

Immune System

1. T lymphocytes gain immunocompetence within the:
 - a. Bone marrow
 - b. Thyroid
 - c. Spleen
 - d. Bursa of Fabricius
 - e. None of the above
2. _____ secrete antibodies.
 - a. Helper T cells
 - b. Killer T cells
 - c. Natural killer cells
 - d. Viruses
 - e. None of the above
3. All nucleated cells bear _____ proteins on their surface.
 - a. MHC 1
 - b. MHC 2
 - c. MHC 3
 - d. MHC 4
 - e. Foreign
4. Which of the following is TRUE?
 - a. Neutrophils are typically the first WBCs to arrive at a site of infection.
 - b. Macrophages contain lysosomes which contain digestive enzymes.
 - c. Eosinophils help defend against parasitic worms.
 - d. Natural killer cells attack and kill virus infected cells.
 - e. All of the above
5. Which of the following is NOT a sign of inflammation?
 - a. Pallor
 - b. Redness
 - c. Loss of function
 - d. Swelling
 - e. Heat
6. The ANP virus has infected a nucleated cell. Fragments of viral proteins will be displayed on the surface of the cell by its _____ proteins and will activate a _____ .
 - a. MHC2 – Plasma cell
 - b. MHC1 – Plasma cell
 - c. MHC1 – Cytotoxic T cell
 - d. MHC2 – Cytotoxic T cell
 - e. Interferon – retroviral cell
7. What type of lymphocyte is responsible for antibody-mediated immunity?
 - a. B lymphocyte
 - b. Killer T lymphocyte
 - c. Macrophages
 - d. Antigen-presenting cells

Immune System

8. The thymus of a young experimental animal was removed. There were no immediate effects, but after 1 year several changes were apparent. Which of the following is the LEAST likely result of the removal of the thymus?
- Increased antibody production
 - Decreased Helper T cell count
 - Decreased Cytotoxic T cell count
 - Increased likelihood of acquiring viral infections
9. Complement proteins do which of the following:
- Activate mast cells
 - Act as chemotactants
 - Form membrane attack complexes
 - Opsonization
- 1, 2, 3, and 4
 - 1, 2, and 4
 - 1, 2, and 3
 - 2 and 4
10. Nonspecific immunity includes all of the following EXCEPT:
- Lysozyme
 - Neutrophils
 - Interferon
 - Antibodies released by B lymphocytes
 - Complement

Use the following answer choices for the next 10 items.

- B lymphocyte
 - T lymphocyte
 - B and T lymphocytes
 - Neither B nor T lymphocytes
11. Immune cells that gain immunocompetence in the bone marrow
12. Immune cells that can mature in a mediastinal lymphoid organ more prominent in the fetus than in the adult
13. They can turn into cells that secrete immunoglobulins
14. They can turn into cells that secrete antibodies
15. They're part of the specific immune system
16. An example of these cells is the Langerhans cells of the epidermis
17. They can release perforins and lymphotoxins
18. They contain a nucleus
19. They mediate humoral immunity

Immune System

20. They mediate cellular immunity
21. Suppose Joey was exposed to antigen X for the first time, and 2 days later his blood serum contained 2×10^6 anti-X antibodies per milliliter. Six months later, Joey is again exposed to antigen X. 2 days after the second exposure, you would expect his serum anti-X antibody concentration to be _____ 2×10^6 per milliliter.
- Exactly
 - Greater than
 - Less than
22. In response to B lymphocyte activation, the number of circulating plasma B cells will _____ and the number of circulating memory B cells will _____
- Increase – Increase
 - Increase – Decrease
 - Decrease – Decrease
 - Decrease – Increase
 - None of the above
23. Which of the following associations is CORRECT?
- Injection of an attenuated pathogen – Artificial active immunity
 - Antibody excretion in breast milk – Natural passive immunity
 - Injection of antibody-containing sera – Artificial passive immunity
 - Generation of memory cells against live pathogens – Natural active immunity
 - All of the above are correct
24. Which of the following is NOT a function of complement?
- Tagging antigen-antibody complexes for phagocytosis
 - Inducing inflammation via glucose release from neutrophils
 - Inducing lysis of pathogenic cells
 - Inducing histamine release from mast cells and basophils
 - None of the above
25. Which of the following would you expect to have the most well developed rough endoplasmic reticulum?
- Memory B lymphocyte
 - Memory T lymphocyte
 - Plasma T lymphocyte
 - Plasma B lymphocyte
 - Immuno-incompetent B lymphocyte
50. Which of the following is NOT TRUE of fever?
- It affects mineral storage by the liver or spleen
 - Is caused by pyrogens that act on the hypothalamus
 - Can be caused by increased interleukin-1 release
 - Causes the individual's metabolic rate to decrease
 - 2 of the above
51. Which of the following is NOT a function of antibodies?
- Agglutination of cells bearing foreign antigens

Immune System

- b. Production of cytotoxic chemicals such as lymphotoxins and capillary lysozyme
 - c. Opsonization
 - d. Activation of complement
 - e. Neutralization of toxins
52. Put the following items in correct sequential order.
- 1. B cell binds and endocytoses its specific antigen
 - 2. B cells differentiate into plasma and memory B cells
 - 3. Helper T cell releases cytokines that activate the B cell
 - 4. Plasma antibody levels rise
 - 5. B cell presents the antigen/MHCII complex
- a. 1,4,5,3,2
 - b. 1,5,3,2,4
 - c. 1,3,2,5,4
 - d. 1,5,2,3,4
 - e. 1,3,5,2,4
53. Which of the following associations is INCORRECT?
- a. Helper T cells – regulate cell-mediated immunity
 - b. Killer T cells – destroy virus-infected cells
 - c. Red blood cells – contain hemoglobin and display MHC class I receptors
 - d. Killer T cells – destroy cancer cells
 - e. Plasma cells – secrete proteins
54. Julio just caught the dreaded Akoloko virus. Since Chester has already had the Akoloko virus, he offers to donate some of his memory T cells to Julio to help combat the disease.
- a. This idea would work because the memory cells would mount a swift campaign against the virus since they've been exposed to it before
 - b. This would work and is an example of natural active immunity
 - c. This would not work because there are no such thing as memory T cells
 - d. This would not work because Julio would consider Chester's T cells as foreign
 - e. Both A and B are correct
66. Interferons:
- a. Are nucleic acids released by virally infected cells
 - b. Are considered part of the specific immune system because they are released in response to viral infection
 - c. Cause cells to produce a molecule that interferes with viral protein synthesis
 - d. Are released by an infected cell so that all viruses within it will be destroyed
 - e. None of the above
67. Chemicals released in response to tissue injury can:
- i. Increase the number of circulating white blood cells

Immune System

- ii. Cause local vasodilation
 - iii. Act as chemotactic factors that attract neutrophils to the site of injury
 - a. I, II, and III are correct
 - b. Only I and II are correct
 - c. Only I and III are correct
 - d. Only II and III are correct
 - e. Only II is correct
68. A decrease in the body's Helper T cell count would:
- I. Not impair clonal selection of B lymphocytes
 - II. Decrease the body's ability to fight viral infections
 - III. Increase the body's ability to produce activated T8 cells
- a. I, II, and III are all correct
 - b. Only I and II are correct
 - c. Only II is correct
 - d. Only I is correct
 - e. Only II and III are correct
69. The presence of a virus inside an intestinal epithelial cell would most likely be detected by:
- a. A T8 cell interacting with a class I MHC protein and an attached fragment of viral protein
 - b. A T8 cell interacting with a class II MHC protein and an exogenous antigen
 - c. A T4 cell interacting with a class I MHC protein and an attached fragment of viral protein
 - d. A T4 cell interacting with a class II MHC protein and an endogenous antigen
 - e. None of the above
70. Which of the following is INCORRECT?
- a. T helper cells promote B and T cell proliferation as well as the recruitment of neutrophils and macrophages
 - b. T killer cells release perforins which can cause cell lysis
 - c. Antigen binding is the only event that must occur for T cells to be activated
 - d. T suppressor cells increase the activity of cytotoxic T cells and natural killer cells
 - e. None of the above
71. Proteins on the surface of mitral valve cells resemble proteins on the surface of the bacterium staphylococcus aureus. This:
- a. Is beneficial because it will help increase the body's anti-bacterial defenses
 - b. Can result in the production of antibodies that target mitral valve cells
 - c. Is an example of cell-mediated immunity
 - d. Is an example of passive artificial humoral immunity
 - e. None of the above
92. All of the various macrophages are derived from:
- a. Lymphocytes

Immune System

- b. Monocytes
 - c. Neutrophils
 - d. Eosinophils
 - e. Basophils
93. Stem cells that will form both B lymphocytes and Natural Killer cells are found primarily in the:
- a. Liver
 - b. Spleen
 - c. Thymus
 - d. Adrenals
 - e. Bone marrow
94. Which of the following is NOT an effect of activation of the complement system?
- a. Enhancement of phagocytosis
 - b. Increased release of histamine by basophils
 - c. Formation of a membrane attack complex
 - d. Opsonization
 - e. None of the above
95. Histamine increases blood flow and vascular permeability. This would account for all of the following changes that occur during inflammation EXCEPT:
- a. Redness of the inflamed tissue
 - b. Increased number of phagocytes being attracted to the tissue
 - c. Heat of the inflamed tissue
 - d. Increased formation of interstitial fluid at the site of injury
 - e. Both A and C
96. A sample of Ralph's blood shows a high concentration of pyrogens. This would indicate that Ralph:
- a. Has hypotension
 - b. Is producing T lymphocytes
 - c. Has a sore throat
 - d. Is running a fever
 - e. Has swollen lymph nodes
97. The fact that living bacteria populate our skin:
- a. Is always detrimental to homeostasis
 - b. Helps prevent infection as our resident bacteria compete with pathogenic bacteria
 - c. Proves that the low pH of the stomach is bacteriostatic
 - d. Proves that the high pH of the stomach is bacteriostatic
 - e. None of the above
98. Saliva and lacrimal fluid both contain:
- a. Lysosomes, bactericidal organelles
 - b. Peroxisomes, bactericidal organelles
 - c. Lysozyme, a bactericidal enzyme
 - d. Peroxizyme, a bactericidal enzyme
 - e. Both A and B are correct
99. Which of the following plays NO ROLE in phagocytosis?
- a. Pseudopods

Immune System

- b. Monocytes
 - c. Phagosomes
 - d. Phagolysosomes
 - e. None of the above
100. Certain complement molecules called C3b coat the surface of a bacterium and roughen its surface, enabling macrophages and neutrophils to phagocytize the organism. This phenomenon would most likely be termed:
- a. Autolysis
 - b. Catalysis
 - c. Antibody-mediated phagocytosis
 - d. Opsonization
 - e. Both A and C are correct
- f. Immunity that results from antibodies that pass the placenta from mother to fetus is called _____ immunity.
- a. Active
 - b. Natural passive
 - c. Artificial passive
 - d. Auto
 - e. Inconsequential
119. Suppressor T cells act to:
- a. Suppress antigens.
 - b. Limit the degree of memory in memory T cells.
 - c. Limit antigen proliferation.
 - d. Depress the responses of other T cells and B cells.
 - e. Produce antibodies involved in autoimmunity
120. The binding of an antigen to an antibody can result in:
- a. Neutralization of the antigen.
 - b. Agglutination or precipitation.
 - c. Complement activation and opsonization.
 - d. A and B only.
 - e. All of the above
121. When an antigen is bound to a Class I MHC molecule, it can stimulate a:
- a. B cell
 - b. Plasma cell
 - c. Helper T cell
 - d. Cytotoxic T cell
 - e. NK cell
122. Helper T cells do all of the following EXCEPT:
- a. Promote B-cell division, plasma cell maturation, and antibody production.
 - b. Encode the antigenic genetic information for use during future exposures to the antigen.

Immune System

- c. Stimulate T-cell divisions that produce memory T cells and accelerate maturation of cytotoxic T cells.
- d. Attract and stimulate the activity of NK cells.
- e. Enhance nonspecific defenses.

123. The following are steps in the cell-mediated immune response.

- 1. Several cycles of mitosis occur
- 2. Antigen is engulfed and presented by a macrophage
- 3. Cytotoxic T cells migrate to focus of infection
- 4. Differentiated T cells with specific receptors recognize the antigen
- 5. Cytotoxic T cells release perforin and/or lymphotoxin

The correct sequence for these steps is:

- a. 4, 1, 5, 3, 2
- b. 2, 4, 1, 5, 3,
- c. 1, 2, 4, 5, 3,
- d. 3, 2, 4, 1, 5,
- e. 3, 4, 5, 1, 2

124. In an experimental situation, a virus is injected into a rabbit and the rabbit is allowed to make antibodies for the viral antigen. These antibodies are then removed from the rabbit plasma and injected into a human to help deal with the same viral disease. This would be an example of:

- a. Innate immunity.
- b. Active immunization.
- c. Passive immunization.
- d. Natural immunity.
- e. Autoimmunity.

125. A decrease in which population of lymphocytes would impair all aspects of an immune response?

- a. Cytotoxic T cells
- b. Helper T cells
- c. Suppressor T cells
- d. B cells
- e. Plasma cells

126. The only T cell population that can directly attack and kill other cells are the:

- a. Suppressor cells
- b. Helper cells
- c. CD4 cells
- d. Cytotoxic cells
- e. Plasma cells

127. Helper T cells:

- a. Bind tightly to target cells and release perforins as well as tumor necrosis factor
- b. Often function to decrease the immune response

Immune System

- c. Perform one function only; they release B234 proteins
 - d. Are often involved in clonal selection of B lymphocytes
 - e. 3 of the above are correct
128. The primary immune response:
- a. Occurs more rapidly and is stronger than the secondary immune response
 - b. Occurs only when memory cells are stimulated
 - c. Is another name for immunological memory
 - d. Has a lag period where B cells proliferate and differentiate into plasma cells
 - e. None of the above
129. Which of the following makes skin an excellent barrier to pathogens?
- a. Presence of sweat
 - b. Presence of sebum
 - c. Presence of keratin
 - d. The fact that it is multi-layered
 - e. All of the above
130. Which of the following is involved in natural passive immunity?
- a. Vaccination
 - b. Injection of human antibodies into an individual
 - c. Injection of rabbit antibodies into an individual
 - d. Excretion of antibodies into breast milk
 - e. Producing memory cells in response to infection with a live virus
131. The specificity of T and B lymphocytes is determined by:
- a. Their surface receptors
 - b. Their nuclear receptors
 - c. Their mitochondria
 - d. All of the above
 - e. 2 of the above
132. Class I MHC proteins:
- a. Are found on all blood cells
 - b. Display protein fragments on a cell's surface
 - c. Are only involved in bacterial infections
 - d. Are not found on macrophages
 - e. Are recognized primarily by Helper T cells
133. In order for a naïve T cell to be activated:
- a. It must be immunocompetent
 - b. It must recognize a specific antigen
 - c. It must recognize an MHC protein
 - d. It must be "costimulated"
 - e. All of the above
154. The Human Immunodeficiency Virus destroys Helper T cells. This will:
- 1. Increase the efficiency of the body's cell-mediated immune response.
 - 2. Decrease the efficiency of the body's humoral immune response.

Immune System

3. Have no effect on the nonspecific immune response.
- a. 1, 2, and 3
b. 1 only
c. 2 only
d. 1 and 3
e. 2 and 3
155. _____ released from basophils and mast cells causes _____.
- a. Histamine; vasoconstriction
b. Histamine; vasodilation
c. Nitrous oxide; vasodilation
d. Prostaglandin; vasoconstriction
e. Leukocytosis-inducing factor; hyperemia
156. A cell that has been infected with a virus will:
- a. Release antibodies.
b. Display viral protein fragments along with a MHC I protein
c. Display viral protein fragments along with a MHC II protein
d. Always release lysozyme and complement proteins
e. None of the above
178. Which of the following is TRUE?
- a. Activated complement can cause bacterial cell lysis.
b. An inflamed area appears red because of decreased local blood flow.
c. During a fever, the liver and spleen release huge amounts of zinc into the plasma.
d. T lymphocytes are made in the thymus but they mature in the red bone marrow.
e. 2 of the above
179. Which of the following could play a role in destroying a foreign antigen in the plasma?
- I. Antibodies
II. Immunoglobulins
III. Plasma cells
IV. Helper T cells
- a. I, II, III, and IV
b. I, II, and III only
c. I, III, and IV only
d. I, II, and IV only
e. I and III only
180. If a virus invaded a muscle cell, that muscle cell would:
- a. Display fragments of viral proteins on its MHC I protein.
b. Display fragments of viral proteins on its MHC II protein.
c. Begin making viral proteins and nucleic acids (e.g., DNA, RNA).
d. Release activated complement.
e. Both A and C are correct.
190. Which of the following cells destroys body cells that have been infected by a virus?
- a. Monocytes

Immune System

- b. Natural killer cells
 - c. B lymphocytes
 - d. Eosinophils
 - e. Alveolar macrophages
191. Interferon:
- a. Is produced by cells in response to high plasma levels of pyrogens.
 - b. Is made only by the cells of the thymus.
 - c. Actively kills bacteria and viruses.
 - d. Helps to prevent viral replication.
 - e. None of the above.
192. Which of the following common signs of inflammation could be caused by increased local blood flow?
- a. Pain
 - b. Swelling
 - c. Heat
 - d. Redness
 - e. All of the above
193. Which of the following is TRUE?
- a. T lymphocytes acquire immunocompetence in the thymus.
 - b. All T lymphocytes will display the same surface receptors.
 - c. All nucleated cells contain class II MHC proteins on their surface.
 - d. Helper T cells are also referred to as CD8 cells.
 - e. More than one of the above.
210. *Mycobacterium bovis* is a weakened, non-pathogenic form of the bacterium that causes tuberculosis. Upon injection, macrophages engulf and destroy them and use the resulting debris to prime the acquired immune system. The macrophages would display the pieces of digested bacteria on their:
- a. MHC I proteins
 - b. MHC II proteins
 - c. MHC III proteins
 - d. Antigen receptors
 - e. Golgi apparatus
211. Which of the following help skin function as an effective pathogen barrier?
- I. Sebum
 - II. Sweat
 - III. Keratin
 - IV. Stratified epithelium
- a. I, II, III, and IV
 - b. I, II, and III only
 - c. I, II, and IV only
 - d. I and II only
 - e. IV only
212. Cells of the innate branch of the immune system that target virus-infected cells and cancerous cells are the:
- a. Killer T cells

Immune System

- b. Helper T cells
 - c. Antigen-presenting cells
 - d. Natural killer cells
 - e. Plasma cells
213. Which of the matches is INCORRECT?
- a. Lysozyme – secreted in saliva
 - b. Lysosome – contains lysozyme
 - c. Complement proteins – form membrane attack complexes
 - d. CD4 cells – Killer T cells
 - e. All of the above ARE CORRECT.
214. The transfer of plasma antibodies from mother to infant via breast milk is an example of what type of immunity?
- a. Natural active
 - b. Natural passive
 - c. Artificial active
 - d. Artificial passive
 - e. None of the above
239. Mr. Rich was infected with *Clostridium difficile*. In response, his adaptive immune system produced antibodies. This type of immunity is...
- a. Natural but not active
 - b. Passive but not natural
 - c. Active but not artificial
 - d. Active and passive
 - e. Artificial but not passive
240. Which of the following would contain the greatest concentration of digestive enzymes?
- a. Phagosome
 - b. Opsonin
 - c. Lysosome
 - d. Interferon
 - e. Complement
241. Which of the following is/are true of dendritic cells?
- a. They are capable of phagocytosis
 - b. They present antigens to T lymphocytes
 - c. They contain MHC 1 proteins
 - d. They contain MHC 2 proteins
 - e. All of the above
242. The linking of soluble antigens by antibodies is known as:
- a. Agglutination
 - b. Self lysis
 - c. Neutralization

Immune System

- d. Aggrandization
 - e. Precipitation
243. Alexander Fleming made a serendipitous discovery. One day when he was suffering from a cold, he sneezed on a bacterial culture of *Micrococcus lysodeikticus*. Following his usual routine of leaving his bacterial cultures lying about, 10 days later he observed that the bacteria near his own nasal mucus had dissolved. The best explanation for this is that:
- a. His mucus contained large quantities of lysozyme
 - b. His mucus had a low osmotic pressure
 - c. His mucus contained B lymphocytes that had recently matured in the thymus
 - d. His mucus lacked T lymphocytes
 - e. His mucus contained a large quantity of natural killer cells
244. Which of the following is an example of natural passive immunity?
- a. Getting sick with monkey pox.
 - b. Getting vaccinated for monkey pox.
 - c. Getting an injection of antibodies from a passive nurse
 - d. Transfer of antibodies from maternal blood to fetal blood
 - e. Transfer of Helper T cells from maternal blood to fetal blood.

Use the following answer choices for the next 25 items:

Increase

Decrease

Stay the same

259. Interleukin-1 is a pyrogen. Thus it will cause body temperature to:
260. Killing the normal bacterial population of the reproductive tract would cause the likelihood of acquiring an infection there to:
261. The agglutination of bacterial cells by antibodies will cause the likelihood of them being swallowed by a macrophage to:
262. In the secondary response to an antigen, the duration of the lag time will:
263. A lack of functioning regulatory T cells would cause the likelihood of acquiring an autoimmune condition to:
264. The binding of a bacterium by complement proteins will cause the likelihood of it getting engulfed by a macrophage to:
265. Histamine causes blood vessel resistance to:
266. Regulatory T cells cause the activity of Cytotoxic T cells to:
267. Stimulation by interferon will cause a cell's likelihood of being killed by a virus to:
268. Opsonization causes the likelihood of phagocytosis to:
269. A lack of functioning cilia will cause the likelihood of acquiring a respiratory infection to:
270. As bacterial release of pyretic chemicals increases, core body temperature will:

Immune System

271. As plasma [interferon] increases, the number of newly synthesized viruses should:
272. During inflammation, local blood flow will:
273. The binding of an antibody to a bacterium will cause the probability of that bacterium being phagocytosed to:
274. During a fever, you would expect plasma levels of zinc to:
275. In Kartagener's syndrome, cilia do not function. This would cause the likelihood of acquiring a respiratory infection to:
276. Interferon causes a cell's protein production capability to:
277. At a site of inflammation, local WBC count will:
278. Precipitation of soluble antigens cause the likelihood of their being phagocytosed to:
279. During inflammation capillary permeability will:
280. Pyrogens cause body temperature to:
281. If a cell is stimulated by interferon, the likelihood of that cell being "hijacked" by a virus will:
282. In response to an acute bacterial infection, one would expect the blood neutrophil count to:
283. An inability to produce functioning leukocytes would cause one's susceptibility to infection to:

In each of the next 5 items two quantities are given. If quantity A is the larger of the two then choose A as your answer. If quantity B is the larger of the two then choose B as your answer. If the two quantities are equal then choose C as your answer.

291. a. Specificity of a memory Killer T cell
 b. Specificity of a natural killer cell
293. a. Number of body cells displaying class I MHC proteins
 b. Number of body cells displaying class II MHC proteins
294. a. Number of memory cells made during natural passive immunity
 b. Number of memory cells made during artificial active immunity
297. a. Lag time in the primary immune response to antigen X
 b. Lag time in the secondary immune response to antigen X
298. a. Number of memory cells produced in response to injection of an attenuated pathogen
 b. Number of memory cells produced in response to injection of antibodies

The next 5 items are TRUE/FALSE

Immune System

- 311. An autoimmune disease is an inappropriate and excessive process to an otherwise harmless environmental antigen
- 312. T cells that respond to self-antigens are removed in the bone marrow
- 313. Natural killer cells and cytotoxic T cells can both release perforins
- 314. A deficiency of suppressor T cells could increase the likelihood of an autoimmune disease
- 315. Because it targets and destroys T helper cells, the human immunodeficiency virus has little impact on humoral immunity

The remaining items are short answer

- 331. Identify the cell that could be considered in charge of the cell mediated immune response.
- 332. Identify a cell that contains MHC2 proteins on its surface.
- 333. Name 2 functions of activated complement proteins.
- 334. Identify 2 functions of antibodies.
- 340. Explain why it would be advantageous for a virus to prevent its host cell from making MHC1 proteins.
- 341. Very briefly explain the function of interferons.
- 342. Compare the primary and secondary immune response in terms of lag period, rate of antibody production, and quantity of antibodies produced.
- 342. Injection of a dead virus will create immunity. Explain how this occurs. Include the roles played by macrophages, T Helper cells, and B cells in your discussion.
- 343. Theresa was born with a defective heart and was lucky enough to receive a new heart from a girl who was killed in a tragic skydiving accident. In conjunction with the heart transplant, Theresa received an "anti-lymphocyte serum" that contained antibodies against her own lymphocytes. The new heart worked great, but unfortunately Theresa died soon after the transplant because of a massive bacterial infection. Explain in great detail why the anti-lymphocyte serum was necessary and how it related to her fatal infection.
- 344. Explain the underlying mechanisms responsible for the cardinal signs of acute inflammation:
- 345. Some parents keep their preschoolers away from other children to prevent them from catching illnesses. How might these well-meaning parents actually be harming their children?