The Lymph System
Lymphatic System

(a) Anterior view of principal components of lymphatic system

(b) Areas drained by right lymphatic and thoracic ducts

- Area drained by right lymphatic duct
- Area drained by thoracic duct

- Palatine tonsil
- Submandibular node
- Cervical node
- Right internal jugular vein
- Right lymphatic duct
- Right subclavian vein
- Thymus
- Lymphatic vessel
- Thoracic duct
- Cisterna chyli
- Intestinal node
- Large intestine
- Appendix
- Inguinal node
- Left internal jugular vein
- Thoracic duct
- Left subclavian vein
- Axillary node
- Spleen
- Small intestine
- Aggregated lymphatic follicle (Peyer’s patch)
- Iliac node
- Red bone marrow
- Lymphatic vessel
Lymphatic words

• Lymphangiogram
• Lacteals
• Chyle
• Thoracic duct
• Right lymphatic duct
• Cisterna chyle
• Nodes
(a) Relationship of lymphatic capillaries to tissue cells and blood capillaries

(b) Details of a lymphatic capillary

- Venule
- Tissue cell
- Arteriole
- Blood capillary
- Blood
- Interstitial fluid
- Lymph capillary
- Lymph
- Interstitial fluid
- Opening
- Tissue cell
- Anchoring filament
- Endothelium of lymphatic capillary
- Lymph
Lymphatic organs

- Nodes
- Spleen
- Thymus
- Tonsils
- Peyer’s patches
- Mucosa associated lymphatic tissue
(b) Portion of a lymph node

LM 45x

Capsule
Subcapsular sinus
Trabecula
Trabecular sinus
Outer cortex
Germinal center in secondary lymphatic nodule
Inner cortex
Medullary sinus
Medulla
Structure of spleen

(a) Visceral surface
- Splenic artery
- Splenic vein
- Gastric impression
- Colic impression
- Hilus
- Renal impression

(b) Internal structure
- Splenic artery
- Splenic vein
- White pulp
- Red pulp
- Venous sinus
- Splenic cord
- Central artery
- Trabecula
- Capsule

(c) Portion of the spleen
- Capsule
- Red pulp
- White pulp
- Central artery
- Trabecula

LM 100x
Development of lymph
Invaders

- Bacteria
- Viruses
- Fungi
- Foreign objects
- Cancer cells
Non-Specific Resistance

- Skin and mucous membranes
- Tears, sweat, oil, urine, vomiting, saliva, etc.
- Sebum, lysozymes, gastric acid.
- Interferon
- Complement
- Transferrins
- N-K cells and Phagocytes
- Inflammation
- Fever
Edward Jenner

Created the first Immunization

The disease: smallpox
Specific Resistance

- Cellular immunity via T-Cells. Attack fungi, parasites, viruses, cancer cells and foreign tissue
- Humoral defense with B-cells. B-cells become plasma cells, leave the nodes and produce antibodies (Ig’s). Attack bacteria and viruses.
- Both systems have memory cells
AIDS / HIV

- Origin of infection in the U.S.
- Method of viral attack
- Retroviruses
- Delayed symptoms
- Where did the virus come from?
- Who is at risk?
- Treatment / cure???
- Are there other viruses?
Words to Learn

- Eczema
- Immunization
- Septic shock
- Systemic lupus
- Hypersensitivity
- Anaphylactic reaction
- Autoimmune disease
More Words

- Lymphoma and Hodgkins
- Allograft
- Autograft
- Gamma globulin
- Lymphadenopathy
- Splenomegaly
- Xenograft