



Faculty of Biological Science and Technology
Zoology and Botanical Department
Practical Histology

Lymphoid System

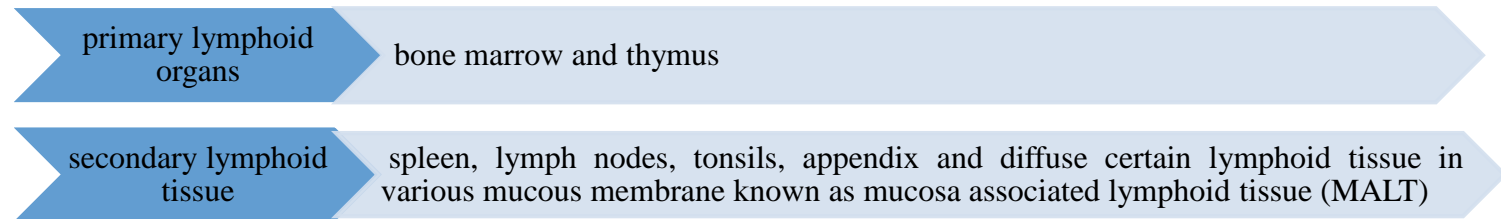
Part 1

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Lymphoid system

- ▶ Lymphoid system is composed of cells, tissues and organs that protect our body from infections
- ▶ A complex group of immune cells including lymphocytes are located in lymphoid organs
- ▶ There are two groups of lymphoid organs:





thymus

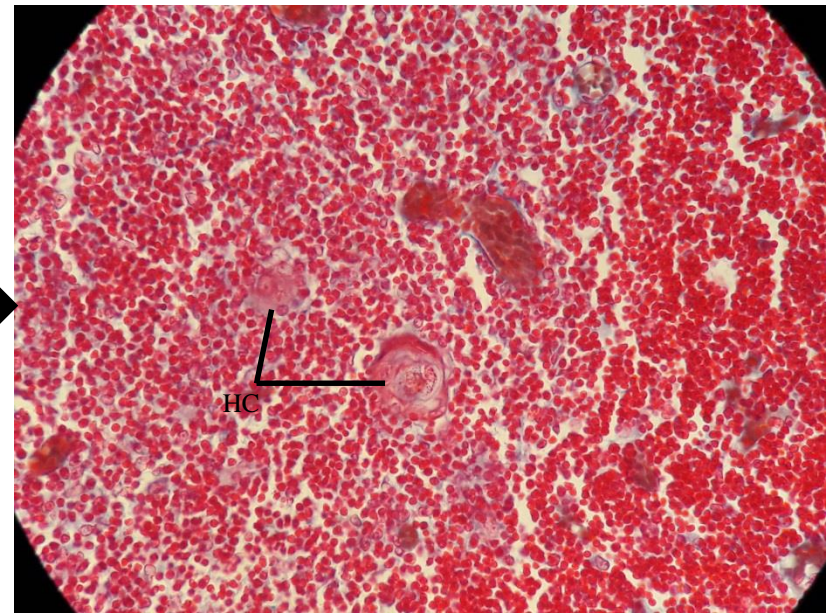
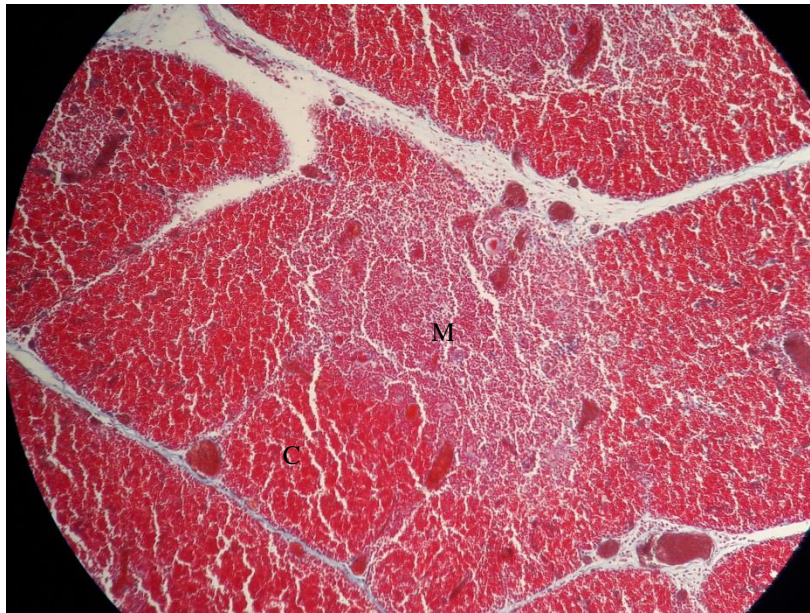
- ▶ Thymus is an encapsulated primary lymphoid organ located in anterior mediastinum
- ▶ Thymus is composed of two lobes
- ▶ Septa (or trabecula) from surrounding capsule penetrate into the tissue and divides it into incomplete lobules
- ▶ Capsule and septa are made of connective tissue
- ▶ Each lobule has an outer, dark basophilic region called cortex and inner, lighter region called medulla
- ▶ Cortex contains numerous small lymphocytes (precursors of T lymphocytes called thymocytes). It also contains macrophages and special epithelial reticular cells
- ▶ Medulla contains larger but fewer mature lymphocytes with pale staining nuclei
- ▶ Hassall's corpuscles are structures found in thymus medulla formed from epithelial reticular cells arranged concentrically



Thymus. C:cortex, M: medulla, S: septa. Closed circle shows a lobule. H&E, 5.6X. This picture is taken from histological slide in histology-laboratory of Isfahan University



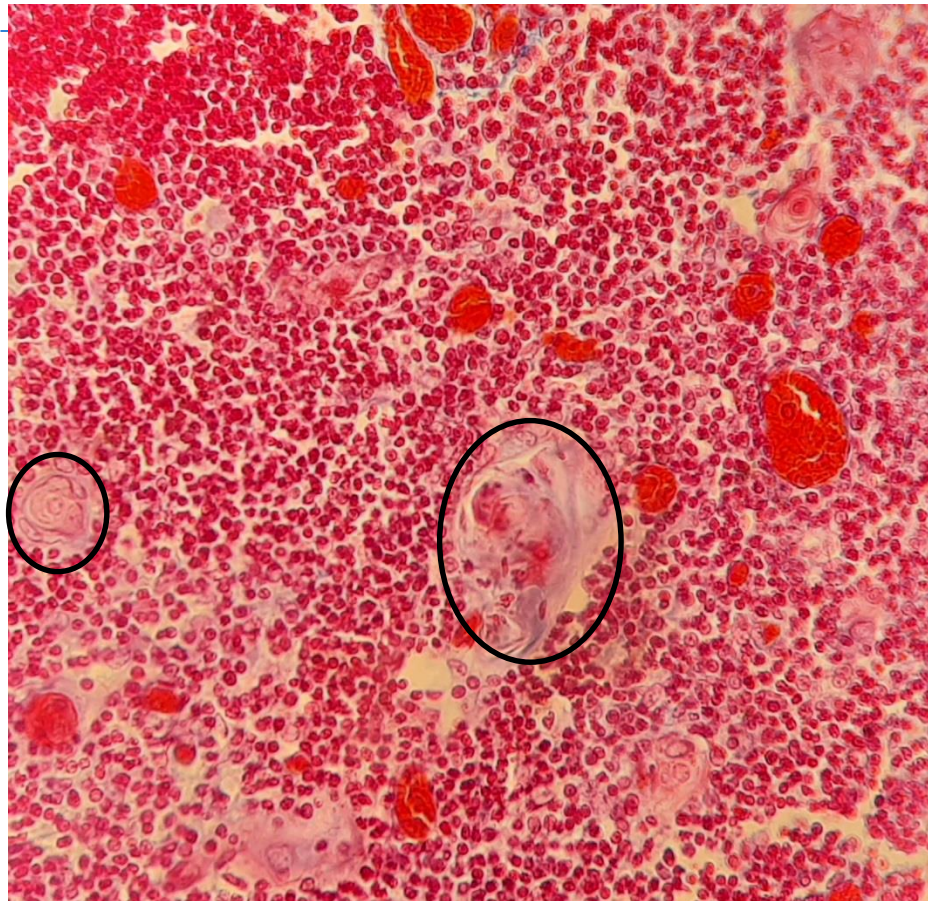
Thymus



Thymus. C:cortex, M: medulla, HC: Hassall's corpuscles . H&E, left, 10X, right: 40X. These pictures are taken from histological slide in histology laboratory of Isfahan University



Thymus

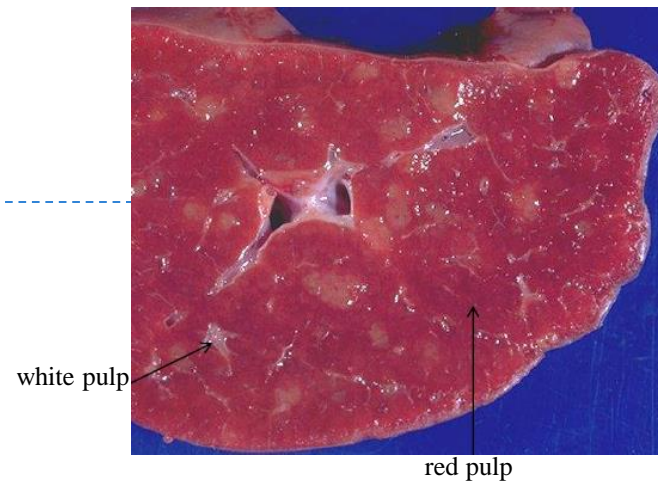


Hassall's corpuscles in the medulla of thymus. Numerous lymphocyte can be seen in this field. H&E, 40X. This picture is taken from histological slide in histology laboratory of Isfahan University

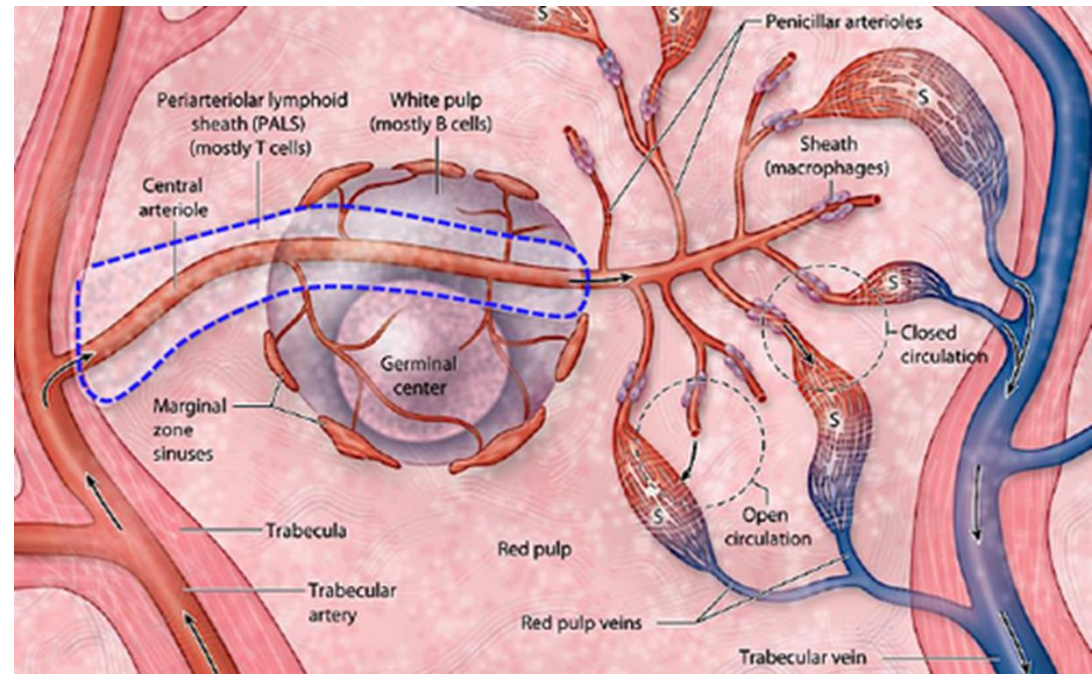


Spleen

- ▶ Spleen is the largest collection of lymphoid tissue located in the left upper part of abdomen
- ▶ The organ is surrounded by dense connective tissue capsule, emerging from which are trabeculae that support the large vessels and divide the spleen into lobules
- ▶ The spleen parenchyma is divided into two compartments: White pulp and red pulp
- ▶ The white pulp is highly organized lymphatic tissue consists of lymphatic nodules and periarteriolar lymphoid sheaths (PALS). It forms 20% of the spleen volume. PALS contain mainly T cells, macrophages, dendritic cells and plasma cells. Arterioles which is surrounded by PALS is called central arterioles
- ▶ The red pulp makes up the majority of spleen and consists of splenic sinusoids and cords. Splenic cords also known as Billroth cords and contain reticular cells alongside B and T cells, macrophages, other leukocytes and red blood cells

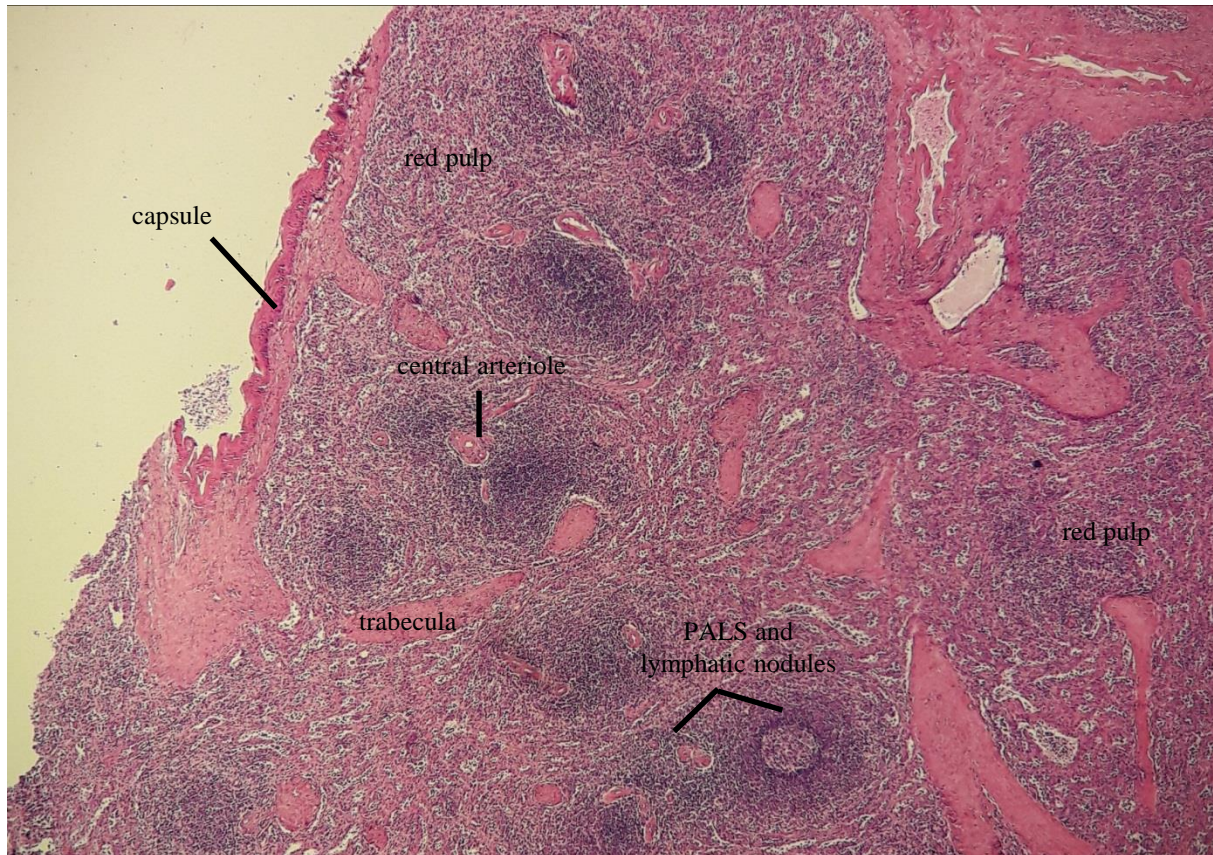


A real illustration of spleen





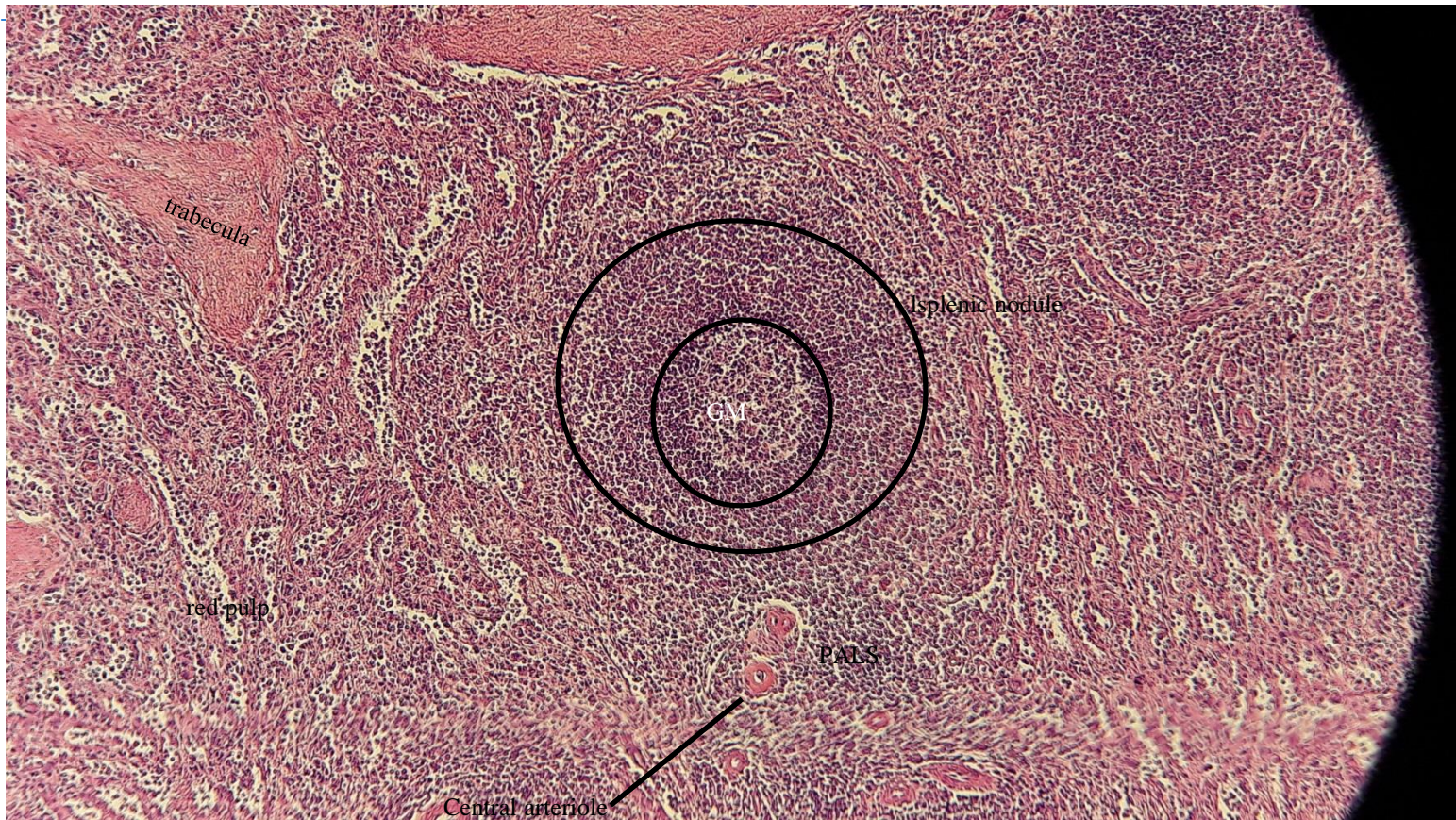
Spleen



Spleen. H&E, 4X. This picture is taken from histological slide in histology laboratory of Isfahan University



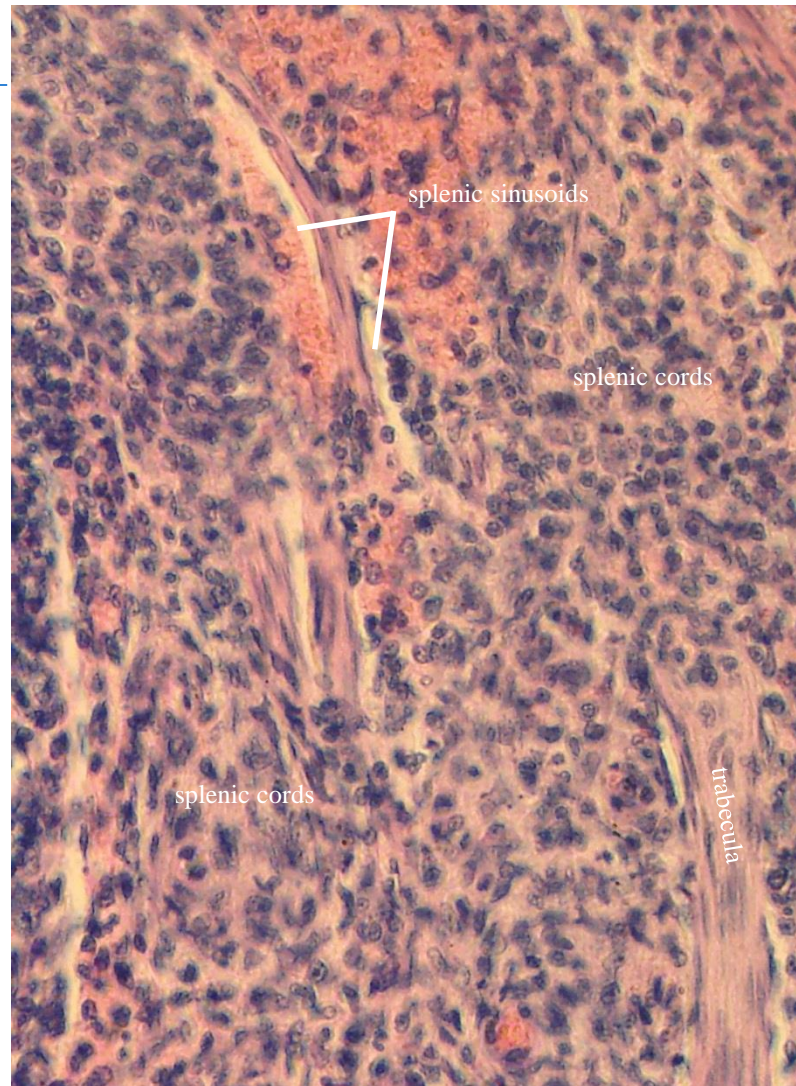
Spleen



Splenic nodule in spleen. GM: germinal center; H&E, 10X. This picture is taken from histological slide in histology laboratory of Isfahan University



Spleen



Red pulp of spleen. H&E, 40X. This picture is taken from histological slide in histology laboratory of Isfahan University