

Warning!

These assessment materials are protected by United States copyright law. They are being provided solely for instructional use by instructors who have adopted Macmillan Learning's accompanying textbooks or online products for use by students in their courses. It is essential that recipients of these assessment materials take no action that would adversely affect the pedagogical integrity of these assessment materials or the textbooks and products that these assessment materials relate to.

These materials may not be copied, distributed, sold, shared, posted online, or used, in print or electronic format, except by instructors for the limited purpose of assessing the learning of students enrolled in the courses in which the instructor uses the accompanying textbooks or products. These materials may not be made publicly available under any circumstances. All other rights reserved.

© 2019 Macmillan Learning, Testbank.

Chapter 14: The Adaptive Immune Response in Space and Time

1. After production, naïve lymphocytes travel briefly through the blood to the

- A) spleen.
- B) peripheral lymph nodes.
- C) mucosal associated lymphoid tissue.
- D) All of the answers are correct.
- E) None of the answers are correct.

Answer: D

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.1

Cognitive Level: LOC

Blooms Level: Remembering

Level of Difficulty: Easy

Hint: Where will naïve cells encounter antigen?

Source: Test Bank

Sequence: 14001

2. Continual lymphocyte circulation is needed because

- A) antigen is usually present in large amounts.
- B) lymphocytes have a small chance of recognizing a particular antigen.
- C) the chance of a naïve cell encountering its target antigen is moderately high.
- D) there are relatively few antigen-presenting cells in the lymph nodes compared to lymphocytes.
- E) All of the answers are correct.

Answer: B

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.1

Cognitive Level: LOC

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: Circulation increases contact between the population of lymphocytes and antigens.

Source: Test Bank

Sequence: 14002

3. Lymphocytes exit the blood and enter the lymph node by extravasating at the high-endothelial venules (HEVs) present in the lymph node cortex. Extravasation does NOT require which of the following?

- A) Homing
- B) Addressins
- C) Chemokines
- D) Dendritic cells
- E) All of the answers are required.

Answer: D

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.1

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: Chemokines are signaling molecules that direct homing.

Source: Test Bank

Sequence: 14003

4. After extravasation, naïve lymphocytes enter the _____ to scan for antigen.

- A) thymic cortex
- B) lymph node medulla
- C) lymph node cortex
- D) high-endothelial venule
- E) None of the answers are correct.

Answer: C

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.1

Cognitive Level: LOC

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Blooms Level: Understanding
Level of Difficulty: Moderate
Hint: The T-cell zone is also called the paracortex.
Source: Test Bank
Sequence: 14004

5. Reticular networks in the lymph nodes

- A) are made of fibroblasts.
- B) guide T-cell movements.
- C) guide B-cell movements.
- D) regulate lymphocyte direction.
- E) All of the answers are correct.

Answer: E
Question Type: Multiple Choice
Chapter Name: 14
Section: 14.1
Cognitive Level: LOC
Blooms Level: Remembering
Level of Difficulty: Easy
Hint: Fibroblasts make up most of the lymph node but do not directly participate in lymphocyte interactions with antigen-presenting cells.
Source: Test Bank
Sequence: 14005

6. Naïve B cells do NOT depend on which of the following as they move through a lymph node?

- A) Follicular dendritic cells
- B) Fibroblastic reticular fibers
- C) Chemokines CCL21 and CCL19
- D) The chemokine CXCL13
- E) Naïve B cells do not depend on any of the answer choices provided.

Answer: C
Question Type: Multiple Choice
Chapter Name: 14
Section: 14.1
Cognitive Level: HOC
Blooms Level: Applying

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Level of Difficulty: Difficult

Hint: CCL21 is found in the T-cell zone of lymph nodes.

Source: Test Bank

Sequence: 14006

7. What is extravasation, and what are its four primary steps?

Answer:

Feedback: Extravasation is the process of immune system cells leaving blood vessels by squeezing between endothelial cells. The four main steps are: rolling, activation, arrest/adhesion, and, finally, migration.

Question Type: Essay

Chapter Name: 14

Section: 14.1

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: Extravasation is initiated when naïve lymphocytes engage HEV addressins.

Source: Test Bank

Sequence: 14007

8. A line of mice develops wherein the S1P1 gene is excised following lymphocyte development. What effect would this have on the immune response?

Answer:

Feedback:

S1P1 is important because it allows lymphocytes to leave tissues where they do not encounter their cognate antigen. This is important for two reasons: 1) the cells are then able to travel to new sites (where they can potentially encounter antigen), and 2) it creates space for new cells to enter the tissue. Mice with developed (but naïve) lymphocytes without S1P1 would have generally damped immune responses because their cells would not encounter their antigens as often as wild-type animals.

Question Type: Essay

Chapter Name: 14

Section: 14.1

Cognitive Level: HOC

Blooms Level: Evaluating

Level of Difficulty: Difficult

Hint: See Figure 14-20.

Source: Test Bank

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Sequence: 14008

9. S1P1 receptor is upregulated by naïve T cells and B cells after 12–18 hours if they fail to encounter antigen in the lymph node. This means all of the following EXCEPT

- A) the naïve cells have not been activated.
- B) the naïve cells have not encountered antigen.
- C) the naïve cells will exit the lymph node.
- D) space will be made for other cells to enter the lymph node.
- E) the naïve cells will die by apoptosis.

Answer: E

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.2

Cognitive Level: HOC

Blooms Level: Applying

Level of Difficulty: Difficult

Hint: Lymph node circulation is designed to maximize interaction between antigen and cells that have the potential to recognize it.

Source: Test Bank

Sequence: 14009

10. Pattern-recognition receptors on innate immune cells

- A) coordinate killing of pathogens.
- B) alert the adaptive immune system of an infection.
- C) recognize specific pathogen.
- D) both coordinate killing of pathogens and alert the adaptive immune system of an infection.
- E) both coordinate killing of pathogens and recognize specific pathogens.

Answer: D

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.2

Cognitive Level: LOC

Blooms Level: Remembering

Level of Difficulty: Easy

Hint: Molecular patterns are found on a variety of pathogens.

Source: Test Bank

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Sequence: 14010

11. Early in an infection, antigen-presenting cells

- A) become less effective at phagocytosis.
- B) become more effective at antigen processing.
- C) become less effective at cross presentation.
- D) recruit more adaptive immune cells than innate immune cells.
- E) remain at the site of infection.

Answer: B

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.2

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: Innate immune response both targets pathogens and activates the adaptive immune response.

Source: Test Bank

Sequence: 14011

12. Which of the following is the CORRECT sequence of events?

- A) Antigen uptake > antigen processing > APC migration to lymph nodes > antigen presentation
- B) APC migration to lymph nodes > antigen uptake > antigen processing > antigen presentation
- C) APC migration to lymph nodes > antigen presentation > antigen uptake > antigen processing
- D) Antigen uptake > antigen processing > antigen presentation > APC migration to lymph nodes
- E) APC migration to lymph nodes > antigen uptake > antigen processing > antigen presentation

Answer: A

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.2

Cognitive Level: LOC

Blooms Level: Remembering

Level of Difficulty: Easy

Hint: The functional sequence has to start with antigen uptake and end with presentation.

Source: Test Bank

Sequence: 14012

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

13. As antigen is picked up in peripheral tissues by antigen-presenting cells, it is

- A) processed for presentation to B cells.
- B) processed for presentation to T cells.
- C) moved without processing over several hours to the lymph nodes.
- D) taken in unprocessed form for presentation to T cells.
- E) All of the answers are correct.

Answer: B

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.2

Cognitive Level: LOC

Blooms Level: Remembering

Level of Difficulty: Easy

Hint: How is antigen recognized by adaptive immune cells?

Source: Test Bank

Sequence: 14013

14. Which of the following mechanisms of travel to lymph nodes by unprocessed antigen is CORRECT?

- A) Small and soluble antigens travel through afferent lymphatics as opsonized particles.
- B) Small and soluble antigens travel directly through the bloodstream.
- C) Large particles and pathogens travel directly through the bloodstream.
- D) Opsonized pathogens travel directly through the bloodstream.
- E) Small particles are carried by macrophages.

Answer: B

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.2

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: Soluble particles do not need to be carried.

Source: Test Bank

Sequence: 14014

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

15. Which of the following is the proper order of transfer for opsonized antigens?

- A) CD169⁺ macrophages > follicular dendritic cells > antigen nonspecific B cells
- B) Antigen nonspecific B cells > CD169⁺ macrophages > follicular dendritic cells
- C) CD169⁺ macrophages > antigen nonspecific B cells > follicular dendritic cells
- D) Antigen nonspecific B cells > follicular dendritic cells > CD169⁺ macrophages
- E) None of the answers are correct.

Answer: C

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.2

Cognitive Level: LOC

Blooms Level: Remembering

Level of Difficulty: Easy

Hint: Follicular dendritic cells are the ones that actually present antigen to B cells.

Source: Test Bank

Sequence: 14015

16. The use of complement receptor deficient cells has shown that

- A) normal B cells sample antigen on macrophages and leave it intact.
- B) normal B cells sample antigen on macrophages and take part of it.
- C) complement receptor-deficient B cells do not sample antigen on macrophages.
- D) complement receptor-deficient B cells sample antigen on macrophages and take part of it.
- E) None of the answers are correct.

Answer: B

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.2

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: Normally, opsonized antigen is transferred.

Source: Test Bank

Sequence: 14016

17. Which of the following cell types is NOT likely to be present early on in an infection?

- A) Granulocytes
- B) Antigen-presenting cells
- C) Cytotoxic T cells
- D) Dendritic cells
- E) Neutrophils

Answer: C

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.2

Cognitive Level: HOC

Blooms Level: Applying

Level of Difficulty: Difficult

Hint: The innate response comes before the adaptive response.

Source: Test Bank

Sequence: 14017

18. Explain the function of nonantigen-specific B cells during the early phases of the adaptive immune response.

Answer:

Feedback: When antigens are opsonized by complement fragments even noncognate B cells can be important players in immune activation and response. Specifically, these nonspecific B cells uptake antigen from CD169⁺ macrophages; these antigens are ultimately relayed to follicular dendritic cells and presented to naïve B lymphocytes.

Question Type: Essay

Chapter Name: 14

Section: 14.2

Cognitive Level: HOC

Blooms Level: Analyzing

Level of Difficulty: Moderate

Hint: See Figure 14-10.

Source: Test Bank

Sequence: 14018

19. Compare and contrast how a soluble toxin subunit and a malarial parasite (sporozoite) would travel through the body. How would each be recognized by the immune system?

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Answer:

Feedback: Small, soluble antigens (such as the hypothetical soluble toxin) are able to travel via the bloodstream and end up in the lymph node, as a result. Larger moieties — up to and including single-cell parasites — can reach lymph nodes via afferent lymphatics. Antigens are then processed (often after being opsonized with complement) by macrophages and other antigen-presenting cells; they are then presented to lymphocytes.

Question Type: Essay

Chapter Name: 14

Section: 14.2

Cognitive Level: HOC

Blooms Level: Evaluating

Level of Difficulty: Difficult

Hint: Refer to Overview Figures 14-1 and 14-2.

Source: Test Bank

Sequence: 14019

20. During activation, naïve CD4⁺ T cells

- A) interact with antigen-presenting cells.
- B) reduce movement.
- C) begin to divide.
- D) move to interact with B cells.
- E) All of the answers are correct.

Answer: E

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.3

Cognitive Level: LOC

Blooms Level: Remembering

Level of Difficulty: Easy

Hint: What happens to activation if one of these steps is not carried out?

Source: Test Bank

Sequence: 14020

21. Although our understanding of the kinetics of T-cell activation has changed over time, we now believe that

- A) antigen availability does not affect T-cell/APC interactions.

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

- B) antigen quantity does not affect T-cell/APC interactions.
- C) optimal proliferation of helper T cells requires only relatively brief APC exposure.
- D) optimal proliferation of helper T cells requires several hours of APC exposure.
- E) dendritic cell activation does not affect T-cell activation.

Answer: D

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.3

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: Consider the necessary interactions between the T cell and the antigen-presenting cell.

Source: Test Bank

Sequence: 14021

22. B cells have been shown to need two signals for activation. Absent T-cell help, they will NOT activate because

- A) T cells provide signal 1 through the B-cell receptor.
- B) T cells provide signal 2 through the B-cell receptor.
- C) T cells activate B cells indirectly by activating follicular dendritic cells.
- D) T cells activate B cells through CD40 signaling.
- E) B cells will still activate because of dendritic cells.

Answer: D

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.3

Cognitive Level: LOC

Blooms Level: Remembering

Level of Difficulty: Easy

Hint: Signal 1 is always the antigen-specific, receptor-recognizing antigen.

Source: Test Bank

Sequence: 14022

23. Several types of T cells have been shown to be able to provide help for B cells during activation. Which of the following statements is TRUE?

- A) All produce the same chemokine to activate but provide different CD40 signals.

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

- B) All produce the same chemokine and the same CD40 signal as well.
- C) All provide CD40 signaling but produce different chemokines.
- D) All provide CD40 signaling but trigger distinct class switching.
- E) All provide CD40 signaling but produce different chemokines and trigger distinct class switching.

Answer: E

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.3

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: All T-helper cells provide CD-40 ligand.

Source: Test Bank

Sequence: 14023

24. Activation of naïve B cells is a two-step process, during which

- A) antigen triggers B-cell production of CCR7, which leads it to interact with T cells.
- B) antigen triggers T-cell production of CCR7, which recruits B cells.
- C) T-cell help stimulates B cells to produce CCR7, then divide.
- D) macrophages trigger B-cell production of CCR7, which leads it to interact with T cells.
- E) None of the answers are correct.

Answer: A

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.3

Cognitive Level: LOC

Blooms Level: Remembering

Level of Difficulty: Easy

Hint: CCR7 is a chemokine receptor.

Source: Test Bank

Sequence: 14024

25. T-cell help of B cells will be impaired if the T cells lack CD28 because

- A) CD28 is needed to activate class switching by turning on AICD.
- B) CD28 is needed to interact with CD40 on the B cell.

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

- C) CD28 is needed to signal through the B-cell receptor.
- D) CD28 is needed to signal through the T-cell receptor.
- E) None of the answers are correct.

Answer: D

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.3

Cognitive Level: HOC

Blooms Level: Applying

Level of Difficulty: Difficult

Hint: CD28 (and CTLA-4) interacts with B-7 on the B cell.

Source: Test Bank

Sequence: 14025

26. Visualization of B-cell traffic between the light and dark zones of the germinal center has shown that they migrate far less than had been predicted. This demonstrates that

- A) the traditional model of trafficking is inaccurate.
- B) the rate of hypermutation and selection does not require extensive movement.
- C) only brief contacts by the B cells with helper T cells are needed.
- D) both the traditional model of trafficking is inaccurate and only brief contacts by the B cells with helper T cells are needed.
- E) both the rate of hypermutation and selection does not require extensive movement and only brief contacts by the B cells with helper T cells are needed.

Answer: E

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.3

Cognitive Level: HOC

Blooms Level: Analyzing

Level of Difficulty: Moderate

Hint: In the germinal center, both hypermutation and positive selection take place.

Source: Test Bank

Sequence: 14026

27. A major difference between naïve and effector lymphocytes is that effector lymphocytes

- A) follow chemokine trails.

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

- B) do not home in to the lymph nodes.
- C) do not require co-stimulation.
- D) All of the answers are correct.
- E) None of the answers are correct.

Answer: D

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.4

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: Effector cells are, by definition, already stimulated.

Source: Test Bank

Sequence: 14027

28. In tissues, B cells seek out T cell help in

- A) bone marrow.
- B) afferent lymphatics.
- C) the follicle border of lymph nodes.
- D) the red pulp of the spleen.
- E) All of the answers are correct.

Answer: C

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.3

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: T cells are drawn to a specific section.

Source: Test Bank

Sequence: 14028

29. How do CD4⁺ T cells provide physical help to CD8 T cells, given that they interact with different classes of MHC molecules?

Answer:

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Feedback: Because of imaging studies, we know that CD4⁺ and CD8 T cells interact with the same antigen-presenting cell at the exact same time. These APCs, often licensed dendritic cells, express MHC I and MHC II and can display peptides to both sets of T cells.

Question Type: Essay

Chapter Name: 14

Section: 14.3

Cognitive Level: HOC

Blooms Level: Evaluating

Level of Difficulty: Difficult

Hint: What did imaging studies reveal about CD4⁺ and CD8 T cells?

Source: Test Bank

Sequence: 14029

30. What are the steps required for a naïve B cell to achieve activation in vivo? Explain the significance of each step.

Answer:

Feedback: B cells require two signals to activate: binding to antigen and costimulation from CD4⁺ T cells. Antigen binding occurs first via the BCR; these cells then migrate to the border between the follicle and the paracortex of the lymph node by upregulating CCR7. At this border B and T cells establish an immunological synapse between the T_H cell's clustered TCR, CD28, and CD40L and a B cell's class II MHC, class II-peptide, CD80/86, and CD40 molecules.

Question Type: Essay

Chapter Name: 14

Section: 14.3

Cognitive Level: HOC

Blooms Level: Evaluating

Level of Difficulty: Difficult

Hint: See Figure 14-14.

Source: Test Bank

Sequence: 14030

31. To avoid returning to the lymph nodes, effector cells

- A) up-regulate chemokine receptors to allow them to home in to site of infection.
- B) down-regulate L-selectin, so they do not enter the high-endothelial venules (HEVs).
- C) down-regulate chemokine receptors, so they do not enter the high-endothelial venules (HEVs).
- D) up-regulate chemokine receptors and downregulate L-selectin.
- E) down-regulate both L-selectin and chemokine receptors.

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Answer: D

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.4

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: L-selectin interacts with HEVs leading to lymph nodes.

Source: Test Bank

Sequence: 14031

32. Tracking of responses to a transgenic pathogen (toxoplasma) has shown that

- A) T-cell behavior followed patterns predicted by previous studies.
- B) dendritic cell behavior followed patterns predicted by previous studies.
- C) lymph-node architecture changed due to inflammation.
- D) T cells divided at the site of infection.
- E) All of the answers are correct.

Answer: C

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.5

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: Predictions and reality did not fully match.

Source: Test Bank

Sequence: 14032

33. Which of the following adaptive cell types' response is MOST similar to innate immunity?

- A) Central memory T cells
- B) Effector memory T cells
- C) Tissue-resident memory T cells
- D) Memory B cells
- E) None of the answers are correct.

Answer: C

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.4

Cognitive Level: HOC

Blooms Level: Applying

Level of Difficulty: Difficult

Hint: HSV specific cells of this type can protect against multiple pathogens.

Source: Test Bank

Sequence: 14033

34. What are the three types of memory cells in the body? Where is each type located?

Answer:

Feedback: Memory cells are either central memory, resident memory, or effector memory.

Central memory cells stay in secondary lymphoid tissues, resident memory cells live in specific tissues (often at barrier sites), and effector memory cells circulate through various tissues.

Question Type: Essay

Chapter Name: 14

Section: 14.4

Cognitive Level: LOC

Blooms Level: Remembering

Level of Difficulty: Easy

Hint: Consider where and how differentiation occurs.

Source: Test Bank

Sequence: 14034

35. Studies of graft rejection using cells labeled with fluorescent markers demonstrate that

- A) any infiltration of a skin graft depends on MHC mismatch.
- B) deep infiltration of a skin graft depends on MHC mismatch.
- C) host antigen-presenting cells enter the skin graft before migrating to lymph nodes.
- D) both any infiltration of a skin graft depends on MHC mismatch, and host antigen-presenting cells enter the skin graft before migrating to lymph nodes.
- E) both any infiltration of a skin graft depends on MHC mismatch and host antigen-presenting cells enter the skin graft before migrating to lymph nodes.

Answer: E

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.5

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: The grafted APCs do migrate to the lymph node but seem to die off quickly.

Source: Test Bank

Sequence: 14035

36. *Listeria* is able to persist in an infection because it

- A) avoids being broken down and presented as antigen.
- B) localizes quickly to lymph nodes and persists there.
- C) reproduces inside macrophages.
- D) is passed by dendritic cells to monocytes.
- E) None of the answers are correct.

Answer: D

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.5

Cognitive Level: LOC

Blooms Level: Understanding

Level of Difficulty: Moderate

Hint: Blood-borne pathogens such as *Listeria* drain to the spleen.

Source: Test Bank

Sequence: 14036

37. The failure of cytotoxic T cells to eliminate tumors can be attributed to

- A) failure of tumor antigen presentation.
- B) failure of activation of tumor-specific T cells.
- C) failure of recruitment of T cells to the tumor.
- D) failure of the T cells to produce cytotoxic effector molecules.
- E) All of the answers are correct.

Answer: A

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.5

Cognitive Level: LOC

Blooms Level: Remembering

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Level of Difficulty: Easy

Hint: Activated T cells can be monitored at the tumor sites.

Source: Test Bank

Sequence: 14037

38. Immune responses are often ineffective — in some cases, these responses can contribute to disease through which of the following conditions?

- A) *Listeria*
- B) Tissue grafts
- C) Solid tumors
- D) Type 1 diabetes
- E) All of the conditions are contributed to by immune responses.

Answer: E

Question Type: Multiple Choice

Chapter Name: 14

Section: 14.5

Cognitive Level: HOC

Blooms Level: Applying

Level of Difficulty: Moderate

Hint: The immune response is often a double-edged sword.

Source: Test Bank

Sequence: 14038

39. Explain how the immune system both responds to and controls *Toxoplasma gondii* infection in the brain.

Answer:

Feedback: Antigen-specific CD8⁺ T cells in the lymph node respond rapidly and form contacts with DCs. Crawling naïve antigen-specific T cells slow down considerably after encountering DCs that have been exposed to antigen. These cells collect in the lymph nodes subscapular sinus before the CD8 T cells begin entering the brain by day 3. In an experimental model, some cells formed stable clusters near infected cells and appeared to be interacting with brain-resident APCs. Infection induced the appearance of a new reticular network.

Question Type: Essay

Chapter Name: 14

Section: 14.5

Cognitive Level: HOC

Blooms Level: Evaluating

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Level of Difficulty: Difficult
Hint: See Figure 14-23.
Source: Test Bank
Sequence: 14039

40. Provide an example of the immune system helping to spread an infection throughout the body, including an analysis of how the infection is able to circulate.

Answer:

Feedback: There are many examples of pathogens exploiting the host's own immune response, but one that has been well visualized is bacterial *Listeria* infection. *Listeria* travels to lymph nodes after physiologic or experimental infection and is then able to actively infect and survive in the dendritic cells that phagocytize it. From there, it is able to "hitch a ride" inside these cells as they circulate, infecting distant regions of the body.

Question Type: Essay

Chapter Name: 14

Section: 14.5

Cognitive Level: HOC

Blooms Level: Evaluating

Level of Difficulty: Difficult

Hint: See Figure 14-26.

Source: Test Bank

Sequence: 14040

41. What is one component, activity, or interaction in the immune system of which you would want high-quality video? What might it assist you in evaluating? How would you apply this to your studies? Explain.

Answer:

Feedback: Answers will vary but the response should demonstrate knowledge of how the immune response is both initiated and ultimately carried out.

Question Type: Essay

Chapter Name: 14

Section: 14.6

Cognitive Level: HOC

Blooms Level: Evaluating

Level of Difficulty: Difficult

Hint: Consider how the immune response is initiated and carried out in the formulation of your response.

Source: Test Bank

Copyright notice

© 2019 Macmillan Learning. Testbank [978-1-319-14750-1]. All rights reserved.

Sequence: 14041