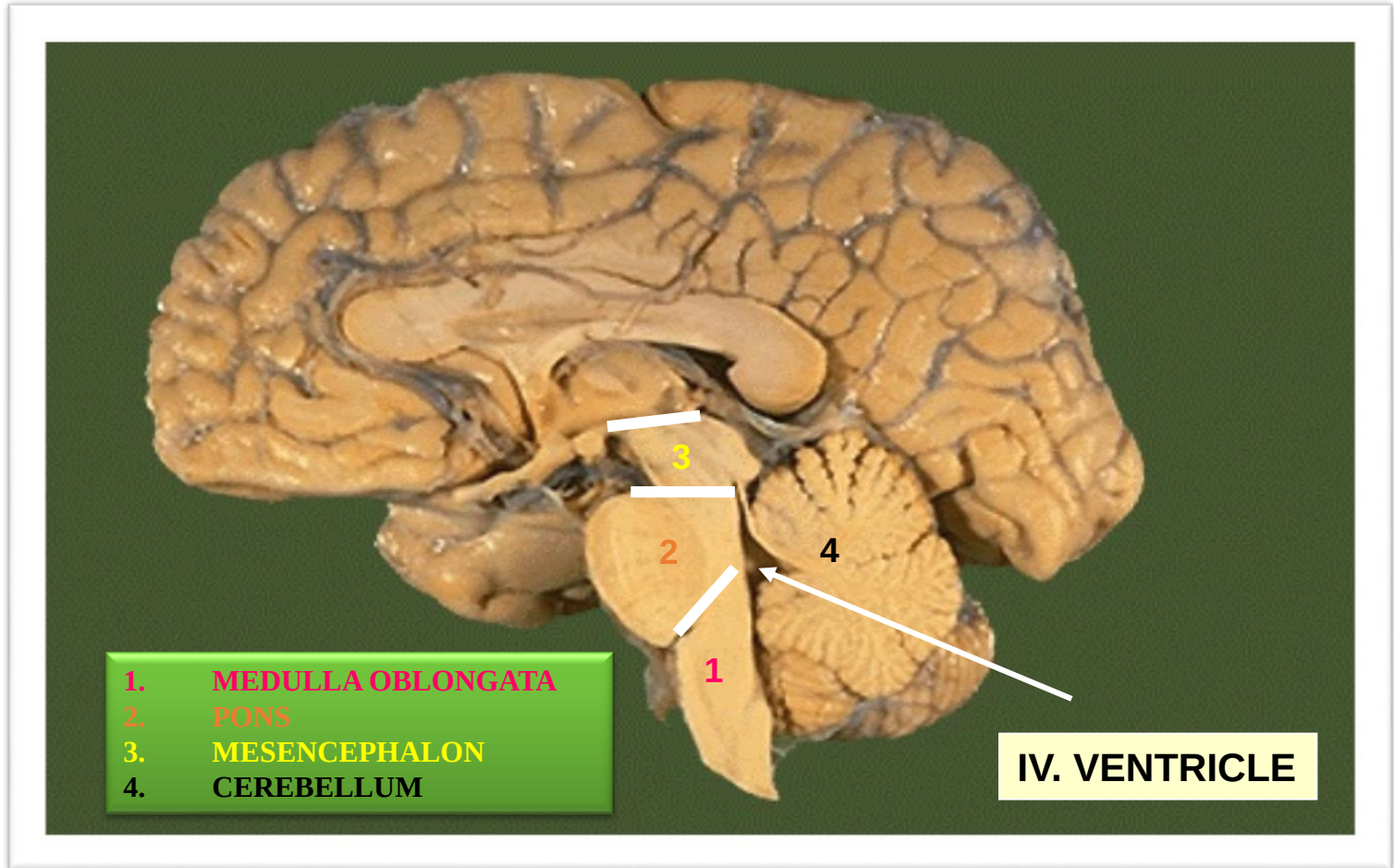


BASICS OF NEUROBIOLOGY

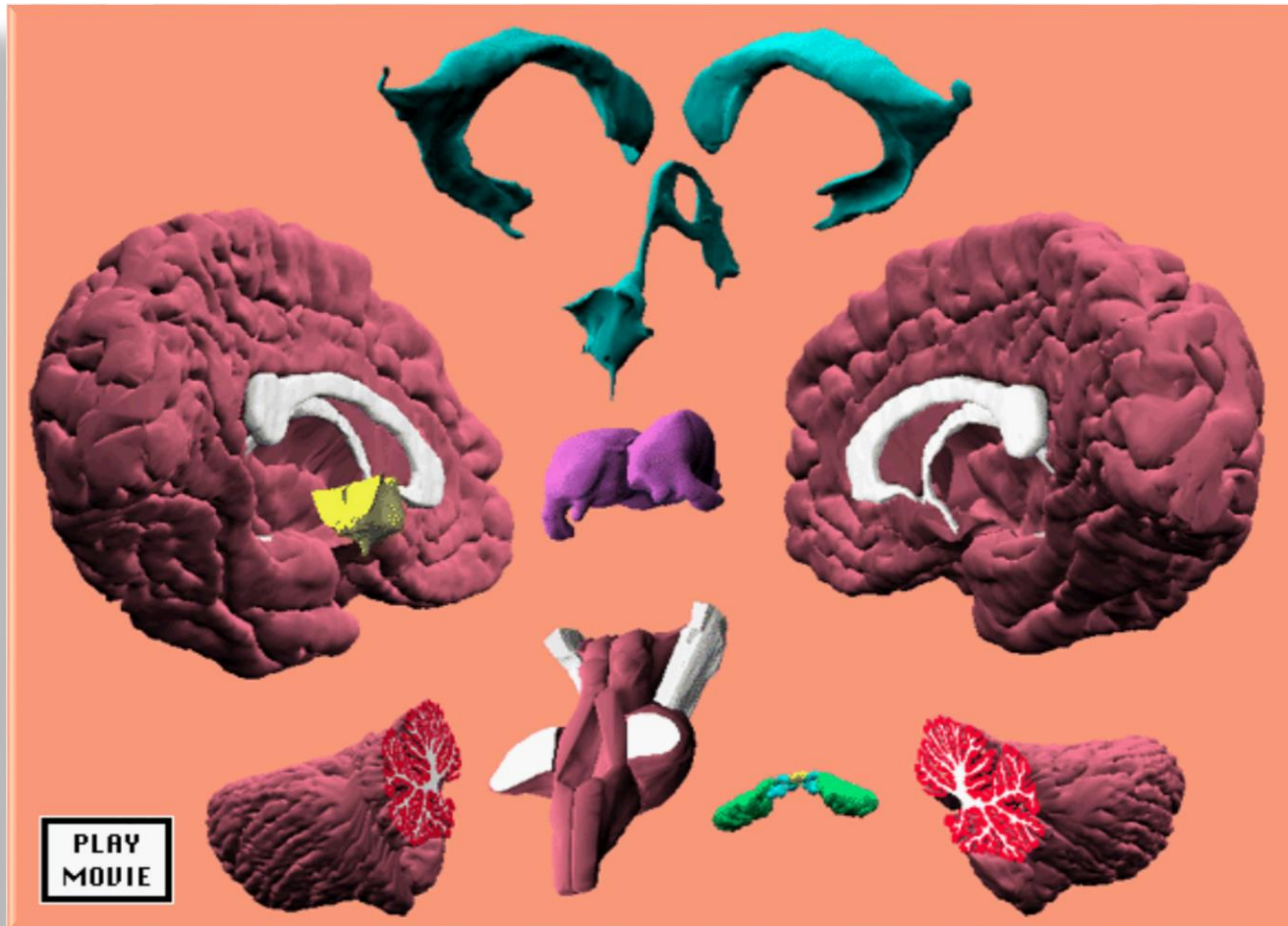
BRAIN STEM

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MAIN CHARACTERISTICS OF THE BRAIN STEM

STRUCTURALLY, IT CONSISTS OF THE MEDULLA OBLONGATA, THE PONS AND THE MESENCEPHALON

ITS CONSTITUENTS DEVELOP FROM THE HINDBRAIN. ALTHOUGH THE CEREBELLUM ALSO DERIVES FROM THE RHOMBENCEPHALON, FROM DIDACTIC POINT OF VIEW MOST TEXTBOOKS DESCRIBE IT SEPARATELY

ITS INNER CAVITY IS THE 4TH CEREBRAL VENTRICLE

IMPORTANT SOMATIC AND AUTONOMIC CENTERS ARE LOCATED IN IT

THE PROCESSING CENTERS OF MOST CRANIAL NERVES ARE WITHIN THE BRAIN STEM

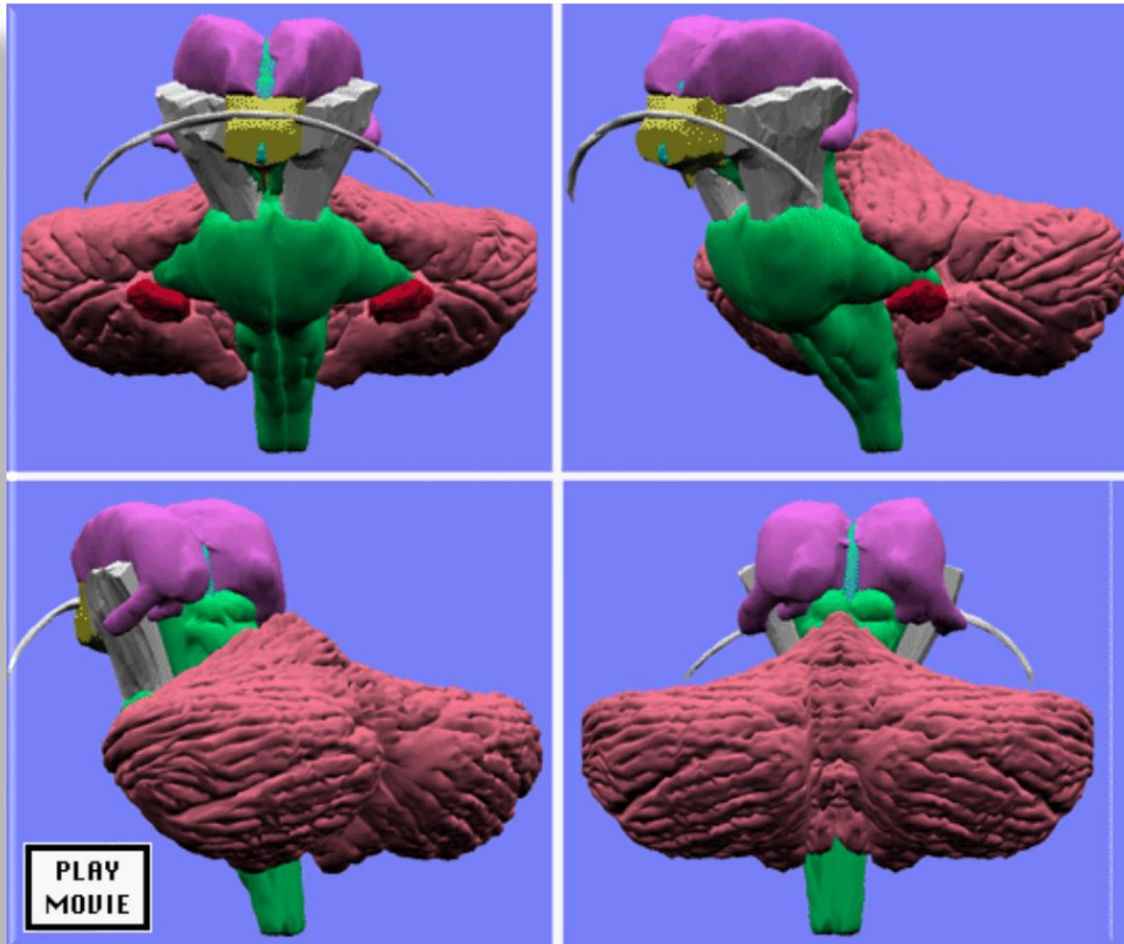
A FUNCTIONALLY SIGNIFICANT SYSTEM, THE RETICULAR FORMATION CONTROLLING VITAL RESPIRATORY AND CIRCULATORY MECHANISMS AND AROUSAL, IS ALSO PART OF THE BRAIN STEM

IT IS THE MAIN SOURCE OF MONOAMINE TRANSMITTERS

MAJOR MOTOR AND SENSORY PROJECTIONS PASS THROUGH THE BRAIN STEM

SUBCORTICAL ACOUSTIC AND VESTIBULAR CENTERS ARE REPRESENTED IN THE BRAIN STEM

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PARCELLATION OF THE BRAIN STEM

A PART OF THE HUMAN BRAIN IS SHOWN IN A MID-SAGITTAL SECTION THAT REVEALS THE MAIN COMPONENTS OF THE BRAIN STEM. IT WAS SEPARATED FROM THE SPINAL CORD. NOTE THE CONTINUITY OF THE BRAIN STEM WITH THE DIENCEPHALON. THE MEDULLA, THE PONS AND THE CEREBELLUM SURROUND THE 4TH CEREBRAL VENTRICLE (GREEN STAR). WITHIN THE MESENCEPHALON, THE RELATIVELY NARROW CEREBRAL AQUEDUCT (RED ARROW) IS ALSO VISIBLE



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STRUCTURES IN THE VICINITY OF BRAIN STEM ON THE VENTRAL SIDE

OPTIC NERVE

TELENCEPHALON

HYPOTHALAMUS

CRUS CEREBRI

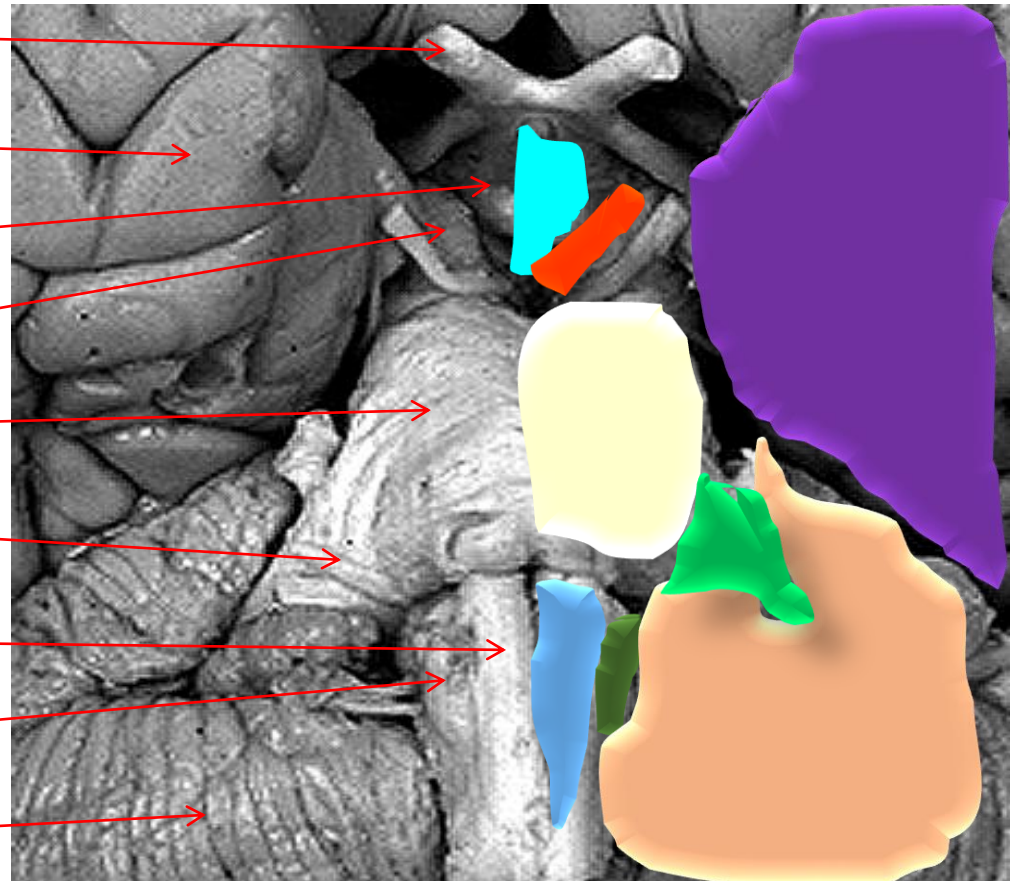
PONS

BRACHIUM PONTIS

PYRAMID

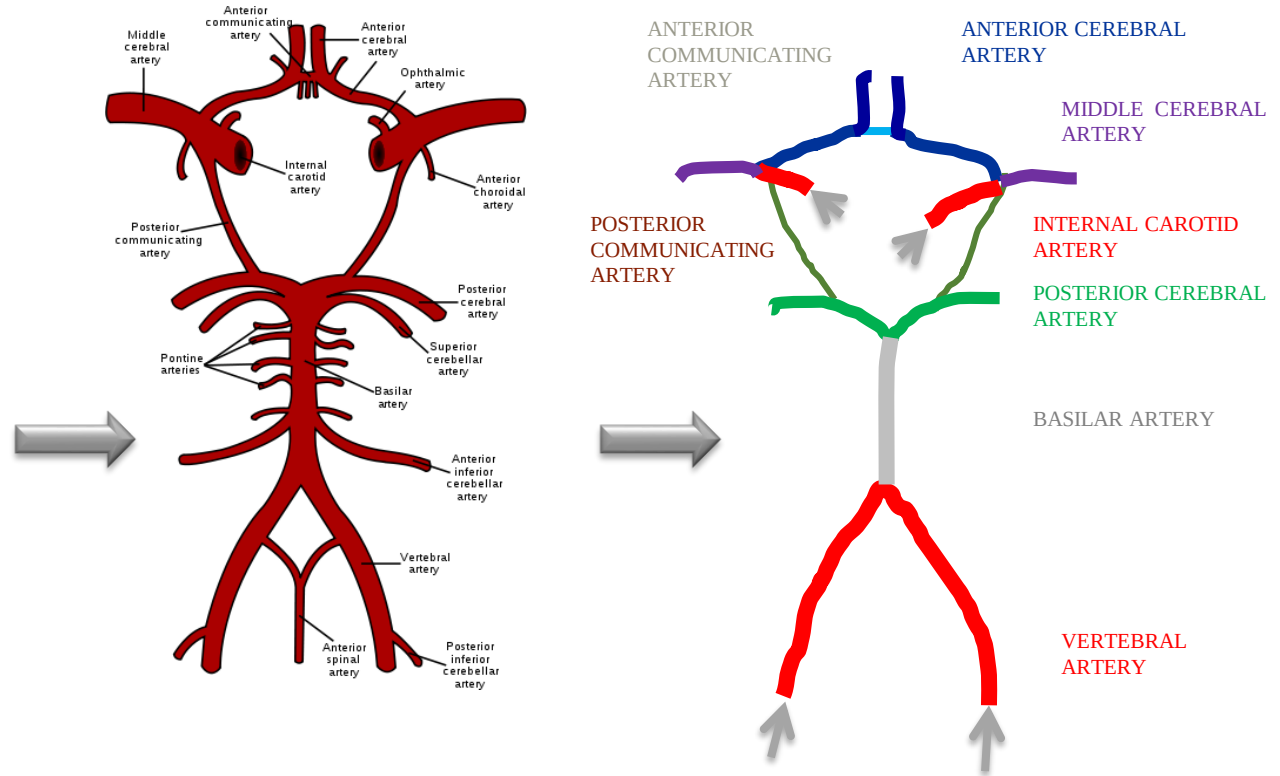
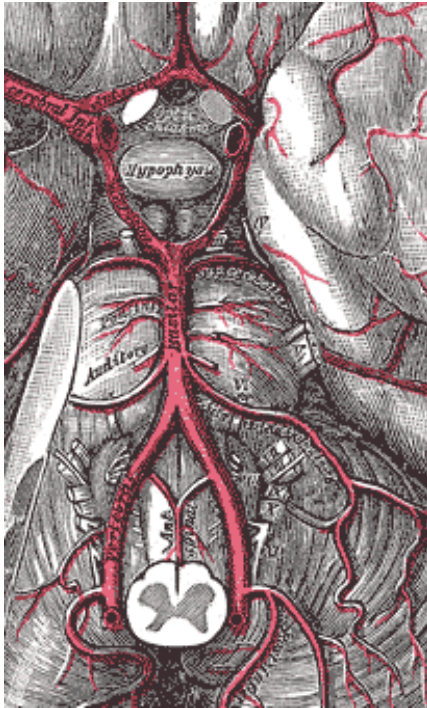
INFERIOR OLIVE

CEREBELLUM



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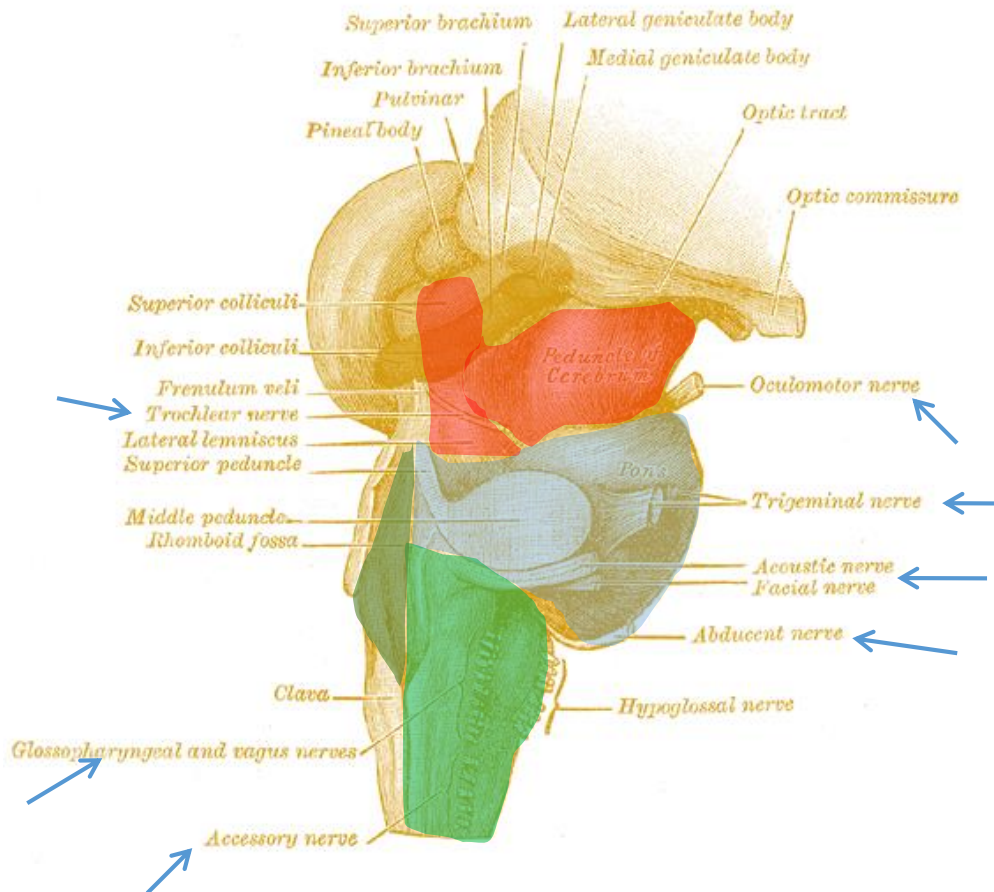
THE ARTERIAL SUPPLY OF THE BASE OF THE BRAIN



THE **VERTEBRAL** AND **INTERNAL CAROTID** ARTERIES SUPPLY THE BRAIN. THE MAIN BRANCHES ARE ASSOCIATED WITH THE VENTRAL SURFACE OF THE BRAIN. THE SYSTEMS ARE INTERCONNECTED VIA THE **POSTERIOR COMMUNICATING ARTERIES**. THE ANTERIOR CEREBRAL ARTERIES ARE ALSO INTERCONNECTED BY THE **ANTERIOR COMMUNICATING ARTERY**. THE ESTABLISHED LOOP IS CALLED, THE ARTERIAL CIRCLE OF WILLIS

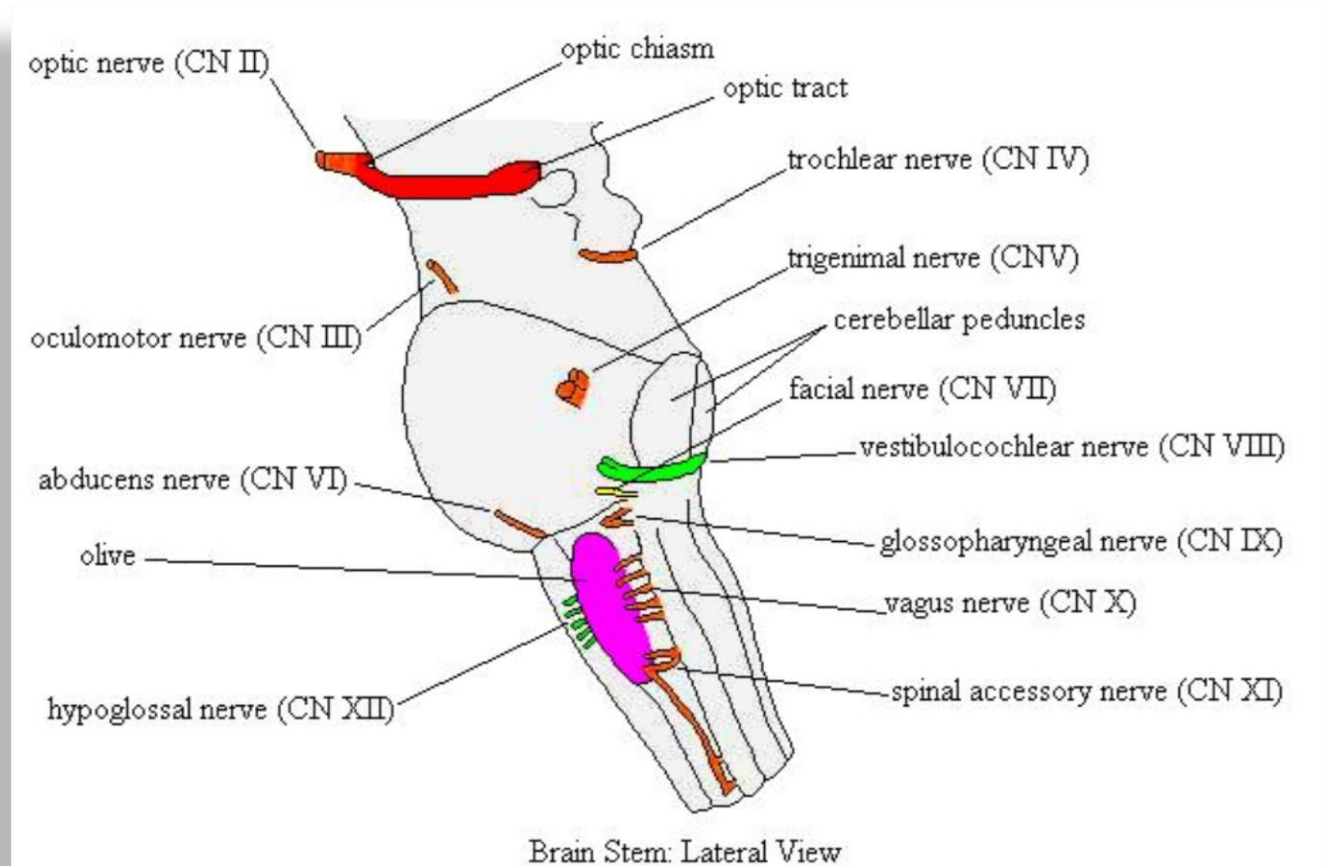
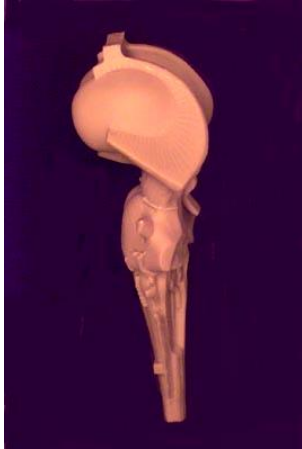
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DORSO-LATERAL VIEW OF THE HUMAN BRAIN STEM



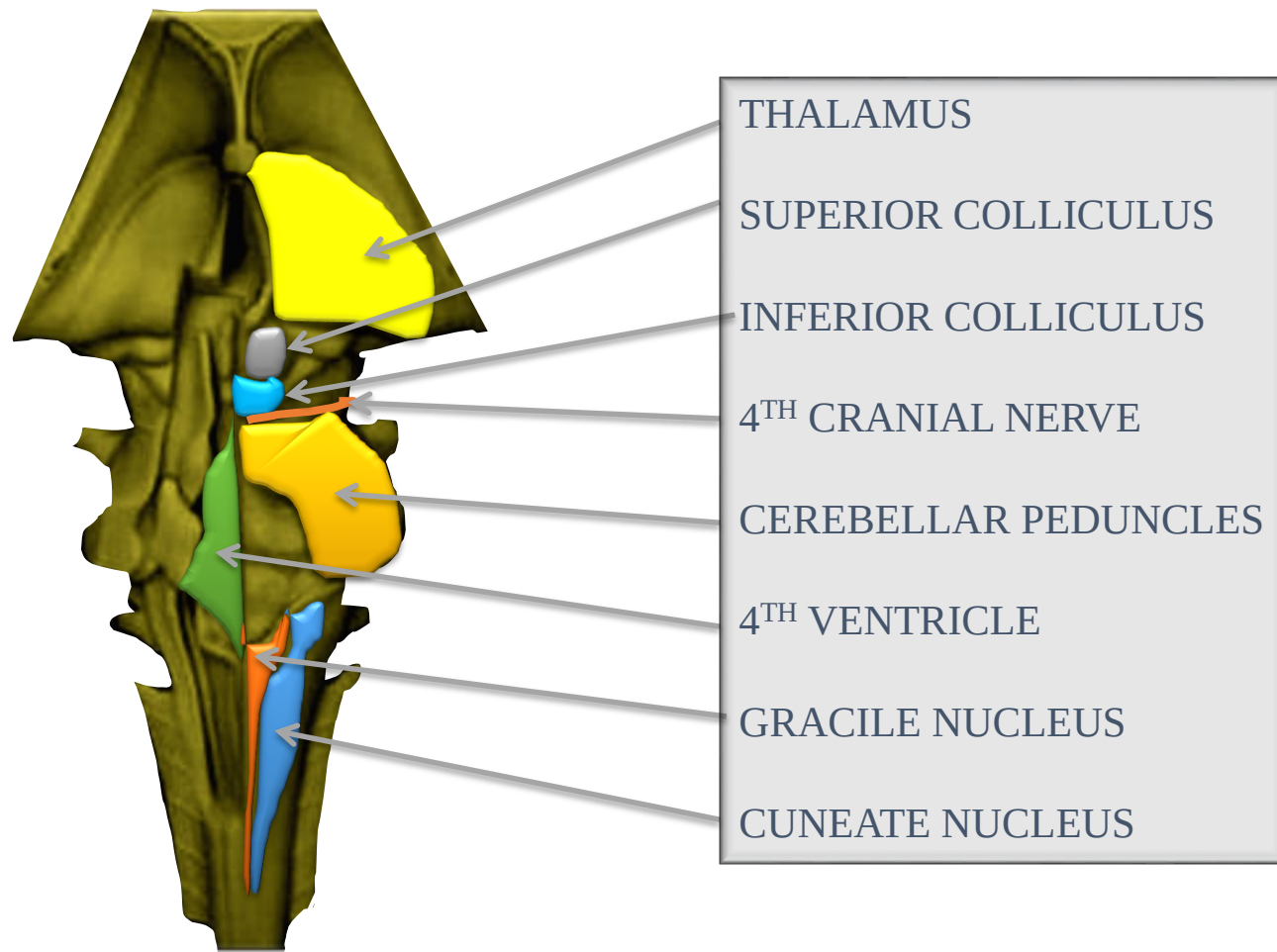
THE MIDBRAIN, THE PONS AND THE MEDULLA ARE DEPICTED AND COLOR CODED IN THE FIGURE. THE CEREBELLUM HAS BEEN REMOVED. THE BASE OF THE 4TH VENTRICLE, THE RHOMBOID FOSSA, IS VISIBLE. SEVERAL CRANIAL NERVES (ARROWS) EXITING THE BRAIN STEM ARE ALSO APPARENT

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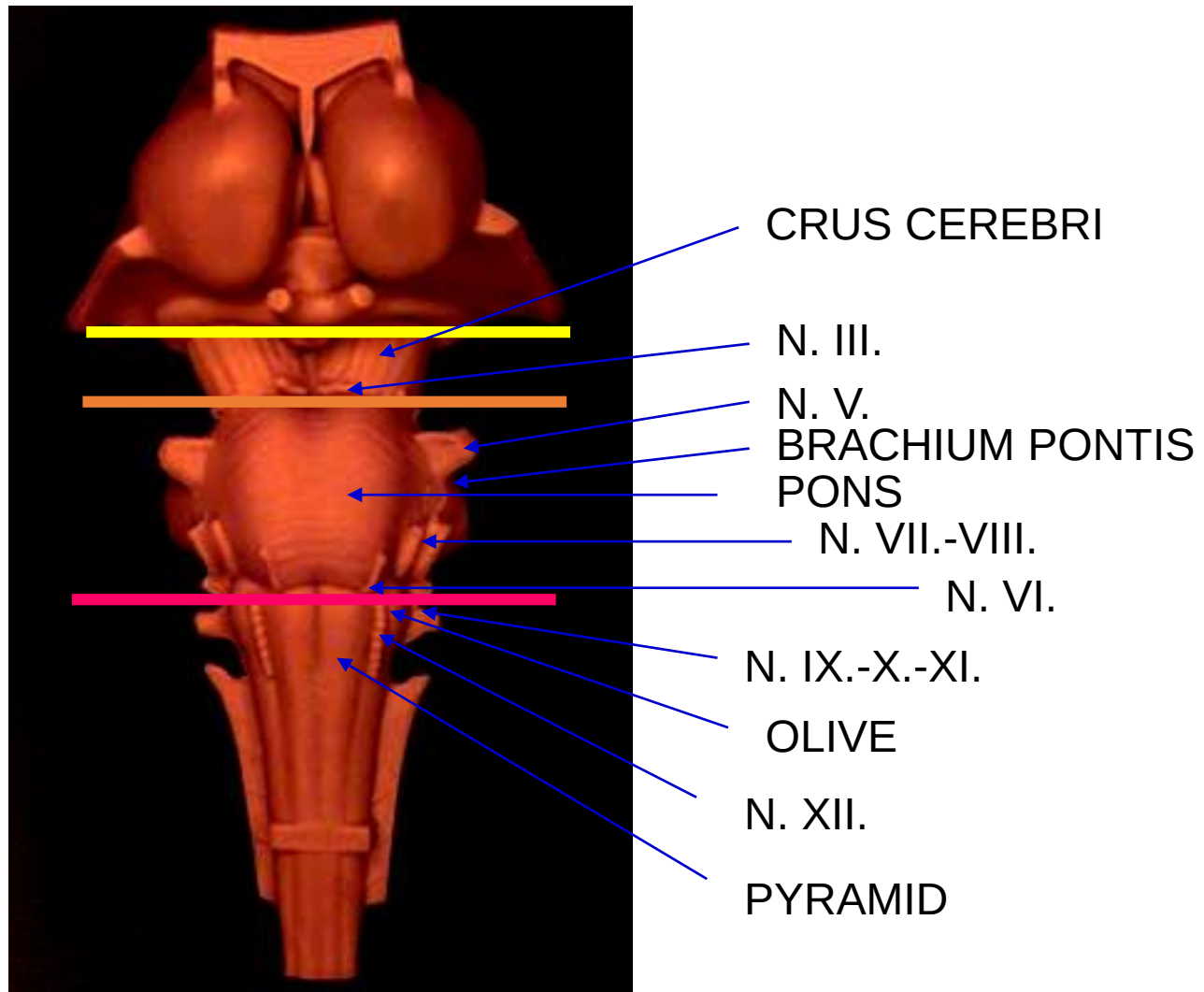
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DORSAL LANDMARKS OF THE BRAIN STEM



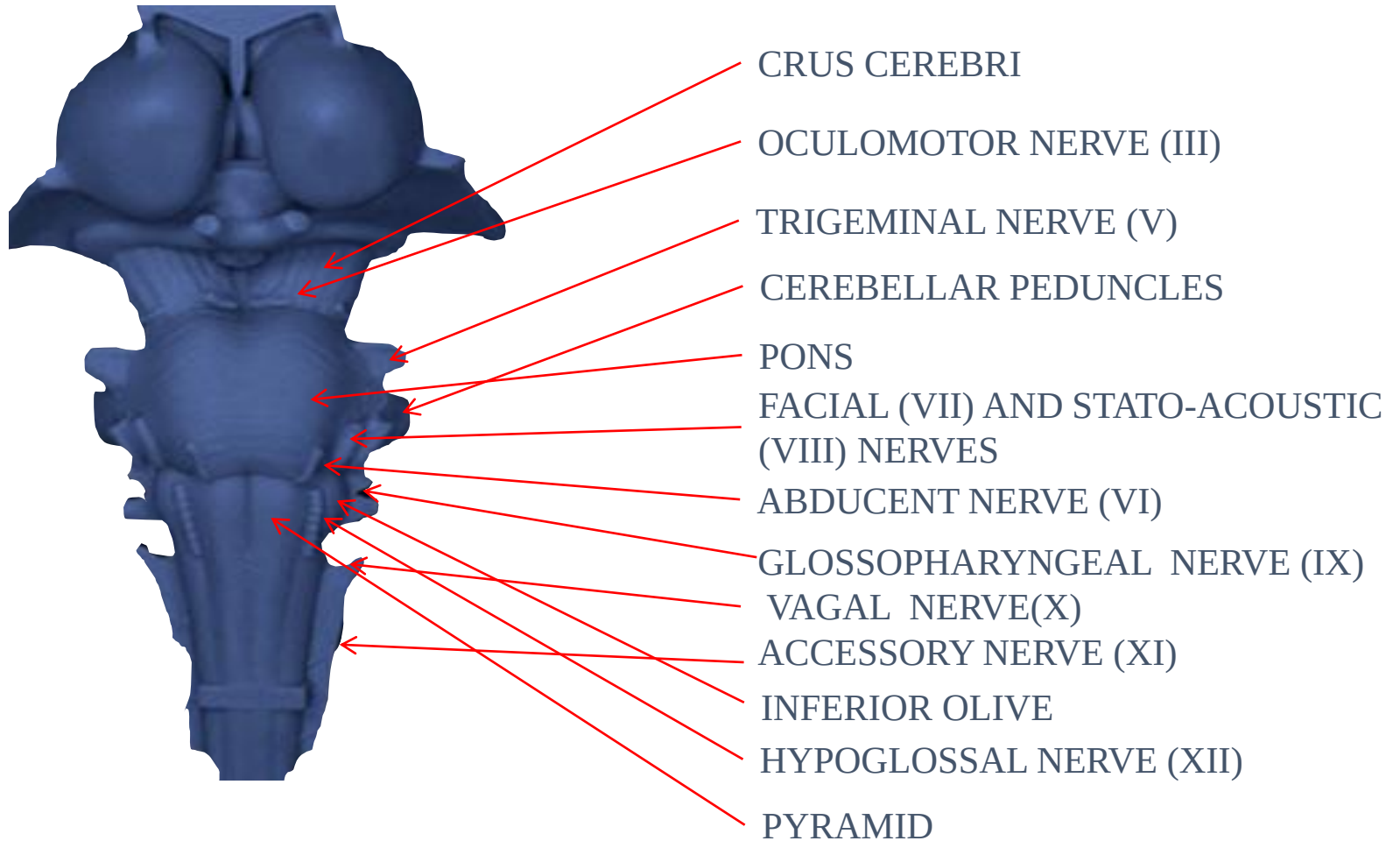
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BRAIN STEM STRUCTURES ON THE VENTRAL SURFACE

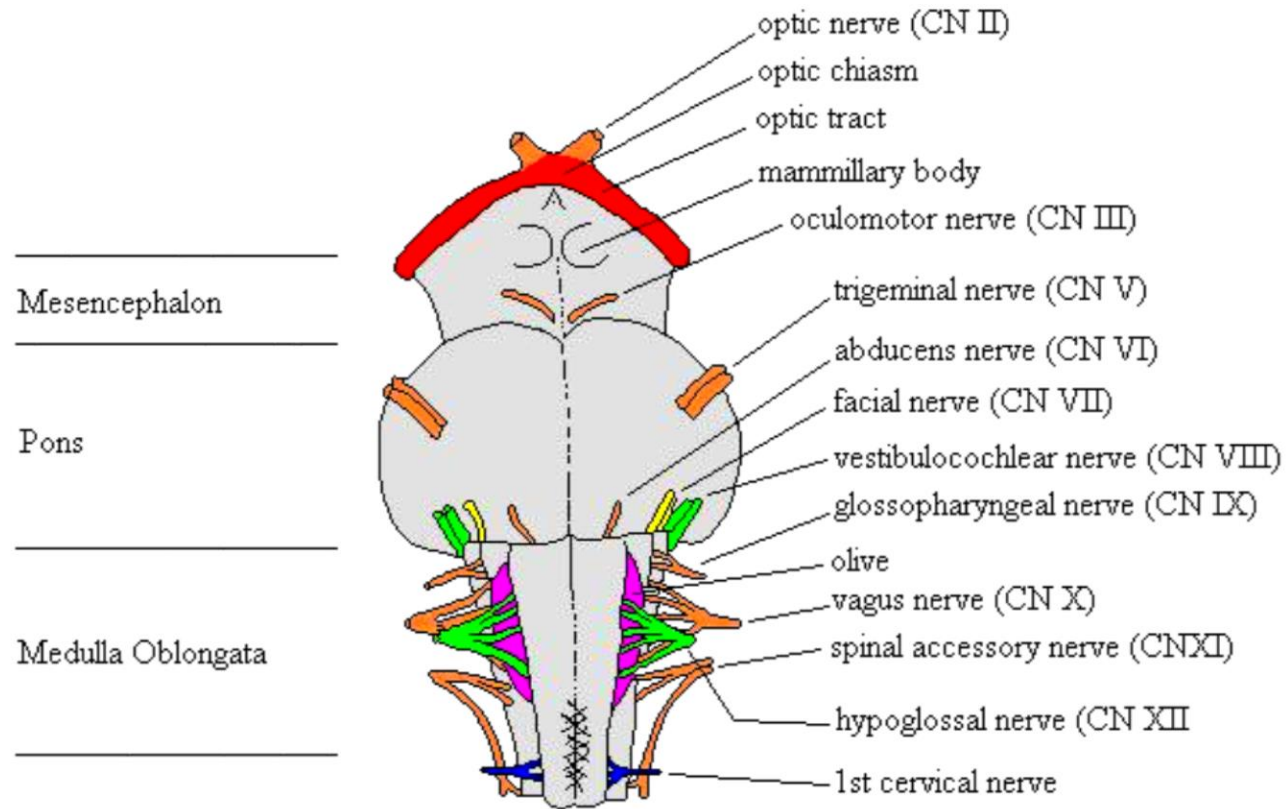


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BRAIN STEM STRUCTURES ON THE VENTRAL SURFACE



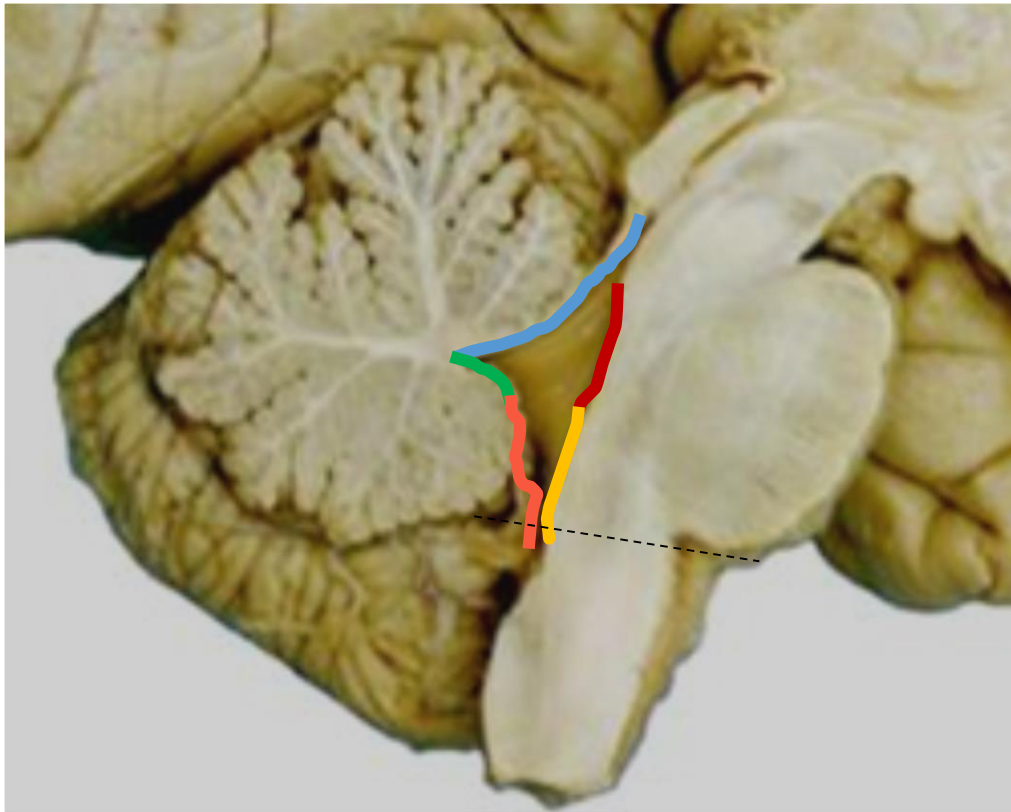
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Brain Stem: Anterior View

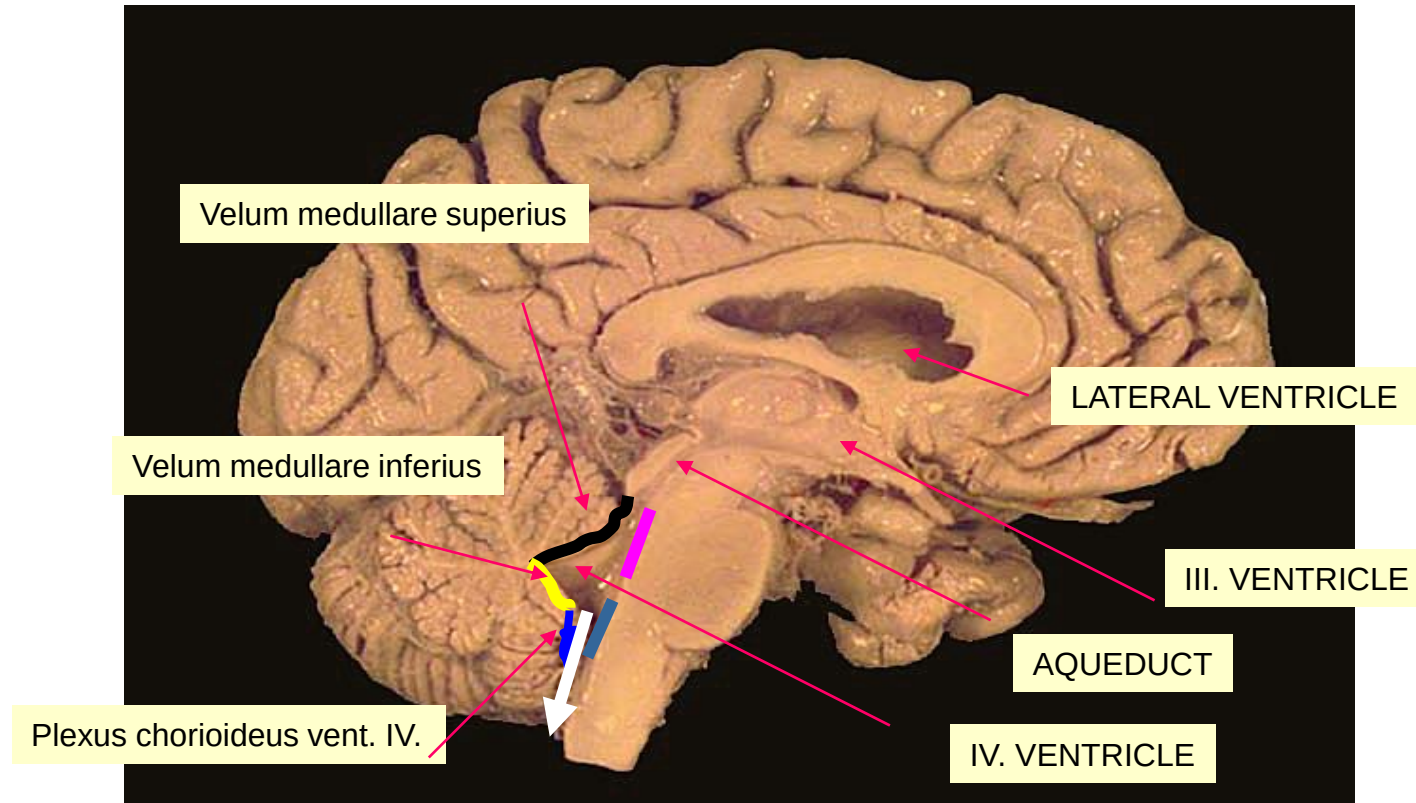
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THE BOUNDARIES OF THE IVTH VENTRICLE



THE ROOF THE 4TH VENTRICLE IS COMPOSED OF THE SUPERIOR MEDULLARY VELUM, THE INFERIOR MEDULLARY VELUM AND THE CHOROID PLEXUS OF THE VENTRICLE. THE FLOOR HAS A RHOMBOID SHAPE. ITS UPPER PART IS FORMED BY THE PONS, THE LOWER HALF IS MADE BY THE OPEN PART OF THE MEDULLA. THE DASHED LINE DEMARCATES THE CLOSED AND OPEN SEGMENTS OF THE MEDULLA OBLONGATA. THE CEREBROSPINAL FLUID LEAVES THE VENTRICULAR SYSTEM THROUGH OPENINGS OF THE 4TH VENTRICLE

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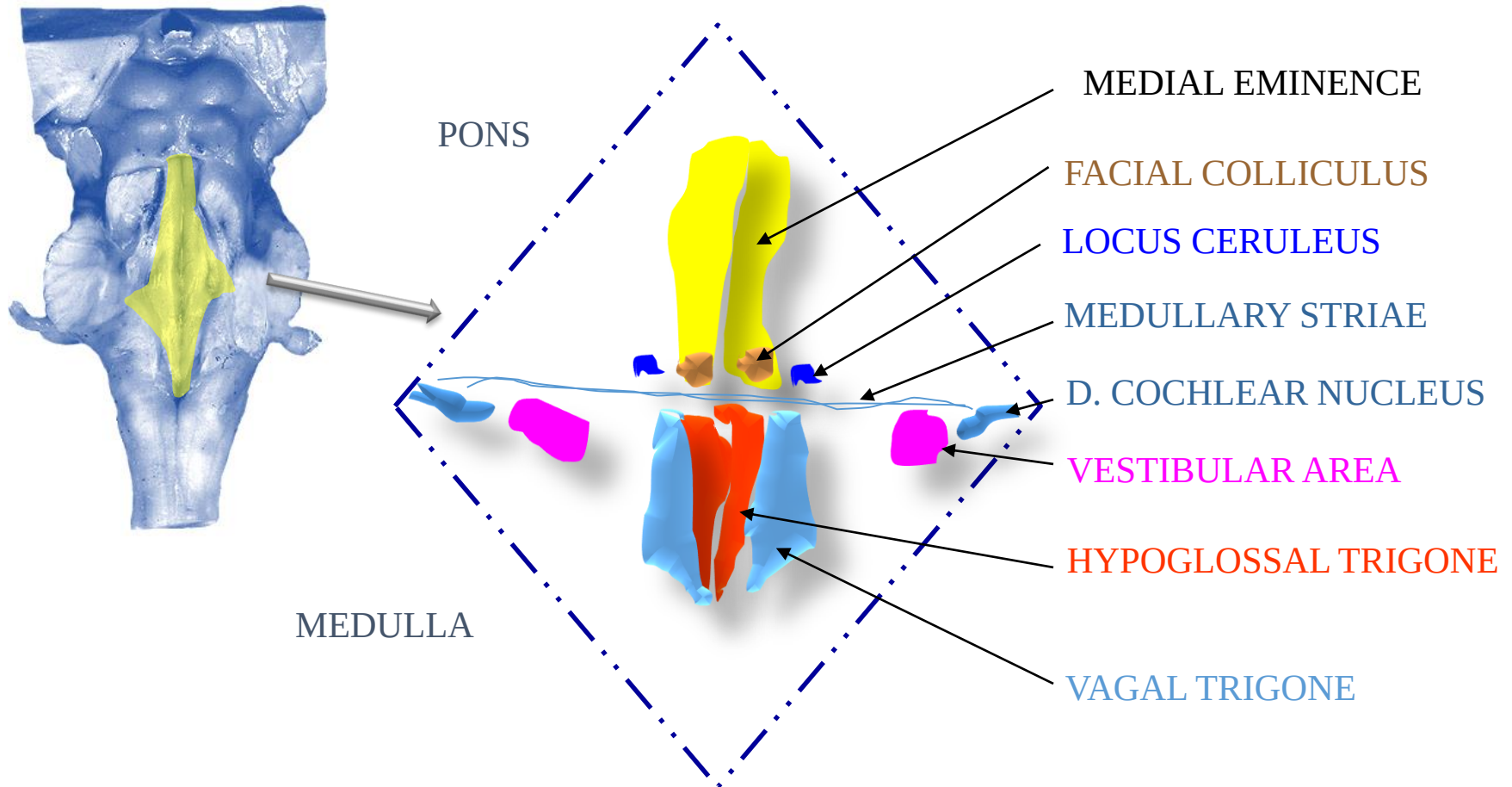


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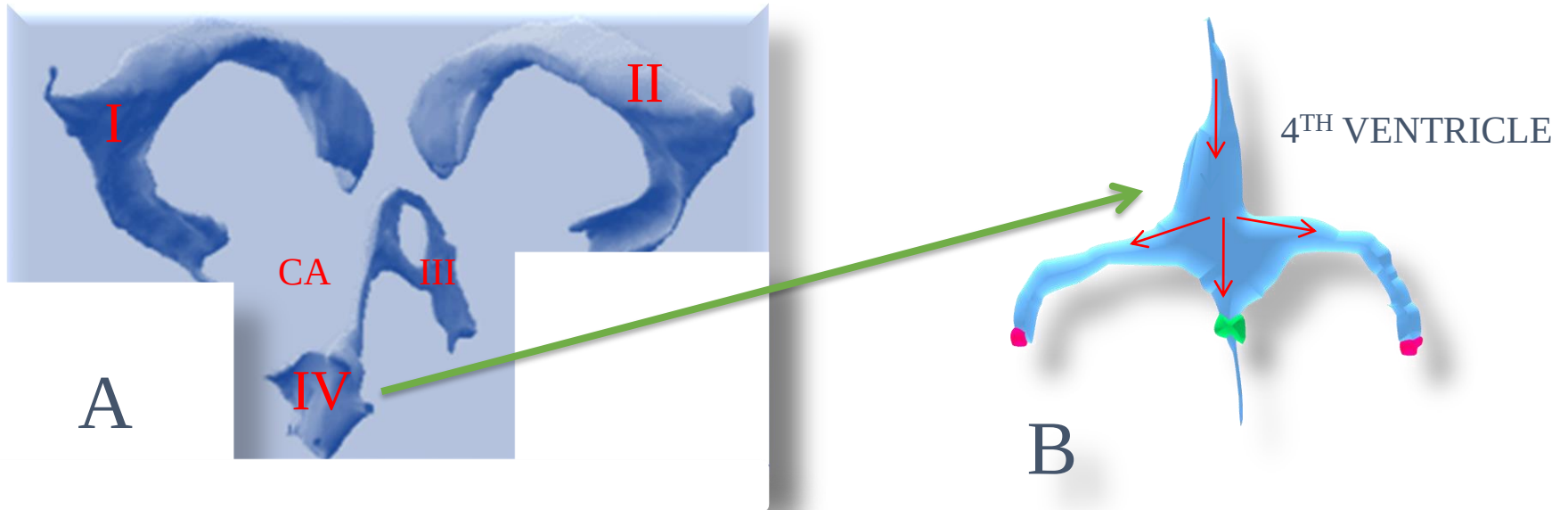
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THE RHOMBOID FOSSA AND ITS STRUCTURES



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COMMUNICATION BETWEEN THE INTRA- AND EXTRACEREBRAL LIQUOR COMPARTMENTS



A. MOULD OF THE CEREBRAL VENTRICLES. I. AND II. LATERAL VENTRICLES. III. THIRD VENTRICLE. CA. CEREBRAL AQUEDUCT. IV. FOURTH VENTRICLE.

B. LIQUOR PRODUCED BY THE CHOROID PLEXUS IN THE LATERAL, THIRD AND FOURTH CEREBRAL VENTRICLES GETS OUT OF THE INTRACEREBRAL COMPARTMENT TO THE EXTERNAL, SUBARACHNOID SPACE VIA THE **MAGENDIE** AND **LUSCHKA** FORAMINA DEPICTED IN FIGURE B