Development of Complex Curricula for Molecular Bionics and Infobionics Programs within a consortial* framework**

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**Molekuláris bionika és Infobionika Szakok tananyagának komplex fejlesztése konzorciumi keretben

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BASICS OF NEUROBIOLOGY

Neurobiológia alapjai

NETWORKING OF BRAIN STEM

(Agytörzs kapcsolatrendszere)

ZSOLT LIPOSITS

SOME FEATURES OF NETWORKING OF THE BRAIN STEM

THE SOMATIC AND VISCERAL NUCLEI OF CRANIAL NERVES (III-XII) ARE LOCATED IN THE BRAIN STEM, THEREFORE, VIA THESE CONNECTIONS IT IS IN COMMUNICATION WITH MANY UNITS OF THE BODY

THE RETICULAR FORMATION AND THE CRANIAL PARASYMPATHETIC REGULATORY CENTER PROVIDE POWERFUL CONTROL OVER VISCERAL FUNCTIONS

IT HAS A PARTICULAR ROLE IN CONTROLLING THE SENSORY AND MOTOR FUNCTIONS OF THE HEAD

IT RELAYS INFORMATION FROM THE CEREBRAL CORTEX TOWARD THE CEREBELLUM AND FROM THE CEREBELLUM TO THE THALAMUS

ITS CENTERS CONTROL THE MUSCLE TONE AND ORCHESTRATE MOVEMENTS

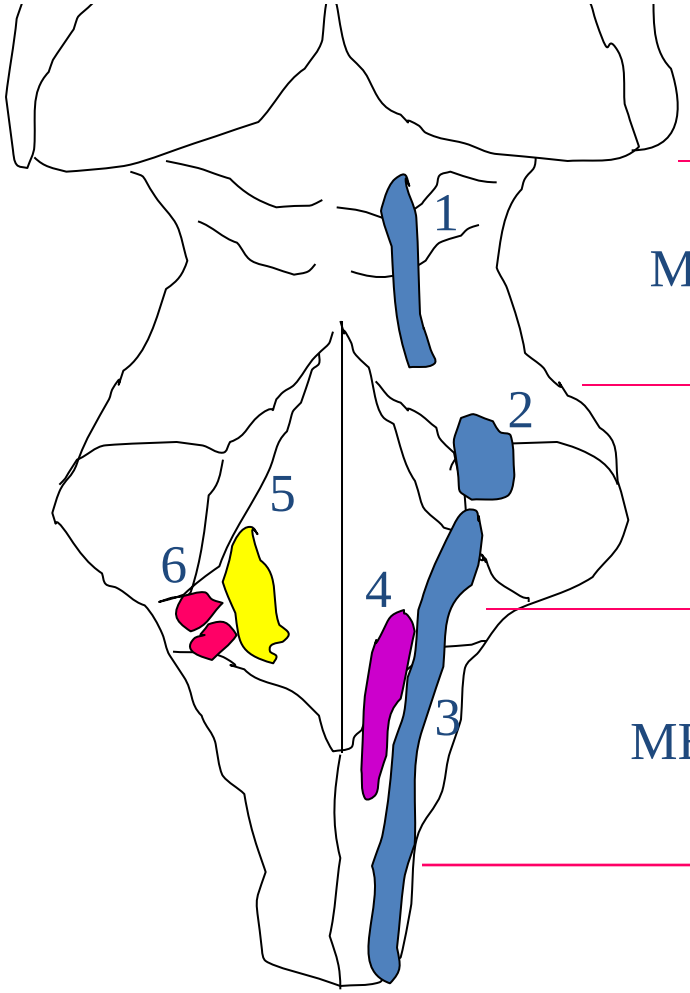
VULNERABLE, LONG ASCENDING SENSORY (MEDIAL LEMNISCUS, SPINOTHALAMIC) AND DESCENDING MOTOR (CORTICOSPINAL) PATHWAYS PASS THOUGH IT

NEURONAL CENTERS OF CRUCIAL REFLEX MECHANISMS (PUPILLARY, ACCOMMODATION, VESTIBULO-OCULAR, JAW REFLEX) ARE IN THE BRAINSTEM

IT IS THE MAIN SOURCE OF SEROTONERGIC, DOPAMINERGIC AND ADRENERGIC PROJECTIONS TO THE ENTIRE NEUROAXIS

SENSORY CRANIAL NERVE NUCLEI

1. NUCL. MESENCEPHALICUS N. V.
2. NUCL. PRINCIPALIS N. V.
3. NUCL. SPINALIS N. V.
4. NUCL. TRACTUS SOLITARII
5. VESTIBULAR NUCLEI
6. COCHLEAR NUCLEI



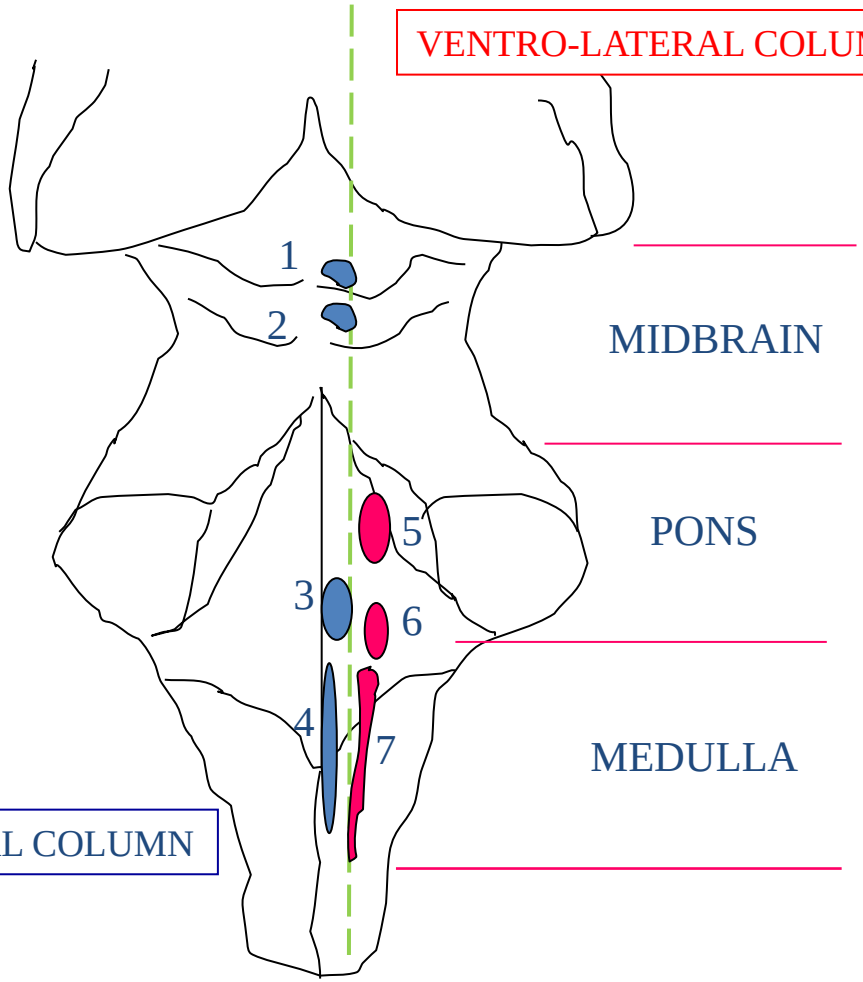
MIDBRAIN

PONS

MEDULLA

SOMATOMOTOR CRANIAL NERVE NUCLEI

1. N. OCULOMOTORIUS. III
2. N. TROCHLEARIS. IV
3. N. ABDUCENS. VI
4. N. HYPOGLOSSUS. XII
5. N. TRIGEMINUS. V
6. N. FACIALIS. VII
7. N. AMBIGUUS. IX, X, XI



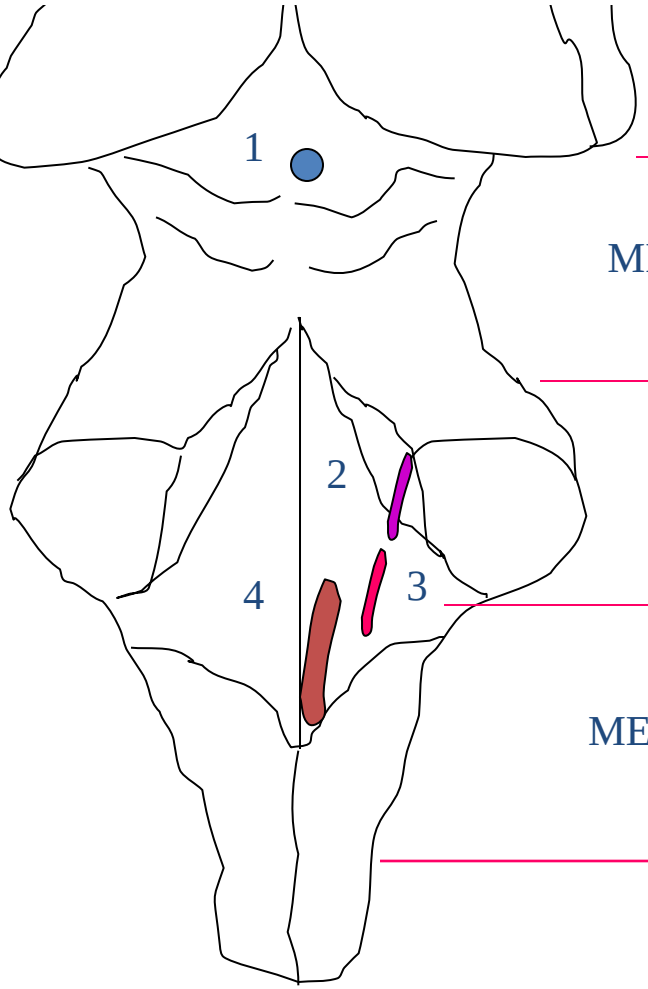
VISCEROMOTOR CRANIAL NERVE NUCLEI

1. N. EDINGER-WESTPHAL. III

2. N. SALIVATORIUS SUP. VII

3. N. SALIVATORIUS INF. IX

4. N. DORSALIS NERVI X.



MIDBRAIN

PONS

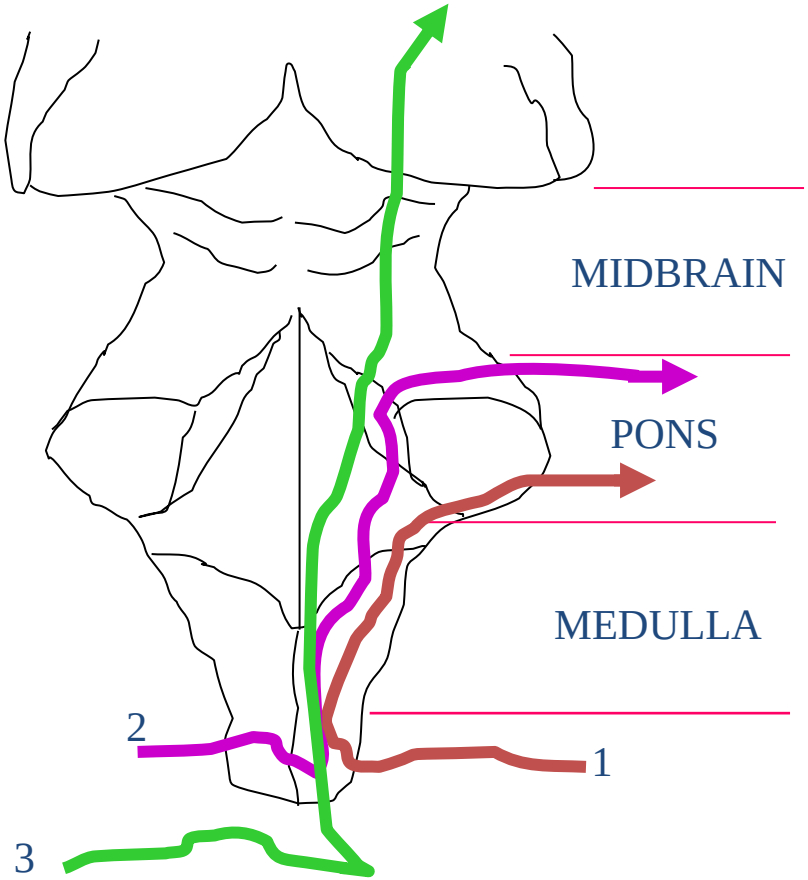
MEDULLA

ASCENDING PATHWAYS TRAVERSING THE BRAIN STEM

1. TR. SPINOCEREBELLARIS D.

2. TR. SPINOCEREBELLARIS V.

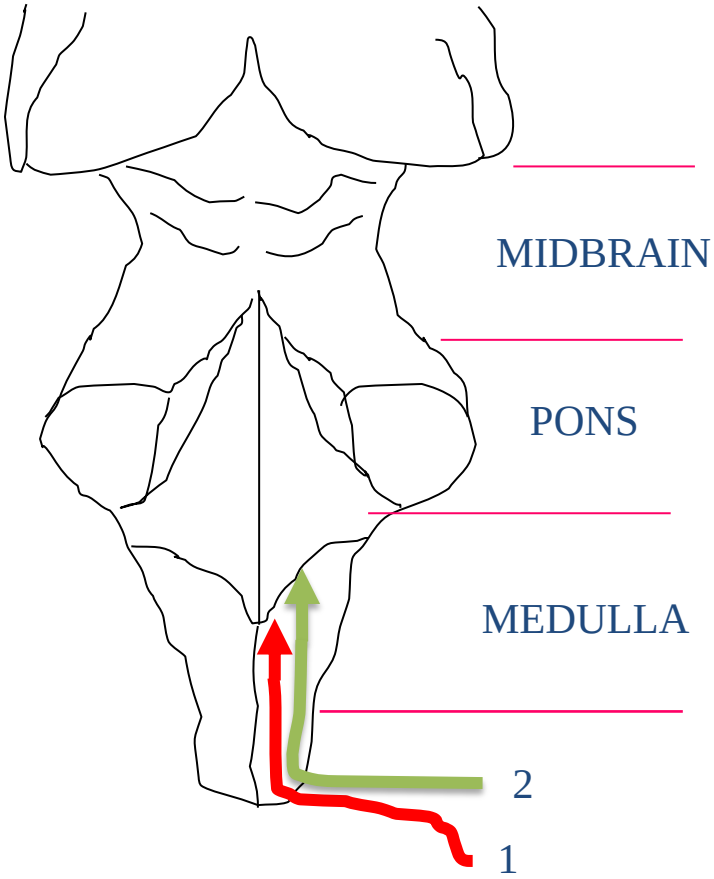
3. TR. SPINOTHALAMICUS
(*EDINGER)*



ASCENDING TRACTS TERMINATING IN BRAIN STEM

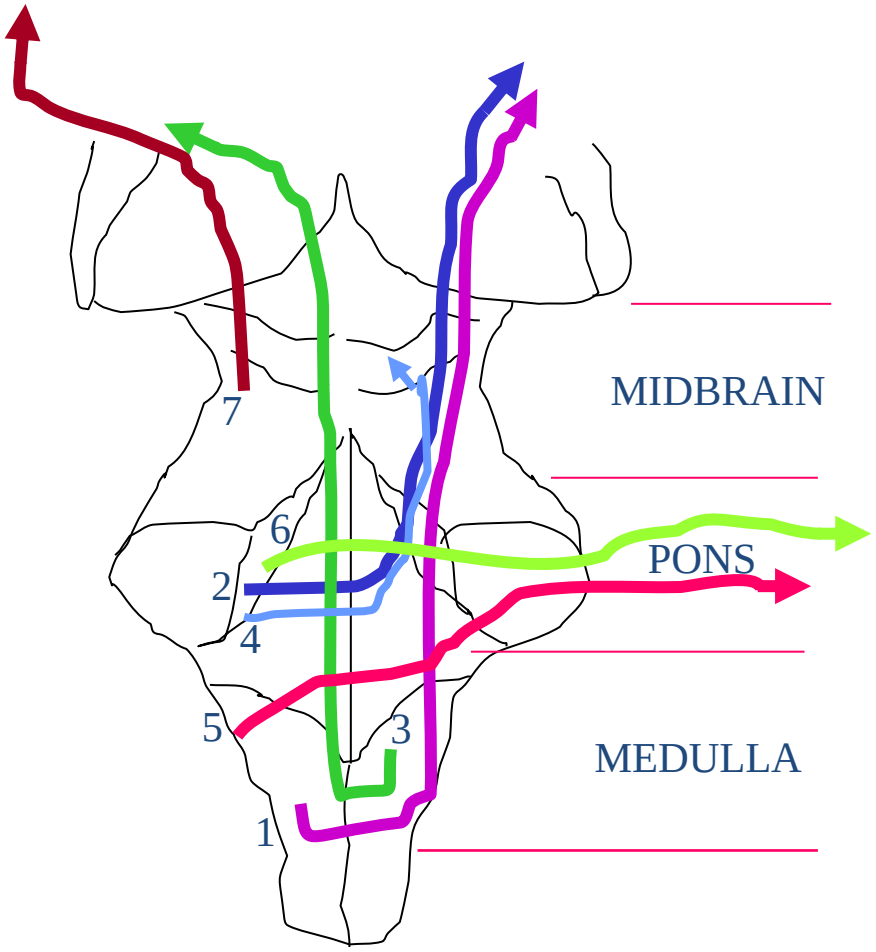
1. FASCICULUS GRACILIS

2. FASCICULUS CUNEATUS



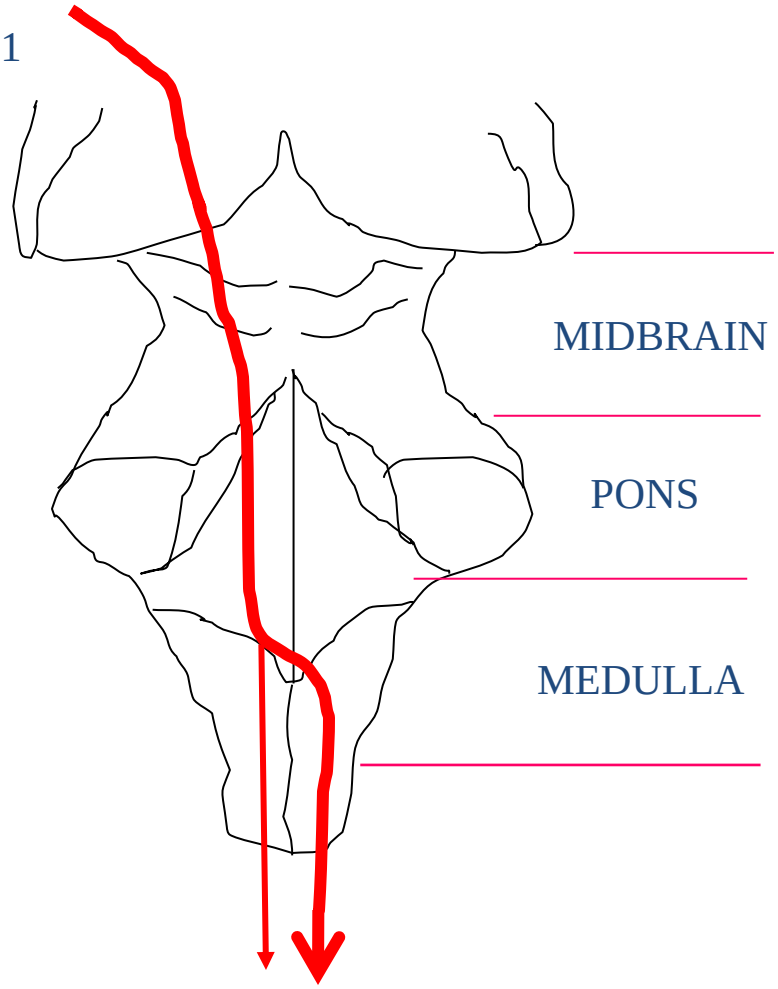
ASCENDING TRACTS ORIGINATING FROM BRAIN STEM

1. LEMNISCUS TRIGEMINALIS
2. LEMN. TRIGEM. DORSALIS
3. LEMNISCUS MEDIALIS
4. LEMNISCUS LATERALIS
5. TR. OLIVOCEREBELLARIS
6. TR. PONTOCEREBELLARIS
7. NIGROSTRIATAL PATHWAY



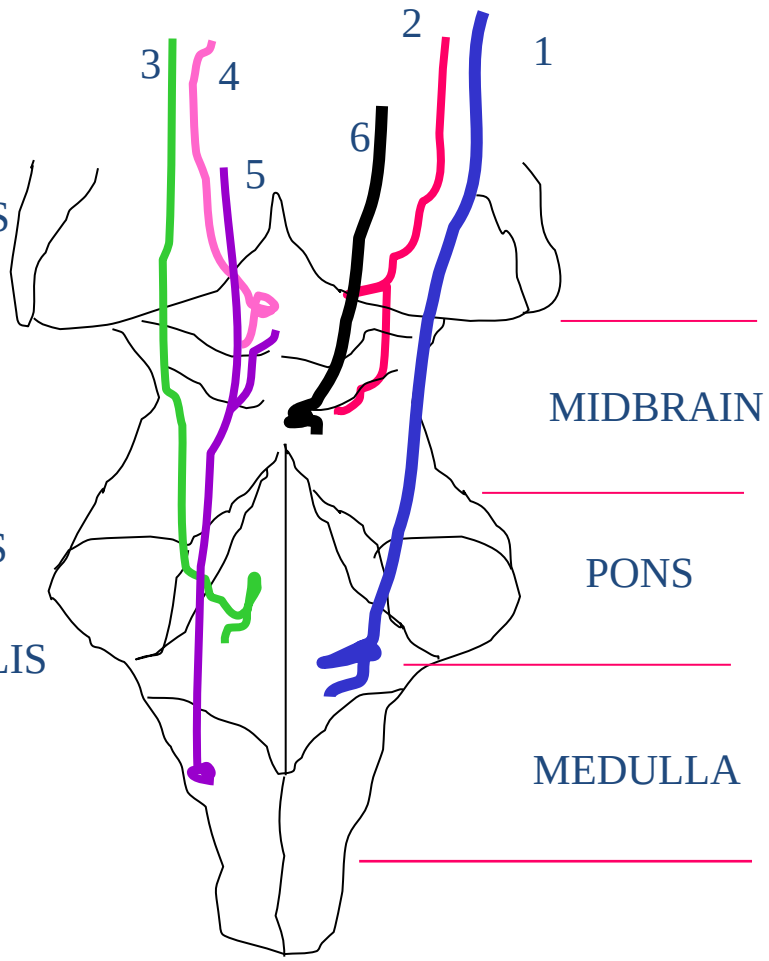
DESCENDING TRACT PASSING THROUGH THE BRAIN STEM

1. TRACTUS CORTICOSPINALIS



DESCENDING PATHWAYS TERMINATING IN BRAIN STEM

1. TR. CORTICOBULBARIS
2. TR. CORTICOMESENCEPHALICUS
3. TR. CORTICOPONTINUS
4. TR. CORTICORUBRALIS
5. FASC. TEGMENTALIS CENTRALIS
6. FASC. LONGITUDINALIS DORSALIS



DESCENDING PATHWAYS ORIGINATING FROM BRAIN STEM

1. TR. TECTOSPINALIS
2. TR. VESTIBULOSPINALIS
3. TR. RUBROSPINALIS
4. TR. RETICULOSPINALIS
5. FASC. LONGITUDINALIS MEDIALIS