

ORGANS OF IMMUNE SYSTEM

Q1. What are the organs of immune system?

Organs of immune system	Types
Primary lymphoid organ	a)Thymus b)Bone marrow
Secondary lymphoid organ	a)lymphnodes, b)spleen, c)mucosal associated lymphoid tissue d)cutaneous associated lymphoid tissue

Q2. Give an account on different types of organs involved in immune response.

(A) **PRIMARY LYMPHOID ORGAN**—

Immature lymphocytes generated during hematopoiesis mature and become committed to a particular antigenic specificity within the **primary lymphoid organs**. e.g; In mammals, B-cell maturation occurs in **bone marrow** and T-cell maturation occurs in the **thymus**.

(a)Thymus:

- i) Flat, bilobed organ situated above the heart. Each lobe is surrounded by a capsule and is divided into lobules.
- ii) Progenitor T cells formed during hematopoiesis enter the thymus and multiply rapidly within cortex.
- iii) A small sub set of mature thymocytes migrate from the cortex to medulla. A small population of thymocytes may leave the thymus without entering the medulla.
- iv) Stromal network composed of epithelial cells, interdigitating dendritic cells and macrophages form the framework of the organ and contribute to thymocyte maturation.

Q4.v) What is nurse cells? Some thymic epithelial cells in the outer cortex have long membrane processes that surround as many as 50 thymocytes forming large multicellular complexes.

MATURATION AND SELECTION OF T CELLS

1. Thymic epithelial cells secrete hormonal factors (α_1 thymosin, β_4 thymosin, thymopoietin and thymulin).
2. Thymic stromal cells secrete IL-7 which stimulate growth of thymocytes.
3. Thymic stromal cells with class I and class II MHC molecules play a role in selection process. Only those cells whose receptors recognizes a self-MHC molecule plus foreign antigen are allowed to mature.

Q5. What is DiGeorge's syndrome?

A congenital birth defect in humans that involves failure of the thymus to develop.

(b)Bone marrow:

- i) Immature B cells proliferate and differentiate within the microenvironment of the bone marrow.
- ii) Stromal cells within the bone marrow interact directly with the B cells and secrete various cytokines that are required for the B-cell developmental process.
- iii) A selection process within the bone marrow eliminates B cells with self-reactive antibody receptors

Q6. What is the importance of lymphatic system in immune response?.

Lymphatic system functions to capture fluid lost from the blood and return it to the blood. When a foreign antigens gains entrance into the tissues, it is picked up by the lymphatic system and is carried to various organized lymphoid tissues which trap the foreign antigens.

(B) **SECONDARY LYMPHOID ORGAN**—

Functions to capture antigen and to provide sites where lymphocytes interact with that antigen and undergo clonal proliferation and differentiation into effector cells. Two types of lymphoid tissues are traced—