

GLOSSARY OF NEUROANATOMY TERMS

Adrenergic neuron: neuron which transmits at synapses by the release of adrenalin or nor-adrenalin.

Anterior and posterior, ventral and dorsal (directions): in neuroanatomy these directional terms are used in two ways: (1) In humans, to mean, respectively, towards the front or the back of the erect body, which is equivalent to the more general biological terms 'ventral' and 'dorsal', applied more widely to embryos and non-bipedal vertebrates (**ventral** = towards the belly, **dorsal** = towards the back). Therefore in the spinal cord, the term 'anterior root' is synonymous with 'ventral root', 'posterior root' with 'dorsal root', etc. Often the two types of description (anterior / ventral and posterior / dorsal) are used interchangeably even in the same text. (2) In the brain, which even in humans is mostly horizontal in its long axis, the terms 'anterior' and 'posterior' are used to define relative position between the front of the head and its rear (e.g. the anterior commissure is in front of the posterior commissure etc.); then the terms '**ventral**' and '**dorsal**' define relative positions from the top of the brain to its base. See also: **rostral** and **caudal**.

Anterior horn (ventral horn): part of the grey matter of the spinal cord where motor neurons are present, seen as an antero-lateral enlargement in cross sections of the cord.

Anterior root: bundle of motor axons passing out of the ventro-lateral surface of the spinal cord.

Anterior (spinal) column: anterior (ventral) division of the spinal cord white matter carrying longitudinal axon bundles, mostly small motor tracts.

Anterograde axonal degeneration: degeneration of an axon after local damage, from the point of damage downstream towards the axon terminal (i.e. away from the cell body).

Arachnoid granulation: small projection of the arachnoid mater through the dura mater into a venous sinus around the brain. Acts like a one-way valve allowing cerebrospinal fluid to leak from the subarachnoid space back into the venous circulation.

Arachnoid mater: thin sheet of connective tissue surrounding the brain and spinal cord, situated between the thick dura mater externally and the very thin pia mater on the brain surface. It lies close to the dura mater, but is separated from the pia mater by the subarachnoid space, crossed by thin strands of tissue, suggesting the appearance of a spider's web (hence arachnoid – greek for spidery).

Association area: part of the cerebral cortex which receives inputs from different sensory modalities, e.g. vision and hearing.

Association tracts: tracts which interconnect different areas of a cerebral hemisphere.

Ataxia: inability to move properly.

Axon: long thin cylindrical extension of a neuron that conducts action potentials away from the neuronal cell body. (NB: rather confusingly, in the case of primary sensory neurons, the long peripheral extension is also known as an axon, although it conducts action potentials towards the cell body).

Axon hillock: a small conical projection from the neuronal cell body where the axon emerges. This part has special electrical properties as the site where action potentials begin.

Axon terminal: region of the axon where neurotransmission to another neuron at a synapse or to a muscle at a neuromuscular junction, or to some other peripheral structure e.g. a gland) occurs.

Basal ganglia: non-cortical regions deep in the cerebral hemispheres where groups of neurons involved in motor control are located. They include the striatum, pallidum and associated nuclei. Involved in the selection and initiation of motor programmes, and also has cognitive importance. Different dysfunctions of these include Parkinson's disease and Huntington's chorea.

Brainstem: narrow part of the brain between the forebrain and spinal cord, consisting of the medulla oblongata, pons and midbrain. Some authorities also include the thalamus, though this is not generally accepted. Houses the nuclei of cranial nerves III – XII, reticular centres, major ascending and descending tracts, etc. Essential for life.

Broca's (speech motor) area: part of the cerebral cortex specialised for the production of speech. Located in the frontal lobe of the cerebral hemisphere just anterior to the base of the motor cortex, usually in the left hemisphere only. Damage to this area leads to various difficulties in speech production.

Calcarine sulcus: short but deep longitudinal sulcus on the medial surface of the cerebral hemisphere's occipital lobe. A longitudinal strip of cortex on either side of the sulcus contains the primary visual cortex.

Caudal: this term indicates direction within the central nervous system, indicating the position of structures derived embryonically towards the tail end. e.g. the spinal cord is caudal to the medulla oblongata.

Cell body: part of a neuron surrounding a cellular nucleus; the cell body contains most of the protein-synthesising organelles of the neuron. Also known as the soma (greek: body) or perikaryon (greek: around the nucleus).

Central nervous system (CNS): brain and spinal cord

Central sulcus: a deep groove in the dorsal and dorso-lateral surfaces of the brain which separates the motor cortex (anterior to it) from the somatosensory cortex (posterior to it).

Cerebellum: part of the brain located ventro-posterior to the cerebral hemispheres and dorsal to the brainstem. Important in corrective motor control and learning and many other functions involving timed sequential activity. .

Cerebellar peduncles: columns of white matter connecting the brainstem to the cerebellum. There are three on each side: a large middle cerebellar peduncle and small inferior and superior cerebellar peduncles. All axons entering and leaving the cerebellum pass through these.

Cerebral hemispheres: the main mass of the brain lying above the brainstem. Includes the cerebral cortices, basal ganglia, diencephalon and various smaller neural centres.

Cerebral peduncle (crus cerebri): Thick plate-like part of the midbrain floor (one on either side) composed of a mass of descending axons from the cerebral cortex, including corticospinal and corticopontine axons.

Chiasm: see optic chiasm.

Cholinergic neuron: neuron which transmits at synapses by the release of acetyl choline.

Choroid plexuses: thin convoluted, highly vascular parts of the brain wall which secrete cerebrospinal fluid into the brain ventricles. There are two on each side of the brain, the largest located in the walls of the lateral ventricles, and the much smaller ones in the wall of the pons beneath the cerebellum.

Cisterna: expanded regions of the subarachnoid space where the arachnoid mater crosses over deep fissures in the brain surface. They contain accumulations of cerebrospinal fluid, and clinically are sites where blood from haemorrhages may accumulate, and bacteria may multiply. The largest, the cistern magna, lies between the cerebellum and brainstem just inside the skull's foramen magnum. Another at the base of the brain lies between the cerebral peduncles under the midbrain (the interpeduncular cisterna).

Clarke's column: part of the dorsal horn which receives information from muscle spindles and skin (via sensory axons in the dorsal roots) and after synaptic transmission, passes the information to the cerebellum via the (ipsilateral) dorsal spinocerebellar tract. Clarke's column is only present between the first thoracic (T1) and first lumbar (L1) spinal nerve roots.

Colliculi (plural), **colliculus** (singular): these are small bumps on the dorsal aspect of the midbrain, two in front (superior colliculi) and two behind (inferior colliculi), together often called the corpora quadrigeminae (i.e. the quads). The superior colliculi are important in visual reflexes (amongst other functions) and the inferior colliculi are part of the auditory pathway.

Columns of spinal cord: regions of white matter in which longitudinal tracts are located. The columns are named dorsal (or posterior), lateral and ventral (anterior) according to their relation to the dorsal and ventral spinal nerve roots.

Commissure: bundle of axons connecting two equivalent parts of the brain. e.g the corpus callosum connecting the two cerebral hemispheres (compare with **Decussation**).

Corpus callosum: a large commissure connecting the two cerebral hemispheres.

Cortex: superficial layer of neural tissue forming the periphery of the cerebral hemispheres. Consists mainly of neuronal cell bodies and dendrites. Conventionally subdivided into a series of cortices which serve various sensory, motor, associative, cognitive and other functions.

Corticospinal tract: descending voluntary motor tract containing axons arising predominantly from the motor cortex and ending directly or indirectly on motor neurons in the spinal cord. It includes the major lateral corticospinal tract which decussates in the medulla, and a minor anterior (/ventral) corticospinal tract whose axons decussate at various levels of the cord close to their termination. The corticospinal tracts form part of the pyramidal system. Although it originates predominantly in the motor cortex, substantial numbers also arise from parts of the pre-motor and parietal cortices.

Cuneate tract: tract containing axons situated in the posterior / dorsal columns of the spinal cord, carrying somatosensory information from the upper parts of the body, above the 6th thoracic nerve root (T6)). The cuneate tract lies lateral to the gracile tract which serves lower parts of the body in the same way. The cuneate tract consists of axons of neurons located in dorsal root ganglia, and they terminate synaptically in the cuneate nucleus of the dorsal medulla. Like the cuneate tract, the gracile tract carries information about discriminative touch, conscious proprioception and vibration sense.

Decussation: location where axons cross from one side of the central nervous system to the other to connect different regions, e.g. the decussation of the pyramidal tracts in the medulla where corticospinal axons cross, connecting the motor cortex with the opposite side of the spinal cord.

Decussation of the pyramids: an area on the ventral part of the medulla where most of the corticospinal tract fibres cross, then descend into the lateral column of the spinal cord as the lateral corticospinal tract. See also **pyramids**

Dendrite: branched extension of a neuronal cell body which receives synaptic inputs from other neurons.

Dendritic spines: small thorn-like extensions of the surfaces of dendrites which are important though not exclusive sites for synaptic contacts.

Diencephalon: part of the brain located between the midbrain and cerebral hemispheres. Includes the thalamus and hypothalamus, as well as the pineal body (epithalamus) and subthalamic nucleus (ventral thalamus).

Dopaminergic neuron: neuron which transmits at synapses by the release of dopamine.

Dorsal: towards the back. See anterior

Dorsal column (also termed posterior column): part of the spinal cord white matter located between the dorsal roots and the midline, forming a longitudinal ridge which runs the whole length of the spinal cord. Contains the axons of the dorsal column tracts (gracile and cuneate tracts) carrying sensation for discriminative touch, conscious proprioception and vibration sense.

Dorsal horn: part of the grey matter of the spinal cord which receives dorsal root axons. Located dorso-laterally in the cord.

Dorsal root: group of sensory axons located between the dorsal ganglion of a spinal nerve and the entry point into the spinal cord's dorso-lateral surface.

Dorsal root ganglion: small swelling in a spinal nerve containing the cell bodies of all the sensory axons in the nerve. There are no synapses in this ganglion.

Dural fold: flap-like extensions of the dura mater which extend into the fissures between some brain parts, e.g. the falx cerebri between the dorsal parts of the two cerebral hemispheres, and the tentorium cerebelli which is inserted between the cerebellum and cerebral hemispheres.

Dural venous sinus: large veins which lie within the dura lining the brain. Receive blood from the brain and return it to the venous drainage of the head. The sinuses have no valves.

Dura mater: robust layer of connective tissue surrounding the brain and spinal cord. Fused with the periosteum lining the skull's interior, but not with the vertebral bone surrounding the spinal cord.

Ependyma: single cell layer lining the ventricles of the brain and spinal cord, often ciliated. This layer is freely permeable to cerebrospinal fluid.

Excitatory neuron: neuron which causes excitation of the next neuron at a synapse.

Extrapyramidal system: this is a motor system whose cell bodies lie in the brainstem, and their axons end on motor neurons of the spinal cord and some cranial nerve nuclei. They include vestibulospinal, tectospinal, reticulospinal and rubrospinal pathways which are mainly concerned with the maintenance of posture, muscle tone and regulation of reflexes, particularly in the neck and upper trunk. The system also includes the medial longitudinal fasciculus, which connects the vestibular system, eye muscle motor nuclei and motor neurons of the upper spinal cord.

Falx cerebri: part of the dura mater (dural fold) inserted between the upper two halves of the cerebrum, providing protection and mechanical stability.

Fasciculus: bundle of axons within the central nervous system containing fibres connecting more than one brain centre, e.g. the medial longitudinal fasciculus which links various nuclei in the brainstem and spinal cord.

Fissure: deep crevice between some parts of the brain.

Fornix: small, paired bundle of axons connecting the hippocampus with the hypothalamus and septal nuclei, part of the limbic system associated with the formation of long-term memory, mood etc.

Funiculus (singular), **funiculi** (plural): a name given to a cord-like bundle of axons bordering the surface of the spinal cord, e.g. the dorsal funiculi = gracile and cuneate tracts.

GABA-ergic neuron: neuron which releases gamma-aminobutyric acid (GABA) at its synapses.

Gracile tract: tract containing axons situated in the posterior / dorsal columns of the spinal cord, carrying somatosensory information from the lower parts of the body, below the 6th thoracic nerve root (T6)). Above this the gracile tract lies medial to the cuneate tract. The gracile tract consists of axons of neurons located in dorsal root ganglia, and they terminate synaptically in the gracile nucleus of the dorsal medulla. Like the cuneate tract, the gracile tract carries information about discriminative touch, conscious proprioception and vibration sense.

Grey matter: neural tissue containing numerous neuronal cell bodies and dendrites, where most synapses are located.

Gyrus (singular), **gyri** (plural): small ridge on the surface of the cerebral hemisphere.

Hippocampus: elongated sausage-shaped fold of cerebral cortex located in the inferior wall of the temporal lobe. Part of the limbic system, important in spatial memory formation.

Homeostasis: regulation of the internal environment of the body to ensure survival, e.g. control of blood pressure, metabolism, electrolyte balance of the blood, etc.

Homolateral: see ipsilateral.

Hypothalamus: ventral part of the diencephalon. Important in many activities directed towards homeostasis (e.g. control of pituitary gland, temperature, blood pH etc.), innate behaviour patterns (territoriality, aggression, reproductive drive etc), and emotion.

Inhibitory neuron: neuron which causes inhibition of the next neuron at a synapse.

Intermediolateral horn: lateral extension of the grey matter of the spinal cord where preganglionic sympathetic neurons are located.

Internal capsule: part of the sheet of axons connecting a cerebral cortex with more ventral / inferior (/caudal) parts of the central nervous system, sandwiched between the lentiform nucleus (laterally) and the caudate nucleus and thalamus (medially).

Interneuron: small neuron typically interposed synaptically between the axon terminal of a larger neuron and a target neuron. Interneurons may be excitatory or inhibitory, allowing complex modulation of the pathway's effects.

Ipsilateral: on the same side of the body (or of the central nervous system). See also homolateral.

Lemniscus: a flat bundle of axons within the central nervous system (e.g. the medial lemniscus, which is part of a major ascending somatosensory pathway)(lemniscus = latin for a ribbon).

Leptomeninges: arachnoid mater and pia mater (the thinner two of the three meninges, (from leptos = greek for thin).

Lissauer's tract: small bundle of axons running longitudinally close to the entry points of the dorsal roots.

Lobe (of cerebral hemisphere): major division of the hemisphere, named according to the adjacent skull bone.

Lower motor neuron: motor neuron situated in the central nervous system, its axon passing into a spinal or cranial nerve, e.g. a spinal motor neuron in the ventral / anterior horn, a motor neuron in the facial nucleus in the brainstem.

Mammillary bodies: small paired rounded protruberances on the floor of the hypothalamus; part of the limbic system, involved in mood and memory (etc).

Medial lemniscus: a flat ribbon of axons which carry ascending somatosensory information about discriminative touch, conscious proprioception and vibration sense within the brainstem. It connects the gracile and cuneate nuclei with the thalamus, en route to the somatosensory cortex, and forms part of the dorsal column-lemniscal pathway.

Medulla oblongata (medulla): part of the brainstem between the pons and the spinal cord, ending caudally at the level of the first spinal nerves.

Meninges (plural), **meninx** (singular): sheaths of tissue surrounding the brain and spinal cord. Consist of, from outer to inner: dura mater, arachnoid mater and pia mater.

Mesencephalon: midbrain.

Metencephalon: cerebellum + pons (usually used as an embryological term).

Midbrain (mesencephalon): part of the brainstem located between the diencephalon and pons.

Myelencephalon: medulla oblongata (usually used as an embryological term).

Myelinated nerve fibre: a nerve fibre with an enclosing myelin sheath, formed by a spiral wrapping of Schwann cell membranes. Gaps between adjacent Schwann cells (Nodes of Ranvier) have voltage-sensitive sodium and potassium gates, enabling action potentials to jump rapidly from one node to another (saltatory conduction) rather than spread slowly along the fibre. This greatly speeds conduction of nerve impulses along myelinated fibres.

Nerve: bundle of nerve fibres located external to the central nervous system, formed by the fusion of dorsal and ventral roots.

Nerve fibre: axon plus its ensheathing cells. In the periphery the ensheathing cells of myelinated nerve fibres are Schwann cells, and of unmyelinated fibres, Remak cells. In the central nervous system, myelinated axons are ensheathed by oligodendrocytes (a type of neuroglial cell). However the term 'nerve fibre' is also often used to denote an axon on its own.

Neural tube: embryonic precursor to the central nervous system.

Neuron: fundamental bioelectrically excitable cellular unit of neural tissue capable of conducting information and transmitting it to other cells.

Neuroglial cell: cell type in neural tissue which provides the physiological and chemical environment of neurons. Major types are astrocytes, oligodendrocytes and microglial cells.

Neurotransmitter: chemical released at a synapse to cause a bioelectrical change in another neuron or a muscle fibre (or some other cell).

Nucleus: in neuroscience, cluster of neuronal cell bodies and dendrites.

Olfactory bulb: part of the forebrain which receives olfactory nerve axons, located beneath the anterior part of the cerebral hemispheres.

Olive: this is a bulge on either side of the medulla oblongata which encloses the inferior olivary nucleus. This is an important link between the spinal cord and other parts of the brain with the cerebellum.

Optic chiasm: the site where 50% of the axons of the optic nerves cross to the other side. Located beneath the cerebral hemispheres just in front of the hypothalamus and pituitary gland.

Optic nerve: part of the visual pathway leading from the eyeball as far as the optic chiasm. Although classed as part of the peripheral nervous system, embryonically it is formed as part of the central nervous system.

Optic tract: part of the visual pathway between the optic chiasm and thalamus (lateral geniculate body).

Pallidum: component of the basal ganglia consisting of the internal and external parts of the globus pallidus.

Perforated substance, anterior and posterior perforated substances: flat regions of the base of the brain where numerous small arteries enter the brain. There are two named regions: the **anterior perforated substance** just lateral to the optic chiasma where the olfactory tracts diverge, and the **posterior perforated substance** located ventrally between the two cerebral peduncles (in the interpeduncular fossa).

Perikaryon: see Cell body.

Peripheral nerve: a neural structure composed of bundles of axons and ensheathing cells (Schwann cells around myelinated axons), extending from the brain or spinal cord.

Peripheral nervous system (PNS): all neural structures outside the brain and spinal cord. Includes cranial and spinal nerves and spinal, sympathetic and parasympathetic ganglia. The neural networks of the alimentary tract wall are usually classed separately as the enteric nervous system.

Peripheral sensory organ: structure which receives a stimulus and converts it into a bioelectrical signal (transduction) for conduction to the central nervous system. The term includes the ear, eye, taste buds, olfactory receptors in the nose, temperature sensors, receptors on the surface of the body and within, sensitive to mechanical, thermal and noxious stimuli.

Pia mater: the thinnest of the meninges, adherent to the surface of brain and spinal cord. Formed externally of a thin layer of connective tissue and internally by the end-feet of neuroglial cells.

Pineal body: small, ovoid midline structure on the dorsal border of the diencephalon. Important in melatonin production regulating circadian (day-night) rhythm of sleep and wakefulness.

Pituitary body: small rounded mass of glandular tissue attached to the underside of the hypothalamus. Key control of the body's endocrine glands. Consists of two parts, the anterior pituitary which contains gland cells secreting a range of hormones, and a posterior part where the axons of neuroendocrine cells located in the hypothalamus secrete the hormones oxytocin and vasopressin (ADH –antidiuretic hormone).

PNS: peripheral nervous system (see above).

Pons: expanded part of the brainstem closely associated with the cerebellum. Contains a number of cranial nerve nuclei, relay nuclei for the cerebellum, eye muscle control centres, longitudinal ascending and descending tracts, etc.

Posterior: see **anterior**

Posterior column: see dorsal column

Posterior root: see dorsal root

Prosencephalon: forebrain consisting of cerebral hemispheres, olfactory bulbs and diencephalon (mostly used in embryology)

Pyramids: large axon bundles which form longitudinal columns on the ventral side of the medulla. They contain corticospinal fibres. In cross section they are approximately triangular, which may be the origin of their name.

Pyramidal tracts: these consist of two tracts carrying voluntary motor commands from the cerebral cortex to the spinal cord and brainstem. They include the corticospinal tract (to the spinal cord) and the corticobulbar tract (to the brainstem motor nuclei).

Raphe: midline region of the brainstem where the two sides meet. Contains a number of reticular nuclei, including the raphe nucleus magnocellularis which is important in descending pain control.

Reticular nuclei (reticular substance): clusters of widely spread neuron cell bodies in the brainstem which carry out many activities important to the maintenance of the internal environment, including blood pressure, heart rate, respiratory ventilation, tone of voluntary muscles and control of spinal and brainstem reflexes. Subdivided into a number of different reticular nuclear groups. Some reticular nuclei also participate in the control of pain transmission from the periphery.

Reticulospinal tract: small tract running from the brainstem in the anterior (ventral) column of the spinal cord, contains motor control axons regulating spinal reflexes and also axons which have an inhibitory action on pain transmission from the periphery.

Retrograde degeneration: degeneration of the centrally-directed part of an axon or neuronal cell body after local damage. This process is much slower than anterograde degeneration and may not occur at all, although the cell body may also shrink and eventually die.

Rhombencephalon: hindbrain (mainly used in embryology) consisting of the medulla oblongata, pons and cerebellum.

Rhomboid fossa: diamond-shaped depression in the floor of the medulla and pons, roofed (over part of the medulla) by a thin layer of non-nervous tissue, and (over the pons) by the cerebellum.

Rostral: this term indicates a direction in the central nervous system, i.e. towards the (embryonic) front end; e.g. the cerebral hemispheres are rostral to the midbrain.

Spinal nerve: nerve extending from the spinal cord to the periphery. Spinal nerves are formed by the fusion of dorsal and ventral roots, and typically contain both sensory and motor elements.

Spinothalamic tract: bundle of ascending somatosensory axons situated in the anterolateral part of the spinal cord, connecting cell bodies in the posterior (dorsal) horns with the thalamus. Carries information about pain, temperature and imprecise (crude, light) touch. Also termed the anterolateral tract in some texts.

Striate cortex: primary visual cortex (not to be confused with the striatum; in both cases the name is derived from the presence of many parallel myelinated fibres)

Striatum: component of the basal ganglia, consisting of the putamen and caudate nucleus.

Subarachnoid space: gap between the arachnoid mater and pia mater around the brain and spinal cord. Contains cerebrospinal fluid, and is crossed by blood vessels to and from the brain.

Subthalamic nucleus: small nucleus in the diencephalon associated with the basal ganglia, important in the inhibition of uncontrolled movements (the “indirect pathway” of basal ganglion function)

Sulcus: shallow groove.

Synapse: junction between two neurons where neurotransmission occurs, usually by the release of neurotransmitter, although electrical synapses are also known.

Synaptic cleft: small gap between the surfaces of neurons at a synapse into which neurotransmitters are released during synaptic transmission.

Synaptic vesicle: small vesicle containing neurotransmitter prior to its release at a synapse.

Tectospinal tract: small tract originating in the superior colliculus of the midbrain and running in the spinal cord's anterior (ventral) column to end via interneurons on ventral horn motor neurons of the cervical spinal cord. Involved in the control of posture. See also **Extrapyramidal system**.

Tectum: midbrain roof.

Telencephalon: the most rostral part of the brain, consisting of cerebral hemispheres and olfactory bulbs.

Tentorium cerebelli: fold of dura mater lying over the cerebellum and beneath the occipital part of the cerebrum.

Thalamus: part of the diencephalon where most of the pathways entering the cerebral cortex have synapses (“gateway to the cerebral cortex”). Shaped approximately like a bird's egg, and contains about 23 nuclei governing sensory and motor control pathways, cognitive and emotional functions, etc.

Tract: bundle of axons within the central nervous system, usually with the same origins and destinations.

Tractus proprius: layer of longitudinally running short axons which encloses the grey matter of the spinal cord, interconnecting adjacent segments of the cord.

Transverse fissure: this is a deep cleft between the cerebellum and the back of the cerebral hemispheres.

Unmyelinated axons: an axon which is surrounded by a non-neural cell (in the peripheral nervous system, a Remak cell similar to a Schwann cell; in the central nervous system, a neuroglial cell), but lack a myelin sheath. These are small fibres less than 2 microns in diameter, and conduct slowly (e.g. 1 metres / second).

Upper motor neuron: motor neuron with an axon which ends entirely within the central nervous system. Includes neurons of the corticospinal and corticobulbar tracts, and brainstem neurons with axons ending in the spinal cord.

Ventral: see **anterior**.

Ventral decussation: area of the spinal cord ventral to the central canal, containing axons crossing from one side to the other, including spinothalamic fibres before they enter the anterolateral part of the spinal cord.

Ventral (spinal) column: see anterior column.

Ventral horn: see anterior horn.

Ventral root: see anterior root.

Ventricle: cavity within the brain and spinal cord derived from the hollow interior of the embryonic neural tube. In the brain, includes the two lateral ventricles and the mid-line third and fourth ventricles and interconnecting cerebral aqueduct. The brain ventricles are continuous with the central canal of the spinal cord.

Wernicke's area: an area of the parietal cortex associated with the understanding of speech. Usually present only on the left side.

White matter: that part of the central nervous system occupied by large numbers of axons. The white colour is due to the presence of myelin sheaths around many of the axons.