

# HISTOLOGY

# LYMPHOID

# TISSUE



**Revised by**

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# LYMPHOID TISSUE

## Objectives:

By the end of the lecture, the student should describe the microscopic structure of the following organs in correlation with their functions:

- 1- Lymph nodes.
- 2- Spleen.
- 3- Tonsils.
- 4- Thymus.

COLOR CODING:

IMPORTANT

## *Information might help you :*

\* Lymph : a pale fluid that contains **white blood cells** and that passes through channels in the body and helps to keep bodily tissues healthy

\* How does the Lymph form ?

The **lymph** is formed when the interstitial **fluid** is collected through **lymph capillaries**.

\* Lymph sinuses : **Channels** which allows the free movement of **lymphatic fluid**

# Lymphoid Tissue

Diffuse lymphoid tissue  
(free not in organs)

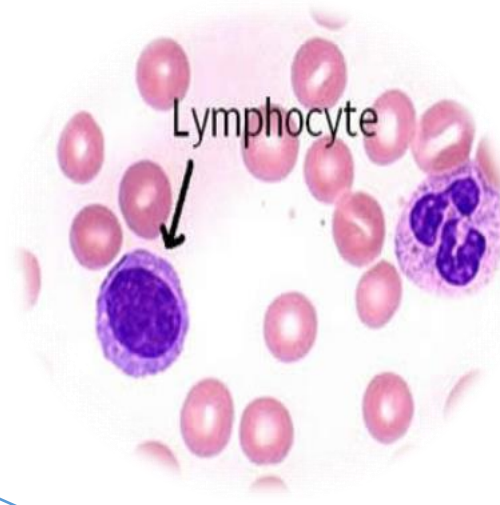
Encapsulated lymphoid organs

Lymph nodes

Spleen

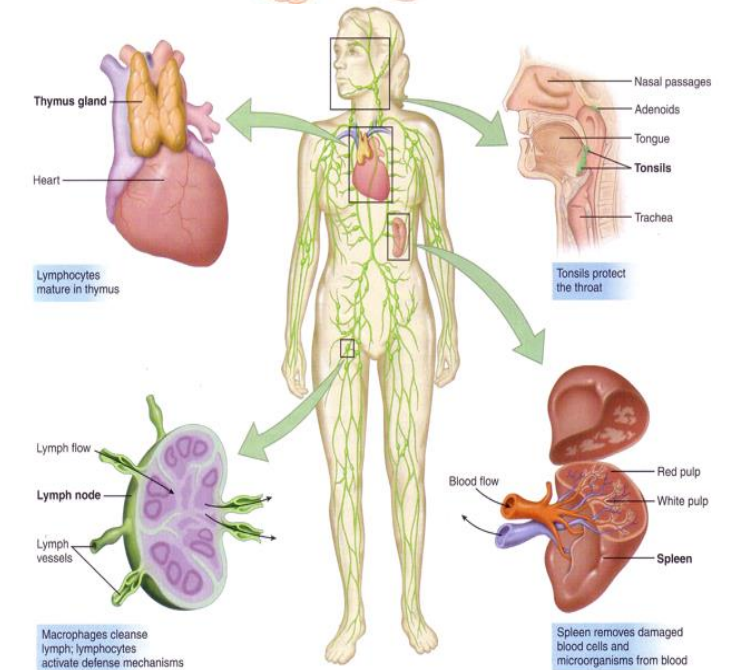
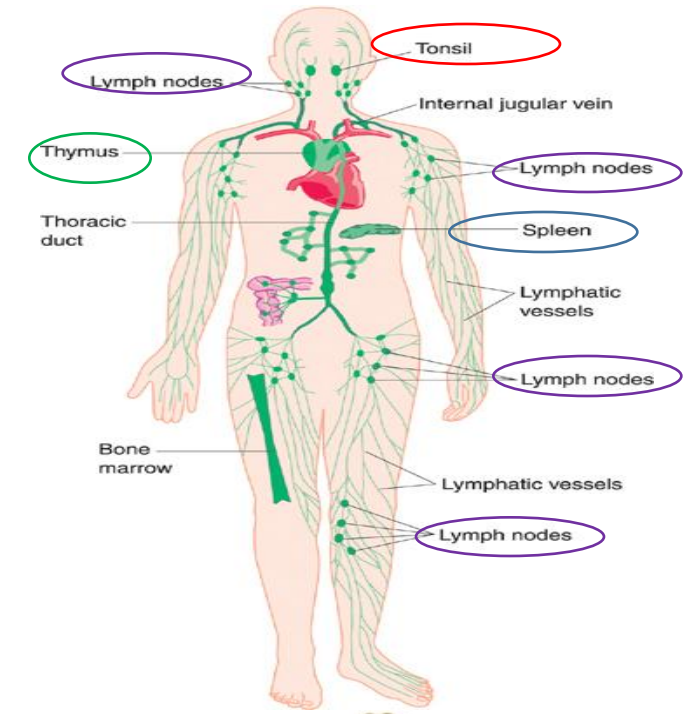
Tonsils

Thymus



## NOTES:

- red bone marrow and thymus are considered 1ry lymphoid organs.
- Bone marrow is a part of lymphoid system because it can make lymphocytes .
- B lymphocyte is active , T lymphocytes are immunincompetant .
- Lymph nodes work as filters .



# LYMPH NODES

## Functions:

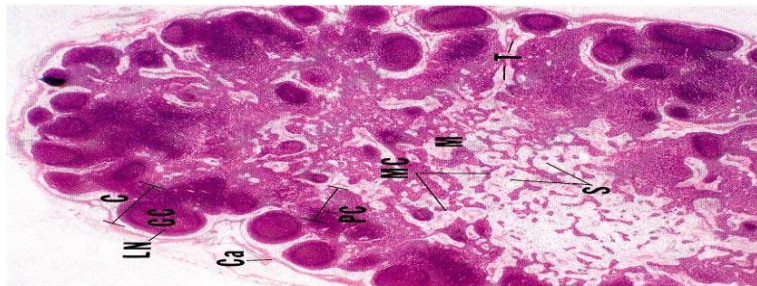
- ❖ Production of immunocompetent cells.
- ❖ Filtration of lymph.

## (A) Stroma:

- Capsule
- Trabeculae (septa) (drape like)
- Reticular C.T (grid like)

## (B) Parenchyma :

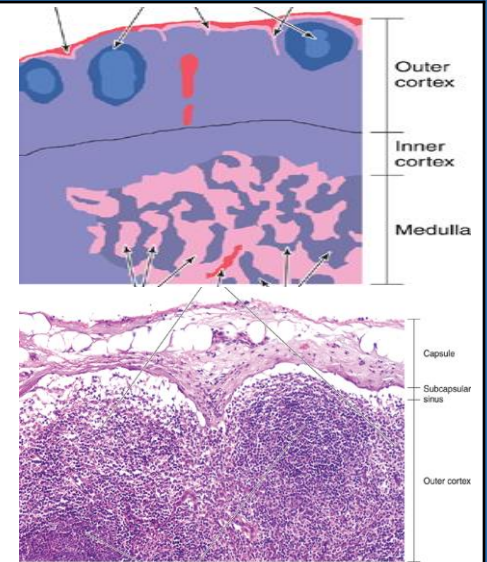
(lymphoid tissue + lymph sinuses)



## Cortex of L.N

B cells are the major component

- ❖ Lymphatic nodules (follicles):
  - 1ry: without germinal center (not active)
  - 2ry: with germinal center: Lighter (active)
- ❖ Cortical lymph sinuses. (sinuses are like capillaries without blood)

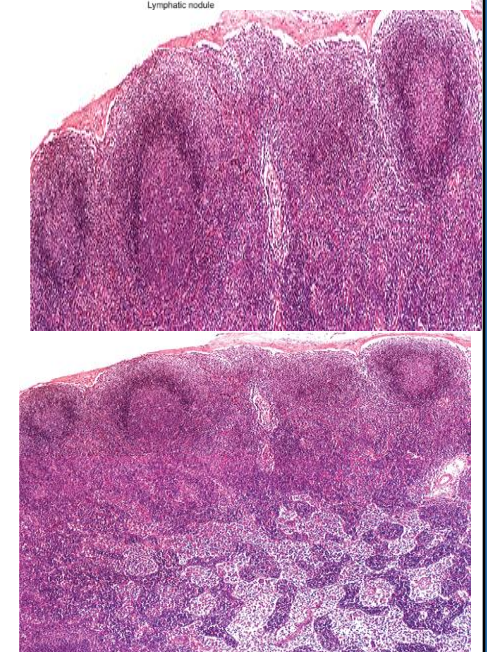


## Paracortex of L.N

- ❖ It is the thymus-dependent zone of L.N.
- ❖ It is composed mostly of T-lymphocytes.

## Medulla of L.N

- ❖ Medullary cords:
  - are formed of lymphoid cells
  - (B & T lymphocytes, plasma cells, macrophages).
- ❖ Medullary lymph sinuses.



# SPLEEN

## Functions of spleen:

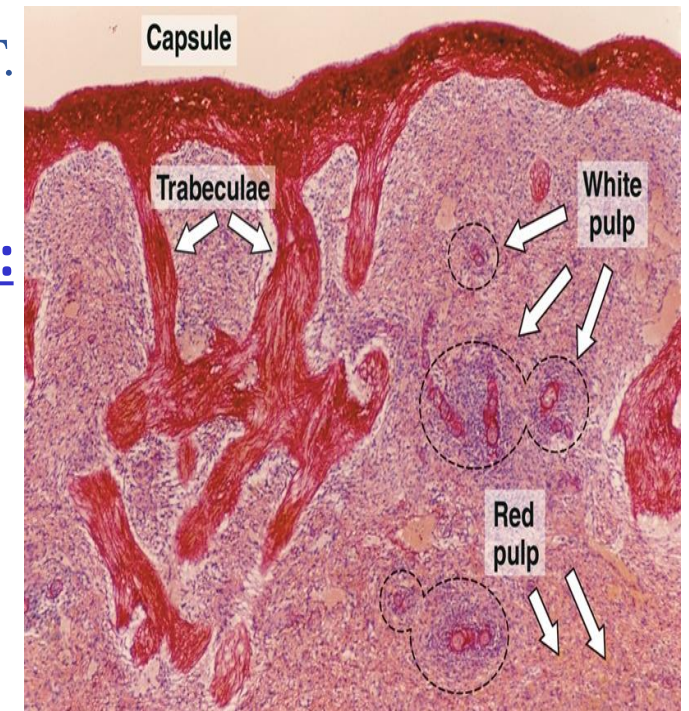
- Filtration of blood.
- Phagocytosis of old RBCs & old blood platelets & invading microorganisms.
- Production & proliferation of immunocompetent B & T lymphocytes.
- Production of antibodies.

## A. Stroma:

- ❖ Capsule. (made of connective tissue)
- ❖ Trabeculae.
- ❖ Reticular C.T.

## B. PARENCHYMA:

- ❖ White pulp.
- ❖ RED PULP.



N.B. No cortex, No medulla, No lymph sinuses

# TONSILS

## Functions:

- ❖ Production of antibodies.

## Types of tonsils:

- ❖ Palatine Tonsils.
- ❖ Pharyngeal Tonsil.
- ❖ Lingual Tonsils.

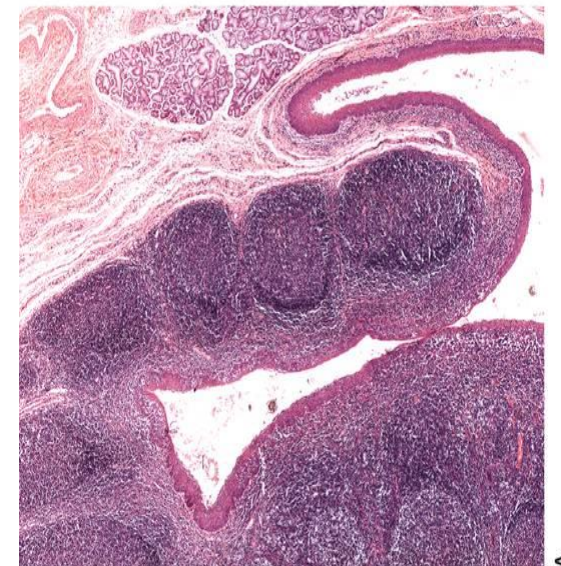
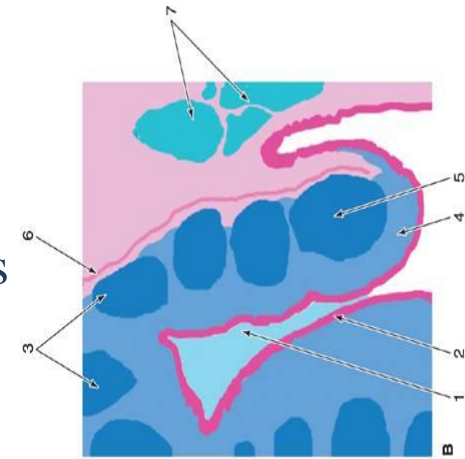
## Note:

Nose lymph infection will cause adenoids

## Palatine Tonsils

### Structure:

- Epithelium:
  - non-keratinized stratified squamous
- Tonsillar crypts.
- Lymphatic nodules.
- Capsule: partial.



# THYMUS

## Functions:

- ❖ Maturation of T lymphocytes.

(Immunoincompetent T cells → Immunocompetent T cells).

## (A) Stroma:

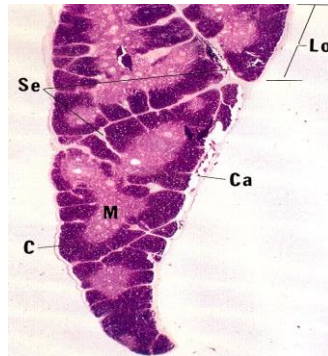
- ❖ Capsule
- ❖ Interlobular trabeculae: **incomplete**

## (B) Thymic lobule :

- ❖ Cortex
- ❖ Medulla

## NOTES:

- \*No B cells
- \*Medulla has activated cells
- \*ERC are unique because:  
Base for cells (like net)  
Secretes factors that stimulates T cell maturation



## Cortex of Thymic Lobule:

- ❖ It contains developing (**immature**) T-lymphocytes (thymocytes).

98% of thymocytes die

- ❖ Epithelial reticular cells
- ❖ Macrophages.(phagocytosis)

\*No lymphatic nodules , No plasma cells , No B-lymphocytes

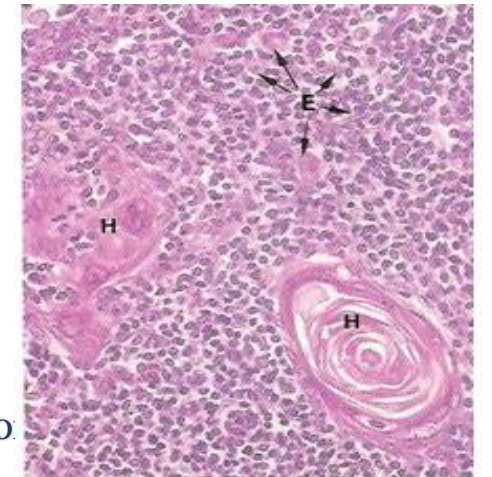
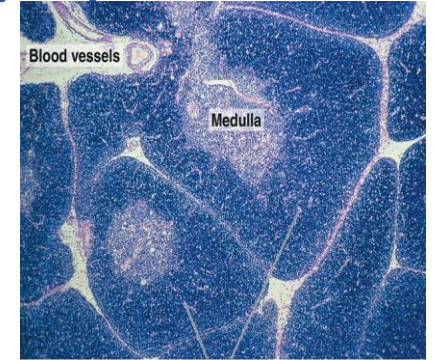
## Medulla of Thymic Lobule:

1. **Hassall's (thymic) corpuscles :** Concentrically arranged epithelial reticular cells in the medulla. ( **in medulla only** )
2. **Mature small T lymphocytes**
3. **Macrophages.**
4. **Epithelial reticular cells.**

\*Medulla of adjacent thymic lobules are interconnected - Why? Incomplete trabeculae

## General notes:

No lymphoid nodules , No reticular fibers, No sinuses o





## *Clinical Applications*

### **Rupture of the Spleen**

Spleen is a fragile or friable organ, so major trauma to the upper left abdominal quadrant usually leads to rupture of the spleen.

Surgical removal of that ruptured spleen is essential.

### **Palpable lymph node**

The presence of antigen or bacteria leads to rapid proliferation of lymphocytes of the lymph node (L.N), leading to increase of L.N. to several times of its normal size, so the L.N. becomes enlarged and palpable to the touch.

# THANK YOU !

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