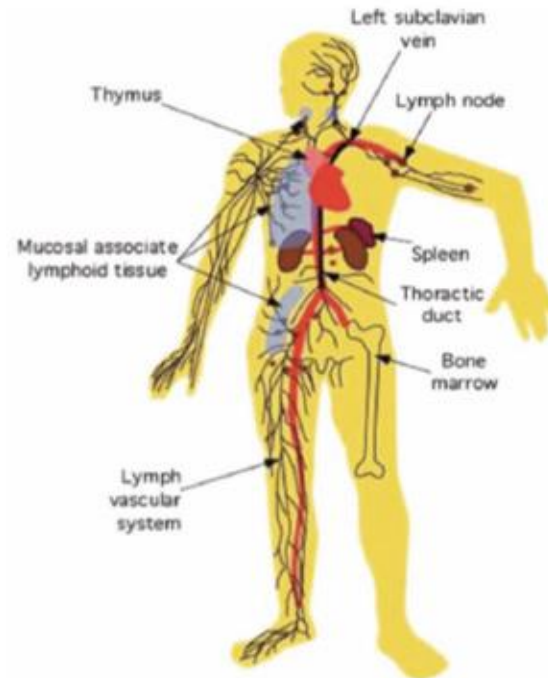


Lymphoid Tissue

OBJECTIVES:

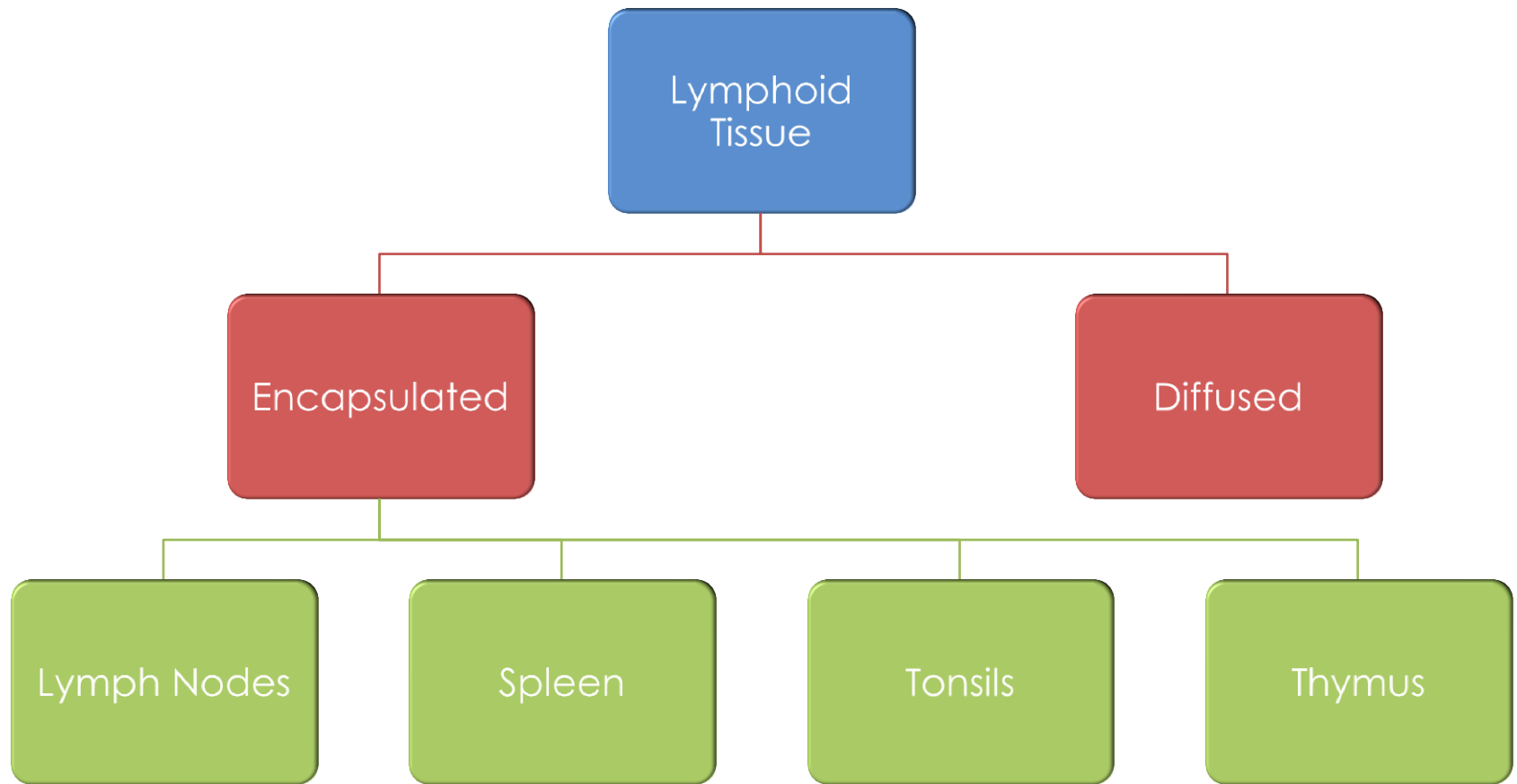
. By the end of the lecture, the student should describe the microscopic structure of the following organs in correlation with their functions:

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

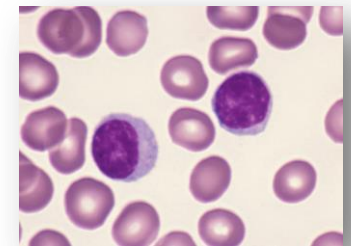


Color Index:

Red = Important Notes Orange = Further Explanation Purple = Additional Notes



The chief cell in lymphoid tissue is **lymphocyte**
T & B lymphocyte look alike under the microscope



Note: Both red bone marrow & thymus are considered primary lymphoid organs

Lymph Node (L.N)

Stroma

“الغرفة”

Capsule

“الجدران”

Trabeculae
(Septa)

“الستائر”

Reticular C.T

“الشبكة”

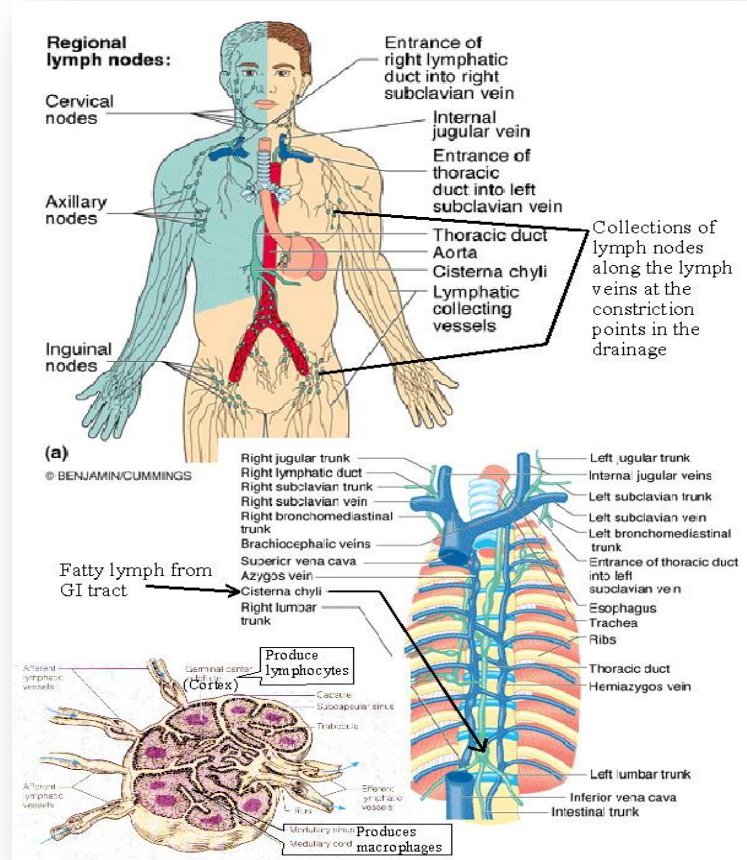
Parenchyma

(Lymphoid
Tissue + Lymph
Sinuses)

Cortex

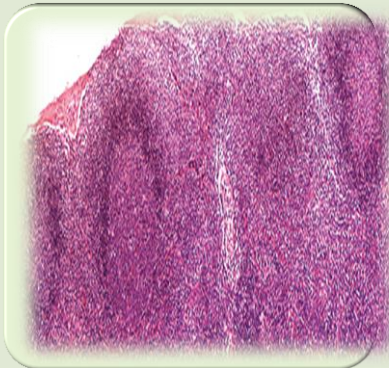
Paracortex

Medulla



Lymph has the same components of plasma but without red blood cells

Lymph Node Structure



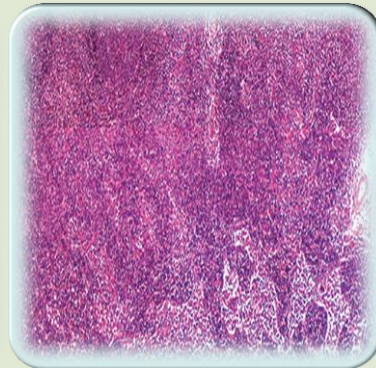
Cortex

1- Lymphatic nodules (follicles):

a- 1ry: without germinal center

b- 2ry: with germinal center:
Lighter, **has active B-lymphocytes**

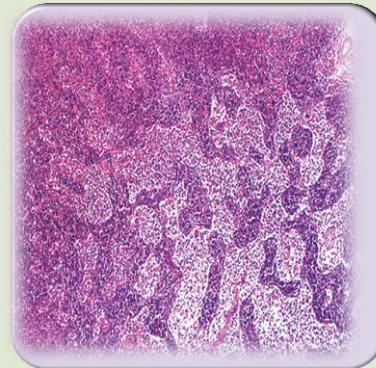
2- Cortical lymph sinuses.



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

Note:

If there is lymphatic nodules in the organ that means it has B-lymphocytes therefore it will produce plasma cells, then antibodies

Spleen

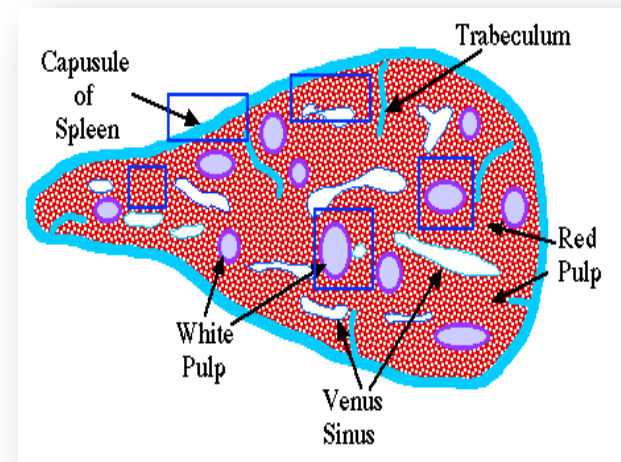
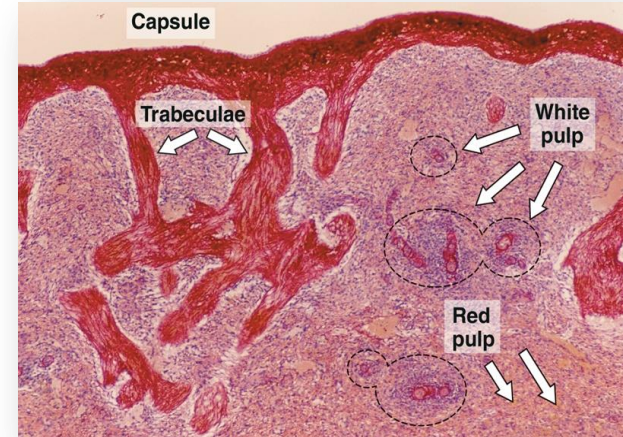
Stroma

- ✓ Capsule.
- ✓ Trabeculae.
- ✓ Reticular C.T.

Parenchyma

- ✓ White Pulp.
- ✓ Red Pulp.

Note: No cortex, No medulla.



Tonsils

Types of Tonsils

Palatine Tonsil

اللوز

Pharyngeal Tonsil

الحمية

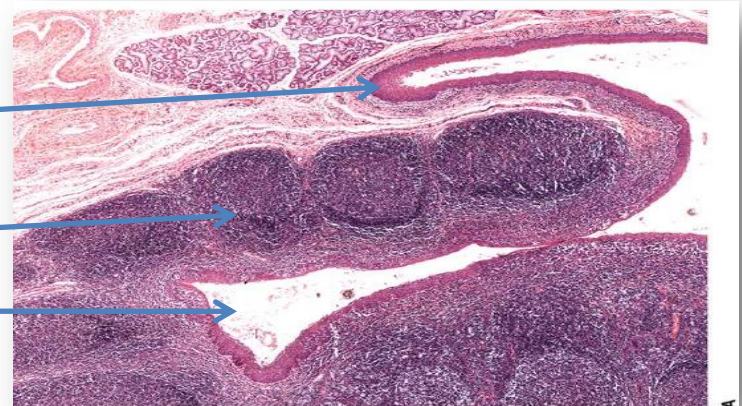
Lingual Tonsil

في اللسان

Palatine Tonsils

Structure:

- ✓ Epithelium: non-keratinized stratified squamous.
- ✓ Lymphatic nodules.
- ✓ Tonsillar crypts.
- ✓ Capsule: partial by connective tissue from inside and lined by epithelium from outside



Thymus

Stroma

- ✓ Capsule
- ✓ Interlobular trabeculae: incomplete that separate lobules

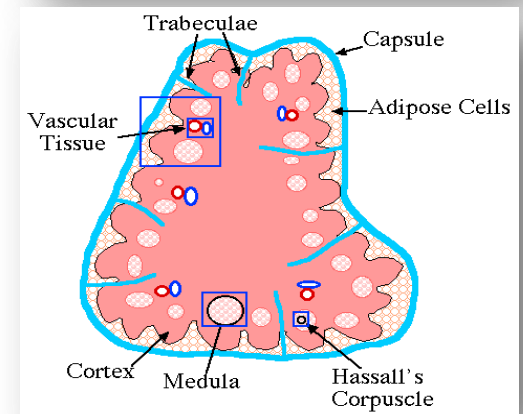
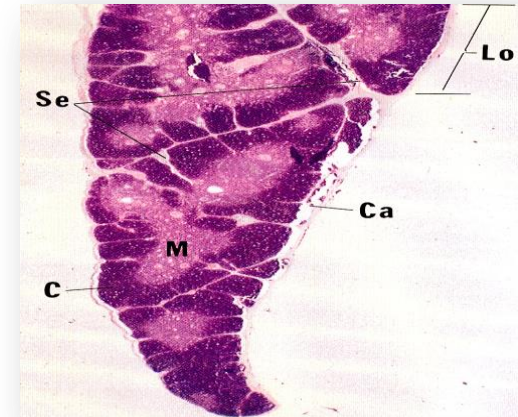
Parenchyma

- ✓ Cortex
- ✓ Medulla

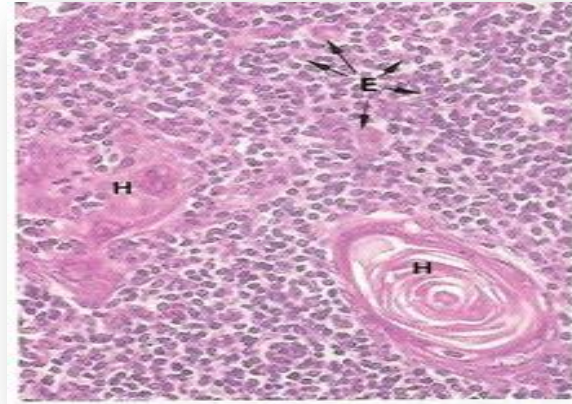
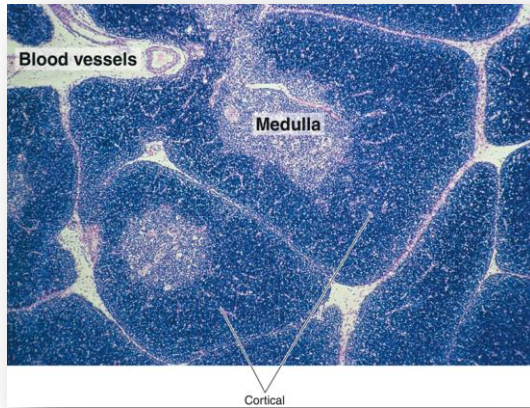
No lymphoid nodules, no reticular fiber, no sinuses or sinusoids

Note:

Thymus is a primary lymphoid organ that is located anterior-superior to the heart behind the sternum, and it is composed of 2 identical lobes.



Thymus Structure



Cortex

- It contains developing (**immature**) **T-lymphocytes** (thymocytes). 98% of thymocytes die and **phagocytosed by macrophages** and the rest 10% goes to medulla
- **Epithelial reticular cells**
- **Macrophages.**
- **Note:** No lymphatic nodules, No plasma cells, No B-lymphocytes

Medulla

- **Hassall's (thymic) corpuscles:**
 - Concentrically arranged epithelial reticular cells in the medulla.
- **Mature small T lymphocyte**
- **Macrophages.**
- **Epithelial reticular cells.**
- **Note:** 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 T lymphocytes from Immunoincompetent cells to Immunocompetent cells

Clinical Applications

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

Rupture of 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.

MCQ's

1. The presence of _____ leads to enlarged lymph node:

- a) Red Blood Cells
- b) Antigens or Microorganisms
- c) Neutrophils
- d) Antibodies

2. Thymus produce Immunocompetent B lymphocytes:

- a) True
- b) False

3. Tonsils are:

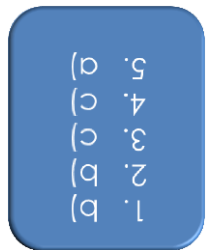
- a) Fully Capsulated
- b) Friable Organ
- c) Partially Encapsulated
- d) T lymphocytes generators

4. One of the following is NOT a secondary lymphoid organ:

- a) Spleen
- b) Lymph Node
- c) Thymus
- d) Tonsils

5. One of Spleen's function is:

- a) Filtration of Blood
- b) Produce Antibodies
- c) Filtration of Lymph
- d) Proliferation of T lymphocytes



YouTube Useful Videos:

Lymphoid Tissue – Lymph Nodes

<http://www.youtube.com/watch?v=MLrF0Dw7Kd0>

Spleen and Thymus

<http://www.youtube.com/watch?v=JFyIMIALOTs>

Thank you for checking our work...

▣ Done By:

Amal Afrah

Rawa Al Ohali

Ouf Al Oufi

Manal Al Hamdan

Najd Al Omran

▣ MOTIVATION CORNER:

“ لم يحقق الإنسان في هذه الحياة كل
طموحاته.. لا لصعوبتها و لكن لتنوعها و
تجددها، لكن الكيس الفطن من جعل أهدافه
الحياتية وسيلة للفوز الأكبر و هو **الجنة** “
– علي محمد الغيلان

For any correction, suggestion or any useful information do
not hesitate to contact us: **Histology434@gmail.com**