### 24.1 – 24.5 Introduction to the Immune System

Video resources: Immune System (http://www.bozemanscience.com/immune-system) and Crash Course Biology: Immune System (https://www.youtube.com/watch?v=CeVtPDjJBPU&list=PL3EED4C1D684D3ADF&index=32)

<table>
<thead>
<tr>
<th>FUNCTION OF THE IMMUNE SYSTEM</th>
<th>Define Pathogen:</th>
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<table>
<thead>
<tr>
<th>2 DIVISIONS OF THE IMMUNE SYSTEM</th>
<th></th>
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<tbody>
<tr>
<td>Innate (Non-Specific)</td>
<td>Adaptive (Specific)</td>
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<table>
<thead>
<tr>
<th>COMPONENTS OF INNATE IMMUNITY</th>
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<tbody>
<tr>
<td>External Barriers</td>
<td>Internal Barriers</td>
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</table>

Place an * next to those components that PREVENT infection and a $ next to those that only work AFTER an infection.

<table>
<thead>
<tr>
<th>HOW DO EACH OF THE FOLLOWING CONTRIBUTE TO IMMUNE FUNCTION?</th>
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<tbody>
<tr>
<td>Phagocytic Cells</td>
<td></td>
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<tr>
<td>What are two examples of phagocytic cells?</td>
<td></td>
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<tr>
<td>Complement System</td>
<td></td>
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<tr>
<td>Inflammation and Histamine</td>
<td></td>
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<table>
<thead>
<tr>
<th>WHAT ARE THE TWO MAIN FUNCTIONS OF THE LYMPHATIC SYSTEM?</th>
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<tbody>
<tr>
<td>1.</td>
<td>Define lymph node.</td>
</tr>
<tr>
<td>2.</td>
<td>Define lymph.</td>
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</tbody>
</table>
• What other organ system is the lymphatic system closely associated with?

• How does fluid that enters the lymphatic system returned to the blood?

**Define Adaptive Immunity – How Does It Differ From Innate Immunity?**

<table>
<thead>
<tr>
<th>Define antigen</th>
<th>Define antibody</th>
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**Role of Lymphocytes in Adaptive Immunity**

What are lymphocytes? What are their function?

Where do they originate from?

<table>
<thead>
<tr>
<th>Summarize the characteristics of B – Cells:</th>
<th>Summarize the characteristics of T – Cells:</th>
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</table>

**2 Branches of Adaptive Immune System Provide Dual Defense**

<table>
<thead>
<tr>
<th>Humoral Immune Response</th>
<th>Cell Mediated Immune Response</th>
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<tbody>
<tr>
<td>Describe:</td>
<td>Describe:</td>
</tr>
<tr>
<td>What types of pathogens does the humoral response defend/work against?</td>
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</tr>
<tr>
<td>What lymphocytes are responsible for humoral response?</td>
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</tr>
</tbody>
</table>
REVIEW QUESTIONS
1. The first line of defense against infection is _____. (24.1)
   a. antibiotics
   b. the immune system
   c. the inflammatory response
   d. the skin and mucous membranes

2. Which of the following cells would be a part of the nonspecific, second line of defense? (24.1)
   a. macrophages
   b. B cells
   c. cytotoxic T cells
   d. prostaglandins

3. The process by which a white blood cell engulfs and destroys a bacterium is called _____. (24.1)
   a. exocytosis
   b. phagocytosis
   c. pinocytosis
   d. cyclosis

4. Macrophages and neutrophils defend against pathogens by _____. (24.1)
   a. secreting lysozyme
   b. producing antibodies
   c. punching a hole in the plasma membrane of the pathogen, causing the cell to burst
   d. phagocytizing pathogens

5. Following tissue damage or the entry of microorganisms, an inflammatory response may be initiated by the _____.(24.2)
   a. increased blood flow to an infected or injured area
   b. accumulation of phagocytes in an injured area
   c. release of chemicals such as histamine by damaged cells
   d. release of interferon by infected cells

6. Which of the following is part of the inflammatory response? (24.2)
   a. division of B and T lymphocytes to produce an army of effector cells
   b. massive production of antibodies
   c. constriction of the arterioles
   d. dilation of the capillaries

7. Which of the following is an immediate function of histamine? (ebook Module 24.2)
   a. decreasing the systemic blood pressure
   b. decreasing the permeability of local capillaries
   c. causing local arterioles to contract
   d. causing local swelling of the affected tissue

8. What can white blood cells do that helps them carry out their defensive functions more effectively? (24.2)
   a. synthesize hemoglobin
   b. reabsorb their nuclei and other cell organelles
   c. swim against the flow of blood to the site of injury
   d. migrate into and out of blood vessels

9. Functions of the lymphatic system include _____. (24.3)
   a. producing digestive enzymes and absorbing nutrients
   b. filtering nitrogenous wastes from the blood
   c. return of fluid to the circulatory system and fighting infections
   d. transport of oxygen to body tissues
10. Which of the following is a lymphatic organ? (24.3)
   a. interstitial fluid
   b. thymus
   c. spleen
   d. blood

11. A substance that causes an immune response is called a(n) _____.
    (24.4)
    a. antibody
    b. antigen
    c. complement
    d. interferon

12. A macromolecule produced in the body that recognizes another molecule as "foreign" to the body is a(n)
    _____.
    (24.4)
    a. lymphocyte
    b. antibody
    c. platelet
    d. antigen

13. What is the primary cell type involved in humoral immunity? (24.5)
    a. macrophages
    b. natural killer cells
    c. B cells
    d. T cells

14. The thymus is most active during childhood. A child with a malfunctioning thymus will have trouble with
    _____.
    (24.5)
    a. leukocyte production
    b. cell-mediated immunity
    c. humoral and cell-mediated immunity
    d. humoral immunity

Answers:
   humoral and cell-mediate immune responses)