**Class Activity #10 (Physiology)**

**Student Presentations, Respiratory Control and the Renal System**

**1. Suggestions for how to find a good Scientific Article that you like.**

**a)** Think of a topic that interests you and involves physiology.

**b)** Conduct a general search online, then focus on a more specific topic.

**c)** Use the Miramar Library “ProQuest Research Library”

<https://login.libraryaccess.sdmiramar.edu/login?qurl=http%3a%2f%2fsearch.proquest.com%2f%3faccountid%3d38871%26selectids%3d10000025>

**d)** Target Date for Student Completion and Posting will be announced.

**2. Control of Respiration and Intro to the Renal System**

*Read and use your textbook, worksheets, lecture notes, slides or internet to* ***select*** *best answers.*

**1)** Fill in this **Feedback Loop**: If *arterial* pH decreases, then this will be detected by a type of receptor that in general is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, because of what it detects. Specifically they are called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which are located in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They then signal the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the CNS. This then signals the effector tissue, primarily the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and will act to (increase/decrease) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, thereby \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ levels of \_\_\_\_\_\_\_\_ in arterial blood.

**2)** There are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the lung tissue that detect changes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They are triggered when the lunges are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They then send signals specifically to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is located in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The specific region then acts to \_\_\_\_\_\_\_\_\_\_\_\_\_ another region called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and this works to then prevent \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the lungs.

**3)** If you were hyperventilating, why would breathing into a paper bag prevent you from fainting?

**4)** If there is an increase in CO2 in CSF (and the PCO2 is also high in cerebral capillaries), this will cause a shift to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the buffer equation.

**Write the Equation here**:

**5)** As a consequence, if the Eq. above is now moving in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ direction, then more \_\_\_\_\_\_\_\_\_\_\_\_ will be made. This causes a/an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the pH of CSF. Due to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on cerebral capillaries, any excess \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cannot leave the CSF by moving into the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Therefore, the concentration of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ will continue to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It is when this excess in \_\_\_\_\_\_\_\_\_ binds to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that are located in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the brain, that this triggers the response to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the pulmonary \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This will then cause a/an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the \_\_\_\_\_\_\_\_\_\_ levels, which will then shift the Eq. in the \_\_\_\_\_\_\_\_\_\_ direction which will then cause a/an \_\_\_\_\_\_\_\_\_\_ in the pH of the CSF.

**3. Introduction to the Renal System**

**1)** List and briefly describe the 5 main functions of the renal system (as discussed in lecture\_.

1)

2)

3)

4)

5)

**2)** What are the 3 Nitrogenous wastes normally found in Blood? What are they the product of?

1)

2)

3)

**3)** Angiotensinogen is made by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is (active/inactive) until it is acted on by the substance \_\_\_\_\_\_\_\_\_\_, which is released by the \_\_\_\_\_\_\_\_\_\_\_\_\_ in order to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Bonus Multiple Choice Questions**

**1.** Which of the following areas of the brain can influence a person’s breathing?

**1.** pons **2.** limbic system **3.** medulla oblongata **4.** cerebellum **5.** thalamus **6.** cerebrum

**a)** 1 and 3 **b)** 3, 2, 5 and 1 **c)** 4, 3, 2 and 1 **d)** 4 and 5 **e)** 6, 1, 3 and 2

**2.** If breathing air at 30m under water, the changes in pressure can have which effects on the body?

**1.** oxygen narcosis **2.** decreased solubility of N2 **3.** increased reactivity of H2

**4.** decreased solubility of CO2 **5.** increased solubility of O2 **6.** nitrogen narcosis

**a)** 1, 6 and 5 **b)** 3, 5 and 6 **c)** 2 and 5 **d)** 6, 2 and 4 **e)** 1, 5, 6 and 2

**3.** Using the answer code below, indicate which chemoreceptors are being described.

**A** = peripheral chemoreceptors, **B** = central chemoreceptors, **C** = both chemoreceptors, **D** = neither

**1.** \_\_\_\_ stimulated by a drop in arterial PO2 to 80 mm Hg.

**2.** \_\_\_\_ stimulated by an elevated [H+] arterial blood.

**3.** \_\_\_\_ stimulated by an elevated [H+] in CSF.

**4.** In In the entire renal system, there are \_\_\_\_\_\_\_\_\_ nephrons.

**a)** over 1 million **b)** fewerthan 2 million **c)** over 2 million **d)** over 3 million **e)** over 4 million

**5.** The glomerular filtration rate (GFR) in a normal adult person is about

**a)** 75 ml/min **b)** 180liters a day **c)** 180 ml/min **d)** 125 liters a day **e)** 125 ml/hour