



# Lymphoid Tissue



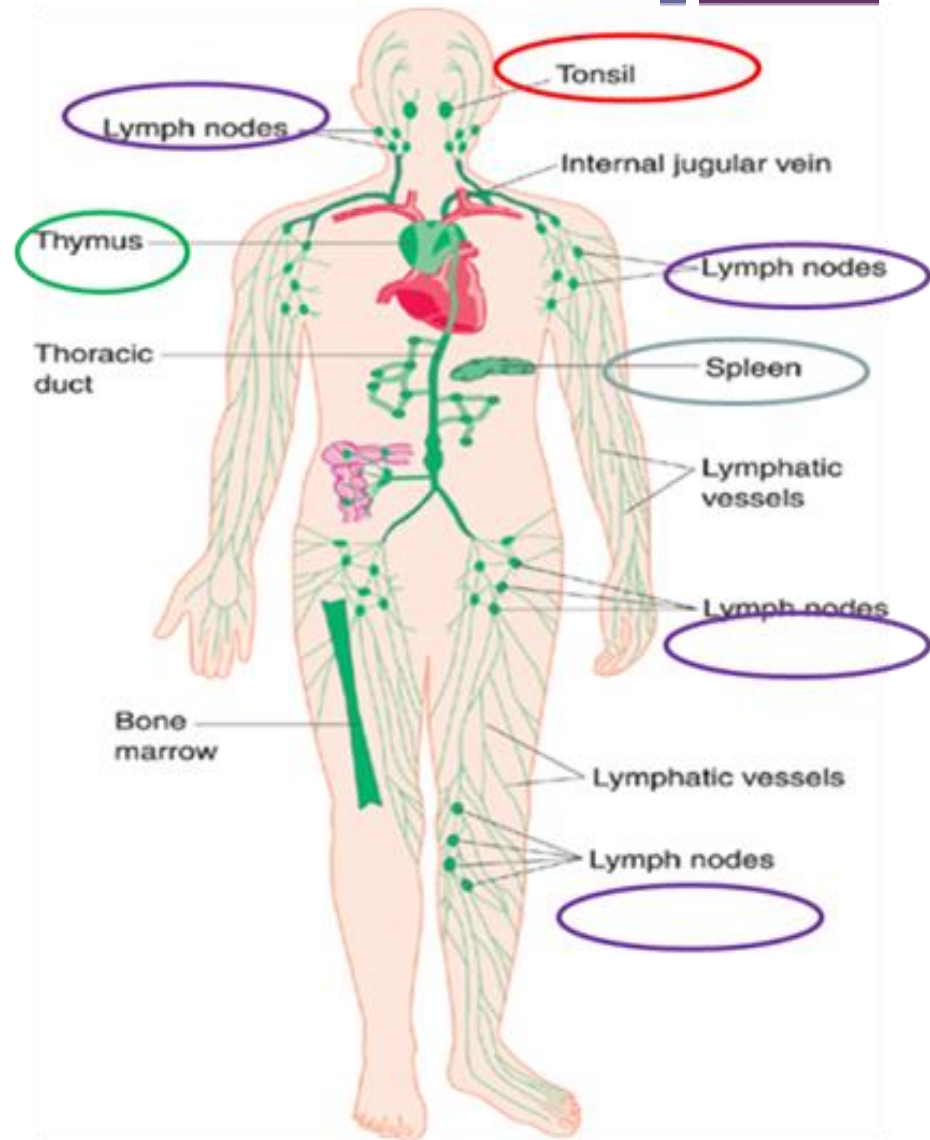
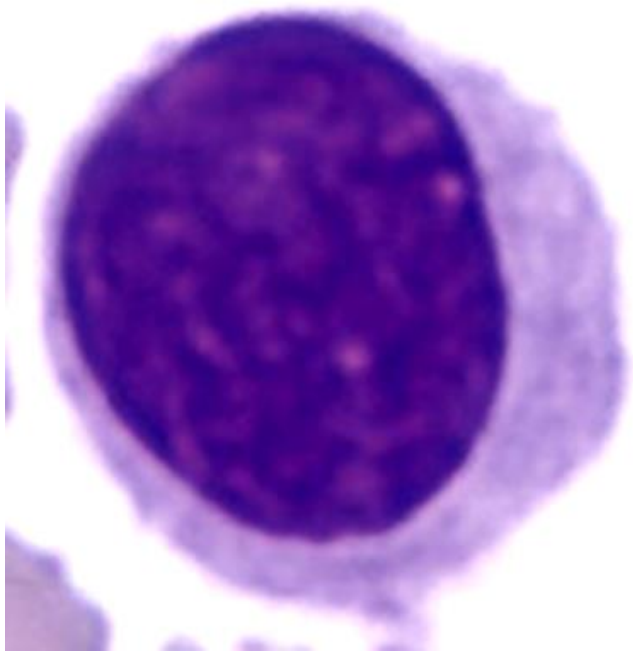
## Objectives:

- 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.



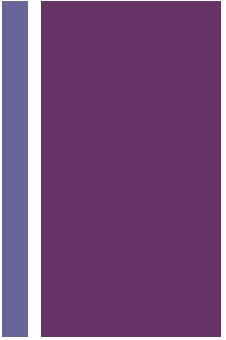
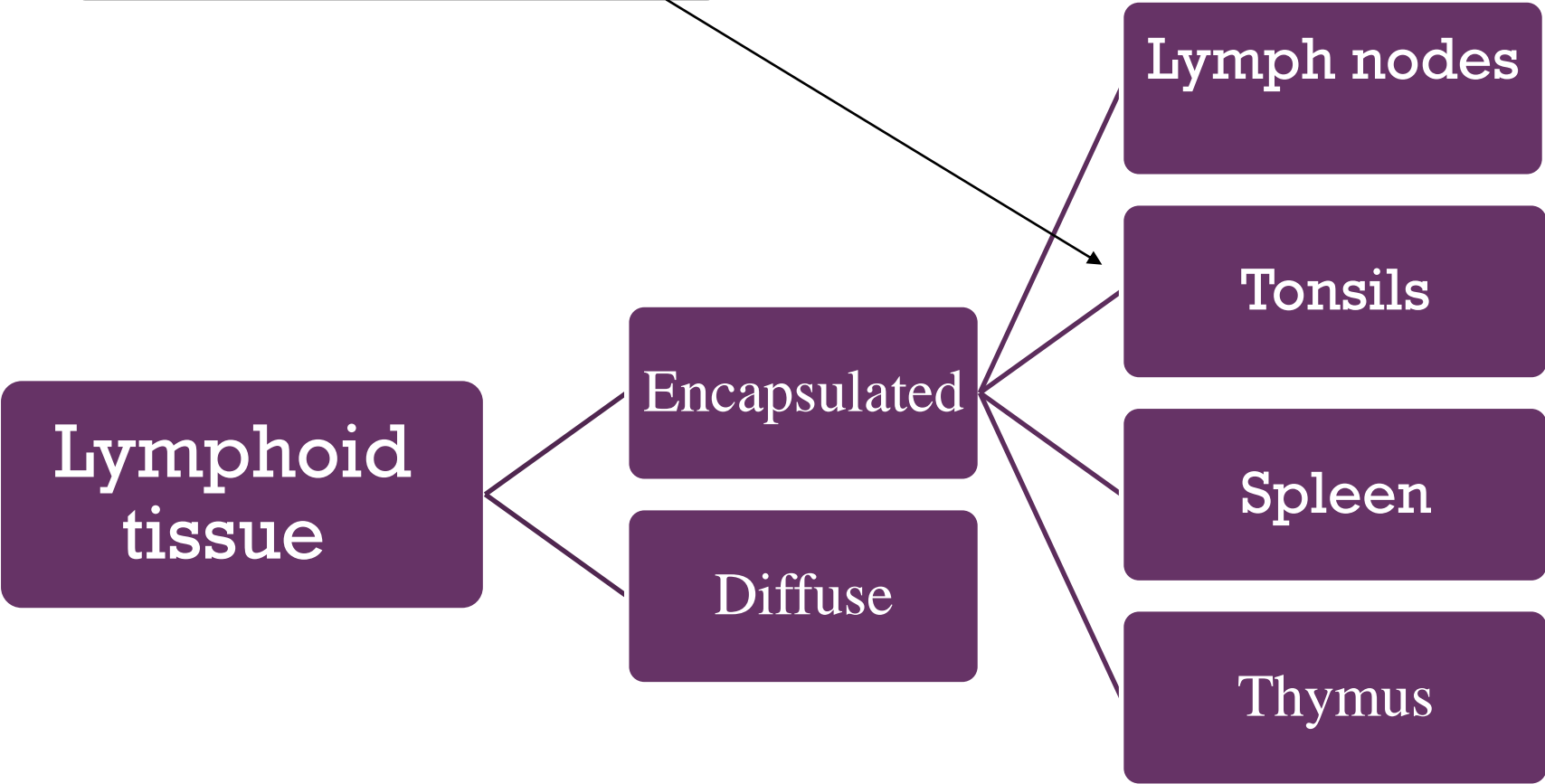


# Lymphocyte





(are incompletely encapsulated)



**N.B. Both red bone marrow & thymus are considered 1ry lymphoid organs.**

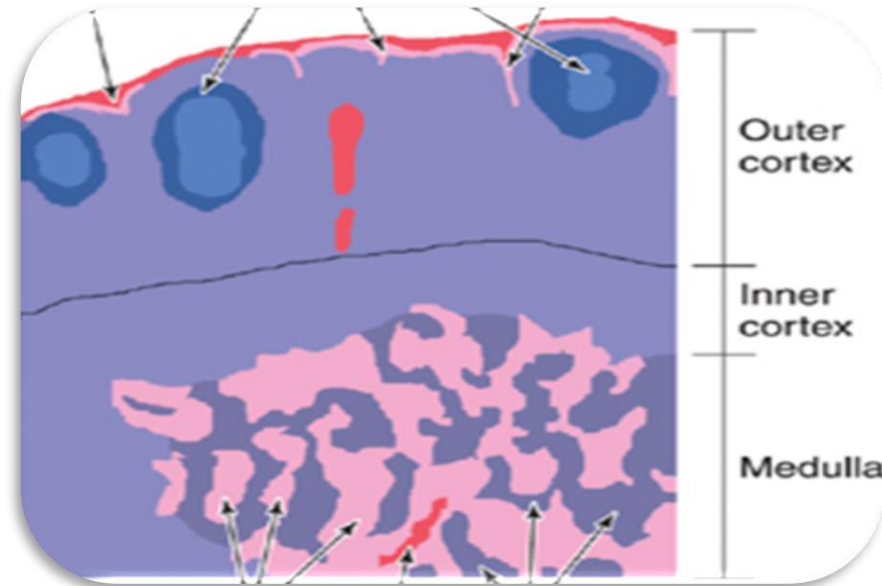
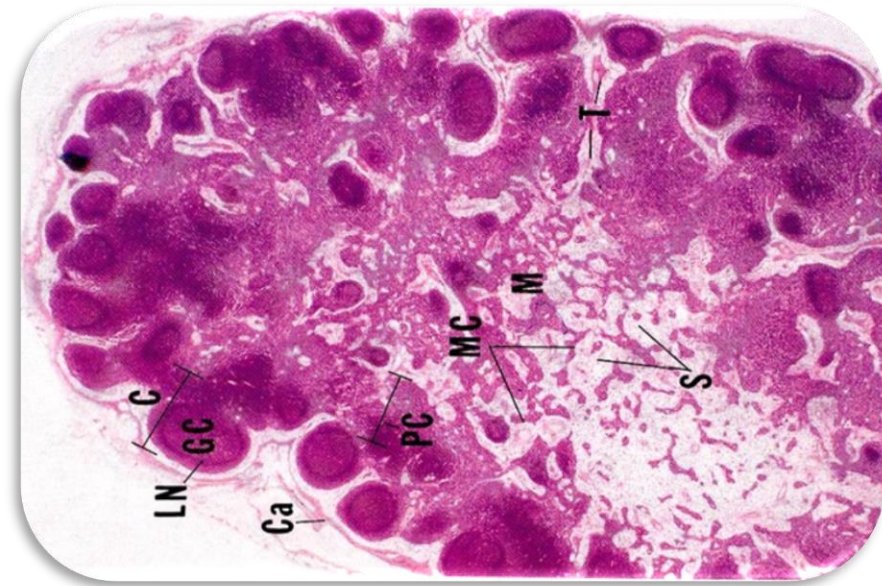
# + LYMPH NODES (L.N.)

## ■ Stroma:

- Capsule
- Trabeculae (septa)
- Reticular C.T.

## ■ Parenchyma: (lymphoid tissue + lymph sinuses)

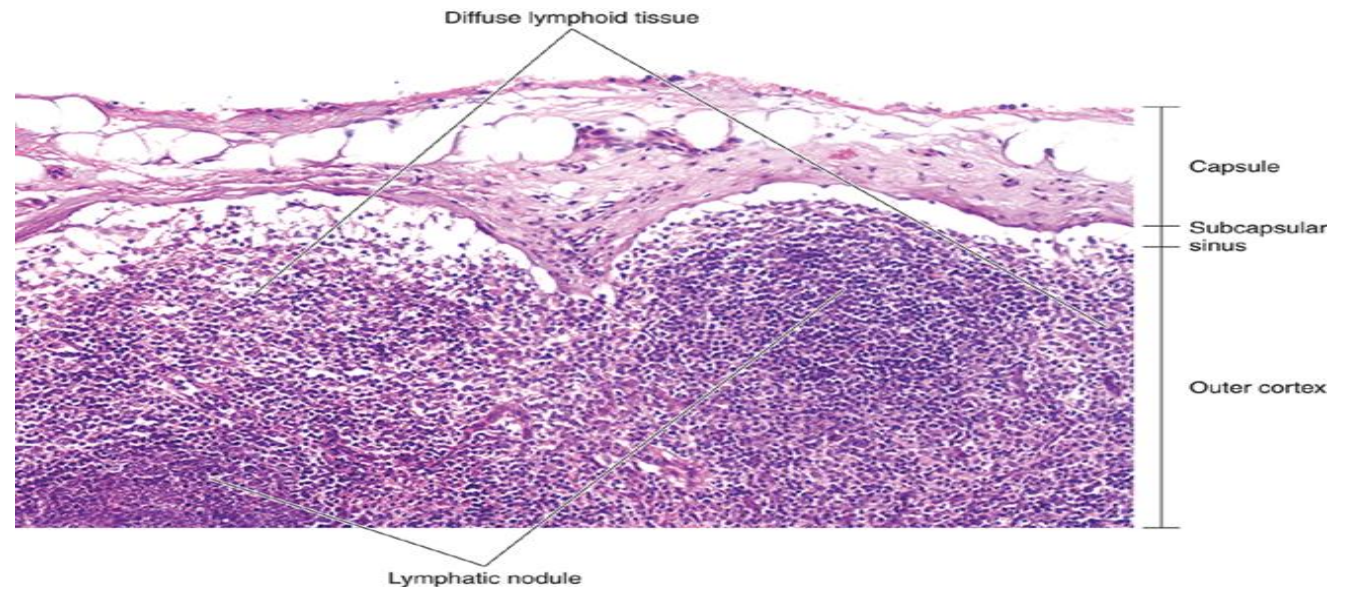
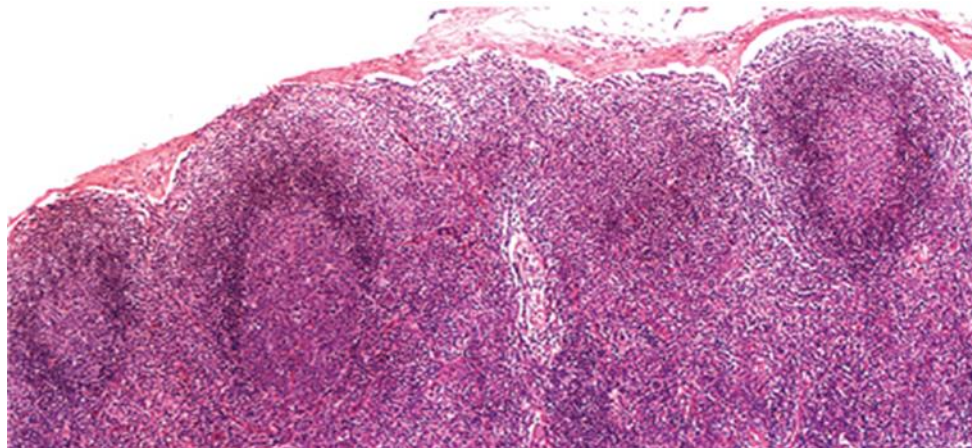
- Cortex
- Paracortex
- Medulla





# 1. Cortex of L.N.

- **Lymphatic nodules (follicles):**
  - a- 1ry: without germinal center
  - b- 2ry: with germinal center: **Lighter**
- **Cortical lymph sinuses.**



## + 2. Paracortex of L.N.

It is the thymus-dependent zone of L.N.

It is composed mostly of T-lymphocytes.

## 3. Medulla of L.N.

(1) Medullary cords: are formed of lymphoid cells

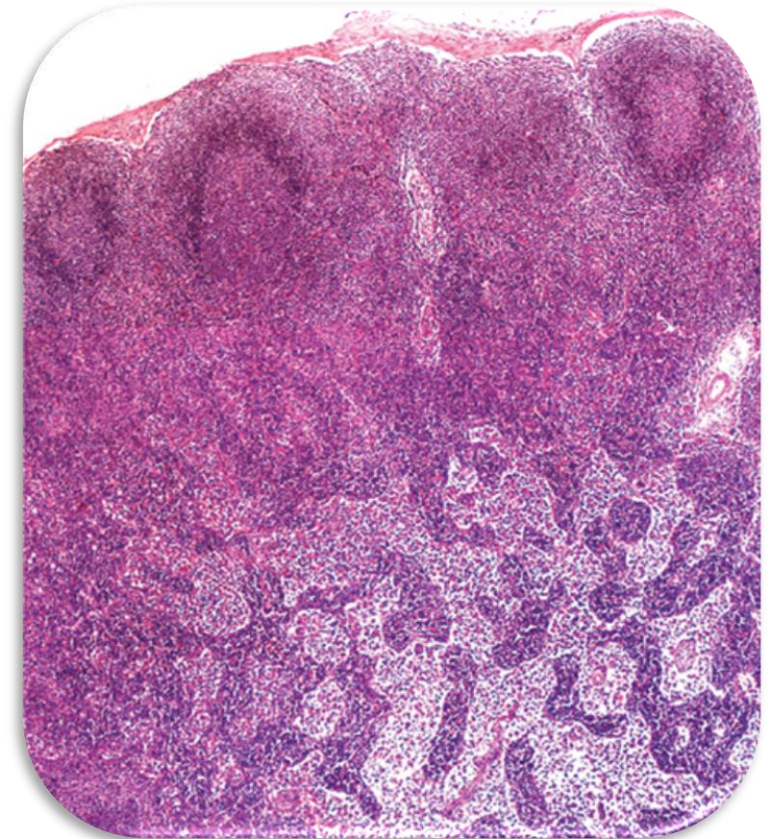
(B & T lymphocytes, plasma cells, macrophages).

(2) Medullary lymph sinuses.

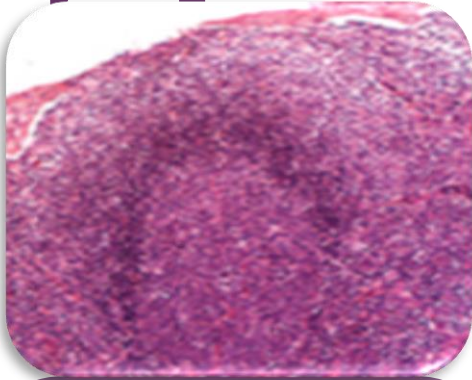
### Functions of L.N:

1- Production of immunocompetent cells.

2- Filtration of lymph.



# + Lymph node structure



## Cortex

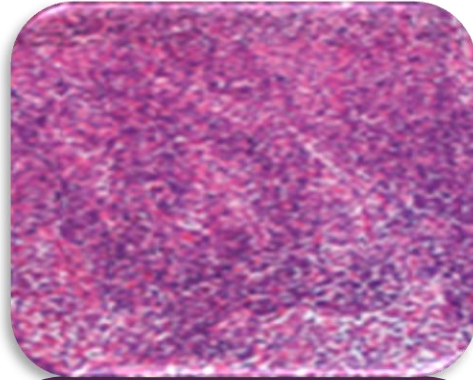
### Lymphatic nodules (follicles):

a- 1ry: without germinal center

b- 2ry: with germinal center:

Lighter

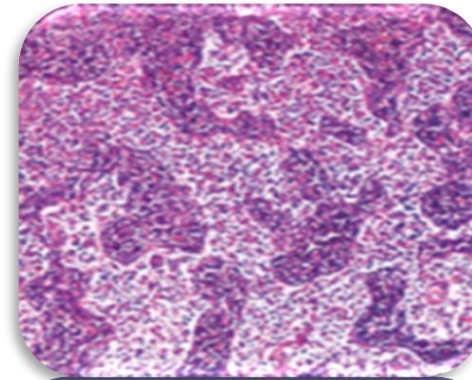
Cortical lymph sinuses.



## Paracortex

It is the thymus-dependent zone of L.N.

It is composed mostly of T-lymphocytes.



## Medulla

1. Medullary cords: are formed of lymphoid cells

(B & T lymphocytes, plasma cells, macrophages).

2. Medullary lymph sinuses.



# + Spleen

- **Stroma:**

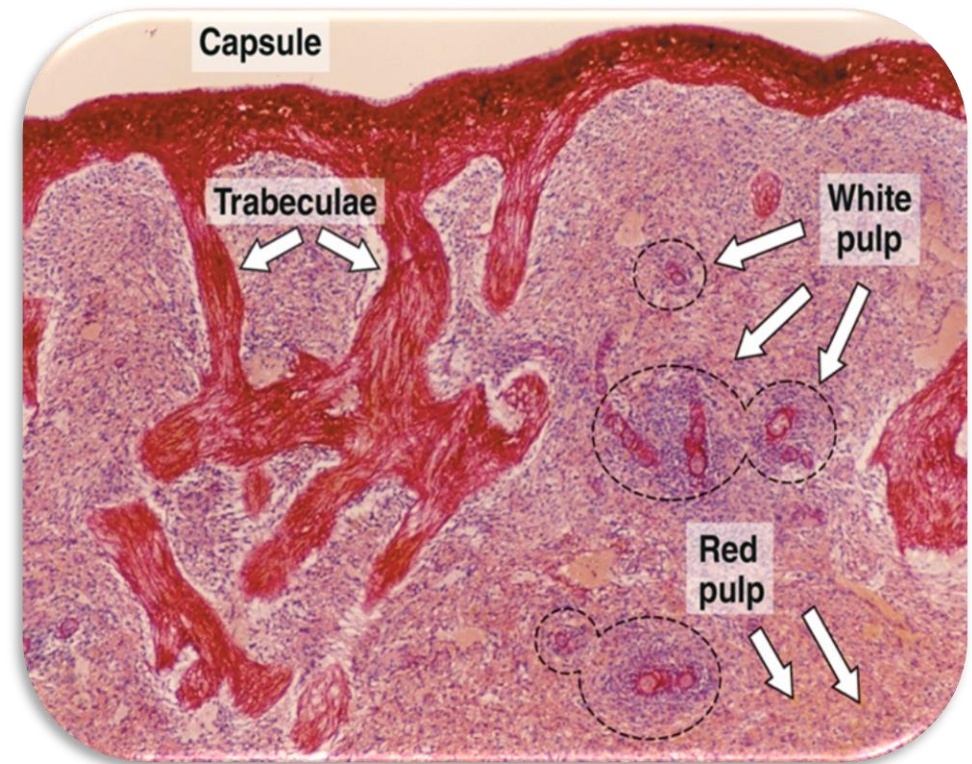
- 1- Capsule.
- 2- Trabeculae.
- 3- Reticular C.T.

- **PARENCHYMA:**

(A) White pulp.

(B) RED PULP.

N.B. **No** cortex, **No** medulla



# + 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.





# Tonsils

## ■ Palatine :

### • Structure:

1. Epithelium (non-keratinized stratified squamous )

2. Tonsilar

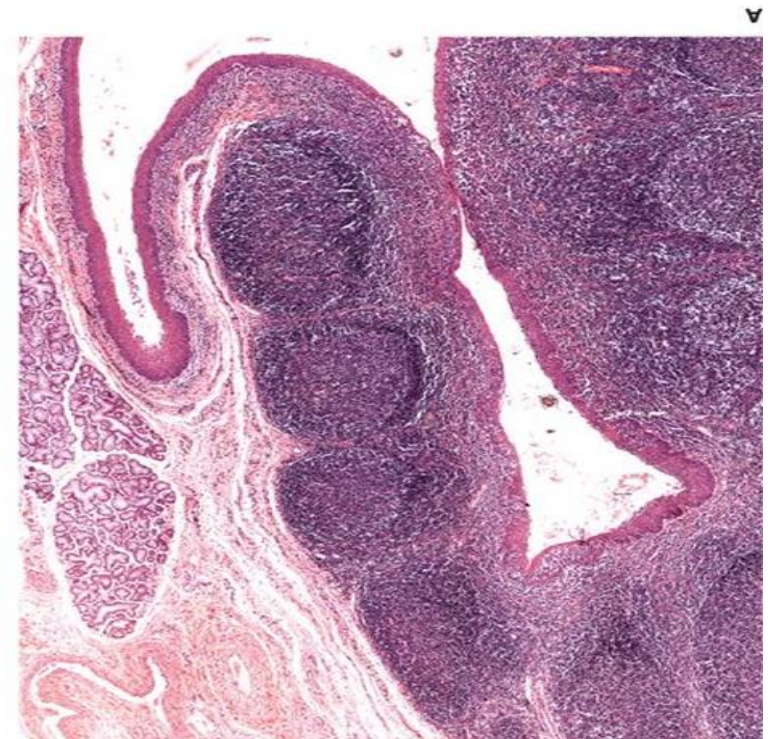
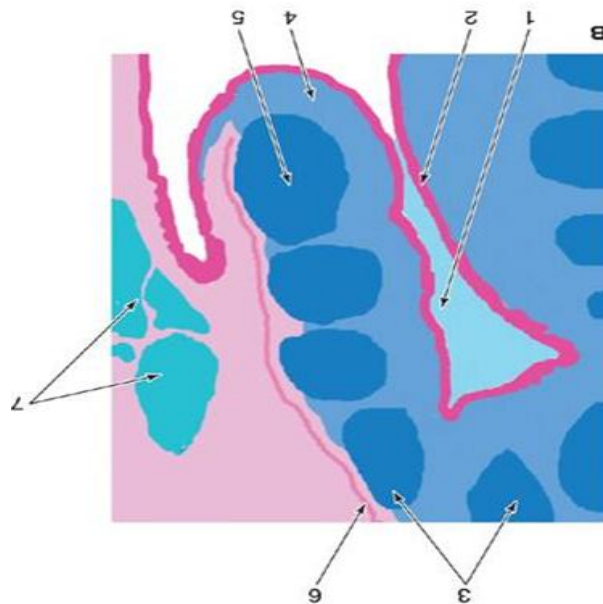
3. Lymphatic nodules.

4. Capsule: partial.

## ■ Lingual

## ■ Pharyngeal

**Function:** Production of antibodies.



# + THYMUS



## ■ Stroma:

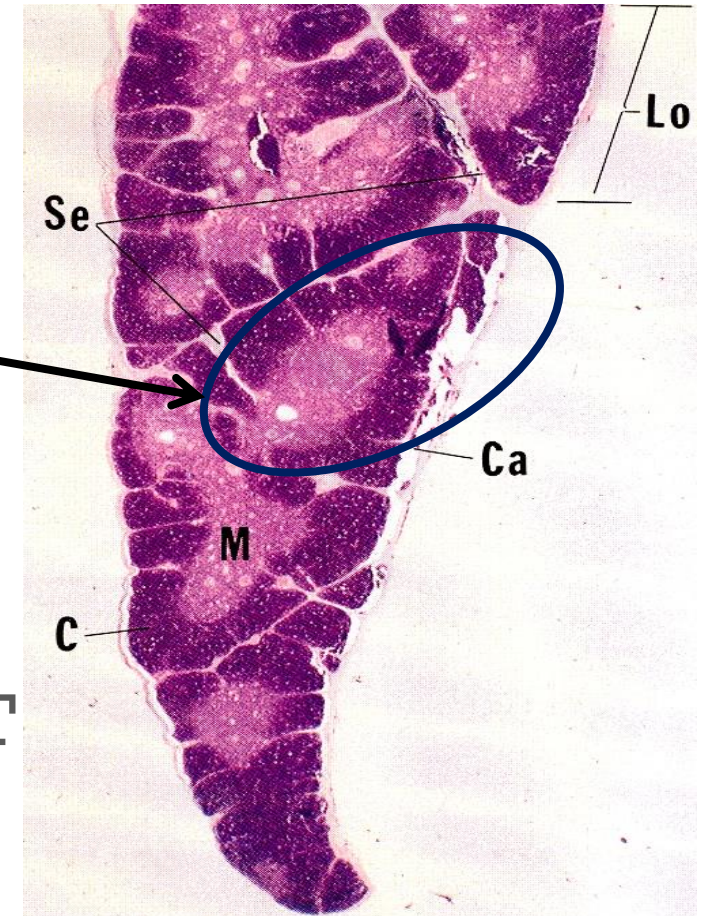
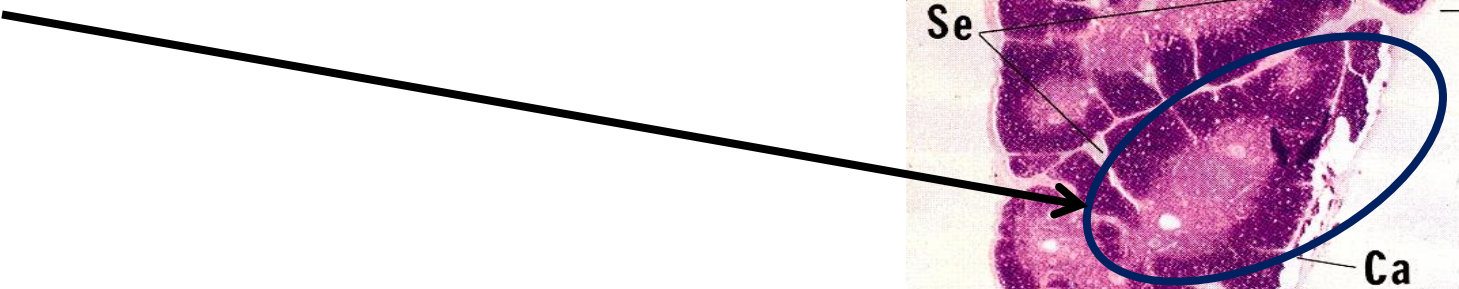
- 1- Capsule
- 2- Interlobular trabeculae: incomplete

## ■ Thymic lobule:

- 1- Cortex
- 2- Medulla

## Function Of Thymus:

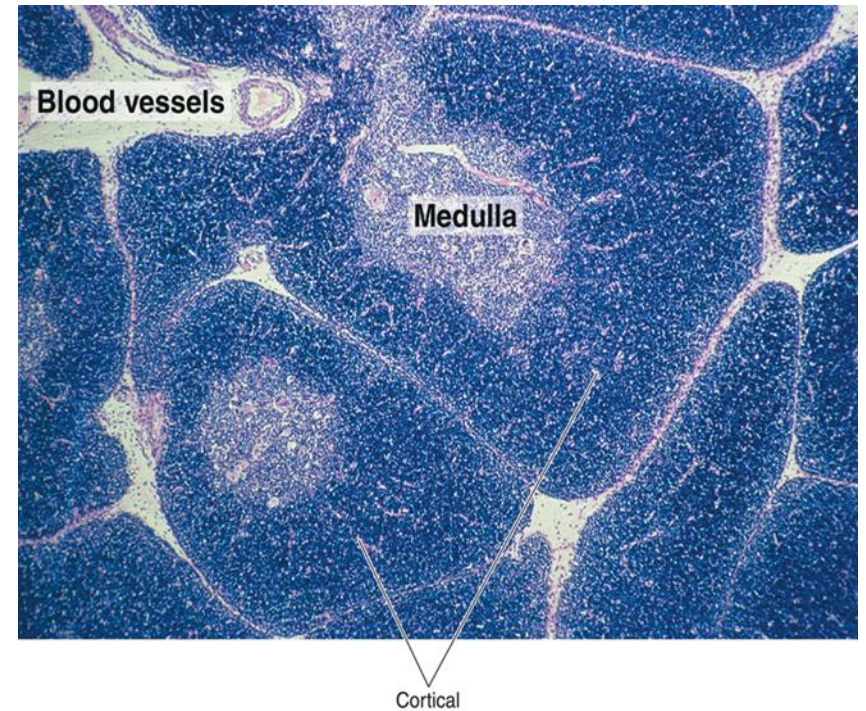
Maturation of T lymphocytes  
from Immunoincompetent to Immunocompetent T  
cells



# + Cortex of Thymic Lobule

- A) It contains developing (immature) T-lymphocytes (thymocytes). 98% of thymocytes die
- B) Epithelial reticular cells
- C) Macrophages.

N.B. **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.

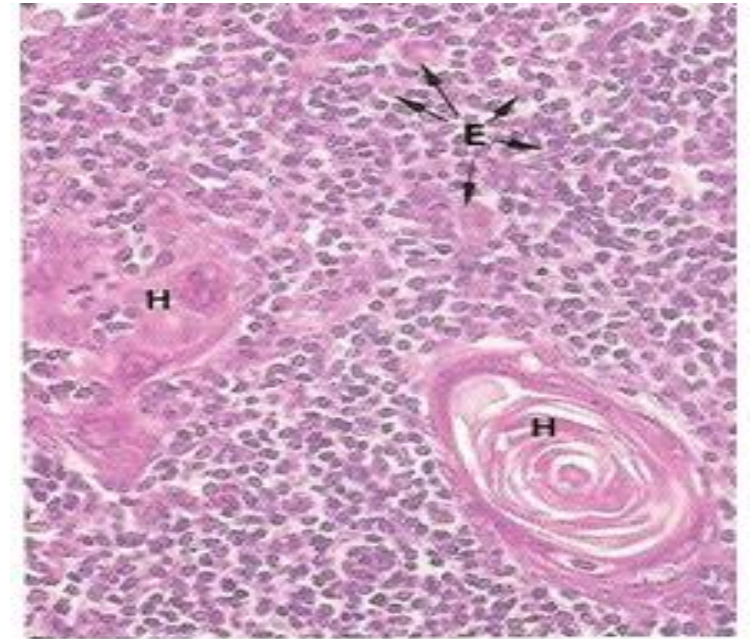
## 2- Mature small T lymphocytes

## 3- Macrophages.

## 4- Epithelial reticular cells.

N.B. Medulla of adjacent thymic lobules are interconnected -

Why? Incomplete trabeculae



# + Functions

## **Lymph Node**

1. Production of Immunocompetent cells.
2. Filtration of lymph .

## **Spleen**

1. Filtration of blood .
2. Phagocytosis of RBC''old blood & invading microorganisms
3. Production & proliferation immunocompetent B&T lymphocytes

## **Tonsils**

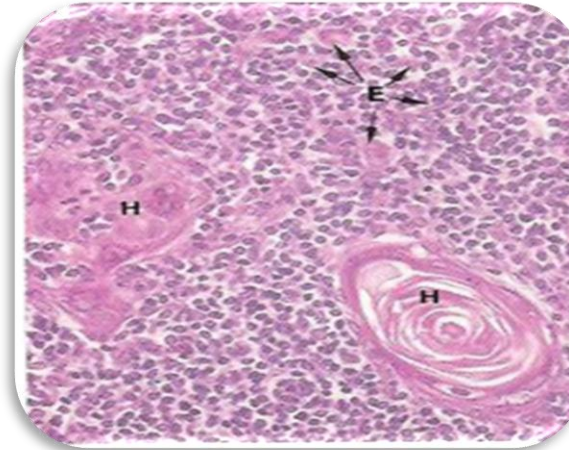
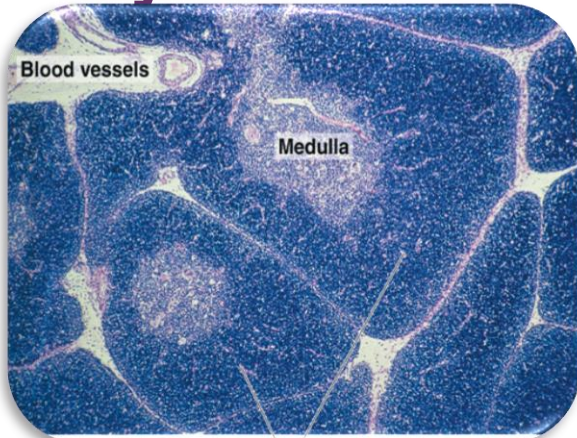
Production of antibodies

## **Thymus**

Maturation of lymphocytes from immunoincompetent cells to Immunocompetent cells.



# Thymus structure



## Cortex

A) It contains developing (immature) T-lymphocytes (thymocytes). 98% of thymocytes die

B) Epithelial reticular cells

C) Macrophages.

N.B. **No** lymphatic nodules  
**No** plasma cells  
**No** B-lymphocytes

## Medulla

1. Hassall's (thymic) corpuscles:

Concentrically arranged epithelial reticular cells in the medulla.

2. Mature small T lymphocytes

3. Macrophages.

4. Epithelial reticular cells.

N.B. Medulla of adjacent thymic lobules are interconnected - Why?

Incomplete trabeculae





## CLINICAL APPLICATION

### **Palpable lymph node**

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

### **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.



# Extra Links



## Quiz:

- <https://www.onlinequizcreator.com/lymphoid-tissue/quiz-119571>

## Helpful videos:

- <https://www.youtube.com/watch?v=MLrF0Dw7Kd0>
- <https://www.youtube.com/watch?v=JFylM1ALOTs>

**Start by doing what's necessary;  
then do what's possible; and  
suddenly you are doing the  
impossible.**



# Credit



## TEAM MEMBERS:

- Adnan Alkhaldi
- Mohammed Amarshoud
- Abdulkarim Alharbi
- Khalid Alghsoon
- Abdullah Alshathry
- Anas Ali
- Shadn Alomran
- Shahad Albeshr
- Sadeem Alqahtani
- Noura AlTawil
- Nouf Alabdulkarim
- Muneerah AlOmari
- Hanan Alabdullah
- Ghadah Alqasimi

## TEAM LEADERS:

- Hazim Bajri
- Areeb AlOkaiel

**Thanks for checking our work,  
Good luck.**

**-Team histology.**

