



How is the
Brain
Organized?

Module 4
The Brain

How much do you
know about YOUR
brain??


—  —

Structures of the brain



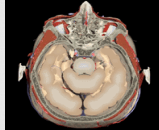
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True or False?
We Only Use 10% of
Our Brain

—  —

3

What observations can you make about the brain?



4



The Primitive Brain



The increasingly complexity of the human brain comes from new brain systems built on top of the old

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The "Old" brain



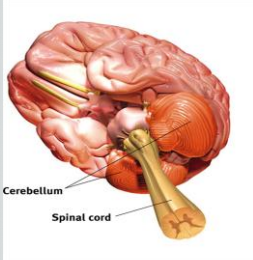
☞ These structures tend to be responsible for basic,

☞ The Brainstem is the oldest region of the human brain.

- The Medulla controls basic body functions- heart beat, digestion and breathing.

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Cerebellum



☞ "Little brain" - attached to back surface of brain stem.

☞ It helps coordinate

- Allows you to walk a straight line

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The "Old" Brain



☞ The reticular formation (RF) is a finger-shaped nerve network in the brainstem that plays an important role in controlling arousal.

- It is involved in behaviors such as walking, sleeping, and turning to attend to a sudden noise.

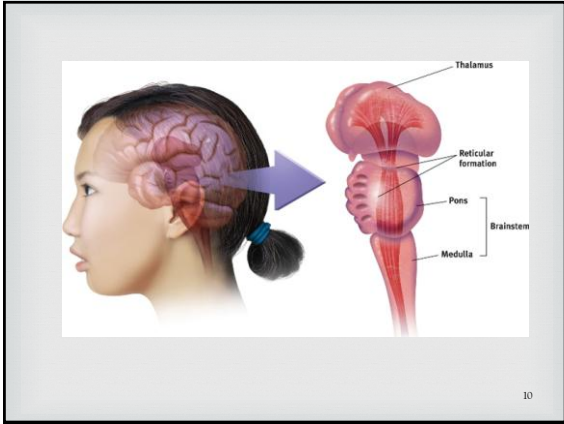
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☞ The Thalamus is a large structure of forebrain that acts

☞ Processes sensory information from the CNS before it reaches the cerebral cortex

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Not the old, but not quite the new.

❧

❧ The Limbic System is a neural system located below the cerebral hemispheres;

- _____

- _____

❧ This is the "pleasure center" of the brain

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The Hippocampus

❧

❧ The hippocampus has a special role in _____

- Individuals who suffer extensive hippocampal damage cannot retain any new conscious memories after the damage.

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The Amygdala



☞ The Amygdala consists of two lima bean-sized neural clusters linked to the emotions _____

- Associated with fear and rage, including the perception of these emotions and the processing of emotional memories.



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Charles Whitman

☞ A student at University of Texas in 1966.

☞ After killing his Mother and wife, he used a high-powered rifle and killed 14 people, wounded 32 others, from the top of the campus observation tower.



☞ *The Hypothalamus* is a pea-sized structure that controls many complex behaviors such as _____

- Linked to emotion and reward



This small structure regulates a variety of complex behaviors. If you have trouble remembering what this structure does try this...



The FOUR F's...

16



17



18



FLEE

It is always good to escape those pesky random battles.

19



20

Can pleasure become addicting?



☞ Research has shown that rats who received electrical stimulation will repeatedly press a lever which activates this region-producing pleasure (Olds & Milner, 1954).

☞ Recent research suggests that there is a link

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The "Newer" Brain



☞ The _____ (cerebral cortex) of the brain is comprised of interconnected neural cells that covers the cerebral hemispheres.

☞ _____

☞ The brain is divided into 2 hemispheres

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The hemispheres of the brain are connected



☞ The Corpus Callosum connects these hemispheres and allows



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Damage to the Corpus Callosum results in two independent brains in one skull



Split brain patients allowed researchers to discover "hemispheric specialization"

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Split Brain Research



☞ This research showed that each hemisphere of the brain is specialized

- The right brain is associated with _____
- The left brain is associated with speech and language.
 - Broca's area - _____
 - Wernicke's area - _____

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Next....More Brain, Please!



The four lobes of the cerebral cortex!

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