**AP BIOLOGY REVIEW – DAY 5**

**ANIMALS (ANATOMY/PHYSIOLOGY), CELL SIGNALING**

1. What are the three primary germ layers and what organ systems do each form in animal development?
   1. .................................................................................................................
   2. .................................................................................................................
   3. ................................................................................................................
2. What are the two main types of immune system defenses in animals?...................................................................................
3. List and define 5 non-specific immune responses?
   1. ........................................................................................................................................
   2. ........................................................................................................................................
   3. ........................................................................................................................................
   4. ........................................................................................................................................
   5. ........................................................................................................................................
4. What is the difference between cell mediated immunity and humoral immunity?
   1. ....................................................................................................................................................................................
5. Differentiate between the primary and secondary immune response.
   1. ......................................................................................................................................................................................
   2. .......................................................................................................................................................................................
6. Which types of cells contribute to humoral immunity? Give the function for each type of cell.
   1. .............................................................................................................................................................................................
7. Which types of cells contribute to cell mediated immunity? Give the function of each type of cell.
   1. .............................................................................................................................................................................................
8. What is the difference between an endotherm and an ectotherm?
   1. ............................................................
   2. ...........................................................
9. Describe the peripheral vs. central nervous system
   1. .............................................................
   2. ..............................................................
10. Contrast the sympathetic and parasympathetic nervous system.
    1. ............................................................
    2. ............................................................
11. Describe the parts of a neuron.
    1. dendrites..........................................................................
    2. axon..................................................................................
    3. nodes of Ranvier...............................................................
    4. terminal branches.............................................................
    5. synaptic clefts.................................................................
12. Describe the release of neurotransmitters at a synapse................................................................................
13. Where is insulin produced and what is its function? .........................................................................................................................
14. Where is glucagon produced and what is its function? .....................................................................................................................
15. Give an example of long distance cell signaling…………………………………………………………………………………………………………………………….
16. What is the mechanism of steroid hormone function?......................................................................................................................
17. What is the mechanism of peptide hormone function?.....................................................................................................................
18. How second messengers work? ......................................................................................................................................................
    1. Give two examples of second messengers.................................................... ...............................................................
19. Define the following:
20. cleavage .................................................................................................................................
21. blastula .................................................................................................................................
22. gastrula ................................................................................................................................
23. What is the difference between the autonomic nervous system and the somatic nervous system?
24. Give the functions and locations of the following parts of the brain:
    1. brain stem .................................................................................................................................
    2. cerebellum.................................................................................................................................
    3. parietal lobe .................................................................................................................................
    4. frontal lobe.................................................................................................................................
    5. temporal lobe .................................................................................................................................
    6. occipital lobe.................................................................................................................................
25. Differentiate between learned and innate behavior.
    * 1. ...................................................................................................................................................
      2. ...................................................................................................................................................
26. Describe the following:
    * 1. Taxis .........................................................................................................................................
      2. Kinesis .....................................................................................................................................
      3. Imprinting .................................................................................................................................
      4. Conditioning (operant and classical)....................................................................................................................................................
      5. Habituation .................................................................................................................................
      6. Insight ......................................................................................................................................
27. **Draw and Label:**  a reflex arc
28. **Draw and Label:** a neuromuscular junction
29. **Draw and label:** activation of a B lymphocyte
30. **Draw and Label:**  a steroid hormone communication with target cell
31. **Draw and Label:** a protein hormone communication with a target cell
32. The rate of metabolism of a certain animal at 10ºC, is 27 µlO2 g-1h-1.

What are its rates of metabolism at 20, 30, and 40 ºC if the Q10 is 2? If it is 2.5?

**((*T*2**−***T*1)/10))**

*R*2 =*R*1 x *Q*10

|  |  |
| --- | --- |
| **Temperature** ºC | **Rate2 if Q10 = 2** |
| 20 |  |
| 30 |  |
| 40 |  |

|  |  |
| --- | --- |
| **Temperature** ºC | **Rate2 if Q10 = 2.5** |
| 20 |  |
| 30 |  |
| 40 |  |

1. The following table reports the rates of metabolism of a species at a series of ambient temperatures:

|  |  |
| --- | --- |
| Temperature (ºC) | Rate of Metabolism (µlO2 g-1h-1.) |
| 15 | 10 |
| 20 | 13.42 |
| 30 | 21.22 |

1. Calculate the Q10 values for each temperature interval.

**(10/(*T*2**−***T*1))**

*Q*10 ={*R*2/*R*1}

1. Within which temperature interval (15-20 or 20-30) is the rate of metabolism most sensitive to temperature change?

1. For this species, would a Q10 calculated for 15 to 30 ºC be as useful as several for smaller temperature ranges? Calculate that Q10 as part of your answer.

3. The reaction rate for a certain process at **14** ºC **is 15 units / time.**

(a) What would be the reaction rate at 20 ºC if the Q10 = 1?