

## **What is the nervous?**

The body's electrochemical communication system. Not alive without it?

## **What is a electrochemical communication system?**

It is a system that uses electricity as well as chemical

## **What is behavioral Neuroscience?**

Is the study of how the nervous system affects and controls behavior.

## **What do Behavior Neuroscientists do?**

### **Four Key characteristics of the nervous system**

- **Complexity**- Over 100 billion nerve cells. And each one talks to 10,000 friends, and each one of those friends talks to 10,000 friends, and so on, and so on, and so on...
- **Integration**- is yours senses of reality. This creates your next moment in time. This is creating a unified experience.
- **Electrochemical Transmission**- Communication from nerve cell to nerve cell. Are both Electrical Impulses and Chemical Messages. Communication from one nerve cell to the next. Important for communication.
- **Adaptability**- The nervous system is adaptable.
- **Plasticity**-The brain has a special capacity to change and adapt as we experience new things or encounter injuries. Once we get older we keep the same neuron and they can be damaged.

### **Organization of the Nervous System**

Two main divisions of the nervous system are the central and the peripheral system.

#### **Peripheral Nervous System**

- **Autonomic Nervous System(Define)**
  - **Sympathetic**-activated when you are scared.
  - **Parasympathetic** – is when you feel calm. Heart rate slow, blood rushes to the abdomen.
- **Somatic Nervous System**- this is all your sense that carry the information to the muscle to function.

#### **The Brain:**

##### **Three Major Divisions:**

- **Hind Brain(Stem)**-controlled our motor functions

- **Medulla**- transition between brain and spinal cord. In charge of critical body functions. You need it for your sensory information.
- **Cerebellum**- it's a mini brain on the back of the brain. It is in charge of movement and how we have our balance. Coordinates your movements.
- **Pons**- contains information on sleep. In charge of arousal and sleep. The ability to swallow, gag, throw up. Regulate when you sleep when you wake up partially.
- **Midbrain(Center)**-these had to do with vision.
  - **Tectum and Tegmentum - Visual reflexes**
  - **Reticular Formation-in charge of arousal**
- **Forebrain(Petals)**
  - **The Limbic system**-emotions and memory. In charge of how you feel. And recording the memories and your behavior of how you feel.
    - **Amygdala**-processes most of your emotions. Good at making you feel anxious and fearful.
    - **Hippocampus**- Think learning and memory. Helps you take information and store it and turn it into a memory. And stores things that have meaning.
    - **Hypothalamus**- in charge of making your body act appropriate to a feeling. In charge of regulating your functions. Anything that requires regulation.
  - **Thalamus**- all sensory info is routed to it.( It's like a train station).And then is sent to the appropriate area.
  - **Basal Ganglia**- group of structures that are in charge of movement.
  - **Cerebral Cortex**- largest structure in your brain. Takes up  $\frac{3}{4}$  of your brain. Brain is wrinkly so you can compact your neurons.
    - **Right Hemisphere**
      - Spatial Locations
      - Process Faces
      - Art/Music
      - Creativity

- "Whole units"
- **Left Hemisphere**
  - Logic
  - Mathematics
  - Verbal Skills
  - Conscious awareness
- **Four Lobe's in the Cerebral Cortex**
- **The Corpus Callosum**-connects hemispheres.
- **Contralateral Organization**-opposite side.
  - **Frontal Lobe-**
    - **Motor Cortex**
  - **Temporal Lobe-**
    - **Prefrontal Cortex**
  - **Parietal Lobe-**
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  - **Occipital Lobe**
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### **Imaging the Brain**

- **CT scan(Computerized Tomography)**-x-rays. Takes a lot of x rays.
- **Magnetic Resonance Imaging(MRI)**- takes an image that has great resolution. It uses a huge magnet. Paints a picture from the atoms.
- **fMRI**

### **Neurons-**

**Whats a cell?**

**What does a neuron look like?**

**What are dendrites?**

**What is an axon?**

**What are Terminal Buttons?**

**What are the four parts of the neurons?**

**What is Neural Impulse?**

**What are the seven Neurotransmitters?**

**Endogenous chemicals-** Chemicals that your body makes.

- **Acetylcholine(ACh)**