Abbas Cellular and Molecular Immunology 11th edition Abbas Test Bank

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Chapter 01: Overview of the Immune System

Abbas: Cellular and Molecular Immunology, 11th Edition

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MULTIPLE CHOICE

1. The principal function of the immune system is

a. Defense against cancer
b. Repair of injured tissues
c. Defense against microbial infections
d. Prevention of inflammatory diseases
e. Protection against environmental toxins

ANS: C

The immune system has evolved in the setting of selective pressures imposed by microbial infections. Although immune responses to cancer may occur, the concept that "immunosurveillance" against cancer is a principal function of the immune system is controversial. Repair of injured tissues may be a secondary consequence of the immune responses and inflammation. Although the immune system has regulatory features that are needed to prevent excessive inflammation, prevention of inflammatory diseases is not a primary function. The immune system can protect against microbial toxins, but it generally does not offer protection against toxins of nonbiologic origin.

2. Which of the following infectious diseases was prevented by the first successful vaccination?

a. Polio
b. Tuberculosis
c. Smallpox
d. Tetanus
e. Rubella

ANS: C

In 1798 Edward Jenner reported the first intentional successful vaccination, which was against smallpox in a boy, using material from the cowpox pustules of a milkmaid. In 1980 smallpox was reported to be eradicated worldwide by a vaccination program. Effective vaccines against tetanus toxin, rubella virus, and poliovirus were developed in the 20th century and are widely used. There is no effective vaccine against *Mycobacterium tuberculosis*.

3. Which of the following is a unique property of the adaptive immune system?

a. Highly diverse repertoire of specificities for antigens
b. Self-nonself discrimination
c. Recognition of microbial structures by both cell-associated and soluble receptors

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d. Protection against viral infections
e. Responses that have the same kinetics and magnitude on repeated exposure to the same microbe

ANS: A

Highly diverse repertoires of specificities for antigens are found only in T and B lymphocytes, which are the central cellular components of the adaptive immune system. Both the innate and the adaptive immune systems use cell-associated and soluble receptors to recognize microbes, display some degree of self-nonself discrimination, and protect against viruses. On repeated exposure to the same microbe, the adaptive immune response becomes more rapid and of greater magnitude; this is the manifestation of memory.

4. Antibodies and T lymphocytes are the respective mediators of which two types of immunity?

a. Innate and adaptive
b. Passive and active
c. Specific and nonspecific
d. Humoral and cell-mediated
e. Adult and neonatal

ANS: D

Both B and T lymphocytes are principal components of adaptive immunity. B lymphocytes produce antibodies, which are the recognition and effector molecules of humoral immune responses to extracellular pathogens. T cells recognize and promote eradication of intracellular pathogens in cell-mediated immunity. Passive and active immunity both can be mediated by either B or T lymphocytes. *Specific immunity* is another term for adaptive immunity. Both B and T lymphocytes participate in adult adaptive immunity but are still developing in the neonatal period.

5. The two major functional classes of effector T lymphocytes are

a. helper T lymphocytes and cytotoxic T lymphocytes.
b. natural killer cells and cytotoxic T lymphocytes.
c. memory T cells and effector T cells.
d. helper cells and antigen-presenting cells.
e. cytotoxic T lymphocytes and target cells

ANS: A

T cells can be classified into effector subsets that perform different effector functions. Most effector T cells are either helper T lymphocytes, which enhance the responses of other immune cells including phagocytes and B cells to infections, or cytotoxic T lymphocytes, which directly kill infected cells. Natural killer cells are not T lymphocytes. Antigen-presenting cells usually are not T cells. Memory T cells are not effector T cells.

6. Which of the following cell types is required for all adaptive humoral immune responses?

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a. Natural killer cells
b. Dendritic cells
c. Cytolytic T lymphocytes
d. B lymphocytes
e. Helper T lymphocytes

ANS: D

Humoral immune responses are antibody-mediated immune responses, and all antibodies are made by B lymphocytes and by no other cell type.

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