

Immunity Worksheet
Honors Anatomy

Pages 394-396

Fill in the table about nonspecific defenses of the human body.

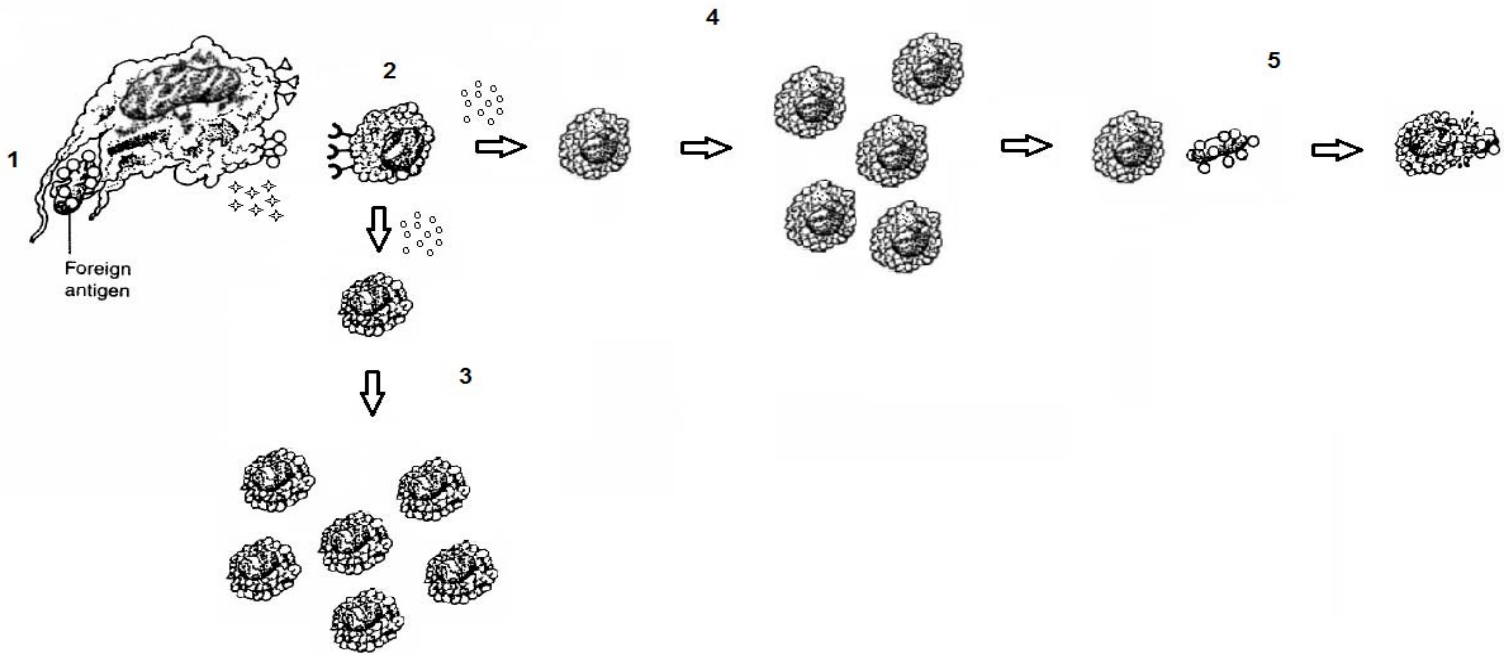
Name of Nonspecific Defense		How does this defense mechanism defend and protect the body?
1.	Barrier	
2.	Inflammatory Response	
3.	Complement Proteins	
4.	Interferon	
5.	Phagocytic Cells	
6.	Natural Killer Cells	

Complete the paragraph about the inflammatory reaction.

The inflammatory response begins when there is 1 to tissues. This causes the release of 2 _____, such as histamine, and the attraction of white blood cells, such as 3 , that remove microorganisms and dead tissue. Three events occur during the inflammatory response. The first event is 4 of the blood vessels, which increases 5 and brings phagocytes and other white blood cells to the area. The second event is the chemotactic attraction of 6 _____, which leaks out of the blood vessels and into the damaged tissue. The third event is the increased vascular 7 of the blood vessel, which allows fibrinogen and complement to enter the damaged tissue. The process of releasing 8 _____ and attracting 9 continues until the damage is repaired. There are symptoms of the inflammatory response. Redness, heat, and 10 are due to the increased 11 flow and increased vascular 12 . 13 is caused by swelling and by chemical mediators acting on 14 _____. Loss of 15 results from tissue destruction, swelling, and pain.

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14. _____
15. _____

Using different colors and the list below, color and label the different parts of cell-mediated immunity.



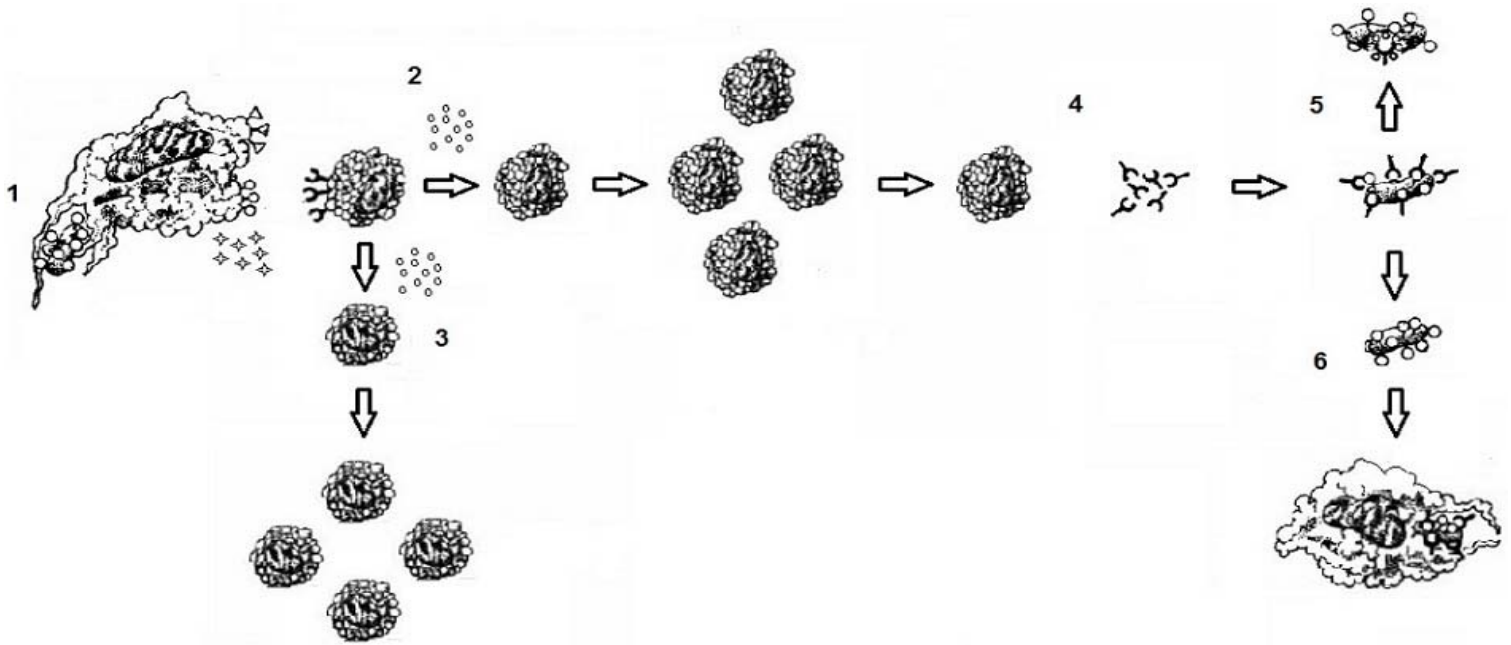
- Antigen
- Helper T-cell
- Interleukin-2 (cytokine)
- Memory T-cell
- Cytotoxic T-cell
- Interleukin-1 (cytokine)
- Macrophage
- Pathogen

Complete the paragraph about cell-mediated immunity.

In Step 1 of cell-mediated immunity, a 1 engulfs a 2 . The 3 of the pathogen is prepared to be presented on the surface of the macrophage by first being bound to a 4 molecule, which act as "serving trays" that have specific binding sites for specific antigens. In Step 2, the foreign antigen is presented on the surface of the macrophage. A 5 with a specific antigen 6 , binds to the foreign antigen, causing the macrophage to release 7 , a cytokine. Interleukin-1, then stimulates the Helper T-cell to release 8 , another cytokine. The release of Interleukin-2 stimulates T-cells to divide rapidly, increasing their numbers. This process is called 9 . In Step 3, after T-cells have divided and increased in number, some T-cells become 10 , which are unactivated T-cells that wait for the next infection by the same antigen. In Step 4, there are other T-cells that become 11 that attack pathogens with the specific antigen. A Cytotoxic T-cell contains a vacuole filled with 12 molecules. In Step 5, a Cytotoxic T-cell encounters a pathogen with the specific antigen and releases perforin, which 13 the 14 of the cell creating a 15 that allows 16 and salts to enter. The pathogen begins to swell and eventually 17 .

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16. _____
17. _____

Using different colors and the list below, color and label the different parts of antibody-mediated immunity.



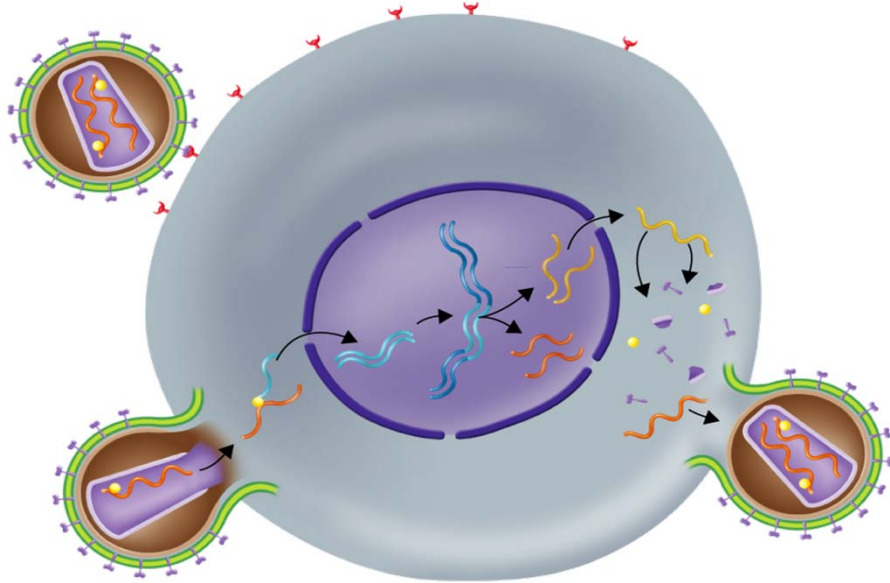
- Antibodies
- Interleukin-1 (cytokine)
- Macrophage
- Pathogen
- Antigen
- Interleukin-2 (cytokine)
- Memory B-cell
- Plasma cell

Complete the paragraph about antibody-mediated immunity.

In Step 1 of antibody-mediated immunity, a 1 engulfs a 2 . The 3 of the pathogen is prepared to be presented on the surface of the macrophage by first being bound to a 4 molecule, which act as "serving trays" that have specific binding sites for specific antigens. In Step 2, the foreign antigen is presented on the surface of the macrophage. A 5 with a specific antigen 6 , binds to the foreign antigen, causing the macrophage to release 7 , a cytokine. Interleukin-1, then stimulates the Helper T-cell to release 8 , another cytokine. The release of Interleukin-2 stimulates B-cells to divide rapidly, increasing their numbers. This process is called 9 . In Step 3, after B-cells have divided and increased in number, some B-cells become 10 , which are unactivated B-cells that wait for the next infection by the same antigen. In Step 4, there are other B-cells that become 11 , which produce "Y-shaped" proteins called an 12 . At the ends of the antibodies are 13 , which have a specific shape to bind to a specific 14 . In Step 5, antibodies bound to antigens, on a pathogen, can activate 15 , which consists of plasma proteins that can fight infection by: inflammation (increased swelling), lysis (cell breakdown), phagocytosis (cell "eaten"), or chemotaxis (cell death by chemicals). In Step 6, antibodies can bind to antigens forming an 16 , or immune complex. These complexes mark the pathogens or antigens for 17 .

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17. _____

Using the list below, label the parts of HIV infection.



- CD4 receptor
- Helper T-cell

- HIV
- Reverse transcriptase

- viral DNA
- viral mRNA

- viral RNA

Complete the paragraph about HIV infection.

AIDS stands for ____ 1 _____. It is caused by a retrovirus called HIV, or ____ 2 _____. HIV infection begins when the virus binds to a 3 _____ molecule, found on the 4 _____-_____. Once attached to the CD4 receptor, the virus injects its genetic material and enzymes into the cell. HIV is a 5_____, which means that its genetic material is 6_____ instead of 7_____. Once inside the host cell, HIV uses a special enzyme called 8 _____ to make viral DNA from its viral RNA. Viral DNA is then inserted into the host cell's DNA to direct production of new 9 _____ and proteins, which are assembled to form new 10 _____ (abbreviated). Over a period of years the 11 _____ numbers gradually increase and the 12 _____-_____ numbers decrease. Normally approximately 1200 helper T-cells are present per microliter of 13_____. An HIV-infected person is considered to have 14 _____ (abbreviated) when one or more of the following conditions occur: the helper T-cell count falls below 15 _____ cells/mL, an 16 _____, such as pneumonia, occurs, or 17 _____, a type of cancer, develops.

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