LYMPHATIC SYSTEM LAB WORKSHEET

ACTIVITY 1: Answer the following questions

1. What is lymph? What is the normal composition of lymph? How does the composition of lymph differ from that of blood?

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2. Describe the structure of lymphatic capillaries emphasizing on the unique features. Into what structures do they drain?

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3. Which major body regions drain lymph to the right lymphatic duct?

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4. What is lymphedema? What can cause lymphedema? Describe at least two different causes.

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NAME:_________________________________________ Pd 4  DATE:________________________________________
5. What are the functions of the spleen? If your spleen were removed [splenectomy], would you be able to fight off illness or infections effectively? Why or why not?

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ACTIVITY 2: Use the following figure and terms list to answer questions # 1-5. There are more terms listed than you will need to use. Use your textbook to find the answers.

Terms List: subclavian vein, intestinal trunk, right lymphatic duct, thoracic duct, lumbar trunk, jugular trunk, cisterna chyli, azygos vein, brachiocephalic vein.

Cisterna chyli 1. What is the structure labeled #1?
Thoracic Duct 2. What is the structure labeled #2?
Right Lymphatic Duct 3. What is the structure labeled #3?
Right Lumbar Trunk 4. What is the structure labeled #4?
Left Jugular Trunk 5. What is the structure labeled #5?
Use the above figure and terms list to answer questions # 6-10. There are more terms listed than you will need to use. Use your textbook to find the answers. [spell correctly]

Terms List: thymus, tonsils, pancreas, spleen, appendix, stomach, peyers patches, thyroid gland, liver, lymph nodes.

6. What is labeled #6?

7. What is labeled #7?

8. What is labeled #8?

9. What is labeled #9?

10. What is labeled #10?

**ACTIVITY 3:** Answer the questions below.

1. What are three main functions of the lymphatic system?
   A. ______________________________________________________
   B. ______________________________________________________
   C. ______________________________________________________

2. Describe the basic structure of and function of a lymph node?
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   ______________________________________________________
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3. What is the role of the thymus in human body?
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4. Complete the following statements by writing the missing terms in the answer blanks:

Although the cardiovascular system has a pump __________ and the vessels ________, ____________ and ____________, the lymphatic system lacks two of these structures: the __________ and ______________. Like the __________ of the cardiovascular system, the vessels of the lymphatic system are equipped with ______________ to prevent the back flow. The lymphatic vessels act primarily to pick up ______________, now called ______________ and return to the bloodstream. About __________ of the fluid is returned every 24 h.

5. How do the white pulp and the red pulp of the spleen differ with respect to both cell population and function?

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6. If your tonsils are removed, how does your body develop an immune response against antigens in the throat? Are any other sources of lymphatic cells or structures located there?

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7. The radical mastectomy is an operation in which a cancerous breast, surrounding tissues, and the underlying muscles of the anterior thoracic wall, plus the axillary lymph nodes, are removed. After such an operation, the arm usually swells, or becomes edematous, and is very uncomfortable -- sometimes for months. Why?

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7. What is the function of the B cells in the immune response?

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8. What is the function of the T cells in the immune response?

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9. Distinguish between antigen and antibody.

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10. Tetanus is a severe illness that causes painful muscle spasms and convulsions, and can lead to death. If adults are advised to get a tetanus booster shot about every 10 years, what is the possible life span of the tetanus detecting memory B cells? Assuming that an adult who had a booster shot of tetanus in 2003 is exposed to tetanus by piercing his / her foot on a nasty nail, will the doctor give another tetanus shot? Why or why not?

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**ACTIVITY 4**: Match the following protective mechanism with its associated element:

<table>
<thead>
<tr>
<th></th>
<th>A. keratin</th>
<th>B. nasal hairs</th>
<th>C. cilia</th>
<th>D. gastric juice</th>
<th>E. lacrimal secretions</th>
<th>F. mucus</th>
<th>G. acid pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Traps microorganisms in the respiratory and digestive tracts</td>
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<td>2.</td>
<td>inhibits growth of bacteria and fungi in female genital tract</td>
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<td>3.</td>
<td>contains lysozymes</td>
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<td>4.</td>
<td>provides resistance against acids, alkali and bacterial enzymes</td>
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<td>5.</td>
<td>filters and traps microorganisms within inhaled air</td>
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<td>6.</td>
<td>contains concentrated HCl and protein - digestive enzymes that destroy pathogens within the stomach</td>
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<td>7.</td>
<td>propels debris - laden mucus from lower respiratory passages</td>
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</table>
ACTIVITY 5: STUDYING the microscopic anatomy of lymph node and spleen [100 X & 400 X]

Observations [spleen, 100 X]: Note down the descriptions of what you see under the microscope.

Observations [lymph node, 100 X]: Note down the descriptions of what you see under the microscope.

ACTIVITY 6: Quiz on Endocrine system