Syrian Private University
Medical Faculty

Medical Terminology

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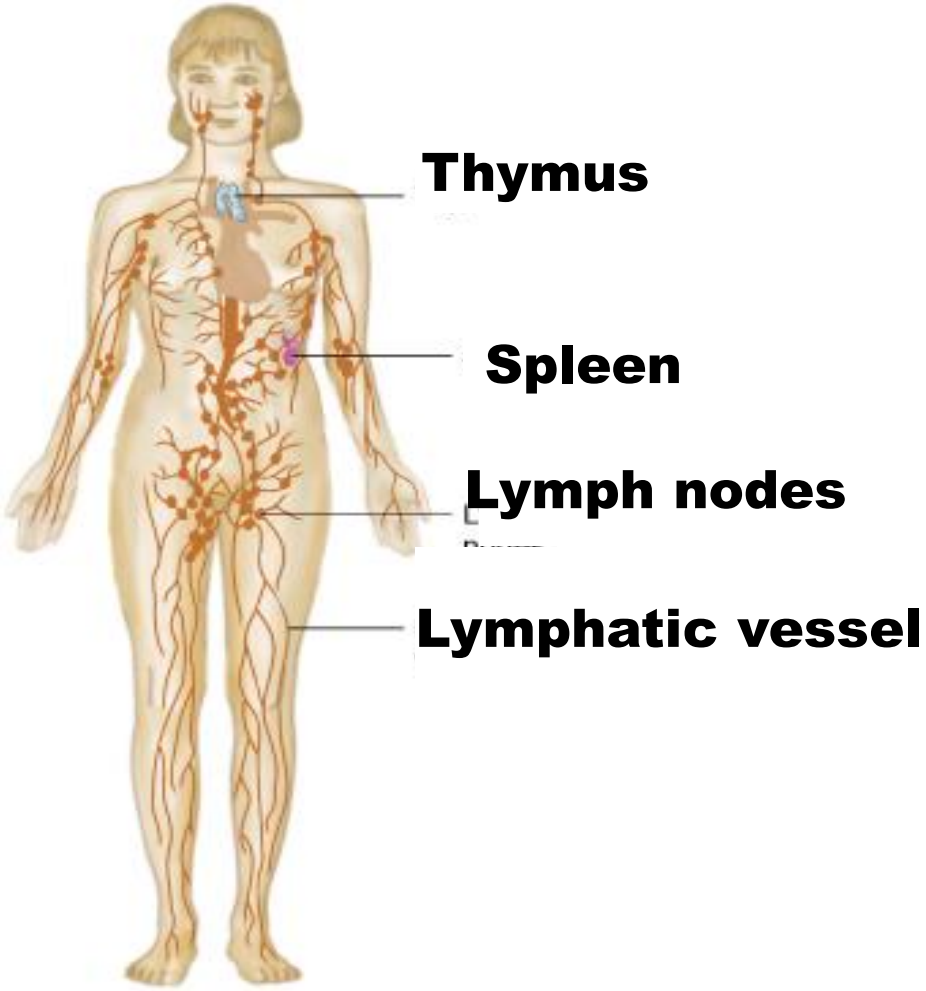
Lecture 13

The Lymphatic and Immune Systems



Objectives

After studying this chapter, you will be able to:

- **Name the parts of the lymphatic and immune systems and discuss the function of each part**
- **Define combining forms used in building words that relate to the lymphatic and immune system**
- **Identify the meaning of related abbreviations**
- **Name the common diagnoses, clinical procedures, and laboratory tests used in treating the lymphatic and immune systems**

Objectives cont'd

- **List and define the major pathological conditions of the lymphatic and immune systems**

- **List common pharmacological agents used in treating disorders of the lymphatic and immune systems.**

Structure and Function

The Lymphatic and Immune System

Lymphatic Organs and Structures

Lymph

- A fluid containing:
  - -water
  - -sugars
  - -white blood cells
  - -protein
  - -salts
  - -waste

Lymph Vessels

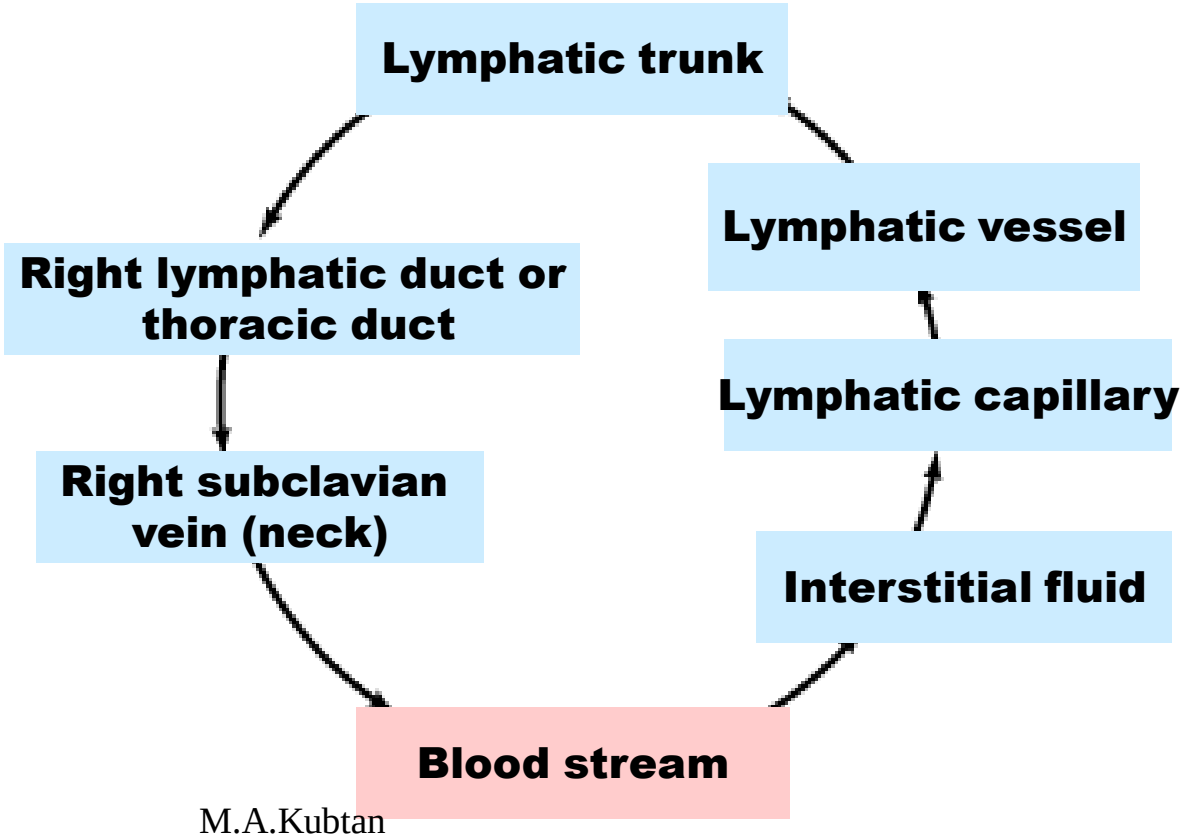
- Carry lymph within the lymphatic system
- Lymph capillaries are the smallest of the lymph vessels

Structure and Function

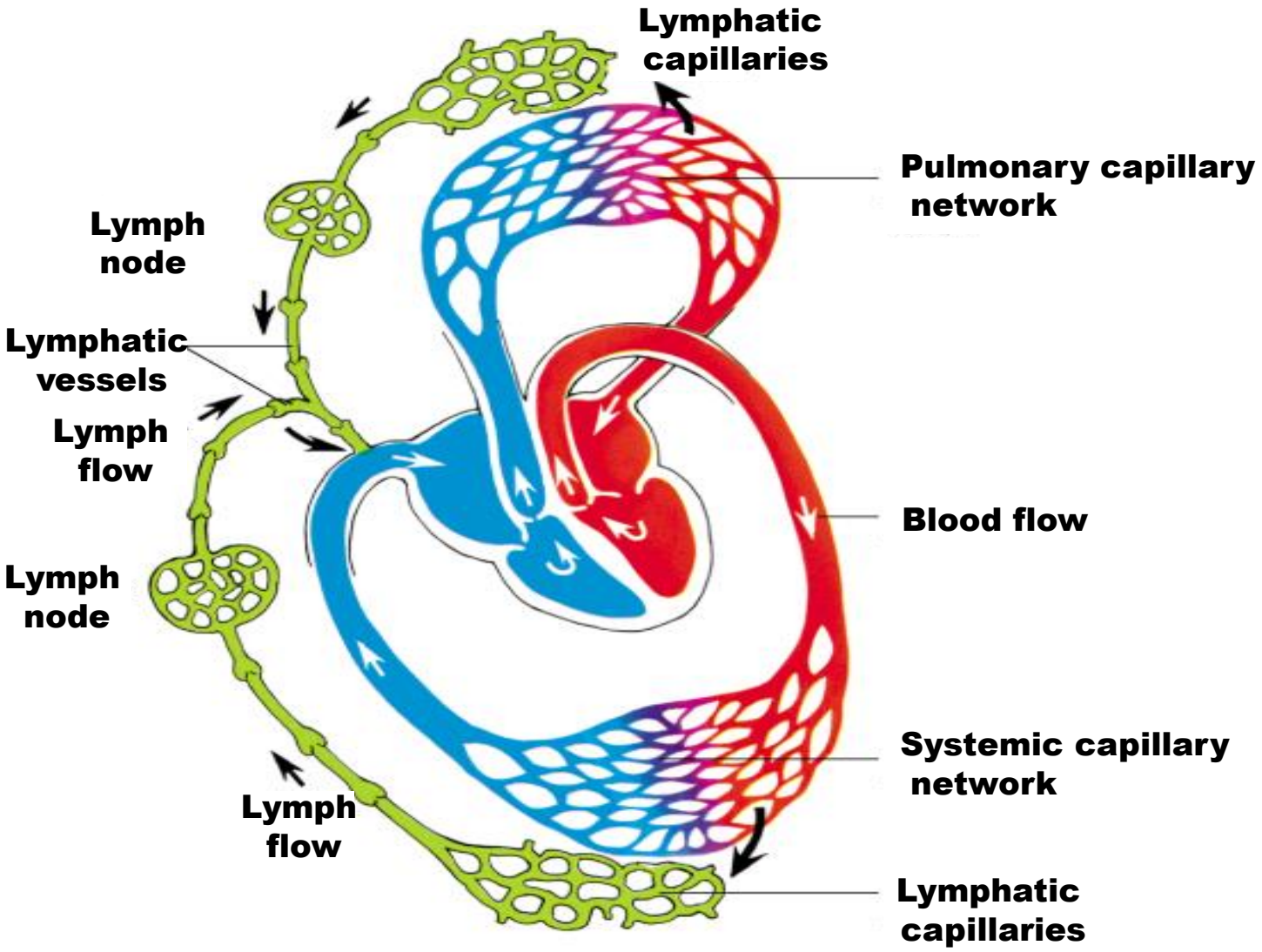
Capillaries have thin walls which allow fluid in body tissues to flow between the capillaries and tissues.

Fluid in the spaces between tissues is called *interstitial fluid*

Once the interstitial fluid flows into the lymph capillaries it is called *lymph*



Structure and Function



Structure and Function

Lymph Nodes

- Specialized organs that produce lymphocytes
- Filter harmful substances from the tissues
- Contain ***macrophages*** that devour foreign substances

- Lymphocytes produce specialized proteins called ***antibodies*** that fight disease
- ***Antigens*** also fight disease by stimulating an immune response in other cells

Structure and Function

Lymph

- **Travels in only one direction**
- **Empties into the right thoracic duct and the lymphatic duct**
- **Lipids are transported from the small intestines to the blood stream by the lymph vessels**

Location of major groups of lymph nodes:

-tonsils -adenoids -neck -armpit -groin -mediastinum

Structure and Function

Organs of the Lymphatic System

Spleen

-largest lymphatic organ
-located in upper left portion of the abdominal cavity
-filters foreign material from the blood
-destroys old red blood cells
-activates *lymphocytes*

Thymus Gland

-soft gland with two lobes
-larger during infancy and childhood
-contains important cells called *thymocytes* (ex. T cells)
-T cells (T lymphocytes provide immunity)
-*thymosin* aids with T cell movement

Structure and Function

Immune System

Consists of a series of defenses against intruders, such as microorganisms

Mechanical Defenses

- skin
- nasal cilia
- mucous membranes

Chemical Defenses

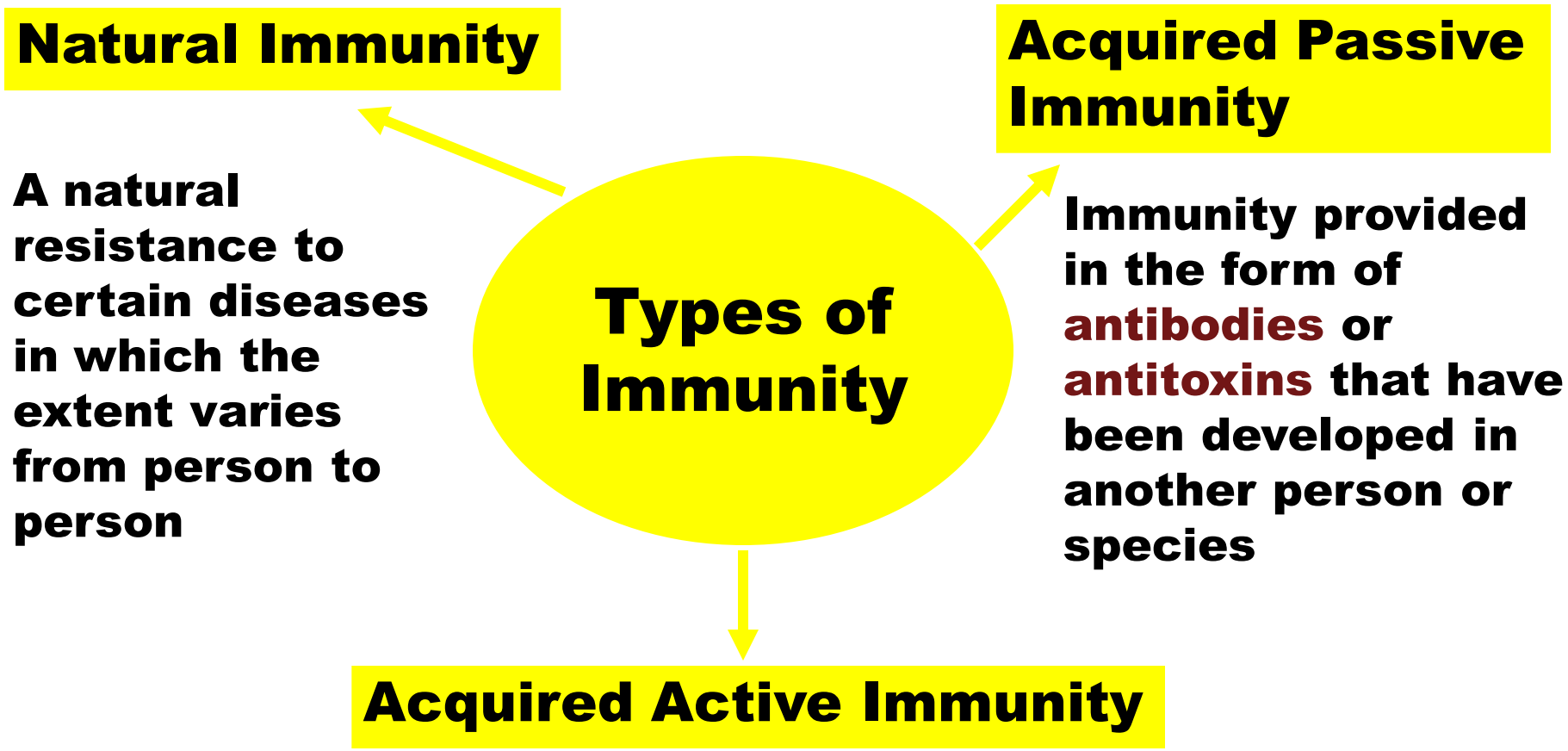
- stomach gastric juices

Other Barriers

Phagocytosis

The ingesting of foreign substances by specialized cells like macrophages

Structure and Function



Structure and Function

Major Immunoglobulins

Immunogobulin G (IgG)

-effective against bacteria, viruses and toxins

Immunoglobulin A (IgA)

-common in exocrine gland secretions such as breast milk and tears

Immunoglobulin M (IgM)

-first antigen to be produced after an infection

Immunoglobulin D (IgD)

-important in B-cell activation

Immunoglobulin E (IgE)

-appears in glandular secretions and is associated with allergic reactions

NOTE: This type of immunity is provided by plasma cells and is called humoral immunity.

Structure and Function

Cell-mediated Immunity

This type of immunity is provided by the action of the T-cells which multiply rapidly and produce certain proteins in response to antigens.

Three Types of Specialized T-Cells

- **Helper cells or CD4 cells that stimulate the immune response**
- **Cytotoxic cells or CD8 cells that help in the destruction of infected cells**
- **Suppressor cells or T cells that suppress B-cells and other immune cells**

Combining Forms and Abbreviations

Combining Form	Meaning
aden (o)	gland
immun (o)	immunity
lymph (o)	lymph
lymphaden (o)	lymph nodes
lymphangi (o)	lymphatic vessels
splen (o)	spleen
thym (o)	thymus
tox (o)	poison

Combining Forms and Abbreviations

Abbreviation	Meaning
AIDS	acquired immunodeficiency syndrome
ALL	acute lymphocytic leukemia
AML	acute myelogenous leukemia
CLL	chronic lymphocytic leukemia

Combining Forms and Abbreviations

Abbreviation	Meaning
CML	chronic myelogenous leukemia
CMV	cytomegalovirus
EBV	Epstein-Barr virus
ELISA	enzyme-linked immunosorbent assay
HIV	human immunodeficiency virus
HSV	herpes simplex virus
IgA	immunoglobulin A

Combining Forms and Abbreviations

Abbreviation	Meaning
IgD	immunoglobulin D
IgE	immunoglobulin E
IgG	immunoglobulin G
IgM	immunoglobulin M
PCP	pneumocystis carinii pneumonia
SLE	systemic lupus erythematosus
ZDV	zidovudine