

1. If an antigen enters through the bloodstream, it encounters the APCs, B-lymphocytes, and T-lymphocytes needed to initiate adaptive immunity in:

- A. The bone marrow and the thymus.
- B. The spleen.
- C. The MALT.
- D. The blood.
- E. The lymph nodes.

2. Naïve B-lymphocytes, T4-lymphocytes, and T8-lymphocytes recognize epitopes of antigens by:

- A. Their B-cell receptors and their T-cell receptors.
- B. Their MHC-I and MHC-II molecules.
- C. Their CD4 and CD8 molecules.
- D. Their pattern-recognition receptors.

3. The primary role of dendritic cells is to:

- A. Activate macrophages through the cytokines they produce.
- B. Activate NK cells through the cytokines they produce.
- C. Activate naïve T4-lymphocytes and naïve T8-lymphocytes.
- D. Activate naïve B-lymphocytes and enable them to differentiate into plasma cells.

4. Naïve T8-lymphocytes are activated by binding to:

- A. MHC-I molecules with bound peptide epitopes from endogenous antigens.
- B. MHC-I molecules with bound peptide epitopes from exogenous antigens.
- C. MHC-II molecules with bound peptide epitopes from endogenous antigens.
- D. MHC-II molecules with bound peptide epitopes from exogenous antigens.

5. Clonal expansion, the proliferation of B-lymphocytes, T4-lymphocytes, and T8-lymphocytes that have bound to epitopes that fit their BCRs or TCRs is mediated by:

- A. Cytokines produced by dendritic cells.
- B. Cytokines produced by macrophages.
- C. Cytokines produced by NK cells.
- D. Cytokines produced by effector T4-lymphocytes.

6. After proliferation of activated B-lymphocytes, most differentiate into:

- A. Dendritic cells.
- B. Plasma cells.
- C. Macrophages.
- D. CTLs.
- E. Mast cells.

7. After proliferation of activated T4-lymphocytes, most differentiate into:

- A. T<sub>h</sub>1-lymphocytes, T<sub>h</sub>2-lymphocytes, and T<sub>h</sub>17-lymphocytes.
- B. Cytotoxic T-lymphocytes (CTLs).
- C. Antibody-secreting plasma cells.
- D. T8-effector cells.
- E. NKT cells.

8. Stimulate B-lymphocytes to produce IgE; stimulates B-lymphocytes to produce a subclass of the antibody immunoglobulin G (IgG) that is able to neutralize microbes and toxins. This best describes:

- A. T<sub>h</sub>1-lymphocytes.
- B. T<sub>h</sub>2-lymphocytes.
- C. T<sub>h</sub>17-lymphocytes.
- D. NKT cells.
- E. Cytotoxic T-lymphocytes (CTLs).



9. Cells that can initiate a rapid, heightened secondary response against an antigen after primary exposure to that antigen are called:

- A. T<sub>h</sub>17-lymphocytes.
- B. T<sub>h</sub>1-lymphocytes.
- C. NKT cells.
- D. Memory cells.
- E. Plasma cells.