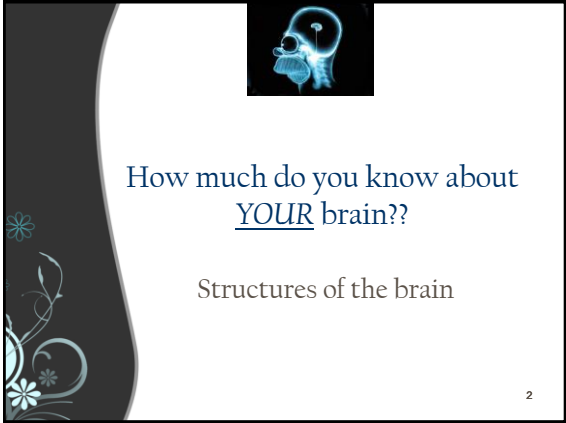


How is the Brain Organized?

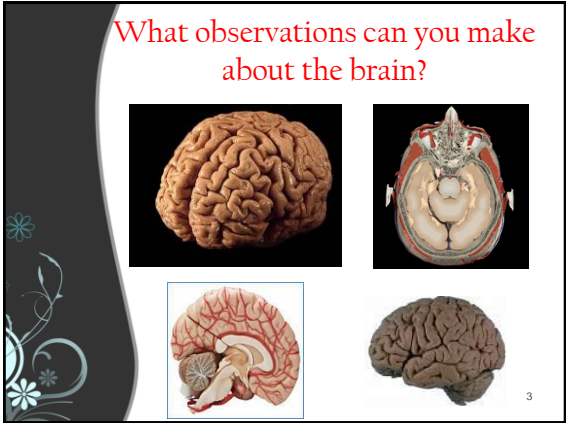
Module 4
The Brain



How much do you know about YOUR brain??

Structures of the brain

2



What observations can you make about the brain?

The Primitive Brain

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

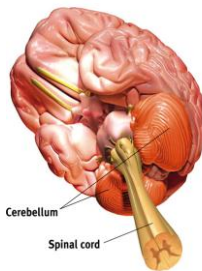
4

The "Old" brain

- These structures tend to be responsible for basic, reflexive functions.
- The *Brainstem* is the oldest region of the human brain.

- The *Medulla* controls basic body functions-

5



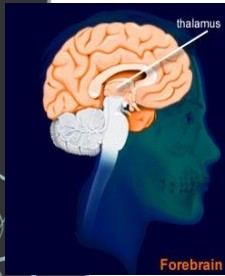
Cerebellum- "Little brain"
- attached to back surface of brain stem.

6

The "Old" Brain

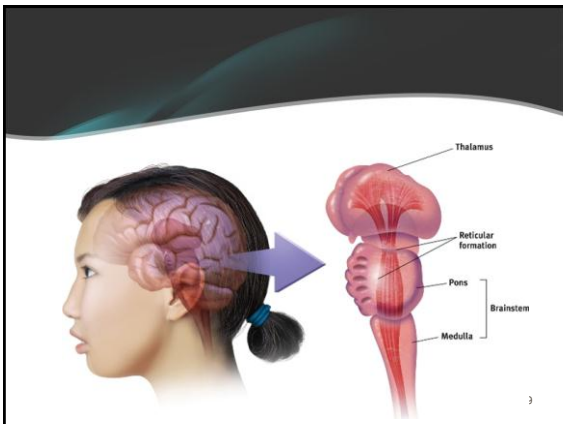
- The reticular formation (RF) is a finger-shaped nerve network in the brainstem that plays an important role in controlling arousal.

7



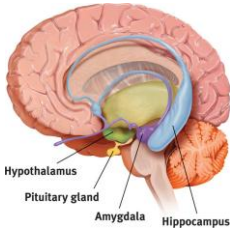
- The *Thalamus* is a large structure of forebrain
- Processes sensory information from the CNS before it reaches the cerebral cortex

8



9

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

The Hippocampus

• The *hippocampus* has a special role in _____

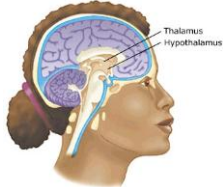
- Individuals who suffer extensive hippocampal damage cannot retain any _____

The Amygdala

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


- Associated with _____, including the perception of these emotions and the processing _____

- The Hypothalamus is a pea-sized structure that controls many complex behaviors such as eating, drinking and sexual activity.










FLEE
It is always good to escape those pesky random battles.


And...Ummm....



17

Can pleasure become addicting?

- _____
- _____
- _____
- The rats will choose to press the bar in preference over food and water, _____
- _____



Recent research suggests that there is a link between addictive behaviors and the stimulation of these areas (Volvow et al., 2002).

18

The "Newer" Brain

- The exterior covering (_____) of the brain is comprised of interconnected neural cells that covers the cerebral hemispheres.
- _____
- These wrinkles increase the surface area of the brain.

The brain is divided into 2 hemispheres

19

The hemispheres of the brain are connected

- The *Corpus Callosum* connects these hemispheres and _____



20

Corpus Callosum



- Damage to the Corpus Callosum results in two independent brains in one skull
- *Split brain patients* allowed researchers to discover “_____”

22

Split Brain Research


- This research showed that each hemisphere of the brain is *specialized*
 - The *right brain* is associated with musical ability, spatial and drawing tasks
 - The *left brain* is associated with speech and language.

23

Hemispheric Specialization

<p><u>Left Brain</u></p> <ul style="list-style-type: none"> ● Controls Right Side of Body ● Right Side Visual Field ● Speaking ● Reading ● Logical Thinking ● Analytical Skills ● Sequential Processing 	<p><u>Right Brain</u></p> <ul style="list-style-type: none"> ● Controls Left Side of Body ● Left Side Visual Field ● Spatial Processing ● Facial Recognition ● Music ● Emotional Expression ● Holistic Thinking
---	---

24



More Brain Next Class!

The four lobes of the cerebral cortex!

25
