

Lymphatic System

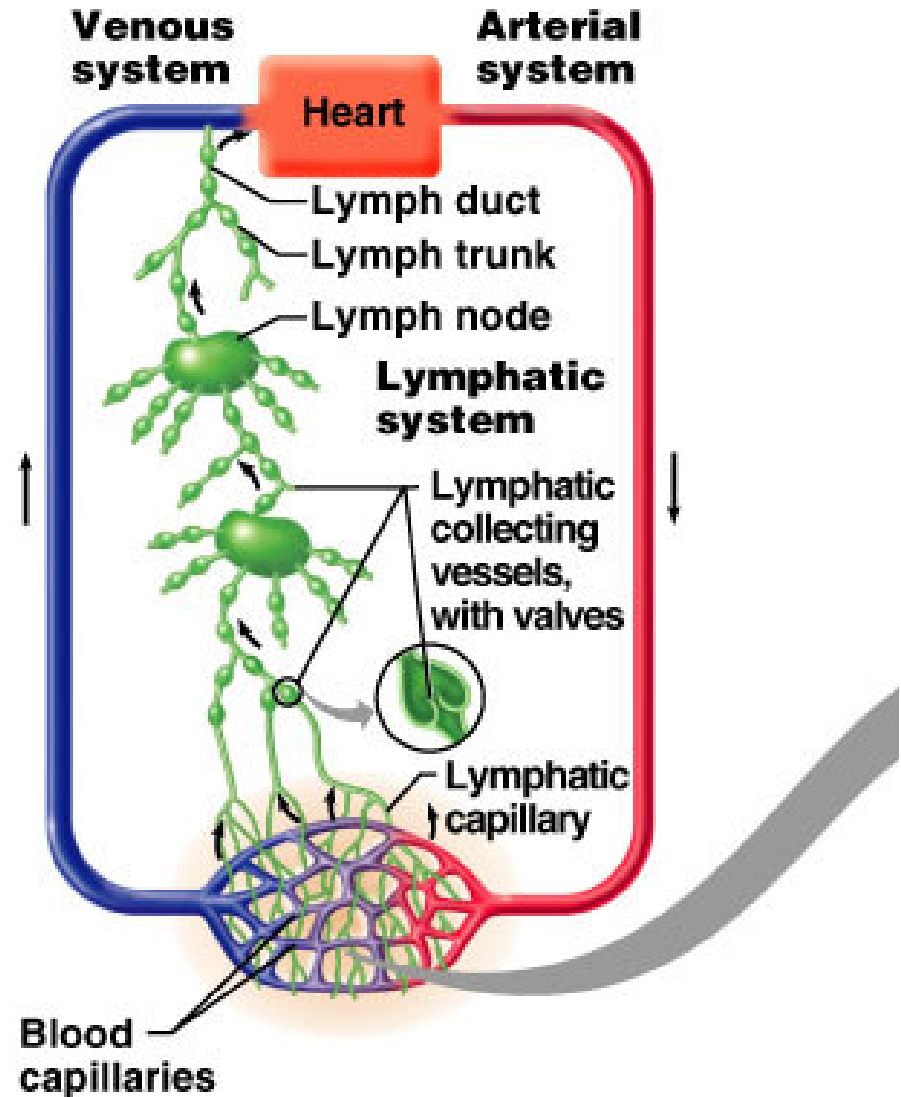
- **Lymphatic System**

- **Made up of:**

- **Lymph**
 - **Lymph vessels**
 - **Lymphocytes**
 - **Lymph nodules**
 - **Lymph nodes**
 - **Tonsils**
 - **Spleen**
 - **Thymus Gland**
 - **Red Bone Marrow**

- **Functions**

- **Maintains fluid balance in tissues**
 - **Absorbs fats from the small intestine**
 - **Defends against microorganisms and foreign substances**



Lymphatic System

- **Lymph Capillaries**
 - **Lack a basement membrane**
 - **Epithelial cells loosely overlap**
 - **Lymph Transport**

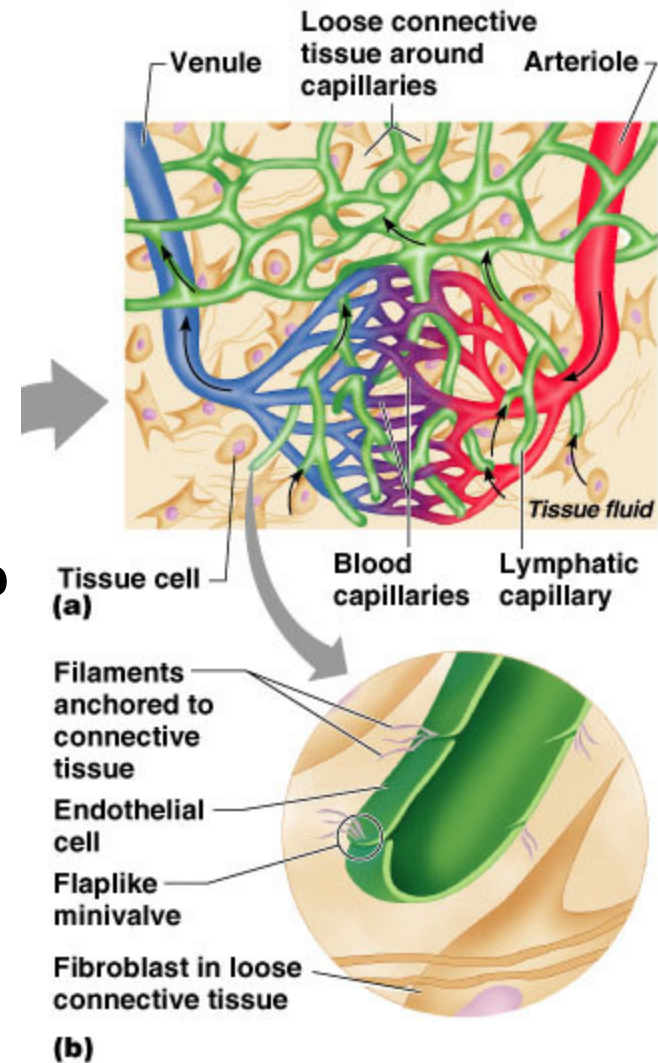


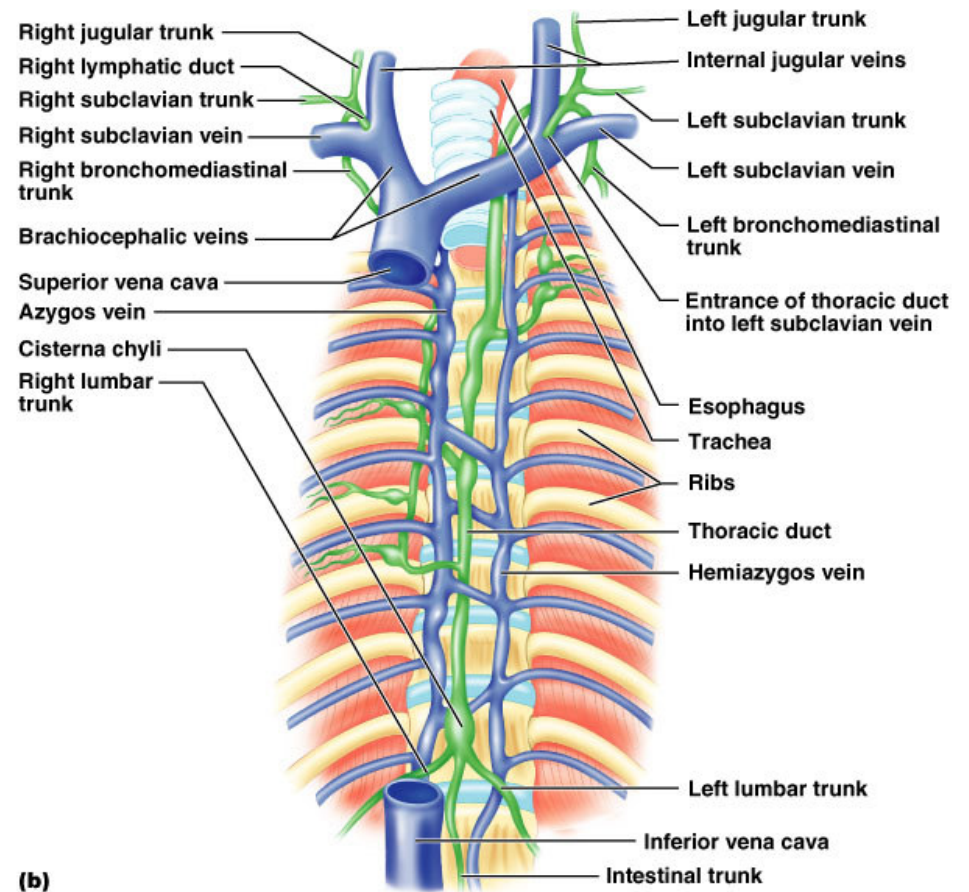
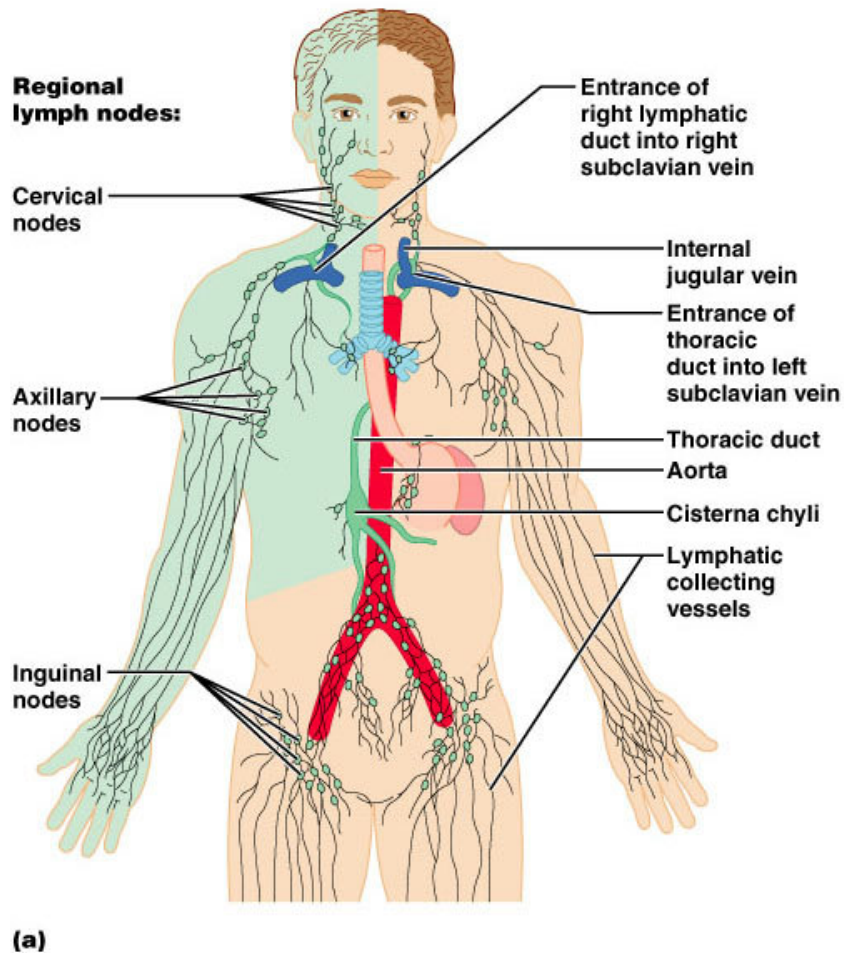


Fig. 281.—Elephantiasis of the scrotum in a native of FIJI



Lymphatic System

• Lymph Trunks and Ducts



Lymphatic System

- **Lymphoid Cells**

- **Lymphocytes**

- **“Main Warriors”**

- **Produced where?**

- **Protect against antigens**

- **Two major types**

- **T Cells**

- » **Orchestrate the immune response**

- » **Some are direct killers that destroy foreign antigens**

- **B Cells**

- » **Produce plasma cells that in turn produce antibodies**

Lymphatic System

– Lymphoid Macrophages

- Eat and destroy foreign antigens**
- Play a role in activating T Cells**

– Dendritic Cells

- Function like macrophages**
- Appear spiny**
- Found in lymphoid tissues**

– Reticular Cells

- Produce the fibrous stroma located in lymphoid organs**

Lymphatic System

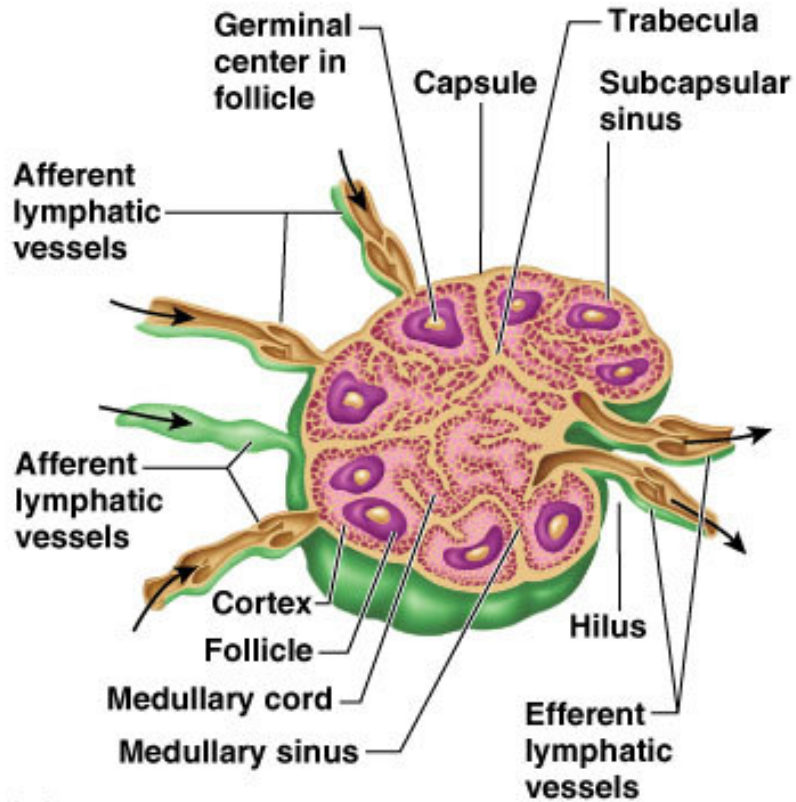
- **Lymphoid Tissues**
 - **Houses lymphocytes**
 - **Provides a “check point” for lymphocytes and macrophages to work**
 - **Composed of several types**
 - **Reticular CT**
 - **Found in all lymphoid organs except the thymus gland**
 - » **Macrophages live on the fibers**
 - » **Lymphocytes live in the spaces between the fibers**

Lymphatic System

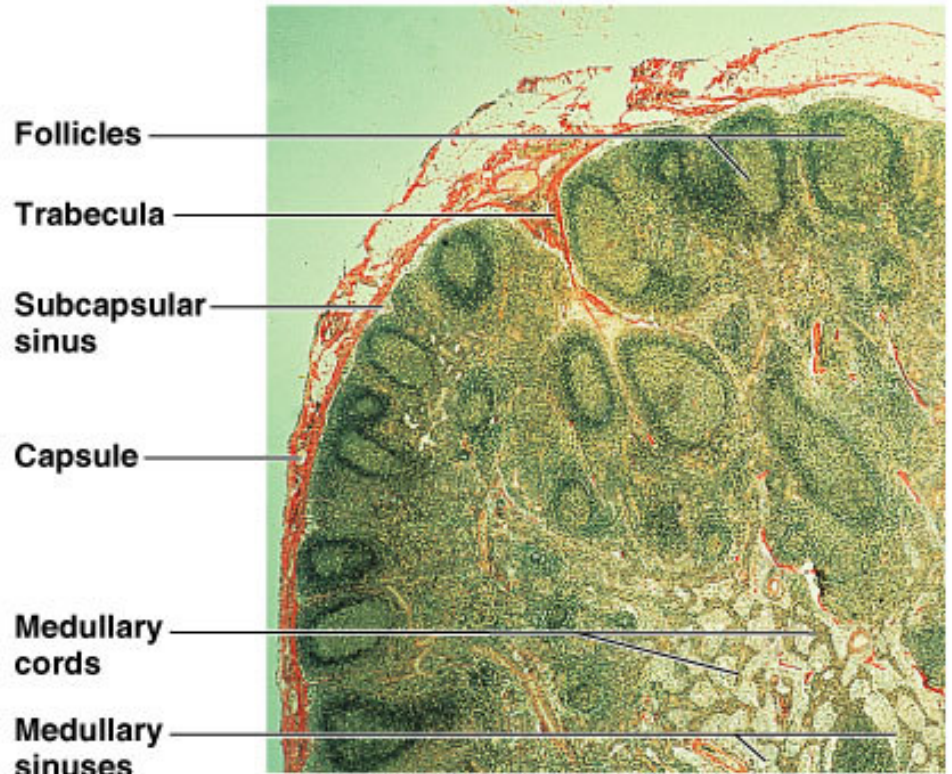
- **Diffuse Lymphatic Tissue**
 - **Scattered reticular tissue elements found in virtually all body organs**
 - **Larger numbers are found in mucous membranes**
- **Lymphoid Follicles (nodules)**
 - **Lack a capsule**
 - **Solid, spherical structures, with tightly packed reticular elements**
 - **Often have light centers (germinal centers) that contain dendritic cells and B Cells**
 - **Good example, Peyer's patches in the intestines and appendix**

Lymphatic System

- **Lymph Nodes**



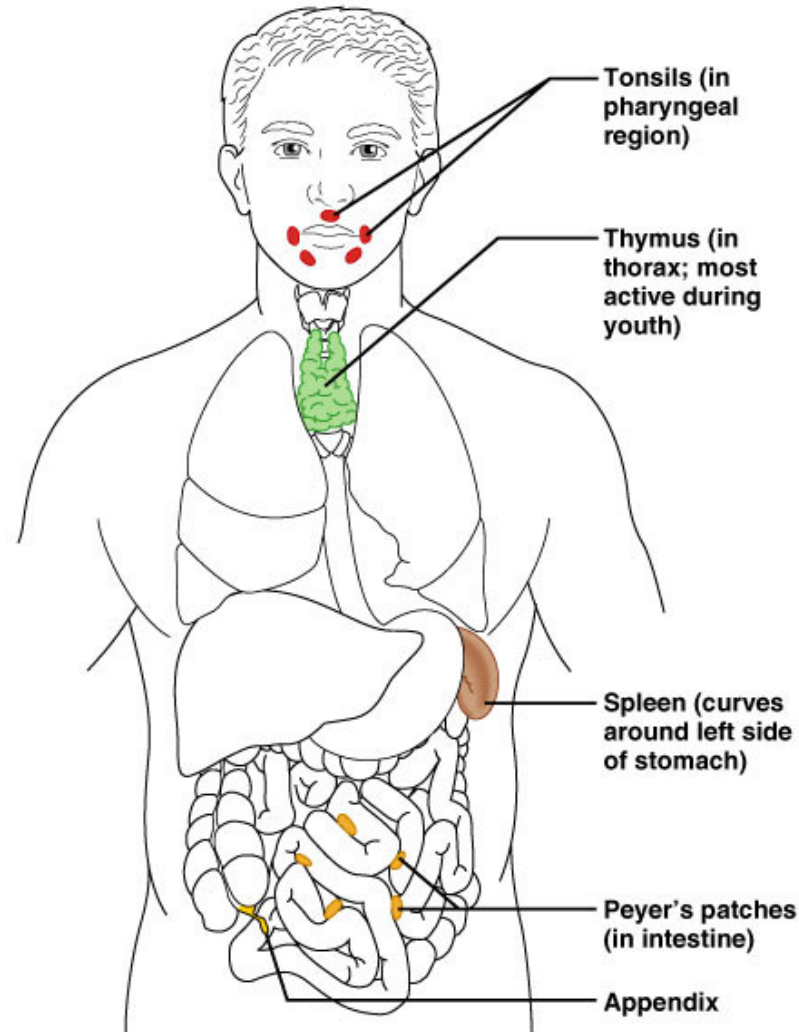
(a)



(b)

Lymphatic System

- **Other Lymph Organs**

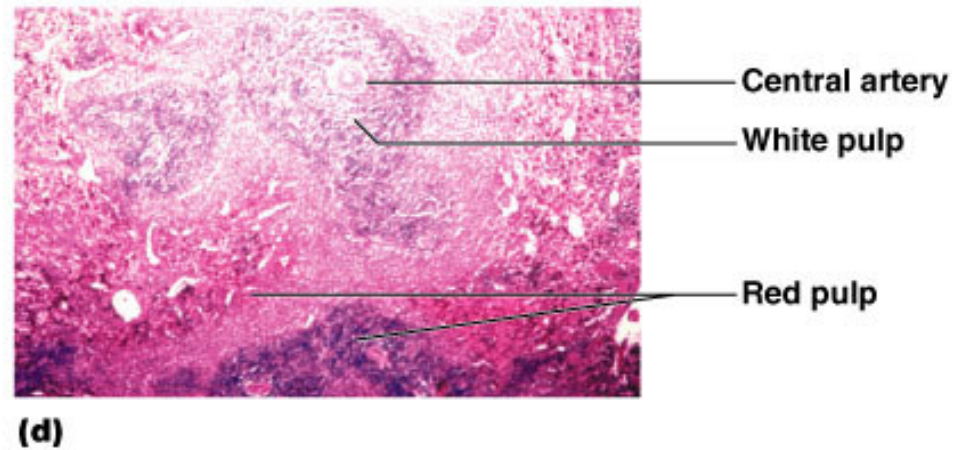
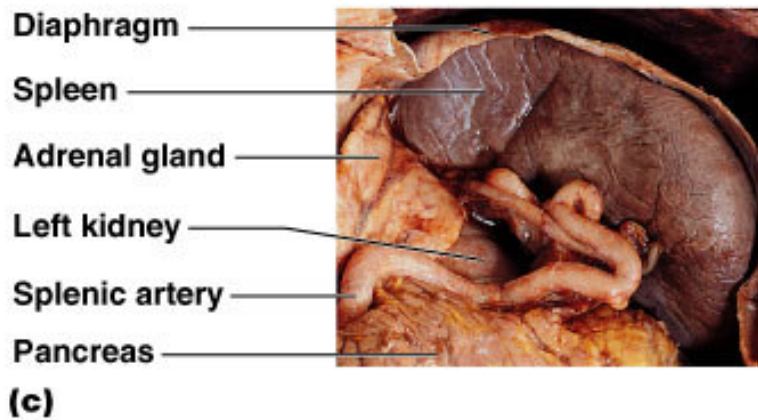
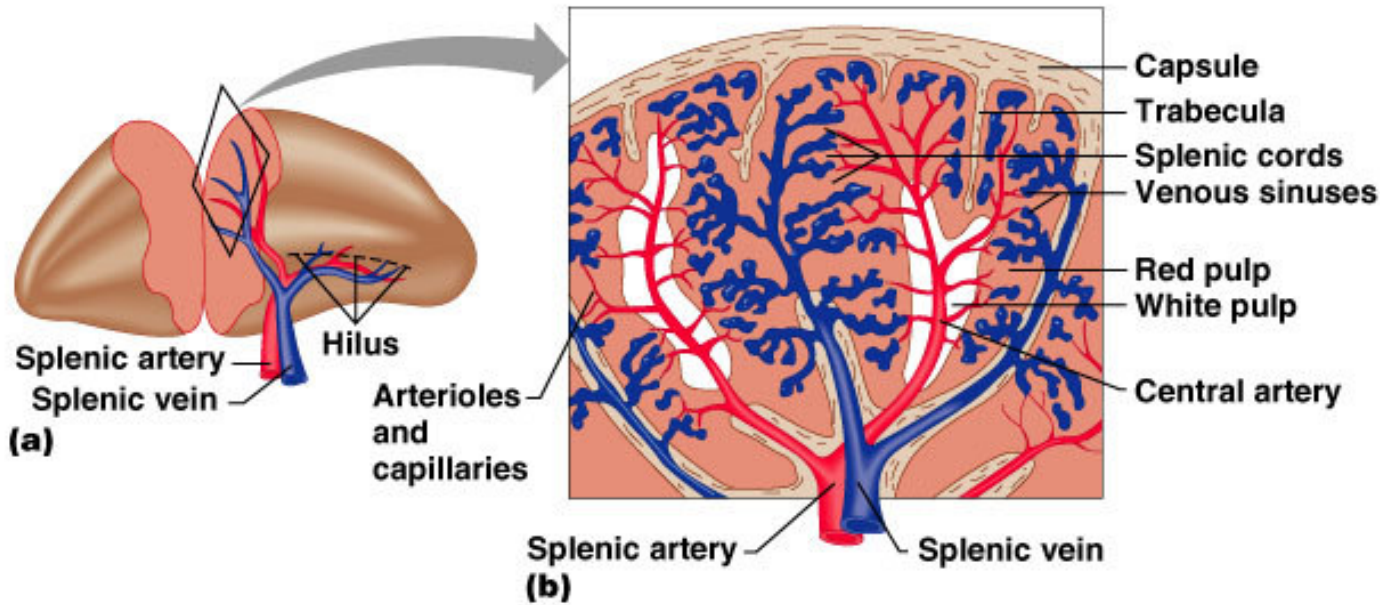


Lymphatic System

- Spleen

- **Site for lymphocytes to proliferate and do their job of surveillance**
- **Cleans the blood (much like lymph nodes clean lymph) - removes old RBC's and platelets**
- **Aids in recycling RBC components**
- **Site of erythropoiesis in the fetus**
- **Stores blood and platelets**

Lymphatic System



Lymphatic System

- **Thymus Gland – important in early life**
 - **Secretes two hormones that play an important role in T lymphocytes becoming immunocompetent**
- **Tonsils – named according to location**
 - **Palatine – paired, on either side of the soft palate**
 - **Lingual – paired at the base of the tongue**
 - **Pharyngeal – located in the posterior portion of the nasopharynx**

Lymphatic System

- **Aggregates of Lymphoid Follicles**
 - **Protect both the respiratory and digestive tracts**
 - **Part of a collection of lymphoid tissues called mucosa-associated lymphatic tissue; MALT**