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MIDBRAIN

- MESENCEPHALON; MIDBRAIN
  - upper and shortest part of brainstem
  - EXTERNAL FEATURES OR SURFACES
    - VENTRAL SURFACE
      - emerges from cerebral hemispheres joins to form
        - crus cerebri of midbrain
          - converges downwards to enter
            - pons
          - forms posterolateral boundary of
            - interpeduncular fossa
          - superficial surface
            - corrugated by underlying longitudinal fibers
            - crosses transversely from above downwards by
              - optic tract ,
              - taenia pontis
              - superior cerebellar artery , posterior cerebral artery
          - medial side
            - groove
              - occulomotor nerve emerges
          - dorsal aspect
            - trochlear nerve emerges
              - curls around lateral aspect of cerebral peduncles
    - DORSAL SURFACE
      - shows four rounded elevations called corpora quadrigemina
        - separated from each other by
          - cruciform sulcus
            - vertical limb of sulcus when
            - traced above forms a depression
              - lodges pineal body
            - traced below becomes continuous with
              - frenulum veli
                - median ridge on dorsal surface of superior medullary velum
        - laterally from colliculi
          - thick ridges of white matter extend
            - called brachium
              - superior brachium
                - connects superior colliculus to lateral geniculate body
                - connects inferior colliculus to medial geniculate body
              - inferior brachium
        - two superior
          - superior colliculus
        - two inferior
          - inferior colliculus
  - INTERNAL STRUCTURE

- Mid brain divided by coronal plane passing through cerebral aqueduct in to two parts
  - anterior part or cerebral peduncle
    - parts from dorsal to ventral
      - tegmentum
      - substantia nigra
        - curved , crescent shaped
        - pigmented band of grey matter
          - deeply pigmented nerve cells
            - contain melanin (polymerized form of dopamine)
            - synthesize dopamine
              - carried through their axons (nigrostriatal fibers)
                - to corpus striatum
            - iron
        - spiky process project in to crus cerebri
        - parts
          - dorsal part (pars compacta) - medium sized cells
          - pars reticularis (ventral part) - few cells
            - intermingled with fibres of crus cerebri
      - crus cerebri
        - most anterior part
        - white matter
          - descending tracts
            - connect cerebral cortex to
              - anterior horn cells of spinal cord
              - cranial nuclei
              - pontine nuclei
            - middle 2/3 of crus
              - corticospinal
              - corticonuclear
            - medial 1/6 th of crus
              - frontopontine
            - lateral 1/6 th of crus
              - temporopontine , parietopontine , occipitopontine
  - posterior part or tectum
  - LEVELS OF SECTION
    - Transverse section of midbrain

- MESENCEPHALON; MIDBRAIN
  - Interpeduncular fossa
  - Posterior perforated substance
  - Oculomotor sulcus
- Cerebral peduncle
  - Cerebral crus
  - Lateral groove
  - Tegmentum of midbrain
    - Trigone of lateral lemniscus
  - Superior cerebellar peduncle

- Frenulum
- Tectal plate; quadrigeminal plate
  - Brachium of inferior colliculus
  - Brachium of superior colliculus
  - Inferior colliculus
  - Superior colliculus
- Cerebral peduncle
  - Base of peduncle
  - Cerebral crus
  - Pyramidal tract
    - Corticospinal fibres
    - Corticonuclear fibres
  - Corticopontine fibres
    - Frontopontine fibres
    - Occipitopontine fibres
    - Parietopontine fibres
    - Temporopontine fibres
    - Corticoreticular fibres
- Substantia nigra
  - Compact part
  - Lateral part
  - Reticular part
  - Retrorubral part
- Tegmentum of midbrain
- White substance
  - Central tegmental tract
  - Rubro-olivary fibres
  - Cerebello-olivary fibres
  - Mesencephalic corticonuclear fibres
  - Hypothalamospinal fibres
  - Base of peduncle
  - Tectopontine tract
  - Lateral tectobulbar tract
  - Medial lemniscus
  - Trigeminal lemniscus
  - Medial longitudinal fasciculus
  - Mesencephalic tract of trigeminal nerve
  - Posterior longitudinal fasciculus; dorsal longitudinal fasciculus Schütz
  - Rubronuclear tract
  - Rubrospinal tract Monakow
  - Rubro-olivary tract
  - Spinal lemniscus; anterolateral tracts; anterolateral systém
  - Spinothalamic fibres
  - Spinoreticular fibres
  - Spinomesencephalic fibres
  - Spinotectal fibres
  - Spinoperiaqueductal fibres
  - Spinohypothalamic fibres
  - Superior cerebellar peduncle
  - Decussation of superior cerebellar peduncles
  - Tectobulbar tract

        - Tectopontine tract
        - Tectospinal tract
        - Pretecto-olivary fibres
        - Tecto-olivary fibres
        - Tegmental decussations
        - Posterior tegmental decussation; dorsal tegmental decussation Meynert
        - Anterior tegmental decussation; ventral tegmental decussation Forel
        - Corticomesencephalic fibres
    - Grey substance
        - Nucleus of oculomotor nerve
        - Accessory nuclei of oculomotor nerve
        - Visceral nuclei; autonomic nuclei
        - Anterior medial nucleus; ventral medial nucleus
        - Posterior nucleus; dorsal nucleus
        - Interstitial nucleus Cajal
        - Central precommissural nucleus
        - Nucleus of posterior commissure Darkšewič
        - Ventral subdivision
        - Interstitial subdivision
        - Dorsal subdivision
        - Interpeduncular nucleus
        - Accessory nuclei of optic tract
        - Posterior nucleus; dorsal nucleus
        - Lateral nucleus
        - Medial nucleus
        - Lateroposterior tegmental nucleus; laterodorsal tegmental nucleus
        - Mesencephalic nucleus of trigeminal nerve
        - Nucleus of trochlear nerve
        - Parabigeminal nucleus
        - Periaqueductal grey substance; central grey substance
        - Peripeduncular nucleus
        - Red nucleus
        - Magnocellular part
        - Parvocellular part
        - Posteromedial part; dorsomedial part
        - Reticular formation
        - Sagulum nucleus
        - Subbrachial nucleus
        - Anterior tegmental nuclei; ventral tegmental nuclei
        - Interfascicular nucleus
        - Parabrachial pigmented nucleus
        - Paranigral nucleus
        - Cuneiform nucleus
        - Subcuneiform nucleus
        - Pedunculopontine tegmental nucleus
        - Compact part; compact subnucleus
        - Dissipated part; dissipated subnucleus
        - Raphe nuclei
        - Posterior raphe nucleus; dorsal raphe nucleus
        - Inferior linear nucleus
        - Intermediate linear nucleus

        - Superior linear nucleus
    - Aqueduct of midbrain; cerebral aqueduct Sylvii
    - Opening of aqueduct of midbrain; opening of cerebral aqueduct
    - Tectum of midbrain
        - Tectal plate; quadrigeminal plate
        - Inferior colliculus
            - Nuclei of inferior colliculus
            - Central nucleus
            - External nucleus
            - Pericentral nucleus
        - Superior colliculus
            - Zonal layer; layer i
            - Superficial grey layer; layer ii
            - Optic layer; layer iii
            - Intermediate grey layer; layer iv
            - Intermediate white layer; layer v
            - Deep grey layer; layer vi
            - Deep white layer; layer vii
    - Brachium of inferior colliculus
    - Brachium of superior colliculus
    - Commissure of inferior colliculus
    - Commissure of superior colliculus
    - Decussation of trochlear nerve fibres
- Reticular nuclei
    - Cuneiform nucleus
    - Subcuneiform nucleus
    - Pedunculopontine tegmental nucleus
    - Compact part; compact subnucleus
    - Dissipated part; dissipated subnucleus
    - Parapeduncular nucleus

TERMINOLOGY

531	MESENCEPHALON	MESENCEPHALON; MIDBRAIN
532	Fossa interpeduncularis	Interpeduncular fossa
533	Substantia perforata posterior	Posterior perforated substance
534	Sulcus nervi oculomotorii	Oculomotor sulcus
535	Pedunculus cerebri	Cerebral peduncle
536	Crus cerebri	Cerebral crus
537	Sulcus lateralis mesencephali	Lateral groove
538	Tegmentum mesencephali	Tegmentum of midbrain
539	Trigonum lemnisci lateralis	Trigone of lateral lemniscus
540	Pedunculus cerebellaris superior	Superior cerebellar peduncle
541	Frenulum veli medullaris superioris	Frenulum
542	Lamina tecti; lamina quadrigemina	Tectal plate; quadrigeminal plate
543	Brachium colliculi inferioris	Brachium of inferior colliculus
544	Brachium colliculi superioris	Brachium of superior colliculus
545	Colliculus inferior	Inferior colliculus

546	Colliculus superior	Superior colliculus
547	Pedunculus cerebri	Cerebral peduncle
548	Basis pedunculi	Base of peduncle
549	Crus cerebri	Cerebral crus
550	Tractus pyramidalis	Pyramidal tract
551	Fibrae corticospinales	Corticospinal fibres
552	Fibrae corticonucleares	Corticonuclear fibres
553	Tractus corticopontinus	Corticopontine fibres
554	Fibrae frontopontinae	Frontopontine fibres
555	Fibrae occipitopontinae	Occipitopontine fibres
556	Fibrae parietopontinae	Parietopontine fibres
557	Fibrae temporopontinae	Temporopontine fibres
558	Fibrae corticoreticulares	Corticoreticular fibres
559	Substantia nigra	Substantia nigra
560	Pars compacta	Compact part
561	Pars lateralis	Lateral part
562	Pars reticularis	Reticular part
563	Pars retrorubralis	Retrorubral part
564	Tegmentum mesencephali	Tegmentum of midbrain
565	Substantia alba	White substance
566	Tractus tegmentalis centralis	Central tegmental tract
567	Fibrae rubroolivares	Rubro-olivary fibres
568	Fibrae cerebelloolivares	Cerebello-olivary fibres
569	Fibrae corticonucleares mesencephali	Mesencephalic corticonuclear fibres
570	Fibrae hypothalamospinales	Hypothalamospinal fibres
571	Lemniscus lateralis	Base of peduncle
572	Tractus tectopontinus	Tectopontine tract
573	Tractus tectobulbaris lateralis	Lateral tectobulbar tract
574	Lemniscus medialis	Medial lemniscus
575	Lemniscus trigeminalis	Trigeminal lemniscus
576	Fasciculus longitudinalis medialis	Medial longitudinal fasciculus
577	Tractus mesencephalicus nervi trigemini	Mesencephalic tract of trigeminal nerve
578	Fasciculus longitudinalis posterior; fasciculus longitudinalis dorsalis Schütz	Posterior longitudinal fasciculus; dorsal longitudinal fasciculus Schütz
579	Tractus rubronuclearis	Rubronuclear tract
580	Tractus rubrospinalis Monakow	Rubrospinal tract Monakow
581	Tractus rubroolivaris	Rubro-olivary tract
582	Lemniscus spinalis; tractus anterolaterales	Spinal lemniscus; anterolateral tracts; anterolateral systém
583	Fibrae spinothalamicae	Spinothalamic fibres
584	Fibrae spinoreticulares	Spinoreticular fibres
585	Fibrae spinomesencephalicae	Spinomesencephalic fibres
586	Fibrae spinotectales	Spinotectal fibres
587	Fibae spinoperiaqueductales	Spinoperiaqueductal fibres
588	Fibrae spinohypothalamicae	Spinohypothalamic fibres
589	Pedunculus cerebellaris superior	Superior cerebellar peduncle

590	Decussatio pedunculorum cerebellarium superiorum	Decussation of superior cerebellar peduncles
591	Tractus tectobulbaris	Tectobulbar tract
592	Tractus tectopontinus	Tectopontine tract
593	Tractus tectospinalis	Tectospinal tract
594	Fibrae pretectoolivares	Pretecto-olivary fibres
595	Fibrae tectoolivares	Tecto-olivary fibres
596	Decussationes tegmentales	Tegmental decussations
597	Decussatio tegmentalis posterior Meynert	Posterior tegmental decussation; dorsal tegmental decussation Meynert
598	Decussatio tegmentalis anterior Forel	Anterior tegmental decussation; ventral tegmental decussation Forel
599	Fibrae corticomesencephalicae	Corticomesencephalic fibres
600	Substantia grisea	Grey substance
601	Nucleus nervi oculomotorii	Nucleus of oculomotor nerve
602	Nuclei accessorii nervi oculomotorii	Accessory nuclei of oculomotor nerve
603	Nuclei viscerales; nuclei autonomici	Visceral nuclei; autonomic nuclei
604	Nucleus anteromedialis	Anterior medial nucleus; ventral medial nucleus
605	Nucleus dorsalis	Posterior nucleus; dorsal nucleus
606	Nucleus interstitialis Cajal	Interstitial nucleus Cajal
607	Nucleus precommissuralis centralis	Central precommissural nucleus
608	Nucleus commissurae posterioris Darkšewič	Nucleus of posterior commissure Darkšewič
609	Pars ventralis	Ventral subdivision
610	Pars interstitialis	Interstitial subdivision
611	Pars dorsalis	Dorsal subdivision
612	Nucleus interpeduncularis	Interpeduncular nucleus
613	Nuclei accessorii tractus optici	Accessory nuclei of optic tract
614	Nucleus posterior	Posterior nucleus; dorsal nucleus
615	Nucleus lateralis	Lateral nucleus
616	Nucleus medialis	Medial nucleus
617	Nucleus tegmentalis posterolateralis	Lateroposterior tegmental nucleus; laterodorsal tegmental nucleus
618	Nucleus mesencephalicus nervi trigemini	Mesencephalic nucleus of trigeminal nerve
619	Nucleus nervi trochlearis	Nucleus of trochlear nerve
620	Nucleus parabigeminalis	Parabigeminal nucleus
621	Substantia grisea centralis	Periaqueductal grey substance; central grey substance
622	Nucleus peripeduncularis	Peripeduncular nucleus
623	Nucleus ruber	Red nucleus
624	Pars magnocellularis	Magnocellular part
625	Pars parvocellularis	Parvocellular part
626	Pars posteromedialis; pars dorsomedialis	Posteromedial part; dorsomedial part
627	Formatio reticularis	Reticular formation
628	Nucleus saguli; sagulum	Sagulum nucleus
629	Nucleus subbrachialis	Subbrachial nucleus

630	Nuclei tegmentales anteriores	Anterior tegmental nuclei; ventral tegmental nuclei
631	Nucleus interfascicularis	Interfascicular nucleus
632	Nucleus pigmentosus parabrachialis	Parabrachial pigmented nucleus
633	Nucleus paranigralis	Paranigral nucleus
634	Nucleus cuneiformis	Cuneiform nucleus
635	Nucleus subcuneiformis	Subcuneiform nucleus
636	Nucleus tegmentalis pedunculopontinus	Pedunculopontine tegmental nucleus
637	Pars compacta	Compact part; compact subnucleus
638	Pars dissipata	Dissipated part; dissipated subnucleus
639	Nuclei raphes	Raphe nuclei
640	Nucleus raphe posterior	Posterior raphe nucleus; dorsal raphe nucleus
641	Nucleus linearis inferior	Inferior linear nucleus
642	Nucleus linearis intermedius	Intermediate linear nucleus
643	Nucleus linearis superior	Superior linear nucleus
644	Aqueductus mesencephali; aqueductus cerebri Sylvii	Aqueduct of midbrain; cerebral aqueduct Sylvii
645	Apertura aqueductus mesencephali; apertura aqueductus cerebri	Opening of aqueduct of midbrain; opening of cerebral aqueduct
646	Tectum mesencephali	Tectum of midbrain
647	Lamina tecti; lamina quadrigemina	Tectal plate; quadrigeminal plate
648	Colliculus inferior	Inferior colliculus
649	Nuclei colliculi inferioris	Nuclei of inferior colliculus
650	Nucleus centralis	Central nucleus
651	Nucleus externus; nucleus lateralis	External nucleus
652	Nucleus pericentralis	Pericentral nucleus
653	Colliculus superior	Superior colliculus
654	Stratum zonale; lamina i	Zonal layer; layer i
655	Stratum griseum superficiale; lamina ii	Superficial grey layer; layer ii
656	Stratum opticum; lamina iii	Optic layer; layer iii
657	Stratum griseum intermedium; lamina iv	Intermediate grey layer; layer iv
658	Stratum medullare intermedium; lamina v	Intermediate white layer; layer v
659	Stratum griseum profundum; lamina vi	Deep grey layer; layer vi
660	Stratum medullare profundum; lamina vii	Deep white layer; layer vii
661	Brachium colliculi inferioris	Brachium of inferior colliculus
662	Brachium colliculi superioris	Brachium of superior colliculus
663	Commissura colliculi inferioris	Commissure of inferior colliculus
664	Commissura colliculi superioris	Commissure of superior colliculus
665	Decussatio fibrarum nervorum trochlearium	Decussation of trochlear nerve fibres
666	Nuclei reticulares	Reticular nuclei
667	Nucleus cuneiformis	Cuneiform nucleus
668	Nucleus subcuneiformis	Subcuneiform nucleus
669	Nucleus tegmentalis peduncolopontinus	Pedunculopontine tegmental nucleus
670	Pars compacta	Compact part; compact subnucleus
671	Pars dissipata	Dissipated part; dissipated subnucleus
672	Nucleus parapeduncularis	Parapeduncular nucleus