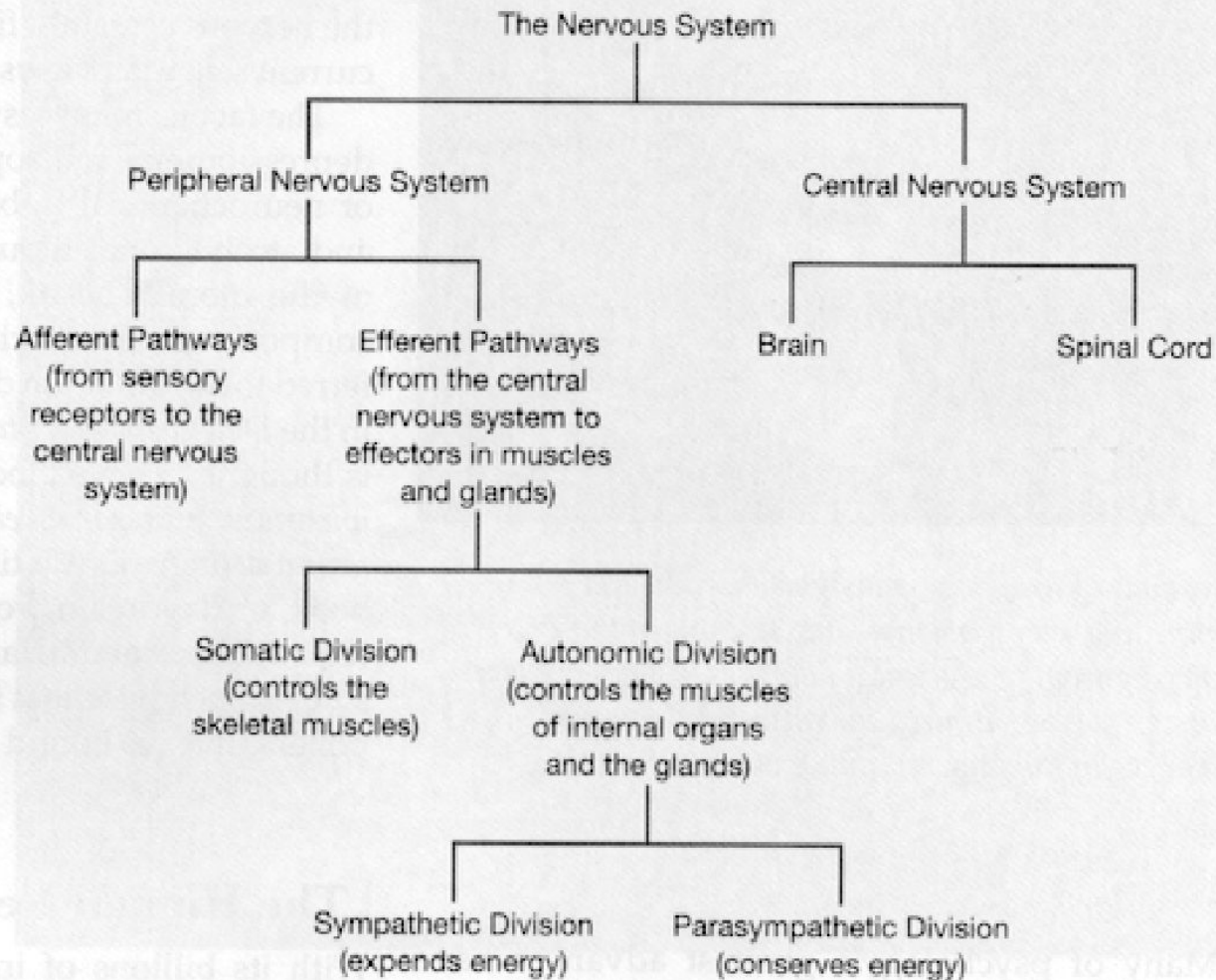


Brain and



behavior

The Human Nervous System



The Human Nervous System

- The Structure of the Nervous System
 - Central nervous system (CNS)
 - Peripheral nervous system (PNS)
 - Afferent pathways
 - Efferent pathways

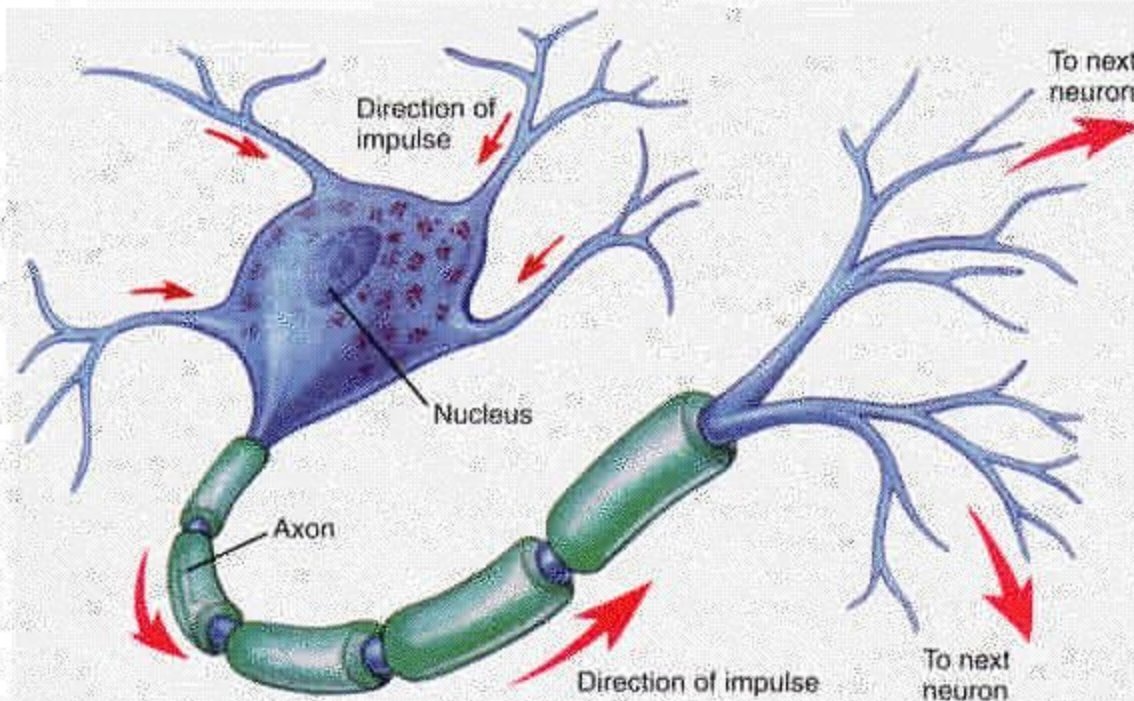
The Human Nervous System

- The Structure of the Nervous System
 - Somatic nervous system
 - Autonomic nervous system
 - Sympathetic nervous system (SNS)
 - Parasympathetic nervous system (PSNS)

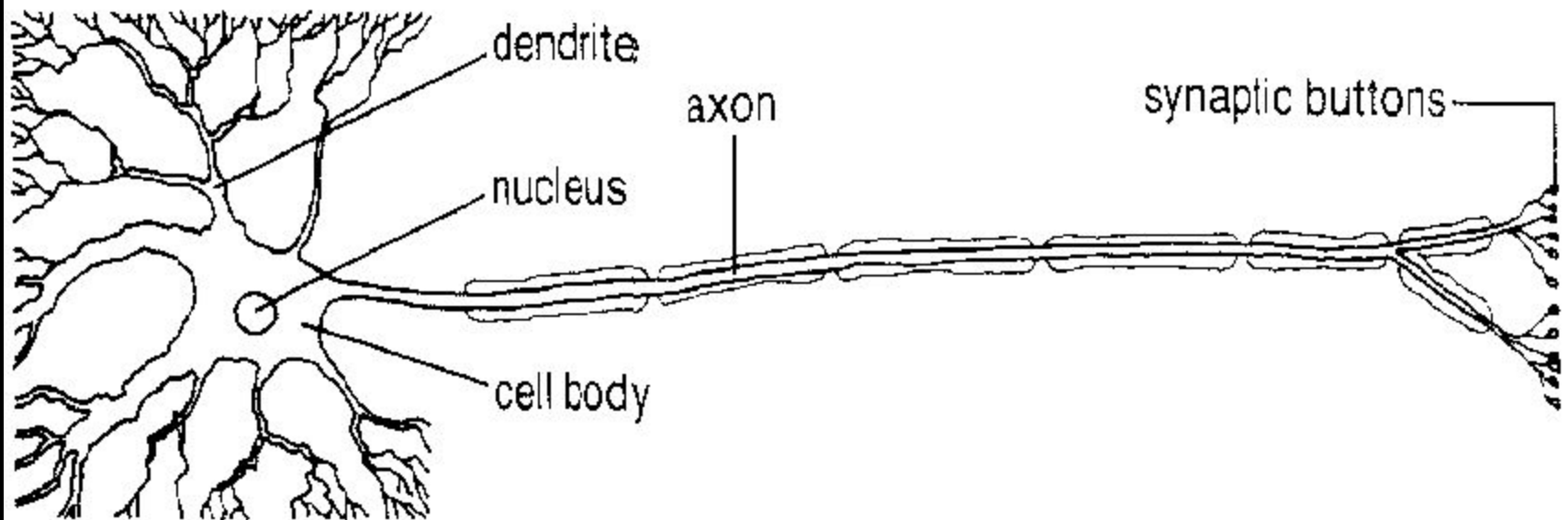
The Structure of Individual Neurons

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Diagram of a Neuron



- For a 3-D image of a neuron, try this site



A Typical Nerve Cell

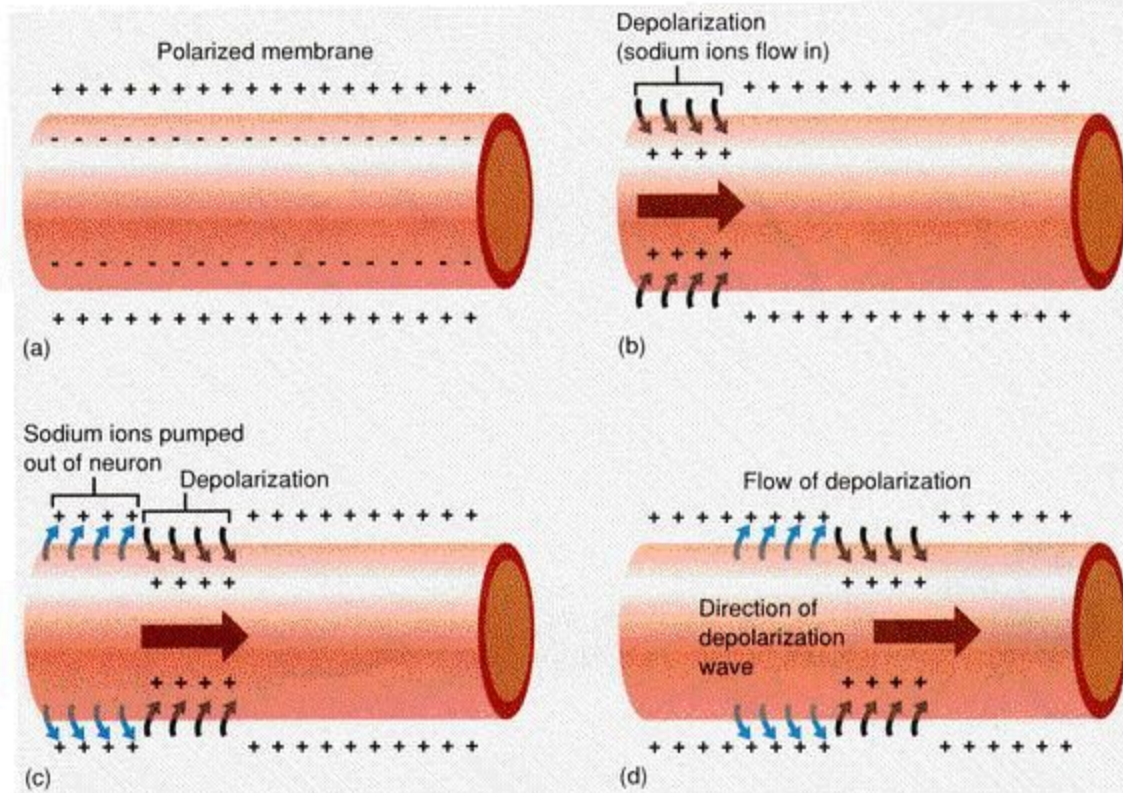
The Process of Neural Transmission

- Transmission within Cells (Action Potential)
 - The Neuron at rest
 - Reception of Input
 - Threshold for Transmission
 - Action Potentials vs. Graded Potentials
 - Enhanced transmission of the Action Potential

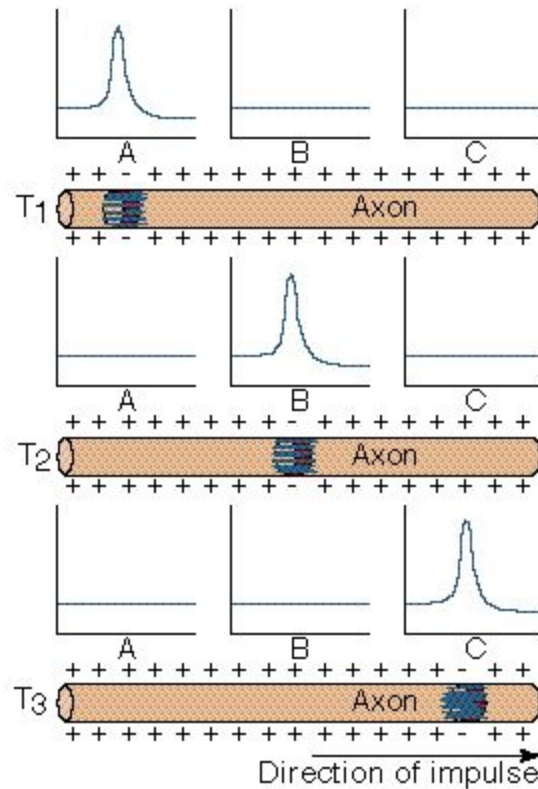
The Process of Neural Transmission

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Neural Transmission

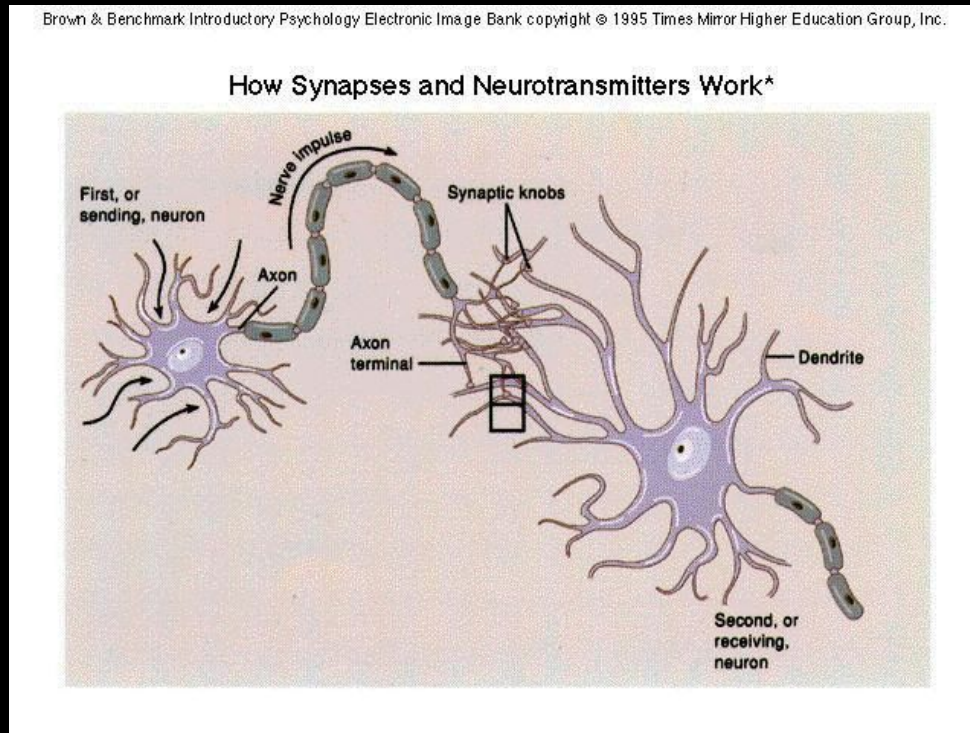


Here's another view of transmission



The Process of Neural Transmission

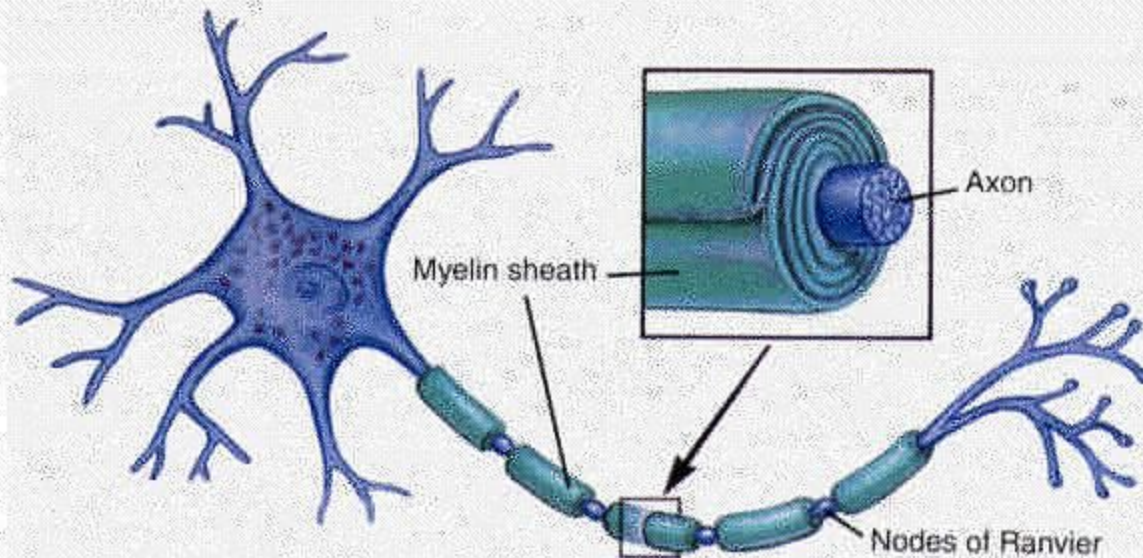
- Transmission between Cells (Synaptic Transmission)
 - Anatomy of a Synapse



Myelin sheath

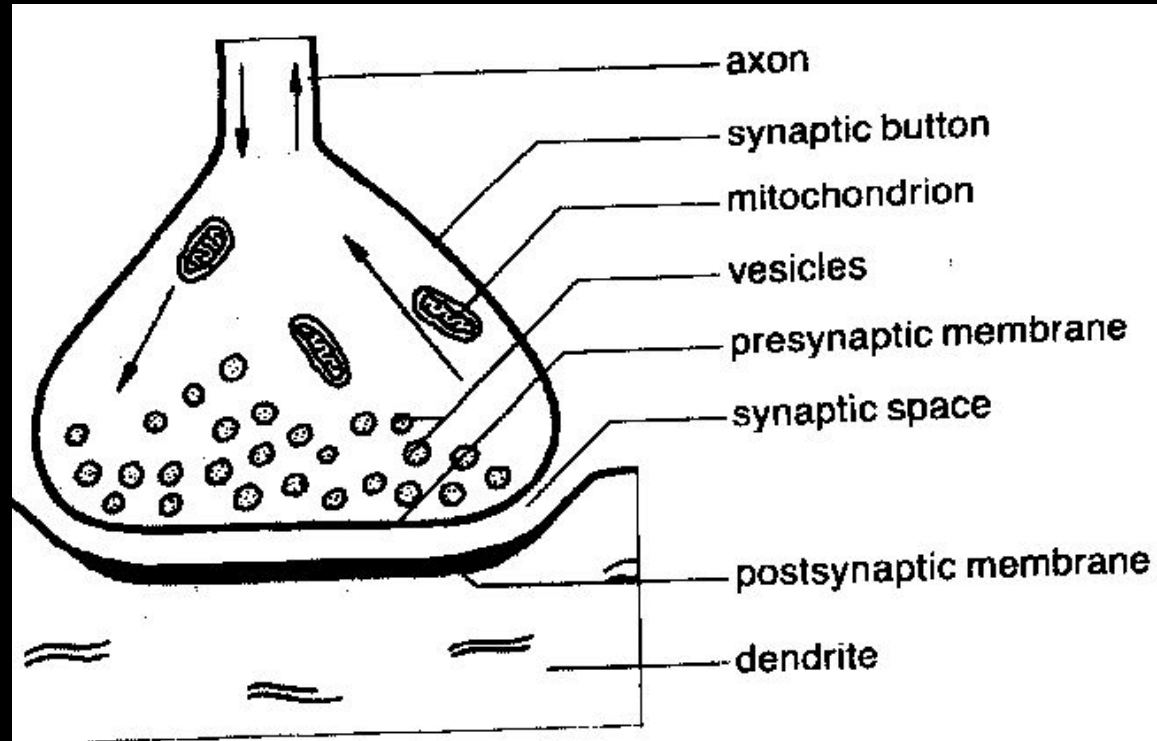
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Myelin Sheath



The Process of Neural Transmission

- Transmission between Cells (Synaptic Transmission)
 - Synaptic Transmission



Detail of a Synapse

Neurotransmitters: Chemical Messengers

- Monoamines

- Dopamine


- schizophrenia

- movement disorders

- Tourette's syndrome; thalamic region; nervousness, tics, emotional extremes

- Parkinson's; deficit in corpus striatum, tremors

- Huntington's chorea; basal ganglia, resulting in fragmented quasi-actions

- 
- Monoamines (cont.)
 - Norepinephrine: depression
 - Serotonin
 - Depression
 - Sleep

Neurotransmitters: Chemical Messengers

- Neuromuscular and Inhibitory Transmitters
 - Acetylcholine
 - Memory (Alzheimer's)
 - Neuromuscular junction
 - GABA
 - Inhibitory

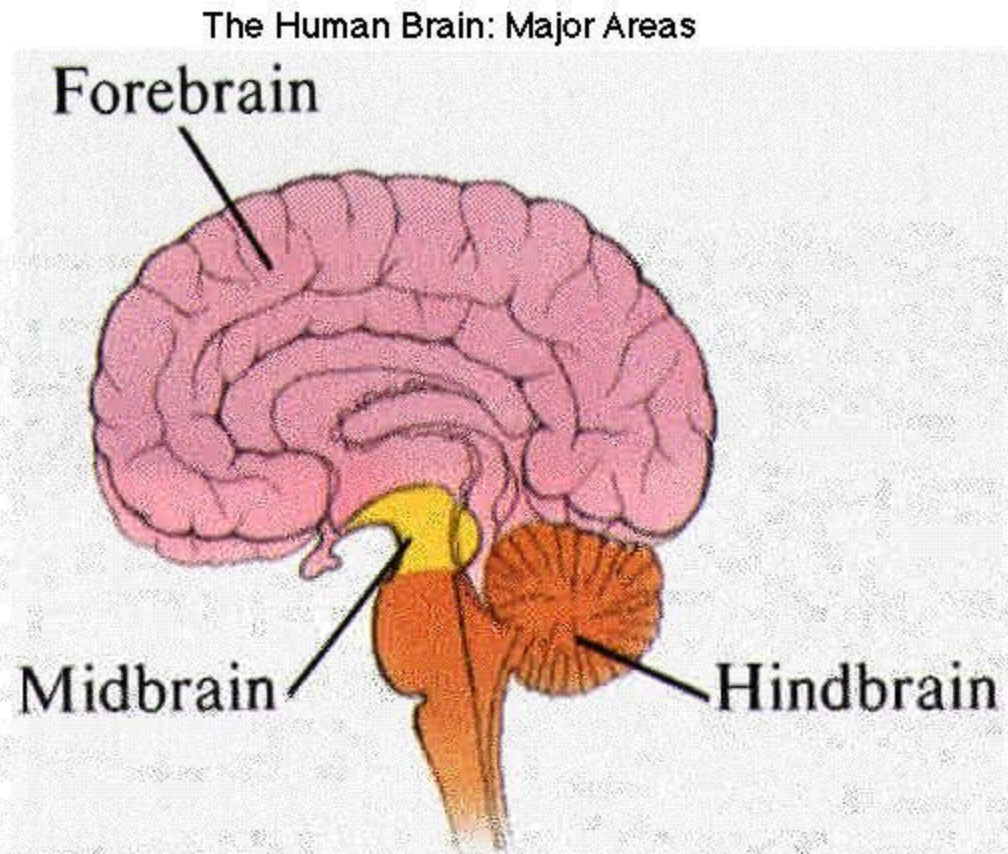
Neurotransmitters: Chemical Messengers

- Pseudo Transmitters
 - Endorphins
 - Opiates
 - “Runner’s high”

The Brain: Structure and Function

- Major Regions of the Human Brain
 - The Hindbrain

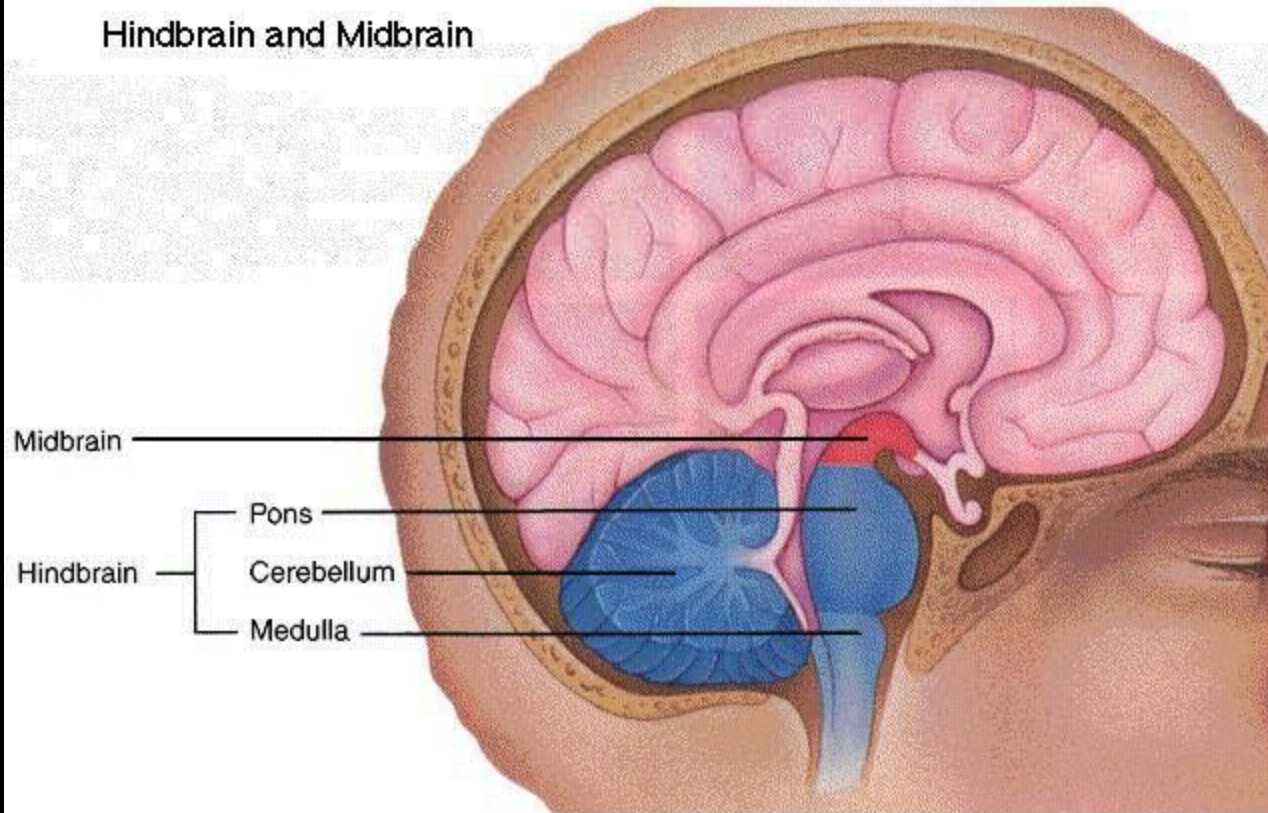
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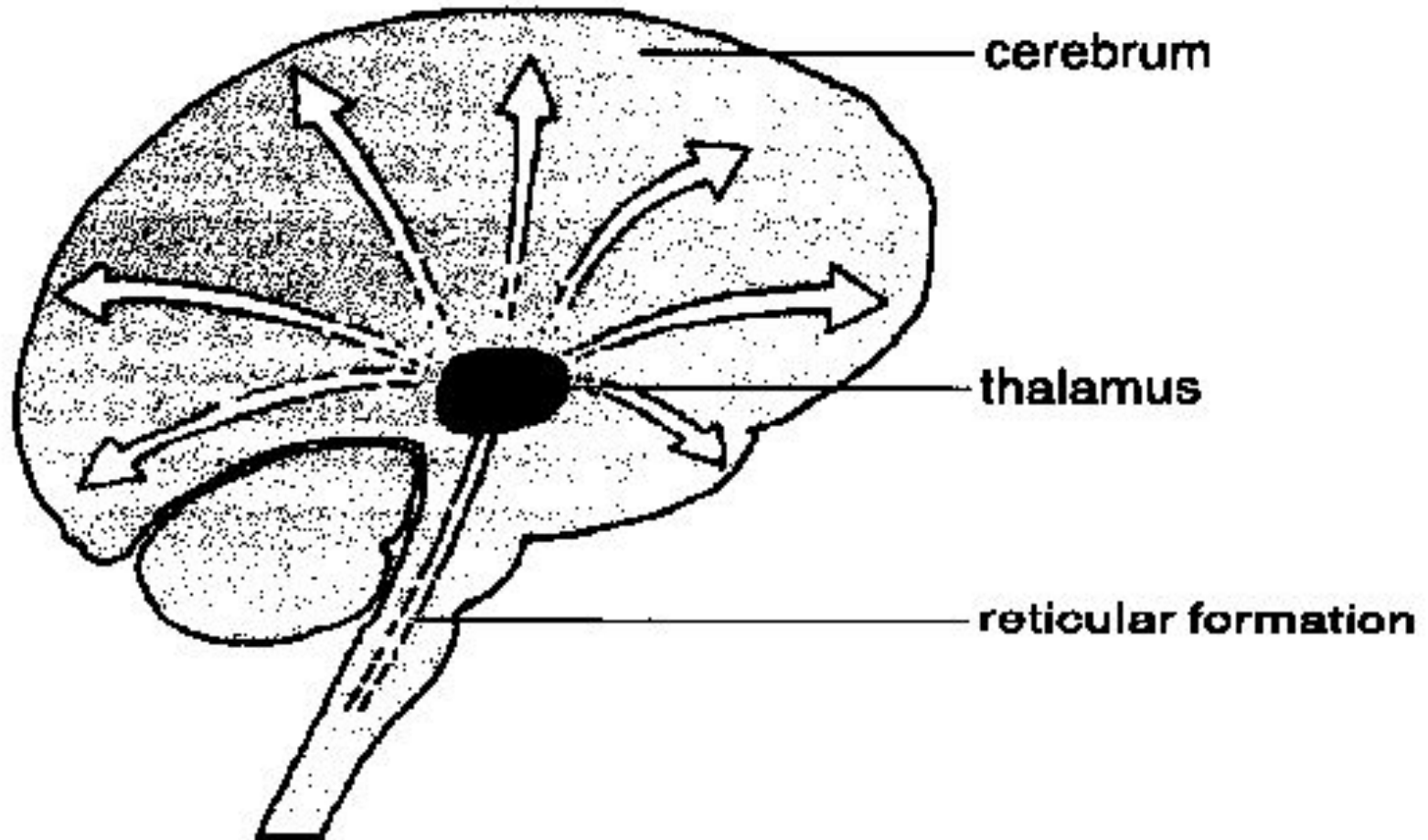
The Brain: Structure and Function

- Major Regions of the Human Brain
 - The Midbrain

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Reticular Activating System



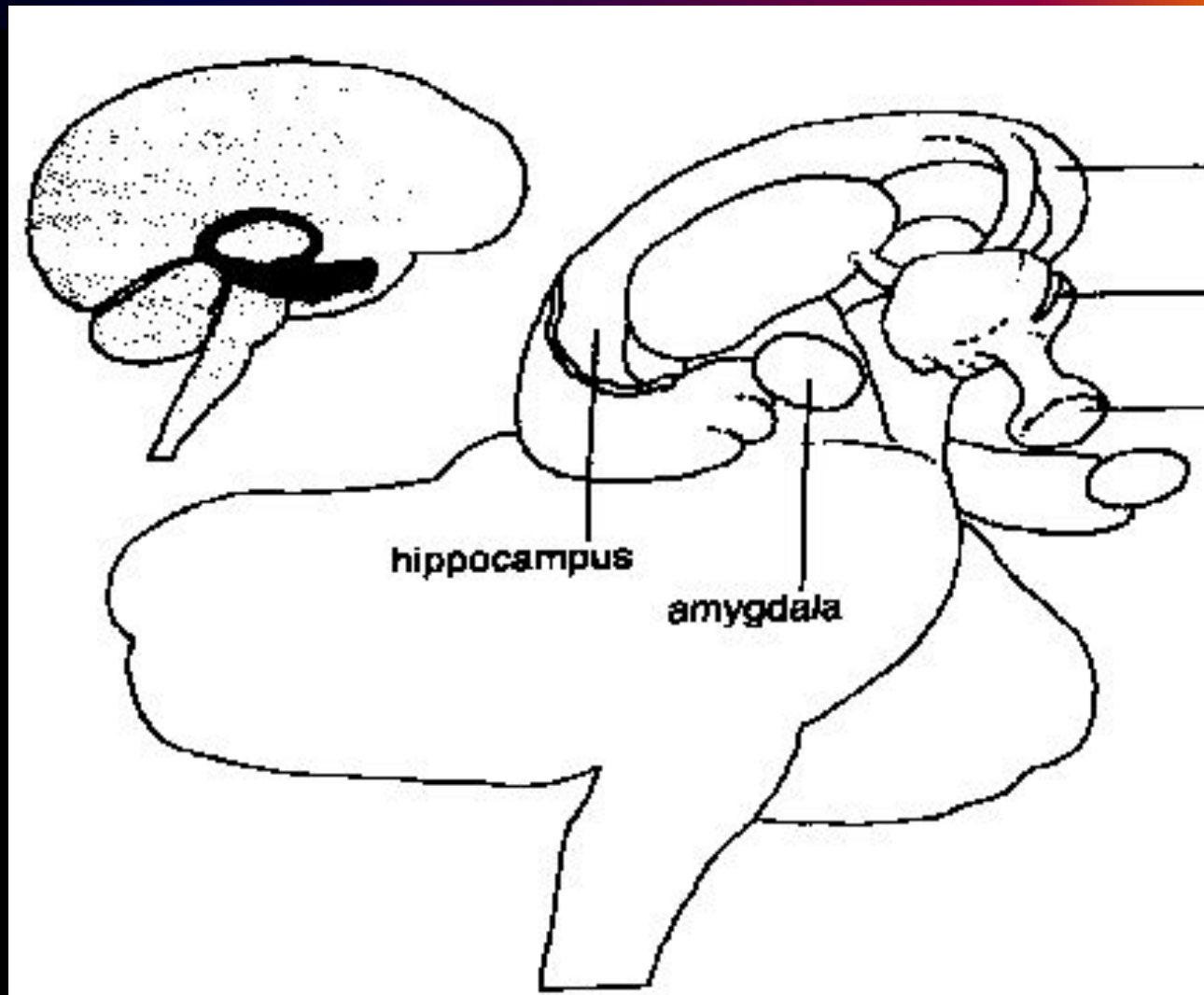
The Brain: Structure and Function

- Major Regions of the Human Brain
 - The Forebrain

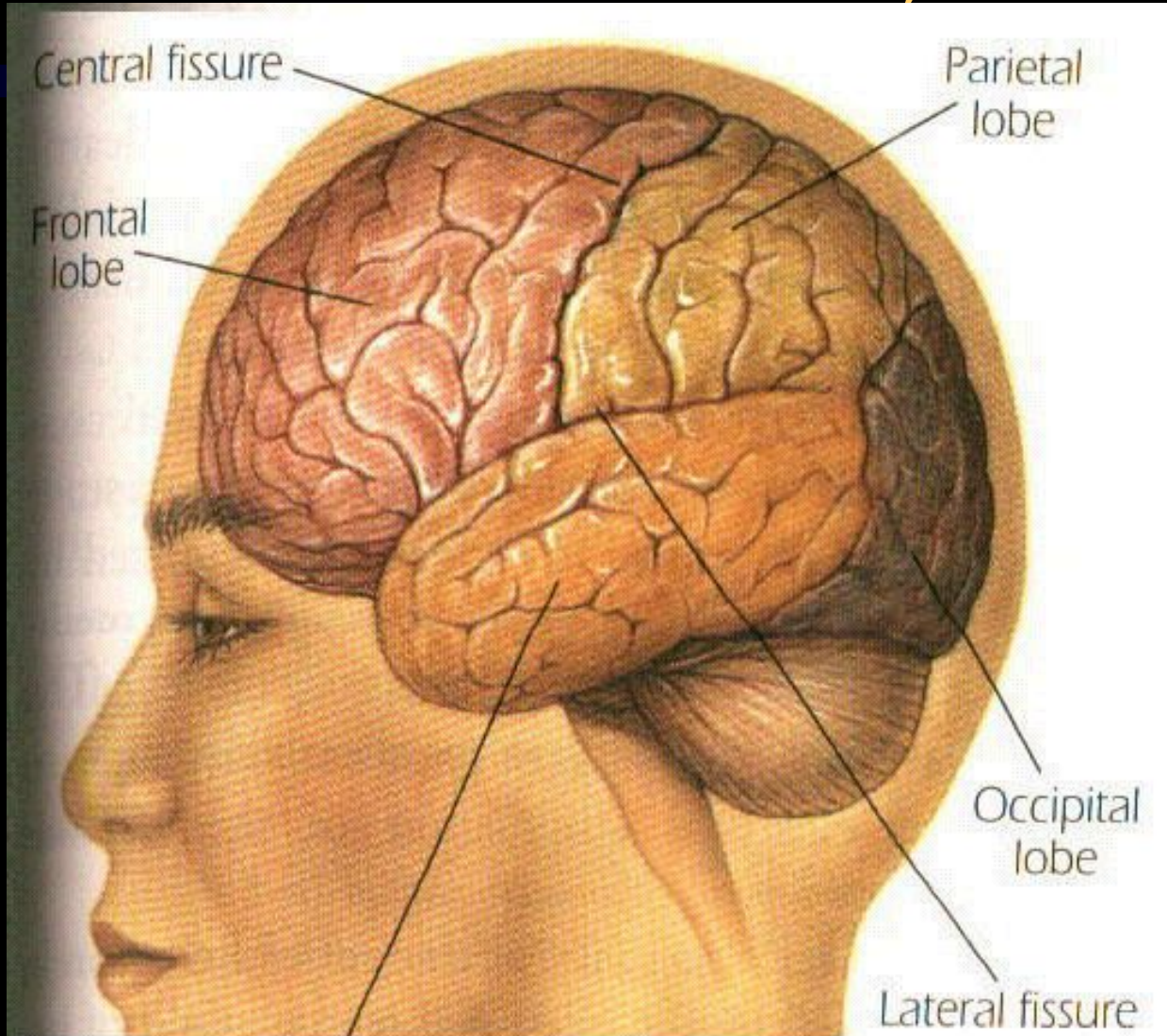
The Brain: Structure and Function

- The Limbic System
 - Structures
 - Thalamus
 - Hypothalamus
 - Pituitary Gland
 - Hippocampus
 - Amygdala
 - Septum
 - Functions
 - 4 F's
 - Memory

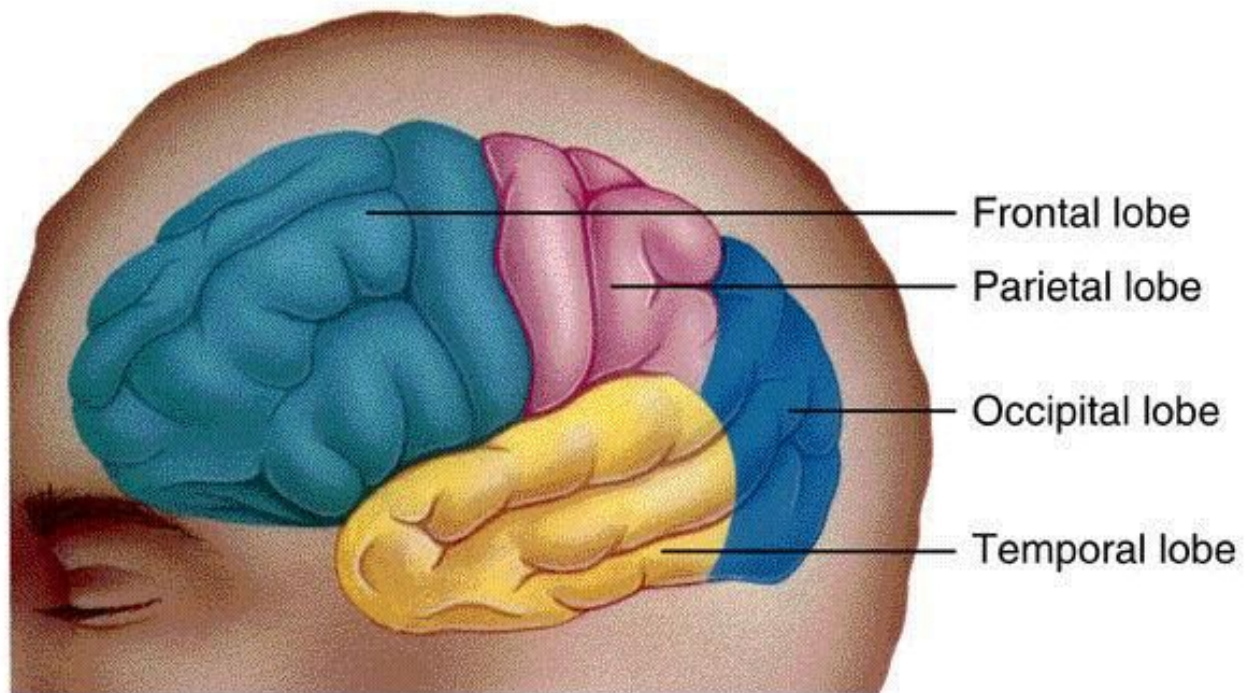
Limbic System



Lobes of the Brain



Four Lobes of the Cerebral Cortex



Motor cortex

Sensory cortex

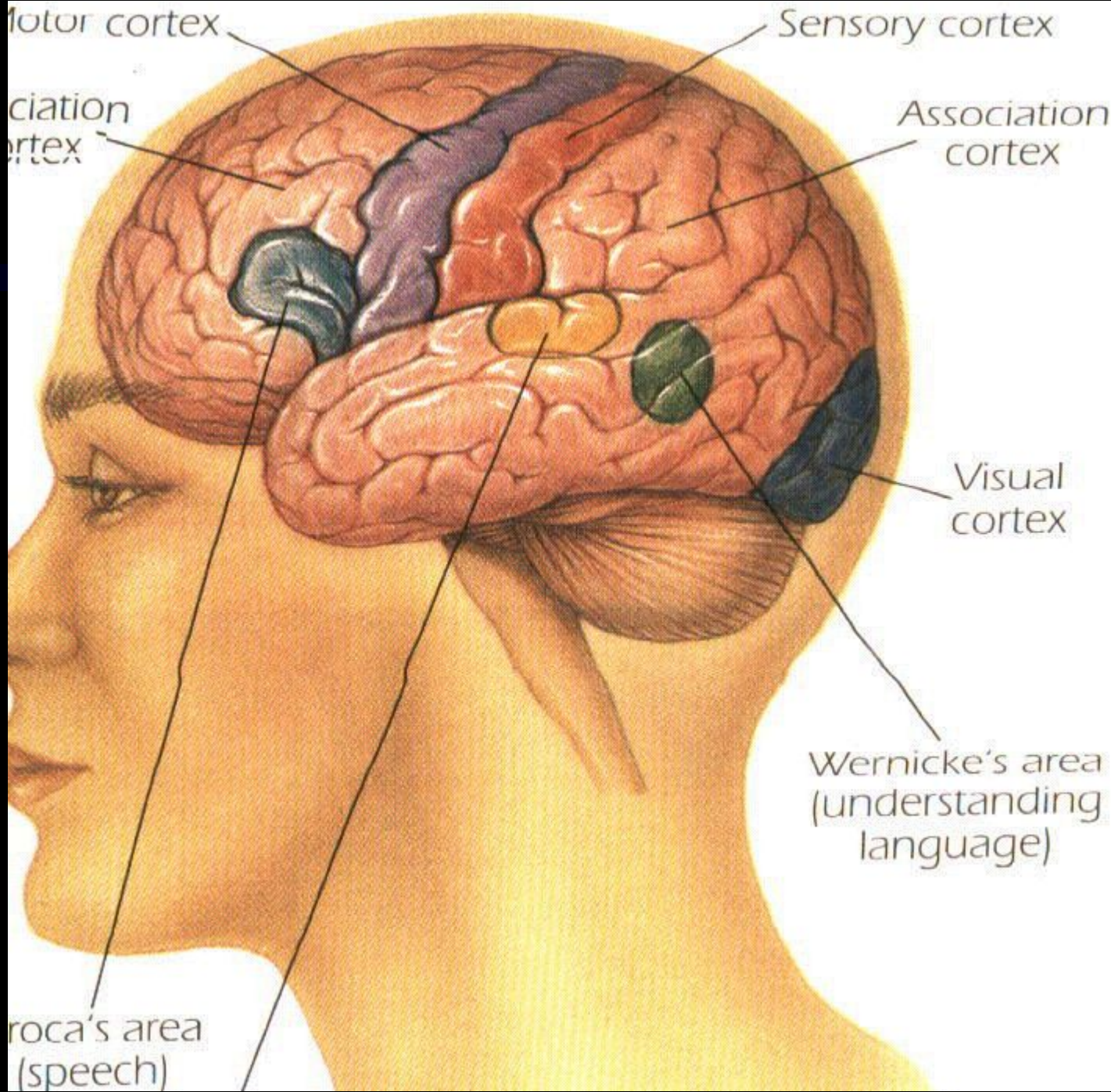
Association cortex

Association cortex

Visual cortex

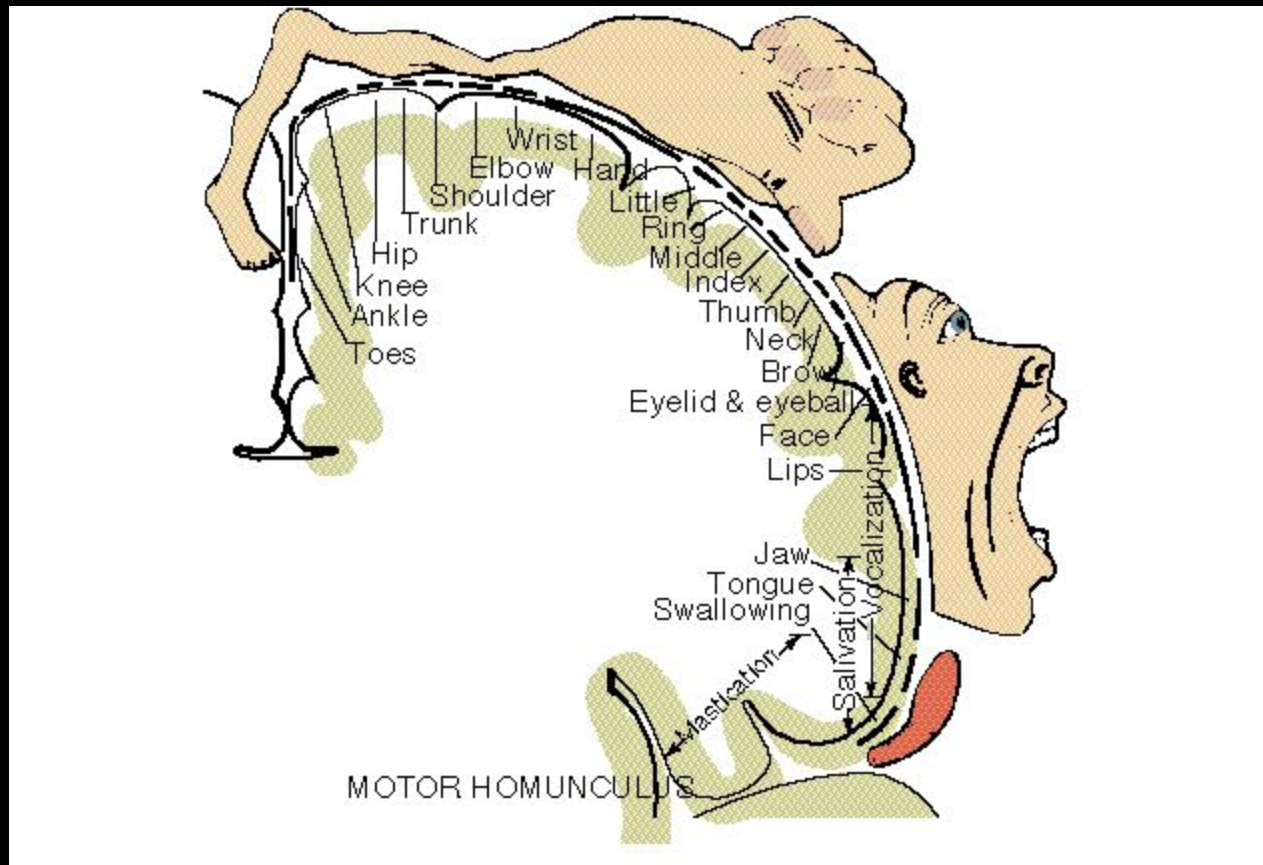
Wernicke's area (understanding language)

Broca's area (speech)



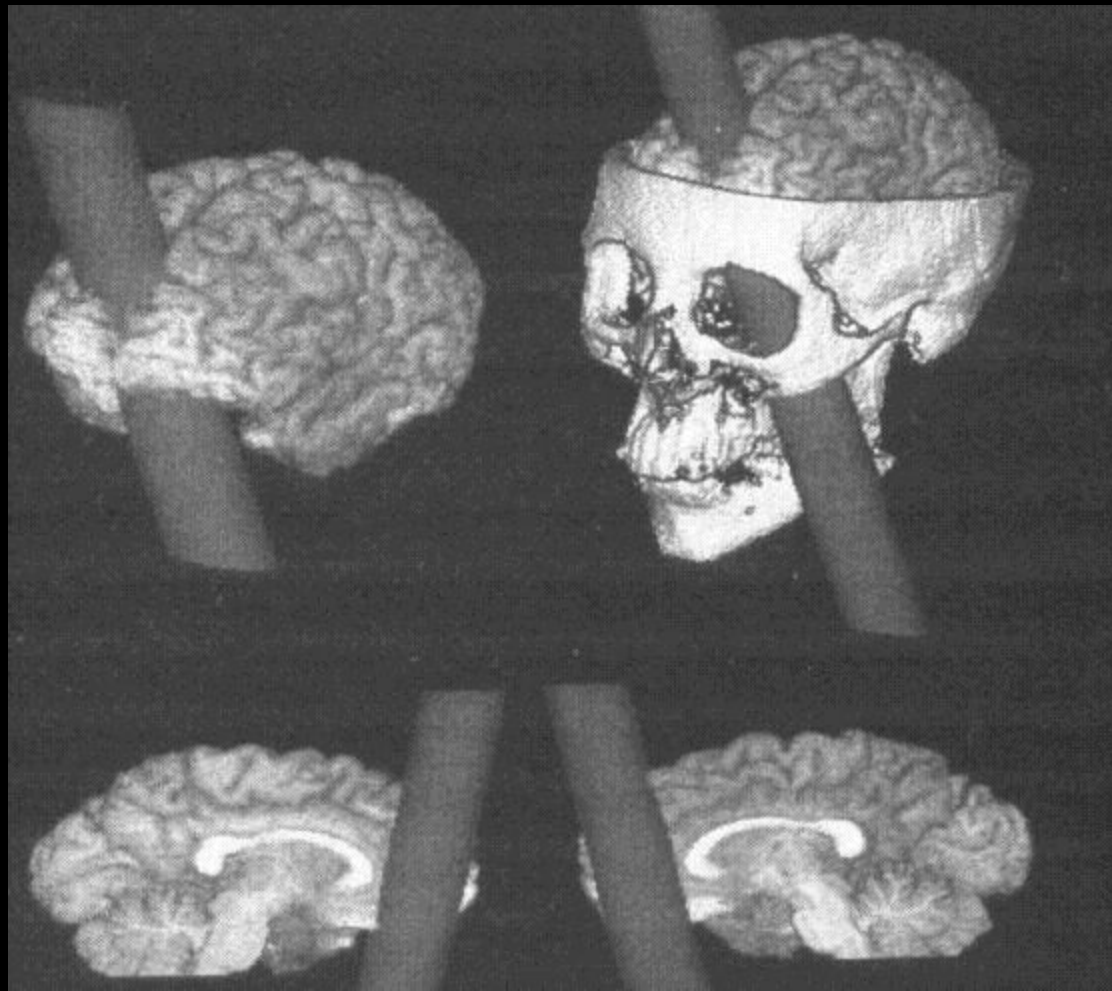
25

The frontal lobes

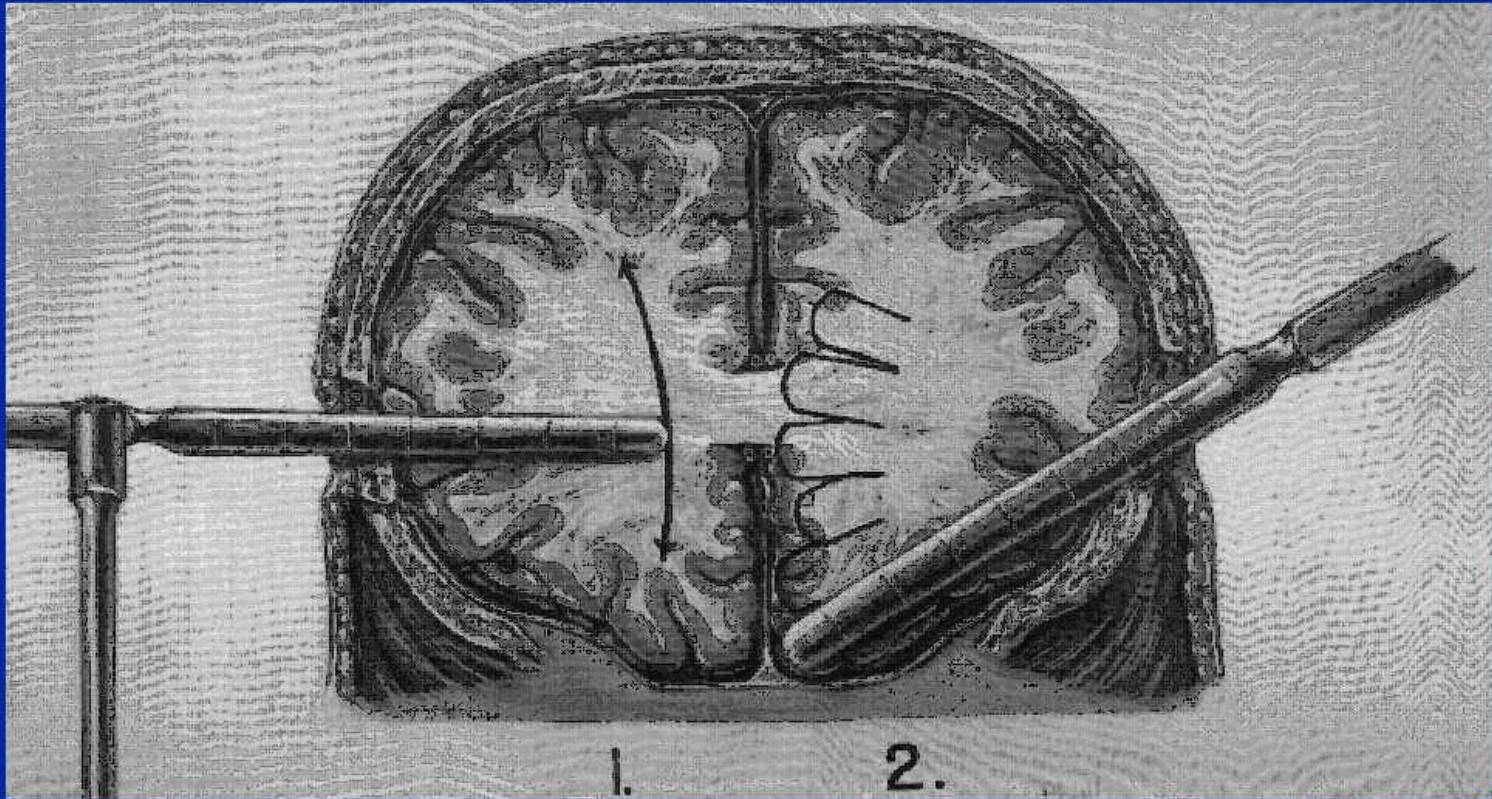


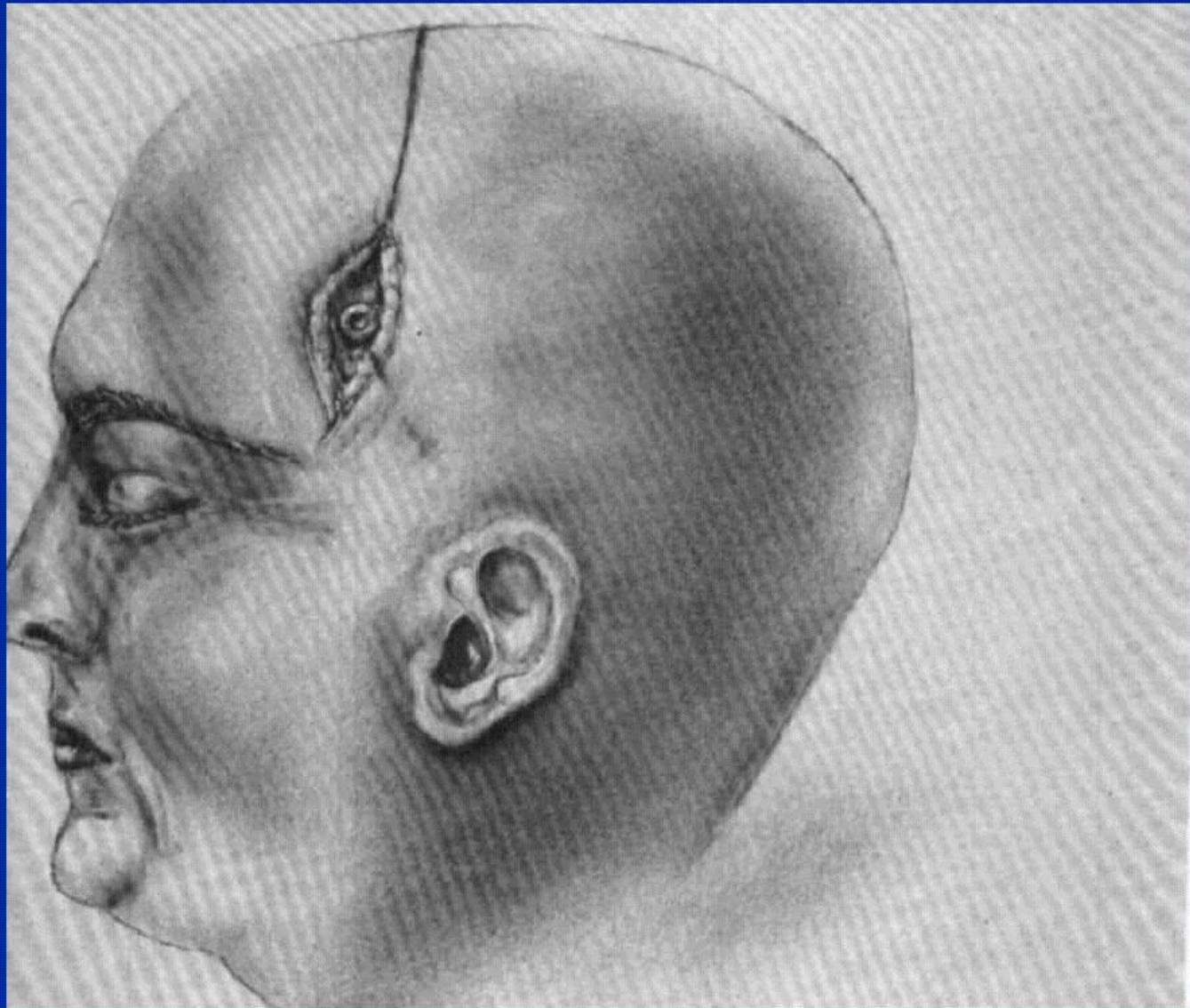
The Cerebral Hemispheres

- The Frontal Lobe




Prefrontal lobotomies





The temporal lobe

- Aphasias

- 
- For several case studies, visit this site
 - For questions and answers about neurological problems, try this site

The Cerebral Hemispheres

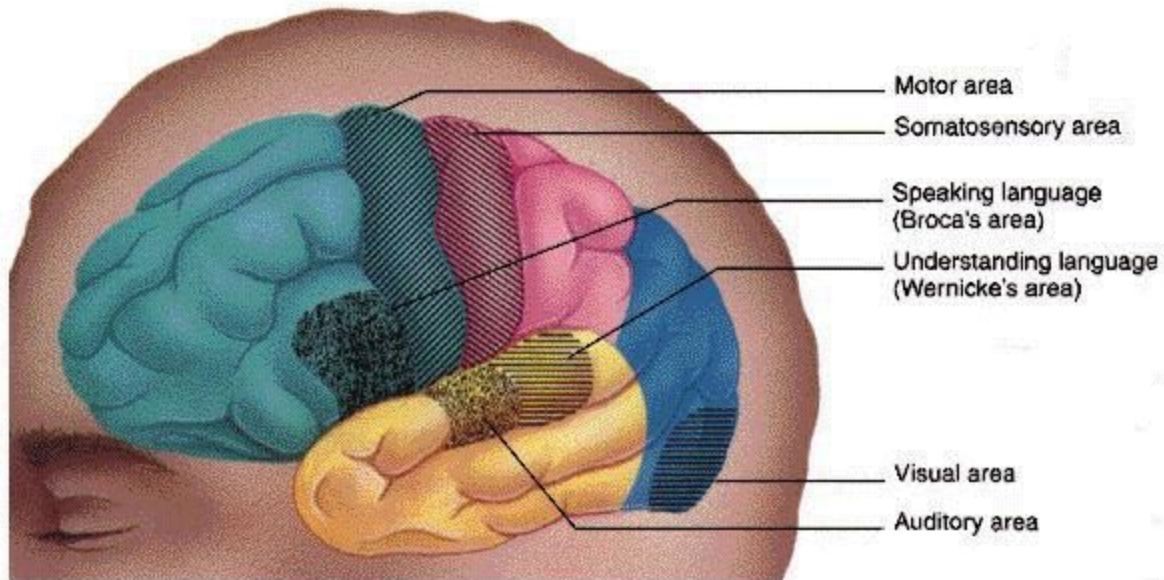
- The Occipital Lobe

The Cerebral Hemispheres

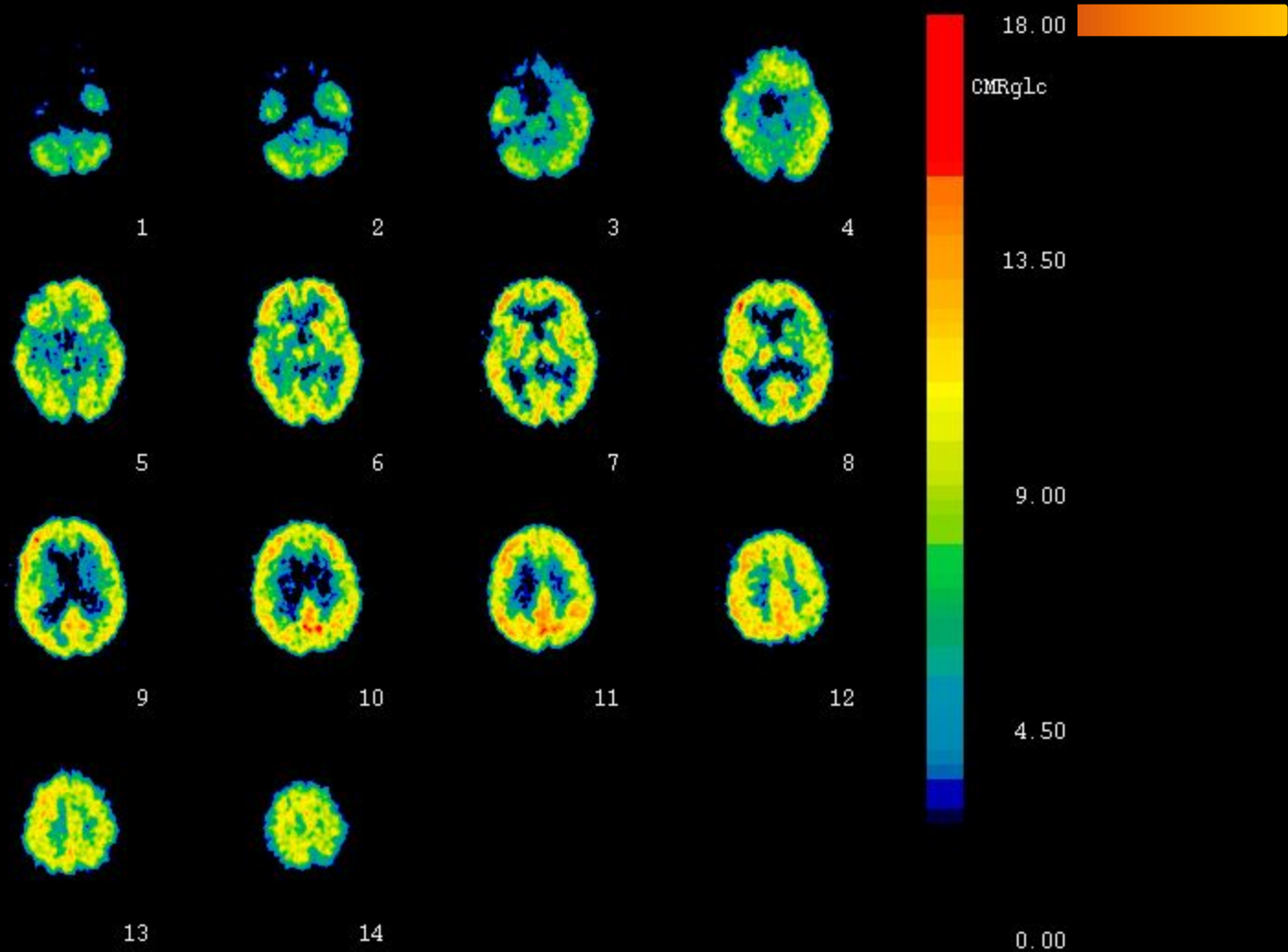
- **The Parietal Lobe**

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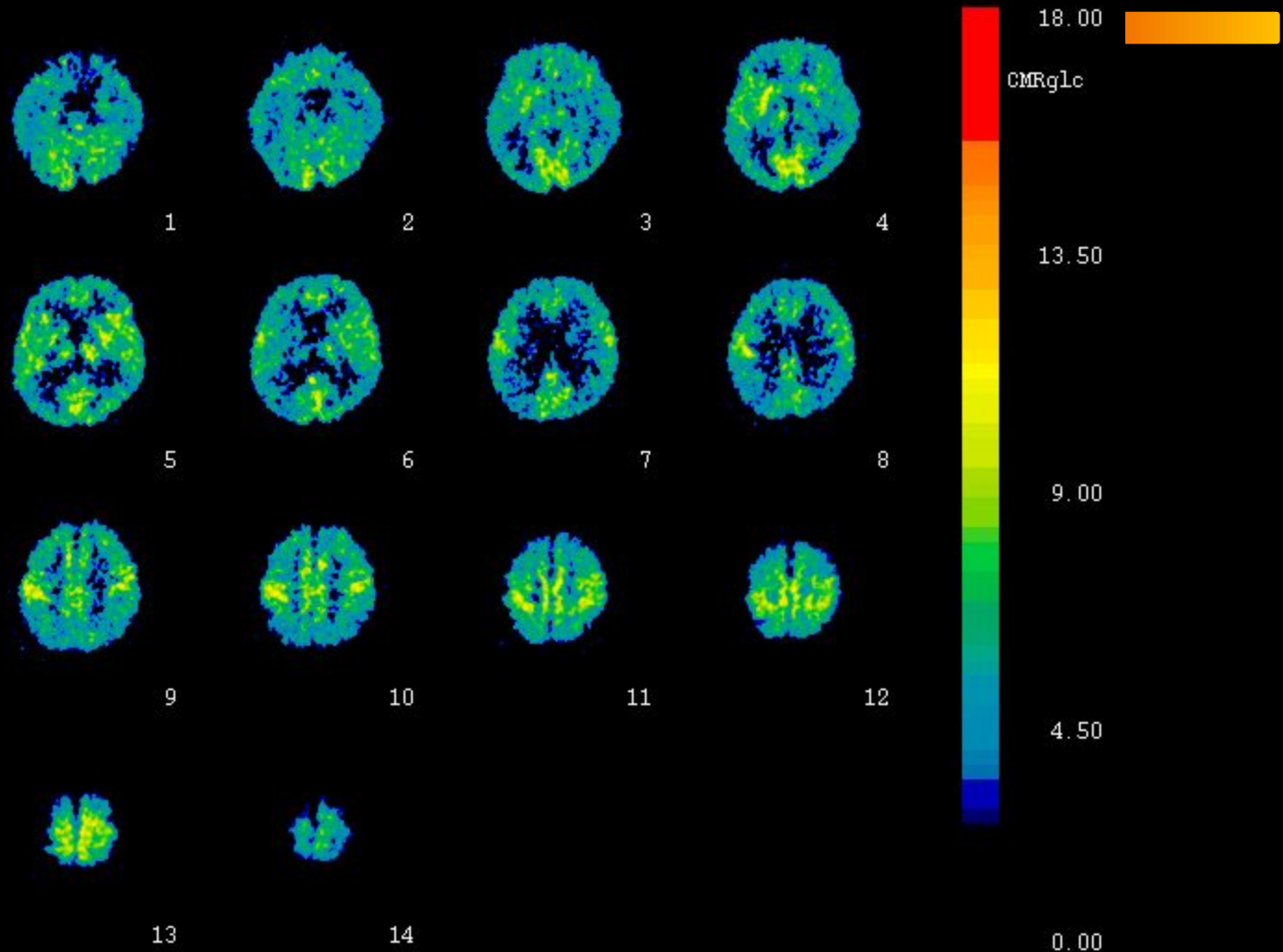
Functions of the Cerebral Cortex



PET scan of normal brain

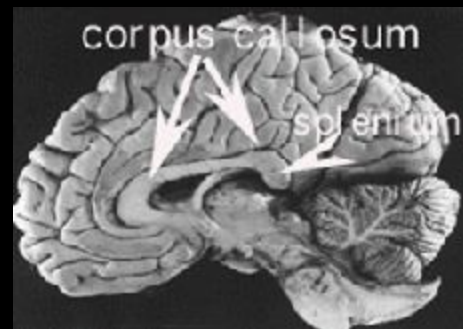
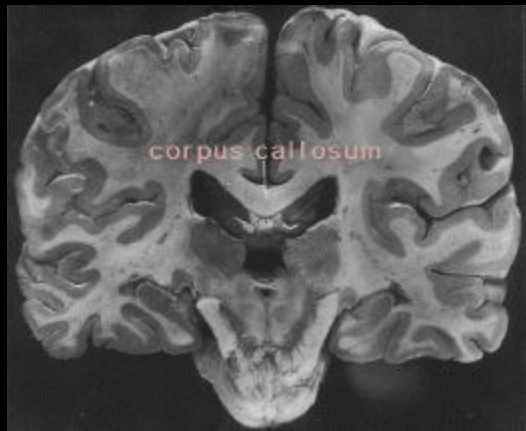


PET scan of patient with Alzheimer's

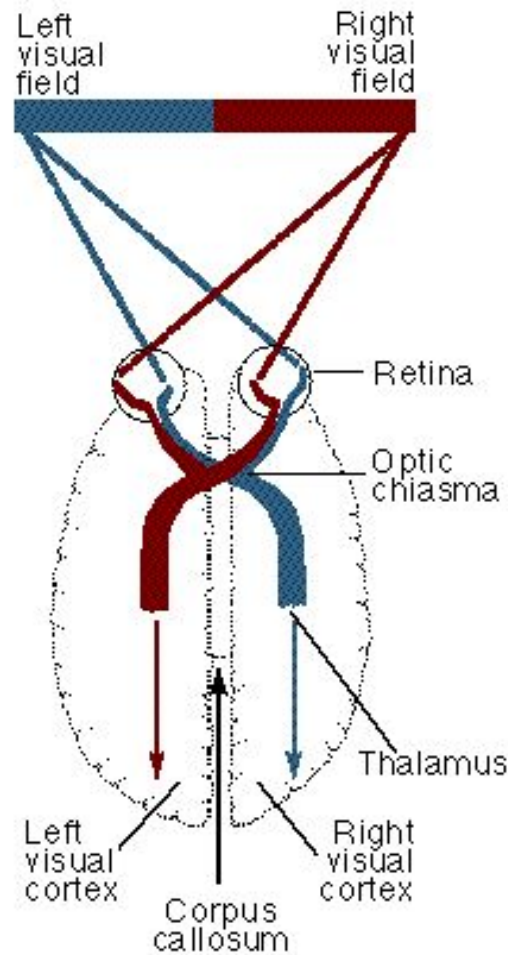


Tour of Alzheimer's brain

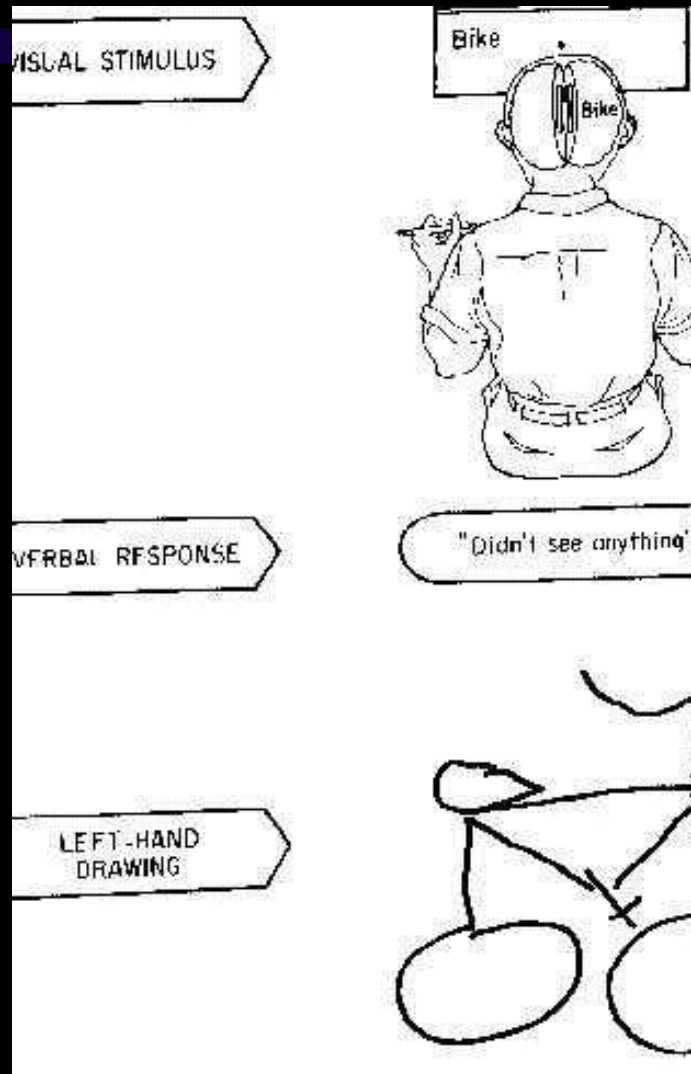




Hemispheres and vision



Split-brain phenomena



Split brain phenomena

- An example of one type of study can be found at this site

Split-brain patient with some right hemisphere language

