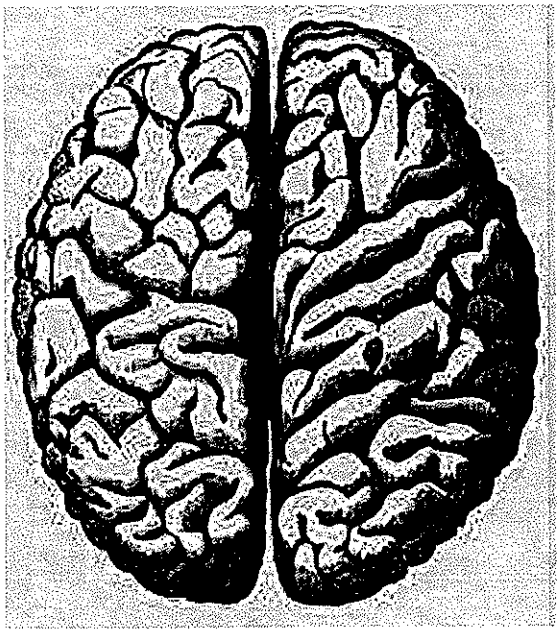
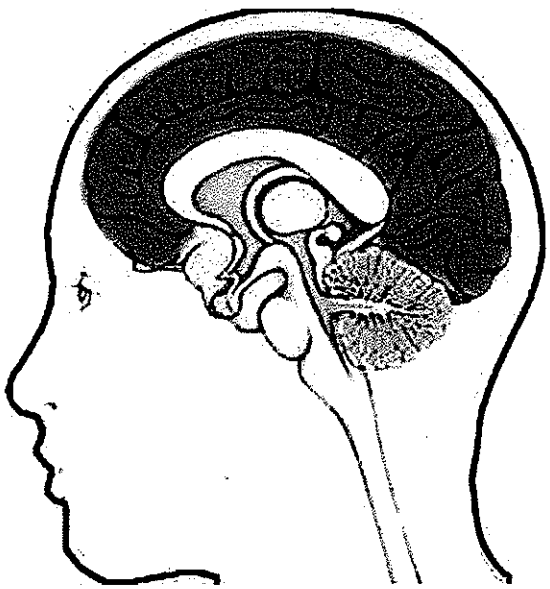
The Cerebrum



The Cerebrum is the two large hemispheres that cover the upper part of the brain.

It consists of the left and right hemispheres and constitutes the forebrain.



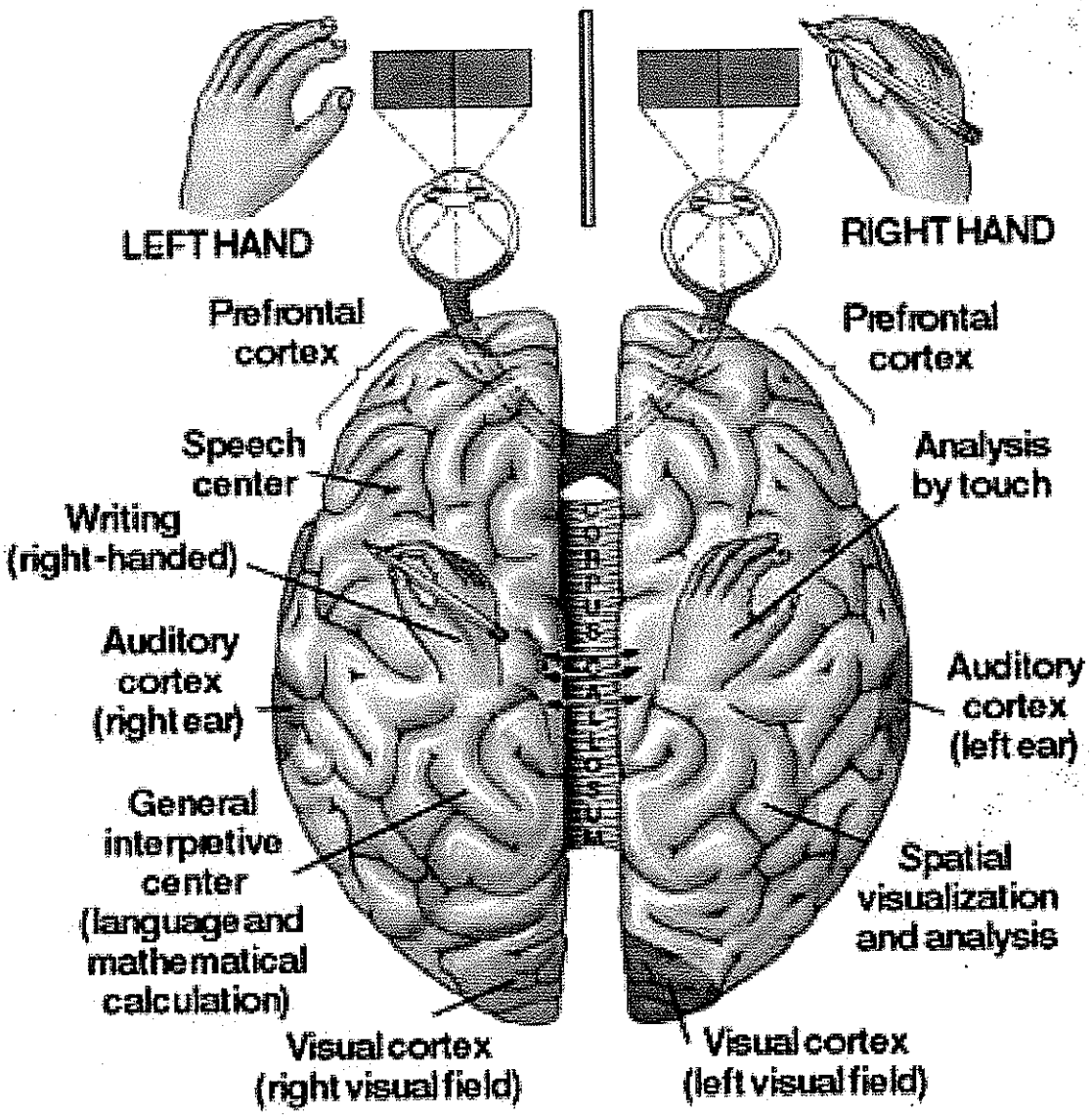
Melissa Rose
AP Psychology
Period 1

Christina Schlesinger
AP Psychology
Period 4

Chapter 2: Brain and Behavior

Term: cerebral hemispheres

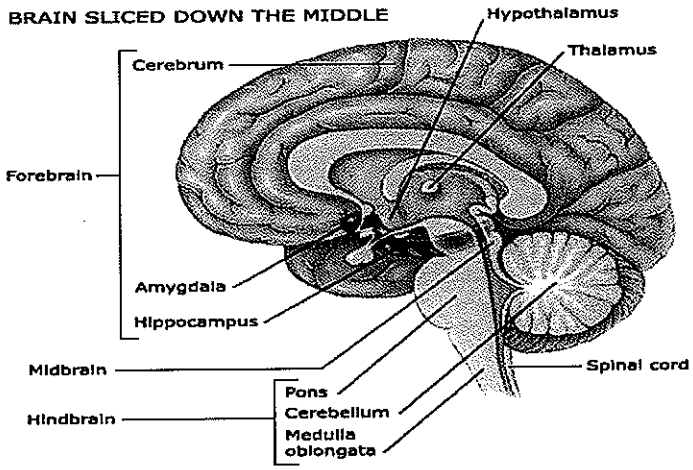
Academic Definition: the right and left halves of the cerebrum



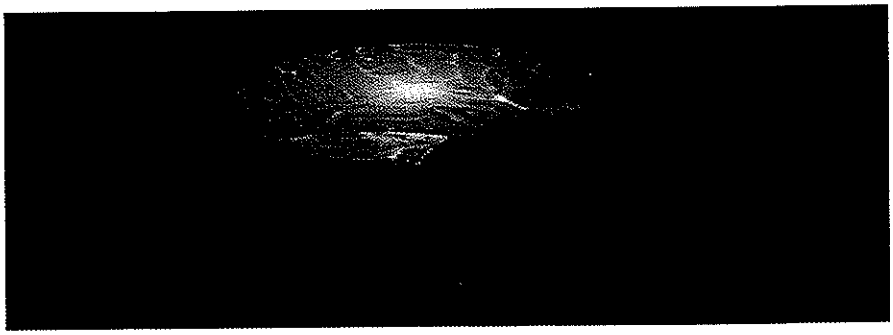
Hannah Bokanoski
10/08/09

The Right and Left Side of the Brain

The Right Side

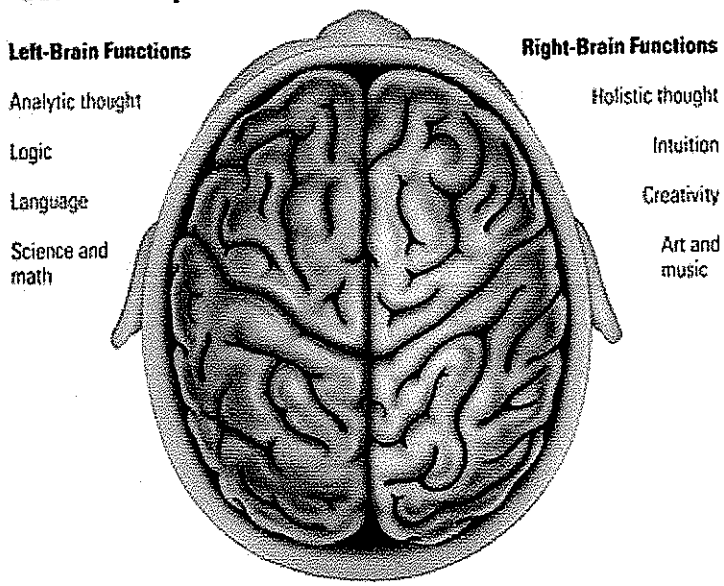


The right brain functions in a non-verbal manner and excels in visual, perceptual, and intuitive information. The right brain processes information differently than the left brain. For the right brain, processing happens very quickly and the style of processing is nonlinear and nonsequential. The right brain looks at the whole picture and quickly seeks to determine the spatial relationships of all the parts as they relate to the whole. This component of the brain is not concerned with things falling into patterns because of prescribed rules. On the contrary, the right brain seems to flourish dealing with complexity, ambiguity and paradox. At times, right brain thinking is difficult to put into words because of its complexity, its ability to process information quickly and its non-verbal nature. The right brain has been associated with the realm of creativity.



EXPERIENCE =

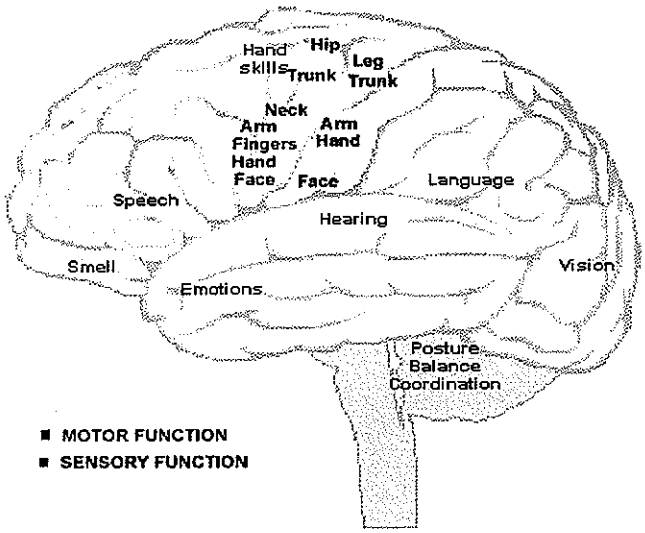
USABILITY/ANALYTIC + DESIGN/CREATIVE



Personal Description:

- cerebral hemispheres are the right and left sides of the brain
- both hemispheres of the brain are specialized
- the right side is the more creative side while the left side is more the logical thinking
- also the right hemisphere controls the left side of the body while the left hemisphere controls the right side of the body
- the two hemispheres are connected by the corpus callosum, which allows for communication between the two hemispheres

The Left side



The left brain is associated with verbal, logical, and analytical thinking. It excels in naming and categorizing things, symbolic abstraction, speech, reading, writing, arithmetic. The left brain is very linear: it places things in sequential order -- first things first and then second things second, etc. If you reflect back upon our own educational training, we have been traditionally taught to master the 3 R's: reading, writing and arithmetic -- the domain and strength of the left brain.

Left Hemisphere:

- **Language skills**
- **Skilled movement**
- **Analytical time sequence processing**
- **Positive emotions**
- **Higher level of dopamine**
- **More grey matter(cell bodies) on the left**

The whole Brain

The Brain consists of two halves connected through the nerve bundles called Corpus Callosum. Both sides of brain work together to help us in creating a comprehensive picture of the world we experience. The brain works through modules that are specialized to perform specific functions.

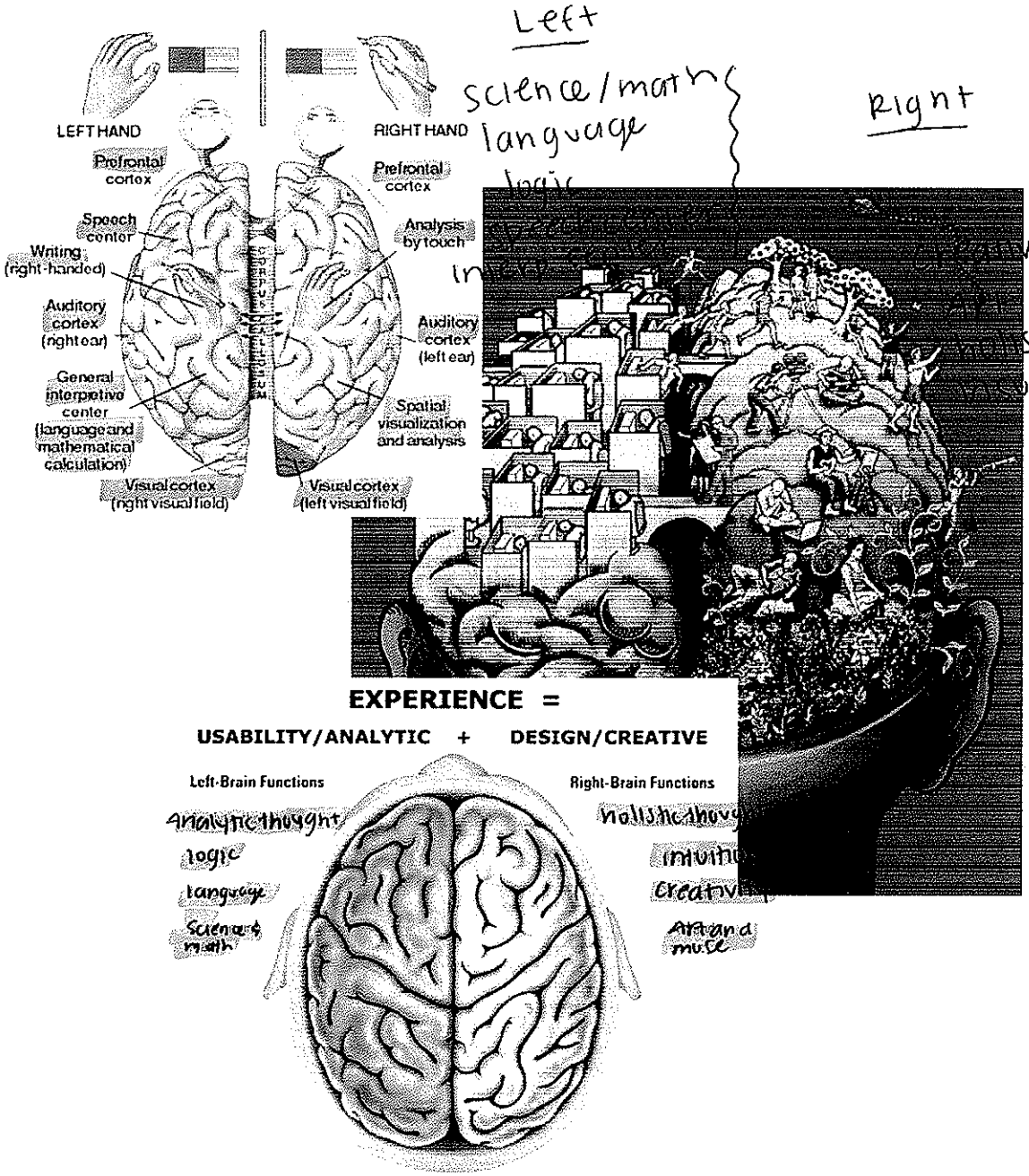
Shared: (left and right side)

- Sensation on both sides of the face
- Sound perceived by both ears
- Pain
- Hunger
- Position

Women tend to have a more active corpus callosum with 10% more neuron fibers. The level of connection will have a large impact on mental processes.

Ivy Chester
Period 1

A cerebral hemisphere (hemispherium cerebrale) is defined as one of the two regions of the brain that are delineated by the body's median plane, (medial longitudinal fissure). The brain can thus be described as being divided into left and right cerebral hemispheres.

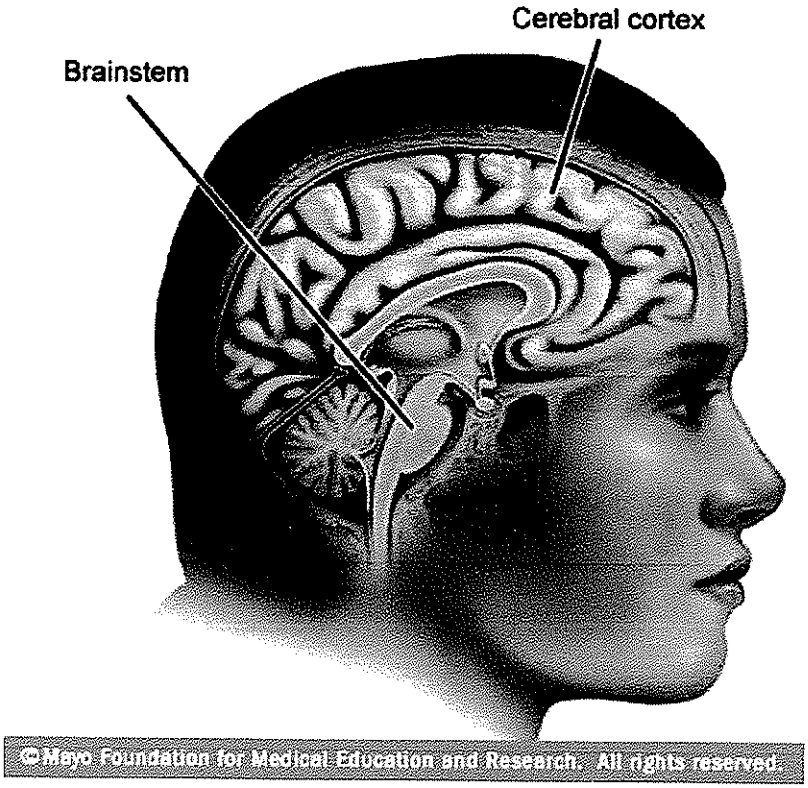


Each of these hemispheres has an outer layer of grey matter called the cerebral cortex that is supported by an inner layer of white matter. The hemispheres are linked by the corpus callosum.

details Left functions: numerical calculation, comparison, direct fact retrival, language, grammar/ vocabulary, rhythm, time, complex movements, writing.

overall pattern Right functions: numerical computation, approximates, language, accentuation, pragmatically, contextual recognition of patterns, faces and melodies. expression of emotion. simple language. preceptual skills spacial organization.

Cerebral Cortex



The cerebral cortex is a structure within the brain that plays a key role in memory, attention, perceptual awareness, thought, language, and consciousness. It constitutes the outermost layer of the cerebrum. In preserved brains, it has a grey color, hence the name "grey matter". Grey matter is formed by neurons and their unmyelinated fibers, whereas the white matter below the grey matter of the cortex is formed predominantly by myelinated axons interconnecting different regions of the central nervous system. The human cerebral cortex is 2–4 mm (0.08–0.16 inches) thick.

Functions

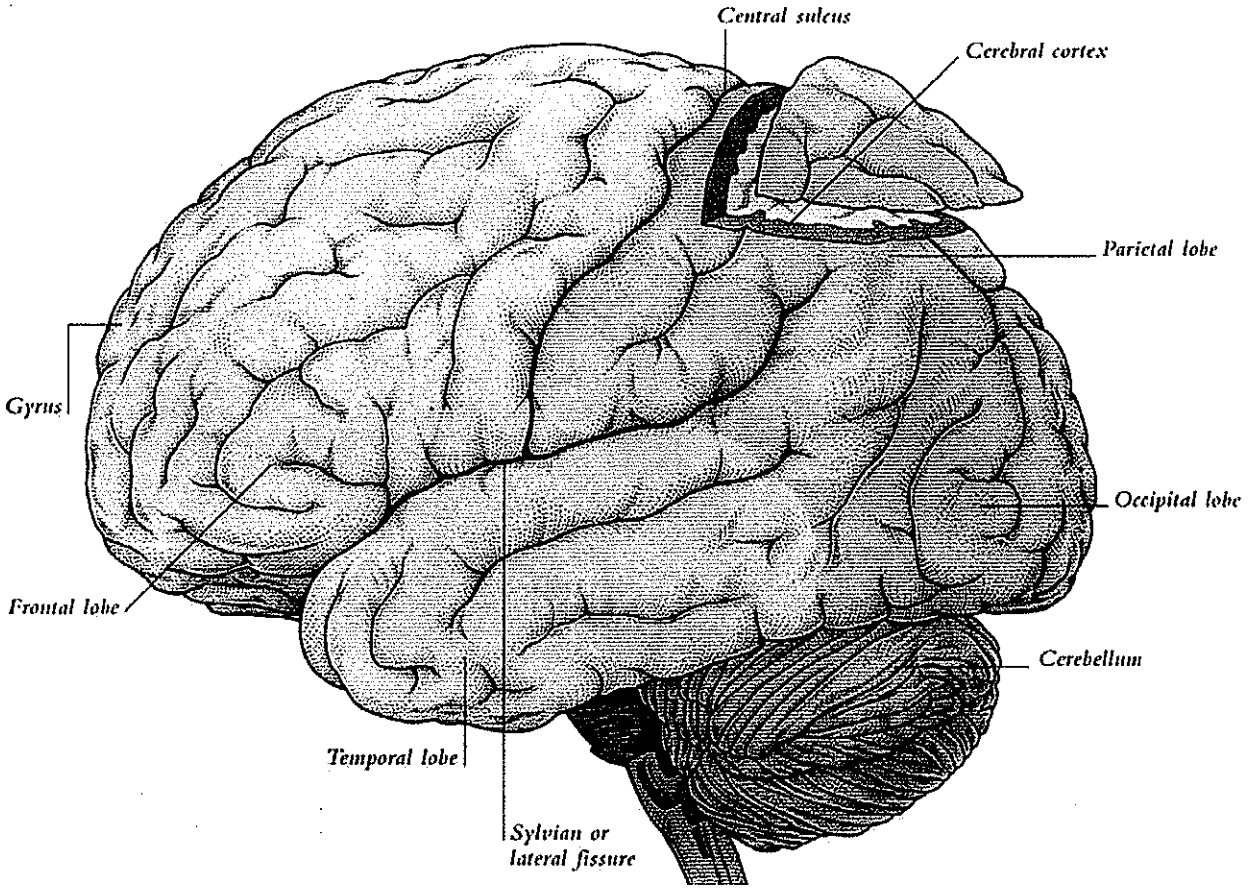
Determines Intelligence Determines Personality Interpretation of Sensory Impulses

Motor Function Planning and Organization Touch Sensation

Ali Owens
Per 1

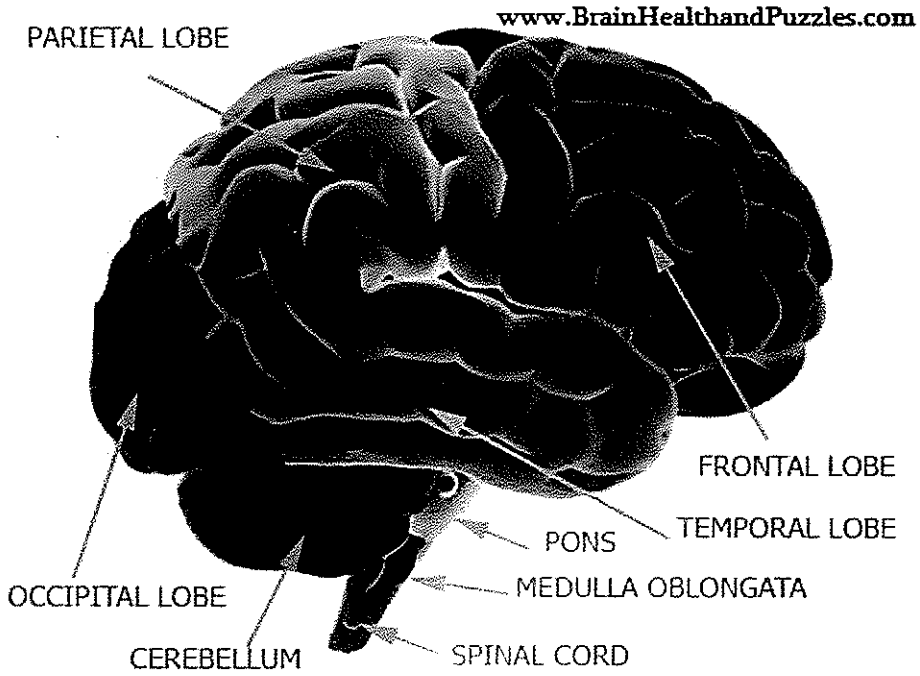
Cerebral Cortex

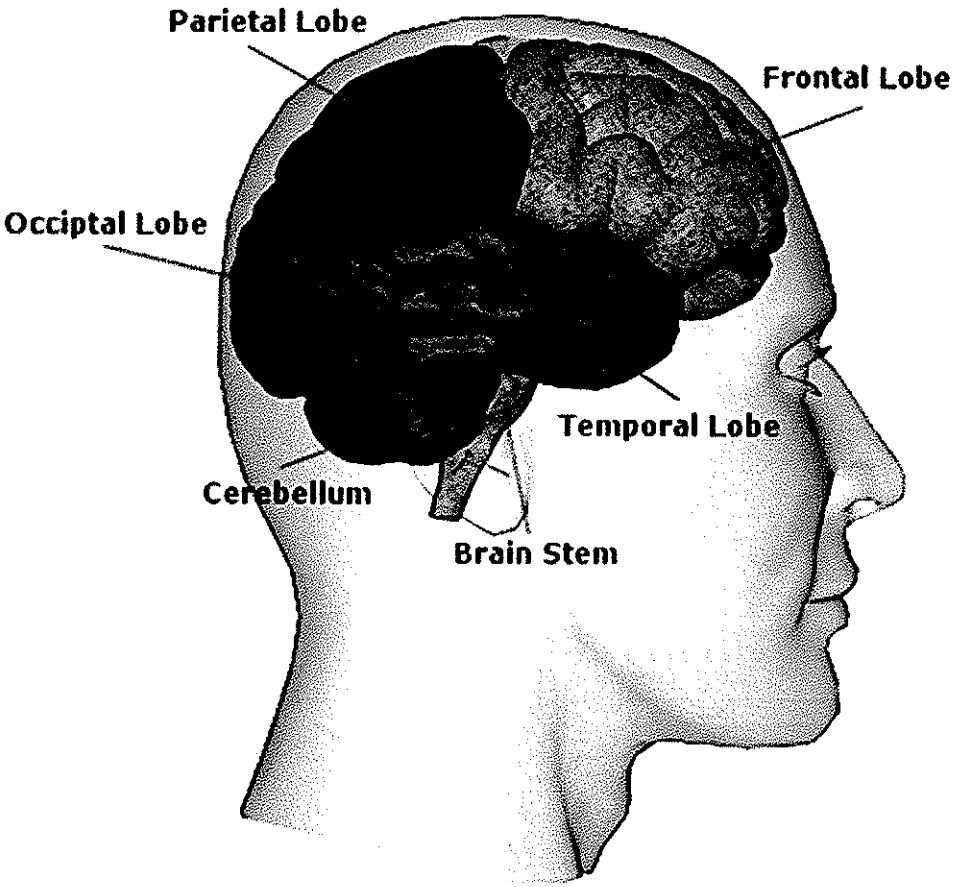
- It's the outer layer of the cerebrum
- It's 3 mm thick and contains 70% of the neurons in the CNS
- Gives us the ability to; use language, make tools, acquire complex skills, and live in complex social groups



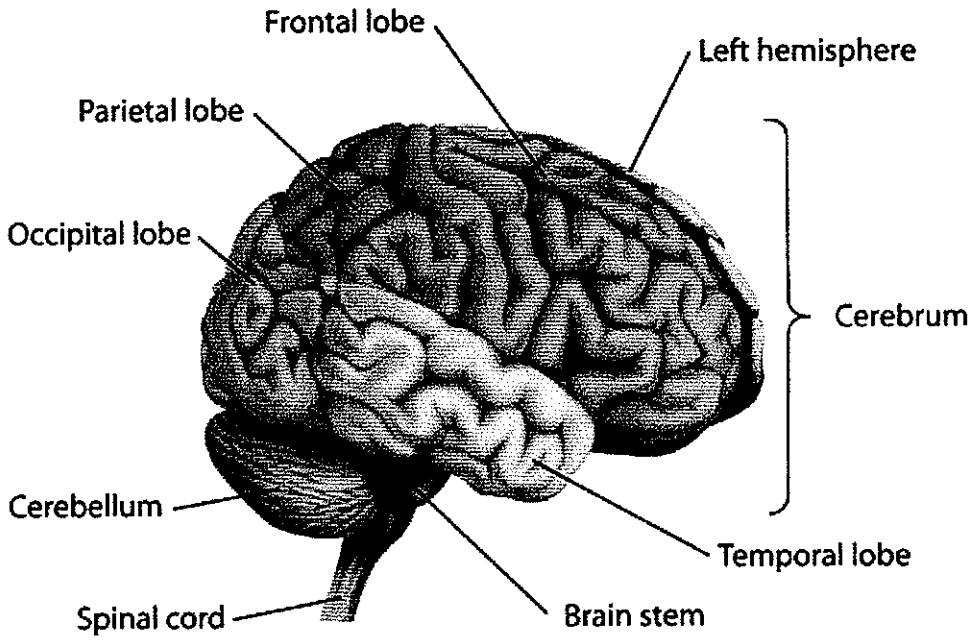
Daniel Doft
Per. 4

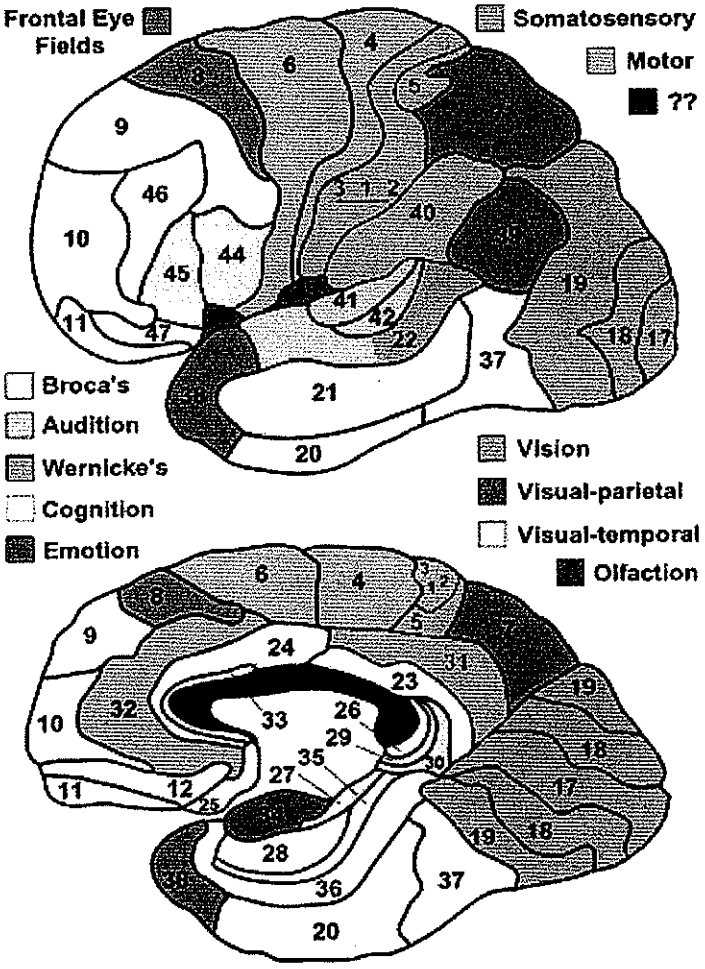
Parts Of The Brain



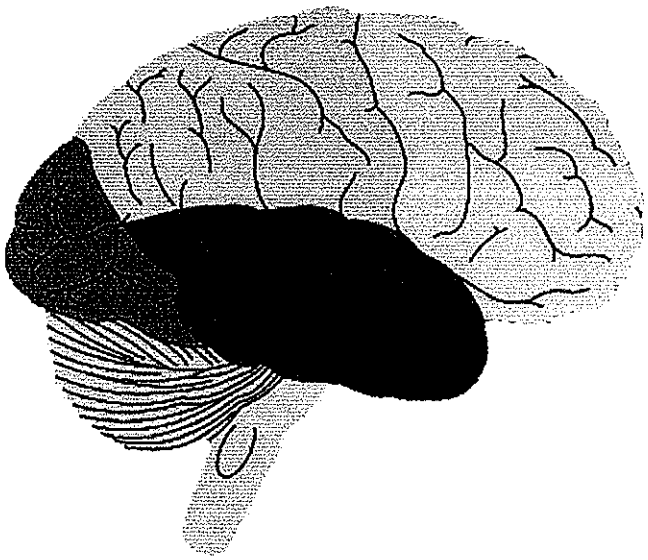


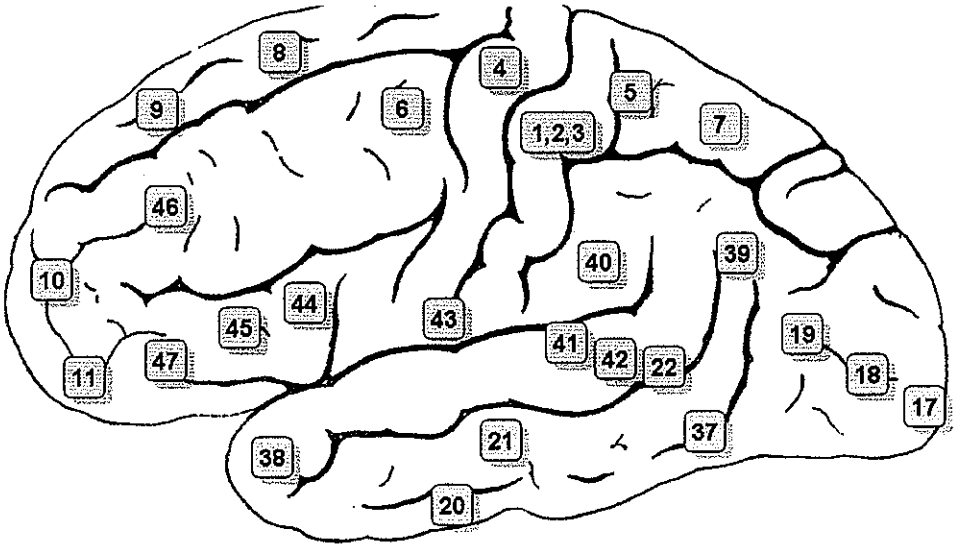
Jovanna Pelayo
Per. 4





Jovanna Pelayo
Per. 4





1) Label each part of the brain. (First image).

2) Label the following in its correct place:

Broca

Wernicke

Cognition

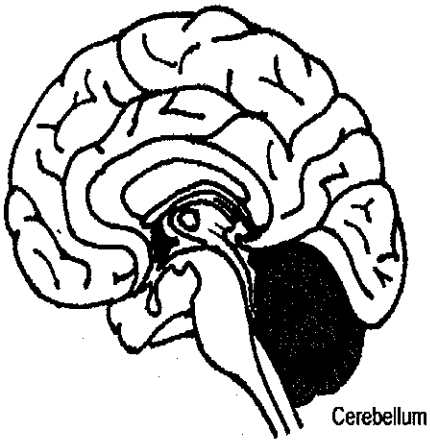
Emotion

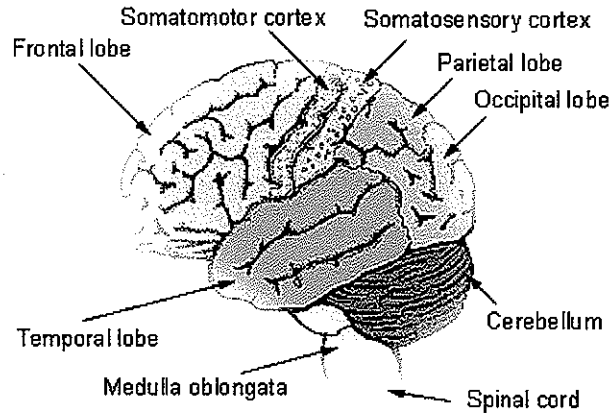
Parietal & Temporal Vision

Somatosensory

CEREBELLUM

Definition- large portion of the brain, serving to coordinate voluntary movements, posture, and balance in humans, being in back of and below the cerebrum and consisting of two lateral lobes and a central lobe.





Lobes of the cerebrum

My Definition

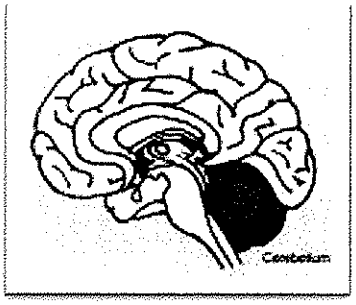
- The cerebellum is located at the lower half of the brain.
- Controls physical movements
- Balance and posture are also affected by the cerebellum.

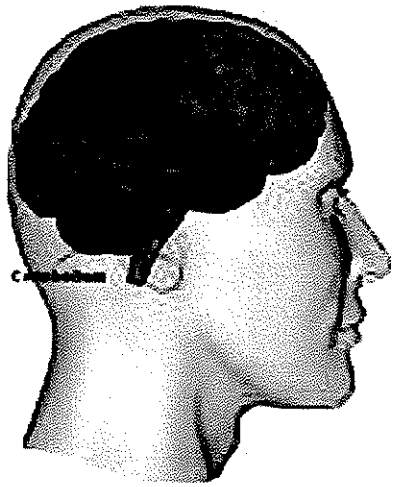
Sarah Silva

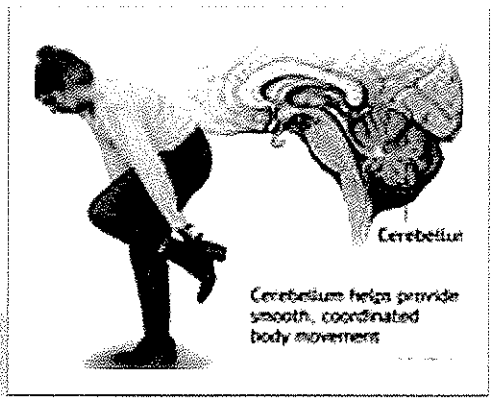
Per.4

Cerebellum: *"little brain"*

Cerebellum: The region of the brain that plays an important role in the integration of sensory, perception, coordination, muscle tone, and motor control.







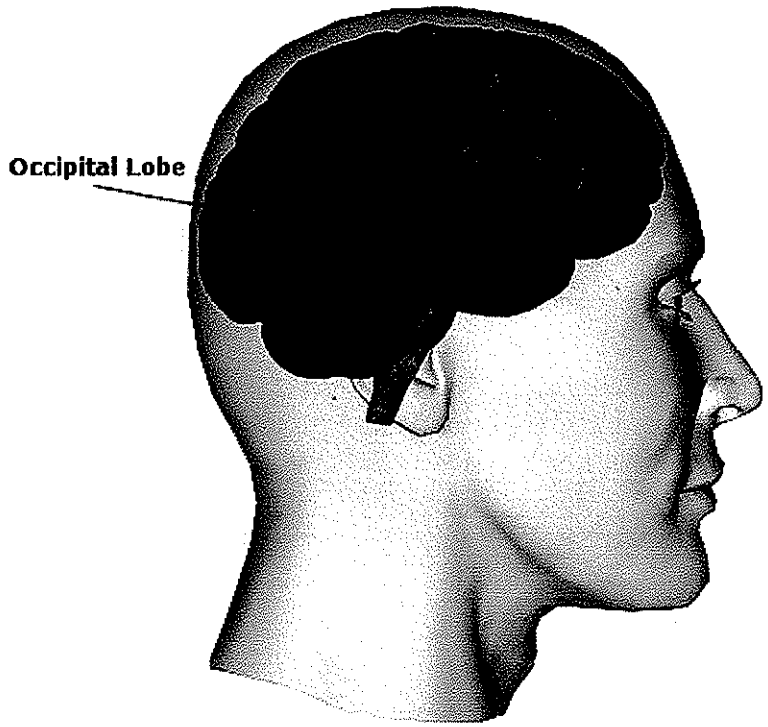
Facts about the Cerebellum:

- ***It is located in the hindbrain above the brainstem and is divided into two hemispheres with ten small lobules.***
- ***It can be divided into three different groups- the gross anatomical, the phyologenetical, and functional***
- ***Contains more neurons than all the other parts of the brain put together.***
- ***Stores memories related to skills, habits, and motor tasks.***
- ***Without it people wouldn't be able to walk, run, play, catch, stand, or feed themselves.***

Bliss Ross
10/09/2009
Period 1

Occipital Lobe

- Key Term: visual
- Academic Definition: The **occipital lobe** is the visual processing center of the mammalian brain containing most of the anatomical region of the visual cortex.
- Visual:

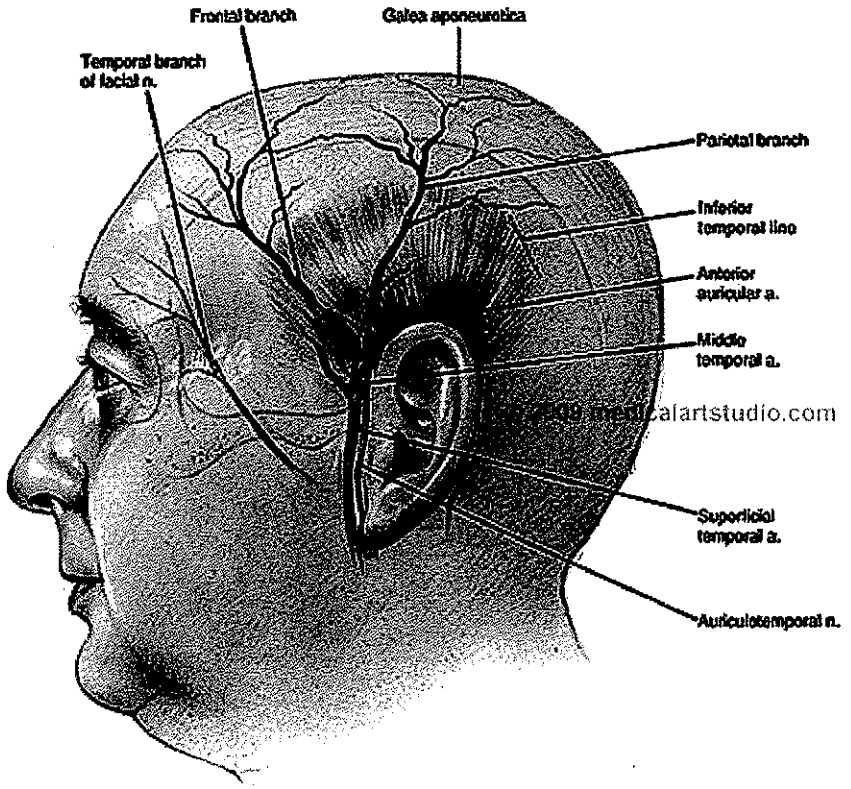


Brian Hernandez Period 4

Temporal

Pronunciation: \tem-p(ə-)rəl\

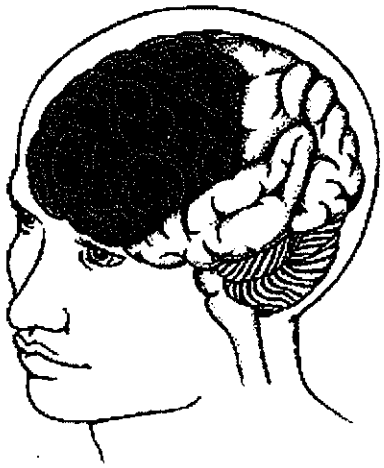
Definition: a large lobe of each cerebral hemisphere that is situated in front of the occipital lobe and contains a sensory area associated with the organ of hearing.

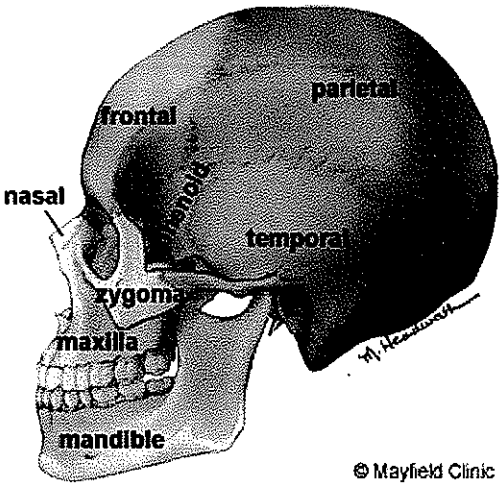


My words: a big specific spot on each side of the brain, positioned more towards the front and deals with hearing.

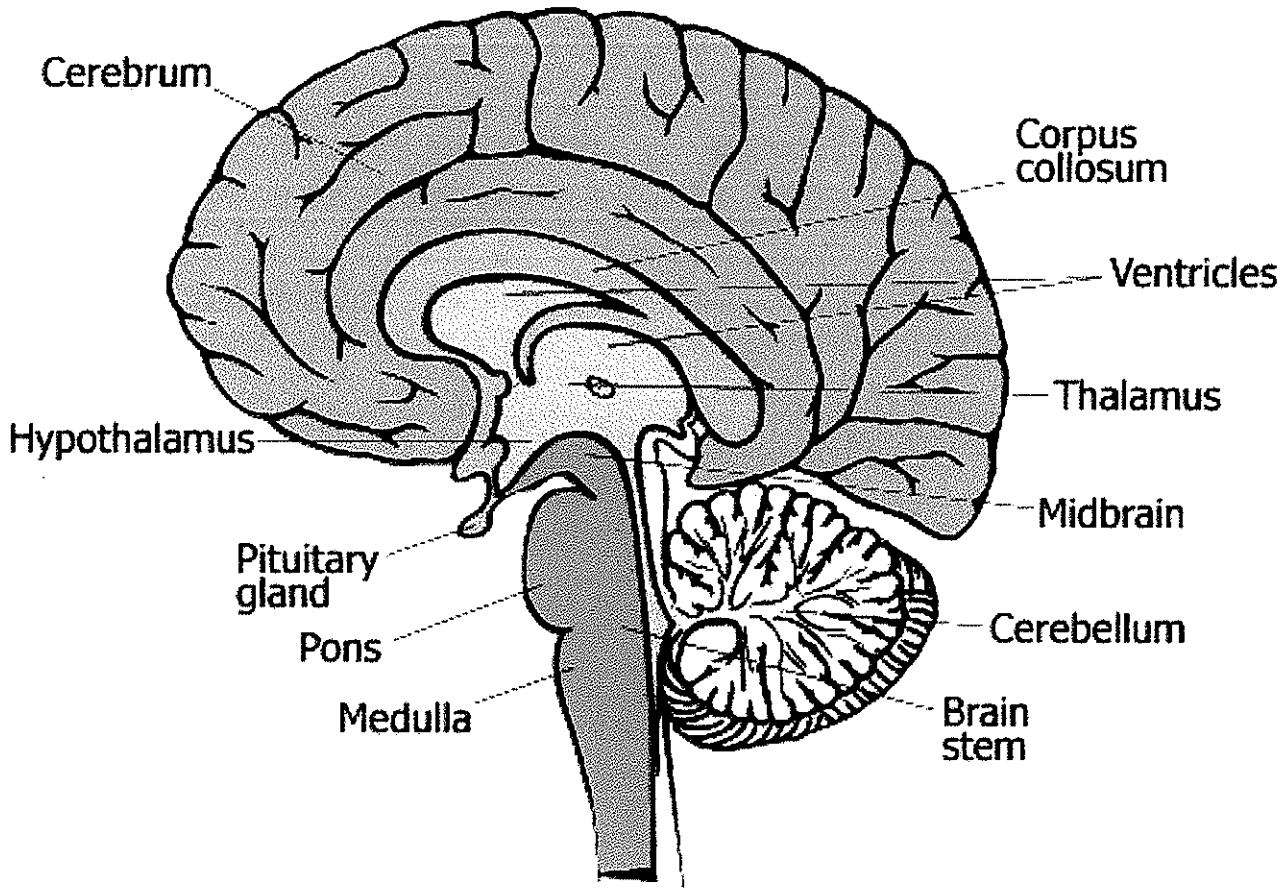
Frontal Lobe

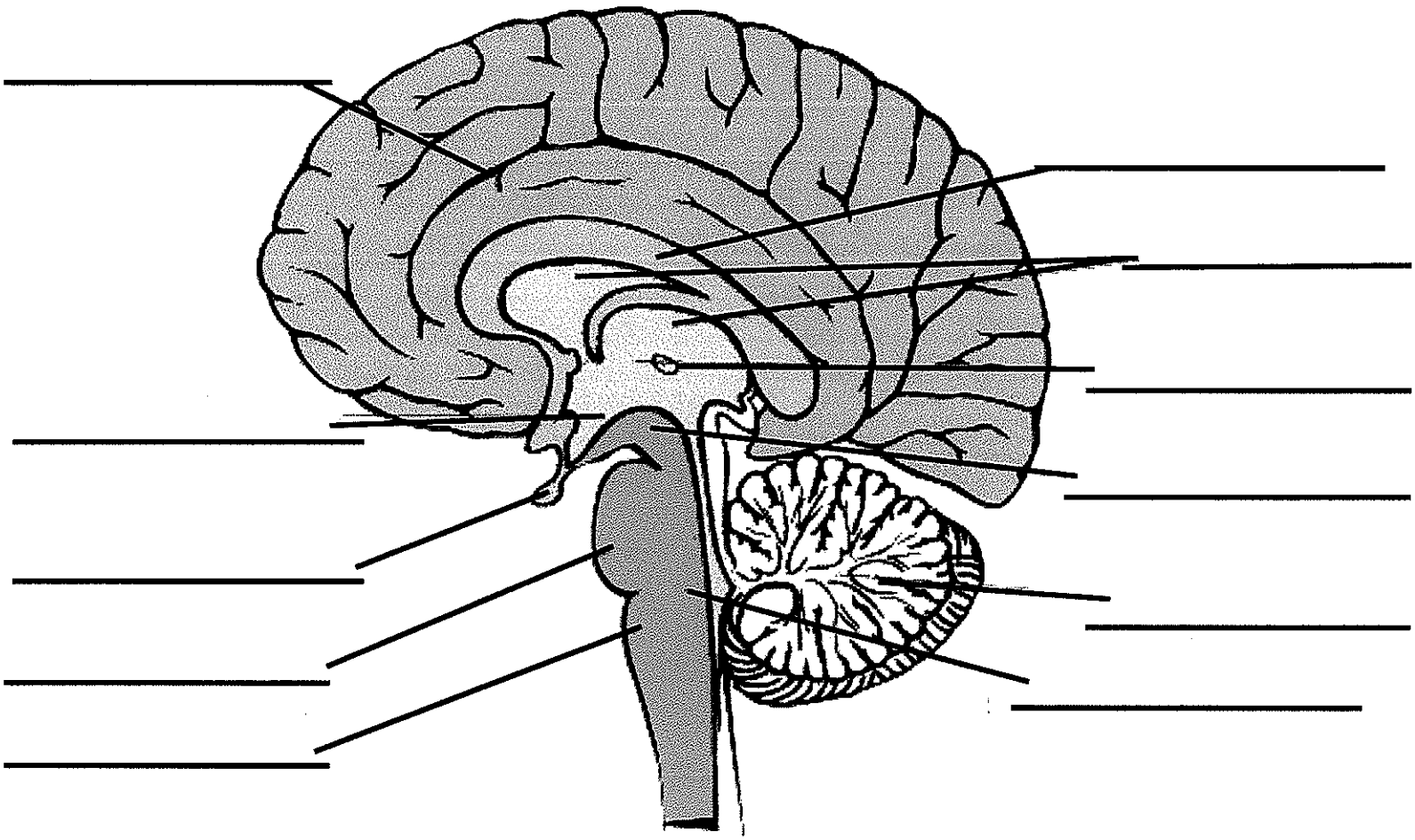
The frontal lobe controls emotions and personality of the body.



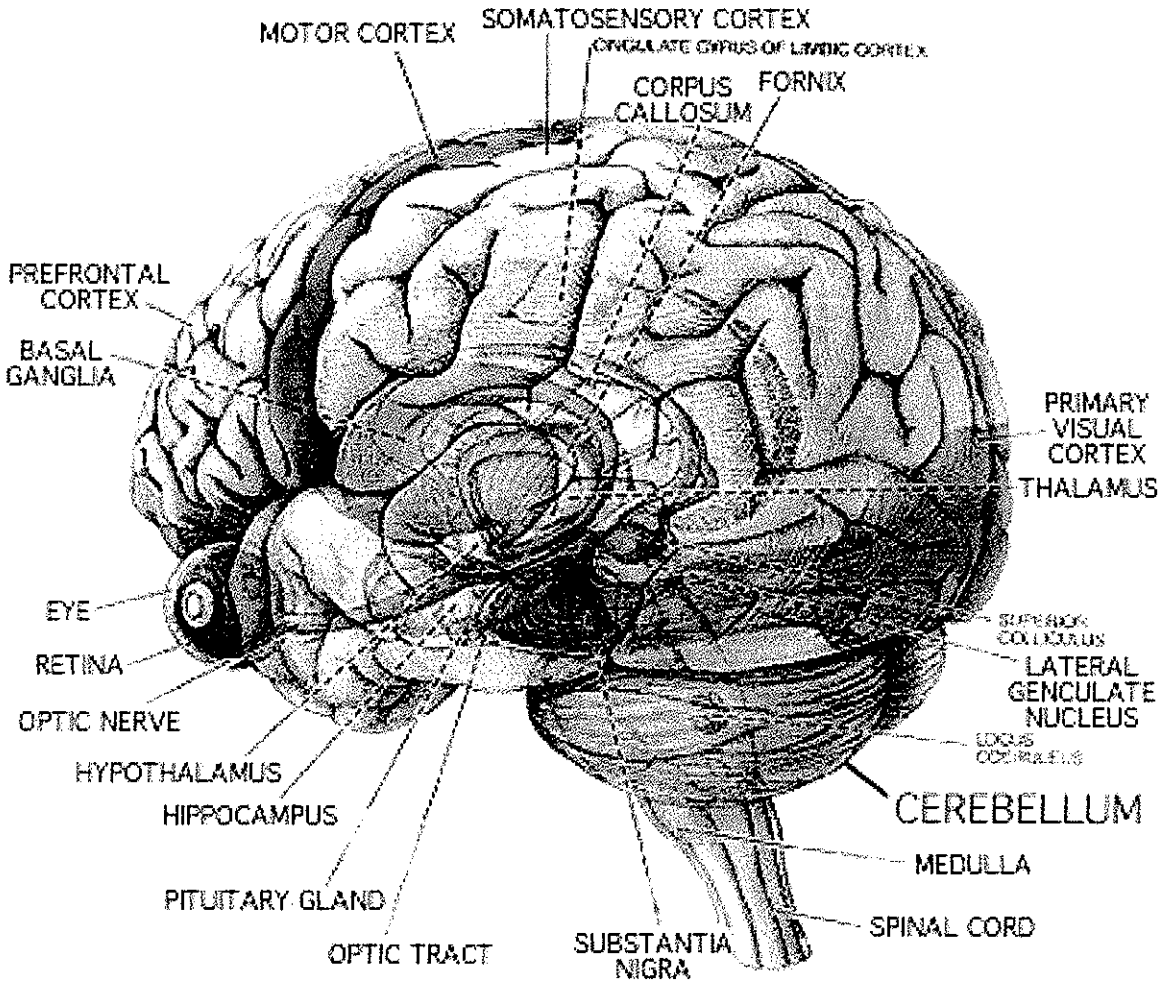


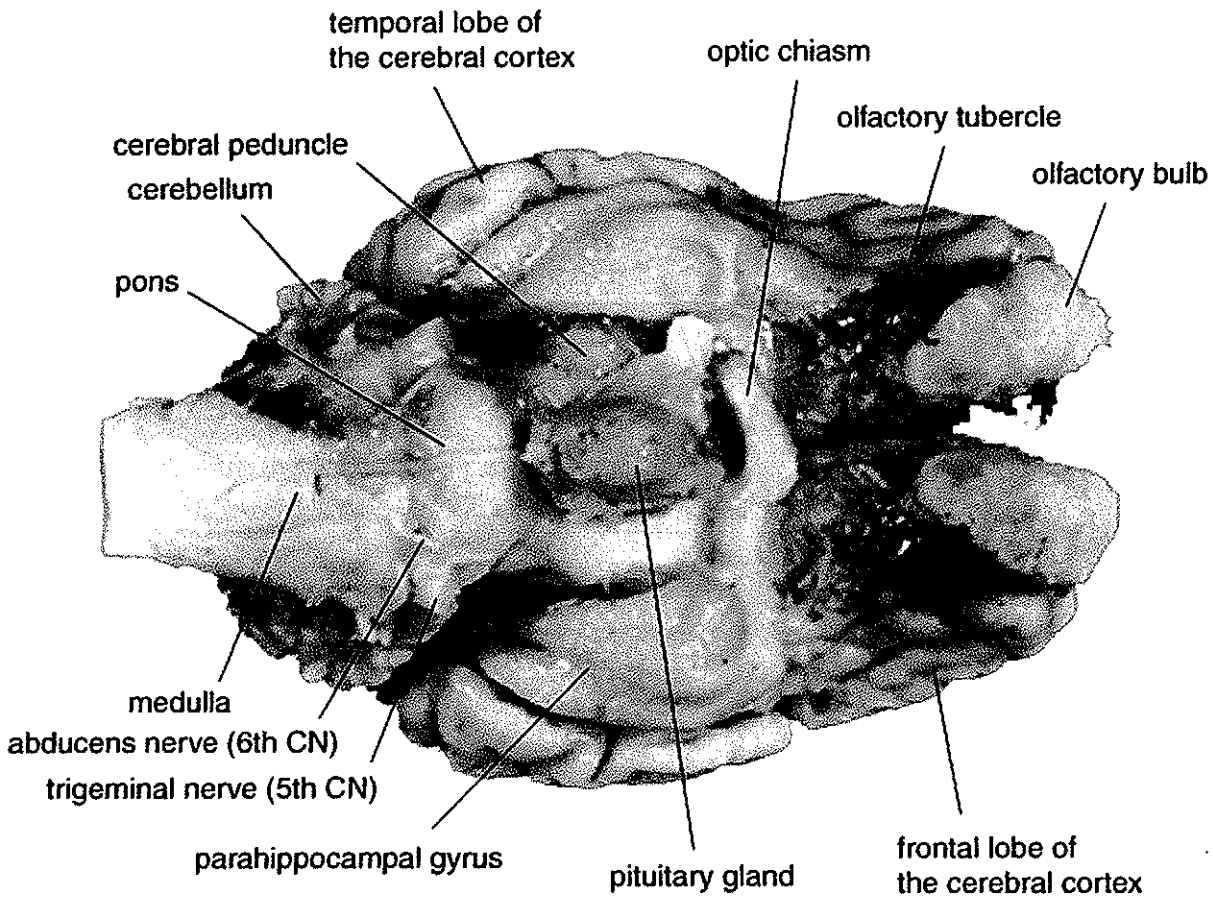
The frontal lobe is the largest of five lobes constituting each of the two cerebral hemispheres. The frontal lobe lies beneath the frontal bone. The frontal lobe significantly influences personality and is associated with the higher mental activities, such as planning, judgment, and conceptualizing.


Cerebrum
Corpus collosum
Ventricles
Thalamus
Hypothalamus
Midbrain
Pituitary gland
Pons
Cerebellum
Medulla
Brain stem



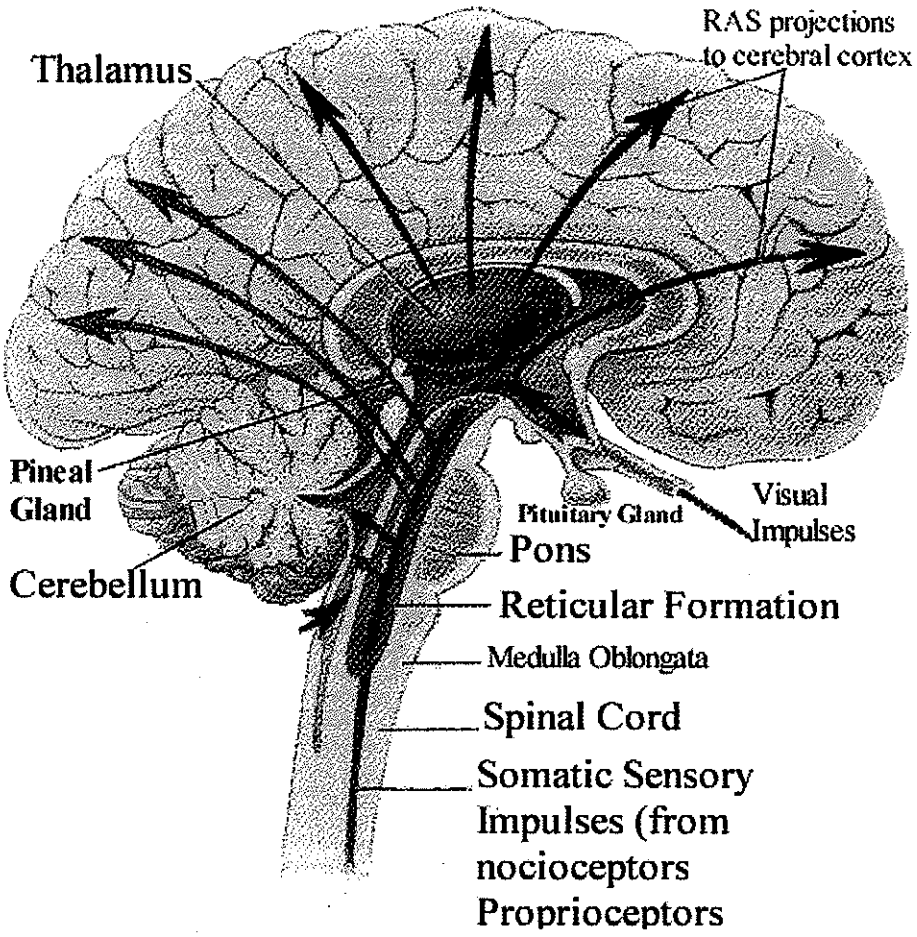
Gabi Vasquez
October 9, 2009
Per. 4




temporal lobe of
the cerebral cortex
optic chiasm
olfactory tubercle
cerebral peduncle
cerebellum
olfactory bulb
pons
medulla
abducens nerve (6th CN)
trigeminal nerve (5th CN)
parahippocampal gyrus
pituitary gland
frontal lobe of
the cerebral cortex

Sara Madruga
Period 1
10/09/09

Recticular Formation



definition: a network of neurons in the brainstem involved in consciousness, regulation of breathing, the transmission of sensory stimuli to higher brain centers, and the constantly shifting muscular activity that supports the body against gravity.

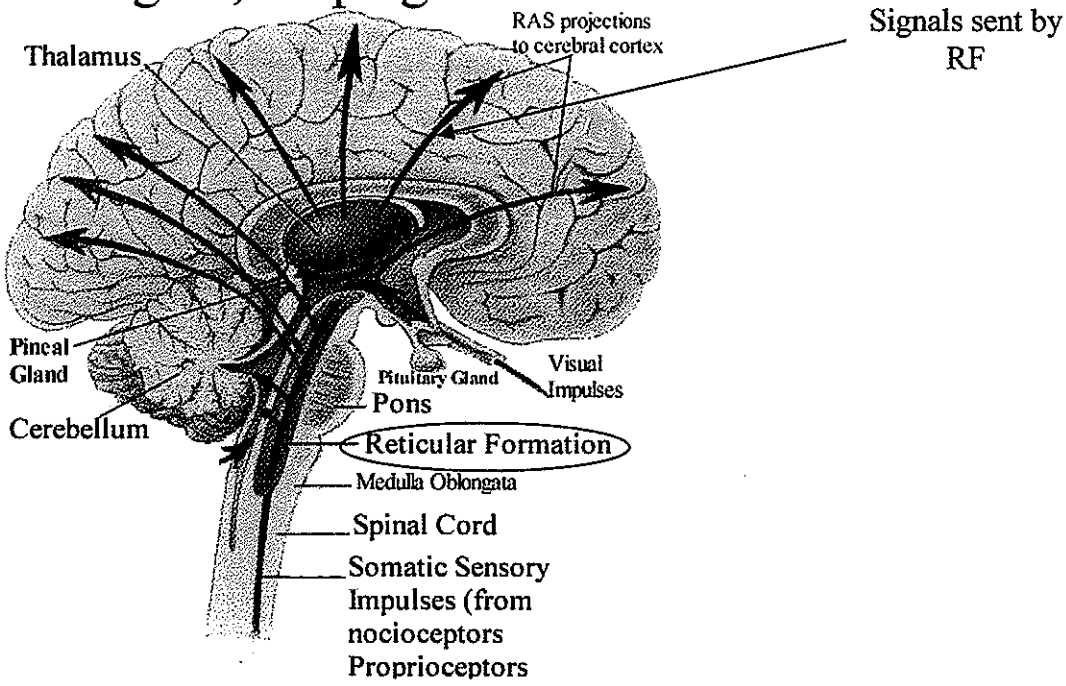
in other words

- It's associated with attention, alertness, reflexes and arousal. It filters incoming stimuli and then relays important information to the brain.

Ally Scott
Per. 4

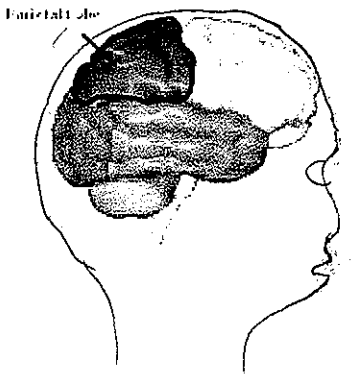
Reticular Formation

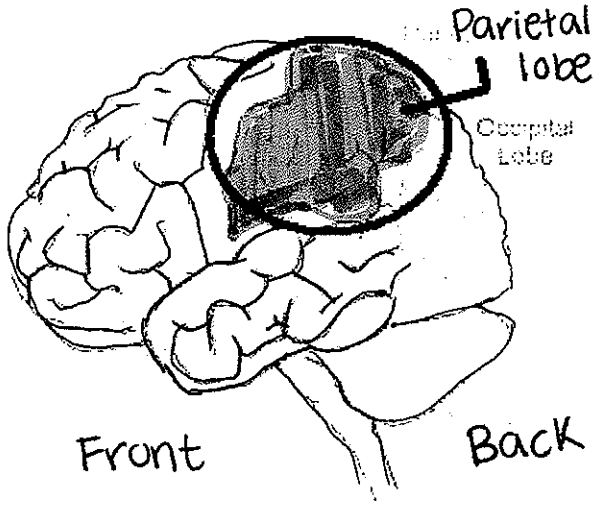
A network of fibers and cell bodies that lie inside the medulla and brainstem. It gives affinity to different messages influencing attention. It also affects muscle tone, posture, and movements of eyes, face, head, body, and limbs. The reticular activation system bombards the cortex with simulation with messages from the sense organs, keeping it active and alert.



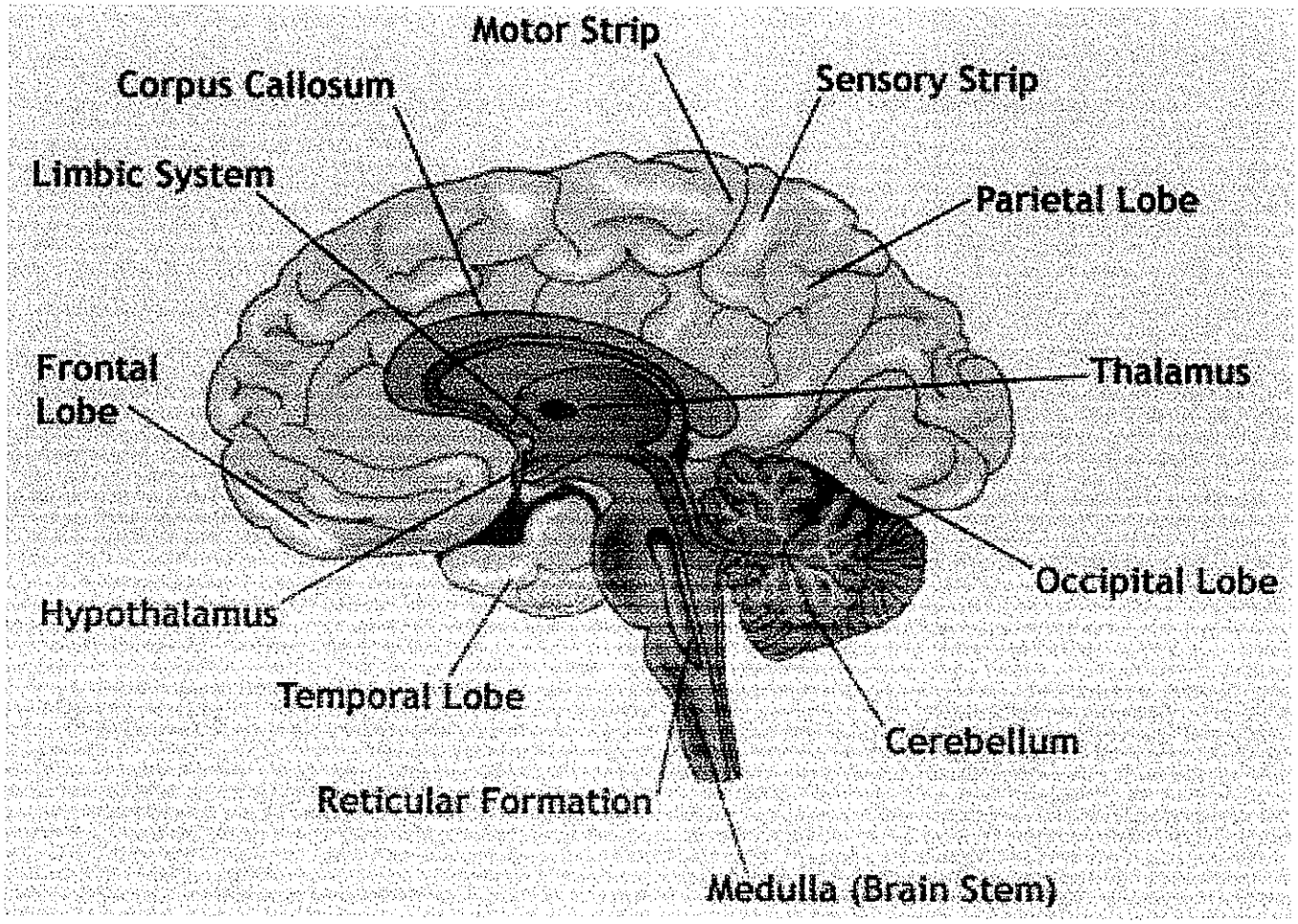
- Chooses the importance of messages that flow into the brain
- Influences attention
- Affects movement by controlling outgoing commands to body
- Controls reflexes (sneezing, coughing, vomiting, etc.)
- Keeps us awake, aware and active by keeping many signals flowing into cortex

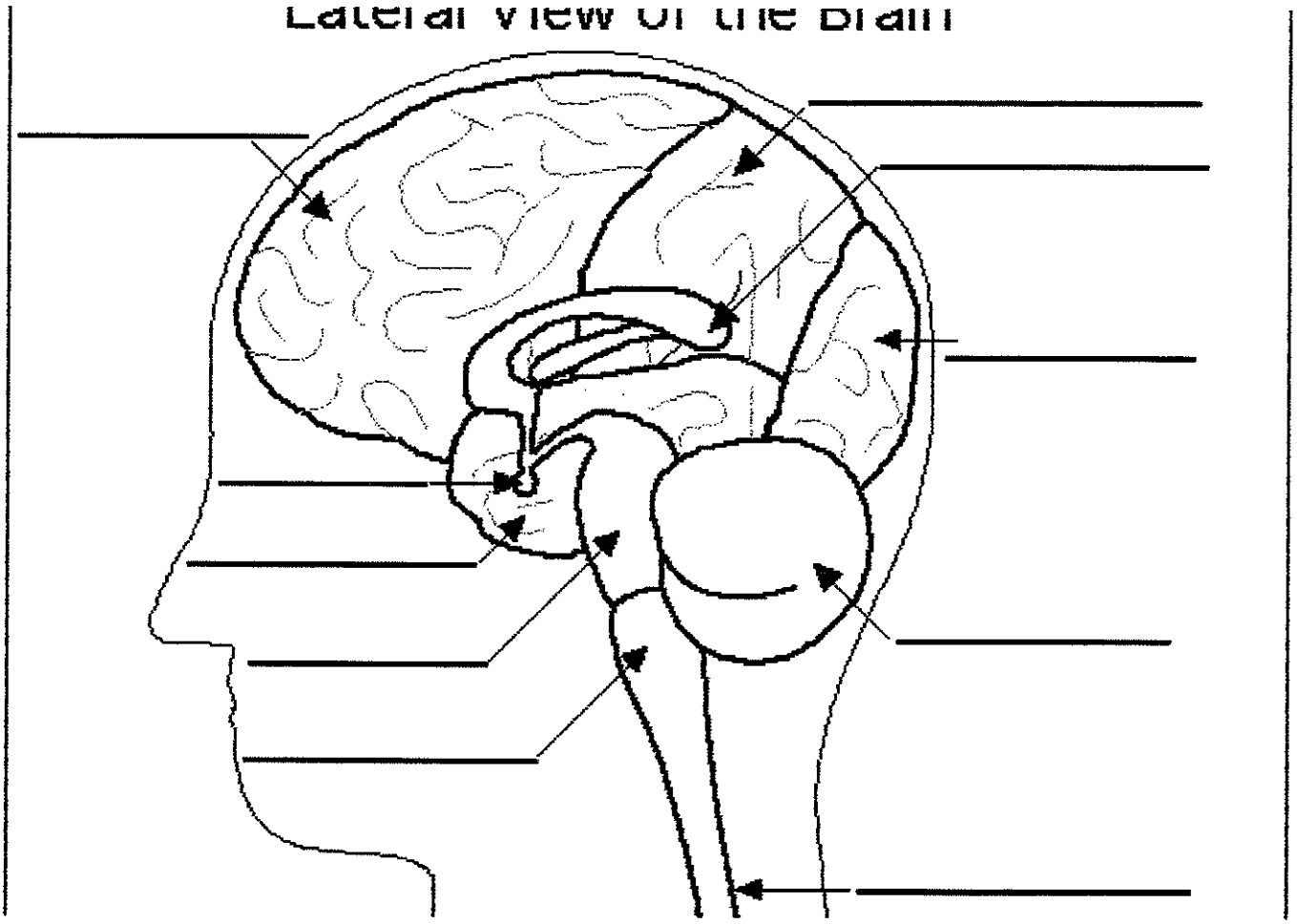
Parietal lobes: The parietal lobe is located in the brain. It's positioned above the occipital lobe and behind the frontal lobe. It integrated sensory information from different modalities, particularly determining spatial sense and navigation.





Area of the brain where bodily sensations register.

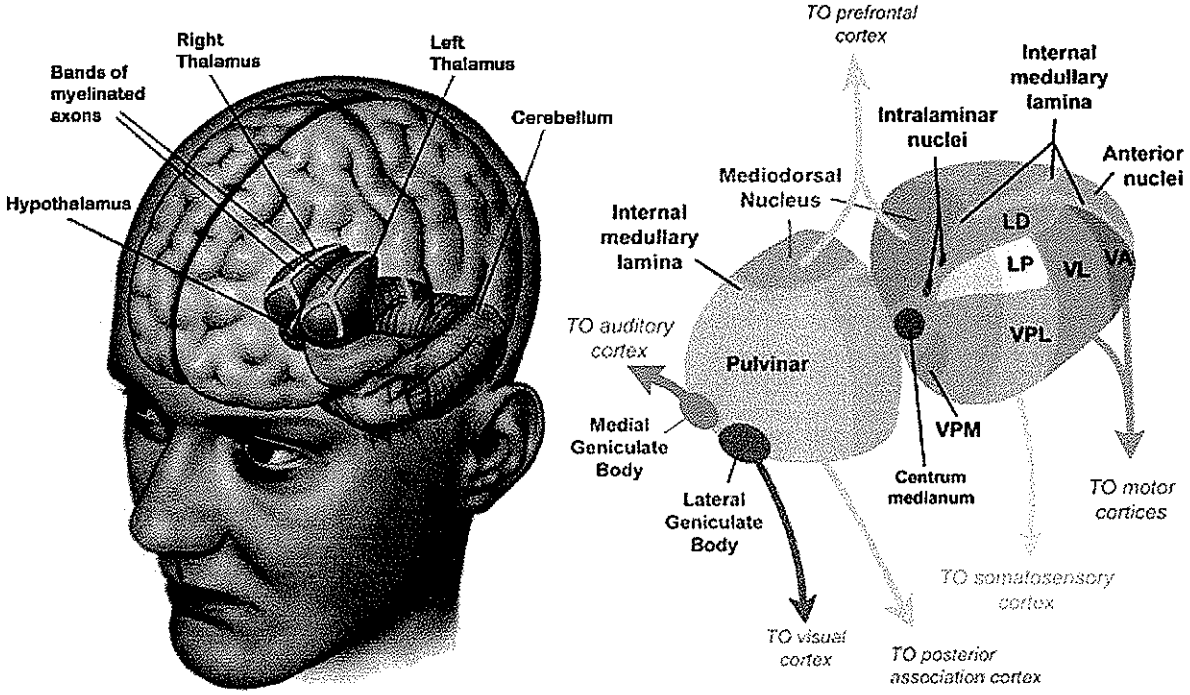




Erick Rivalcaba

Katie Marco

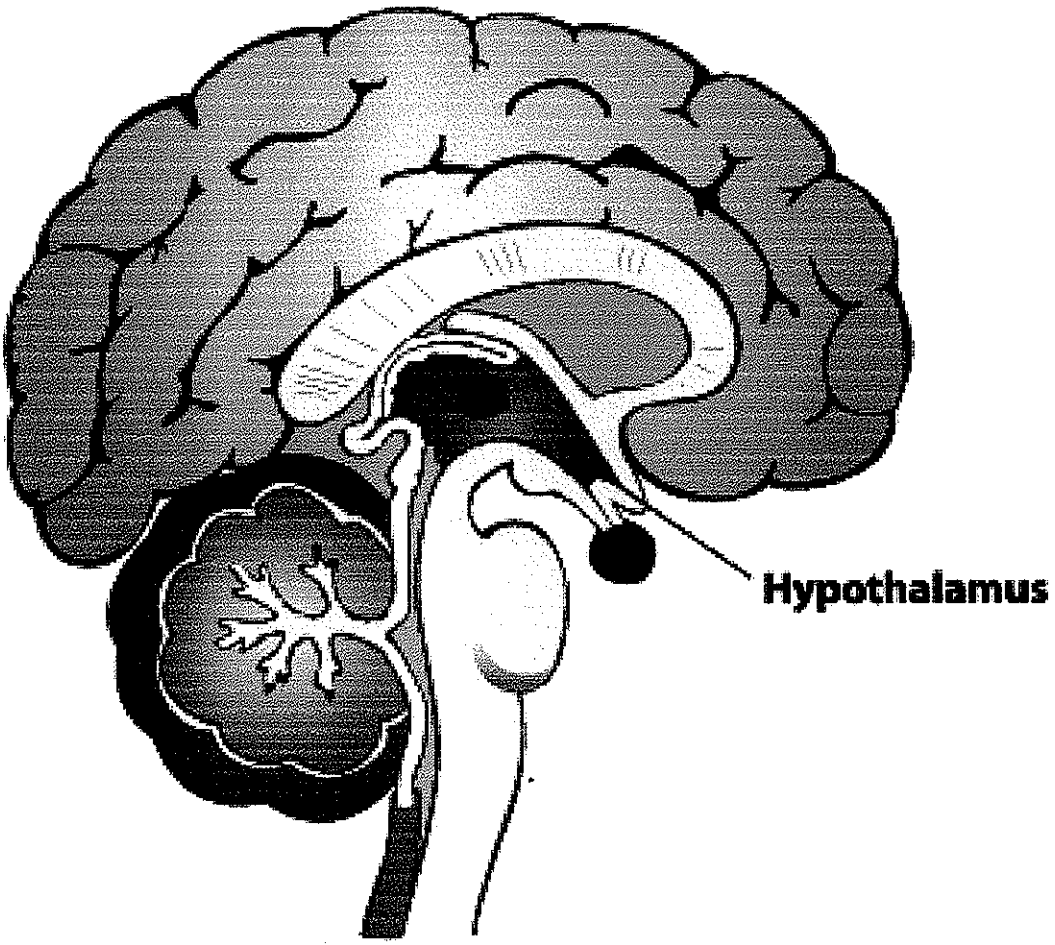
Thalamus



- A key part of the forebrain. It acts as a final "switching sensation" for sensory messages on their way to the cortex. Vision, hearing, taste, and touch all pass through it. Injury to even the small areas of the thalamus can result in deafness, blindness, or loss of any other sense except smell.

Hypothalamus

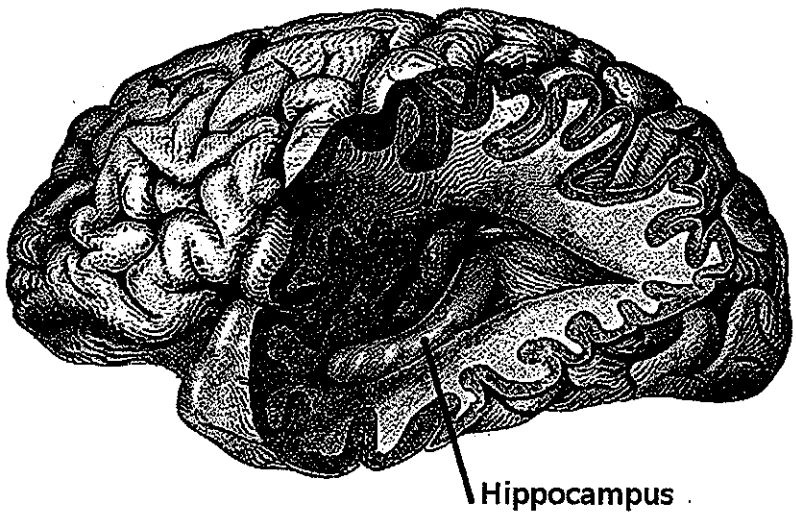
-> The area of the brain that controls body temperature hunger and thirst.



The hypothalamus is generally very active in regulating our primary instincts and emotional responses. The instincts for basic survival, fight or flight, mating, eating, and drinking, are all regulated right here.

Hippocampus

<u>Definition</u>- A structure in the brain associated with the regulation of emotions and the transfer of information from short-term memory to long-term memory

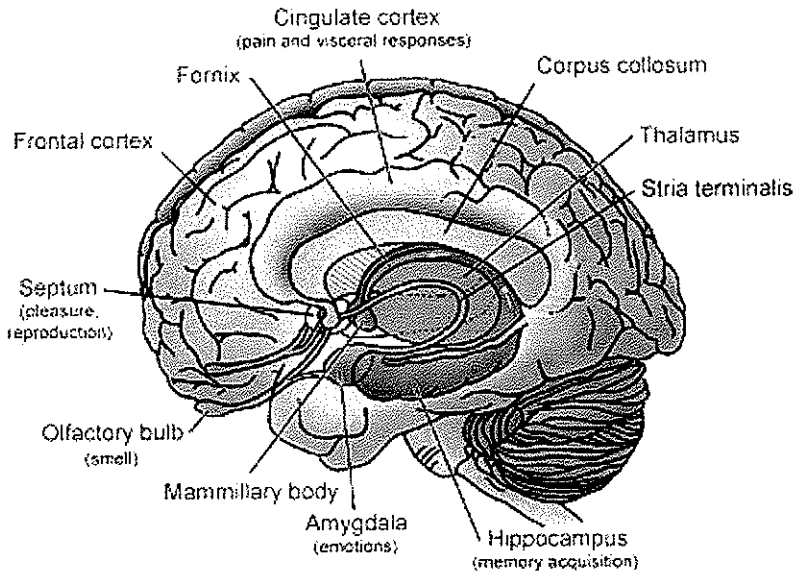


- **Belongs to the limbic system**
- **Located inside the medial temporal lobe**
- **Plays important roles in long-term memory & spatial navigation**
- **An important role in the formation of new memories about experienced events**
- **Responsible for memories that can be explicitly verbalized**
- **In Alzheimer's disease the hippocampus is one of the first regions of the brain to suffer damage**

Bryce Trower Per. 4

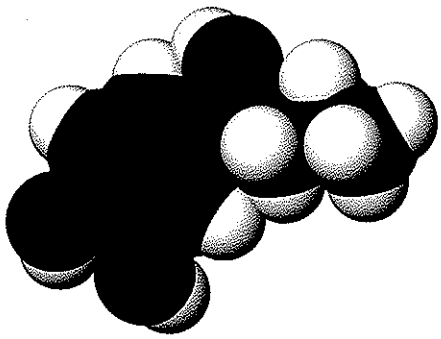
The Limbic System

- Has a major role in producing emotion and motivated behavior
- Amygdala: Strongly related to fear
- Hippocampus: Important for forming long lasting memories
- Stria terminalis: Connects Hypothalamus and Amygdala
- Hypothalamus: Regulates emotional behaviors and motives
- Thalamus: Relays sensory information to the cerebral cortex



- Corpus Callosum: Bundle of fibers connecting the cerebral hemispheres
- Cingulate Cortex: Deals with pain and visceral responses
- Fornix: Bundle of fibers connecting the Hippocampus to the mamillary body of the Hypothalamus
- Frontal Cortex: Cognition
- Septum: Deals with pleasure and reproduction
- Olfactory Bulb: Sense of smell

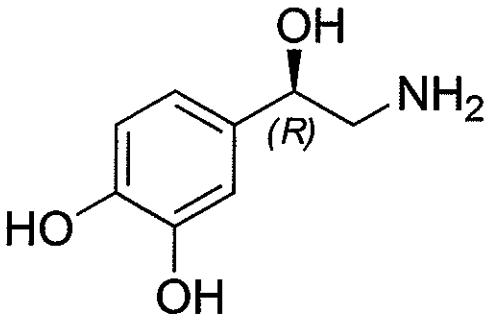
EPINEPHRINE



Definition - A hormone secreted by the adrenal medulla upon stimulation by the central nervous system in response to stress, as anger or fear, and acting to increase heart rate, blood pressure, cardiac output, and carbohydrate metabolism.

Own Words - A hormone released in response to stress or a scary situation. It increases your heart rate.

NOREPINEPHRINE



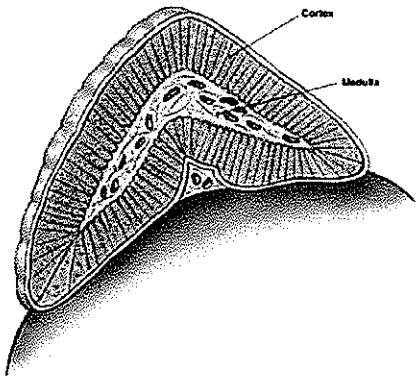
Definition - A neurotransmitter, released by adrenergic nerve terminals in the autonomic and possibly the central nervous system, that has such effects as constricting blood vessels, raising blood pressure, and dilating bronchi.

Own Words – This is almost the same as an 'epinephrine' and constricts blood vessels resulting in high blood pressure.

ADRENAL GLAND

Definition - one of a pair of ductless glands, located above the kidneys, consisting of a cortex, which produces steroidal hormones, and a medulla, which produces epinephrine and norepinephrine.

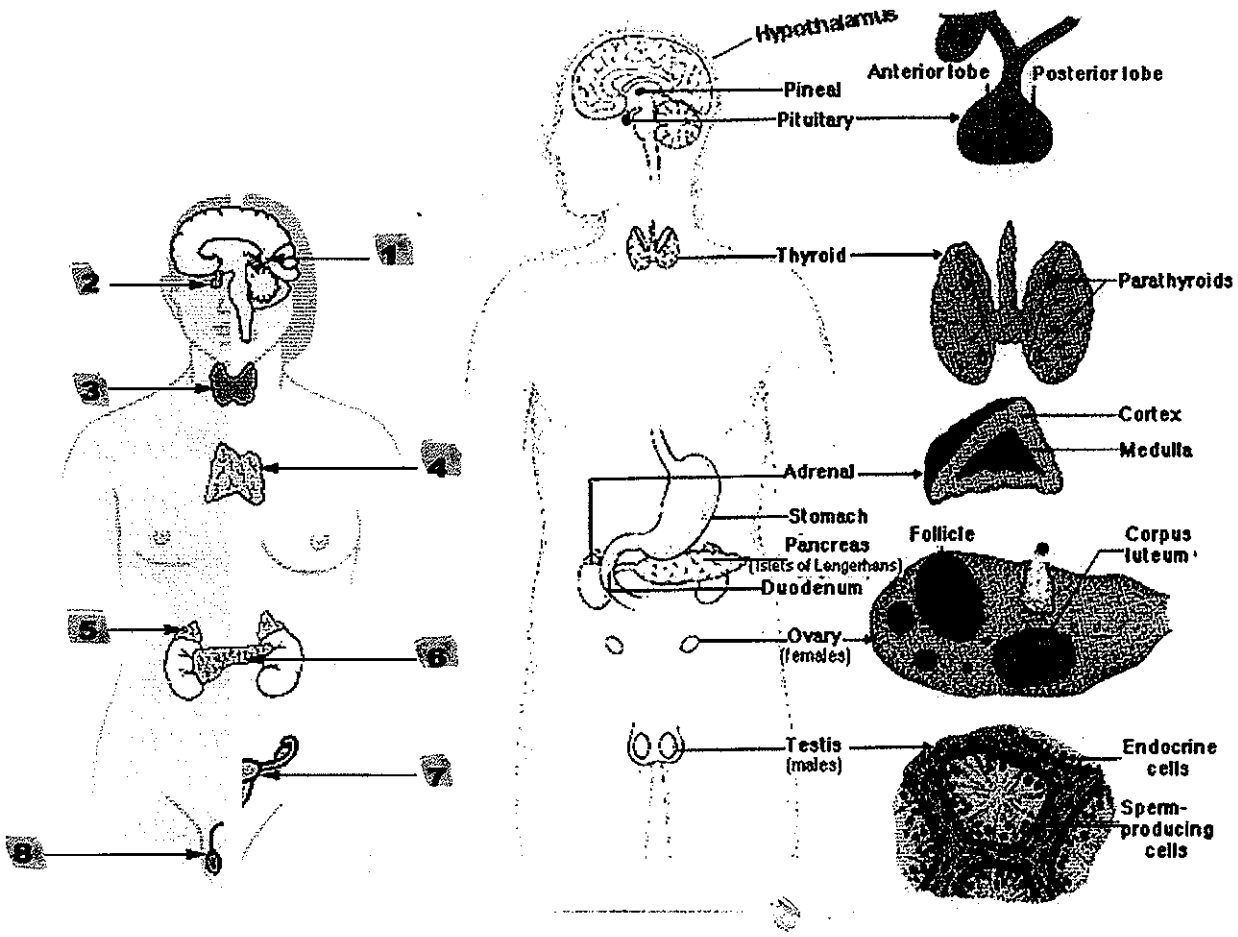
Own Definition – Thus makes epinephrine and norepinephrine.



Shone Bowman
10/9/09
P.4

Endocrine System

Definition: system of glands that release extracellular signaling molecules , hormones. The endocrine system is instrumental in regulating metabolism, growth, development, puberty, tissue function, internal environment (temperature,water balance,ions) and also determines mood.



1. Phineal gland

2. Pituitary gland

3. Thyroid gland

4. Thymus

5. Adrenal gland

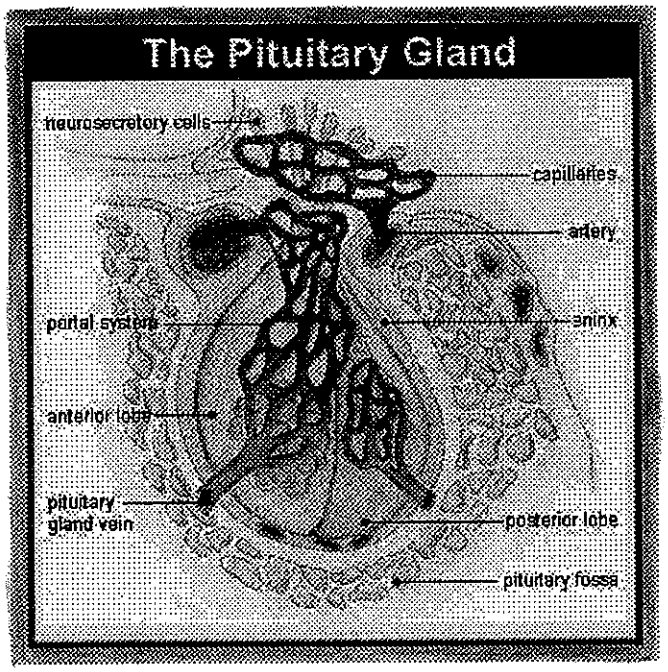
6. Pancreas

7. Ovary

8. Testicles

Pituitary Gland

The pituitary gland secretes hormones regulating homeostasis, including tropic hormones that stimulate other endocrine glands. -Wikipedia



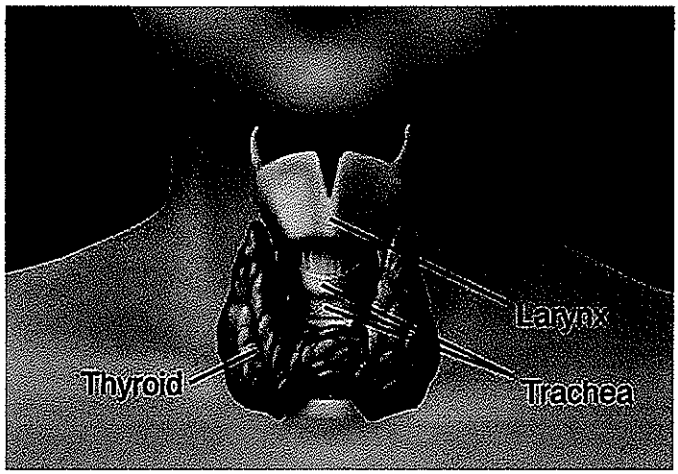
The pituitary gland releases hormones that help control:

- ☐ **Growth**
- ☐ **Blood Pressure**
- ☐ **Sex Organ Functions**
- ☐ **Breast Milk Production**

It is also referred to as the "Master Gland."

THYROID GLAND

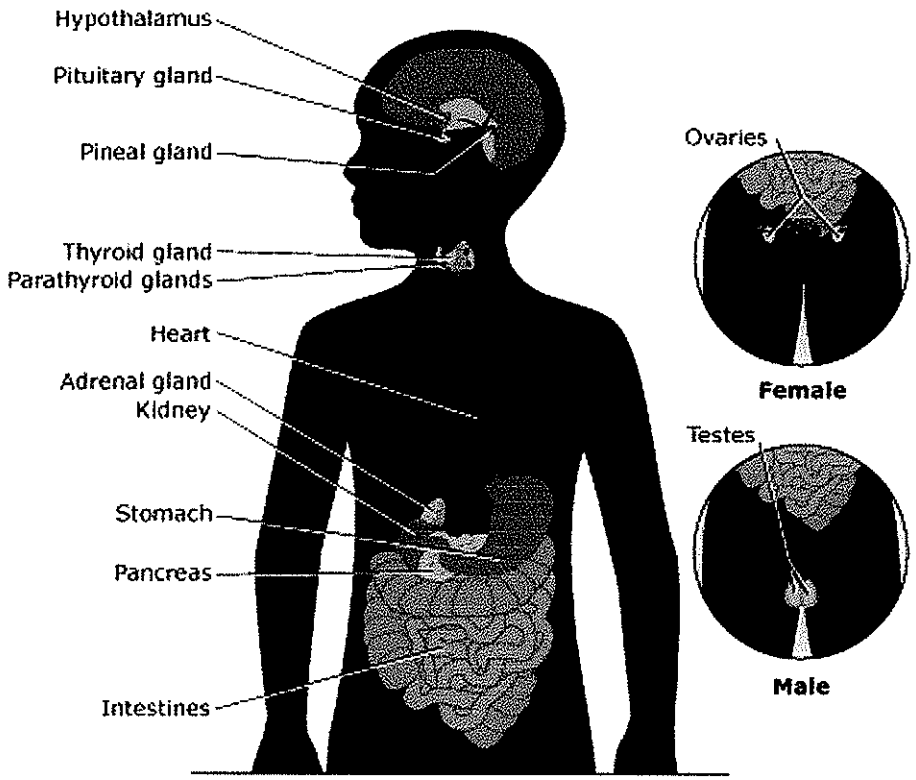
Gland at the base of the neck that regulates metabolism



The thyroid's primary function is controlling the rate of metabolism. It releases hormones to affect the burning of calories. These hormones can also affect growth and function of other organs. Common problems with this gland are hyperthyroidism (overactive thyroid) and hypothyroidism (underactive thyroid). These conditions affect all bodily systems, including personality and behavior. A person with hyperthyroidism experiences weight loss, increased appetite, hair loss, heart palpitations, apathy, and depression. Someone with an underactive thyroid (three percent of our population) experiences fatigue, intolerance to cold, weight gain, irritability, and hoarseness of the voice. In recent years the thyroid has been linked to increasing obesity.

Ashley Morrison
Period 1

Endocrine System + Hormones



The Endocrine System

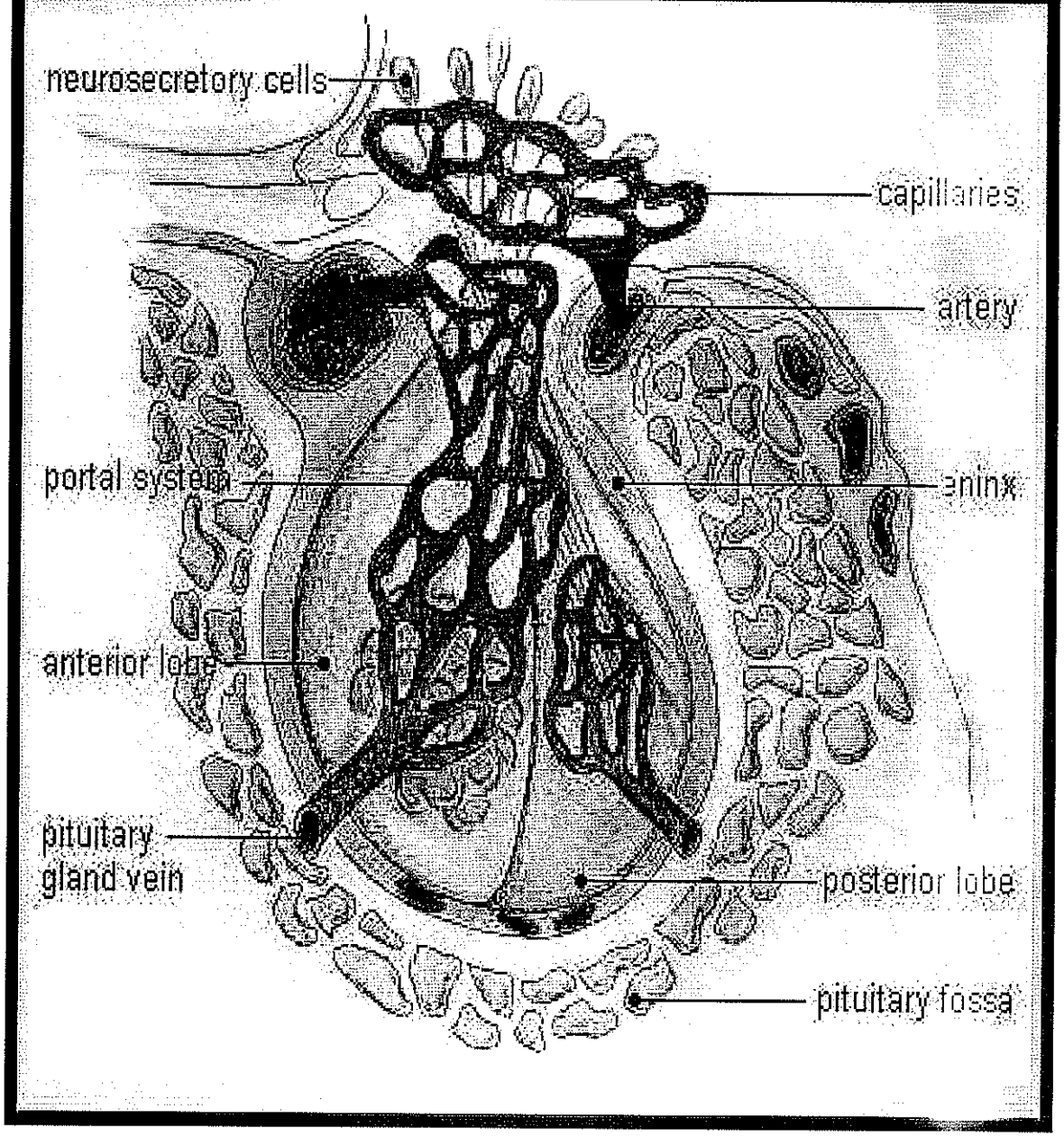
• The **Endocrine System** is a system of **hormone-releasing glands** that regulate metabolism, growth, development, puberty, tissue function, internal environment (**homeostasis**), and also plays a part in **determining mood**.

• **Hormones** are chemical messengers that transport a signal from one cell to another.

• All multi-cellular organisms secrete hormones

• Endocrine hormones are released directly into the bloodstream or lymph system

The Pituitary Gland



Greg Dotter
10/9/09
Per. 1

One pager - Pituitary Gland

★ The pituitary gland is also called the "master" gland of the endocrine system.

- It controls the functions of the other endocrine glands.
- The pituitary gland is no larger than the size of a pea.
- The pituitary gland is located at the base of the brain. The gland is attached to the hypothalamus by nerve fibers.
- The pituitary gland is made of three parts, The Anterior lobe, the Intermediate lobe, and the Posterior lobe.
- Each lobe has different hormones.

Anterior lobe -> Growth hormone

- Prolactine, ACTH (adrenocorticotropic Hormone), TSH (Thyroid-Stimulating hormone), Fsh (Follicle-stimulating hormone), LH (Lutenizing hormone).

- Intermediate lobe -> Melanocyte-stimulating hormone - to control skin pigmentation

Posterior lobe -> ADH (antidiuretic hormone) increase absorption of water into blood by the kidneys.

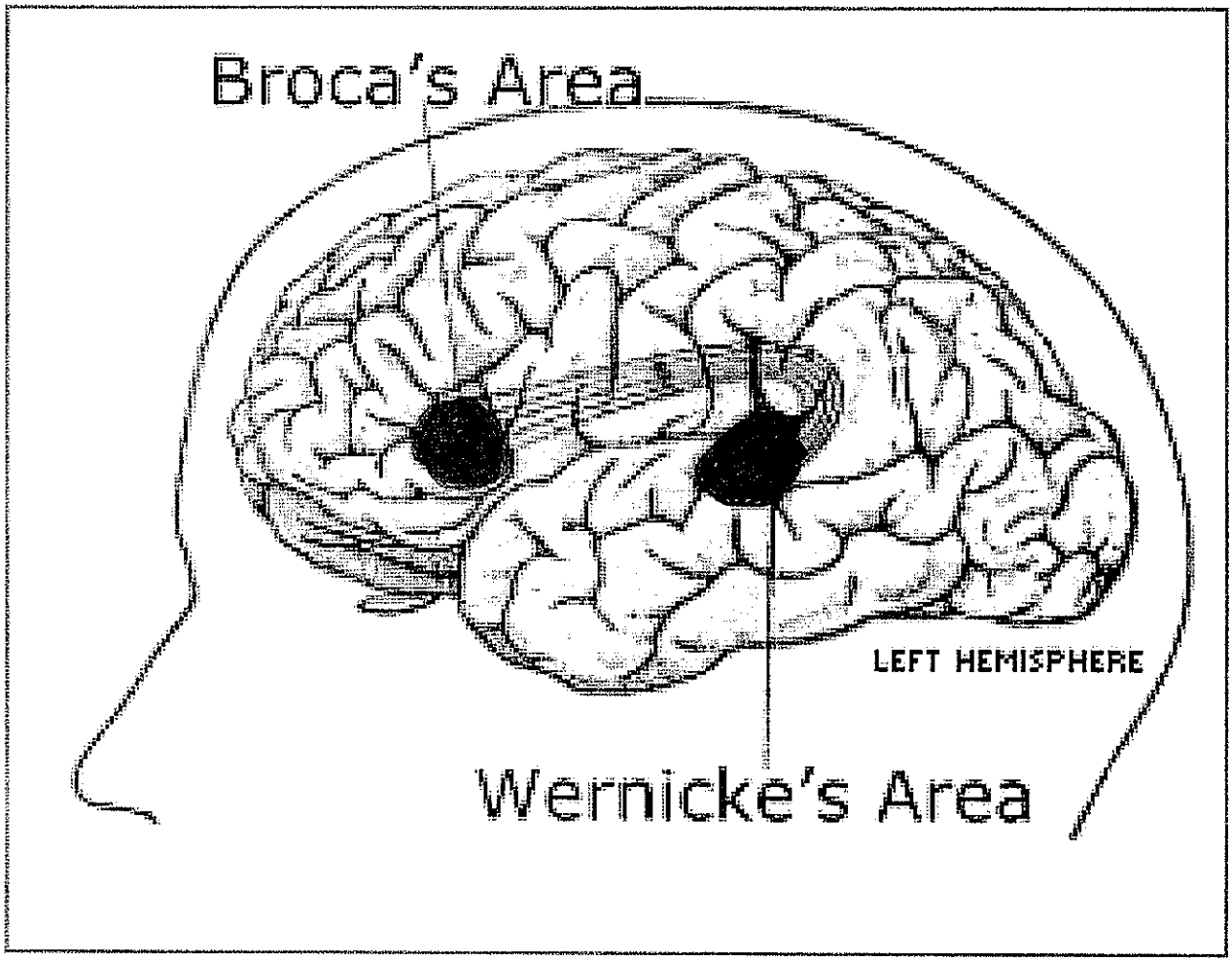
- Oxytocin -> To contract the uterus during childbirth and stimulate milk production.

Wernicke's Area: the region of the brain that is important in language development.

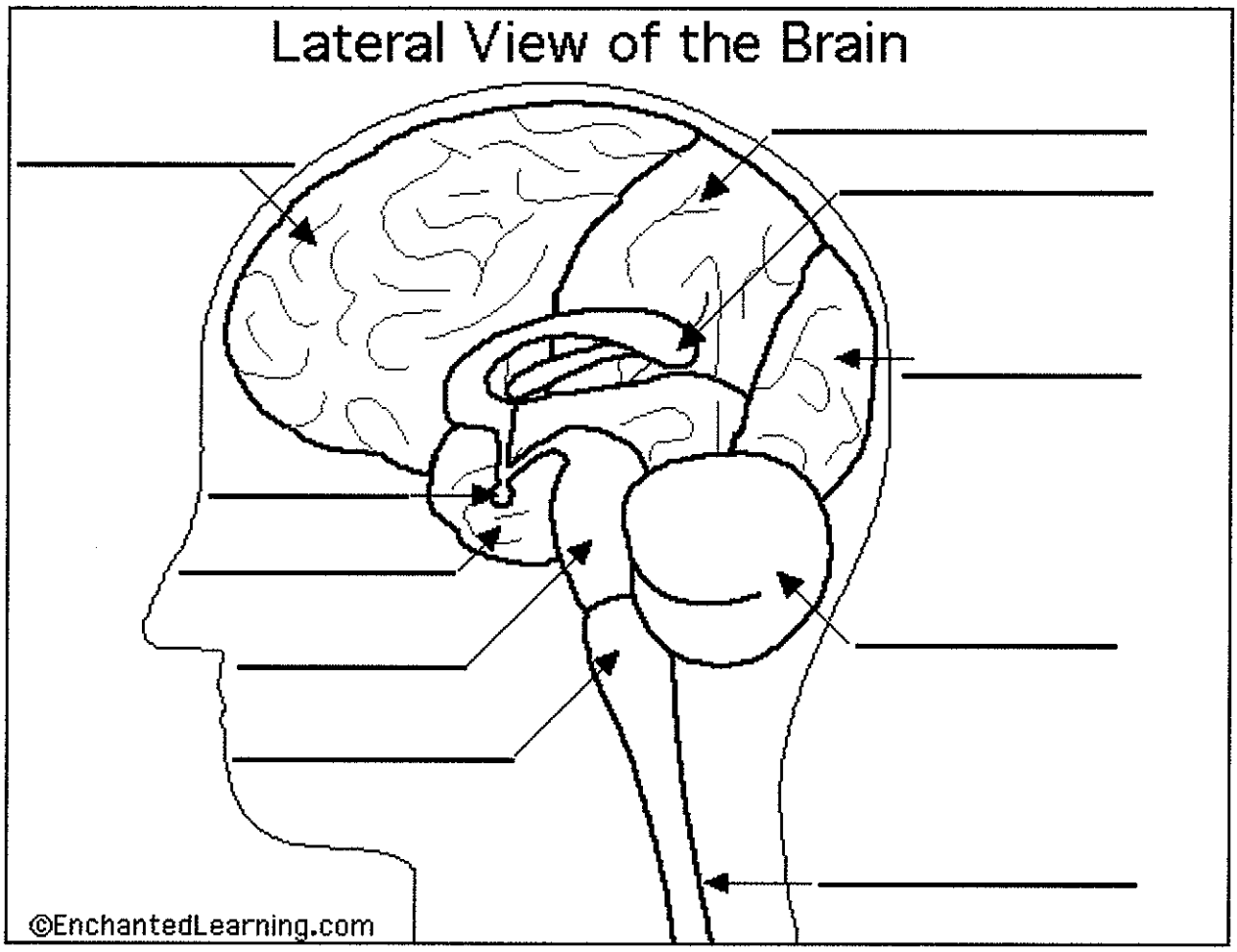
- Related to language comprehension.

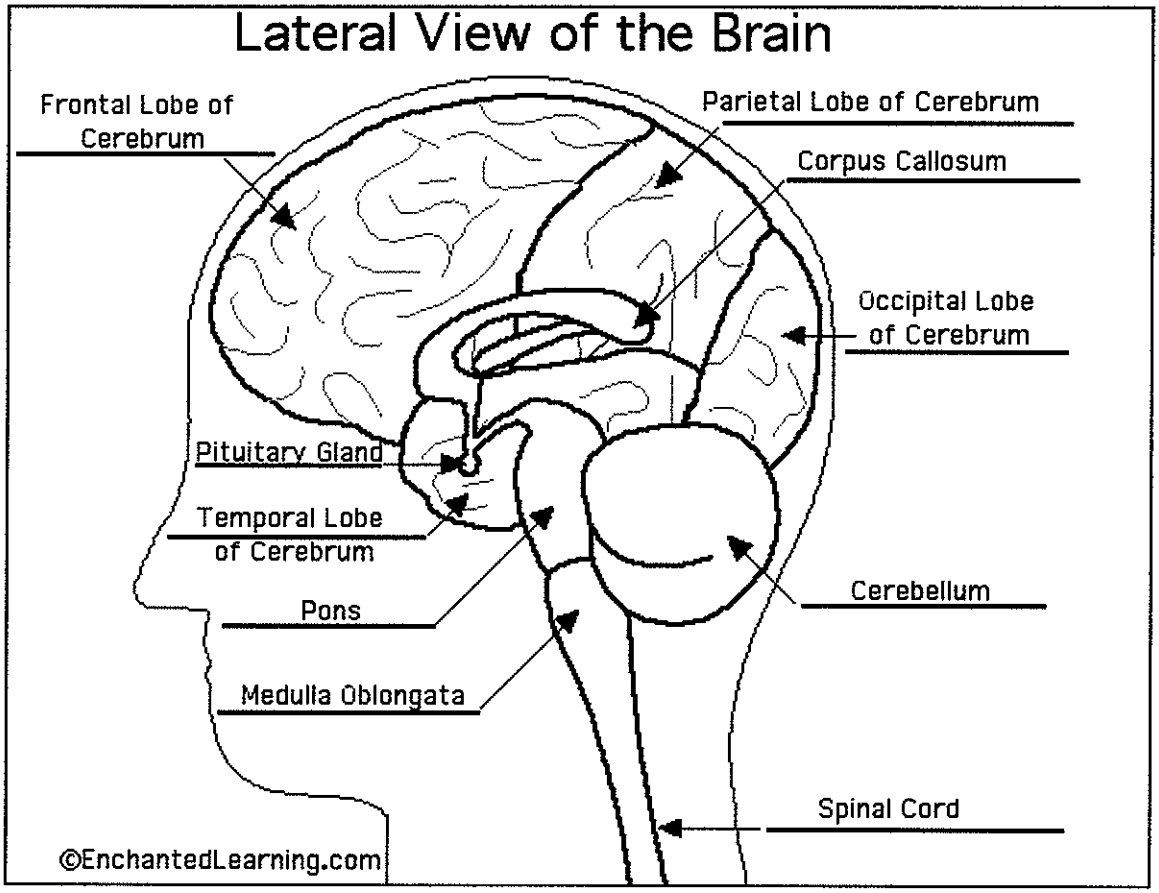
Broca's Area: involved in understanding language and speech production.

- Related to grammar and pronunciation.



Thomas Beckman
Period 4
10-9-09


Lateral View of the Brain
©EnchantedLearning.com



Cerebellum - the part of the brain below the back of the cerebrum. It regulates balance, posture, movement, and muscle coordination.

Corpus Callosum - a large bundle of nerve fibers that connect the left and right cerebral hemispheres. In the lateral section, it looks a bit like a "C" on its side.

Frontal Lobe of the Cerebrum - the top, front regions of each of the cerebral hemispheres. They are used for reasoning, emotions, judgment, and voluntary movement.

Medulla Oblongata - the lowest section of the brainstem (at the top end of the spinal cord); it controls automatic functions including heartbeat, breathing, etc.

Occipital Lobe of the Cerebrum - the region at the back of each cerebral hemisphere that contains the centers of vision and reading ability (located at the back of the head).

Parietal Lobe of the Cerebrum - the middle lobe of each cerebral hemisphere between the frontal and occipital lobes; it contains important sensory centers (located at the upper rear of the head).

Pituitary Gland - a gland attached to the base of the brain (located between the Pons and the Corpus Callosum) that secretes hormones.

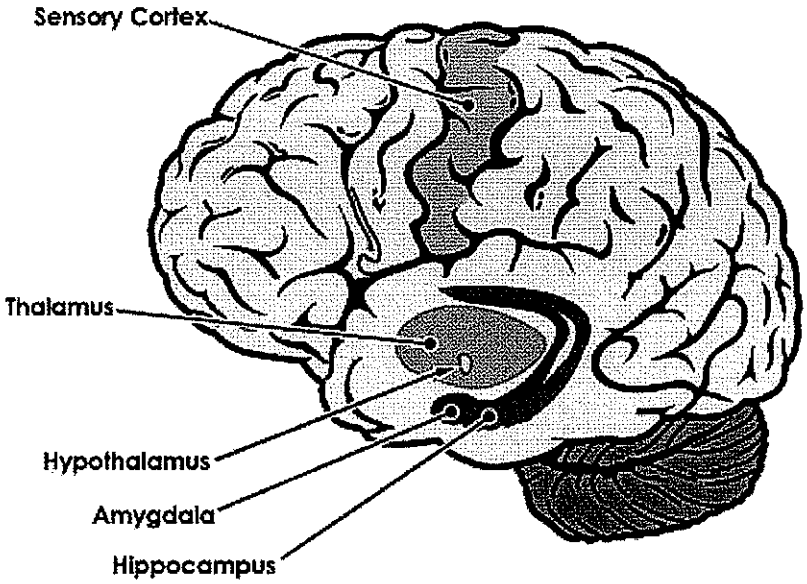
Pons - the part of the brainstem that joins the hemispheres of the cerebellum and connects the cerebrum with the cerebellum. It is located just above the Medulla Oblongata.

Spinal Cord - a thick bundle of nerve fibers that runs from the base of the brain to the hip area, running through the spine (vertebrae).

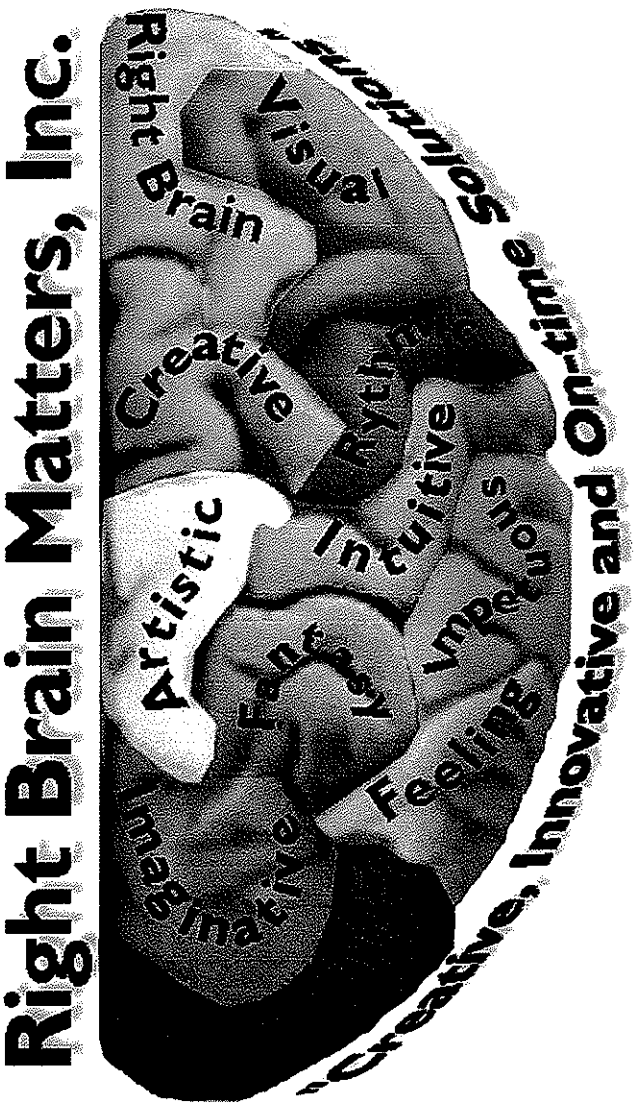
Temporal Lobe of the Cerebrum - the region at the lower side of each cerebral hemisphere; contains centers of hearing and memory (located at the sides of the head).

Carlton Bartlett

Parts of the Brain Involved in Fear Response



The right brain functions in a non-verbal manner and excels in visual, spatial, perceptual, and intuitive information. The right brain processes information differently than the left brain. For the right brain, processing happens very quickly and the style of processing is nonlinear and nonsequential. The right brain looks at the whole picture and quickly seeks to determine the spatial relationships of all the parts as they relate to the whole. This component of the brain is not concerned with things falling into patterns because of prescribed rules. On the contrary, the right brain seems to flourish dealing with complexity, ambiguity and paradox. At times, right brain thinking is difficult to put into words because of its complexity, its ability to process information quickly and its non-verbal nature. The right brain has been associated with the realm of creativity.



Right brain:

- Holistic thought
- Intuition
- Art & music
- Images (nonverbal)
- Color
- Imagination
- Daydreaming
- Random
- Aesthetics
- Philosophy & religion

Look at the chart and say the <u>COLOUR</u> not the word

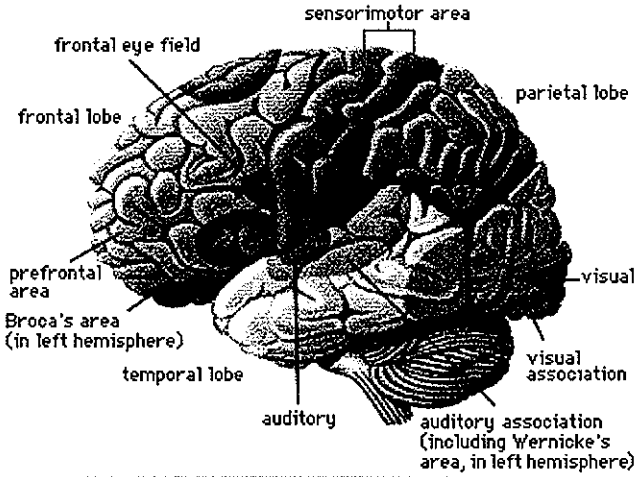
YELLOW BLUE ORANGE
BLACK RED GREEN
PURPLE YELLOW RED
ORANGE GREEN BLACK
BLUE RED PURPLE
GREEN BLUE ORANGE

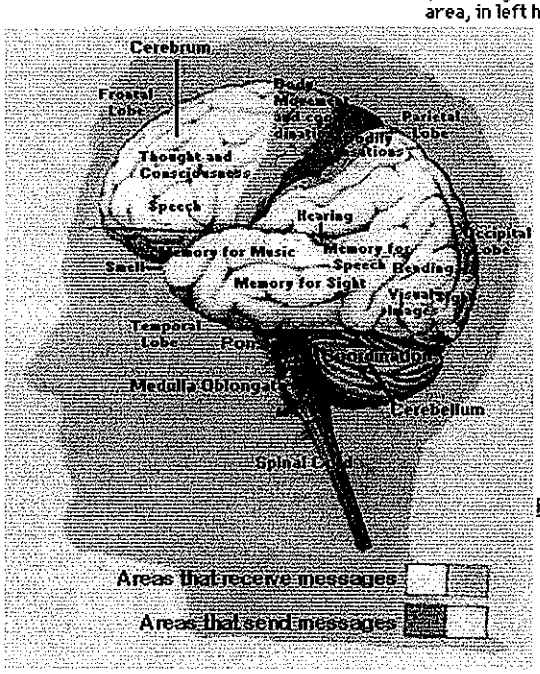
Left – Right Conflict
Your right brain tries to say the colour but your left brain insists on reading the word.

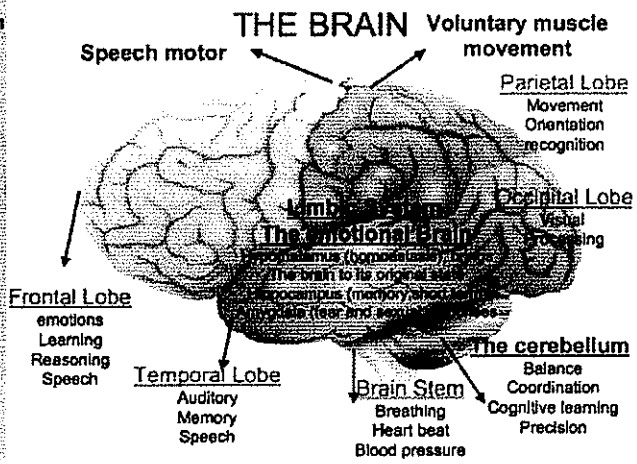
CYNTHIA PHAM
PSYCH P.1

PLHS
AP Psychology

Jaime Nixon
Period 1
10/8/09

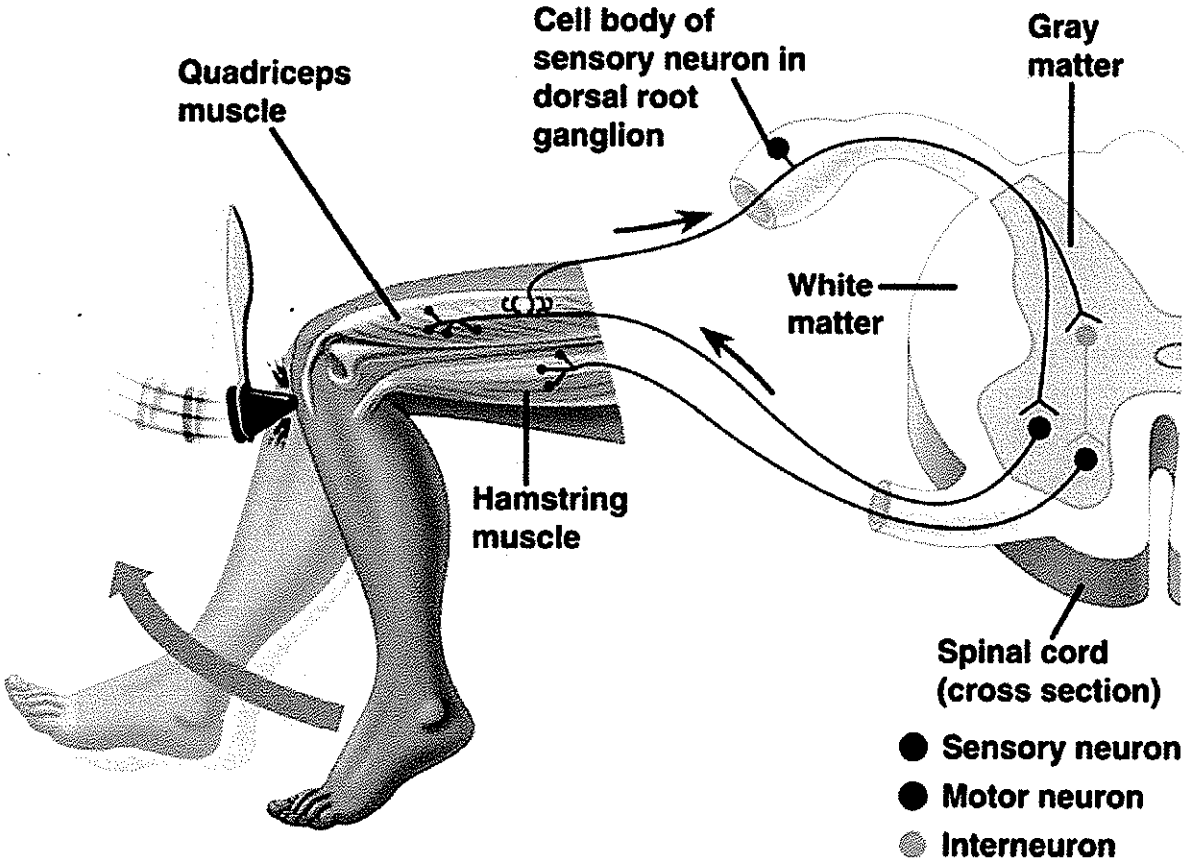






Evalina Monreal per. 1

Reflex Arc



The **reflex arc** is the **neural pathway** that results in a **reflex action.** There are two types of **reflex arc: Autonomic (affecting inner organs)** and **Somatic (affecting muscles).**