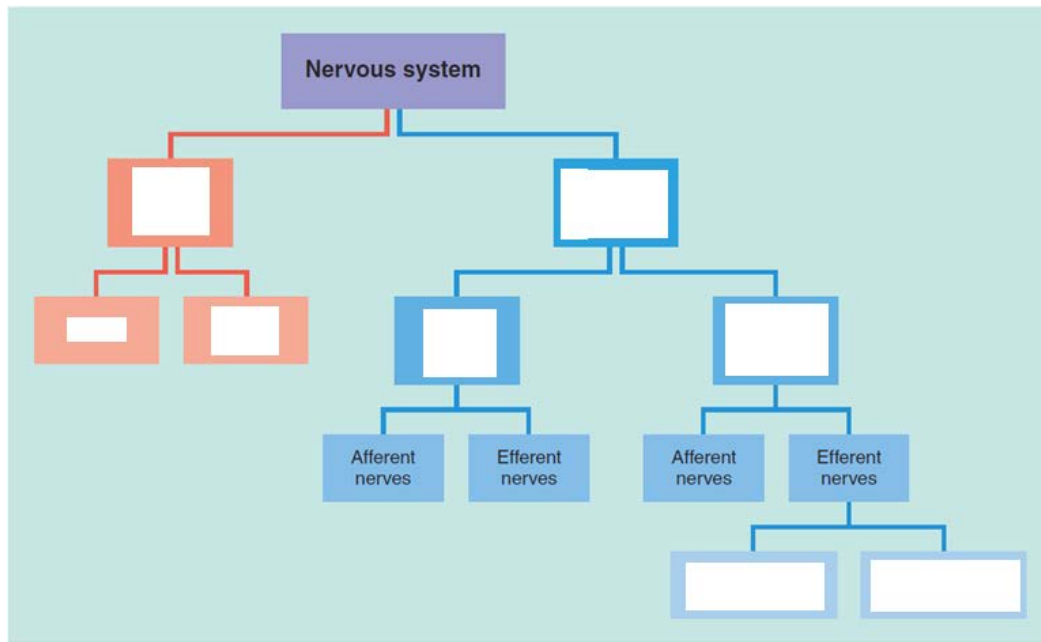


Chapter 3:

The Anatomy of the Nervous System

General Layout



Job of the _____ is to receive and organize information from the body and coordinate the activity of the body.

Peripheral Nervous System

Sensory signals coming from the body

Motor signals to the body

_____ is the part of the **peripheral nervous system** associated with the _____ control of body movements. Therefore it is made up of afferent and efferent nerves because it must send information to the CNS and receive output from the CNS.

_____ is the part of the **peripheral nervous system** that acts as a **control system** functioning largely below the _____, and controls **visceral** functions (functions of internal organs).

Heart rate, digestion, respiratory rate, perspiration

Sympathetic

Engages body's _____ and assists in maintaining homeostasis.

Heart Rate:

Digestion:

Respiratory Rate:

Perspiration:

Parasympathetic

If the sympathetic system activates our fight-or-flight response, then our parasympathetic system activates our _____.

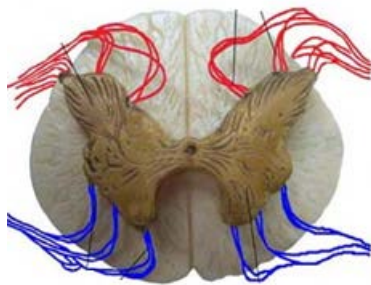
Heart Rate:

Digestion:

Respiratory Rate:

Perspiration:

Spinal Cord



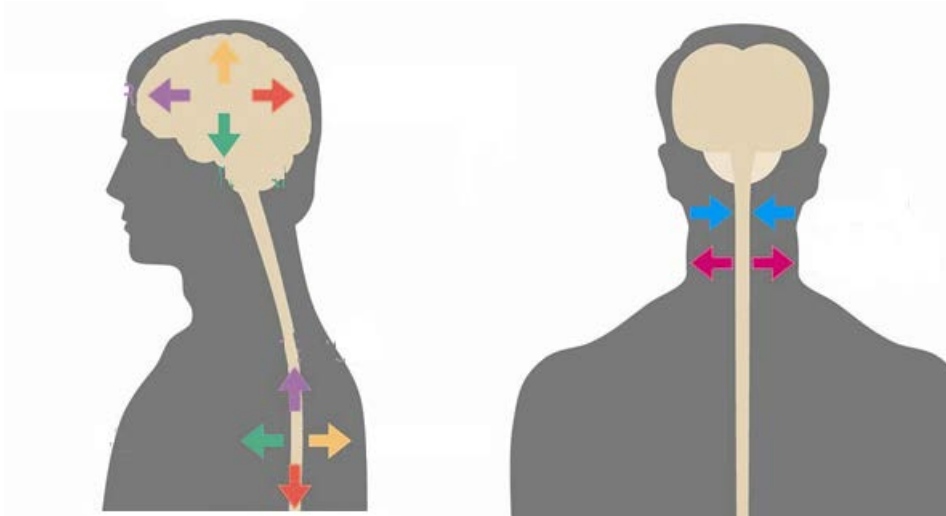
_____ – makes up the outside of the spinal cord, consisting of highly myelinated axons that carry information either up or down the spinal cord.

_____ – the inner component of the spinal cord, primarily composed of cell bodies and _____, which allow motor and sensory neurons to communicate.

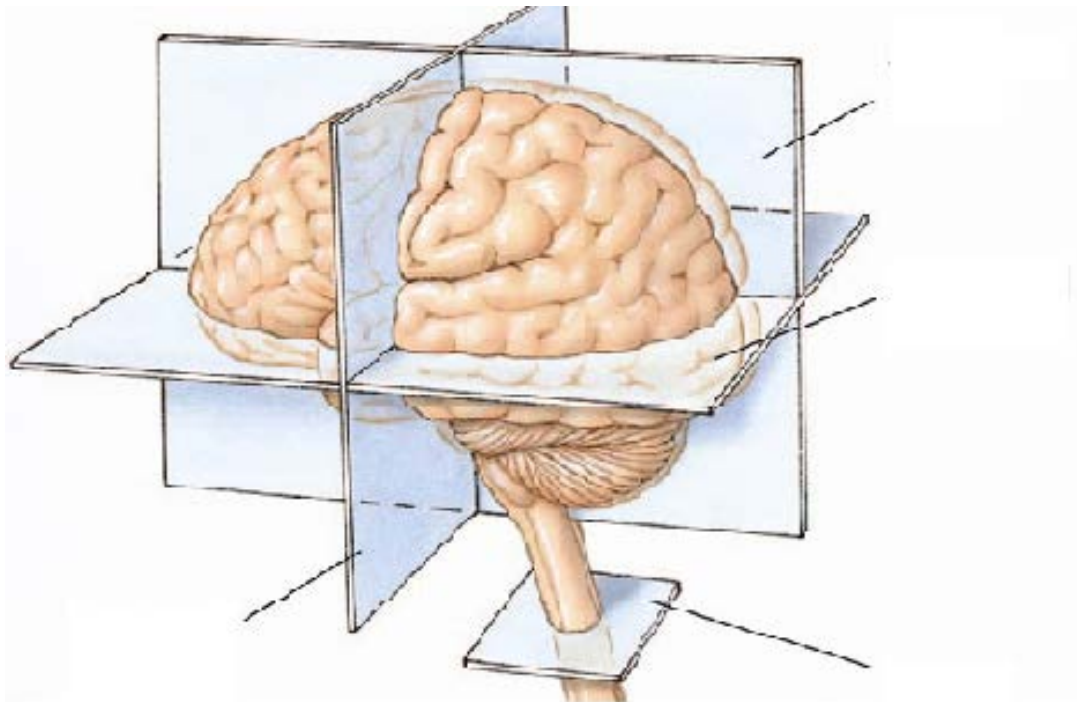
_____ - is composed of afferent (sensory neurons), meaning that is carrying information to the brain.

_____ - is comprised of efferent (motor neurons), meaning that is carrying information away from the brain

Anatomical Directions in Humans

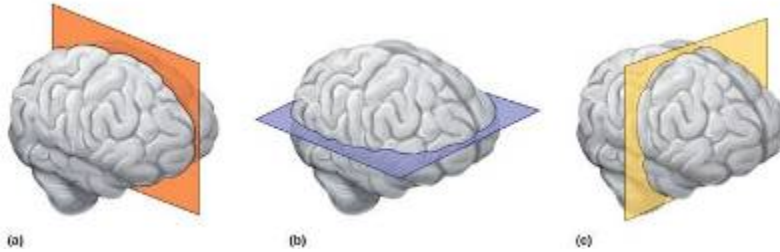


Planes of the Brain



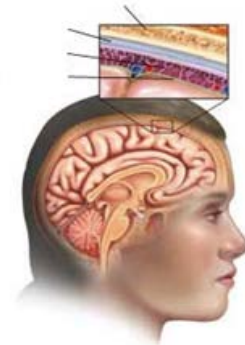
Planes of the Brain Continued

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Protecting the Brain.

Underneath the skull are the _____, which act like a wrapper around the brain and creates a buffer zone. The primary goal of the meninges is to protect the _____.

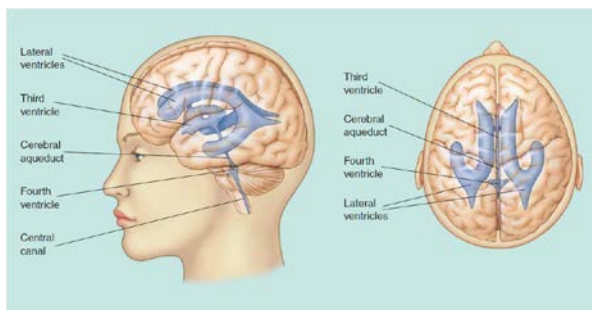


_____ (Latin for Tough Mother) is the _____ outer most layer.

_____ (Web-like structure) lies beneath the _____

_____ (Latin Tender Mother) _____ of meninges.

The Brain is also protected from the inside by _____. It's main function is to act as a cushion for the cortex. It is found between the _____ and _____ in an area known as the _____ and in the _____ of the brain.



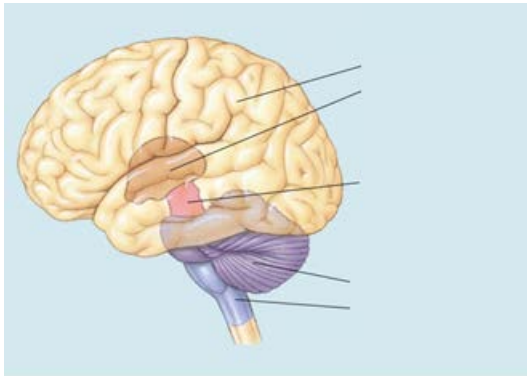
Chemical Protection

The brain is protected by foreign chemicals by the _____, a tightly-packed system of cells wrapped around blood vessels walls that prevent many molecules from entering the brain.

Advantages – Protects from foreign bodies, and thus brain infection is quite rare

Disadvantages – Because the blood brain barrier prevents many molecules from reaching the brain, it is difficult to develop pharmaceuticals that can act upon the brain.

Structures of the Adult Brain



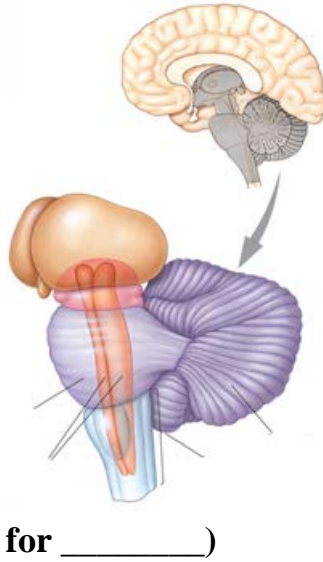
Myel-encephalon

Myelos/muelos is Greek meaning _____.

Encephalon is Greek meaning _____, so this name makes sense because this is where the spinal cord is meeting the brain.

Met-encephalon

Just after the myelencephalon is the metencephalon. Meta is Greek meaning _____.



_____ : (Myelencephalon) Involved in various autonomic processes in the body, including respiratory and cardiac functioning.

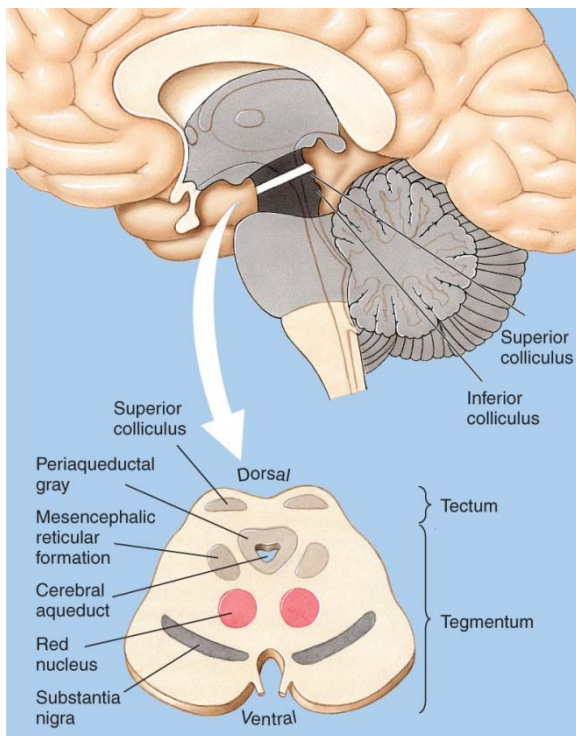
_____ : (Myelencephalon) Involved in sleep-wake cycle and habituation.

_____ : (Metencephalon) Also involved in autonomic functioning such as regulating breathing

_____ : (Metencephalon) Involved in motor behavior, balance, movement and coordination (Latin

for _____)

Mes-encephalon



Meso is Greek meaning _____.

_____ which is Greek for roof; it is the dorsal/upper region of the midbrain, in the adult human brain, only consists of two structures
_____ – preliminary vision

_____ – Involved in auditory processing

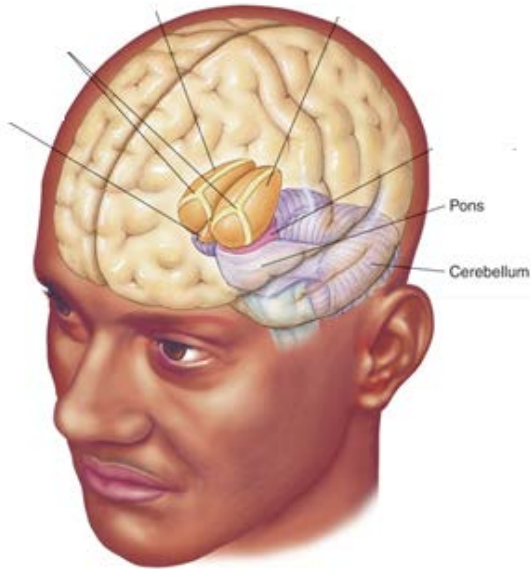
_____ is lower and larger portion of midbrain-

_____ – involved in movement and reward, and is rich in dopaminergic neurons

_____ - involved in motor coordination and communicating with the cerebellum and motor cortex

_____ - involved in processing pain

Di-encephalon



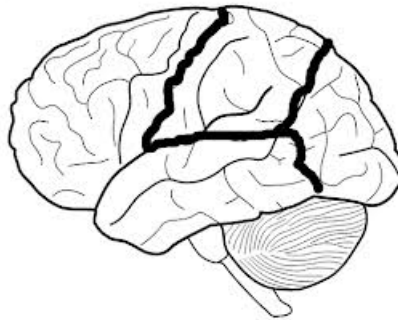
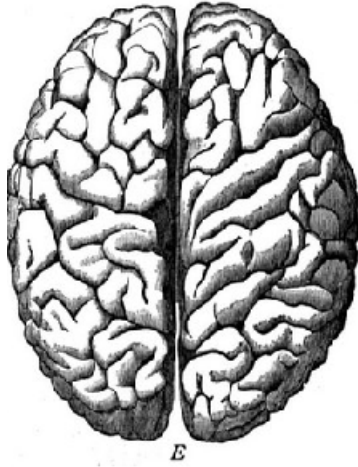
Di is greek meaning _____

Highly myelinated outer surface. Can be thought of as a regulatory gateway. Almost all sensory input goes through the Thalamus. The visual system is processed through Lateral Geniculate Nucleus LGN in Thalamus, while auditory input passes through the Medial Geniculate Nucleus on its way to auditory cortex

Hypo means under, so the name HT makes sense b/c its directly under the thalamus. Arguably its most important function is linking the nervous system to the endocrine system via the pituitary gland, and is also regulates body temp, hunger, thirst, and other autonomic process.

Tel-encephalon

Telos is Greek for _____ and because this is evolutionarily the most recent part of the brain the name makes sense. Our complex behavior such as voluntary movement, sensory input, speaking, memory, problem solving, and other executive functions are developed here. There are two parts that comprise the telencephalon, the _____ and _____.



_____ – groove in cerebral cortex

_____ – ridge or wrinkle in cerebral cortex

_____ – deep groove in cerebral cortex

_____ – divides right and left hemisphere

_____ – divides frontal lobe and parietal lobe

_____ – divides frontal lobe and parietal lobe from temporal lobe

_____ – intercortical structure that allows right and left hemisphere to communicate with one another

Occipital Lobe

Parietal Lobe

Temporal Lobe

Frontal Lobe