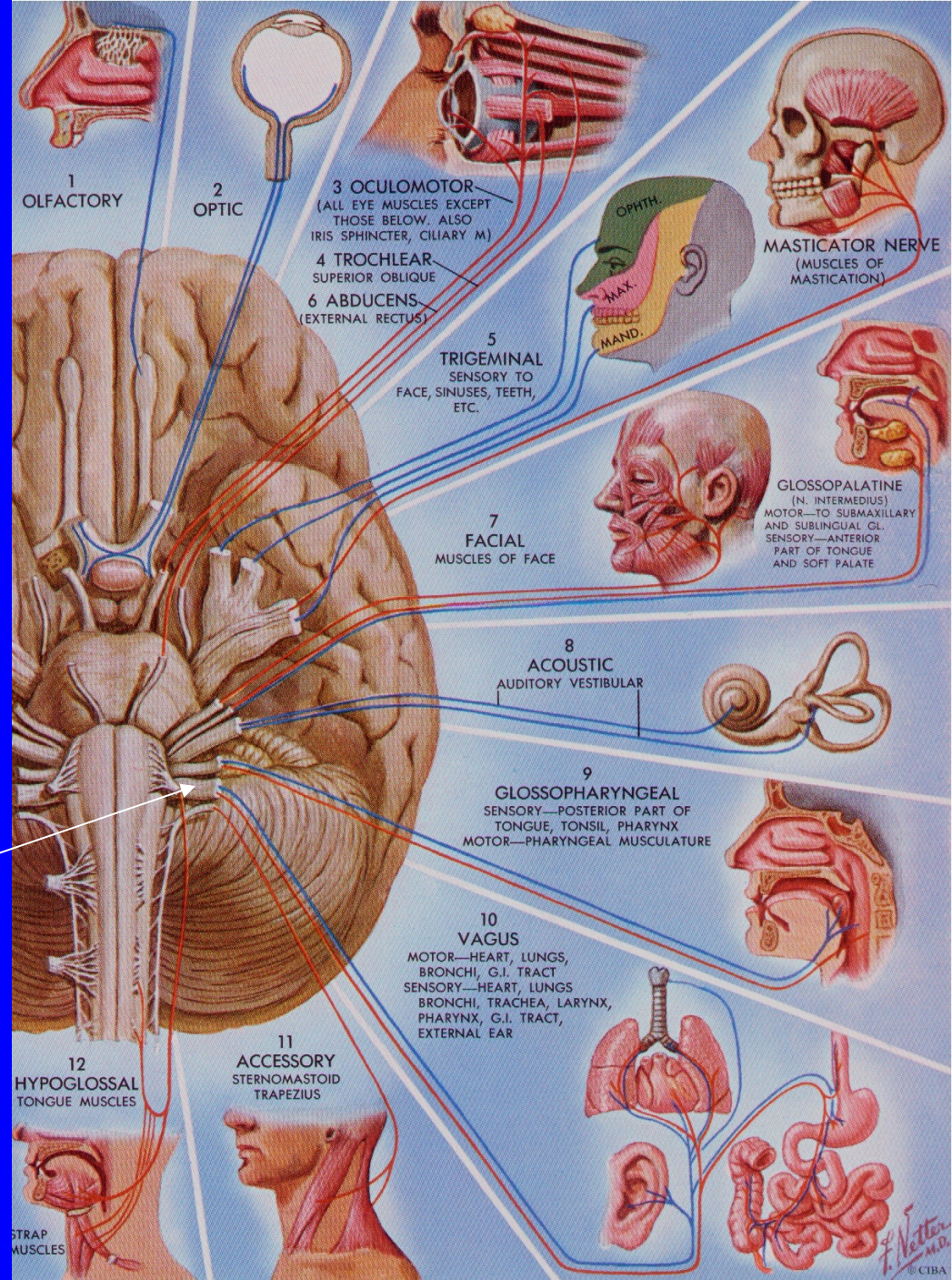
- I. Olfactory Nerve
- II. Optic Nerve
- III. Oculomotor Nerve
- IV. Trochlear Nerve
- V. Trigeminal Nerve
- VI. Abducens Nerve
- VII. Facial Nerve
- VIII. Vestibulocochlear Nerve
- IX. Glossopharyngeal Nerve



CRANIAL NERVES

Terminologica Anatomica:

- I. Olfactory Nerve
- II. Optic Nerve
- III. Oculomotor Nerve
- IV. Trochlear Nerve
- V. Trigeminal Nerve
- VI. Abducens Nerve
- VII. Facial Nerve
- VIII. Vestibulocochlear Nerve
- IX. Glossopharyngeal Nerve
- X. Vagus Nerve



CRANIAL NERVES

Terminologica Anatomica:

I. Olfactory Nerve

II. Optic Nerve

III. Oculomotor Nerve

IV. Trochlear Nerve

V. Trigeminal Nerve

VI. Abducens Nerve

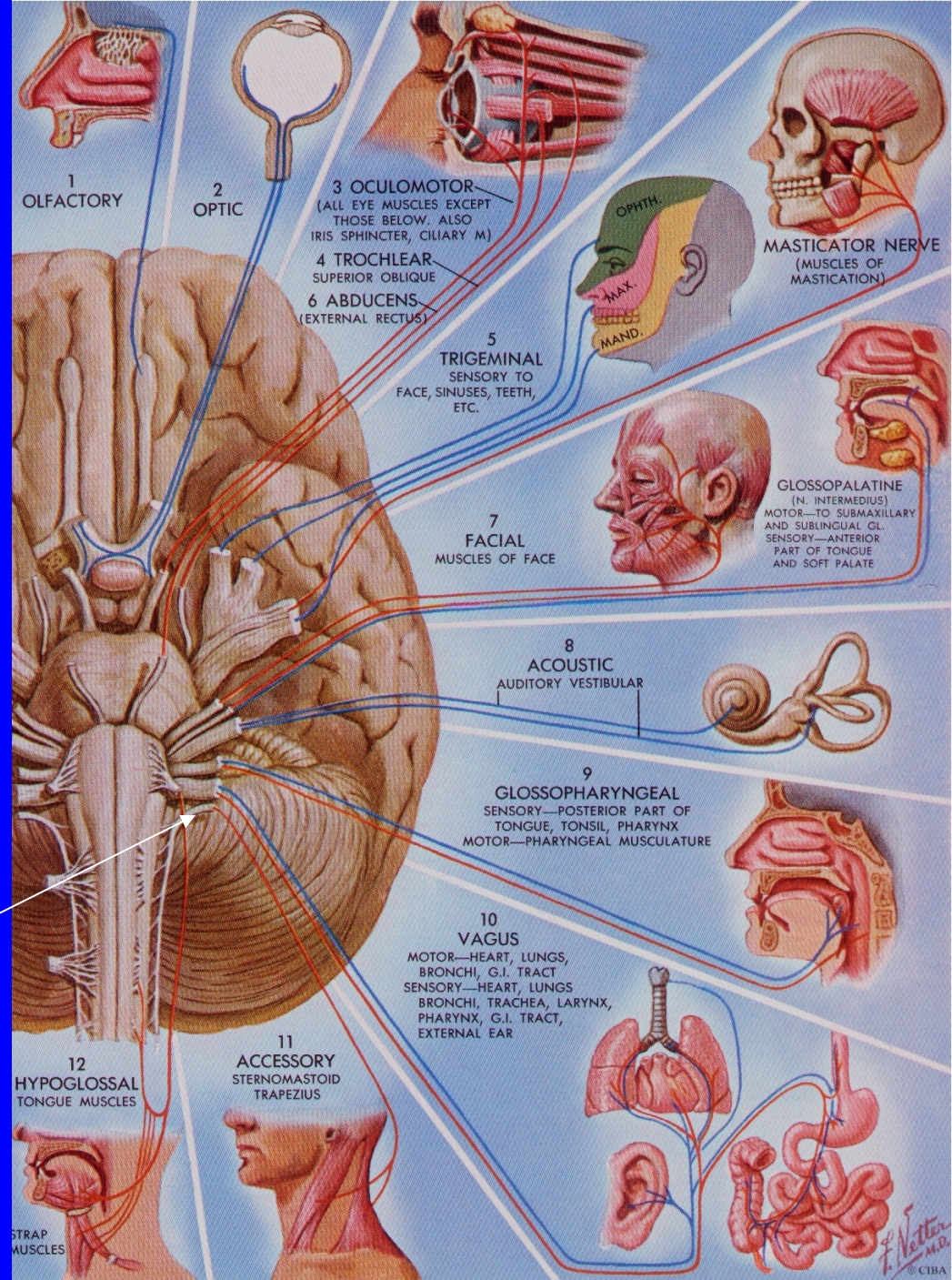
VII. Facial Nerve

VIII. Vestibulocochlear Nerve

IX. Glossopharyngeal Nerve

X. Vagus Nerve

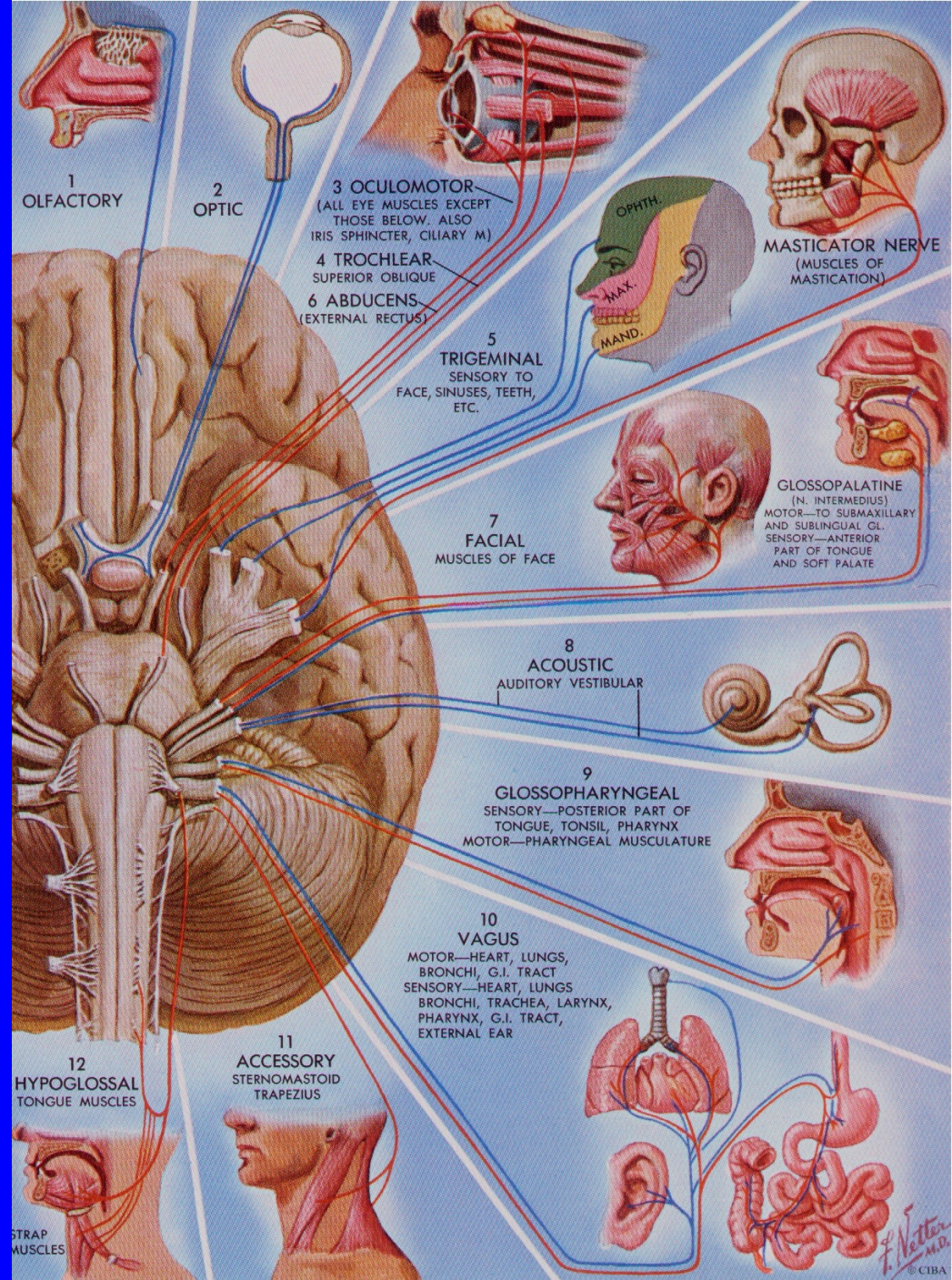
XI. Accessory Nerve



CRANIAL NERVES

Terminologica Anatomica:

- I. Olfactory Nerve
- II. Optic Nerve
- III. Oculomotor Nerve
- IV. Trochlear Nerve
- V. Trigeminal Nerve
- VI. Abducens Nerve
- VII. Facial Nerve
- VIII. Vestibulocochlear Nerve
- IX. Glossopharyngeal Nerve
- X. Vagus Nerve
- XI. Accessory Nerve
- XII. Hypoglossal Nerve



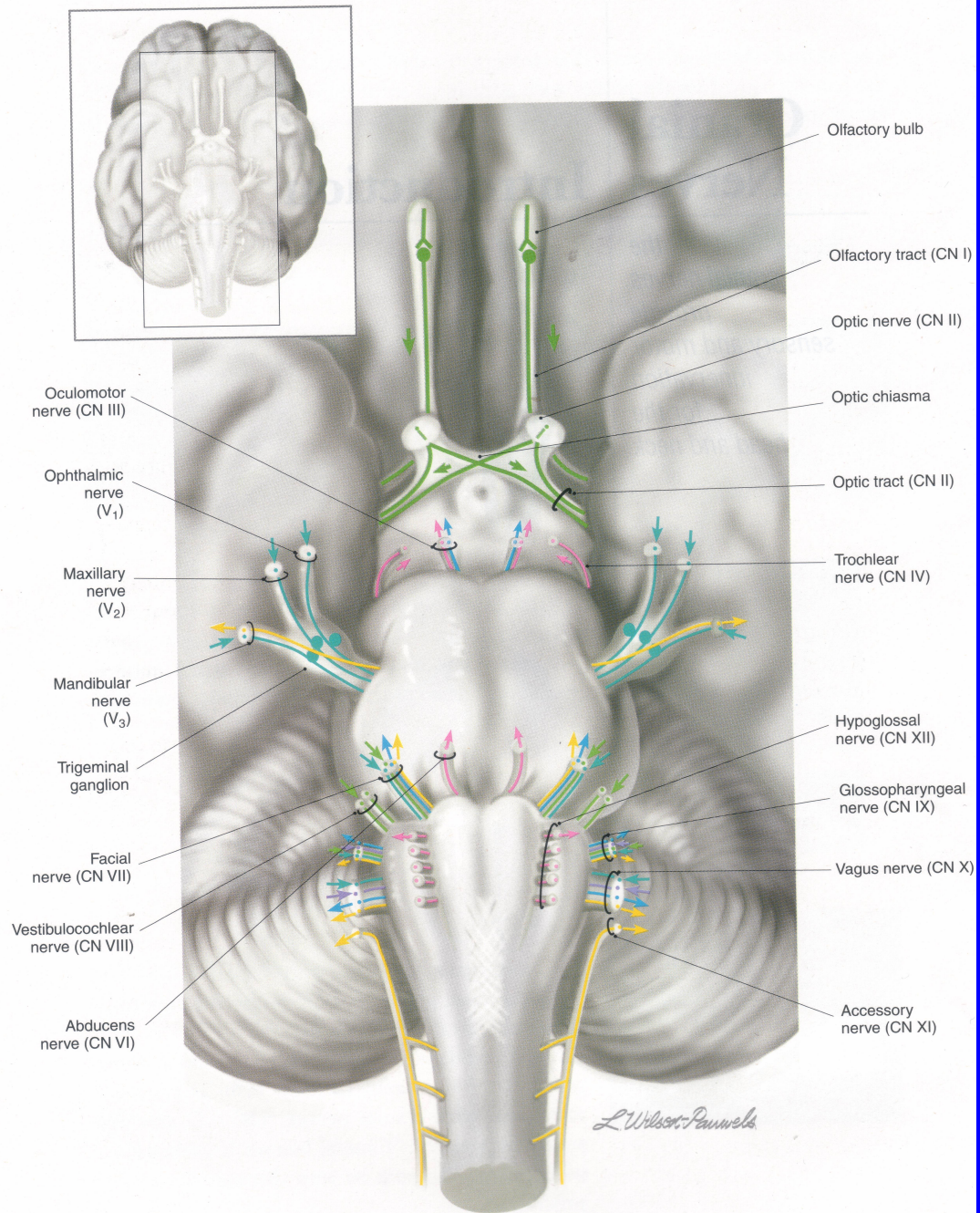


Figure 1 Basal view of the brain and brain stem (cropped).

CRANIAL NERVES

FUNCTION:

SENSORIAL

Olfactory CN I

Optic CN II

Vestibulo-
cochlear CN VIII

MOTOR

Oculomotor CN III

Trochlear CN IV

Abducens CN VI

Facial CN VII

Accessory CN XI

Hypoglossal CN XII

MIXED

(sensory and motor)

Trigeminal CN V

Glosso-
pharyngeal CN
IX

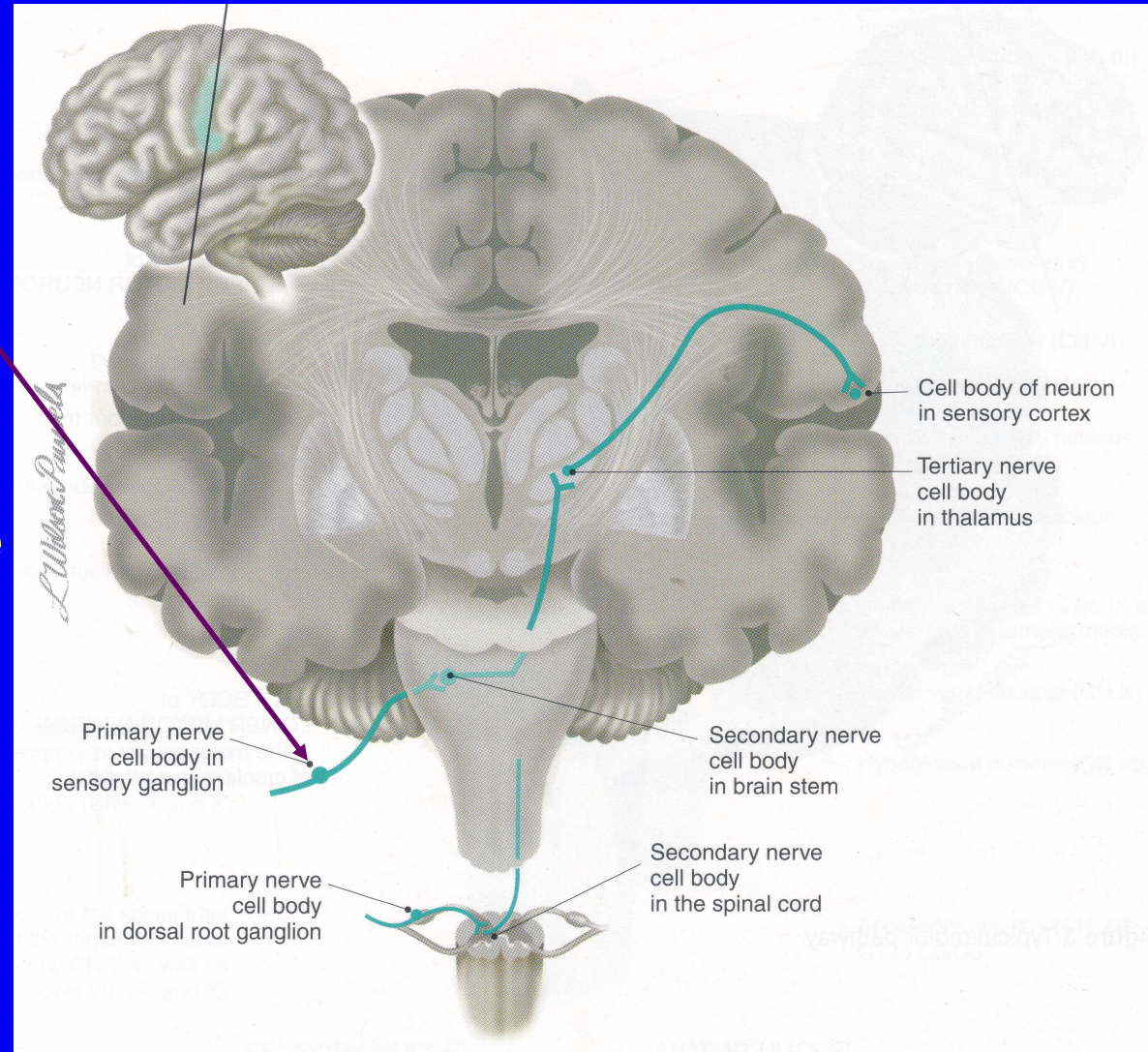
Vagus CN X

CRANIAL NERVE SENSORY (AFFERENT) PATHWAYS

The primary neuron cell bodies

Are usually located
outside the CNS in
sensory ganglia.

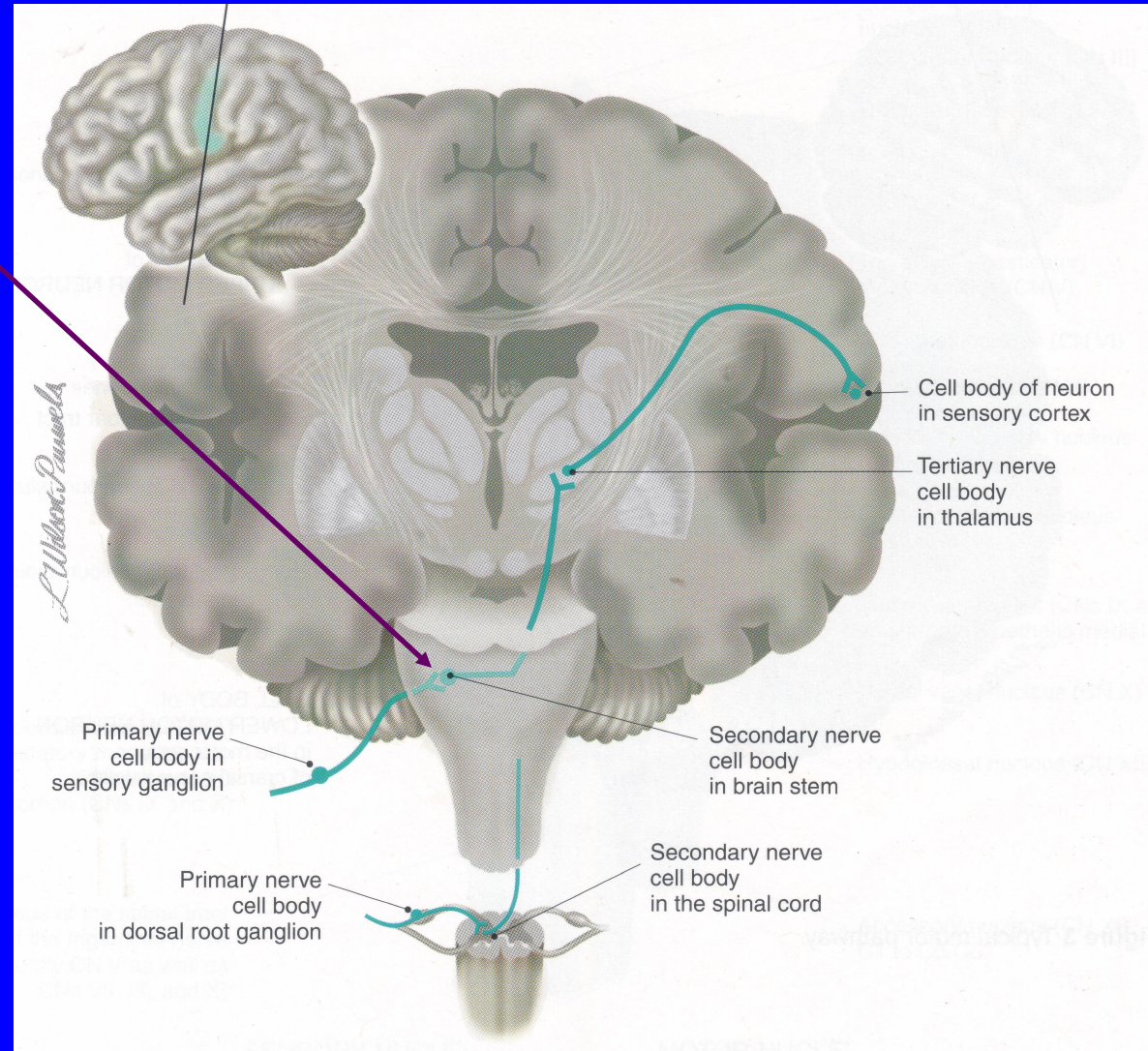
They are
homologous with the
dorsal root ganglia
of the spinal cord



CRANIAL NERVE SENSORY (AFFERENT) PATHWAYS

The secondary neuron cell bodies

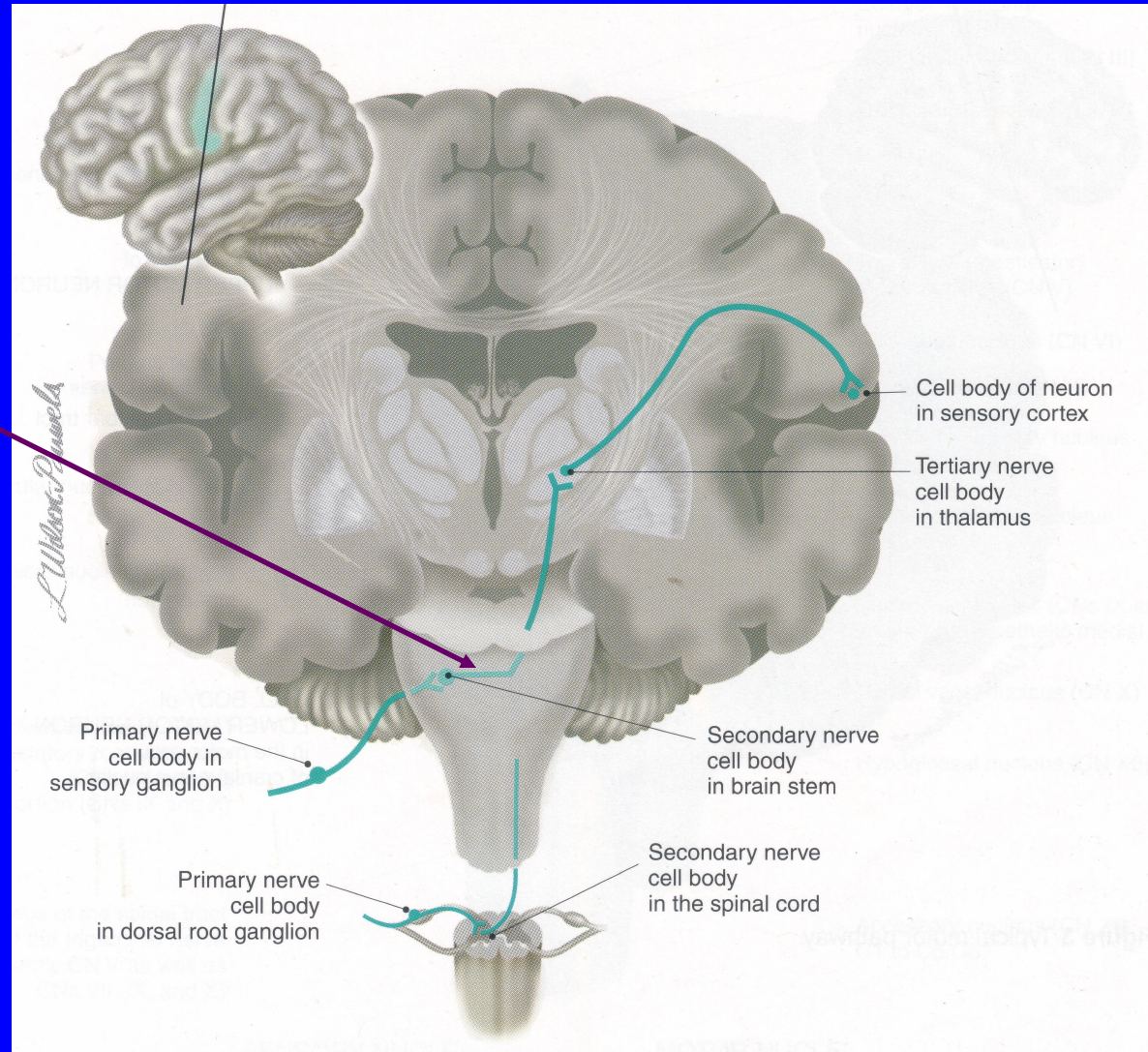
are located in the dorsal gray matter of the brain stem, and their axons usually cross the midline to project to the thalamus. The cell bodies that reside in the brain stem form the sensory group of cranial nerve nuclei.



CRANIAL NERVE SENSORY (AFFERENT) PATHWAYS

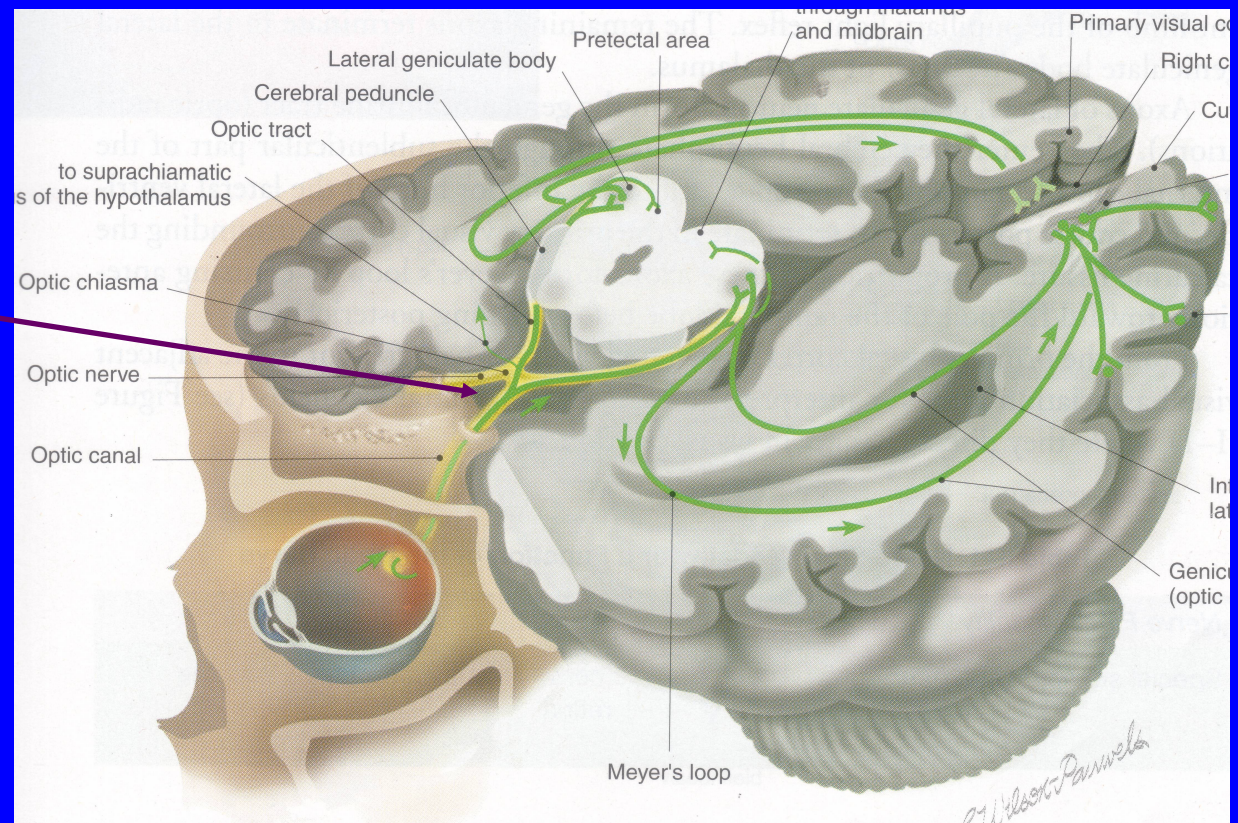
After the secondary
neuron cell bodies...
???

CROSSING !!!



CRANIAL NERVE SENSORY (AFFERENT) PATHWAYS

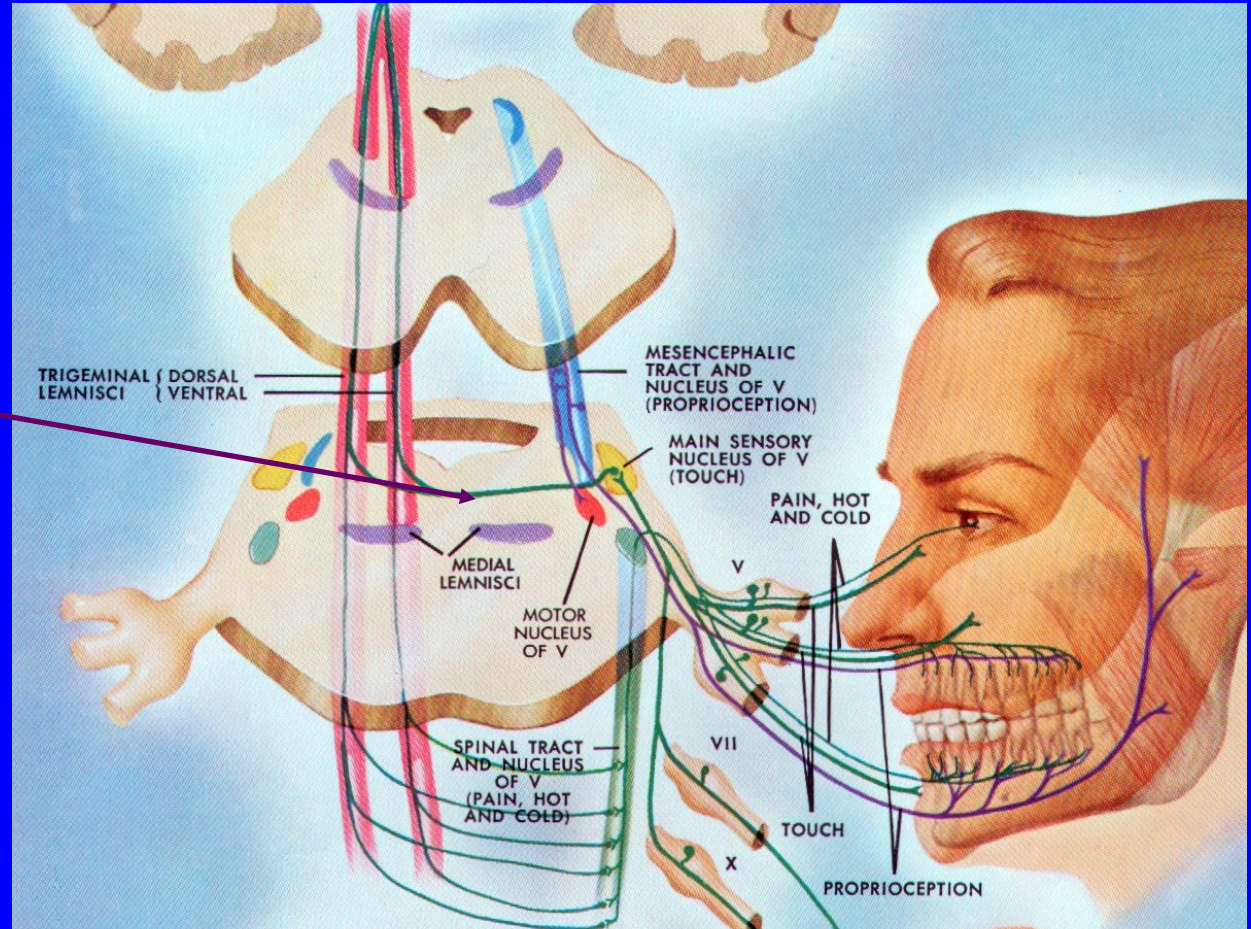
CROSSING !!!



NERVII CRANIENI SENZITIVI și SENZORIALI

Generalități de constituire și funcționare: lanț aferent din 3 neuroni

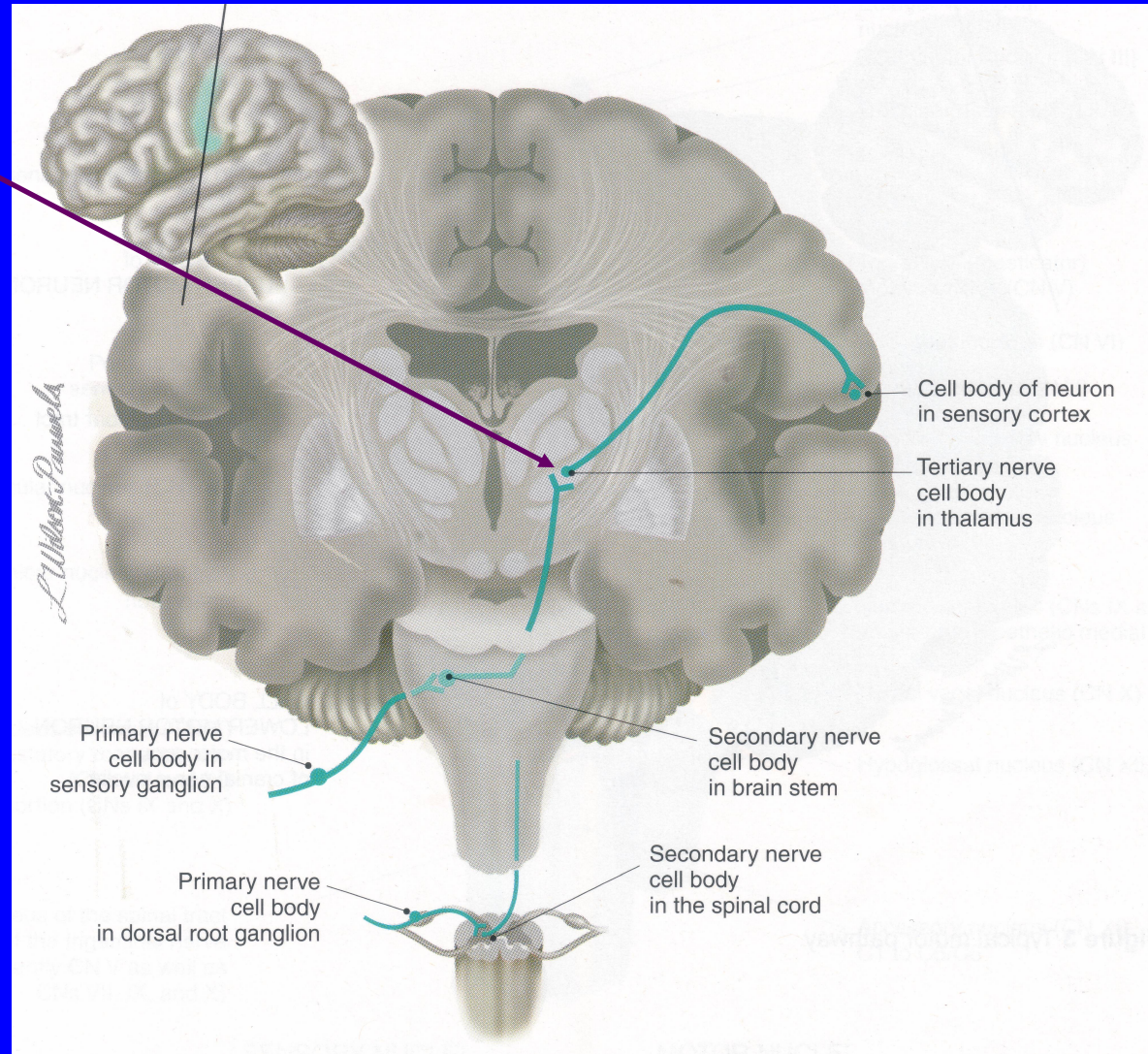
ÎNCRUCIȘAREA!!!
căilor senzitive



CRANIAL NERVE SENSORY (AFFERENT) PATHWAYS

The tertiary neuron
cell bodies

are located in the
thalamus, and their
axons project to the
cortex.



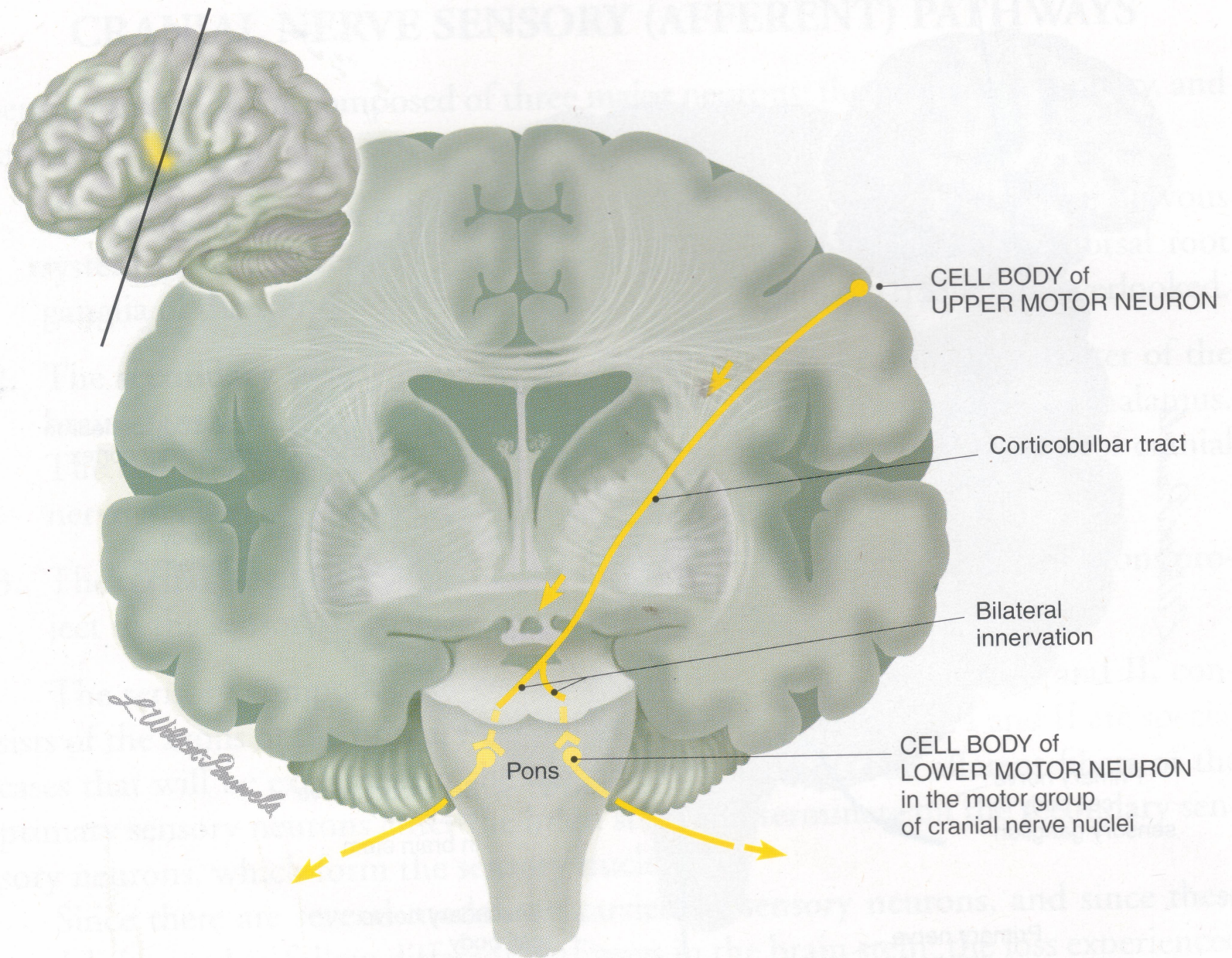


Figure 3 Typical motor pathway.