Advanced Human Immunology

Immunology · Answer Key · 8 Questions

1. Which specific immunoglobulin class is the first to be secreted during a primary immune response and functions as a pentamer in its secreted form?

A) IgG
B) IgA
C) IgM
D) IgD

2. What is the primary function of the Aire (autoimmune regulator) protein expressed in the thymic medullary epithelial cells?

A) Inducing apoptosis in self-reactive T cells
B) Promoting the survival of regulatory T cells
C) Regulating the expression of peripheral tissue-restricted antigens for negative selection
D) Enhancing MHC class II presentation of exogenous antigens

3. During B-cell development, which enzyme is responsible for the introduction of N-nucleotides at the junctions of V, D, and J gene segments?

A) RAG-1
B) TdT (Terminal deoxynucleotidyl transferase)
C) DNA Polymerase epsilon
D) AID (Activation-induced cytidine deaminase)

4. Which cytokine is primarily responsible for the differentiation of naive CD4+ T cells into the Th17 subset in humans?

A) IL-4
B) IFN-gamma
C) TGF-beta and IL-6
D) IL-12

5. What is the role of the TAP (Transporter associated with Antigen Processing) protein in the MHC class I pathway?

A) Degradation of cytosolic proteins into peptides
B) Stabilization of the MHC class I alpha chain
C) Transport of peptides from the cytosol into the endoplasmic reticulum
D) Loading of MHC class I molecules with exogenous antigens

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6. Which complement pathway is initiated by the binding of C1q to antigen-antibody complexes?

A) Alternative pathway
B) Lectin pathway
C) Classical pathway
D) Terminal pathway

7. What is the specific phenotypic marker combination that characterizes human regulatory T cells (Tregs)?

A) CD3+, CD4+, CD8+
B) CD3+, CD4+, CD25+, Foxp3+
C) CD3+, CD8+, CD28+
D) CD3+, CD4+, CD40L+

8. Which cell type is the primary source of the cytokine IL-2 in the early stages of an adaptive immune response?

A) Activated CD8+ T cells
B) Activated CD4+ T cells
C) Follicular dendritic cells
D) Natural Killer cells

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