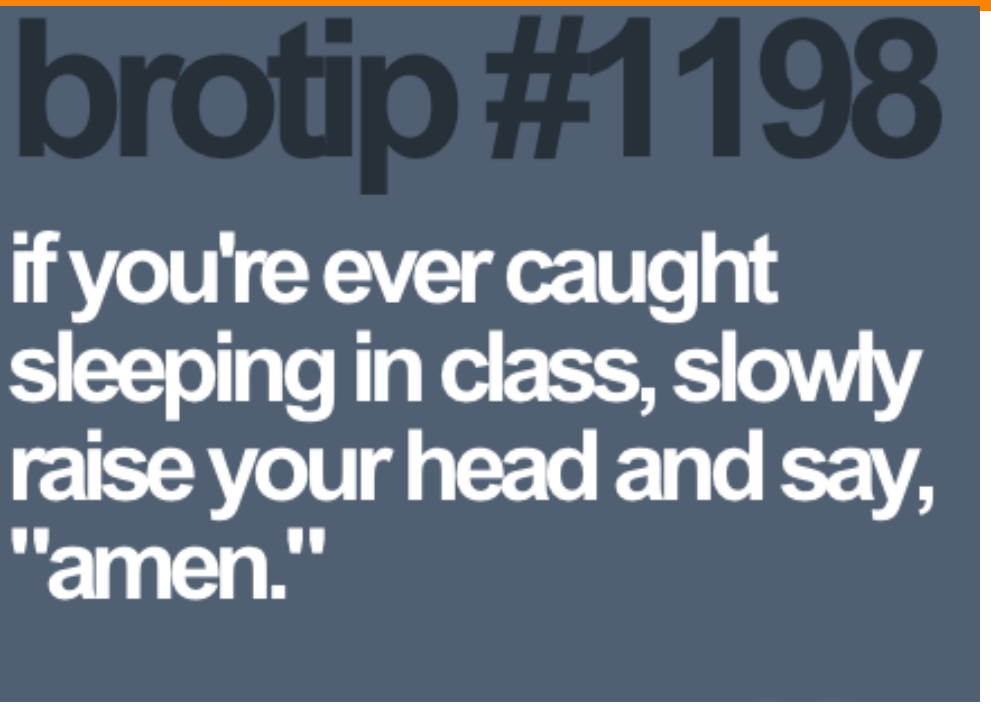
WELCOME TO PSYC 110

PSYCHOLOGY

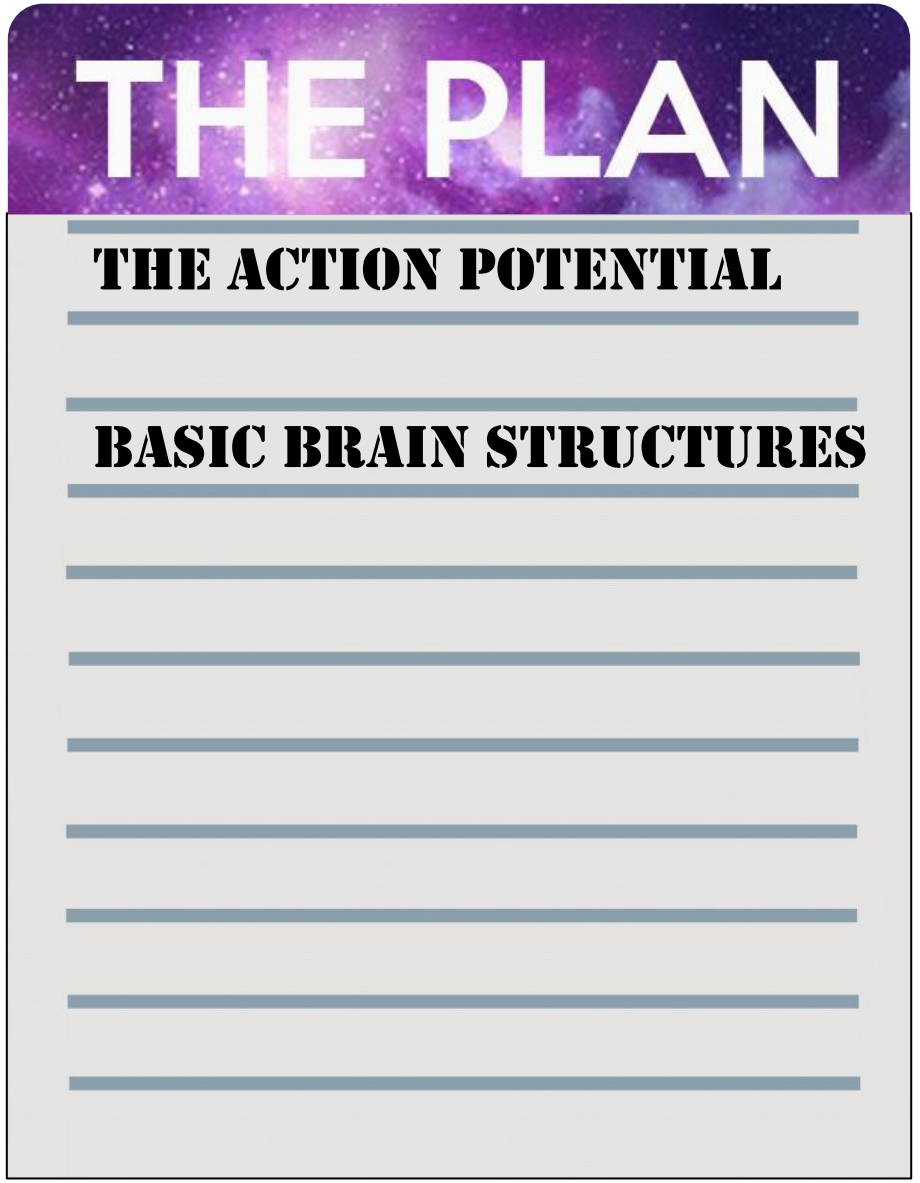


PSYC 110 (General Psychology)

Module 3:
Neuroscience

Trenton C. Johanis, Ph.D.

What should we get out of today?



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Three YouTube videos posted to replace Monday

▾ Module 3 (Neuroscience)

- Norton Illumine Ebook: Psychology in Your Life: Chapter 2: The Role of Biology in Psychology
- Friday Quiz 3
  Feb 14 | 10 pts
- InQuizitive: Chapter 2: The Role of Biology in Psychology
  Feb 16 | 10 pts
- Reflection Journal 3
  Feb 16 | 1 pts

"Lecture" 1

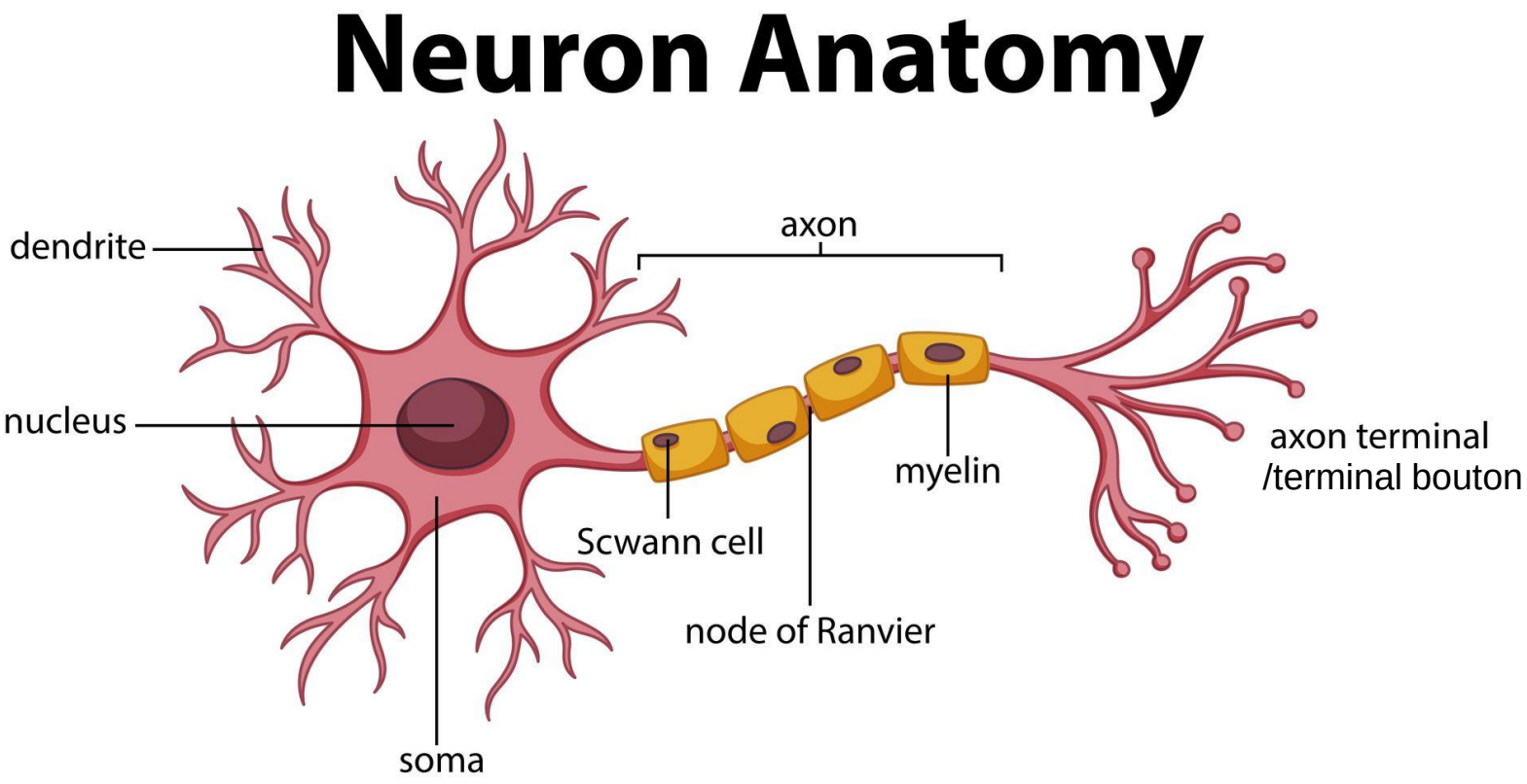
- Anatomy of a Neuron
- Ways of Studying the Brain
- How SSRIs Treat Depression

All fair game for Quiz, QuizTerm, and Final Exam ☺


point
solutions

PSYCHOLOGY

Neurons are the information highway



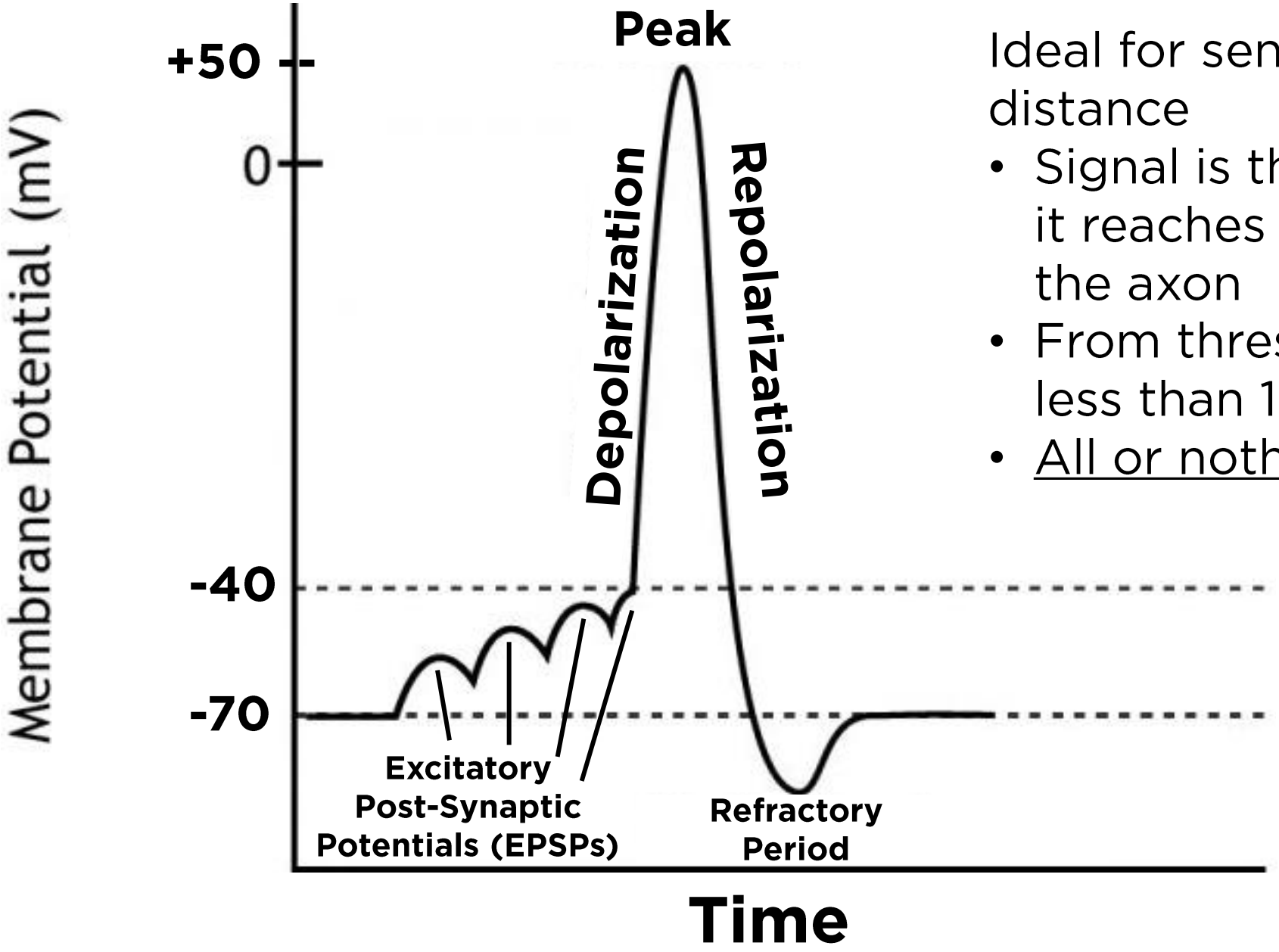
The video posted to replace Monday's lecture covers this in detail. Be sure to know it for the Friday Quiz!

Our brains are a system of interacting nerve cells

How many neurons is the average brain estimated to have?

100,000,000,000 (One Hundred Billion)

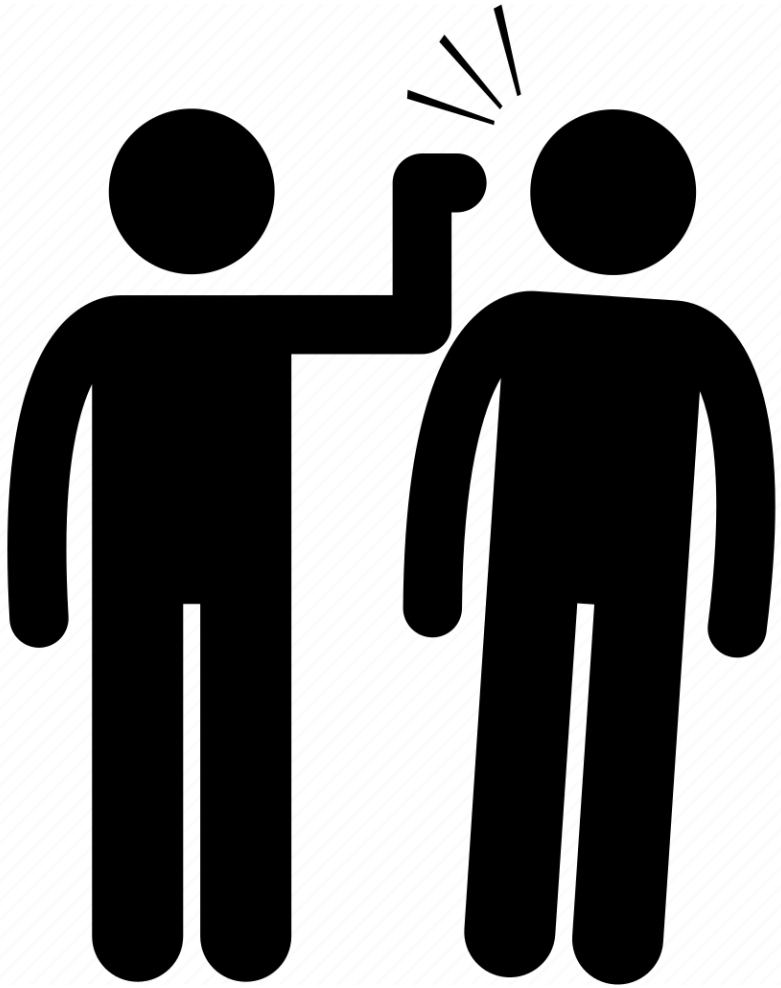
Our neurons carry electrical signals called Action Potentials



Ideal for sending signals over a distance

- Signal is the same size when it reaches the other end of the axon
- From threshold to rest in less than 1ms
- All or nothing

The Action Potential is “all or nothing”

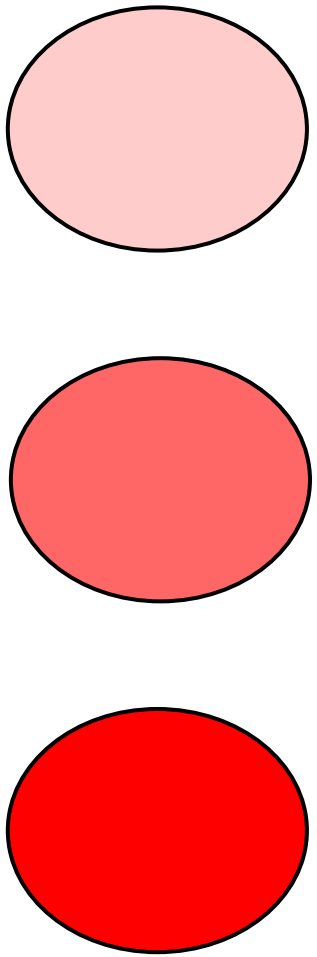


EPSP Neuron

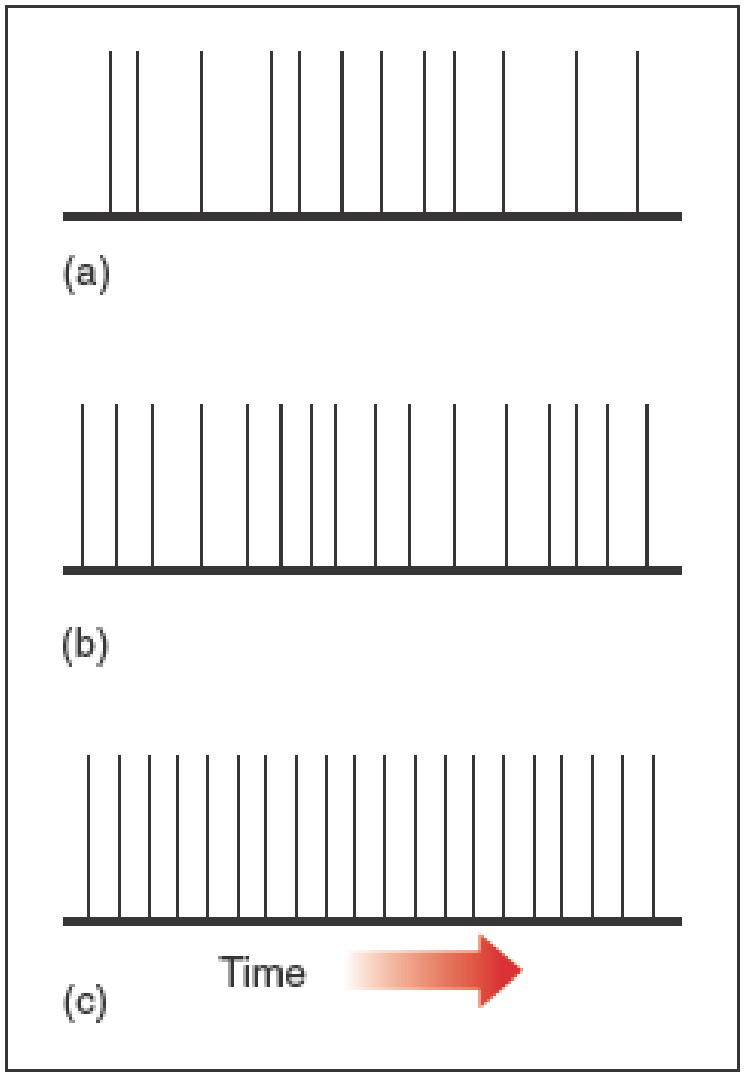
After enough times...

Action Potential

Frequency is proportional to the magnitude of the sensation



Rate of action potentials in a neuron activated by the color red



Higher intensity of stimulus = Higher frequency of activation, NOT higher strength of activation

Appears in all sensations and perceptions (e.g., touch, hearing, smell, taste)

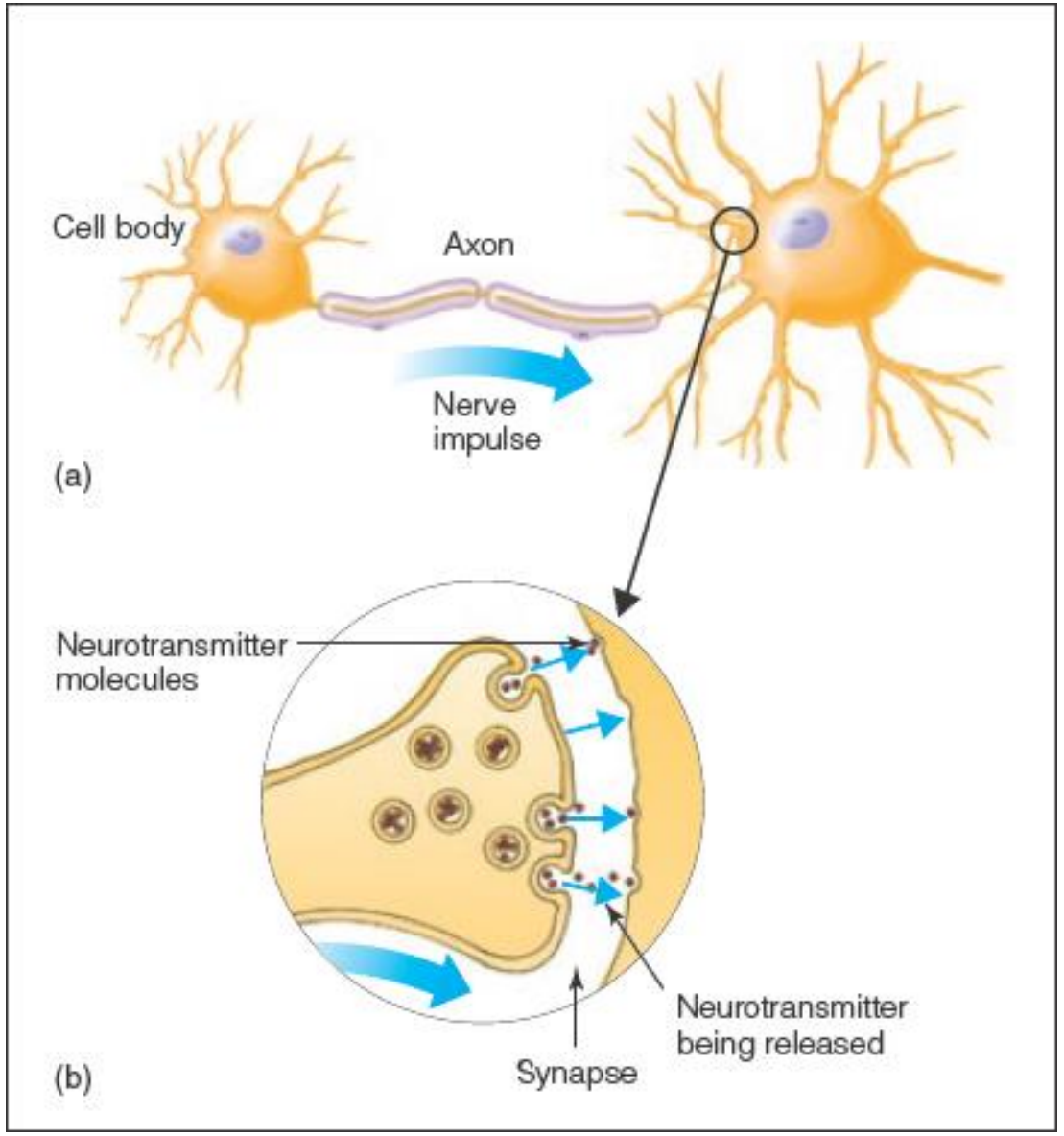
Synapses transfer the action potential between neurons

Synapses are the gap that separates the presynaptic cell from the post-synaptic cell

- Presynaptic = the signal starts
- Postsynaptic = the signal continues

Neurotransmitters are released here

Neurotransmitters binding to post-synaptic neuron triggers an EPSP



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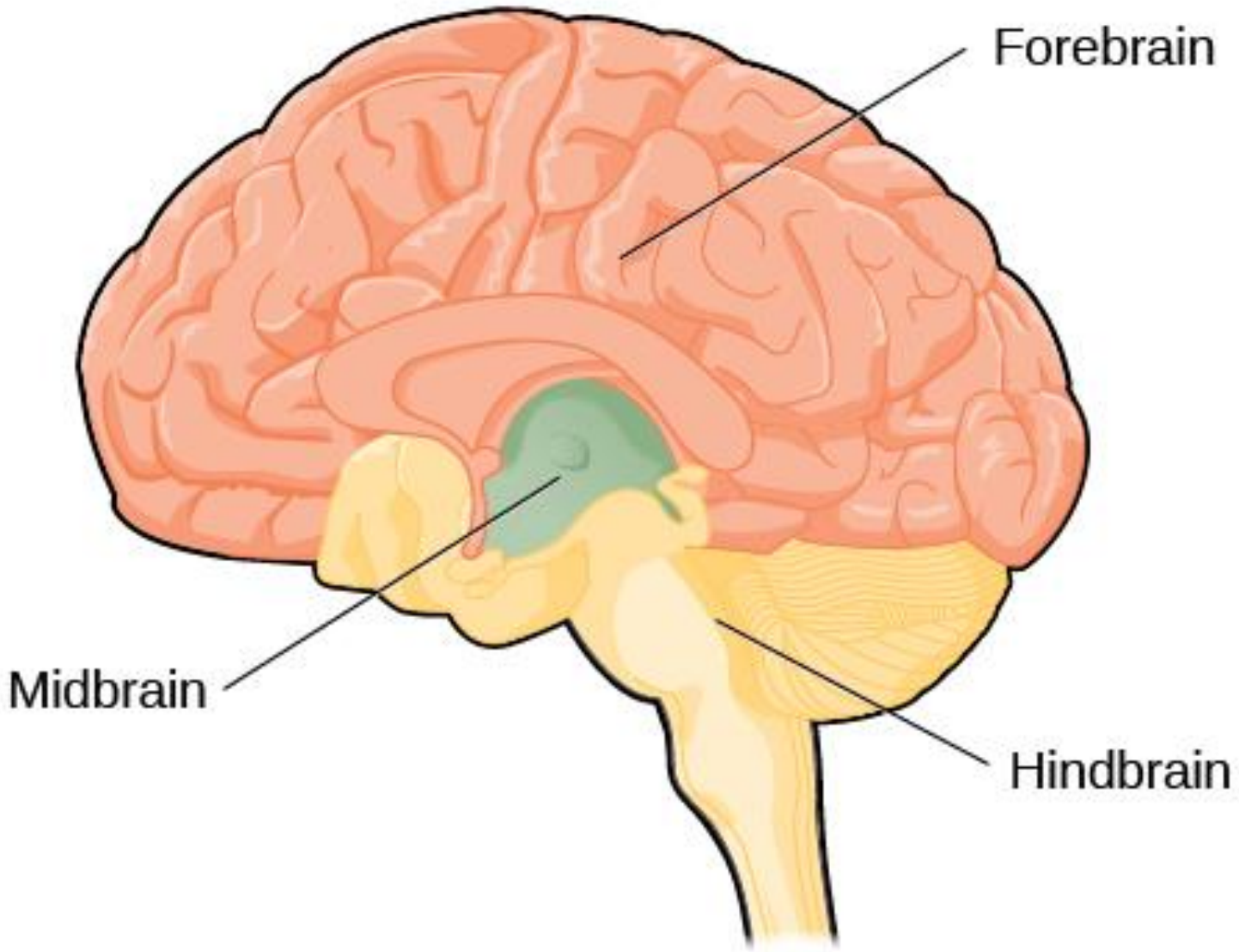
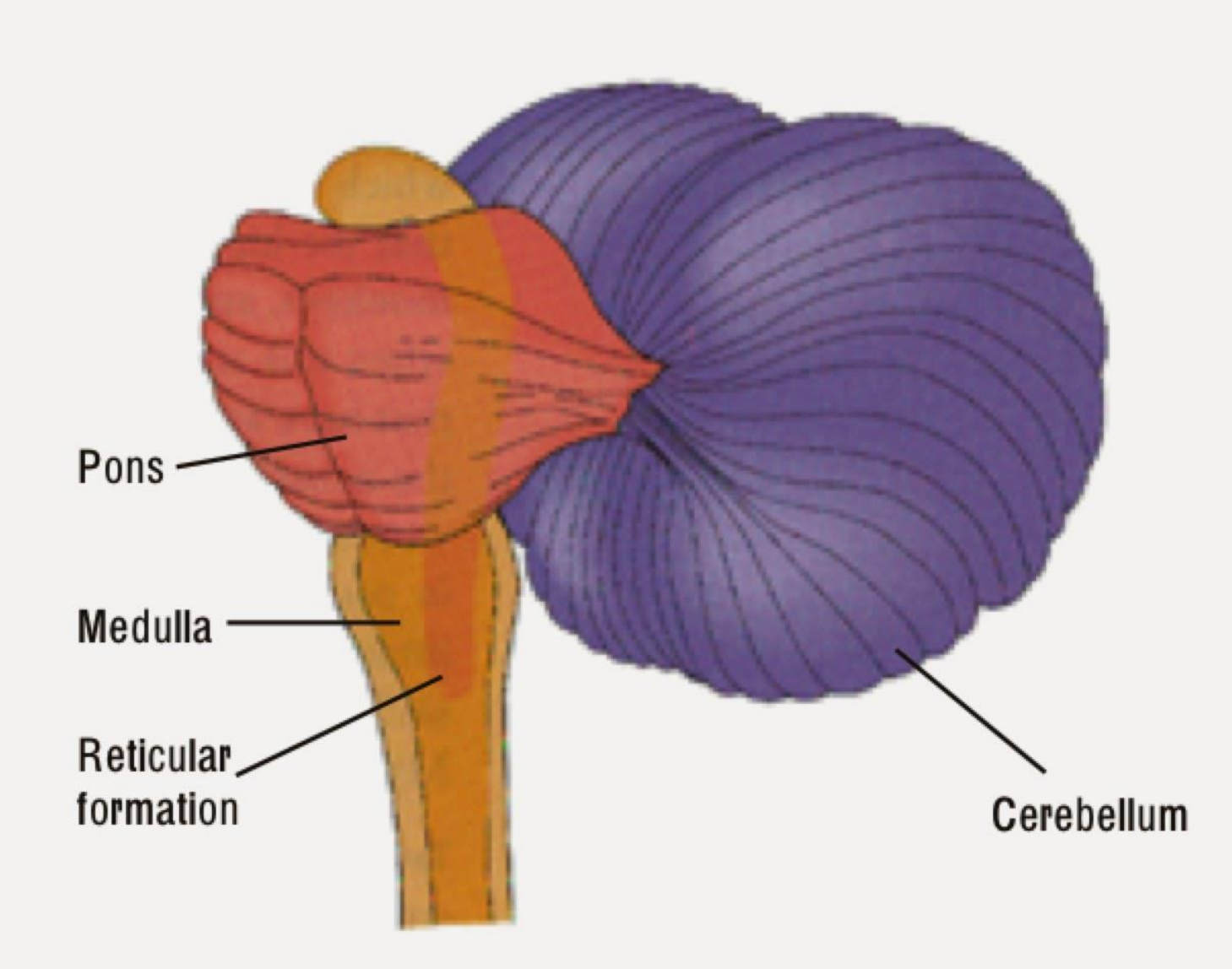
The brain consists of three distinct regions



The hindbrain structures control a variety of important functions



Pons
Movement, Auditory Processing, Emotion

Medulla
Breathing, Digestion, Heart (i.e., vitals)

Reticular Formation
Circadian rhythms (sleep/wake), Motivation, Posture, Balance

Cerebellum
Coordinated movement

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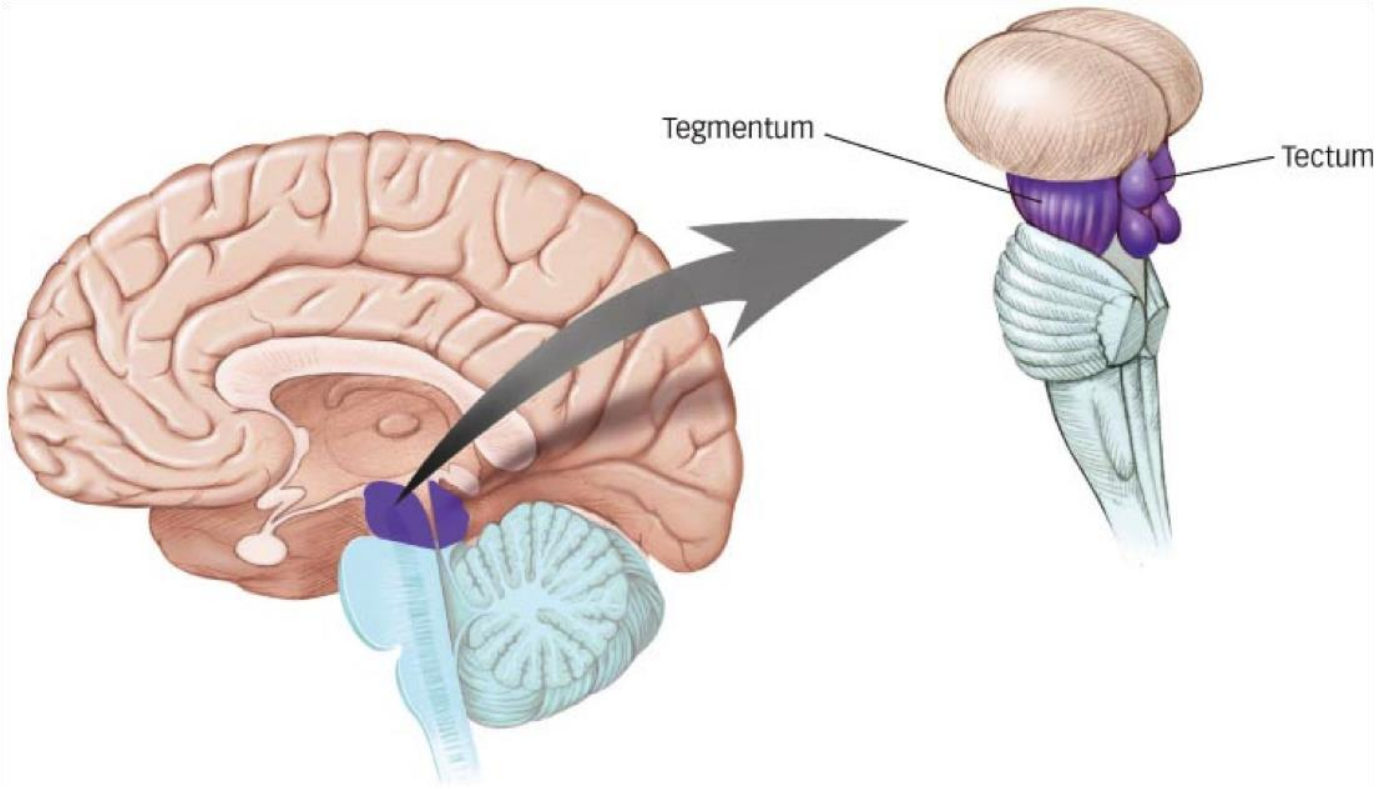
The midbrain is composed of the tecutum and the tegmentum



Tectum

Superior Colliculus = Visual

Inferior Colliculus = Auditory

Tegmentum

Red Nucleus = Motor

Substantia Nigra = Reward

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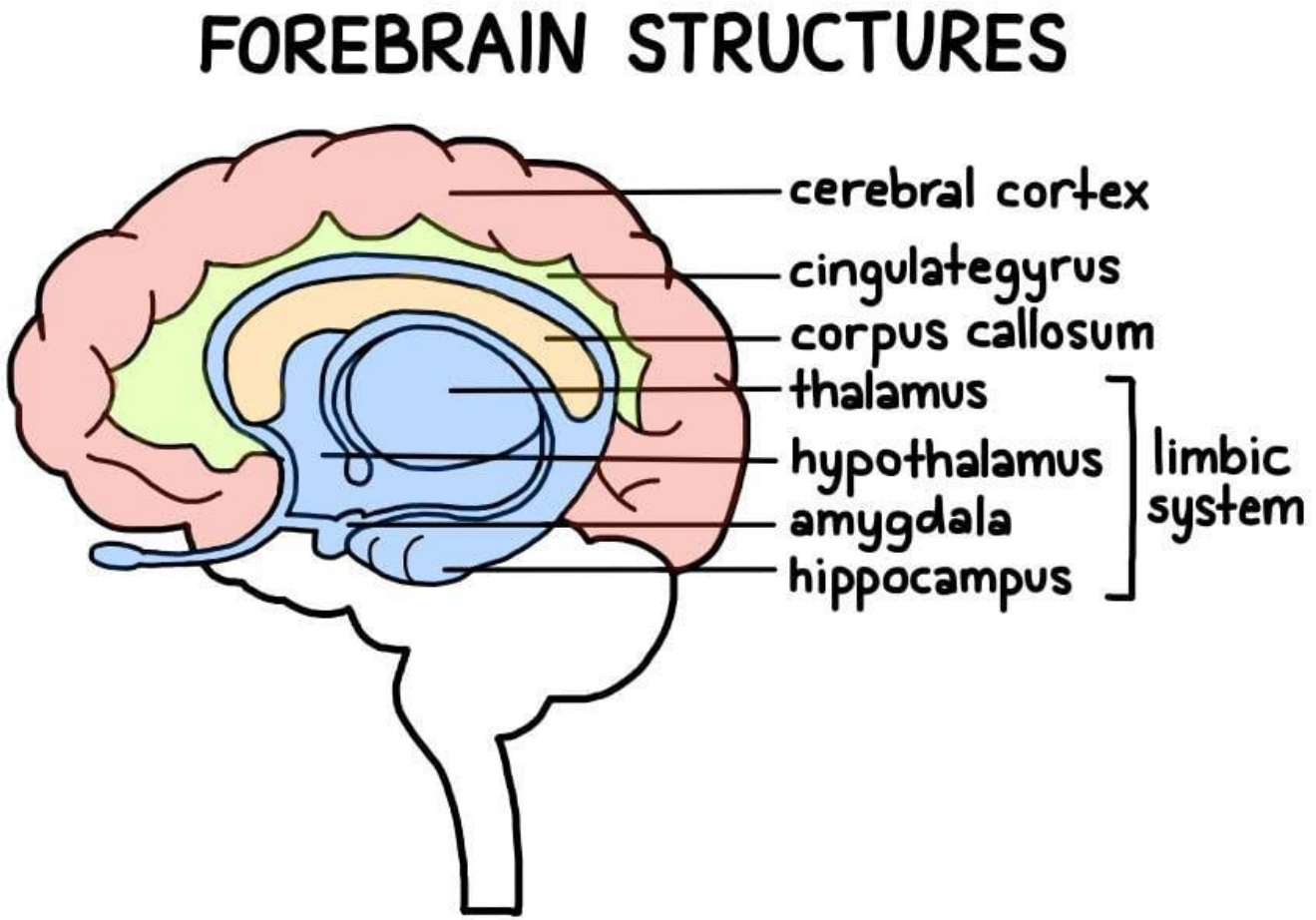
The forebrain is the largest and uppermost region of the brain



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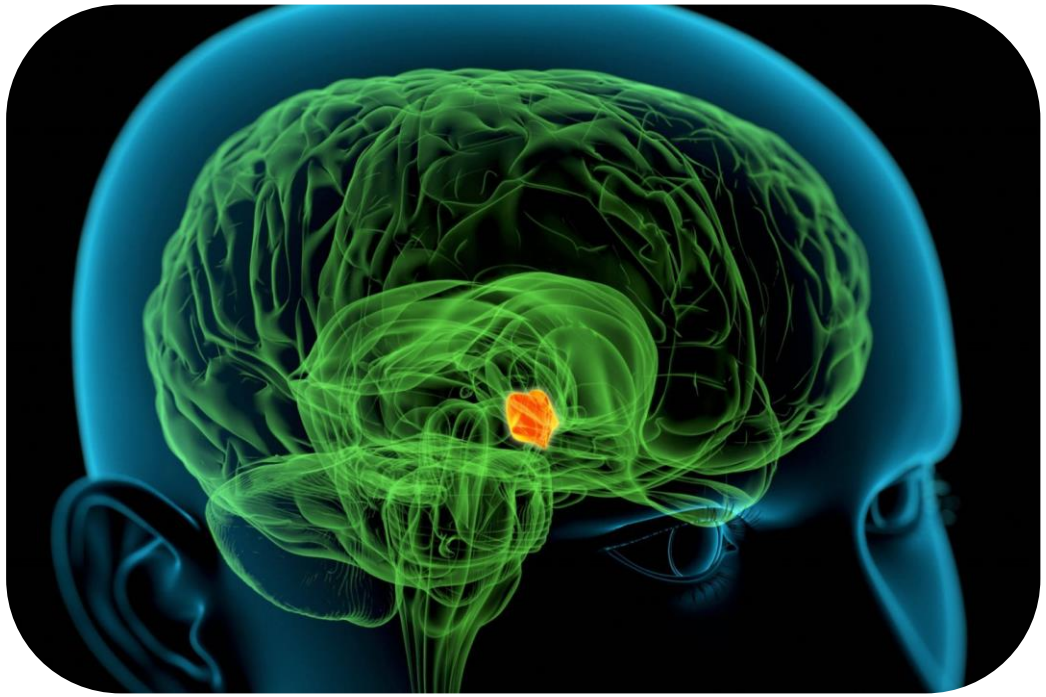
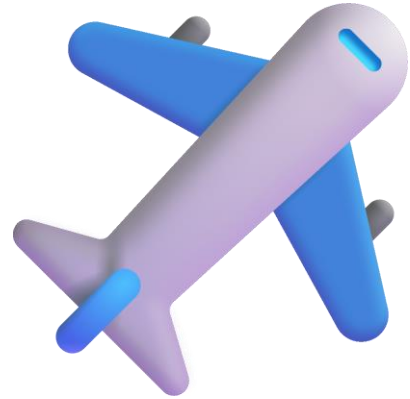
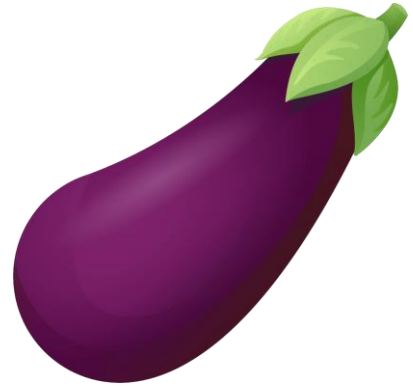
The hypothalamus controls the four F's







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The pituitary gland is the master of the endocrine system

Hormone secretion

PSYCHOLOGY

The thalamus relays messages

Sensory and motor relay

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The amygdala decodes fear and emotion from sensation

Fear, anxiety

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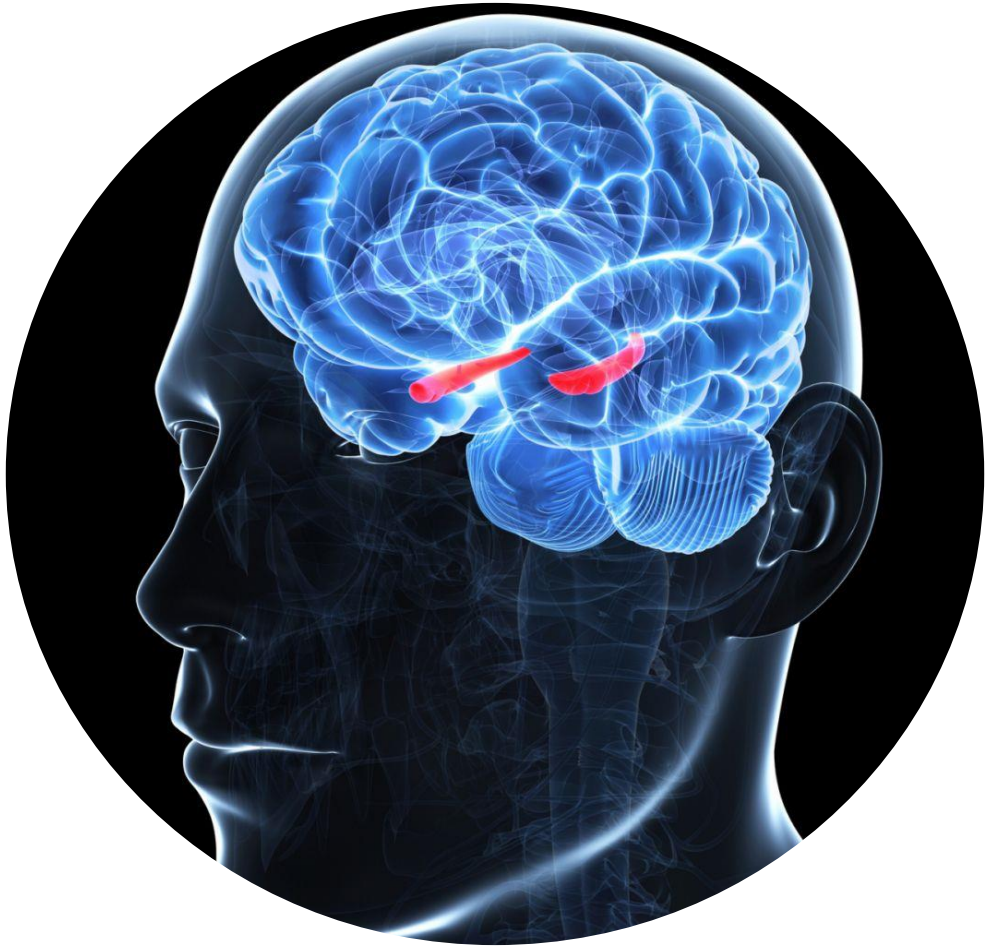
The hippocampus processes memory and navigation



Memory and retrieval

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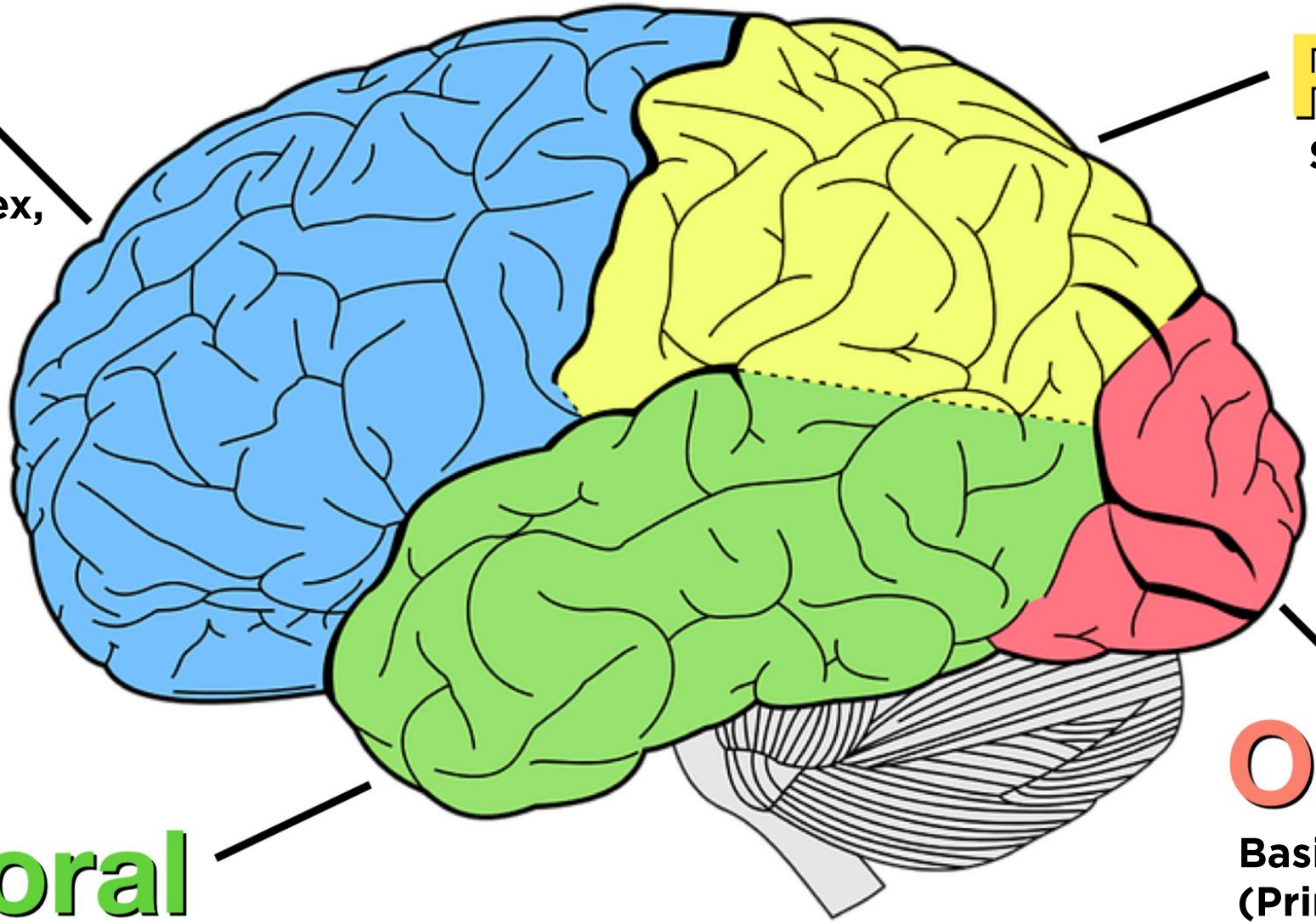
The cortex can be divided into four lobes



Frontal

Primary Motor Cortex, Decision Making, Complex Thought

Parietal

Spatial Processing, Somatosensory Processing

Occipital

Basic Visual Processing (Primary Visual Cortex)

Temporal

Primary Auditory Cortex, Higher Visual Processing, Memory, Language

PSYCHOLOGY

How does brain damage affect us?

Functional Localization

Specific functions for specific parts of the brain

Frontal Lobe Damage
Personality changes
Motor control

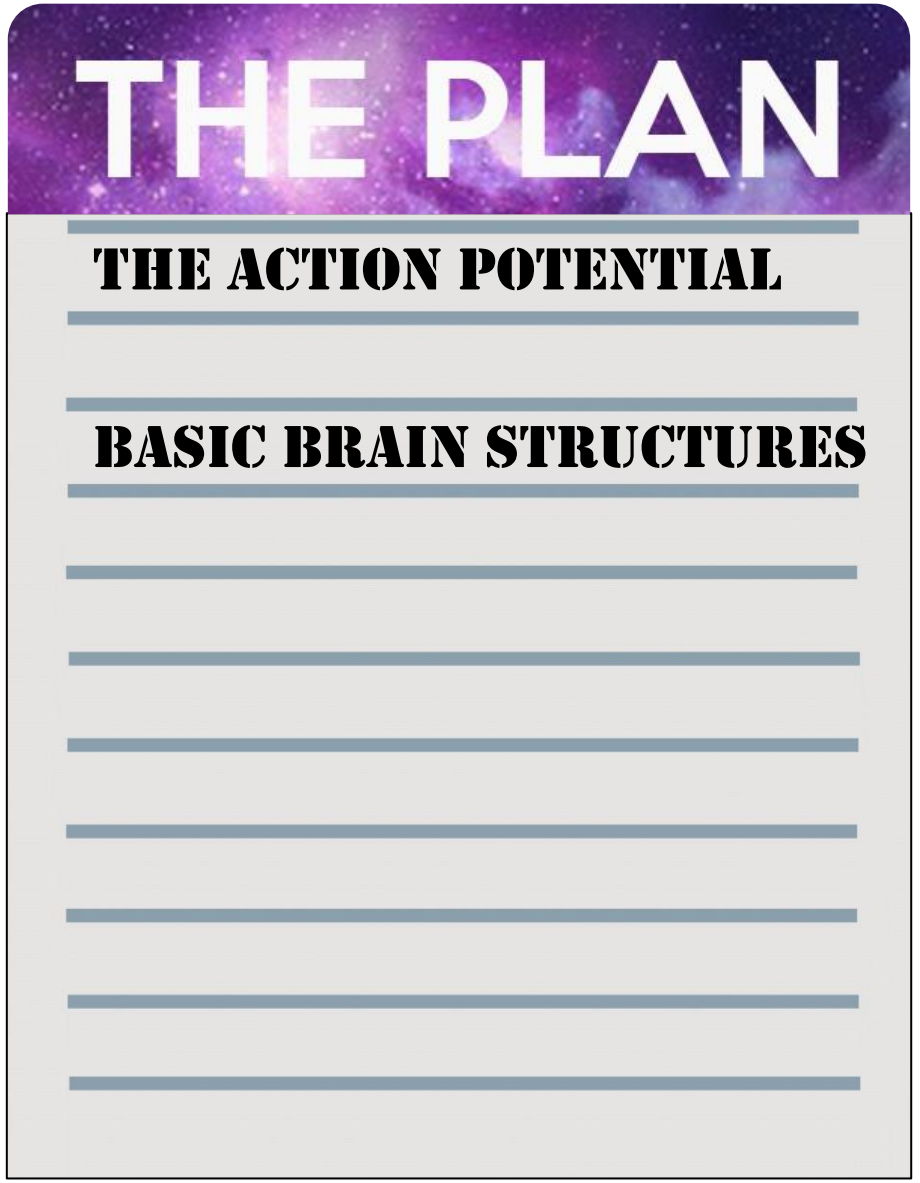
Parietal Lobe Damage
Loss of sensation
Orienting
Attention
Movement

Temporal Lobe Damage
Speech
Comprehension
Memory
Auditory Processing
(e.g., deafness)

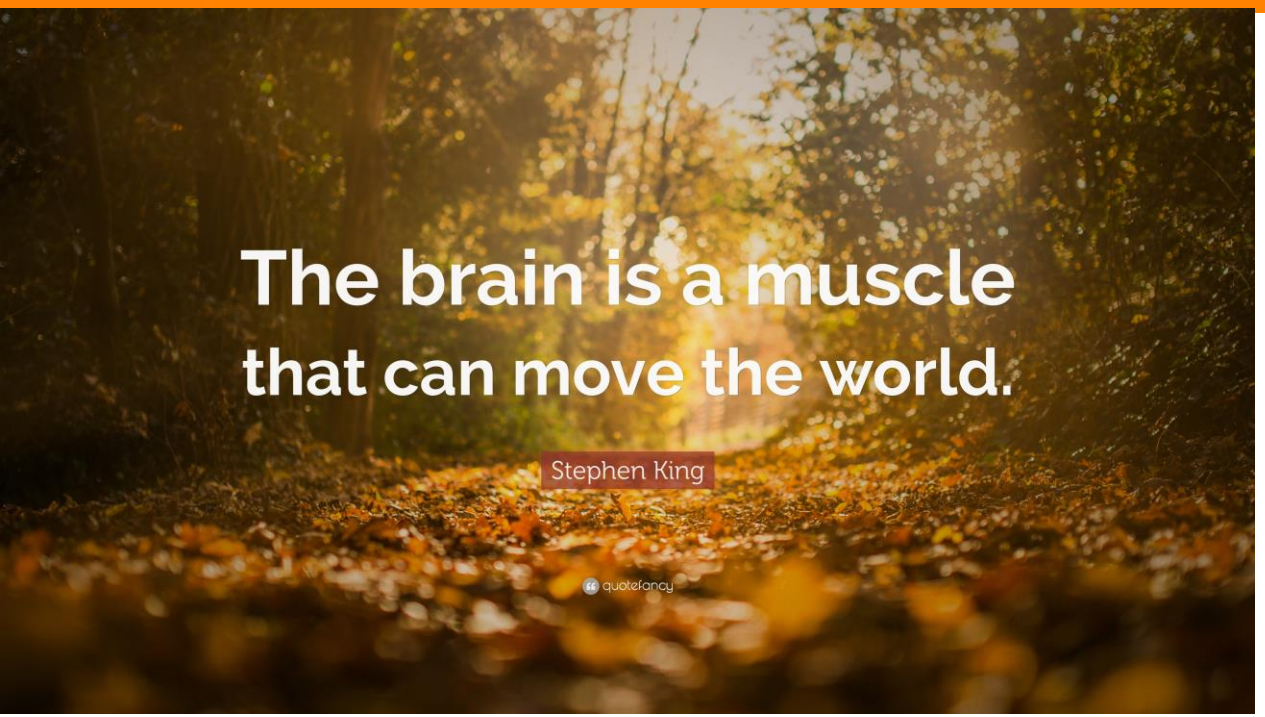
Occipital Lobe Damage
Blindness


point
solutions

What should we get out of today?



How did we do?



For y'all:

Friday Quiz 3 is **Feb 14 <3**

Reflection Journal 3 due **Feb 16**

InQuizitive due **Feb 16**