**Neuron, Brain, & Nervous System Webquest**

http://tinyurl.com/2e4ynbm

1. **Make a Mad, Mad, Mad Neuron**

Build your own monster neural circuit

1. Define the following structures used to make your mad neuron.

|  |  |
| --- | --- |
| Cell body |  |
| Dendrites |  |
| Axon terminal |  |
| Nucleus |  |
| Myelin sheath |  |
| Axon |  |

2. Draw and label your neural circuit

|  |
| --- |
|  |

1. **Crossing the Divide: How Neurons Talk to Each Other**

3. How do nerves communicate with one another?

4. What is inside a vesicle? Give one example.

5. What do the receptors do?

6. Why use a second messenger?

7. What does the second messenger do?

8. When is the impulse terminated?

1. **The Other Brain Cells**

9. Identify the function of the different glia cells in the brain.

|  |  |
| --- | --- |
| Oligodendrocytes |  |
| Microglia |  |
| Astrocytes |  |

10. How can astrocytes help defend against disease?

1. **Label A Neuron & Label a Brain (MultiView)**

|  |
| --- |
| **A.** **B.****C.****D.****E.****F.****G.****H.****I.****J.****K.****L.****M.****N.****O.**Label Neuron with word bank.JPG |
| Label Neuron 2.JPGLabel Neuron 3.JPG**A.****B.****C.****D.****E.****F.**Label Brain 1.JPGA.B.C.D.E.F.G.H.I.J.K.L.M.N.O.P.Q.R.S.T.U.V.W.X.Y.Z.AA.BB.CC.DD.EE.FF.GG.HH.II.JJ.KK.Label Brain 2.JPGLabel Brain 3.JPGuntitled.JPG |

1. **Neuron Animation Video Questions:**

12. Label the charges (inside and outside) of a neuron at rest on the diagram below:

 

13. When a neuron is stimulated, in what direction does Na+ move?



14. In what direction does K+ move?

15. Label the ions (circles) on the diagram to the right AND

 draw arrows showing the direction of ion movement.

**Resting & Action Potential**

16. So what effect will the voltage difference have on the Na+ ions when the Na+ channels first open? **A B C D**

17. Explain why that answer is correct:

18. At the end of the depolarization phase, what is the tendency for movement of a sodium ion at the mouth of a sodium channel?

1. **The sodium ion will still be pulled in most of the time.**
2. **The sodium ion will stay outside most of the time.**
3. Explain why that answer is correct:

**Quiz Questions: (Please answer with a number: 1 for 1st answer, 2 for 2nd, etc…)**

1.\_\_\_\_\_\_\_\_ Which side of the axon is more positive before the action potential?

2.\_\_\_\_\_\_\_ What causes diffusion?

3.\_\_\_\_\_\_\_ Which pair of charges will attract each other?

4.\_\_\_\_\_\_\_ If the inside of the neurons is -30mV relative to the outside, the K+ ion channel is open, what will the K+ ion tend to do?

**F: Nervous System Game:** You will get 10 body parts from a random mix. In the table, write the name of the body part, then tell how the nerve impulse travels and what section of the spinal cord the nerve connects.

|  |  |  |
| --- | --- | --- |
| **BODY PART** | **HOW THE NERVE IMPULSE TRAVELS** | **SPINAL CORD CONNECTION** |
| 1. |  |  |
| 2. |  |  |
| 3. |  |  |
| 4. |  |  |
| 5. |  |  |
| 6. |  |  |
| 7 |  |  |
| 8. |  |  |
| 9. |  |  |
| 10. |  |  |

**F: The Human Brain Map:**

|  |
| --- |
| **CEREBRUM** |
| Describe what the cerebrum looks like: |  |
| What is the cerebral cortex? |  |
| Name the 4 lobes that make up the cerebral hemispheres | 1.2.3.4. |
|  **\*\*Right & Left Hemispheres\*\*** |
| What joins the left & right hemispheres? |  |
| Explain how someone with damage to the left hemisphere of the brain would act in comparison to someone with damage to the right hemisphere. |  |
|  **\*\*Frontal Lobe\*\*** |
| Where is the frontal lobe located and what can be said for its size? |  |
| Provide three functions of the frontal lobe. | 1.2.3. |
| What does the motor cortex do? |  |
|  **\*\*Cerebral Cortex\*\*** |
| What do the nerves of the cerebral cortex do? |  |
|  **\*\*Motor Cortex\*\*** |
| Where is the motor cortex located? |  |
| What is the function of the motor cortex? |  |
| Name 3 places to which the motor cortex provides fine motor skills. | 1.2.3. |
| Describe what often happens when damage occurs to the Broca’s area. |  |
|  **\*\*Sensory Cortex\*\*** |
| In which lobe of the brain do you find the sensory cortex? |  |
| Name 3 places on the body that contain the most sensory receptors. | 1.2.3. |
|  **\*\*Parietal Lobe\*\*** |
| Provide 4 examples of tasks carried out in the parietal lobe of the brain. | 1.2.3.4. |
|  **\*\*Temporal Lobe\*\*** |
| Provide 2 examples of tasks carried out in the temporal lobe of the brain. | 1.2. |
| Describe the effect of brain damage done to the Wernicke’s area. |  |
|  **\*\*Occipital Lobe\*\*** |
| What is the function of the occipital lobe? |  |
| **LIMBIC SYSTEM** |
| What is the function of the limbic system? |  |
| What is another name for the limbic system? |  |
|  **\*\*Olfactory Bulbs\*\*** |
| What is the function of the olfactory bulbs? |  |
|  **\*\*Hypothalamus\*\*** |
| What conditions within the body are kept constant by the hypothalamus? |  |

|  |  |
| --- | --- |
|  **\*\*Thalamus\*\*** |  |
| Why is the thalamus so essential to our well being? |  |
|  **\*\*Pineal Gland\*\*** |
| What hormone is secreted by the pineal gland? What does it do? |  |
|  **\*\*Hippocampus\*\*** |
| What are 2 functions of the hippocampus? | 1.2. |
|  **\*\*Amygdale\*\*** |
| What is the job of the amygdala? |  |
|  **\*\*Pituitary Gland\*\*** |
| Why is the pituitary gland referred to as the master gland? Give examples. |  |
| **BRAIN STEM** |
| What are 5 jobs of the brain stem? | 1.2.3.4.5. |
|  **\*\*Midbrain\*\*** |  |
| What 2 reflex centers are found in the midbrain? | 1.2. |
|  **\*\*Pons\*\*** |  |
| The pons serves as a relay station between what 2 structures? |  |
| The pons regulates what essential function? |  |
|  **\*\*Medulla Oblongata\*\*** |  |
| The medulla oblongata serves as a relay station between what 2 structures? |  |

|  |  |
| --- | --- |
| The medulla oblongata is responsible for what 5 actions? | 1.2.3.4.5. |
|  **\*\*Cerebellum\*\*** |
| What is the cerebellum responsible for coordinating? |  |

**If there is extra time….**

* Neuron Jigsaw Puzzle
* What Sex Is Your Brain?
* Face Memory Test
* I.Q. Test
* Left or Right Brained?