

Lymphoid Tissue and Lymphatic Organs

Defense Mechanisms

○ Innate / Non-specific

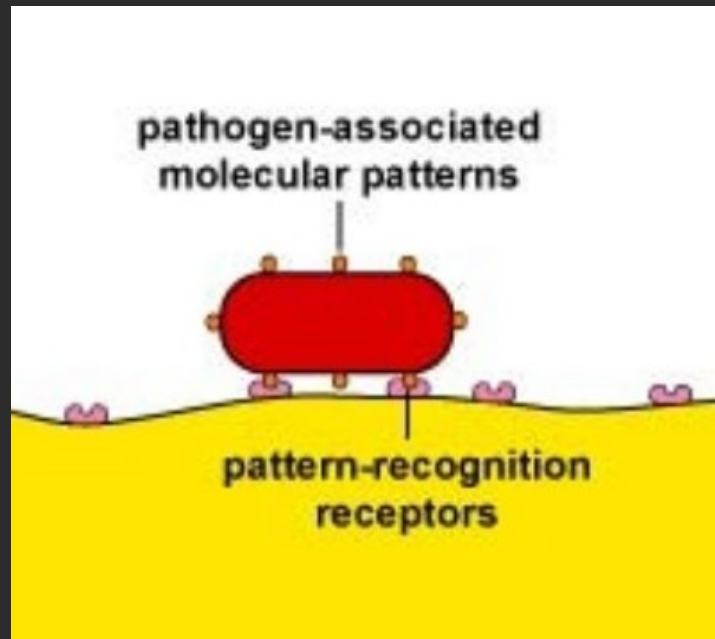
- Epithelial Barriers
- Phagocytic cells
- Pattern Recognition Receptors
- Acute inflammation
 - Neutrophils, Macrophages, Mast cells, other granulocytes
- NK cells
- Complement system

○ Adaptive / Specific

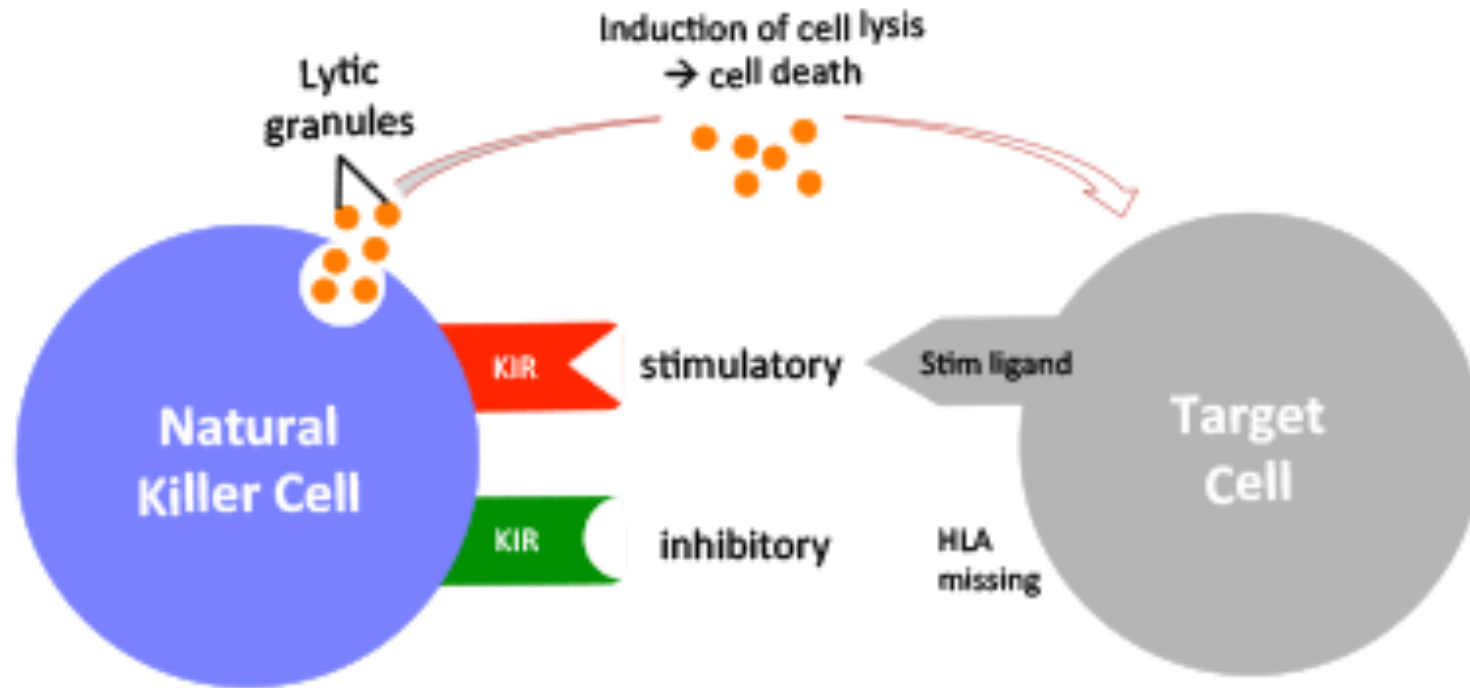
- Humoral Immune reaction (B cells)
- Cell-mediated immune reaction (T cells)
- Antigen Presenting Cells (APCs)

Pattern Recognition Receptors

- Innate (non-specific) immune system
- Recognize molecular patterns
- Found on phagocytes
- Types
 - Endocytic PRRs
 - Signaling PRRs
 - Toll-like receptors (TLRs)
 - CD 14 receptor
 - NOD receptor



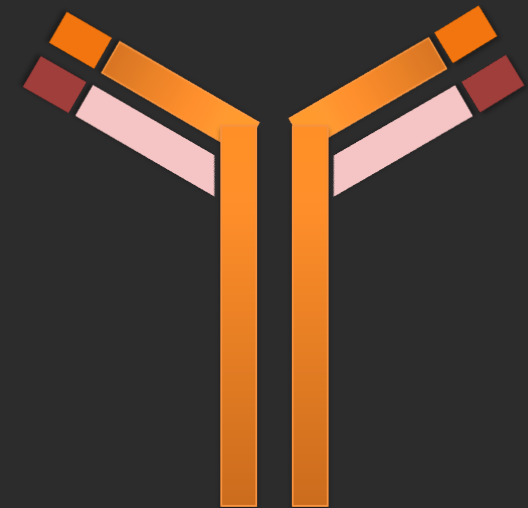
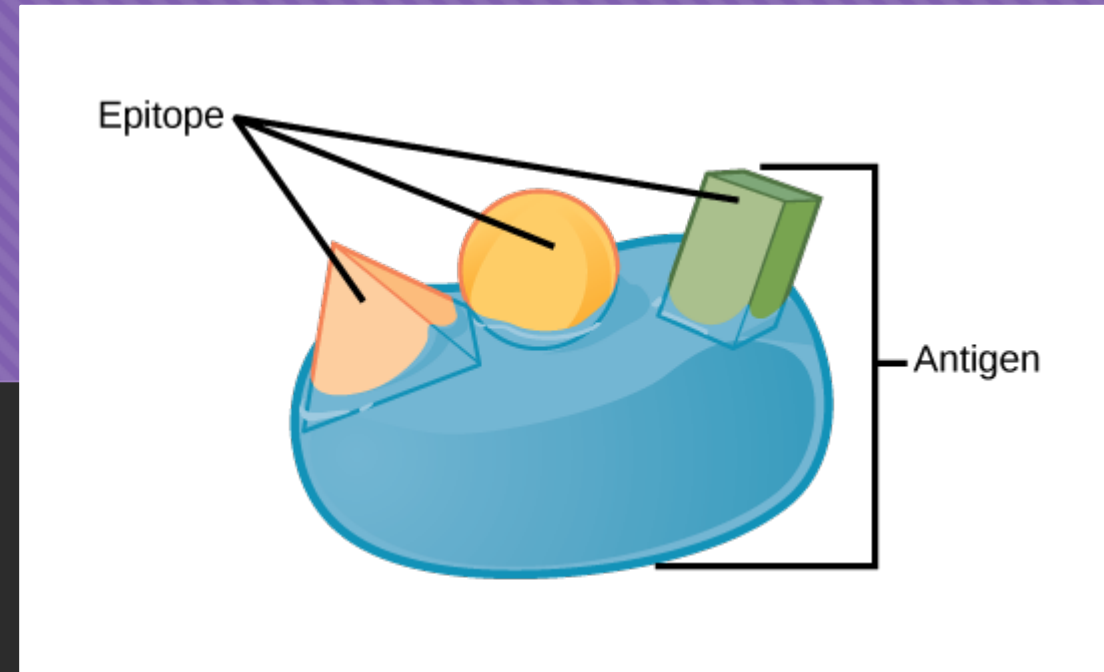
Natural Killer cells (NK cells)



Adaptive / Specific

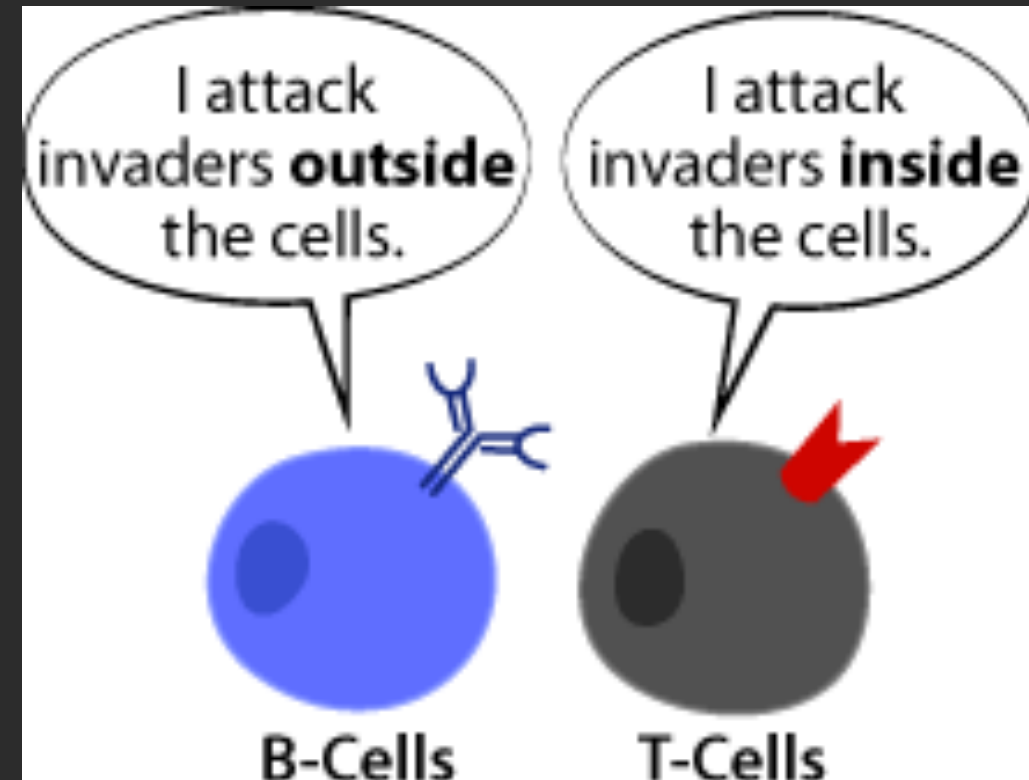
Some Definitions

- Antigen
 - Self: Major Histocompatibility Complex (MHC) – I and II
 - Non-self: Foreign
- Epitope
- Antibody
 - IgG, IgM, IgD, IgE, IgA



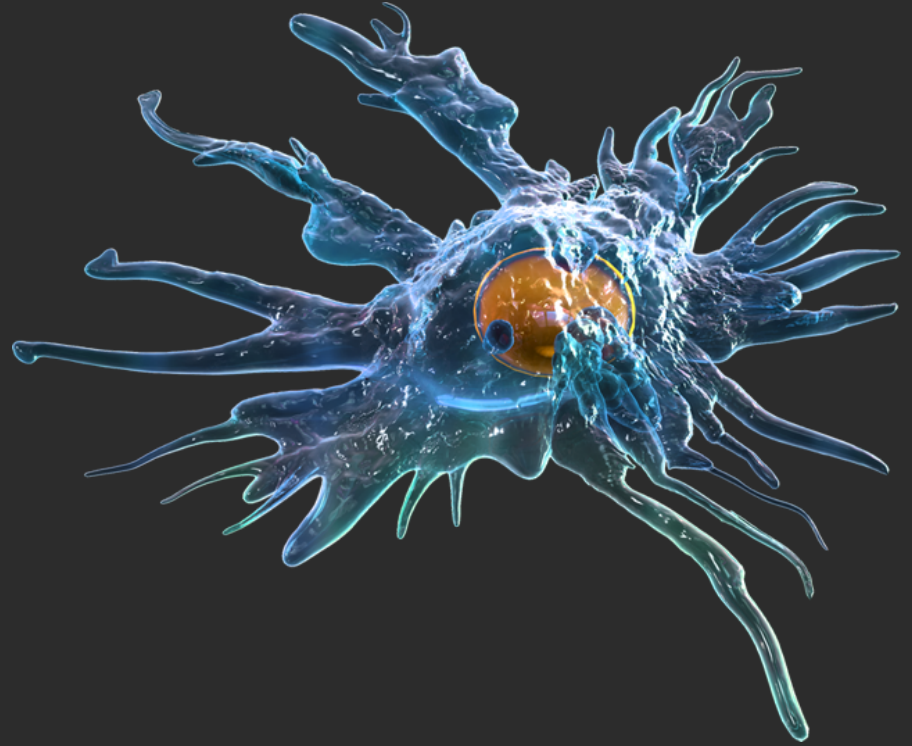
Adaptive Immune System: Cells

- B cells
 - *Humoral immune response*
 - B cells receptors: Immunoglobulins (antibodies)
- T cells
 - T cytotoxic cell (CD8+)
 - *Cell-mediated immune response*
 - T helper cell (CD4+)
 - Active in initial phase of both types



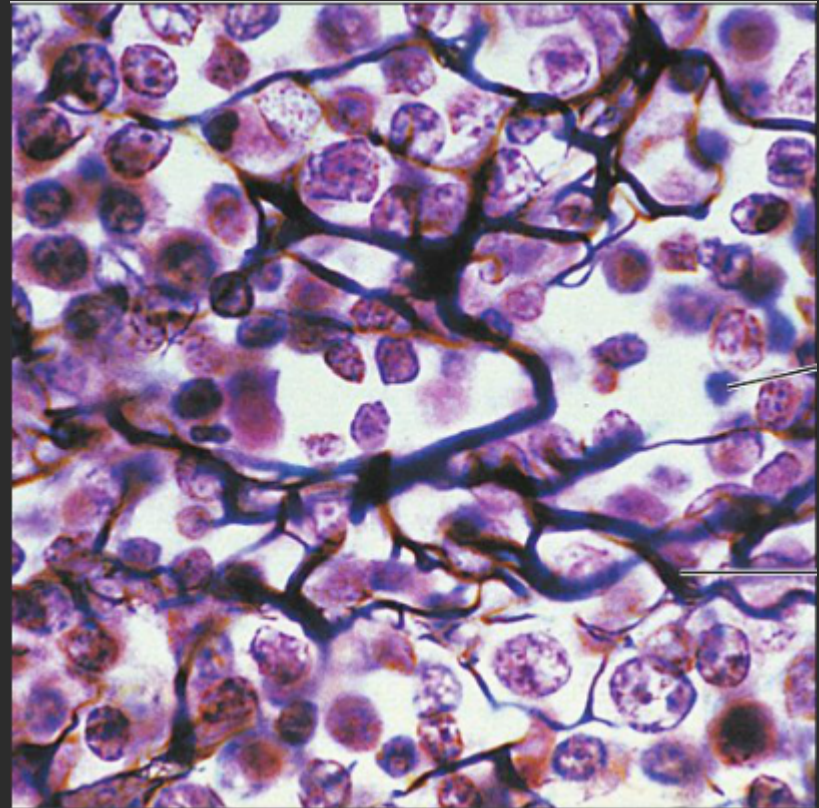
Antigen Presenting Cells (APCs)

- Professional
- Non Professional



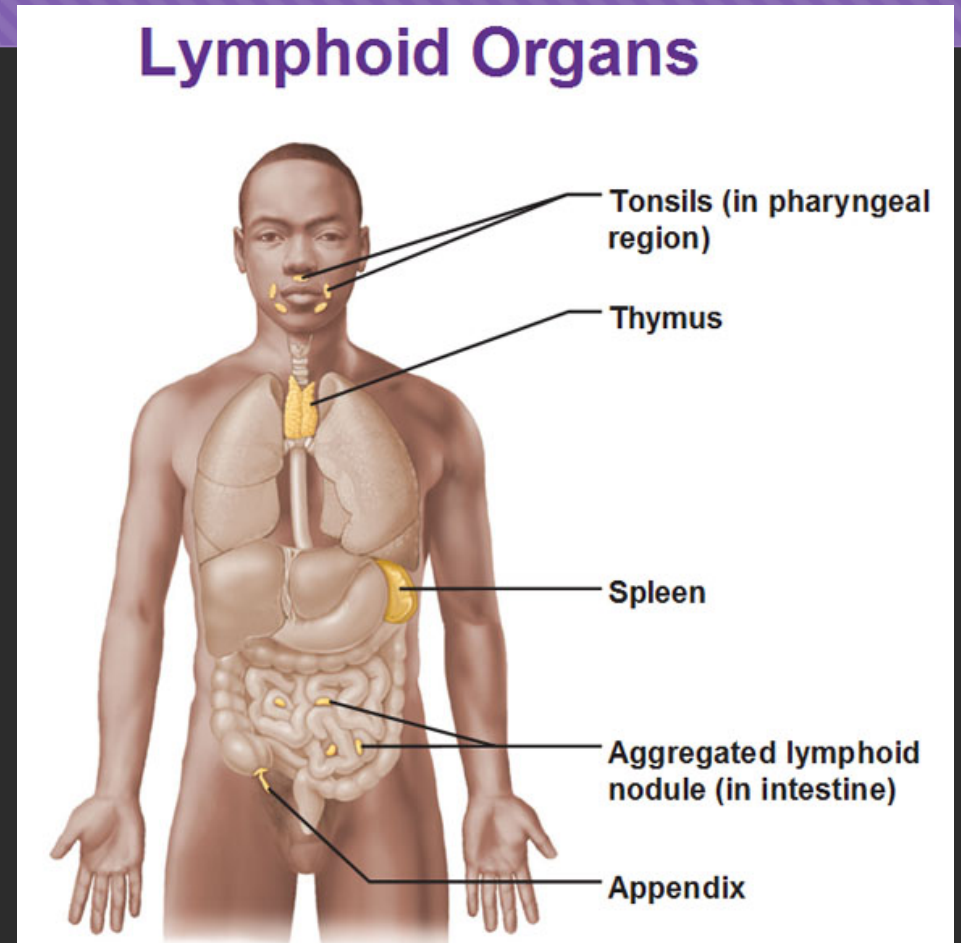
Lymphoid Tissue

- Reticular connective tissue
 - Network of reticular fibers
 - Network of stellate reticular cells
 - Fibroblasts, Macrophages, Dendritic cells
- Very numerous lymphocytes



Localization of Lymphoid Tissue

- Lymphatic Organs
 - Lymph node
 - Spleen
 - Thymus
- Mucosa-Associated Lymphoid Tissue (MALT)
 - Tonsils
 - GALT
 - BALT (Bronchi-Associated LT)

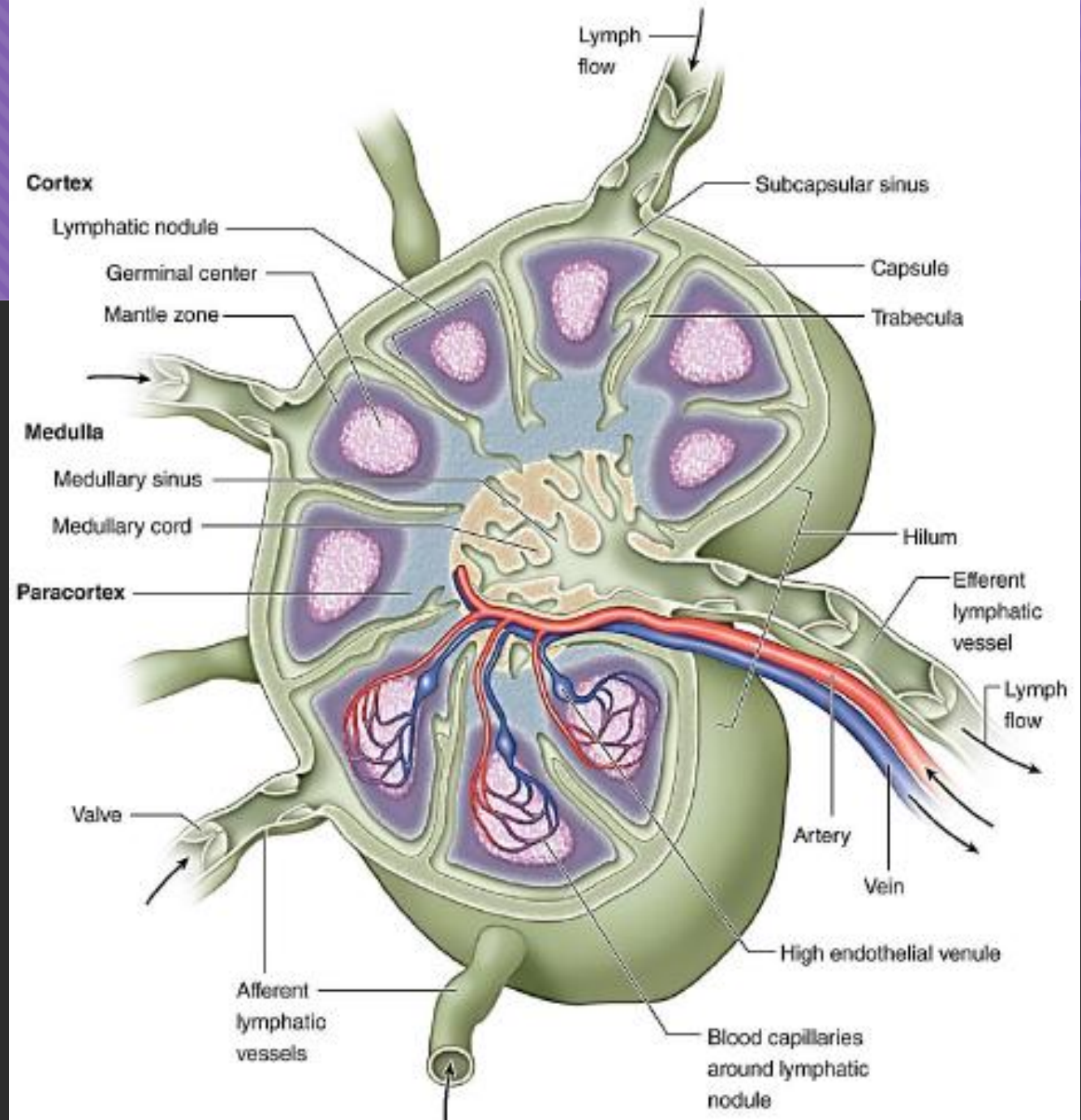
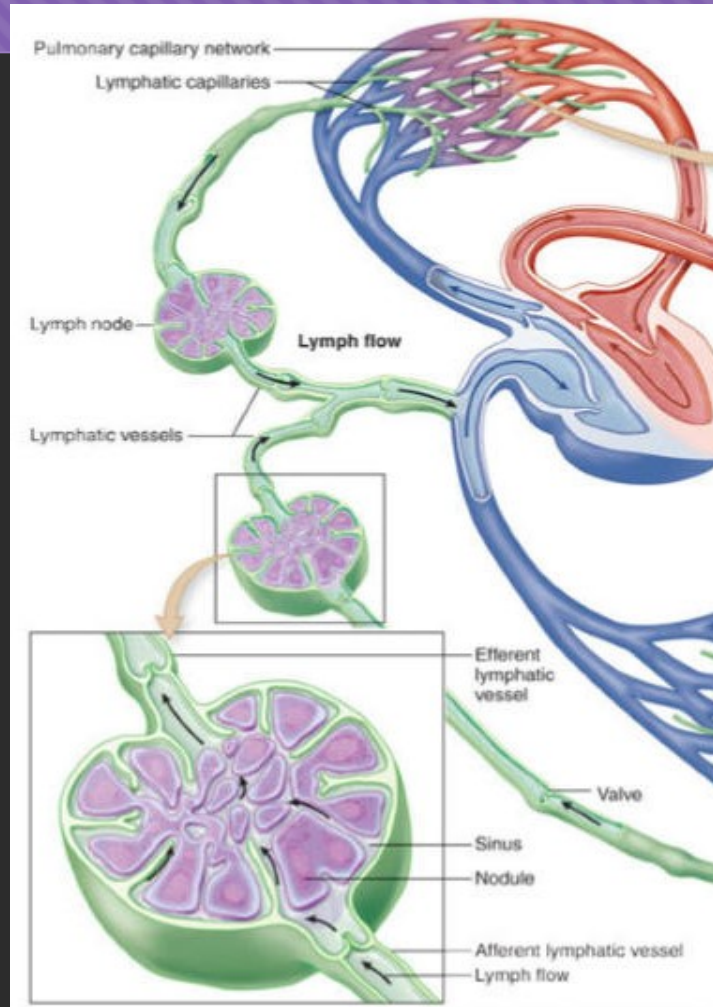


Types of Lymphoid Tissue

- Diffuse: B and T cells
- Nodular (Follicular): Mainly B cells
 - Spherical aggregates of lymphoid tissue
 - Primary and secondary
- B cell selection
 - Follicular Dendritic cells
 - Th cells
 - Macrophages

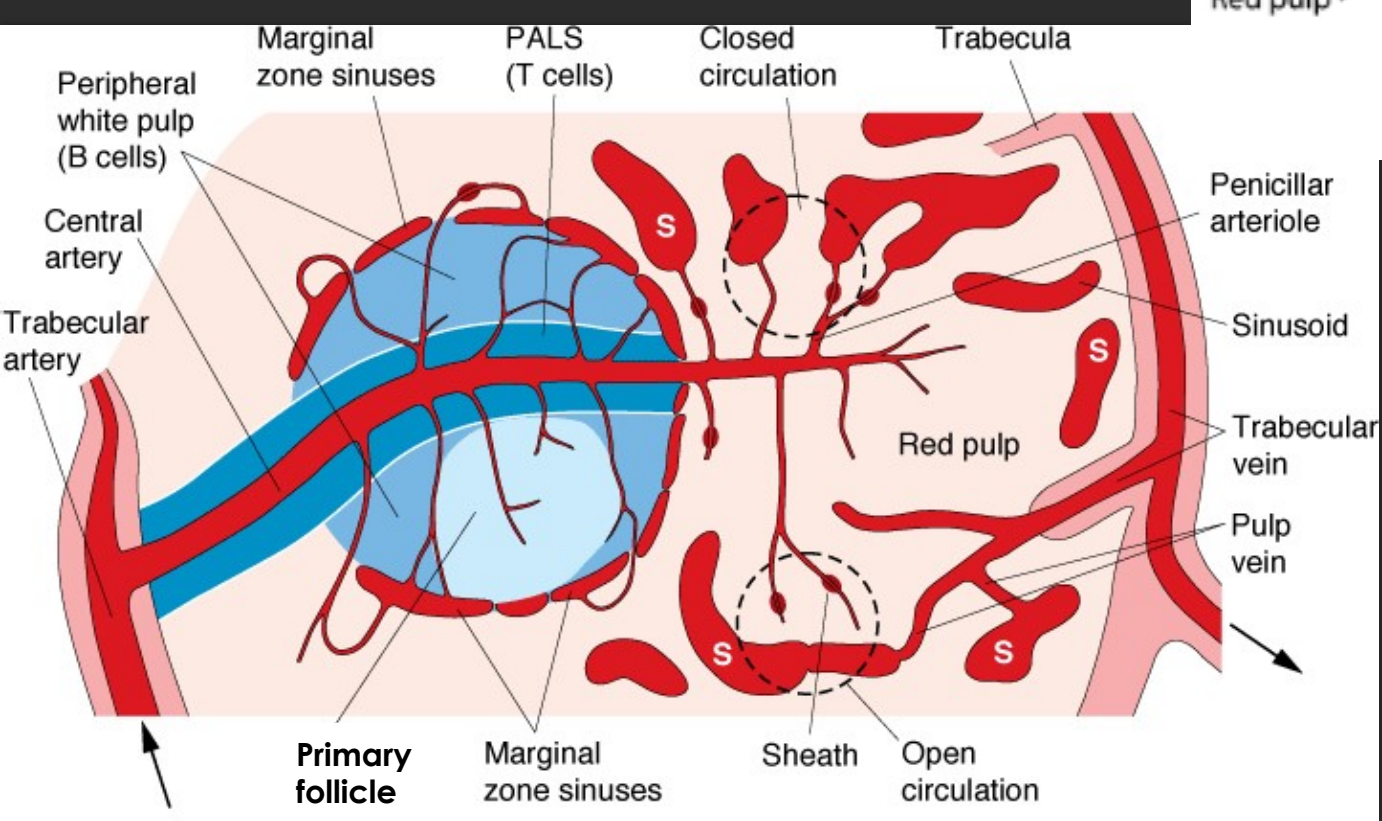
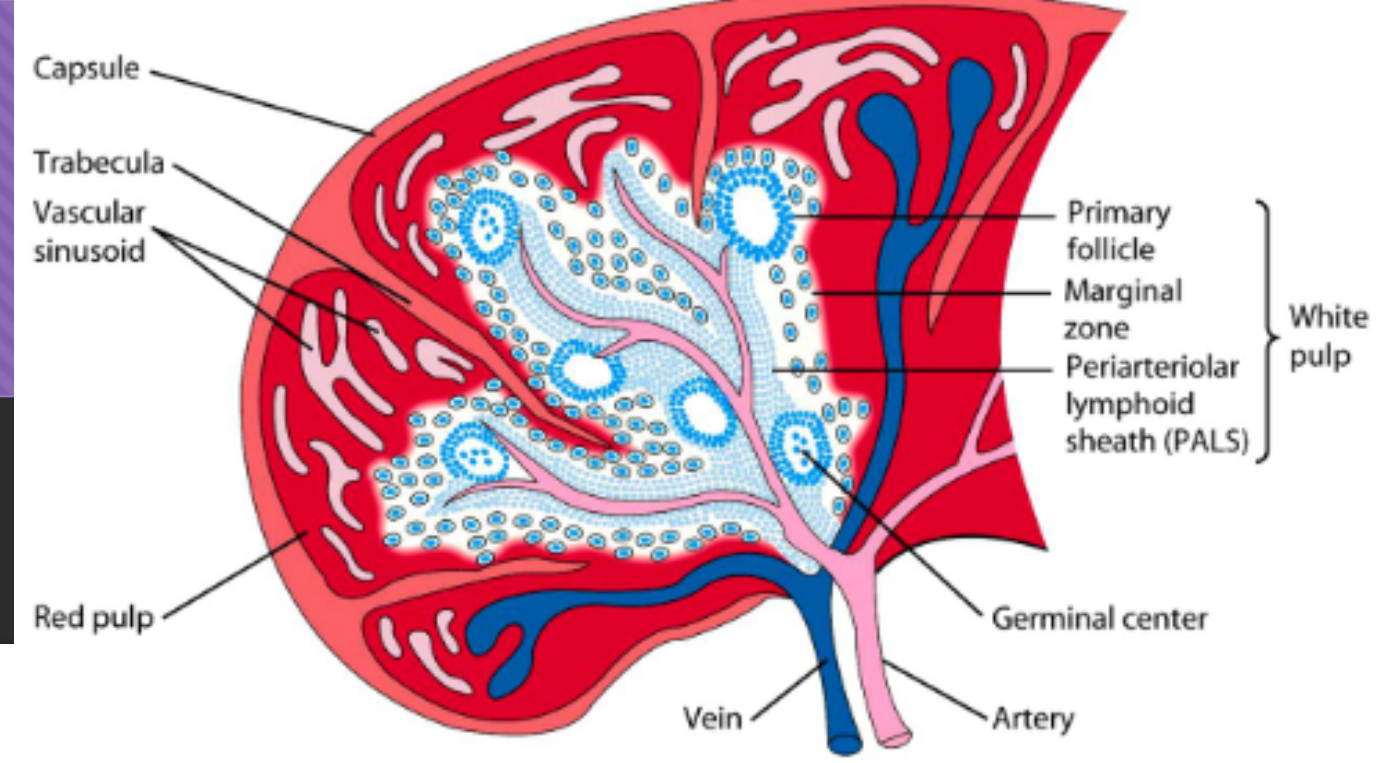


Lymph Node



Spleen

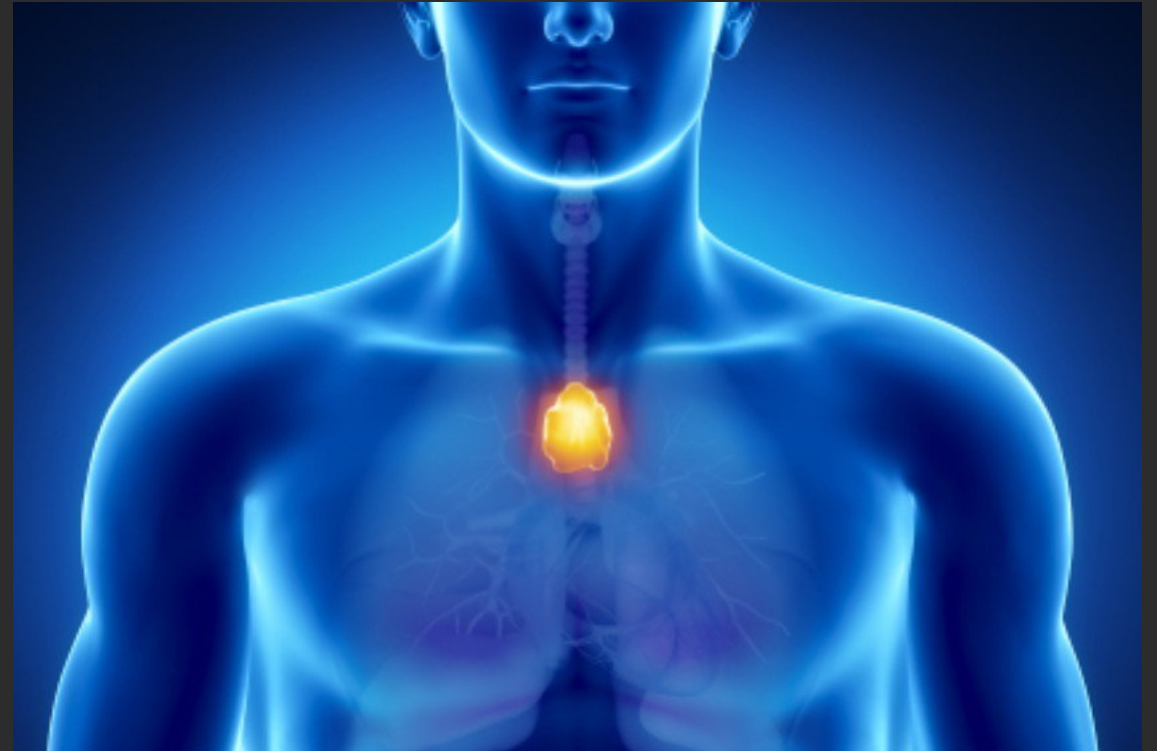
- White pulp
 - PALS (T cells)
 - Splenic (lymphoid) nodules (B cells)



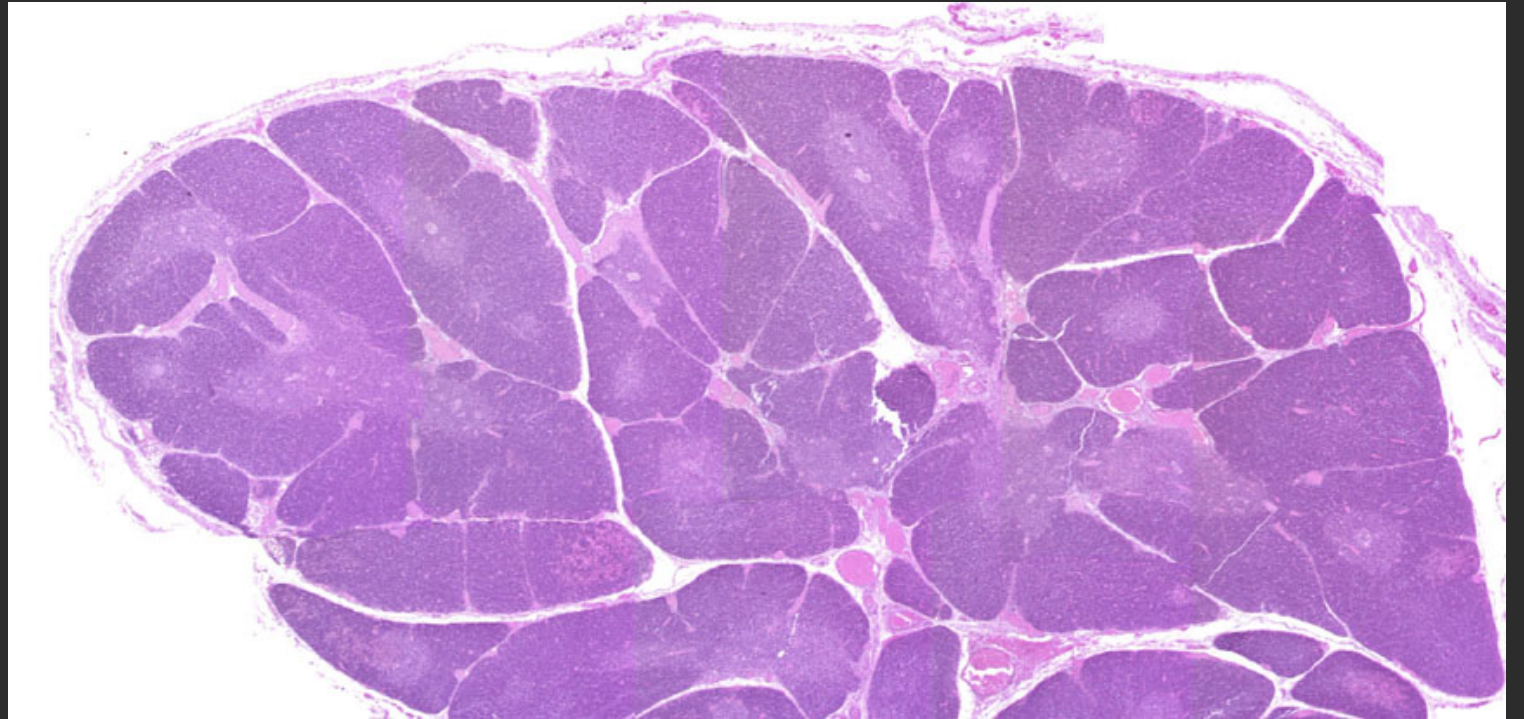
- Red pulp
 - Splenic cords
 - Splenic Sinusoids
 - Pulpal veins

Thymus

- Epithelial origin
- No reticular connective tissue
- Only T cells
 - No lymphoid nodules
 - No immune reactions against non-self antigens
- T cell school



Thymus



Thymus

- Autoimmunity
- Involution