



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

Lymphatic system

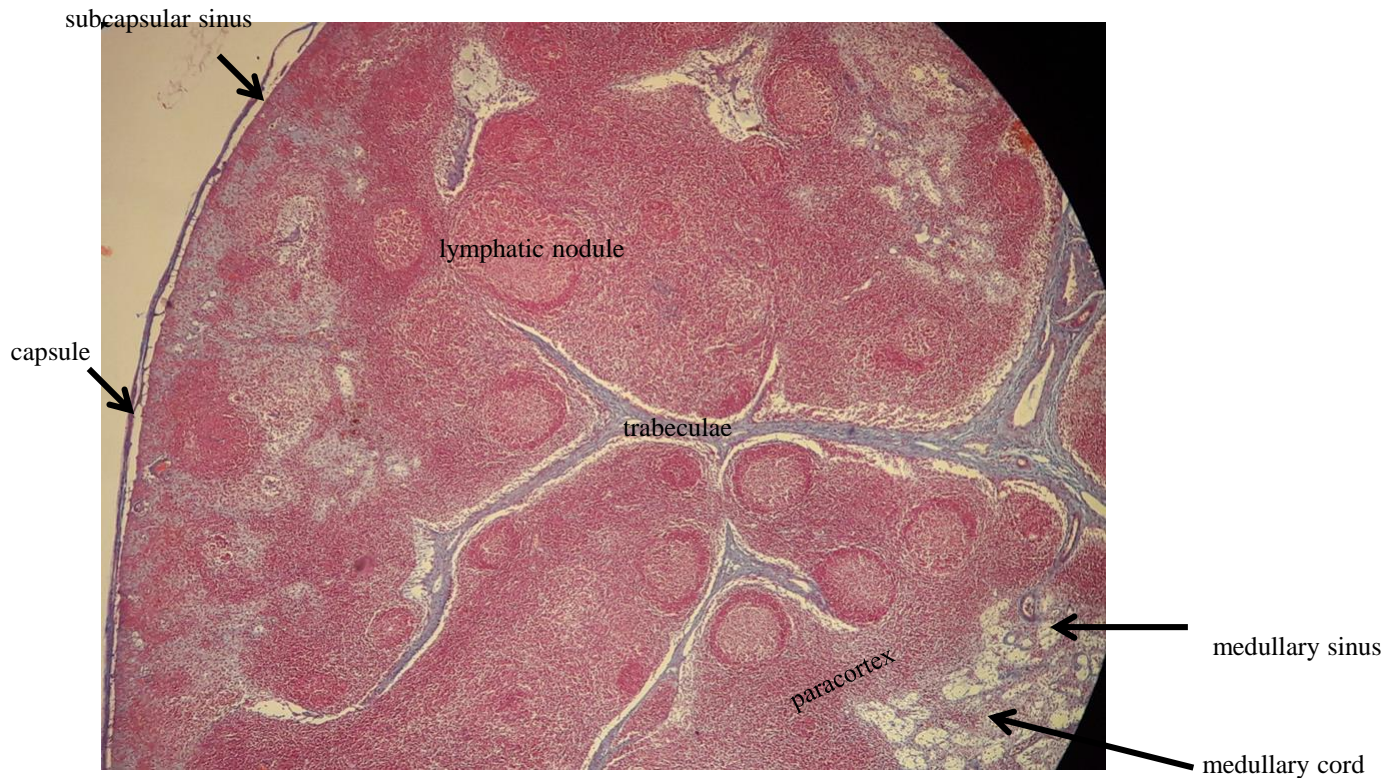
Part 2

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Lymph nodes

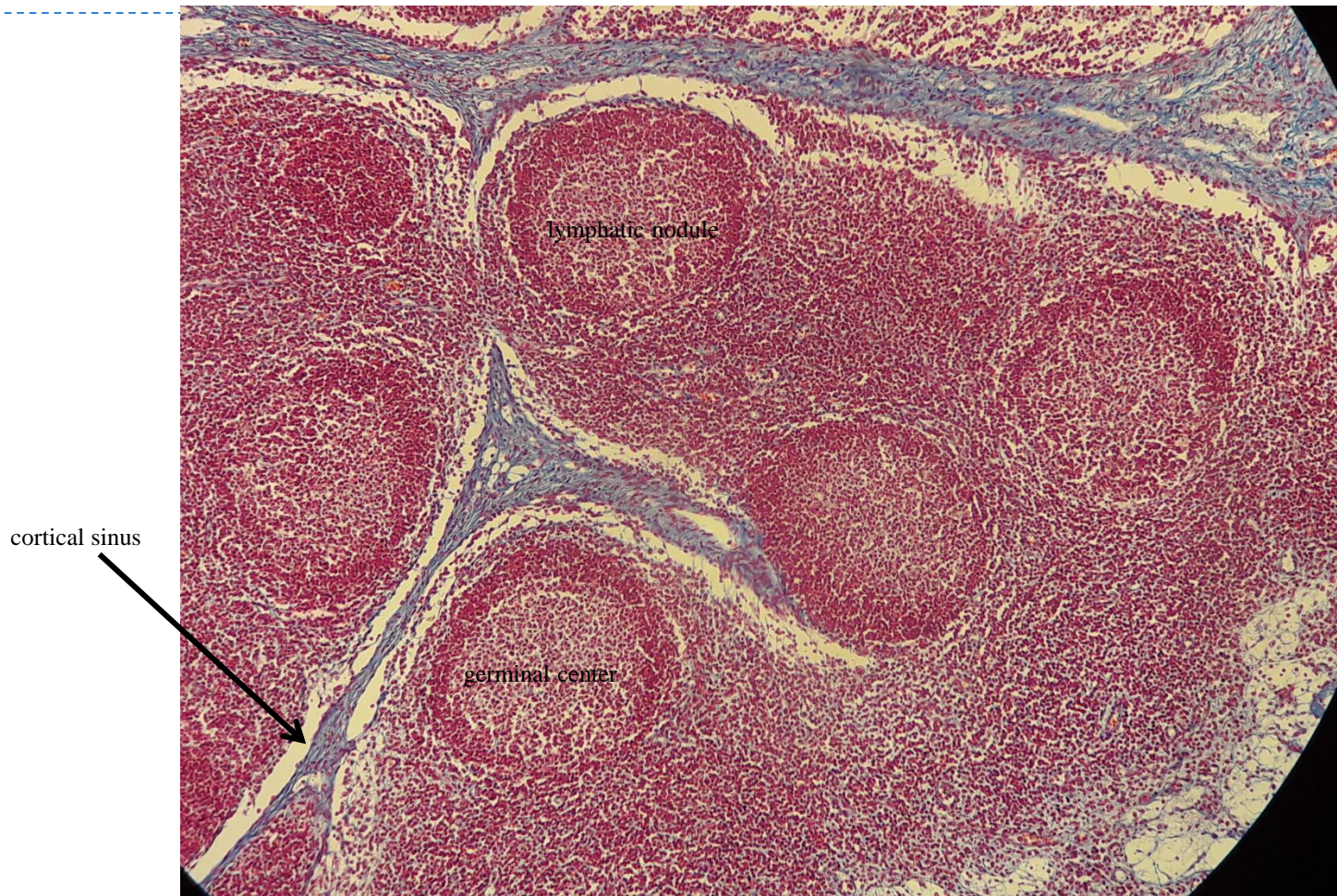
- Lymph nodes are small, bean-shaped and encapsulated organs located along the pathway of lymphatic vessels throughout body -----
- ▶ The capsule made of dense connective tissue and is separated from node parenchyma by a narrow space called subcapsular sinus
- ▶ The paranchyma of lymph node is divided into three compartments including: cortex, paracortex, and medulla
- ▶ Cortex composed of lymphatic nodules (or follicles) rich in B cells, subcapsular sinus and cortical sinus
- ▶ Medula is less cellular and composed of sinus and cord medullary
- ▶ Paracortex is rich in T cells without lymphatic nodules



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



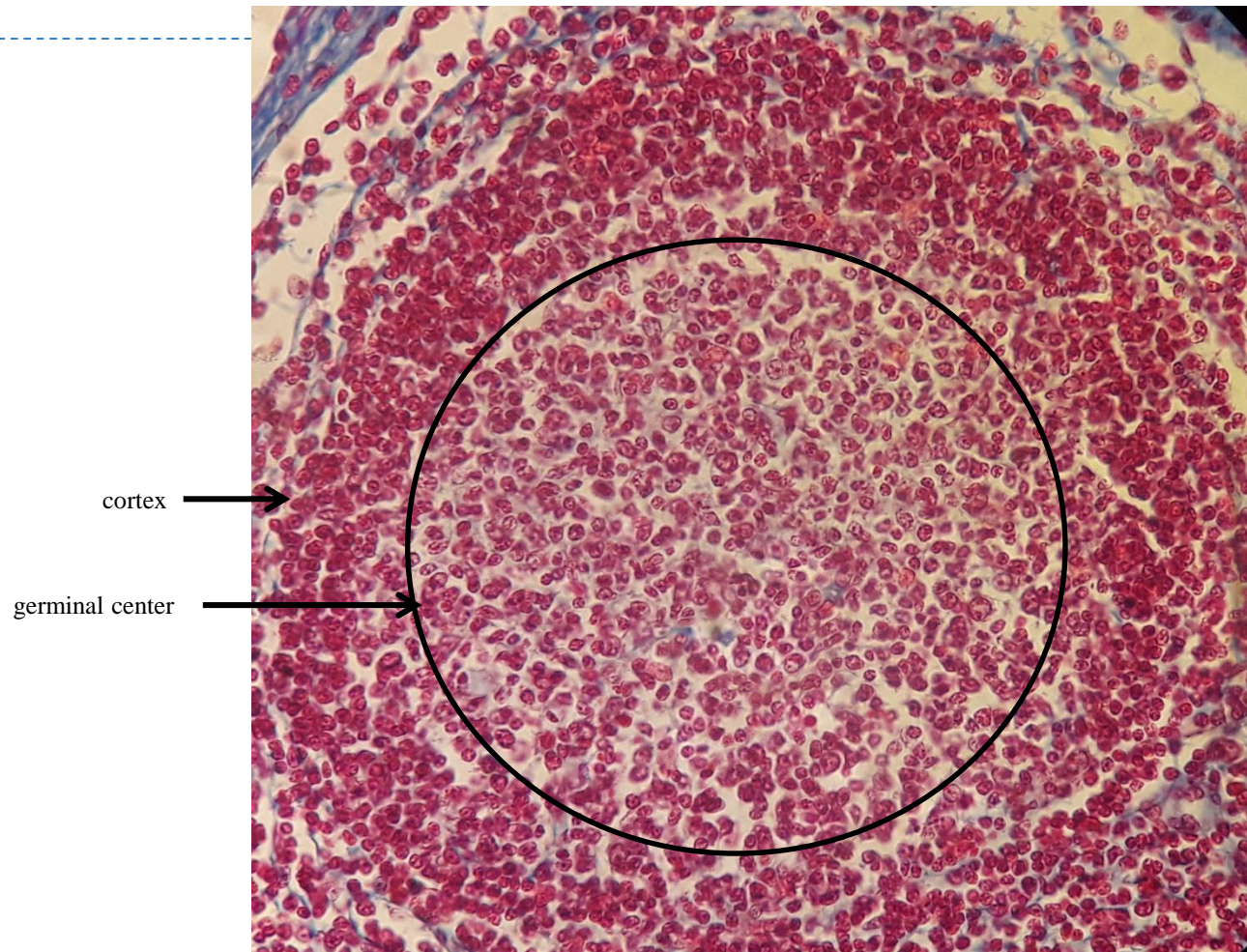
Lymph node



Cross section of lymph node. H&E, 10X. This picture is taken from histological slide in histology laboratory of Isfahan University



Lymph node

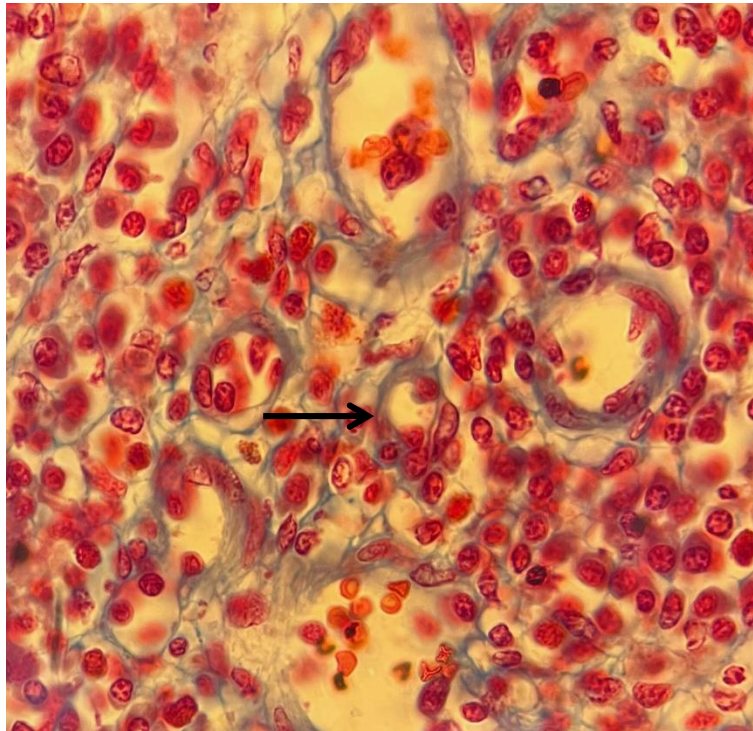


Lymphatic nodule in lymph node. H&E, 40X. This picture is taken from histological slide in histology laboratory of Isfahan University



Lymph node

- ▶ High endothelial venules (HEVs) are specialized venules which characterized by cuboid endothelium
- ▶ They are found in lymph nodes where they help lymphocyte trafficking

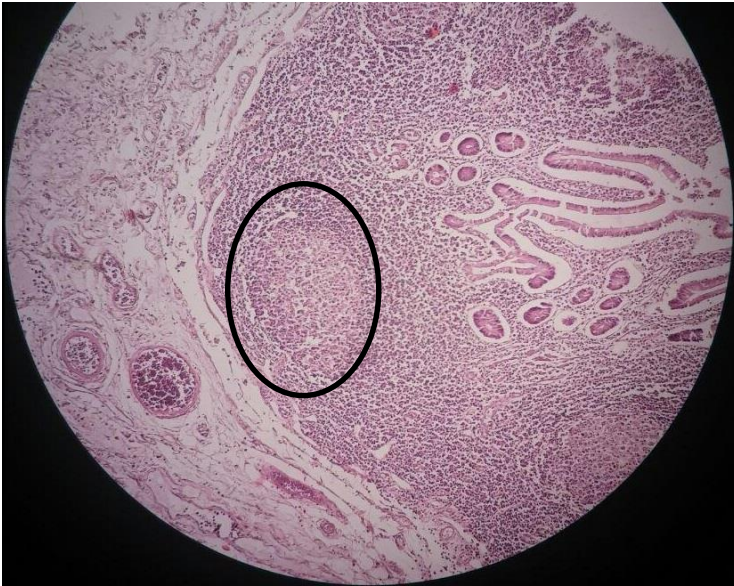


HEV (black arrow) in lymph node. 100X. This picture is taken from histological slide in histology laboratory of Isfahan University



Mucosa associated lymphoid tissue (MALT)

- ▶ Mucosa associated lymphoid tissue is a collection of diffuse cells and lymphatic nodules (or follicles) located in mucosal lining of digestive tract, respiratory and urogenital system
- ▶ Most of immune cell in MALTs is scattered while some of them form large structure like tonsils, Peyer's patch and appendix



Lymphatic nodule in jejunum mucosa (left) and bronchus wall in lung (right). H&E, 4X. These pictures are taken from histological slide in histology laboratory of Isfahan University



Peyer's patch

- ▶ Peyer's patch are round or oval structures made of cluster of lymphatic tissue
- ▶ They are located in the wall of small intestine specially in mucosa and submucosa



Peyer's patch in the submucosa of jejunum. H&E, 4X. This picture is taken from histological slide in histology laboratory of Isfahan University



Appendix

- ▶ Appendix is a thin, finger-shaped, blind ended pouch connected to the first part of large intestine (cecum). It is 8-10 cm long and 1.3 cm wide
- ▶ Appendix is rich from lymphoid tissue in mucosa and submucosa, so it may has a role in immune function



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



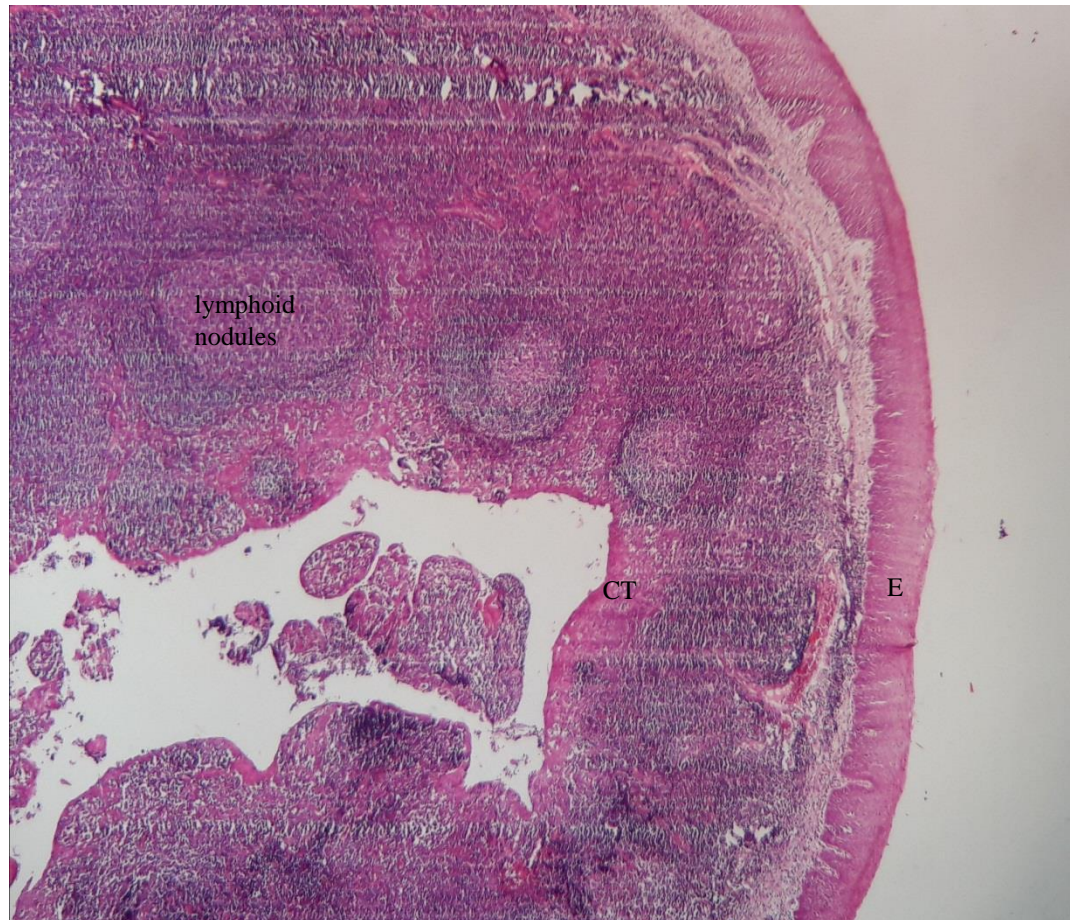
Tonsils

- ▶ Tonsils are large and irregular mass of lymphoid tissue located close to entrance of the respiratory and digestive tracts. They consist of palatine, lingual and pharyngeal tonsils
- ▶ Each tonsil has a tissue similar to lymph node covered by mucosa
- ▶ Other histological characteristics of tonsils are summarized as below:

type	epithelium	capsule	crypt
palatine	stratified squamous	incomplete	*
lingual	stratified squamous	-	*
pharyngeal	ciliated pseudostratified columnar	incomplete	-



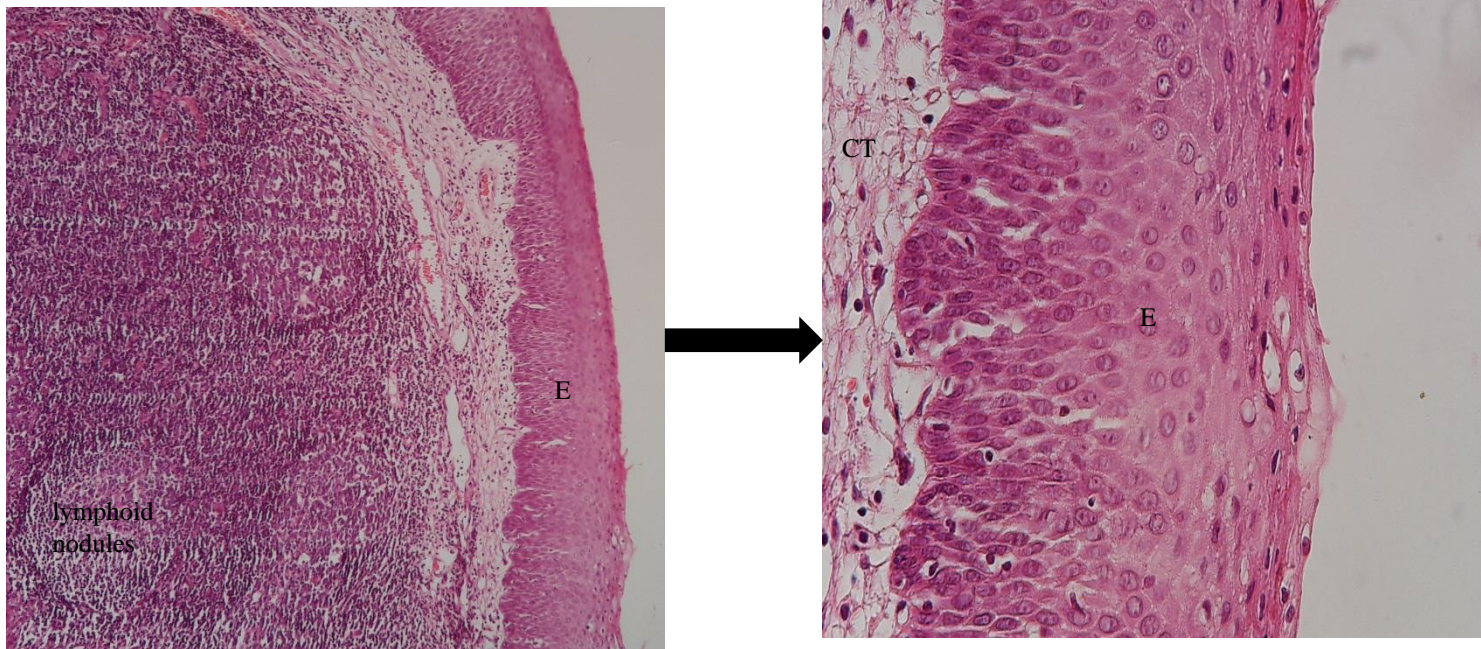
Tonsils



Tonsil. CT; connective tissue, E: epithelium; H&E, 4X. This picture is taken from histological slide in histology laboratory of Isfahan University



Tonsils



Tonsil. CT: connective tissue, E: stratified squamous epithelium; H&E, left: 40X., right: 100X. These pictures are taken from histological slide in histology laboratory of Isfahan University

