

HISTOLOGY OF LYMPHATIC SYSTEM TUCOM

By-Dr.Elham Majed

Lecture 1 .

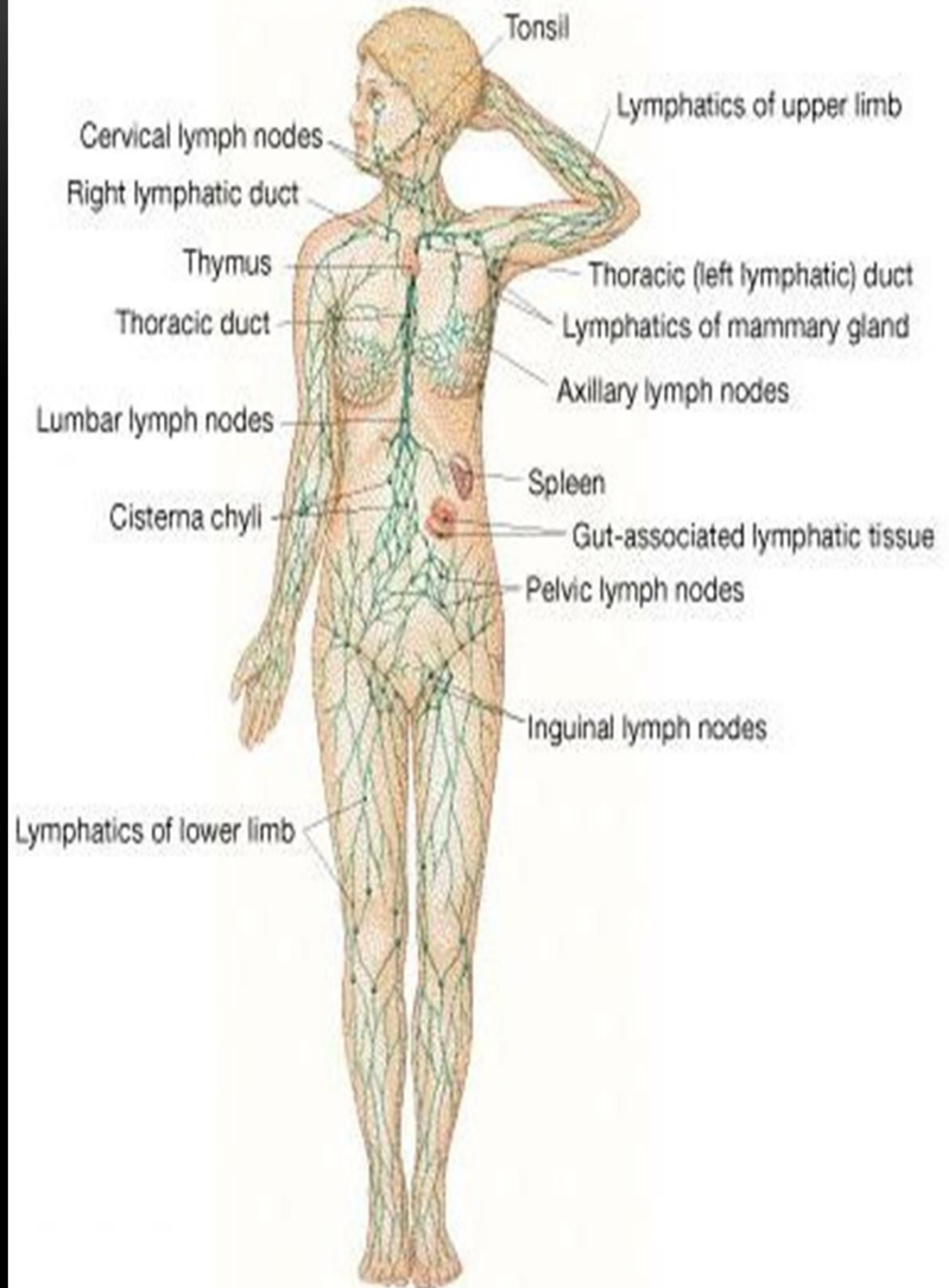
LYMPHOID SYSTEM

It is part of the circulatory system and an important part of the immune system .

It returns fluids that have leaked from the circulatory system back to the blood.

Lymphatic system consists of :

- 1- lymph vessels
- 2- lymphoid tissues
- 3- circulating lymph
- 4-lymphatic organs



FUNCTIONS

- Defense of body
- Phagocytosis of foreign cells
- Involved in production of lymphocytes and plasma cells

LYMPHATIC VESSELS

Originate as lymph capillaries

Lymphatic Capillaries originate in tissues as tiny blind ended sacs

- lie side by side with blood capillaries
- single layer of endothelial cells like blood capillaries
- but much more permeable to solvents, and large solutes and whole cells

Major features of the lymphatic capillaries :-

Composed of simple squamous epithelium/ endothelium

Blind-ended (dead end) capillaries

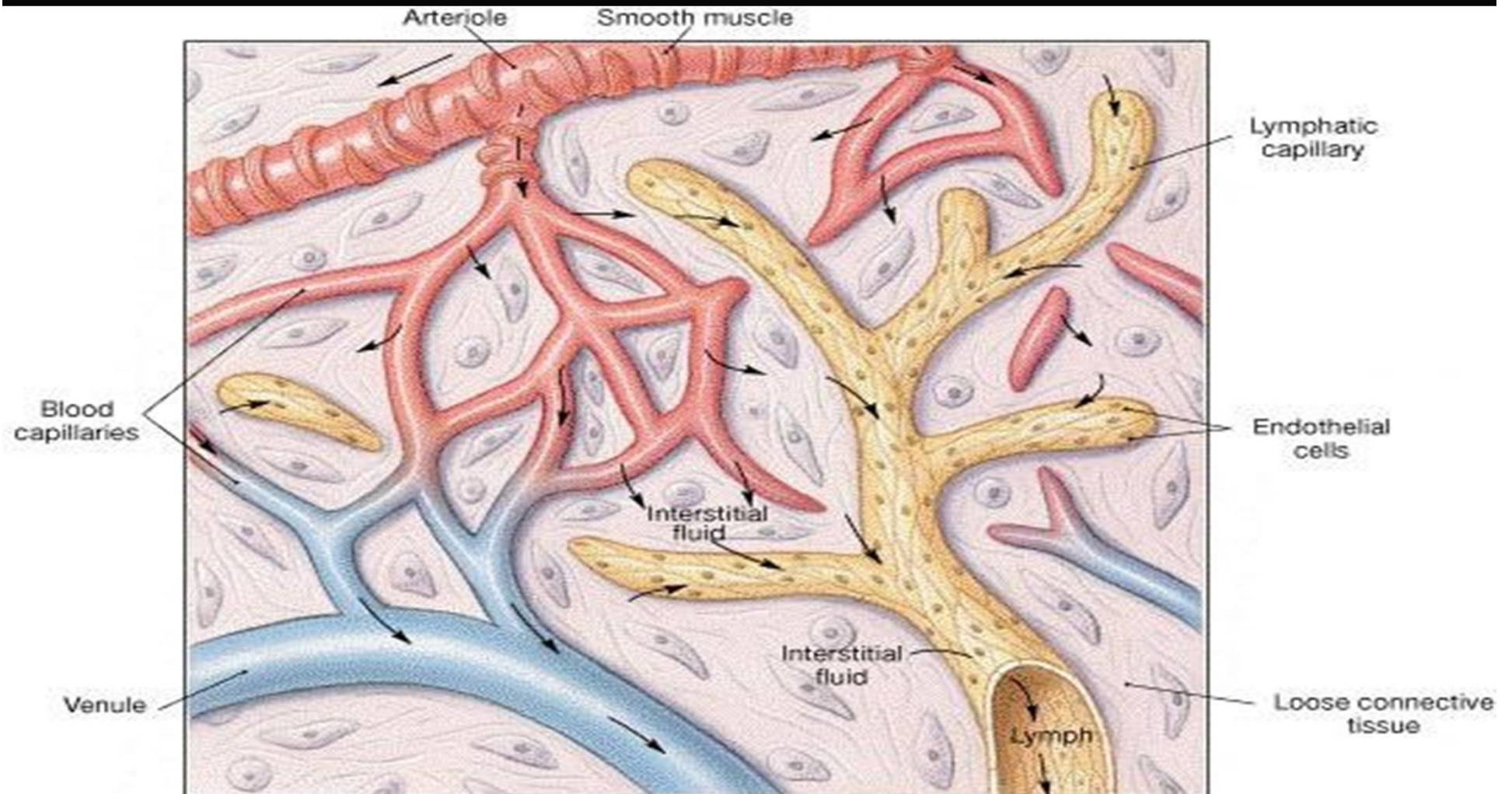
Endothelial cells at capillary ends loosely overlap

Anchoring filaments attach endothelial cells to surrounding tissues to form one way mini-valves

Highly permeable & allow interstitial fluid to enter capillary

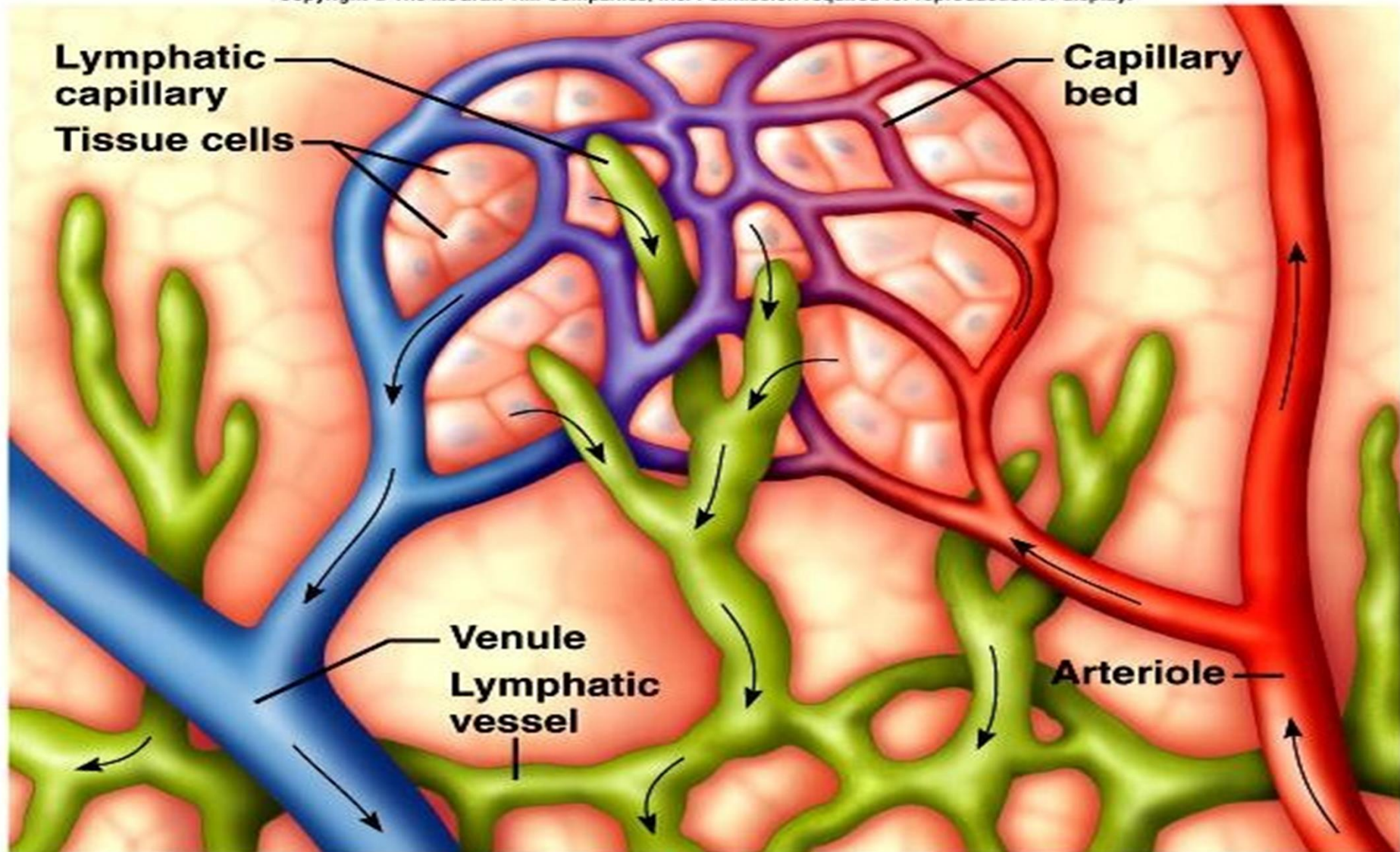
Lacteals are lymphatic capillaries that facilitate fat absorption in the small intestine

Lymphatic capillaries union to form the lymphatic vessels ,reassemble to veins with exception thinner wall with high number of valves to prevent the back flow of the lymph connect to lymph nodes at various intervals

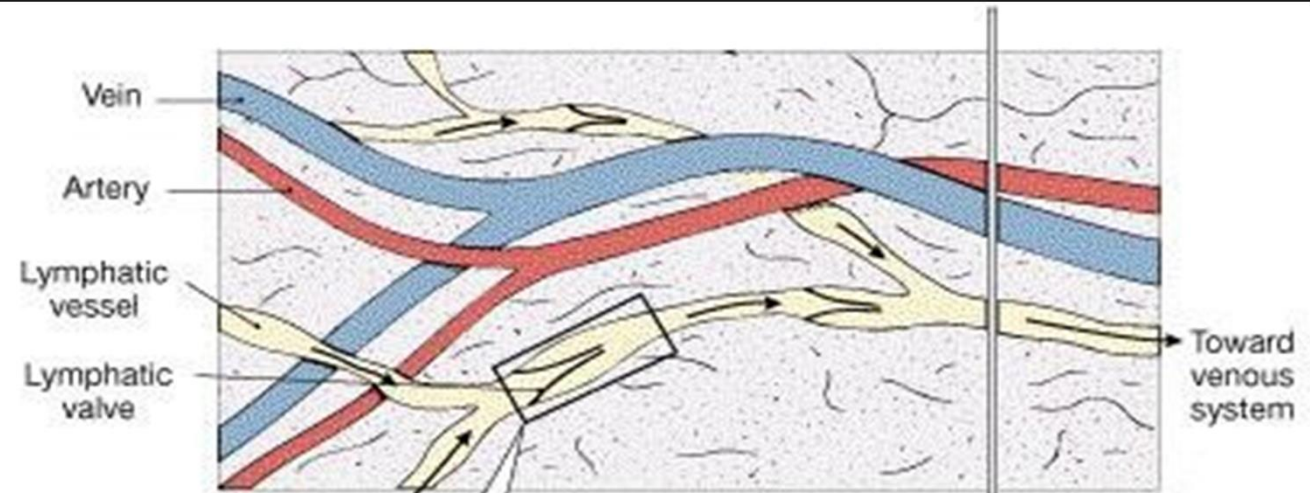


LYMPHATIC CAPILLARY & VESSEL

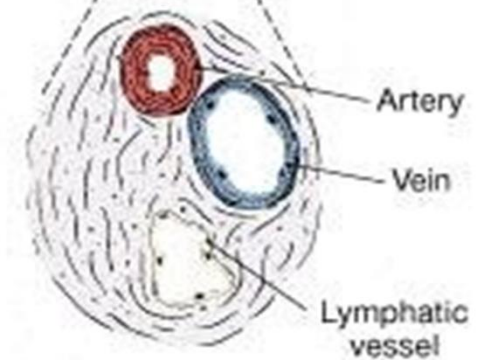
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-LYMPHATIC VESSELS



(a) Lymphatic vessels showing arrangement of valves



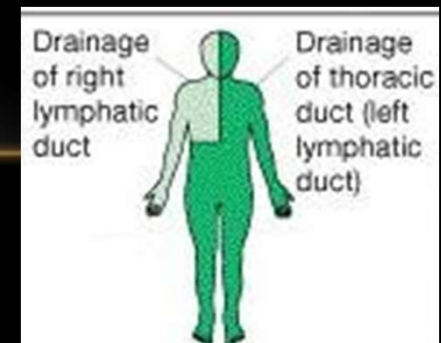
(c) Sectional view



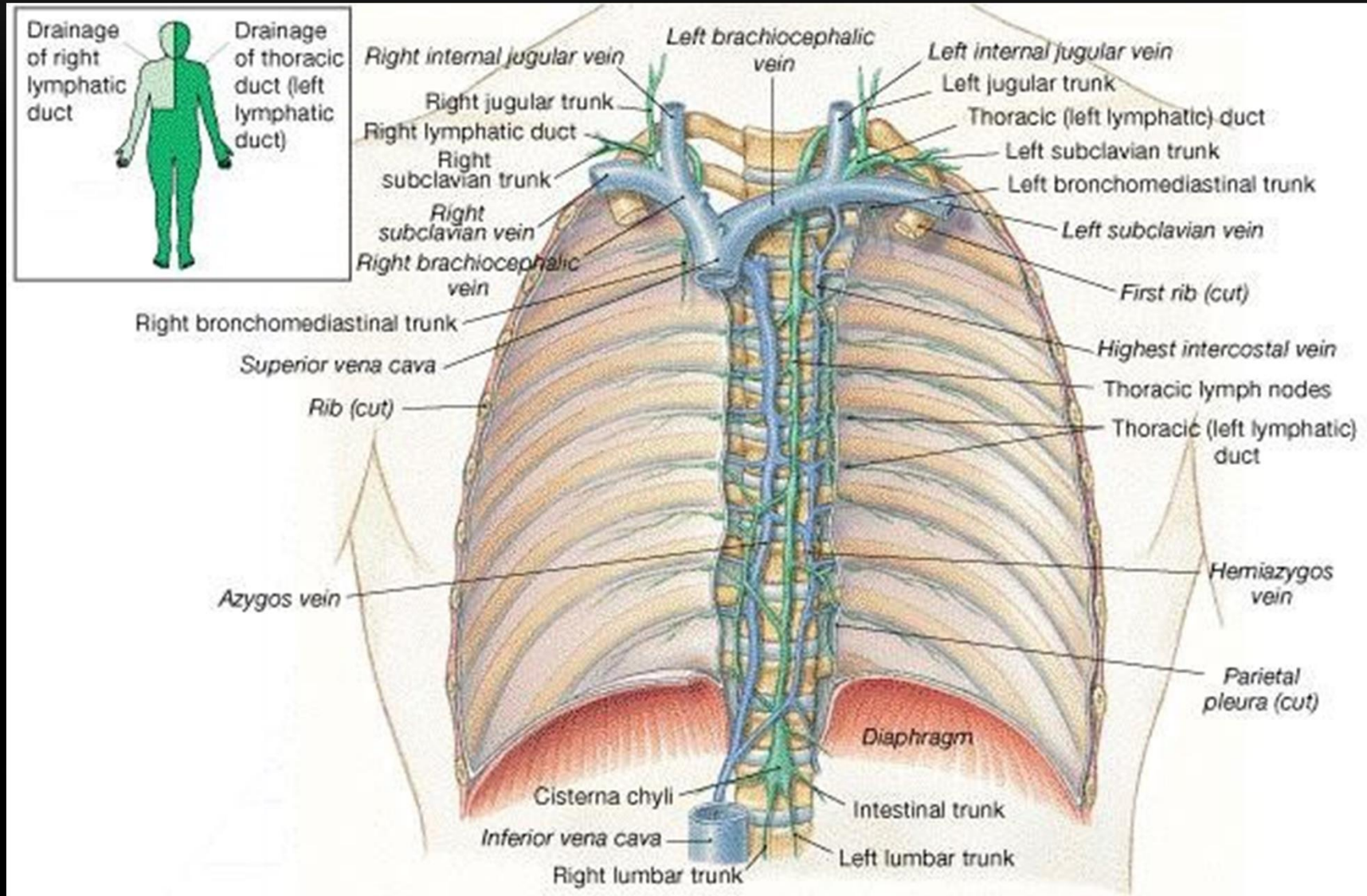
(b) Whole mount of lymphatic vessel with valve (LM \times 63)

CHANNELS OF LYMPHATICS

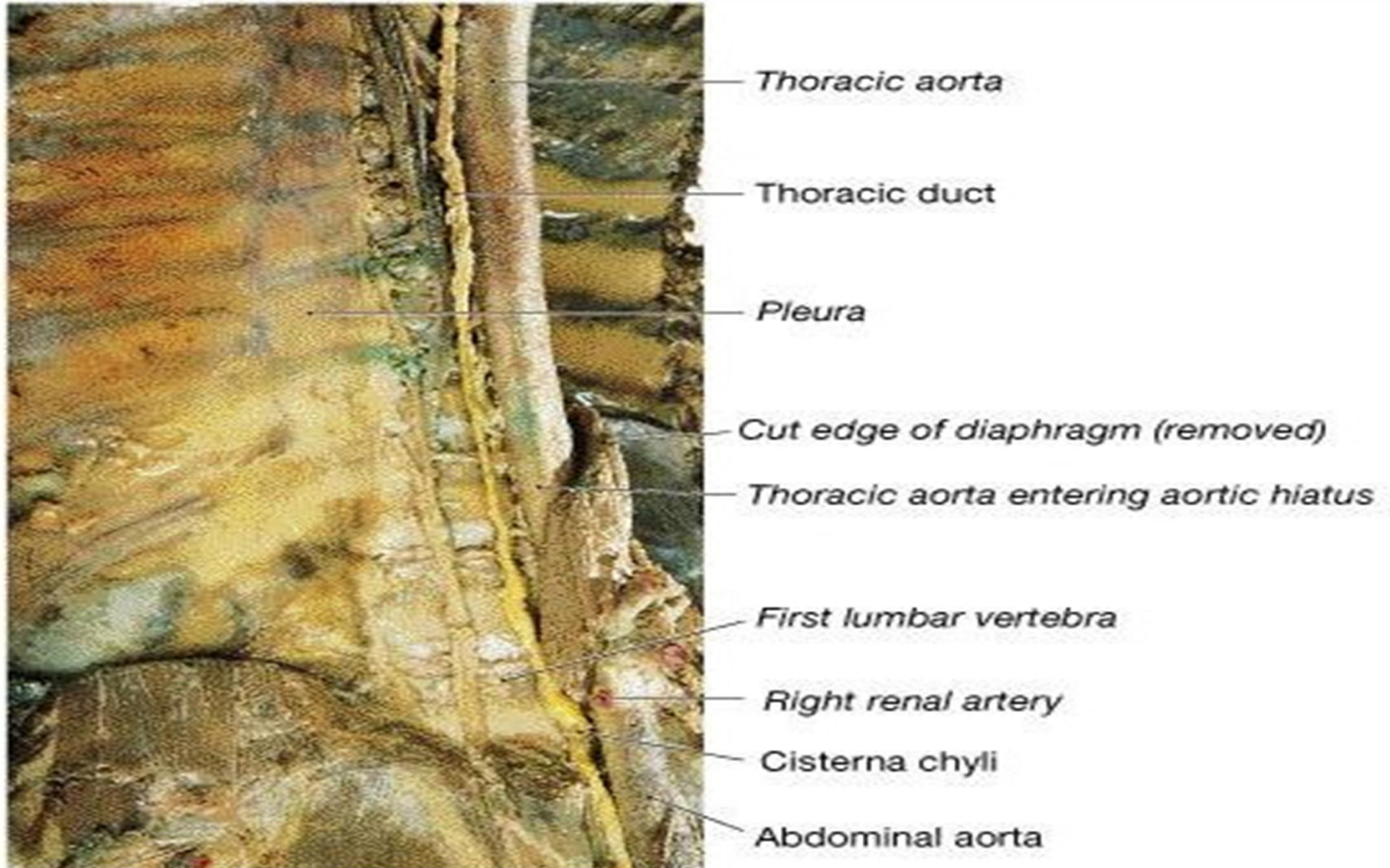
- Lymphatics ultimately deliver lymph into 2 main channels
 - Right lymphatic duct
 - Drains right side of head & neck, right arm, right thorax
 - Empties into the right subclavian vein
 - Thoracic duct
 - Drains the rest of the body
 - Empties into the left subclavian vein



CHANNELS OF LYMPHATICS



MAJOR LYMPHATIC VESSEL OF THE TRUNK



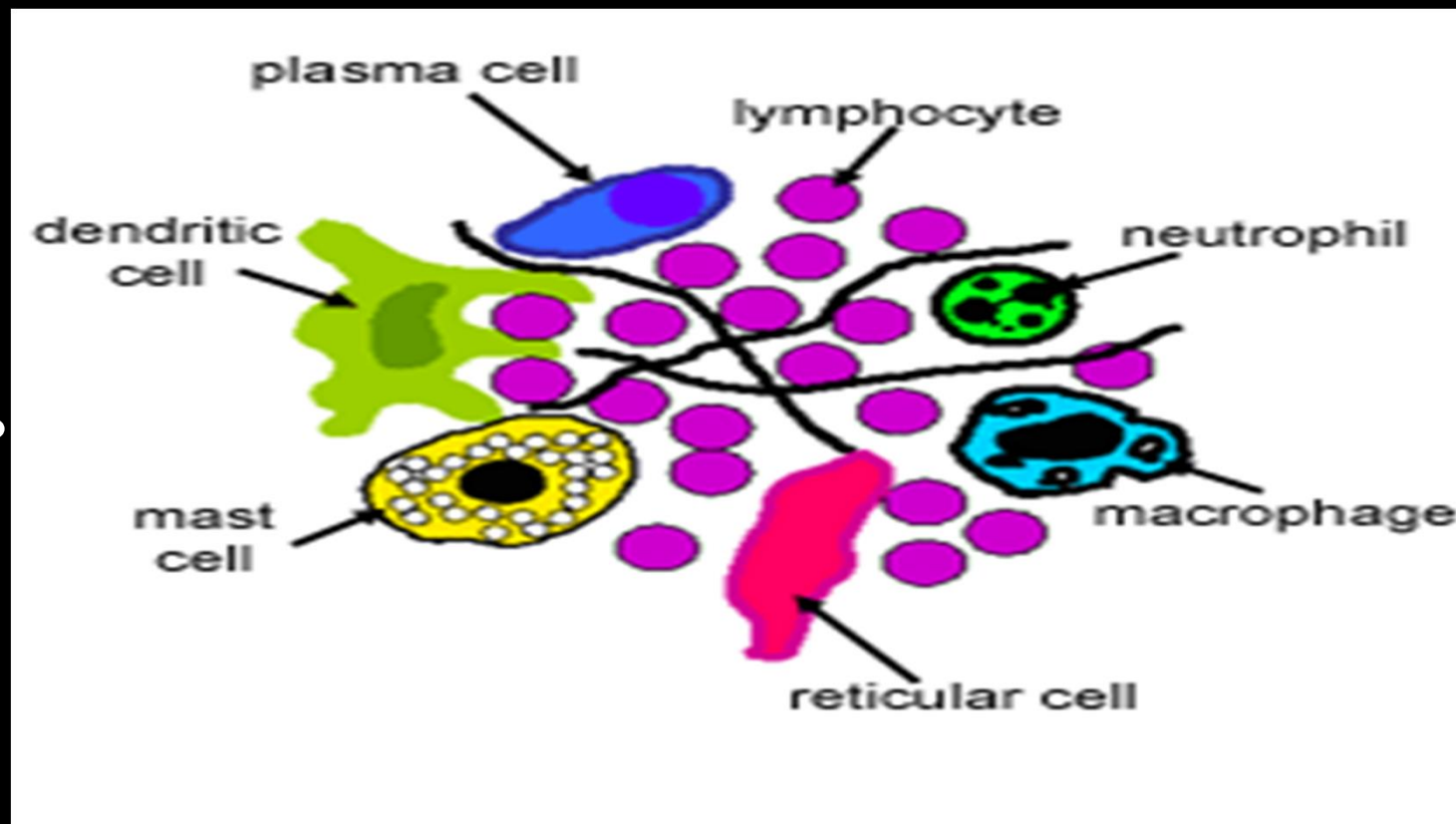
WHAT IS LYMPHOID TISSUE?

Specialized form of connective tissue

Supporting framework: reticular cells & reticular fibres

.Large number of lymphocytes T and B lymphocytes.

.Other cells: Plasma cells, mast cells & macrophages

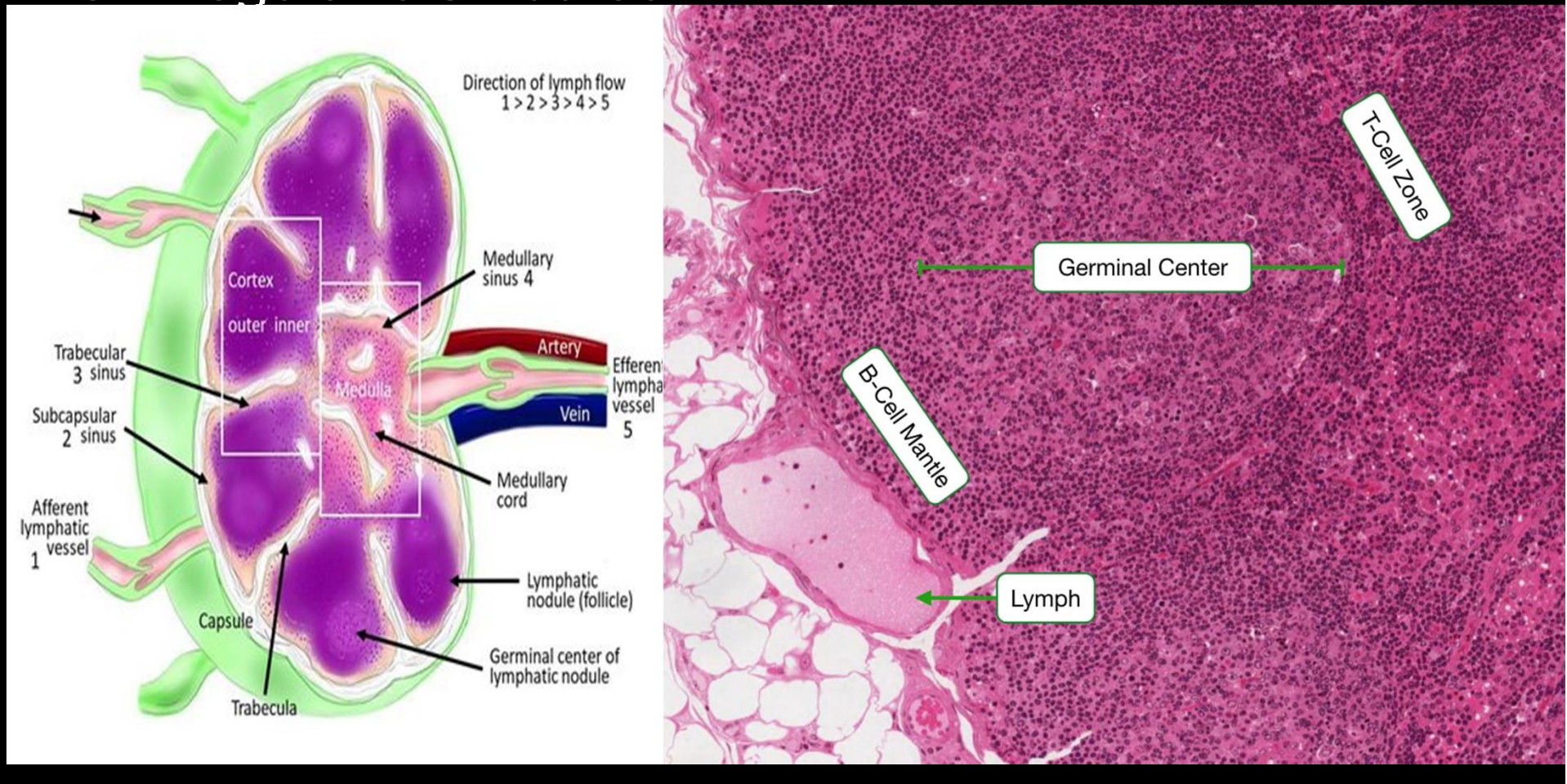


The diagram shows the different types of immune cell that are important in the immune system.

- **Lymphocytes** (B and T).
- **Plasma cells** - which secrete antibodies, derived from B-cells
- **Macrophage** - which engulfs micro-organisms and presents antigens on its surfaces to lymphocytes.
- **Dendritic cell** - presents antigens to lymphocytes on its surface.
- **Neutrophil** - phagocytic cell
- **Reticular cell** - also a dendritic cell, which presents antigens.

Mast Cell - derived from the bone marrow, release histamine, heparin, etc. Have receptors for IgE antibodies on their surface.
Involved in allergic reactions

- The cells of lymphoid tissues either (regular circular distributed forms the lymphatic nodules concenter as the structural unit of the lymphoid system) or irregular distributed



-LYMPHATIC TISSUE

- **Diffuse lymphatic tissue**

- No capsule present
- Found in connective tissue of almost all organs

- **Lymphatic nodules**

- No capsule present
- Oval-shaped masses
- Found singly or in clusters

-Lymphatic organs

.Capsule present

Primary lymphatic organs ,where the lymphocytes originate and matured (Thymus, Bone marrow)

Secondary lymphatic tissue(Lymph nodes, spleen)

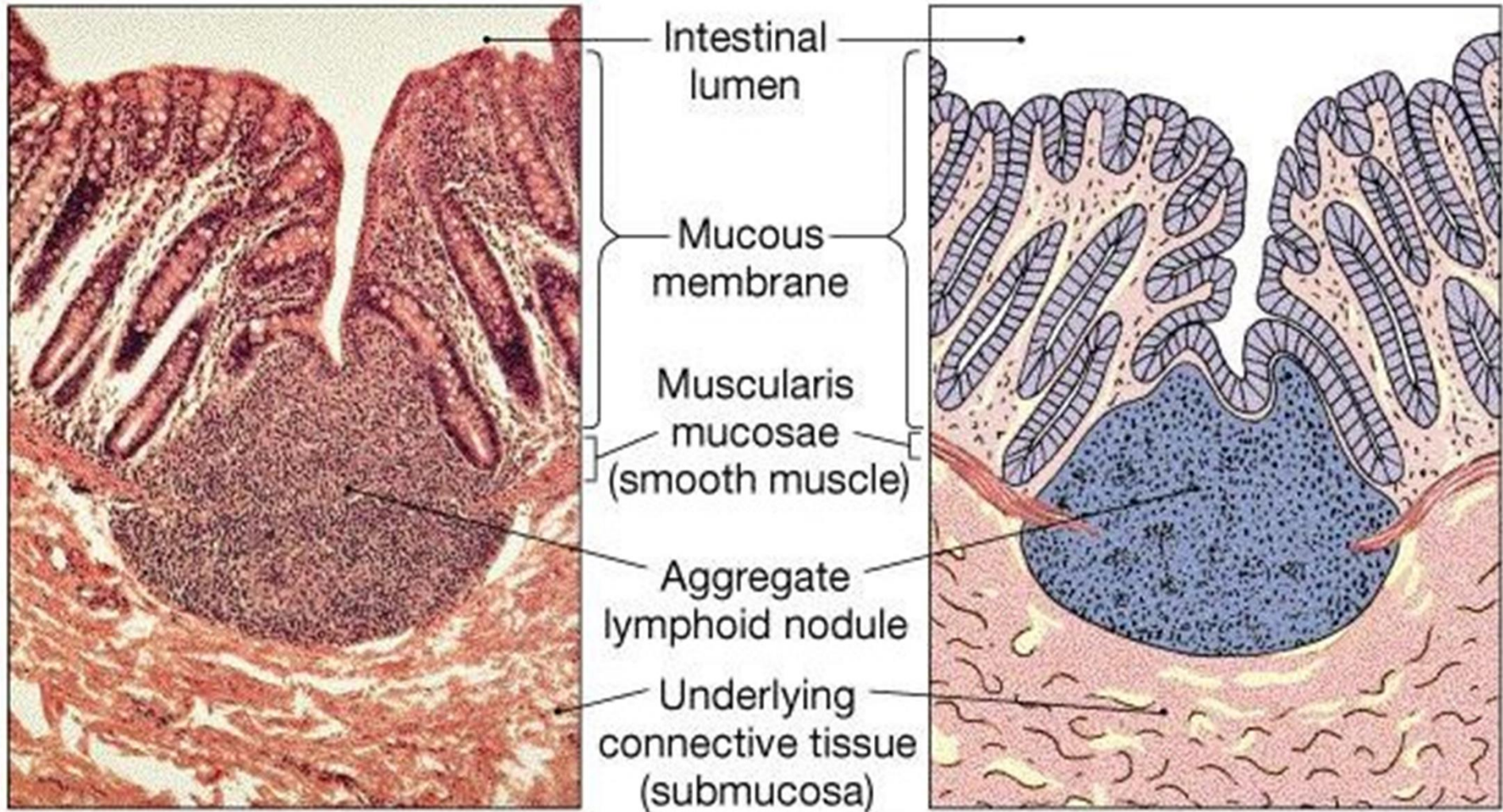
DIFFUSE LYMPHATIC TISSUE

- Called as mucosa associated lymphatic tissue (MALT).
- Accumulation of lymphatic tissue in the mucous membrane of gastrointestinal, respiratory, urinary and reproductive tracts.
- Located where they come in direct contact with antigens.

LYMPHATIC NODULE

- Circumscribed concentration of lymphatic tissue (lymphocytes and related cells).
- It may be mature ,when the germinal center is present (secondary lymphatic nodules).Or immature ,when the germinal center does not appear and is called (primary lymphatic nodule)
- **Not surrounded by capsule.**

DIFFUSE LYMPHOID TISSUE



TANKS FOR LISITENING