

Name:

Date:

Period

**Nervous System: WebQuest**

**Part 1 - Body Organization; Cells, Tissues, Organs, Organ Systems**

Go to <http://web.jjay.cuny.edu/~acarp/NSC/14-anatomy.htm>

Read the text and answer the following questions.

1. What is a tissue? \_\_\_\_\_

2. Name & Describe the 4 types of tissues in the human body?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. What is an organ? \_\_\_\_\_

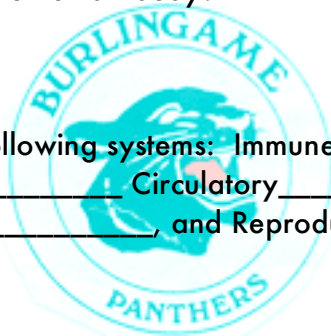
4. Name 4 different organs in the human body \_\_\_\_\_

5. Explain why the skin is classified as an organ (what tissues make up the skin? \_\_\_\_\_

6. What is an organ system? \_\_\_\_\_

7. Name the 10 organ systems in the human body?

8. Describe the major role of the following systems: Immune \_\_\_\_\_,  
Nervous, \_\_\_\_\_, Circulatory \_\_\_\_\_,  
Respiratory \_\_\_\_\_, and Reproductive \_\_\_\_\_



**Part 2 - Homeostasis**

Go to [http://www.colorado.edu/epob/academics/web\\_resources/cartoons/homeo.html](http://www.colorado.edu/epob/academics/web_resources/cartoons/homeo.html)

Read the text and answer the following questions.

1. In your own words describe the concept of homeostasis in relation to your body.

\_\_\_\_\_  
\_\_\_\_\_

2. Name several factors that must be maintained constant in order for your body to remain alive.

3. What is negative feedback and how does it relate to homeostasis?

4. Read the analogy of maintaining a constant speed when driving and how body temperature is maintained at 98.6°F. Draw a diagram showing temperature regulation as negative feedback.

\_\_\_\_\_

### Part 3 - Neurons

Go to <http://health.howstuffworks.com/brain1.htm>

Read the text and answer the following questions.

1. What is a neuron? \_\_\_\_\_
2. Name & describe the 3 basic parts of a neuron.  
\_\_\_\_\_
3. Draw a neuron and label the parts.

4. Name & describe 4 different types of neurons  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

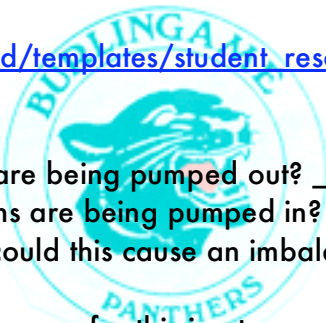
### Part 4 - The Sodium/Potassium Pump

Go to

[http://www.brookscle.com/chemistry\\_d/templates/student\\_resources/shared\\_resources/animations/ion\\_pump/ionpump.html](http://www.brookscle.com/chemistry_d/templates/student_resources/shared_resources/animations/ion_pump/ionpump.html)

View the animation

1. How many positive sodium ions are being pumped out? \_\_\_\_\_
2. How many positive potassium ions are being pumped in? \_\_\_\_\_
3. Since the numbers are different could this cause an imbalance of charge on either side of the membrane? \_\_\_\_\_
4. What molecule is providing the energy for this ion transport? \_\_\_\_\_
5. What is the process called when particles are being transported against the concentration gradient across a membrane? \_\_\_\_\_



## Part 5 – The Nerve impulse & Synapse

Go to [http://www.bris.ac.uk/synaptic/public/basics\\_ch1\\_2.html](http://www.bris.ac.uk/synaptic/public/basics_ch1_2.html)

It's your job in this section to learn how neurons conduct an electrical impulse by using the action potential. Read the text, view the animation and answer the questions as a guide to obtaining this knowledge.

1. Neurons maintain different concentrations of certain ions across their cell membranes. What ion is in high concentration outside the neuron? \_\_\_\_\_
2. Which ion is in high concentration inside the neuron? \_\_\_\_\_
3. What specialized protein exists in the neural cell membrane? \_\_\_\_\_
4. What is its function? \_\_\_\_\_
5. Under resting conditions which ion leaks more. The sodium leaking inward or the potassium leaking outward? \_\_\_\_\_
6. The result of the leaks makes the outside of the cell charged \_\_\_\_\_ and the inside of the cell charged \_\_\_\_\_. The cell is said to be \_\_\_\_\_.
7. Since sodium is in high concentration outside of the cell what happens if the sodium channel opens in the membrane? Which way does the sodium move? \_\_\_\_\_.
8. This makes the neuron momentarily \_\_\_\_\_ charged. The cell is said to be \_\_\_\_\_.
9. This switch in membrane potential is the \_\_\_\_\_.
10. View the animation to see how the action potential moves down the length of the cell (in one direction). Summarize what's happening.

\_\_\_\_\_

\_\_\_\_\_

11. What does the disease Multiple Sclerosis have to do with all this?

\_\_\_\_\_

\_\_\_\_\_

Go to [http://www.lifesci.ucsb.edu/~mcdougal/neurobehavior/modules\\_homework/lect2.dcr](http://www.lifesci.ucsb.edu/~mcdougal/neurobehavior/modules_homework/lect2.dcr)

View the animation of the neuron. It is showing why there is different concentrations of sodium ( $\text{Na}^+$ ) and Potassium ( $\text{K}^+$ ) ions and the resulting difference in charge of the neuron in the resting state.

12. Summarize the animation. Draw a diagram and label what's going on.

Go to <http://www.blackwellpublishing.com/matthews/actionp.html>

View this animation. It shows the action potential moving in one direction along the neuron's axon.

13. What is happening to the charge on the outside and inside of the cell as the action potential moves. \_\_\_\_\_

Go to [http://www.mind.ilstu.edu/flash/synapse\\_1.swf](http://www.mind.ilstu.edu/flash/synapse_1.swf)

This animation illustrates how a nerve impulse travels from one neuron to another. Answer questions as you step through the animation.

14. Neurons communicate with other neurons at \_\_\_\_\_.
15. At the synapse the \_\_\_\_\_ of one neuron comes close to the \_\_\_\_\_ of another neuron
16. They communicate by using what kind of messengers \_\_\_\_\_.
17. Summarize what happens when an action potential reaches an axon terminal.

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### Part 6 - Nervous System - The Brain

Go to <http://www.pbs.org/wnet/brain/3d/index.html>

View the parts of the brain and describe their location and function.

1. Frontal Lobe -
2. Parietal Lobe -
3. Occipital Lobe -
4. Cerebellum -
5. Temporal Lobe -
6. Brain Stem -
7. Corpus Callosum -
8. Limbic System & Thalamus -



**Part 7 - Nervous System - Hearing**

Go to [http://www.bbc.co.uk/science/humanbody/body/factfiles/hearing/hearing\\_animation.shtml](http://www.bbc.co.uk/science/humanbody/body/factfiles/hearing/hearing_animation.shtml)

View the animation and read the text.

1. Describe how you hear

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**Part 8 - Drugs & the Nervous System**

Go to <http://www.wnet.org/closetohome/animation/neuron-main.html>

View the animation and read the text

1. Describe how drugs of abuse work on the brain. (draw a diagram to help your explanation)

