CHAPTER 3

STRUCTURE OF THE NERVOUS SYSTEM

- THE NERVOUS SYSTEM
- THE NEURON

BRAIN ANATOMY

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STRUCTURE OF THE NERVOUS SYSTEM

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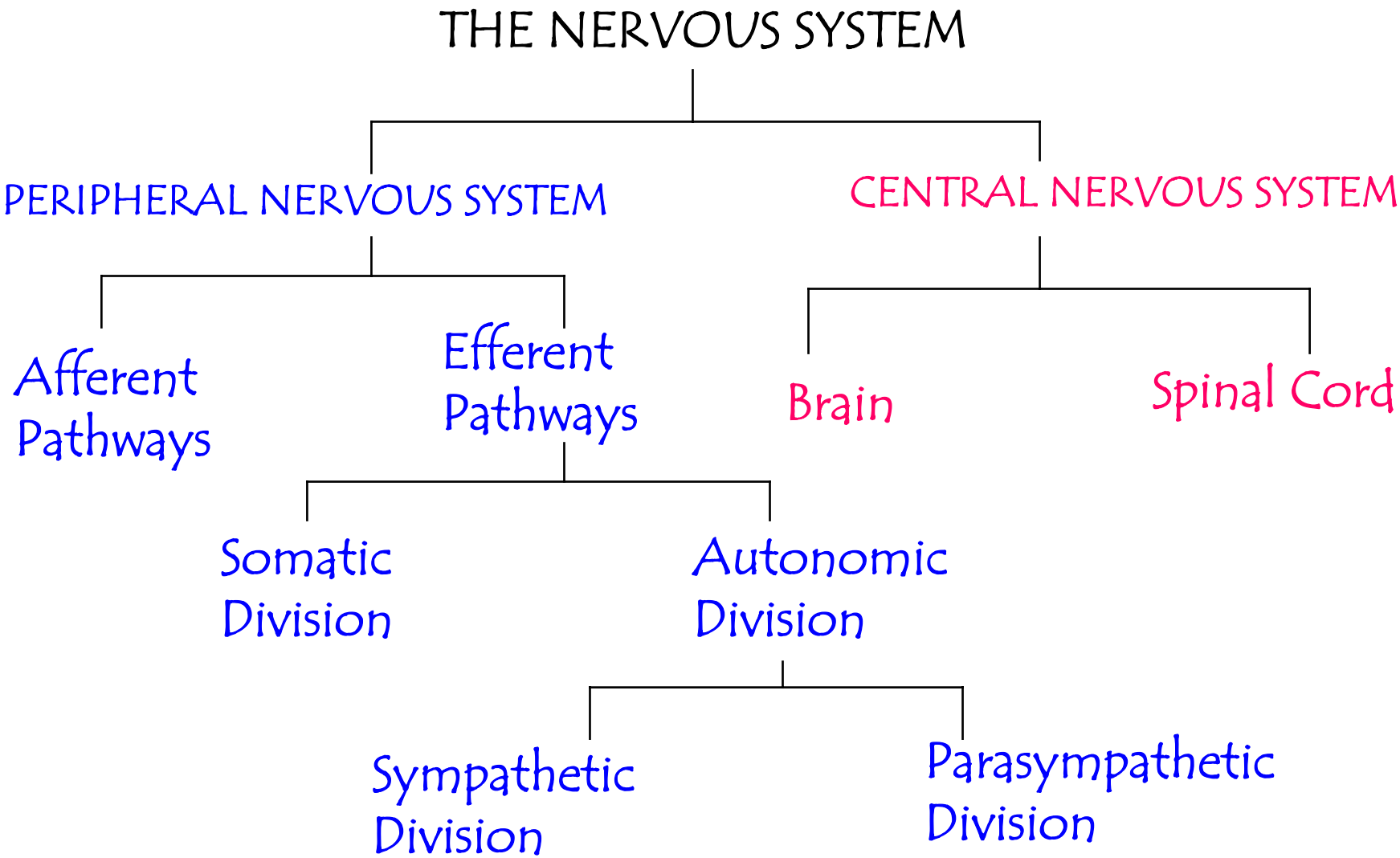
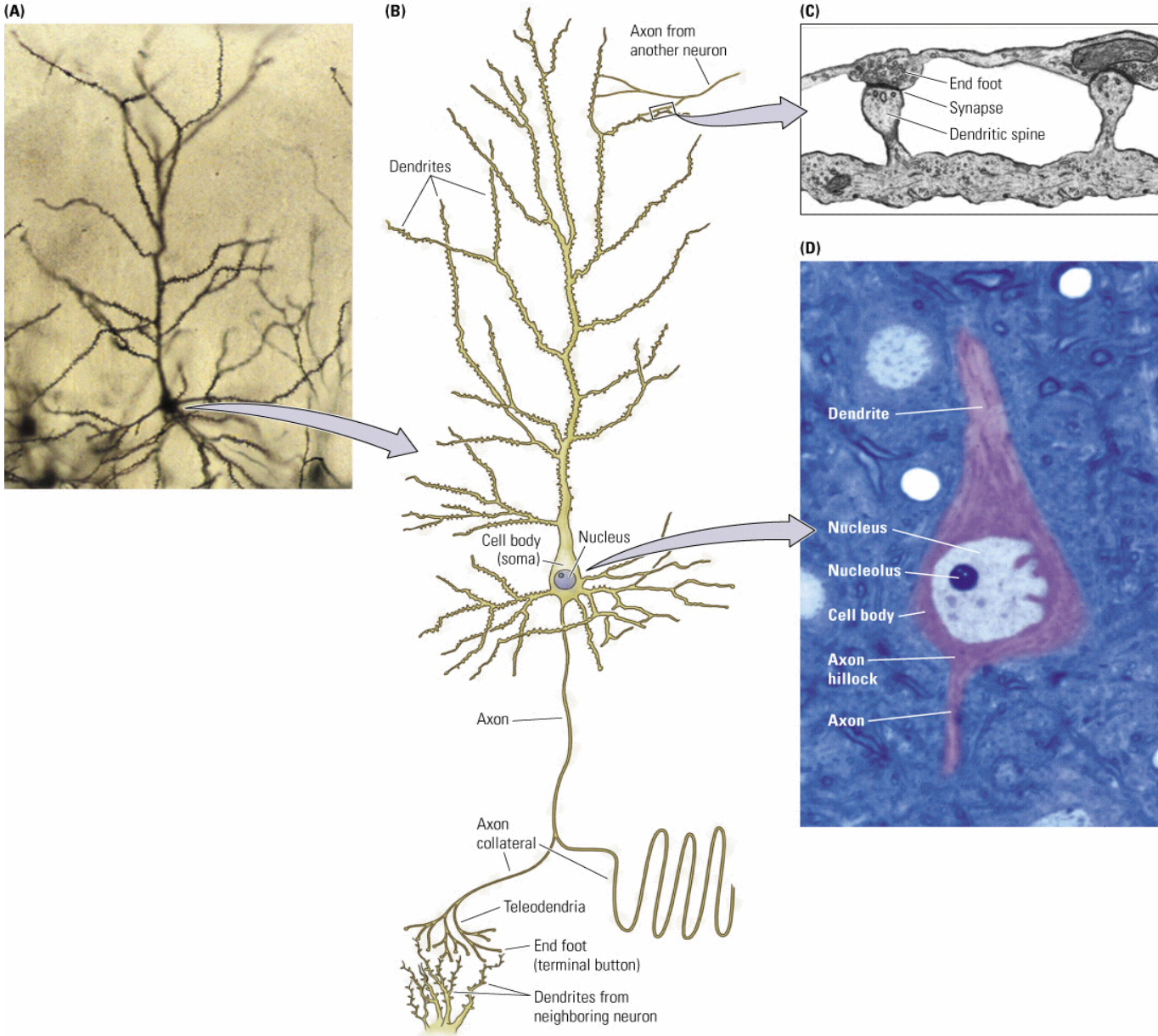


STRUCTURE OF THE NERVOUS SYSTEM

NEURONS

DEFINE & LABEL THE FOLLOWING:

- **SOMA**
- **DENDRITES**
- **AXON**
- **SYNAPSE**



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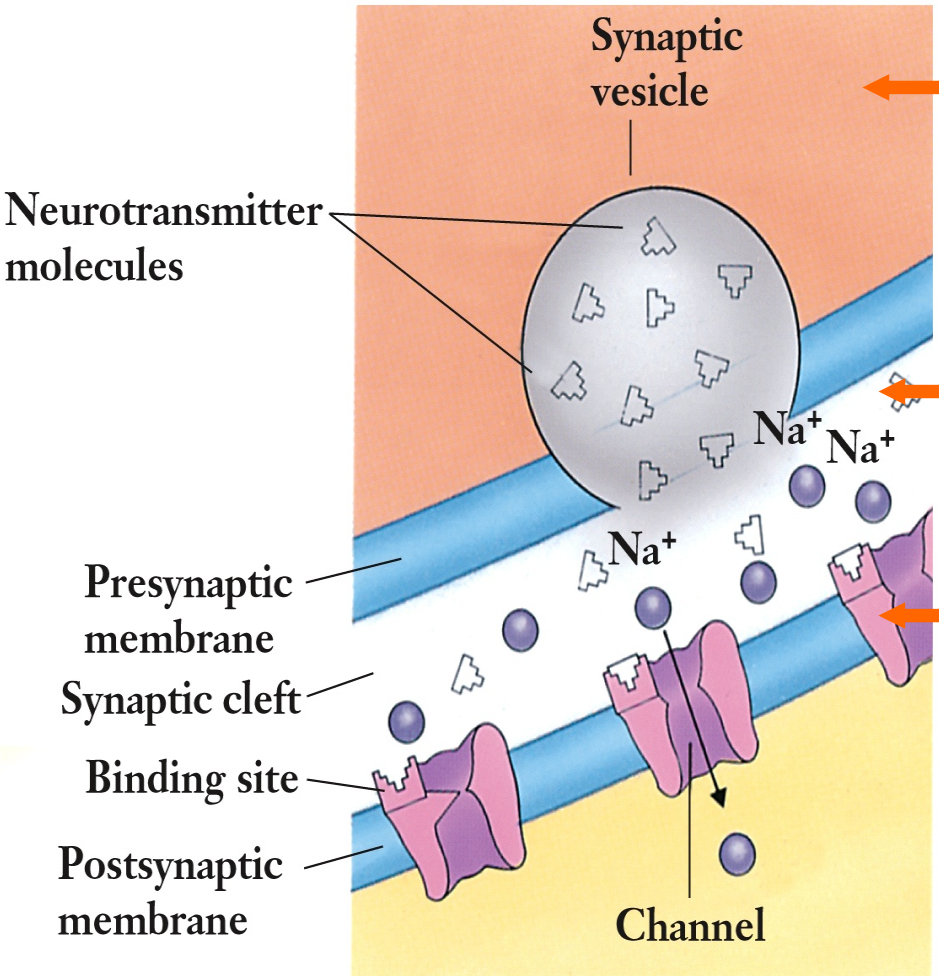
STRUCTURE OF THE NERVOUS SYSTEM

NEURONS



TERMINAL BUTTON (AXON)

THE SYNAPSE

POSTSYNAPTIC MEMBRANE (ON DENDRITE OF ANOTHER NEURON)

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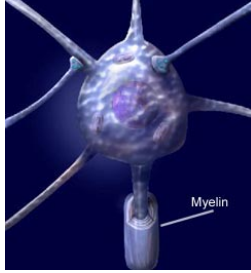
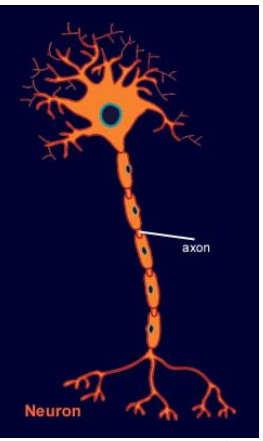
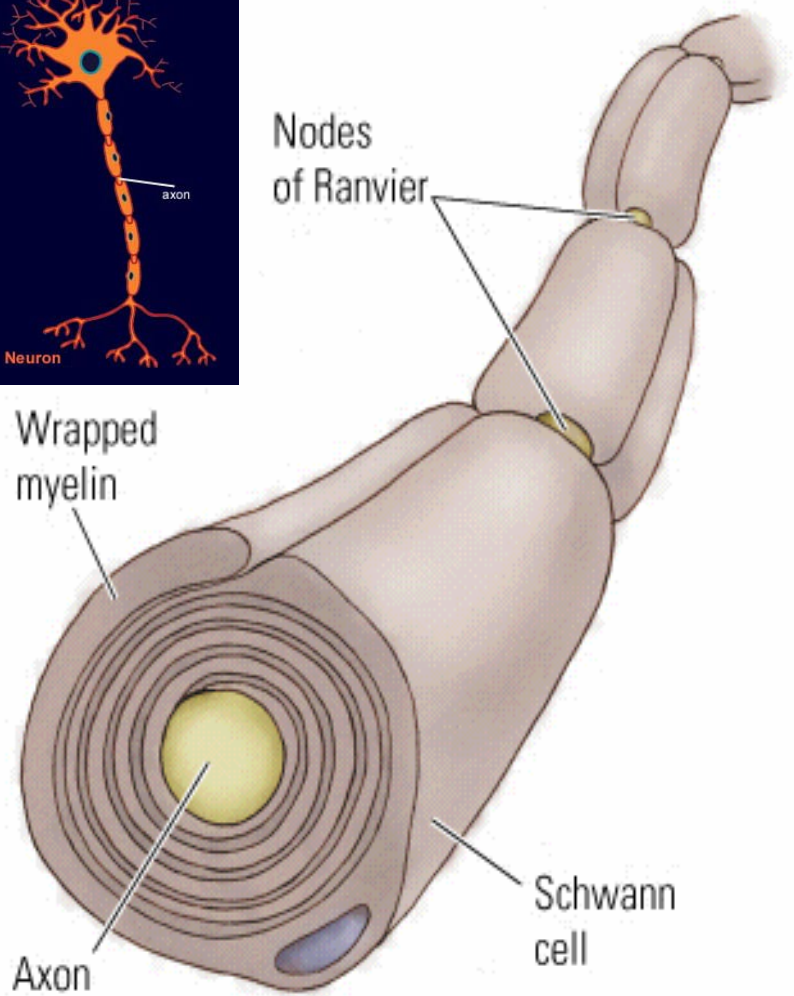
NEURAL IMPULSE: ELECTROCHEMICALBEGINNINGS







- **MYELIN SHEATH**
- ***NODES OF RANVIER***

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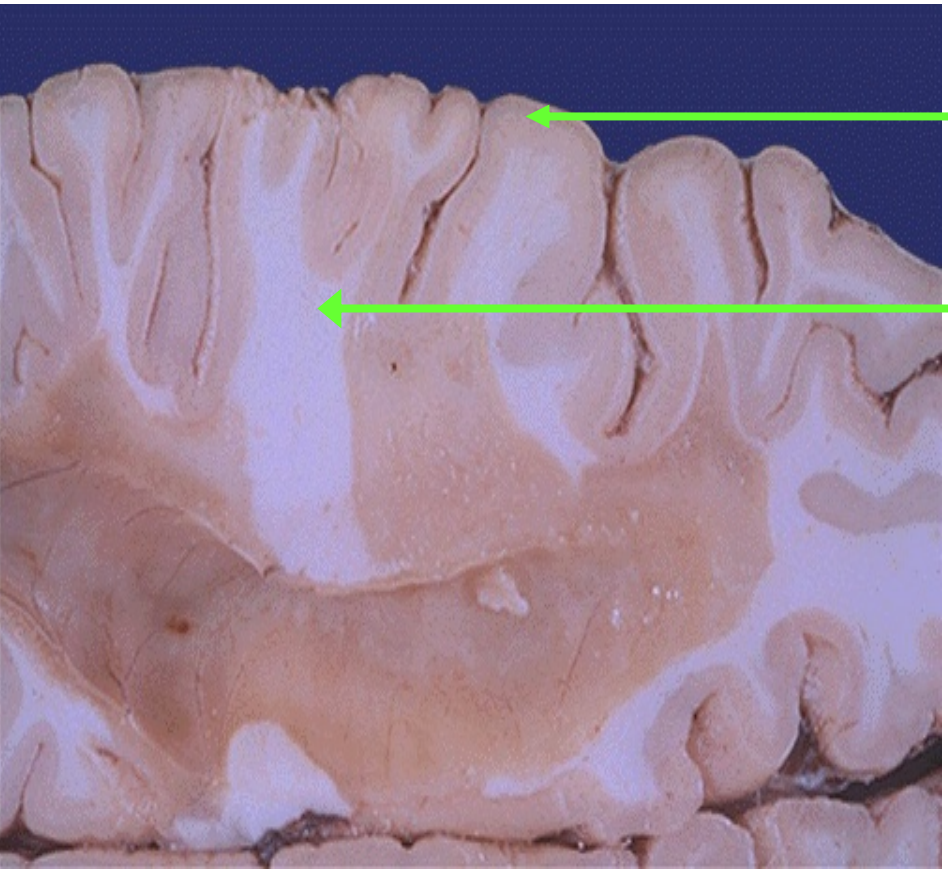
The Cortex



GREY MATTER
- Unmyelinated

WHITE MATTER
- Myelinated

MULTIPLE SCLEROSIS

- **Loss of myelination of neural pathways**

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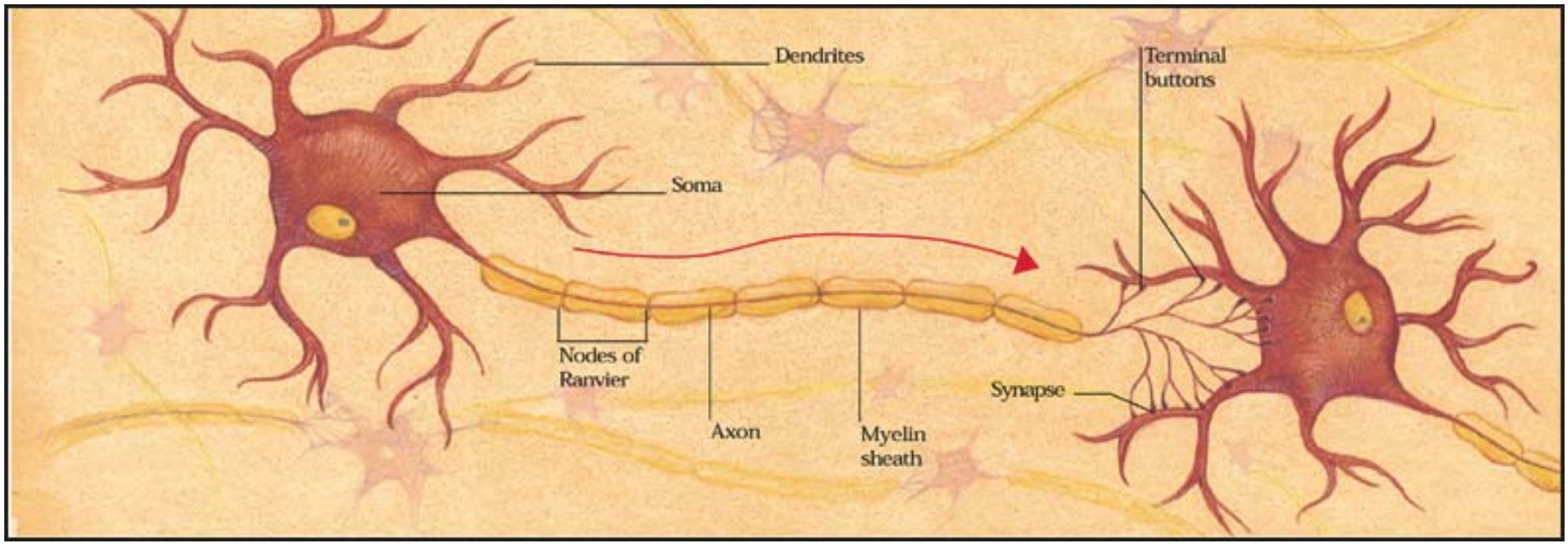
NEURAL IMPULSE: THE ACTION POTENTIAL



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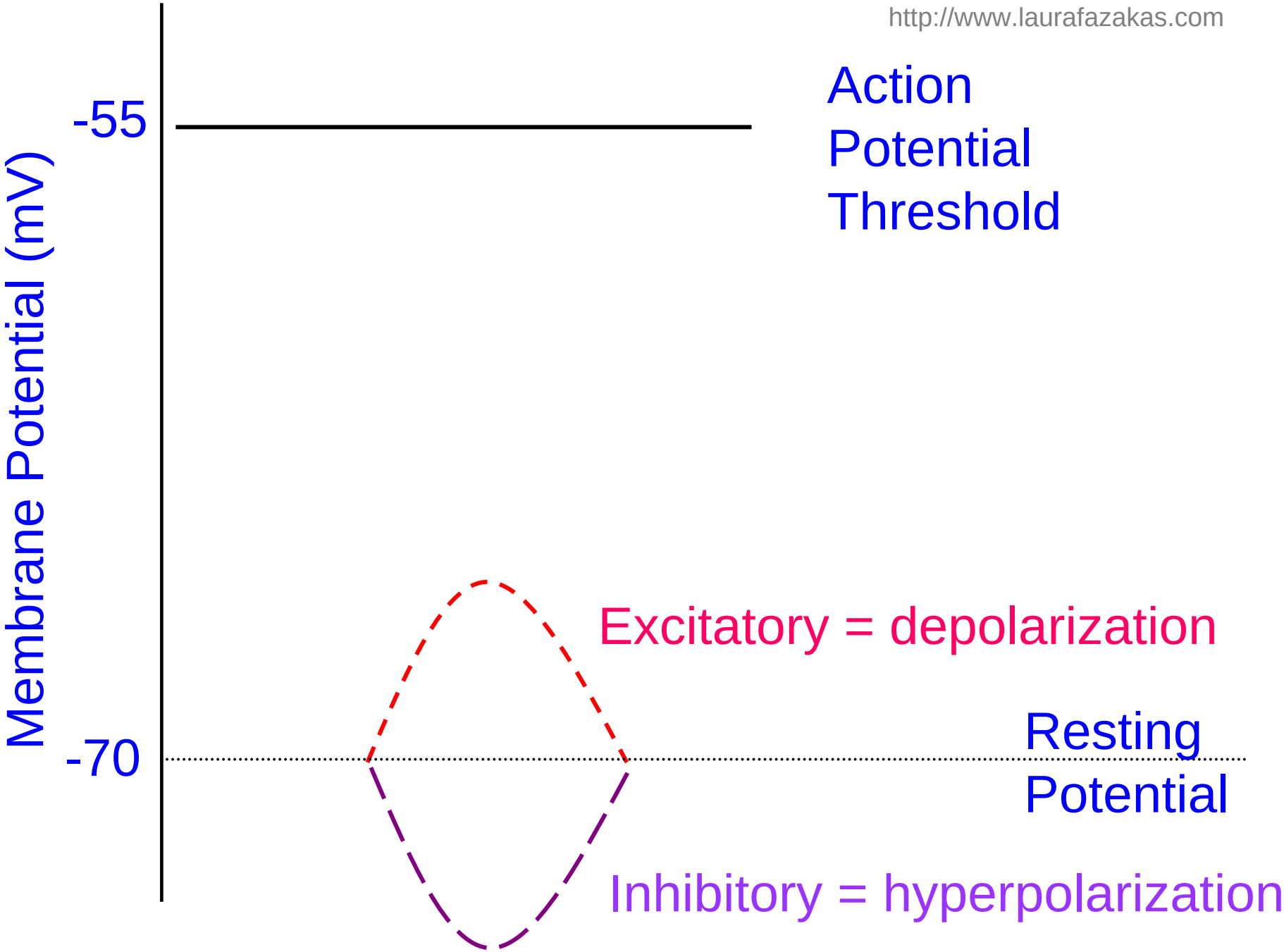

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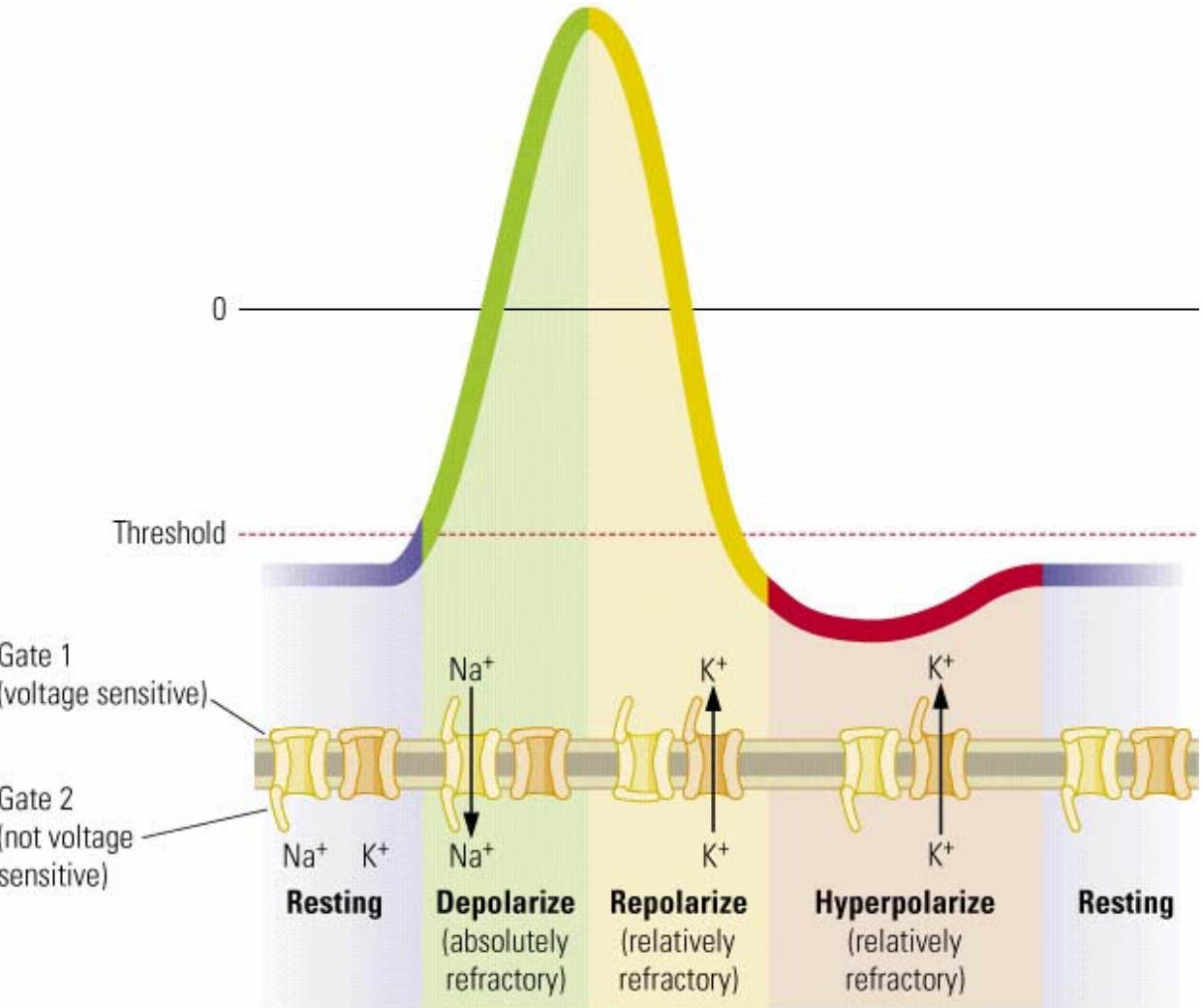
THE NEURAL IMPULSE



After an impulse passes any point on the axon, the membrane isn't excitable & can't fire an action potential.

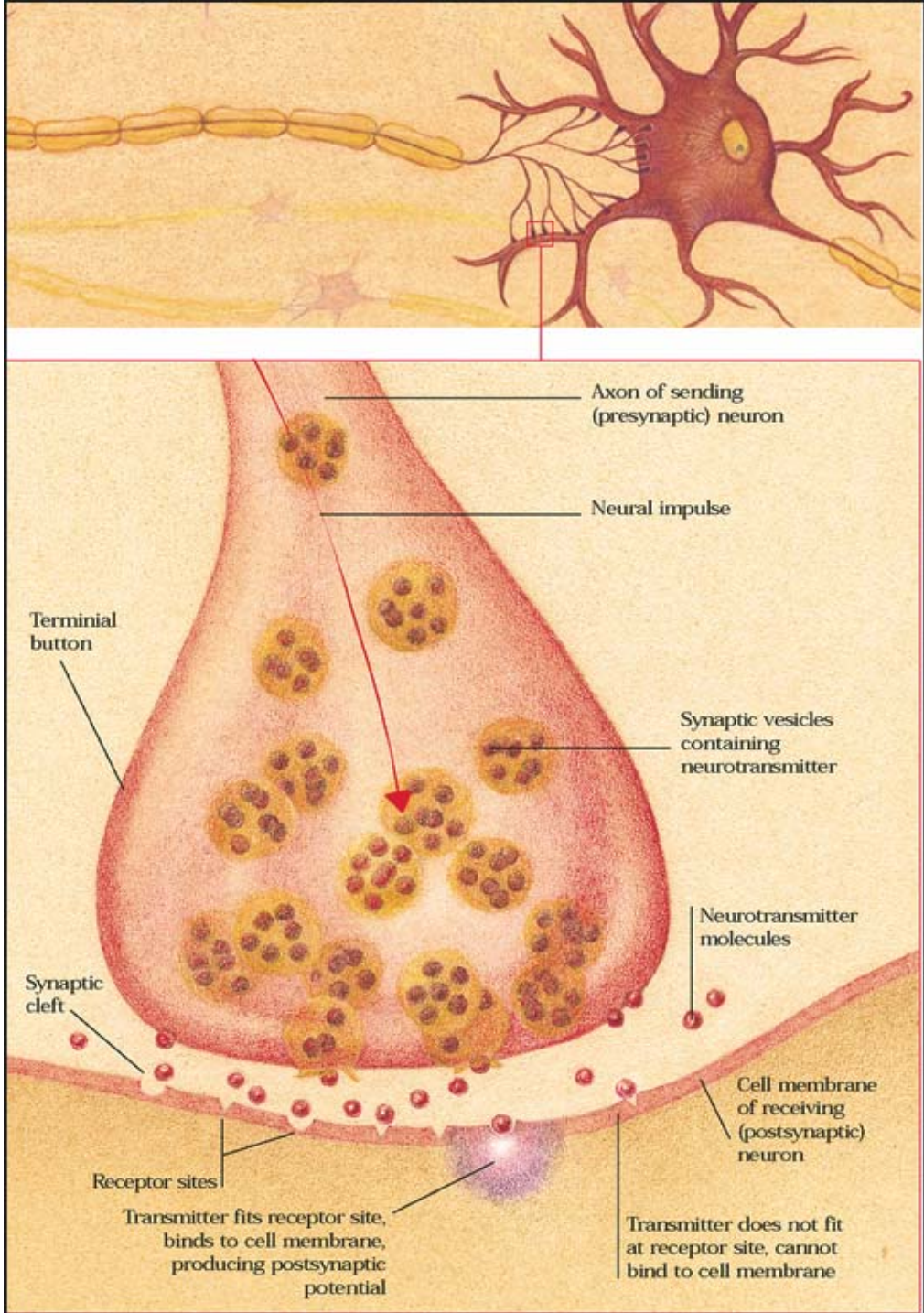
REFRACTORY PERIOD
1/1000 second

HOW NEURONS COMMUNICATE

SYNAPTIC TRANSMISSION

Action Potential

* Excitatory or Inhibitory



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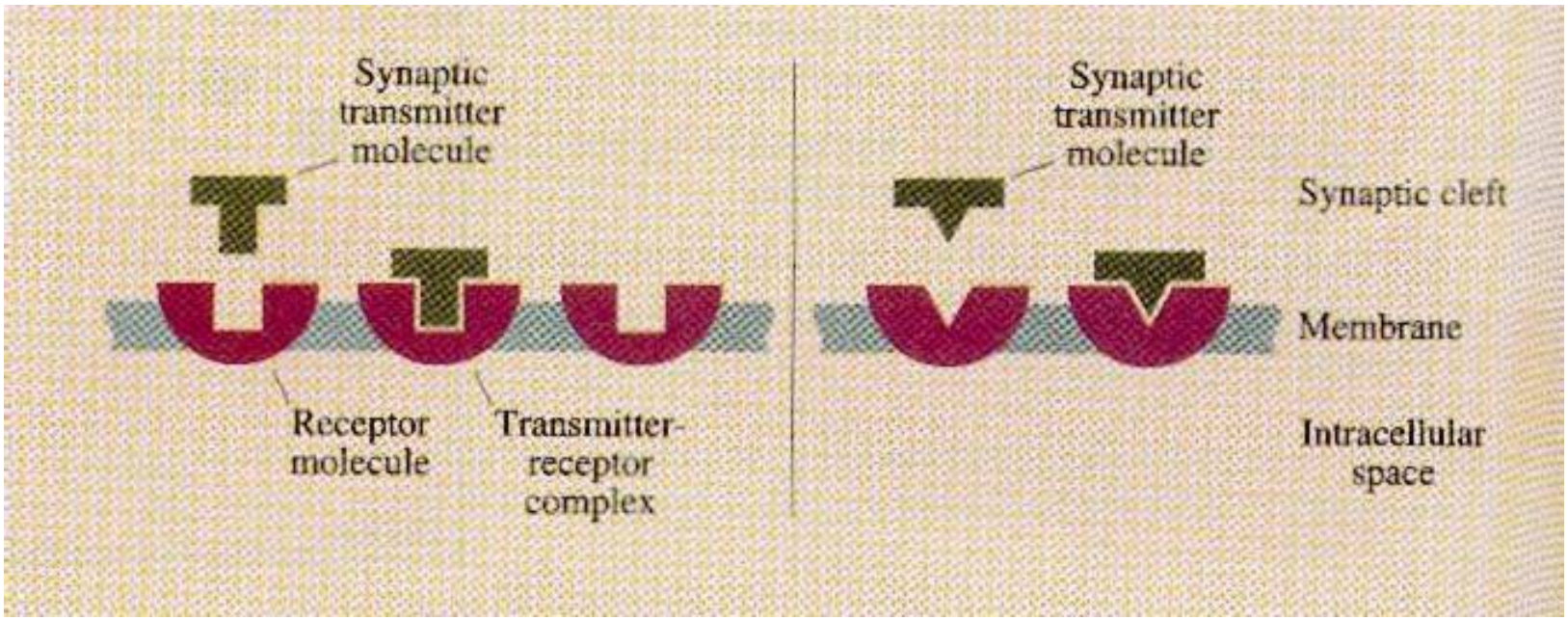
NEUROTRANSMITTERS



LOCK & KEY NATURE OF NEUROTRANSMITTERS

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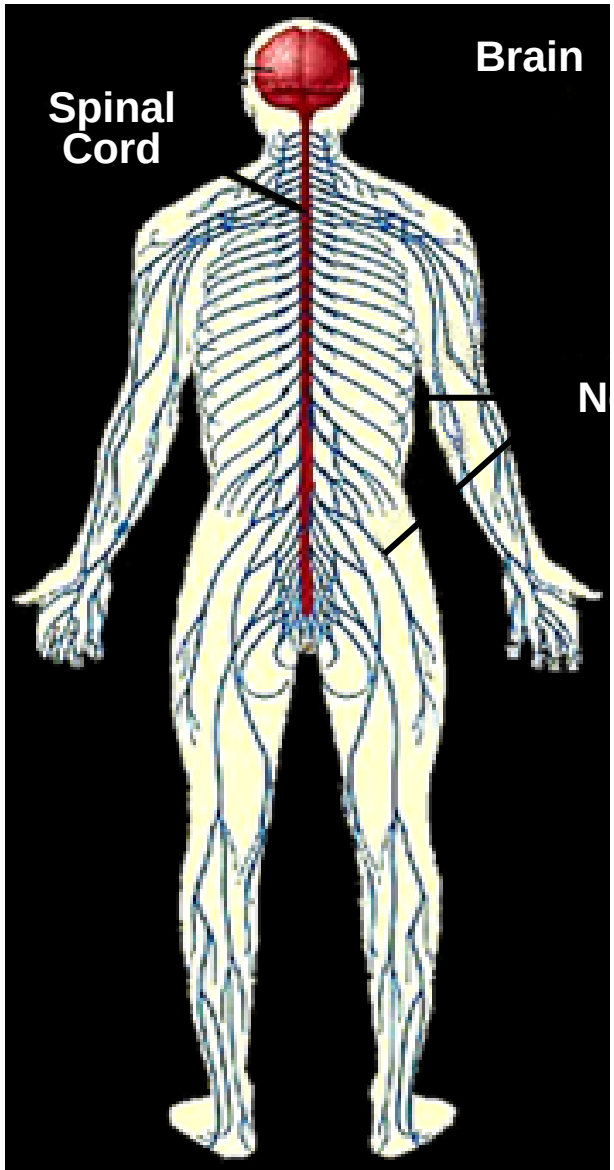
THE SPINAL CORD



CENTRAL NERVOUS SYSTEM

- BRAIN
- SPINAL CORD

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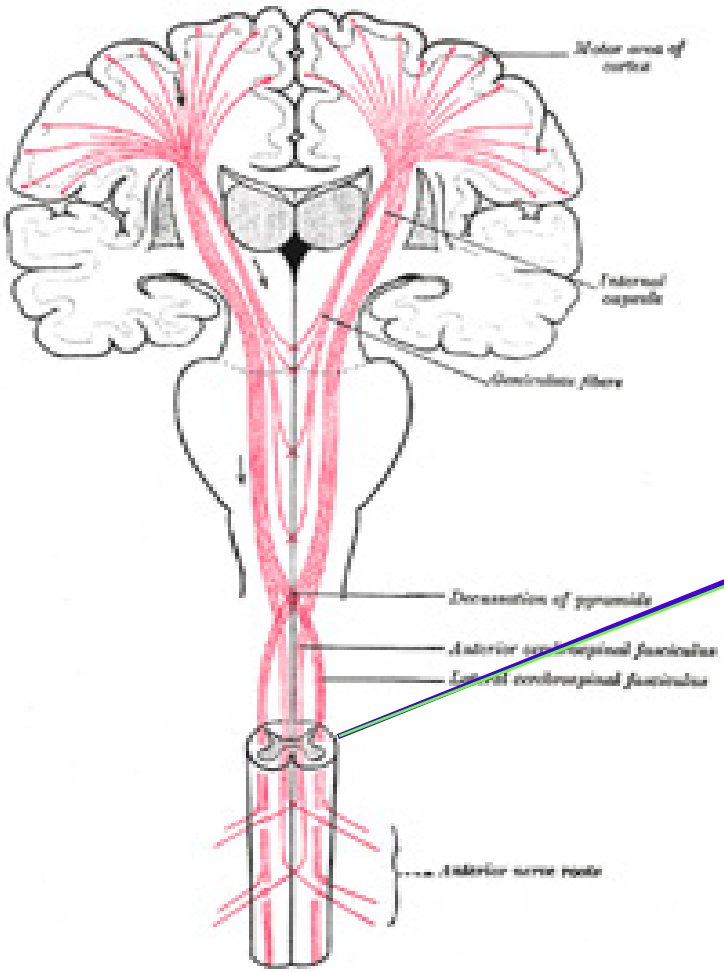
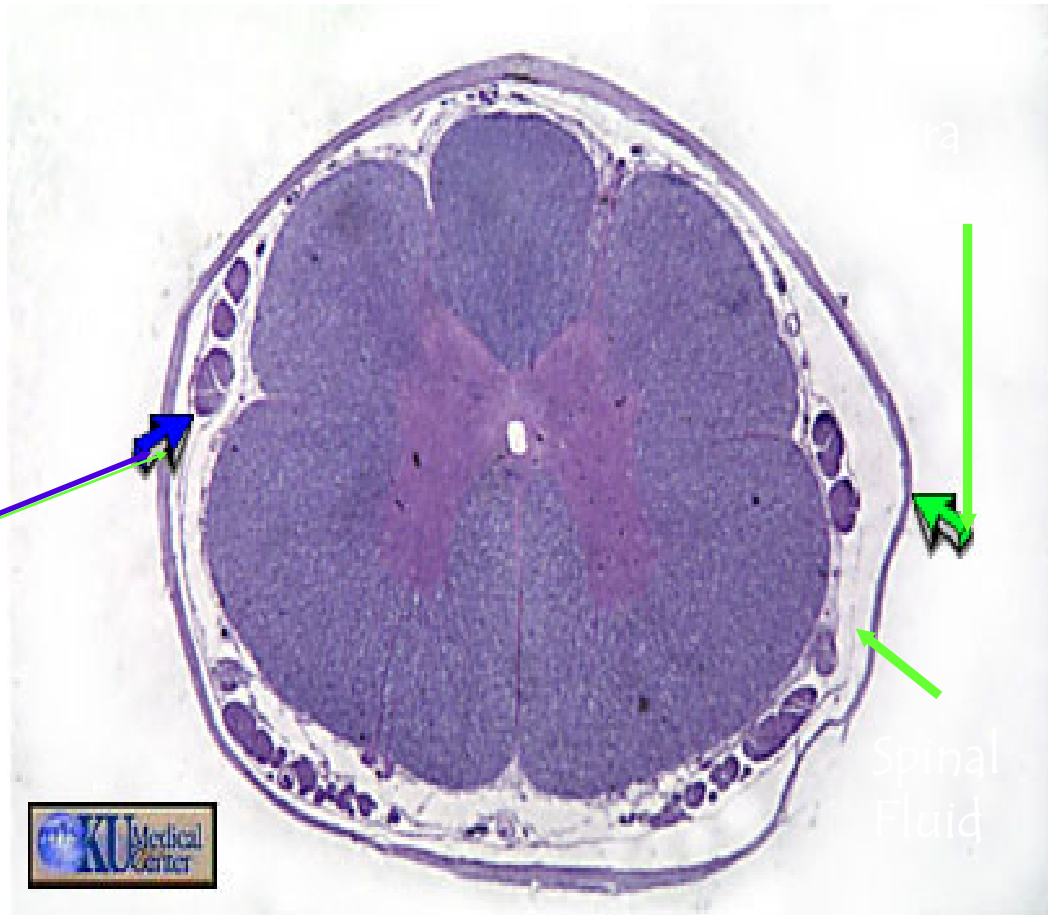
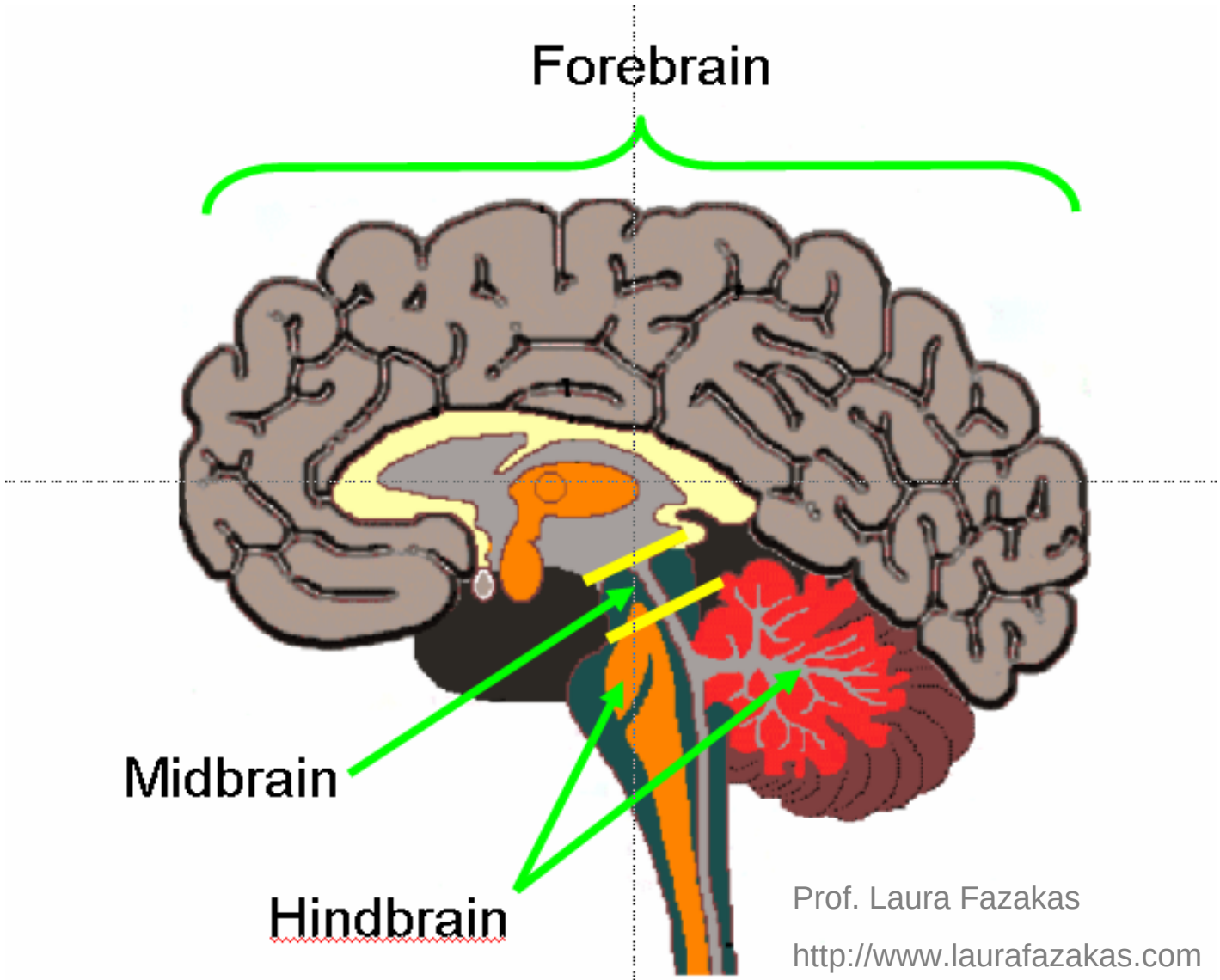
THE SPINAL CORD



Cross section of spinal cord



THE HIERARCHICAL BRAIN



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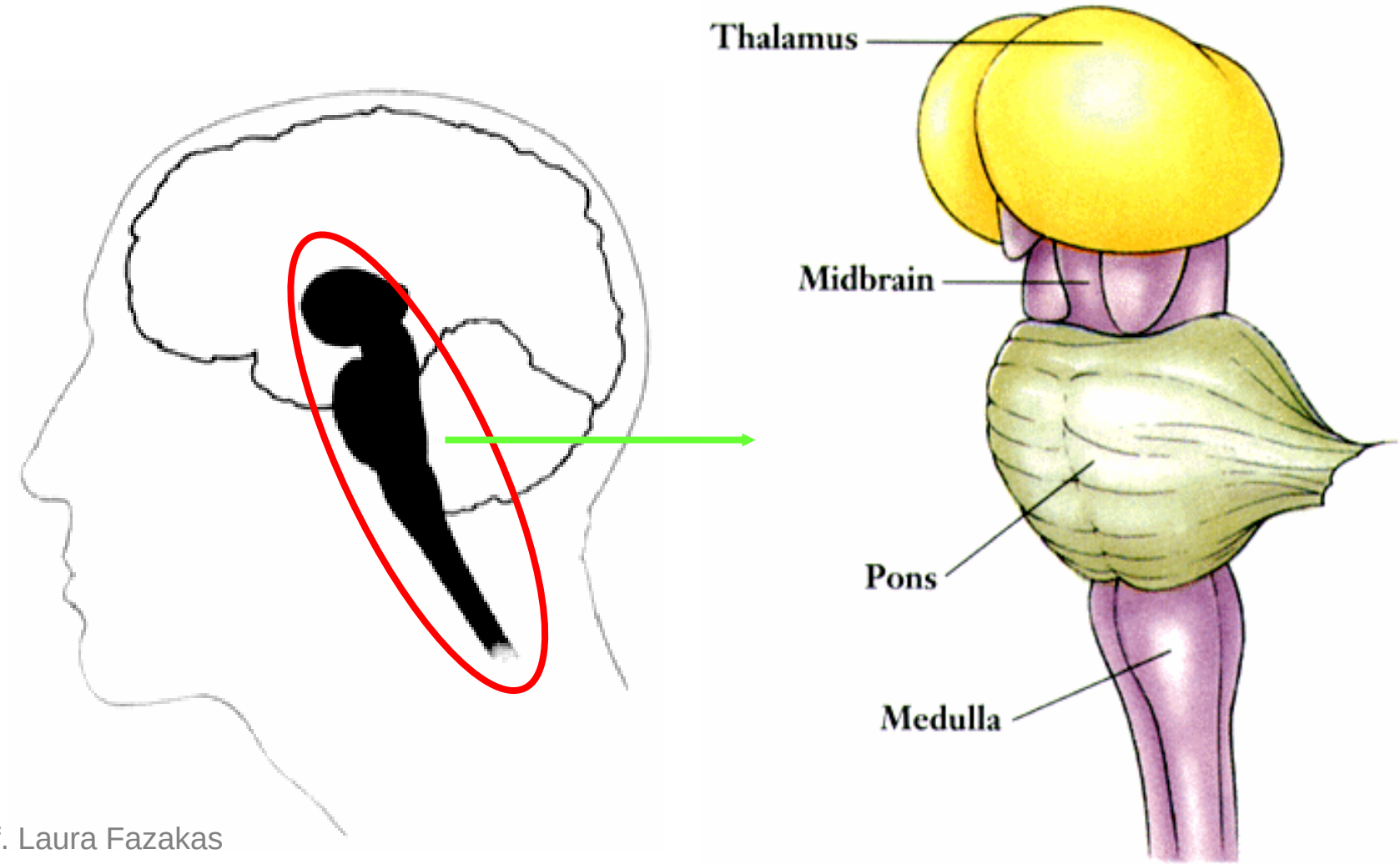
THE HIERARCHICAL BRAIN

- HINDBRAIN & MIDBRAIN



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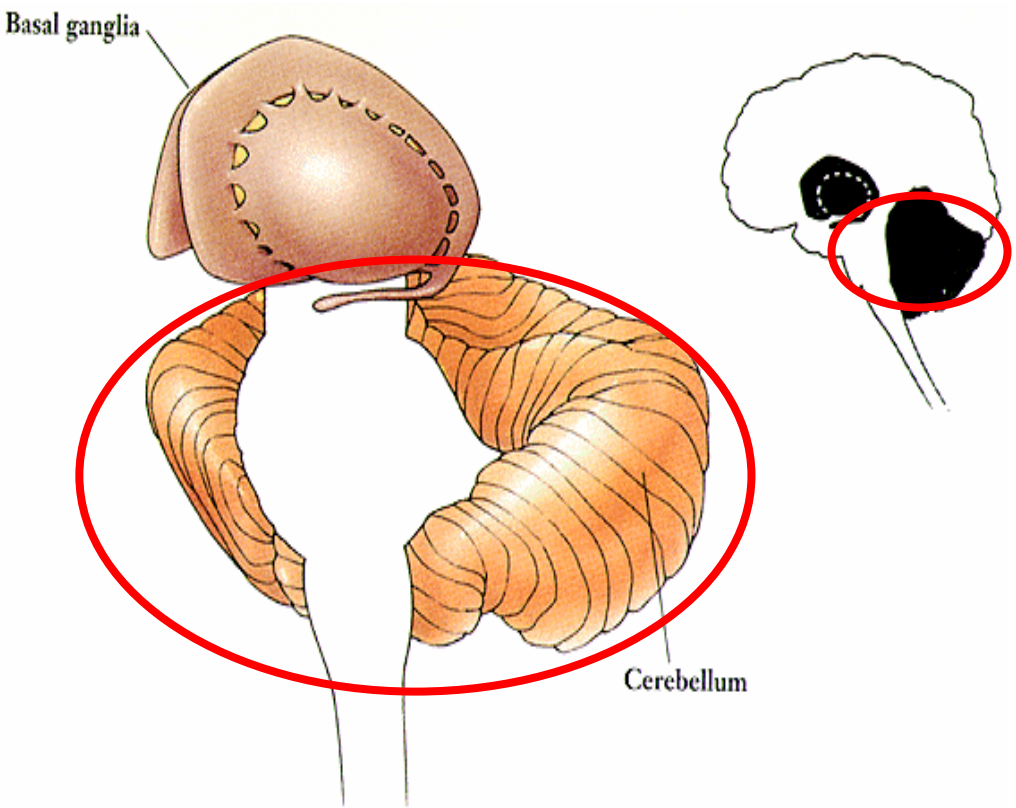
THE HIERARCHICAL BRAIN



THE HINDBRAIN

- CEREBELLUM

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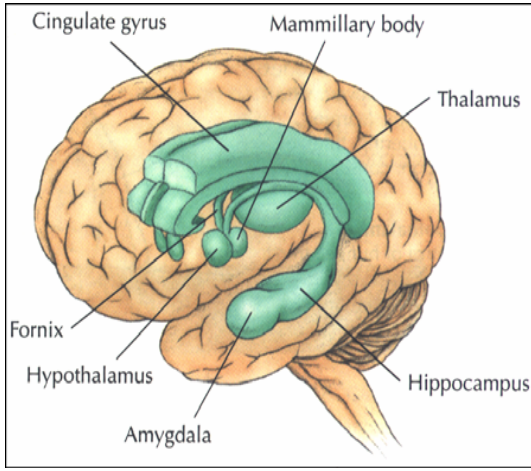
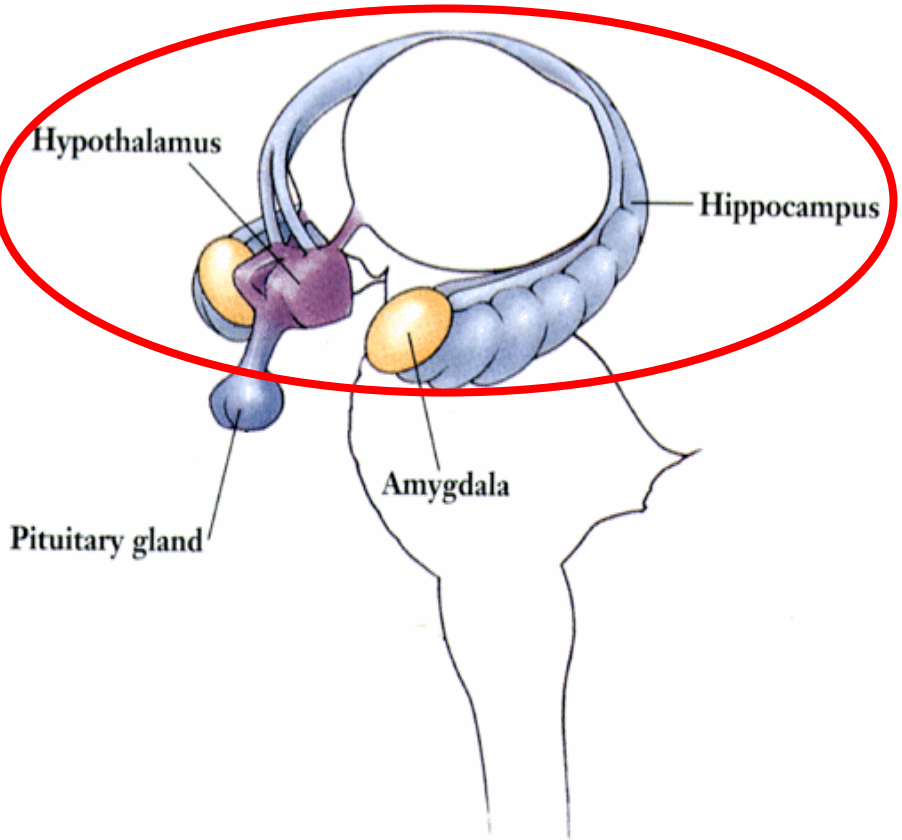
THE HIERARCHICAL BRAIN



THE FOREBRAIN



- HYPOTHALAMUS
- LIMBIC SYSTEM
- AMYGDALA
- HIPPOCAMPUS

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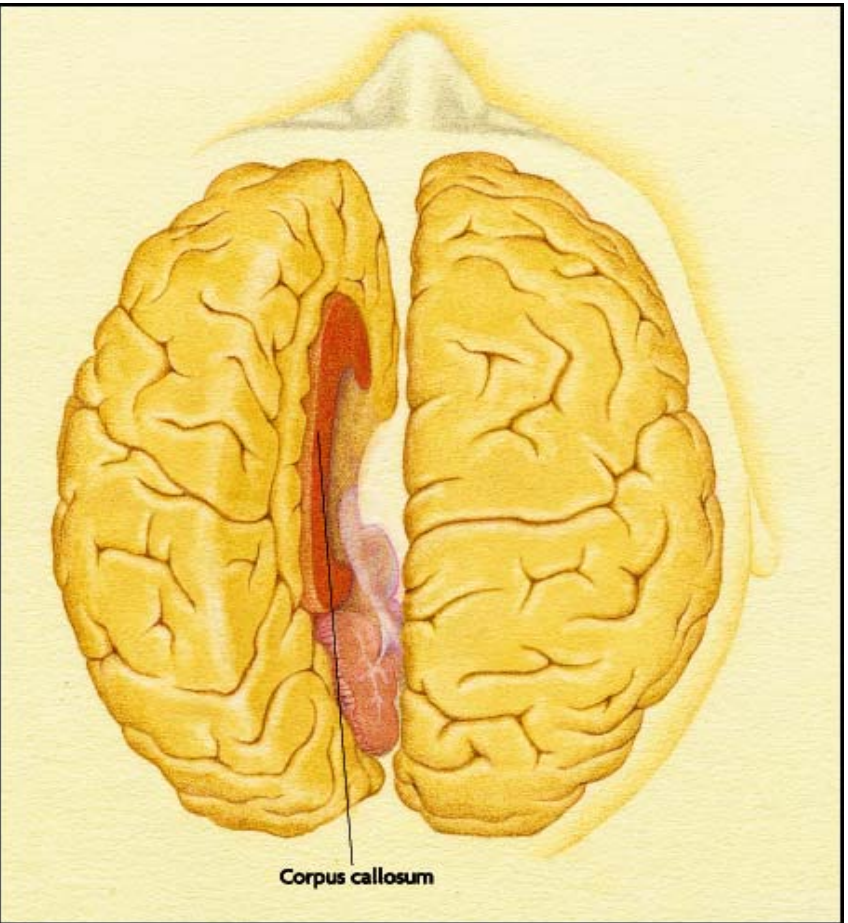
THE FOREBRAIN

THE CEREBRUM: 2 HEMISPHERES, 4 LOBES



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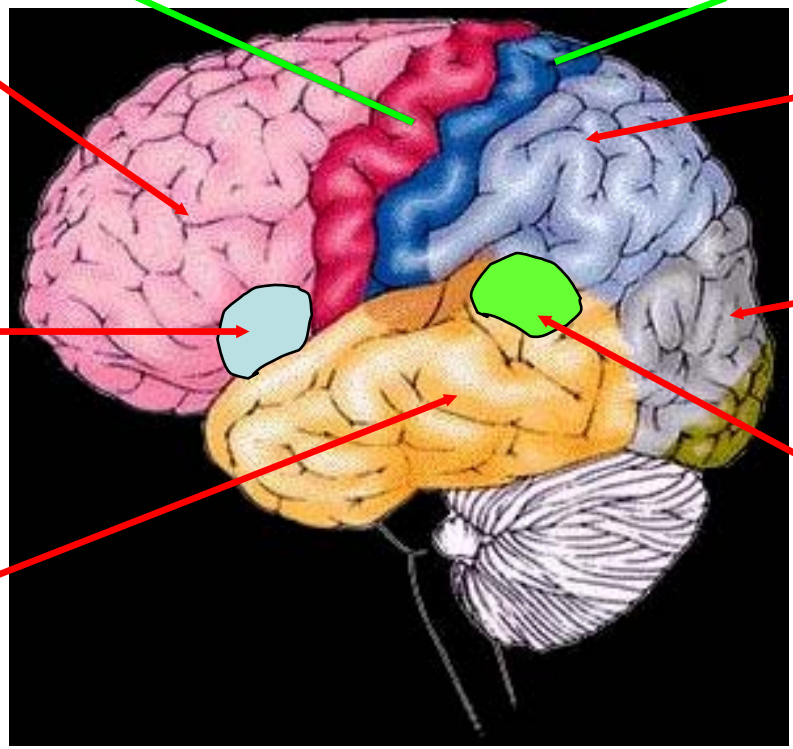
CEREBRAL CORTEX

FRONTAL CORTEX
- execute & control systems

Motor Cortex

Somatosensory Cortex



PARIETAL CORTEX
- somatosensory

OCCIPITAL CORTEX
- vision

BROCA'S AREA
- speech production

WERNICKE'S AREA
- comprehend speech

TEMPORAL CORTEX
- auditory

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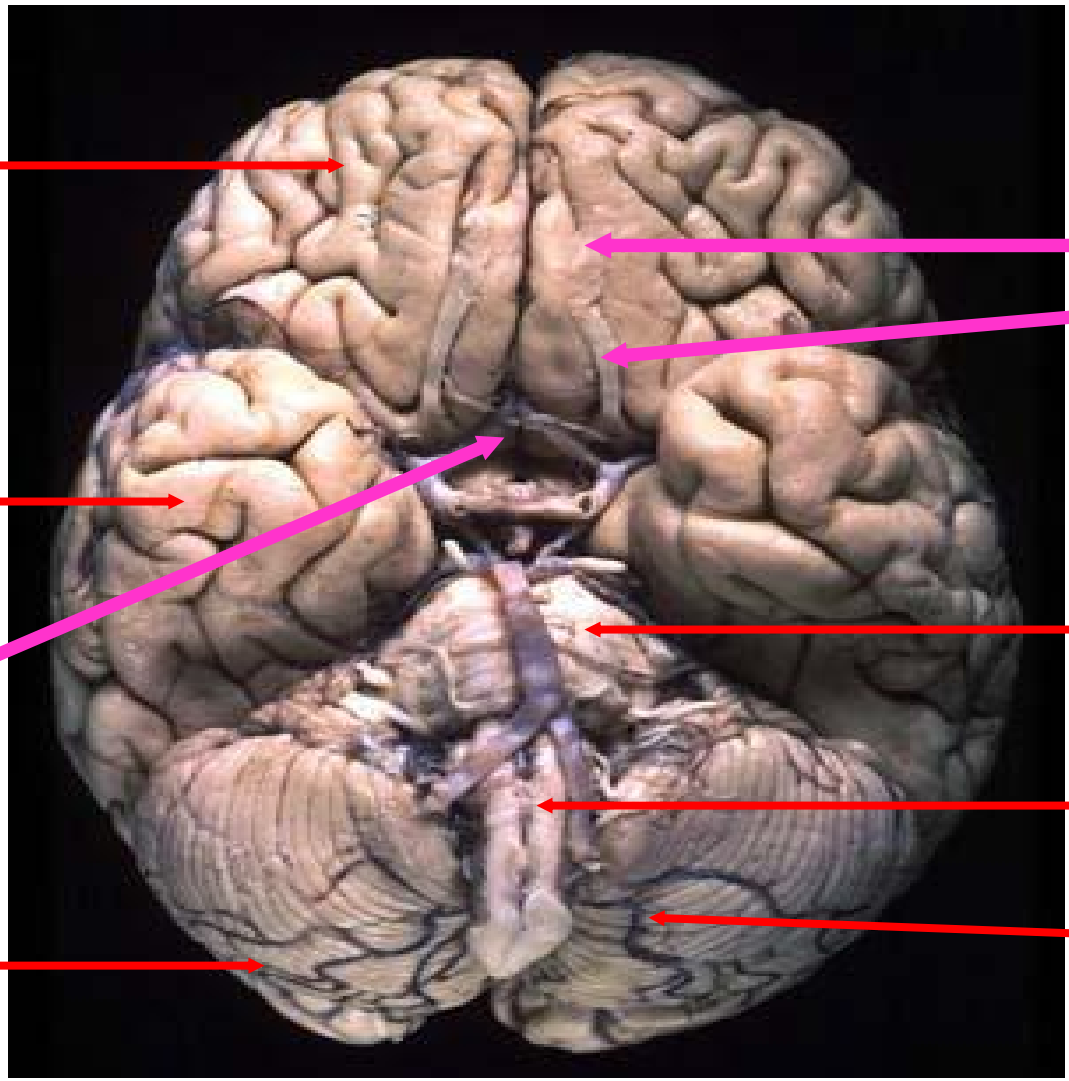
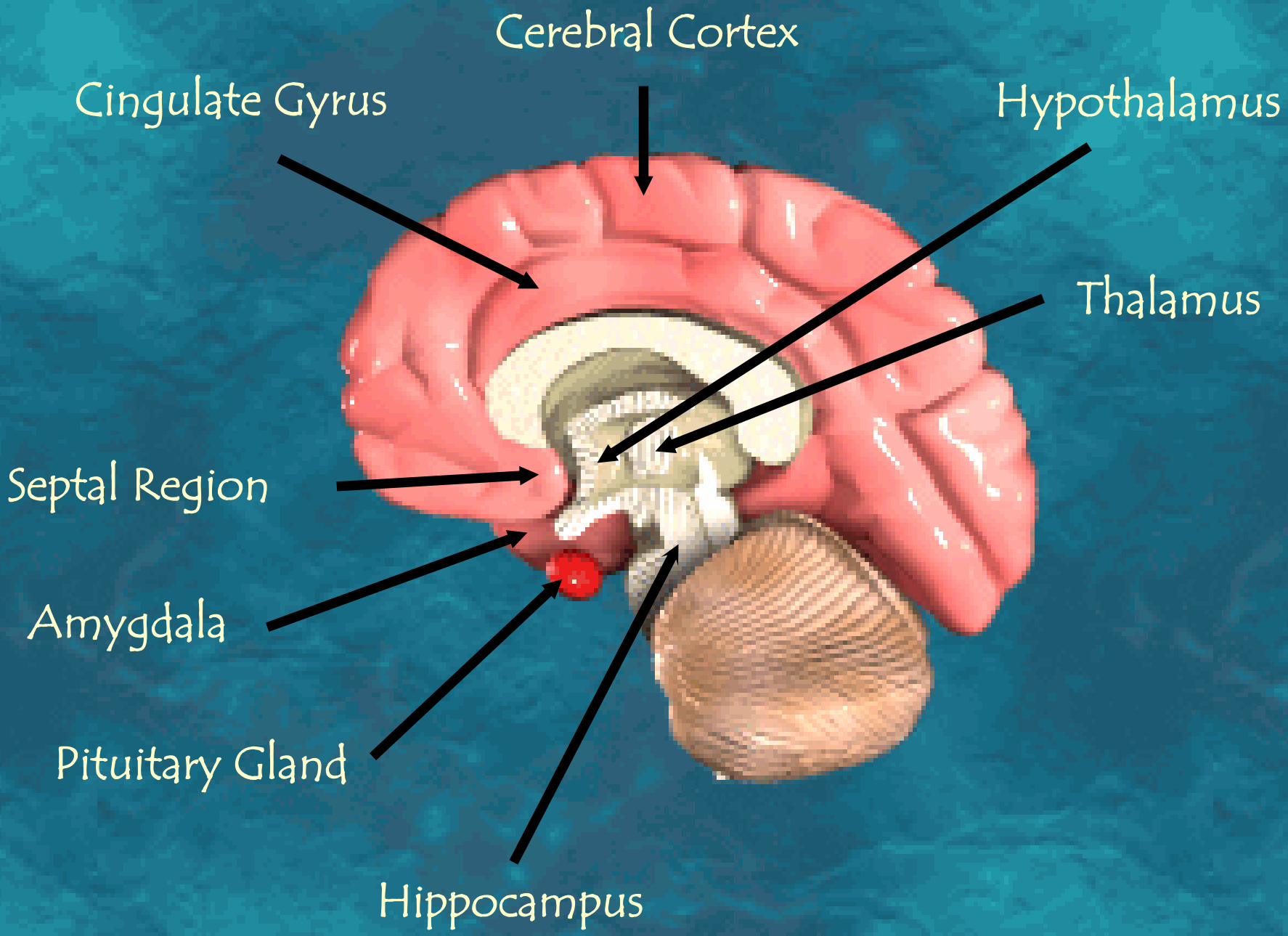
THE BRAIN

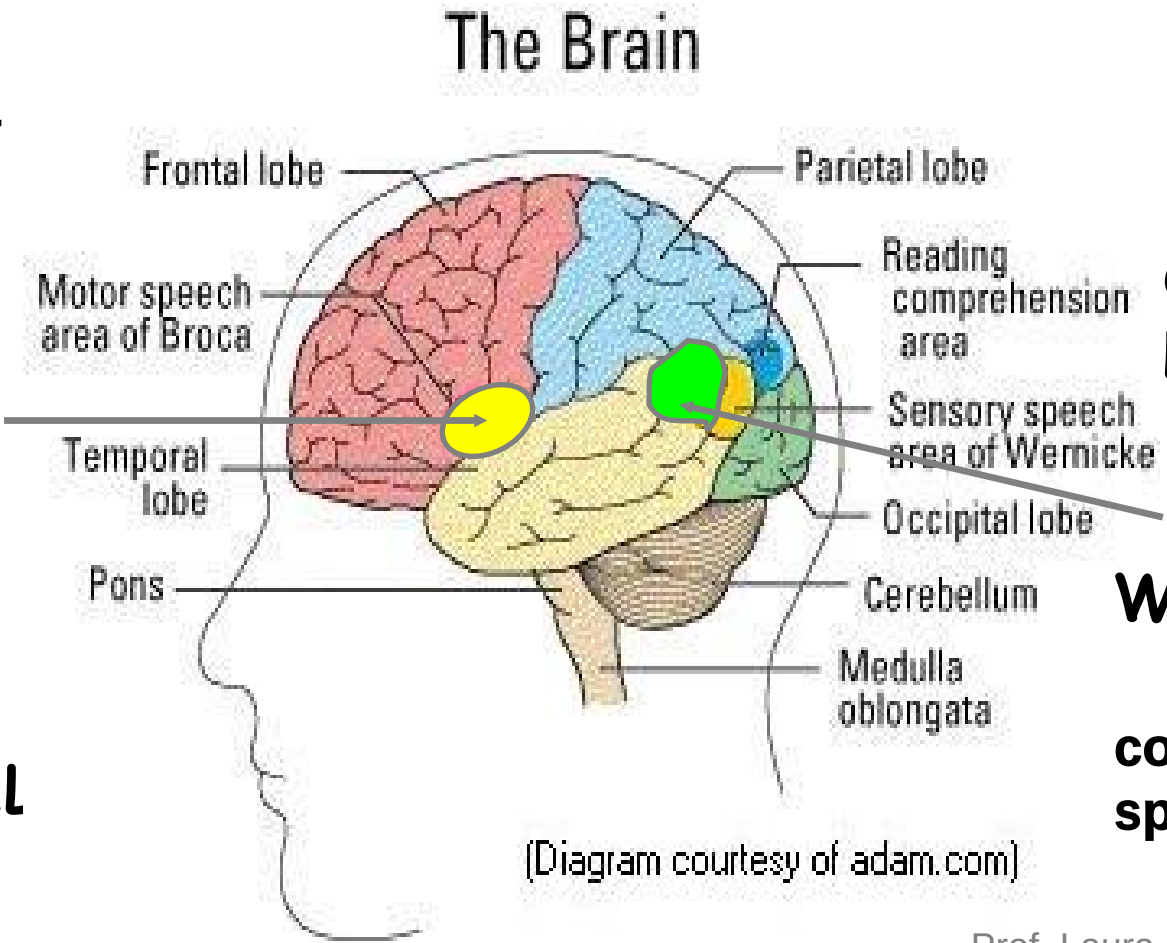



Cerebral Cortex
Cingulate Gyrus
Hypothalamus
Thalamus
Septal Region
Amygdala
Pituitary Gland
Hippocampus

CEREBRAL CORTEX

FRONTAL LOBE
- execute & control systems

PARIETAL LOBE
- somatosensory



BROCA'S AREA
- speech production

OCCIPITAL LOBE
- vision

WERNICKE'S AREA
comprehend speech

TEMPORAL LOBE
- auditory

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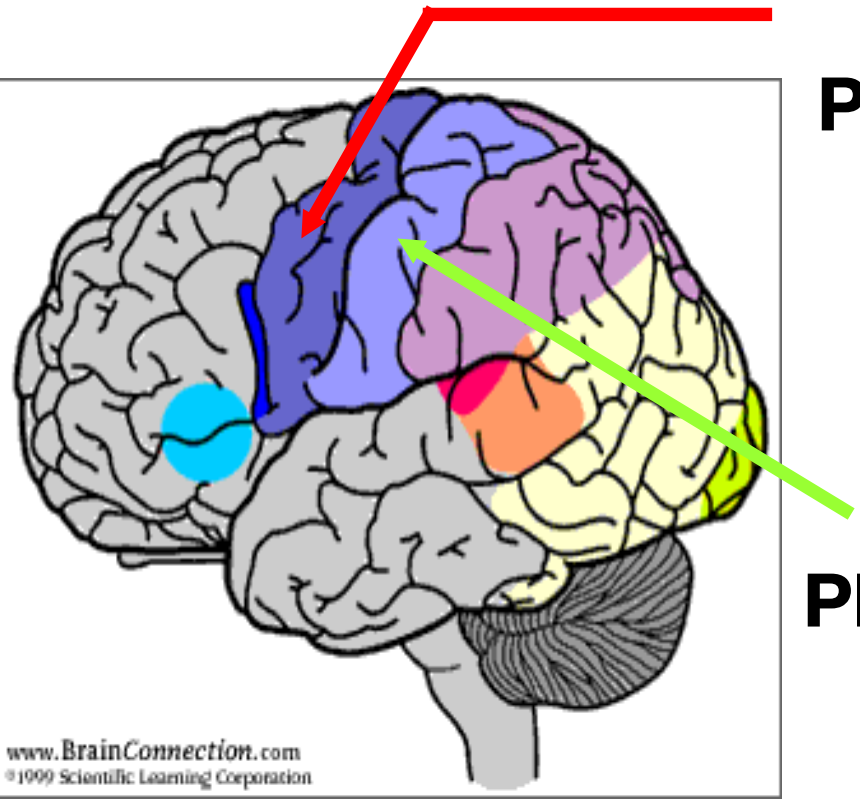
CEREBRAL CORTEX



PRIMARY MOTOR CORTEX

PRIMARY SENSORY CORTEX

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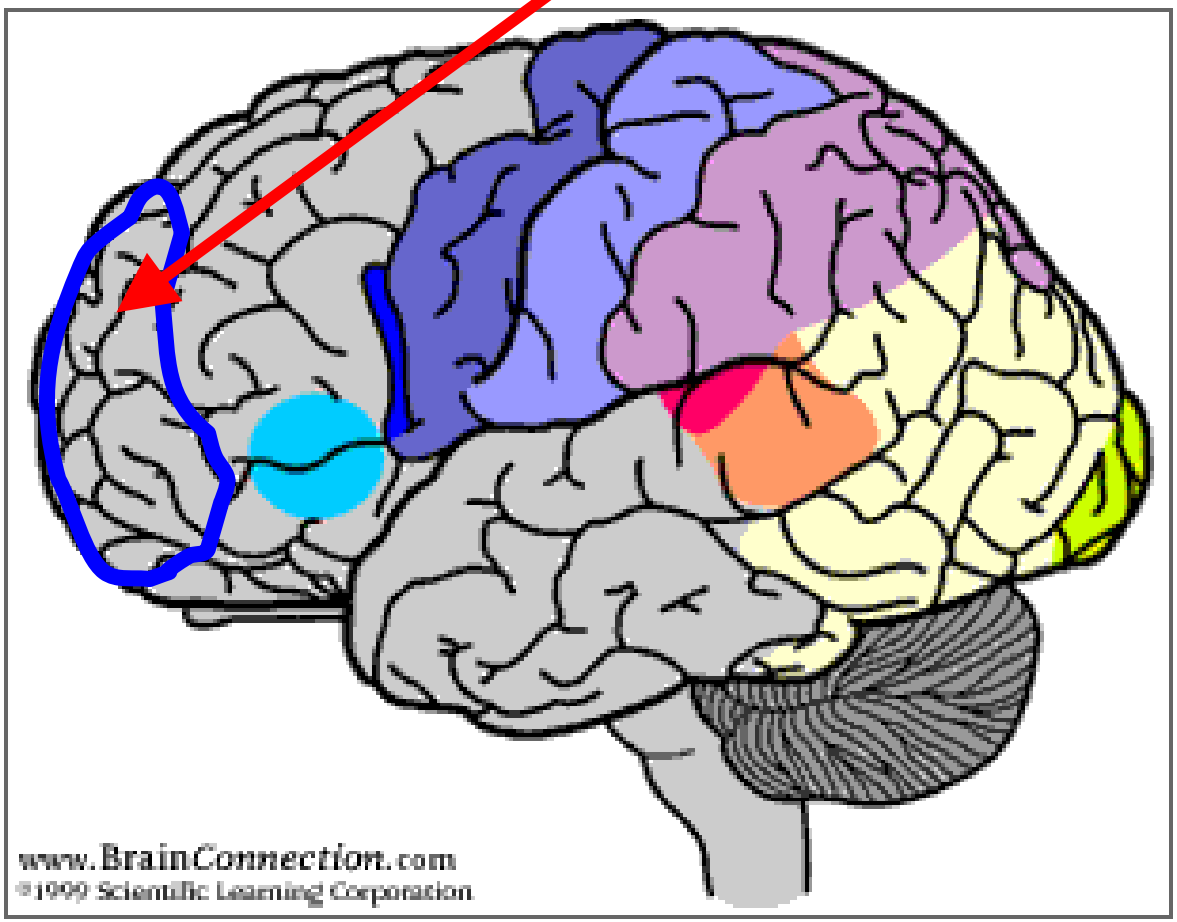
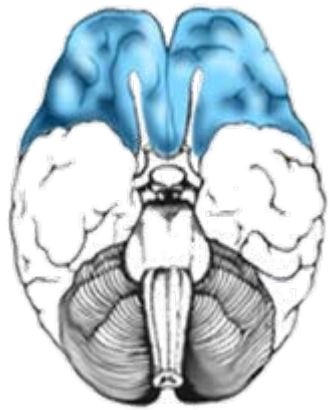
THE FOREBRAIN

PREFRONTAL CORTEX





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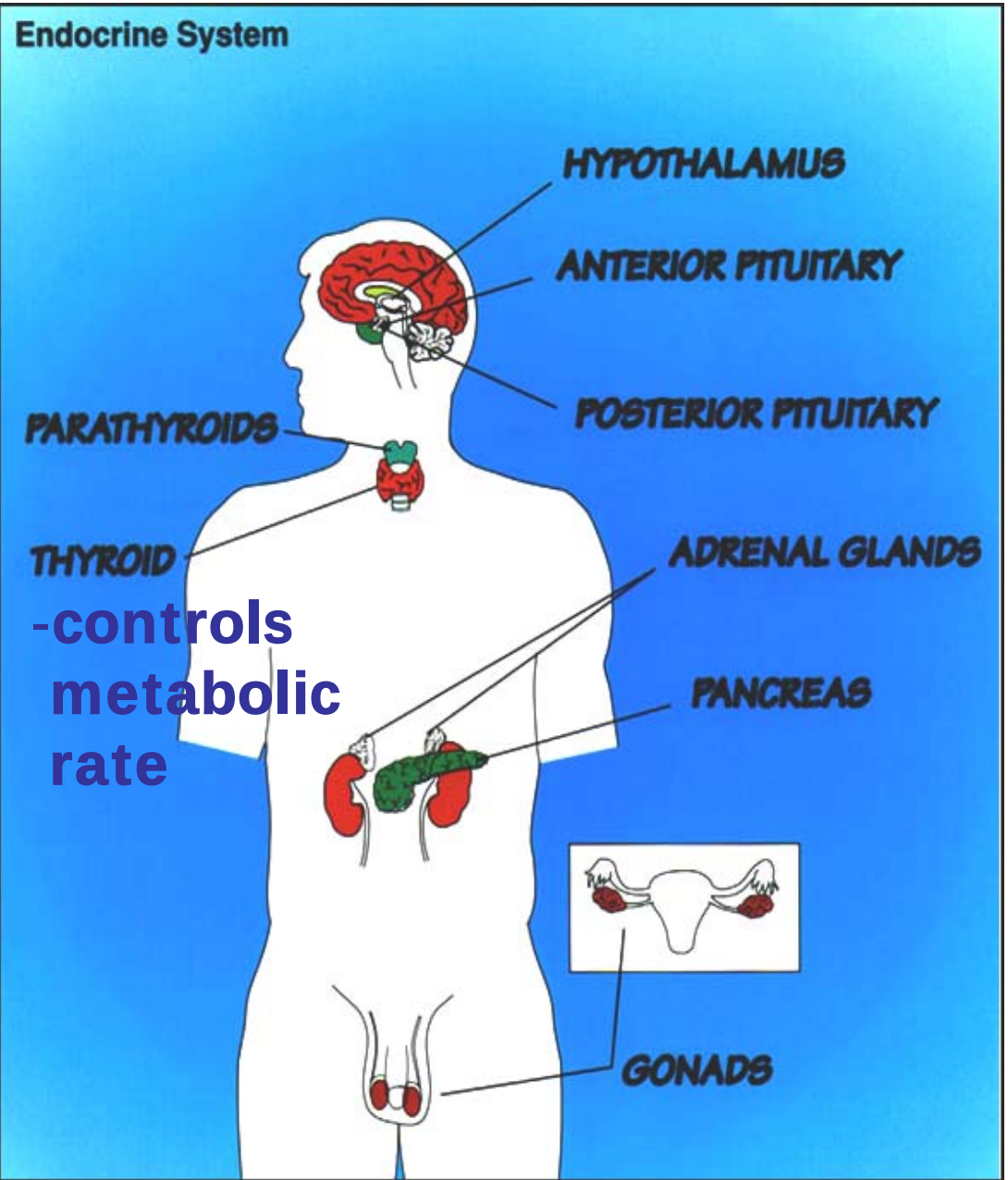
THE ENDOCRINE SYSTEM



-controls metabolic rate

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