

İMMUN (LENFOİD) SİSTEM ORGANLARI

PRİMER LENFOİD ORGANLAR
MERKEZİ LENFOİD ORGANLAR

Kökeni

Endoderm, ektoendoderm

Ortaya çıkışı

Erken emriyonik dönem

Büyüklük

Doğumda en büyük relatif hacim

Gelişim

Antijenik uyarımdan bağımsız

Devamlılık

Puberteden sonra küçülme

Antijene yanıt

Antijene yanıt vermez

Neonatal çıkartılmanın etkisi

Bağışıklığı çok etkiler

SEKONDER LENFOİD ORGANLAR
PERİFERAL LENFOİD ORGANLAR

Kökeni

Mezoderm

Ortaya çıkışı

Geç fetal dönem

Büyüklük

Erişkinde en büyük relatif hacim

Gelişim

Antijenik uyarıma bağlı

Devamlılık

Yaşam boyu

Antijene yanıt

Antijene yanıt verir

Neonatal çıkartılmanın etkisi

Önemli etkisi yok

İMMUN (LENFOİD) SİSTEM ORGANLARI

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Timus
(T lenfosit)



Tüm hayvanlar

Bursa Fabricius
(B lenfosit)



Kanatlı

İliosekal Peyer pl
(B lenfosit)



Ruminant

Kemik iliği
(B lenfosit)



Diğerleri

Dalak

Lenf nodülleri

Jejunal Peyer pl

Kemik iliği

Mukozal lenfoid dokular

Tonsil

Apendiks

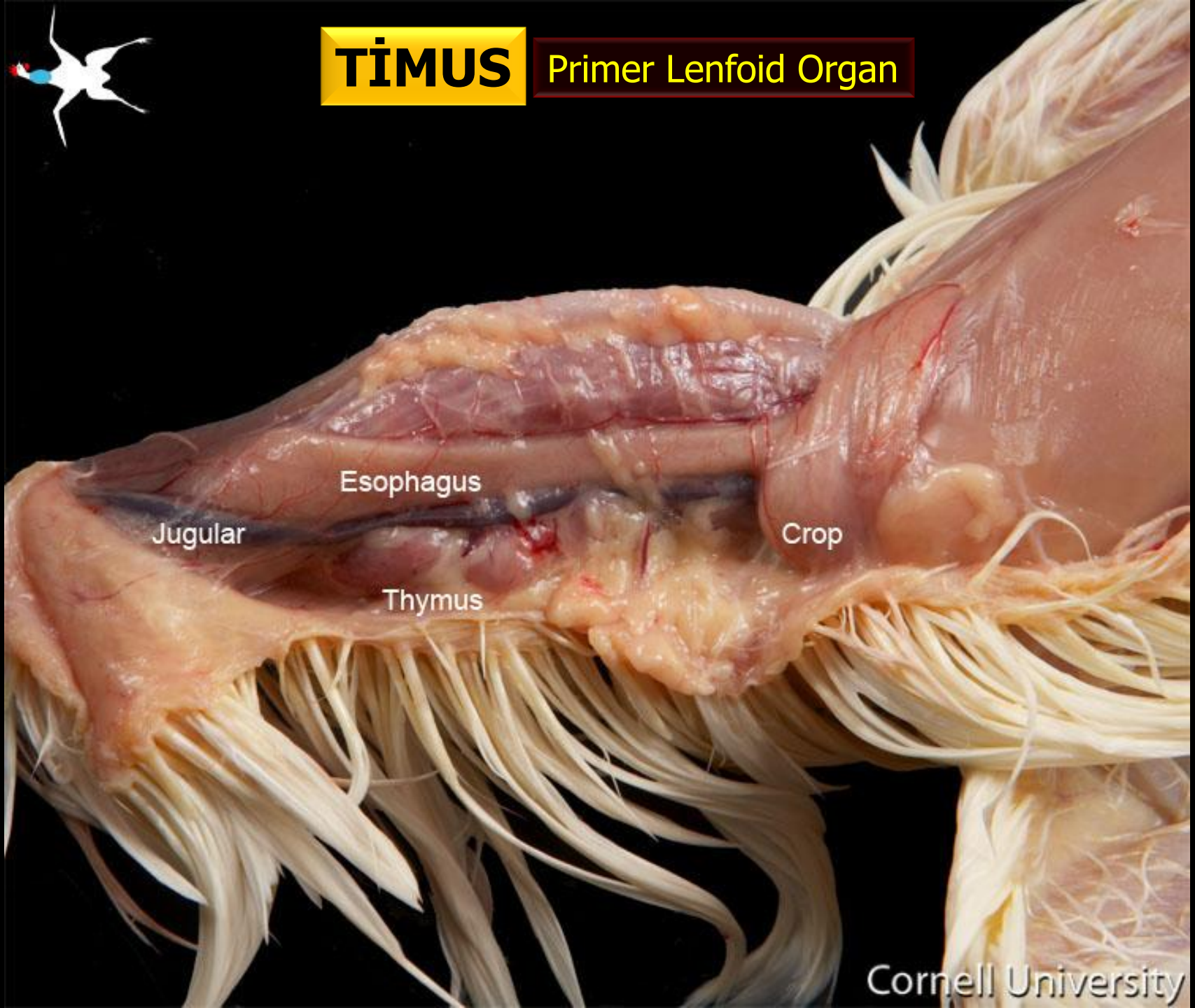
MALT

Hemolenf nodülleri



TIMUS

Primer Lenfoid Organ



Jugular

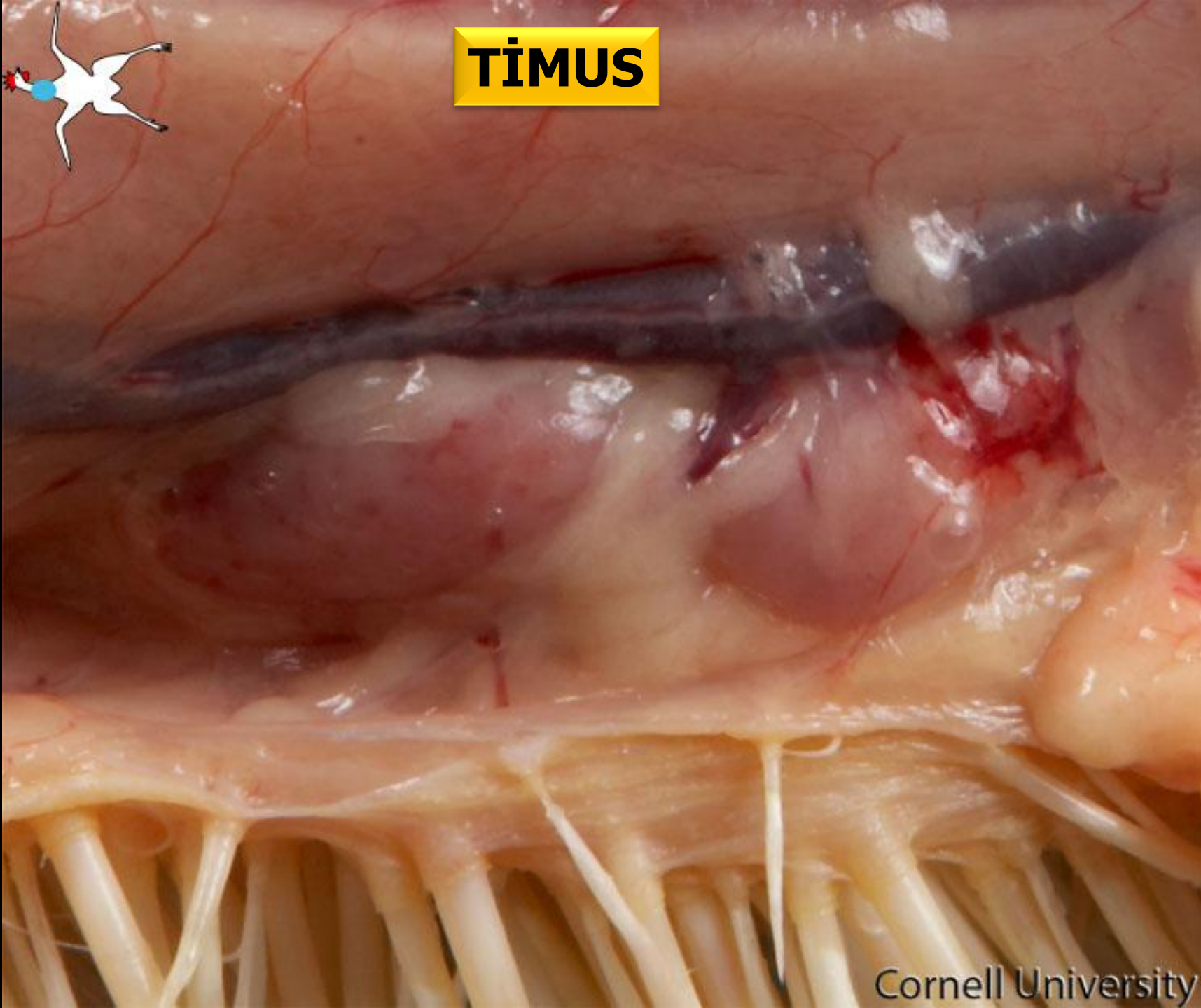
Esophagus

Thymus

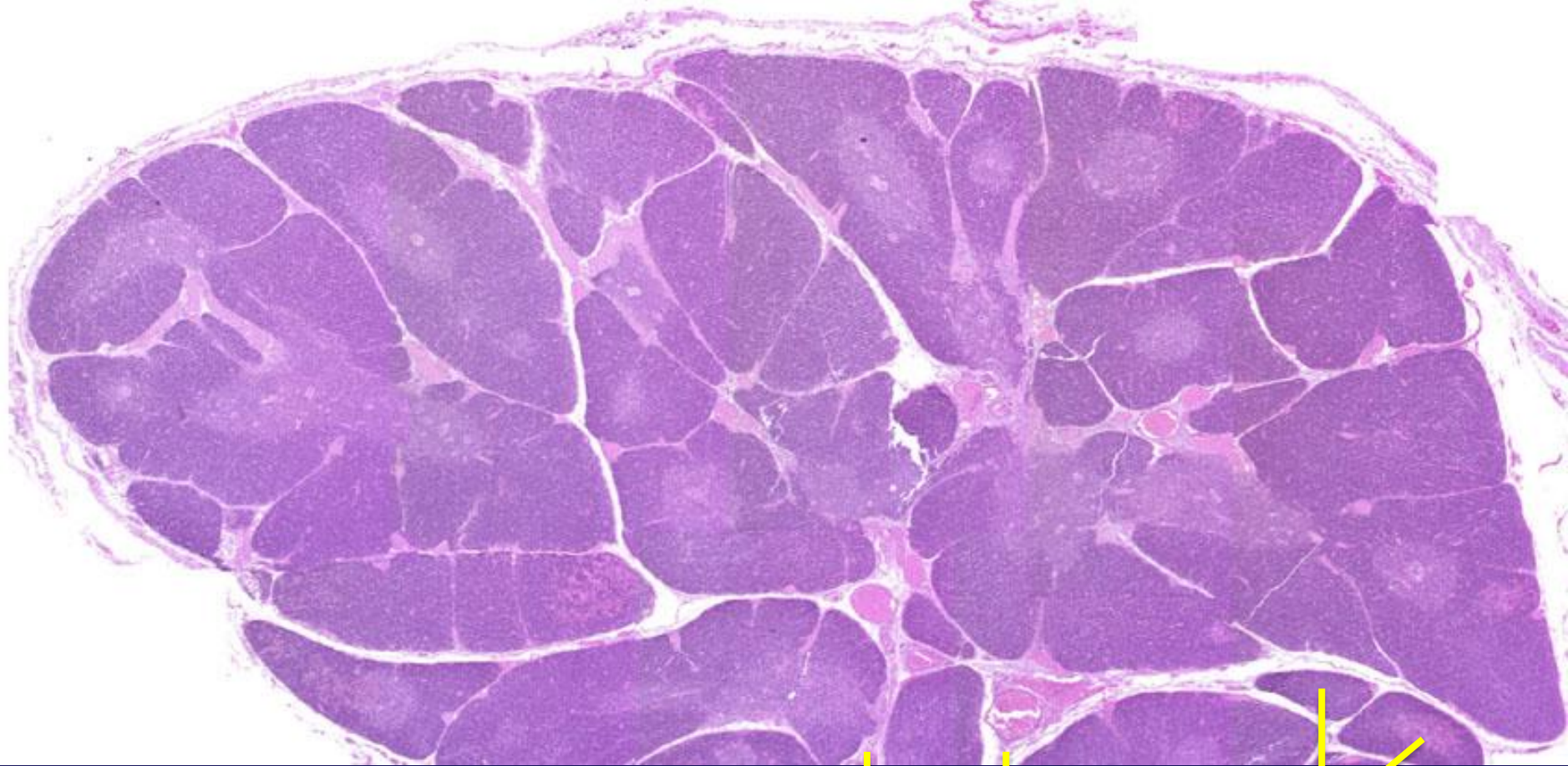
Crop



TIMUS



TİMUS



trabekül

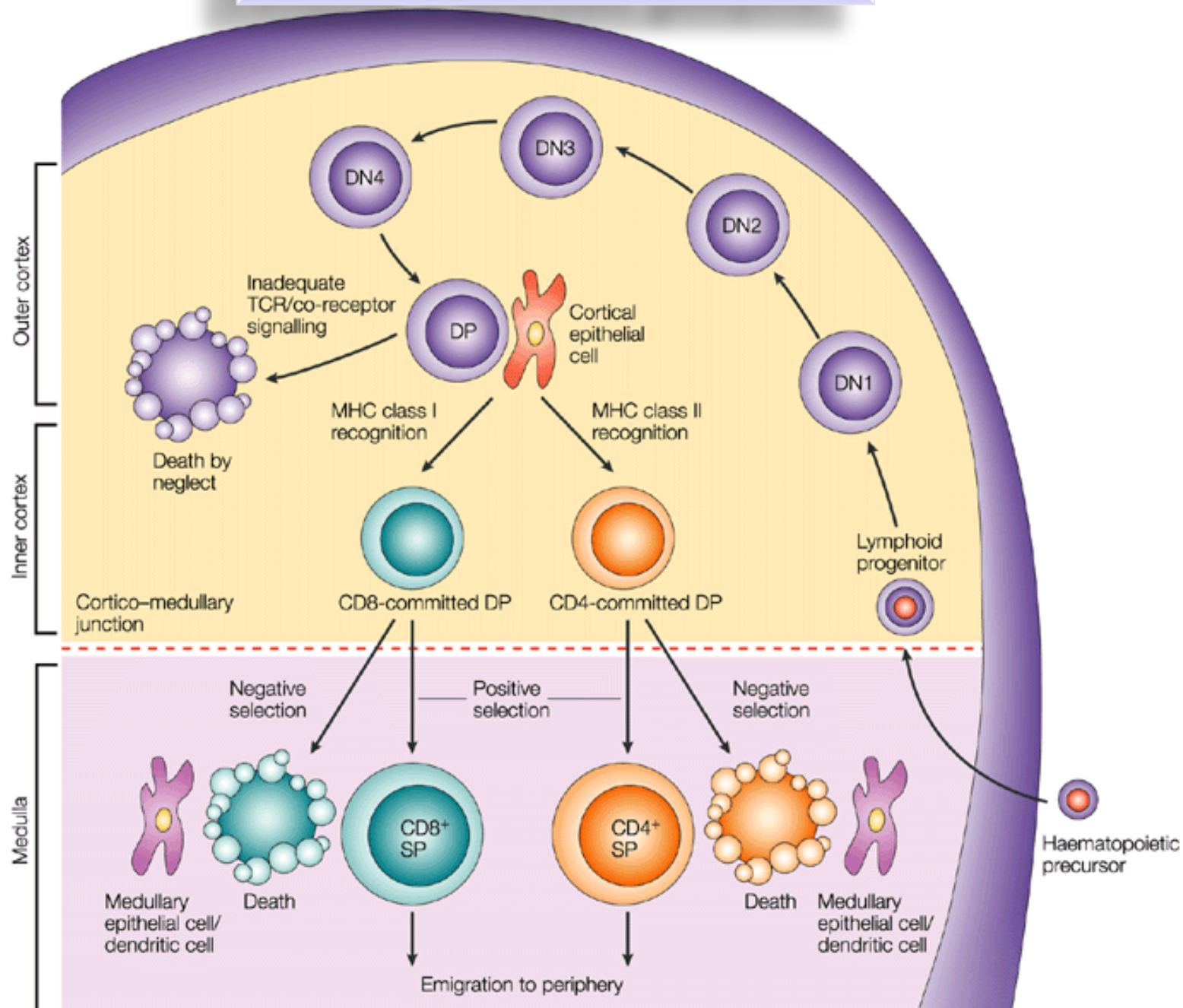


loblar

TIMUS

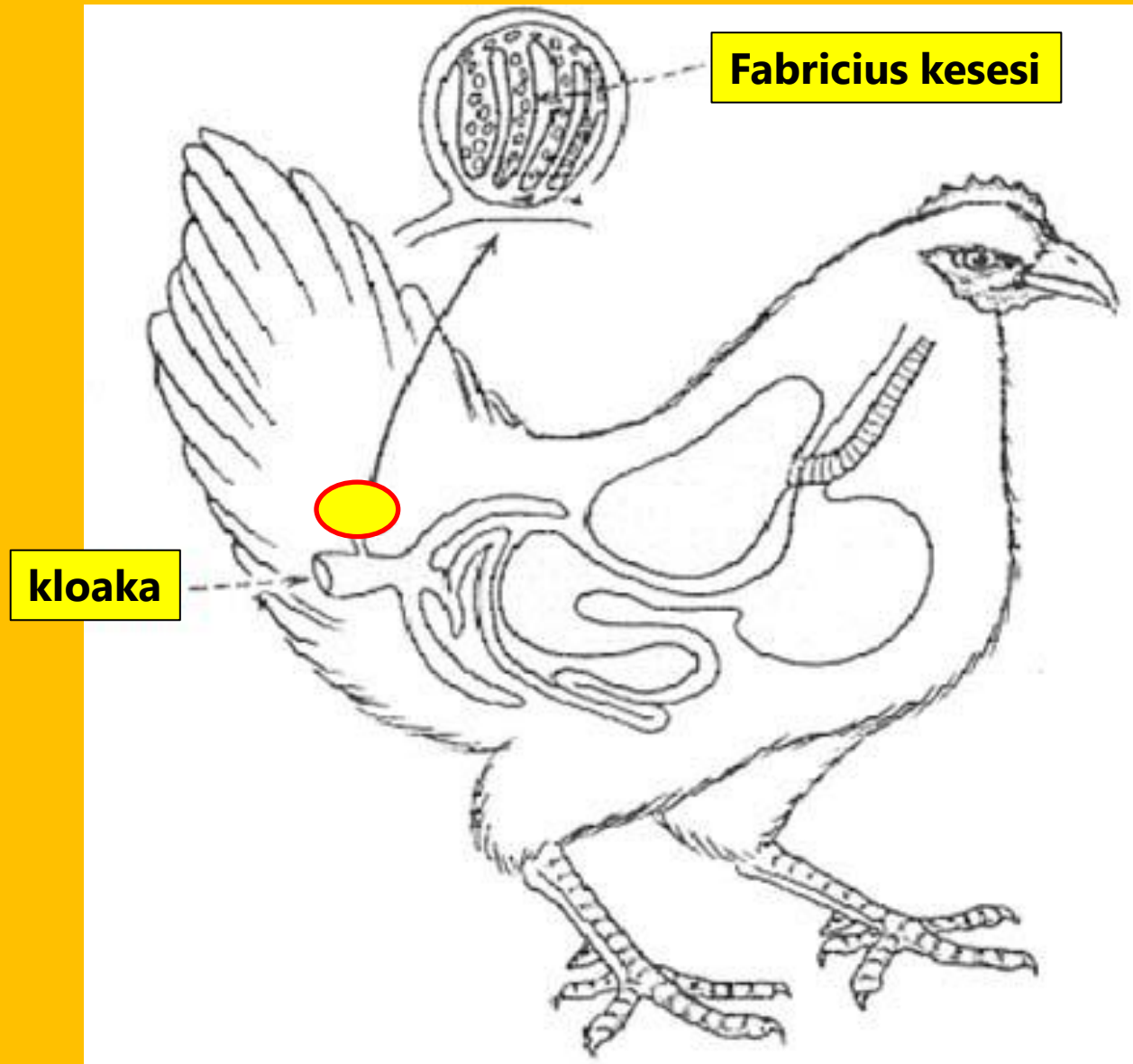


Timusta T lenfosit gelişimi

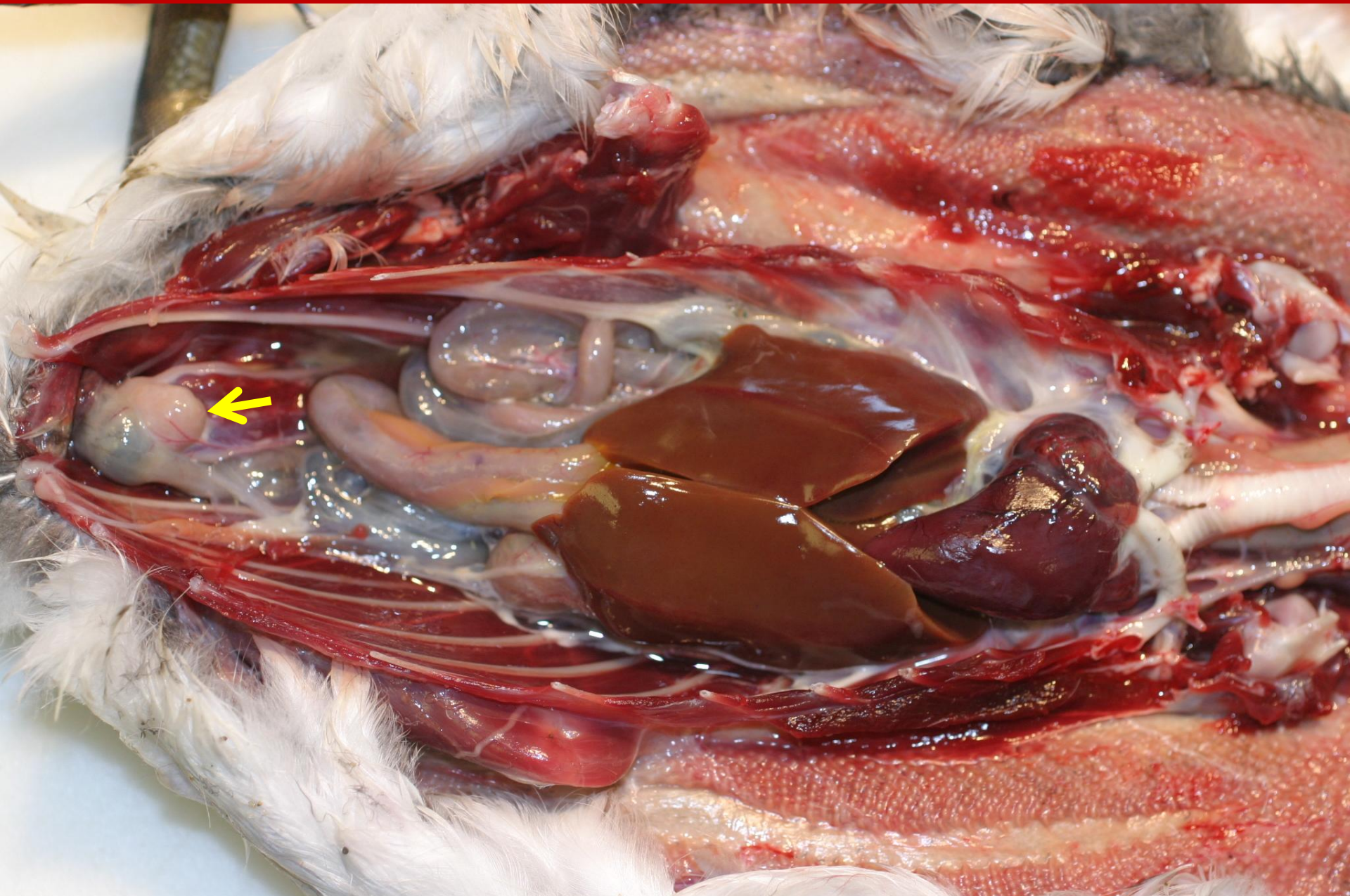


bursa Fabricius

Primer Lenfoid Organ

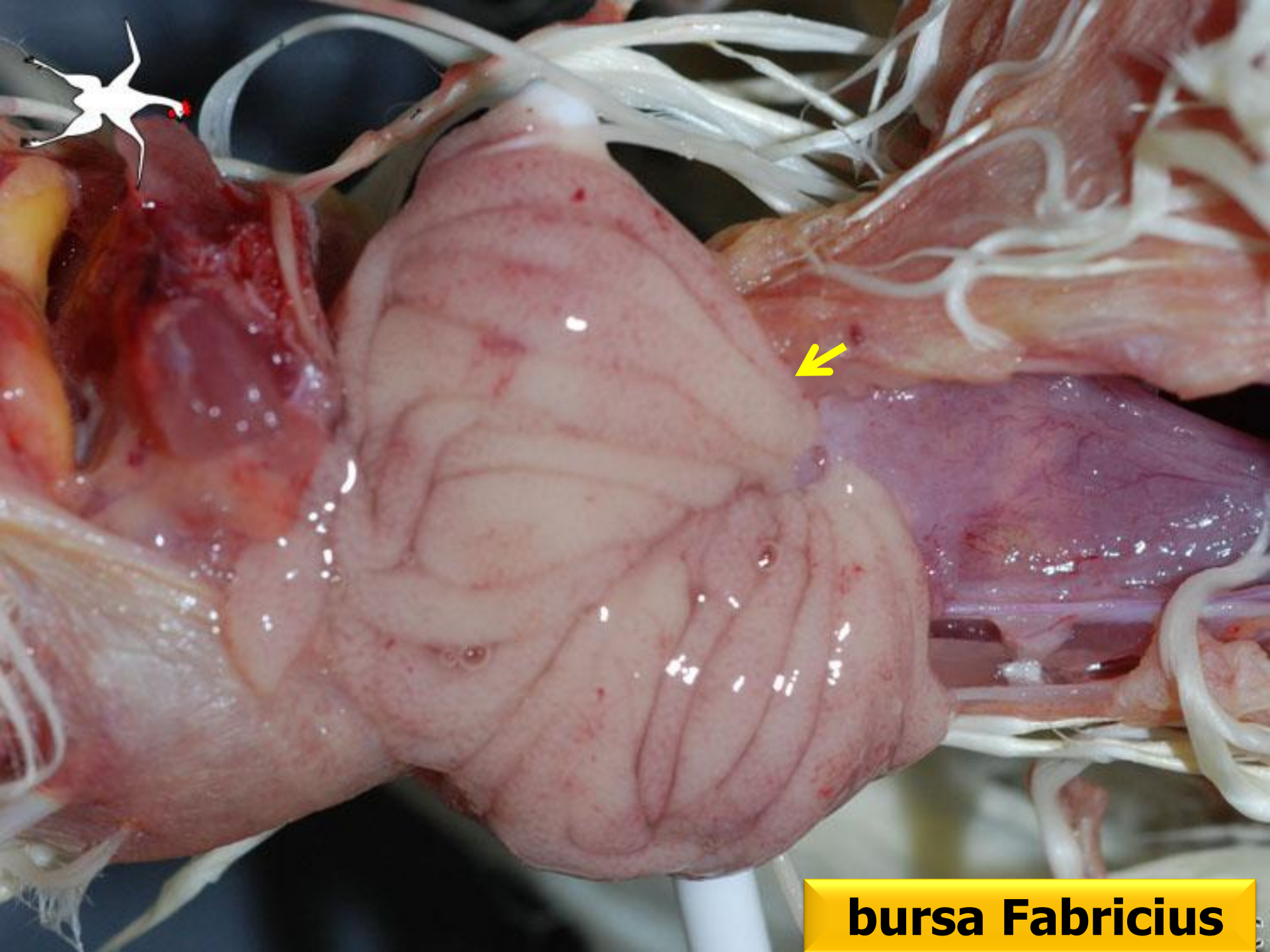


bursa Fabricius



bursa Fabricius





bursa Fabricius

bursa Fabricius

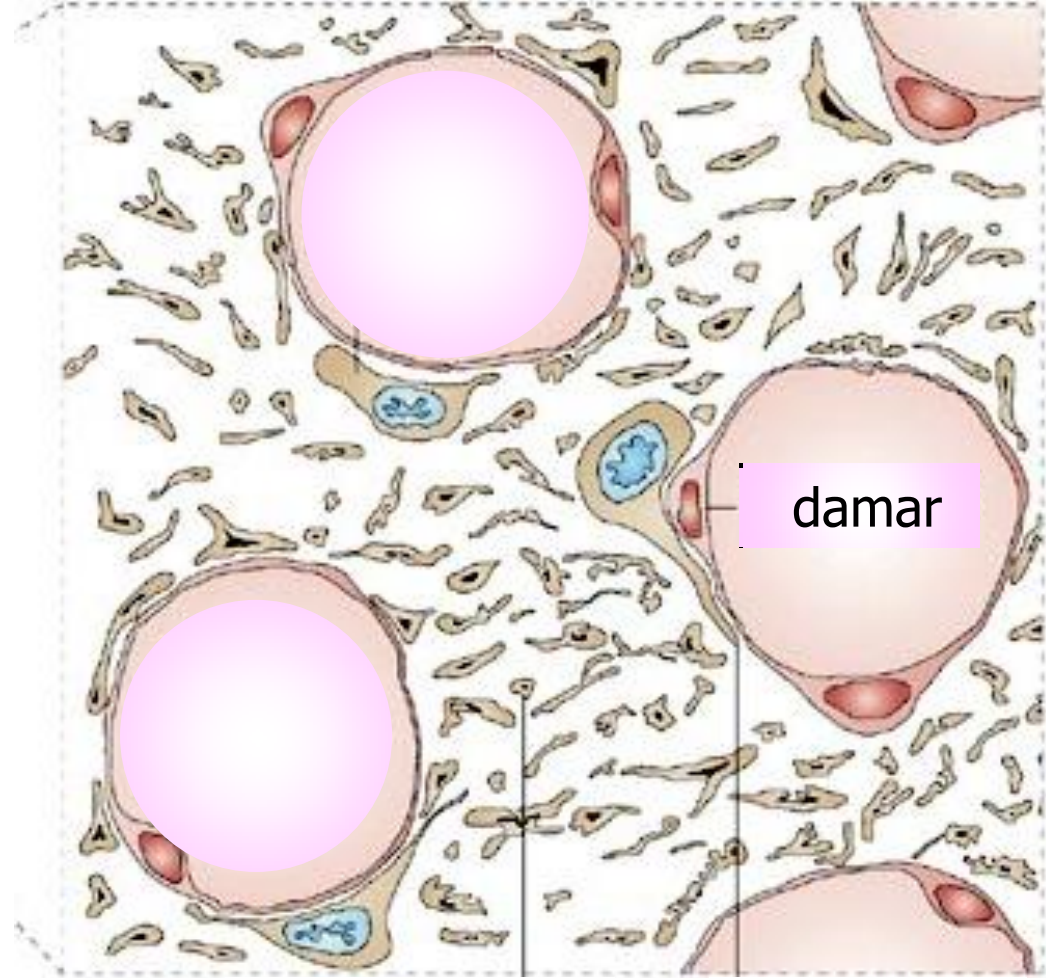
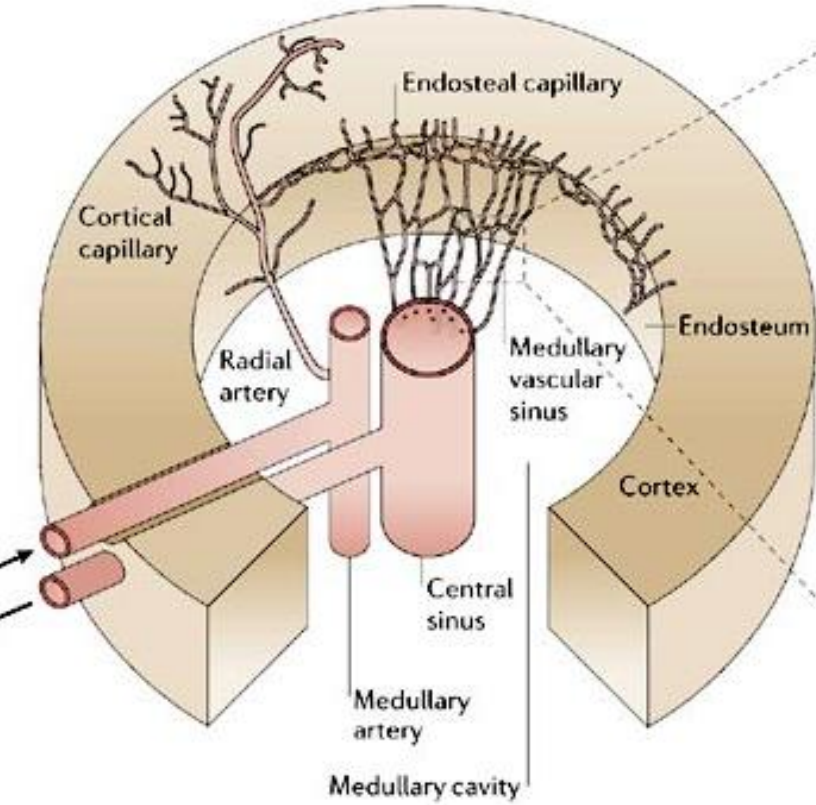


bursa Fabricius



kemik iliđi

Primer Lenfoid Organ



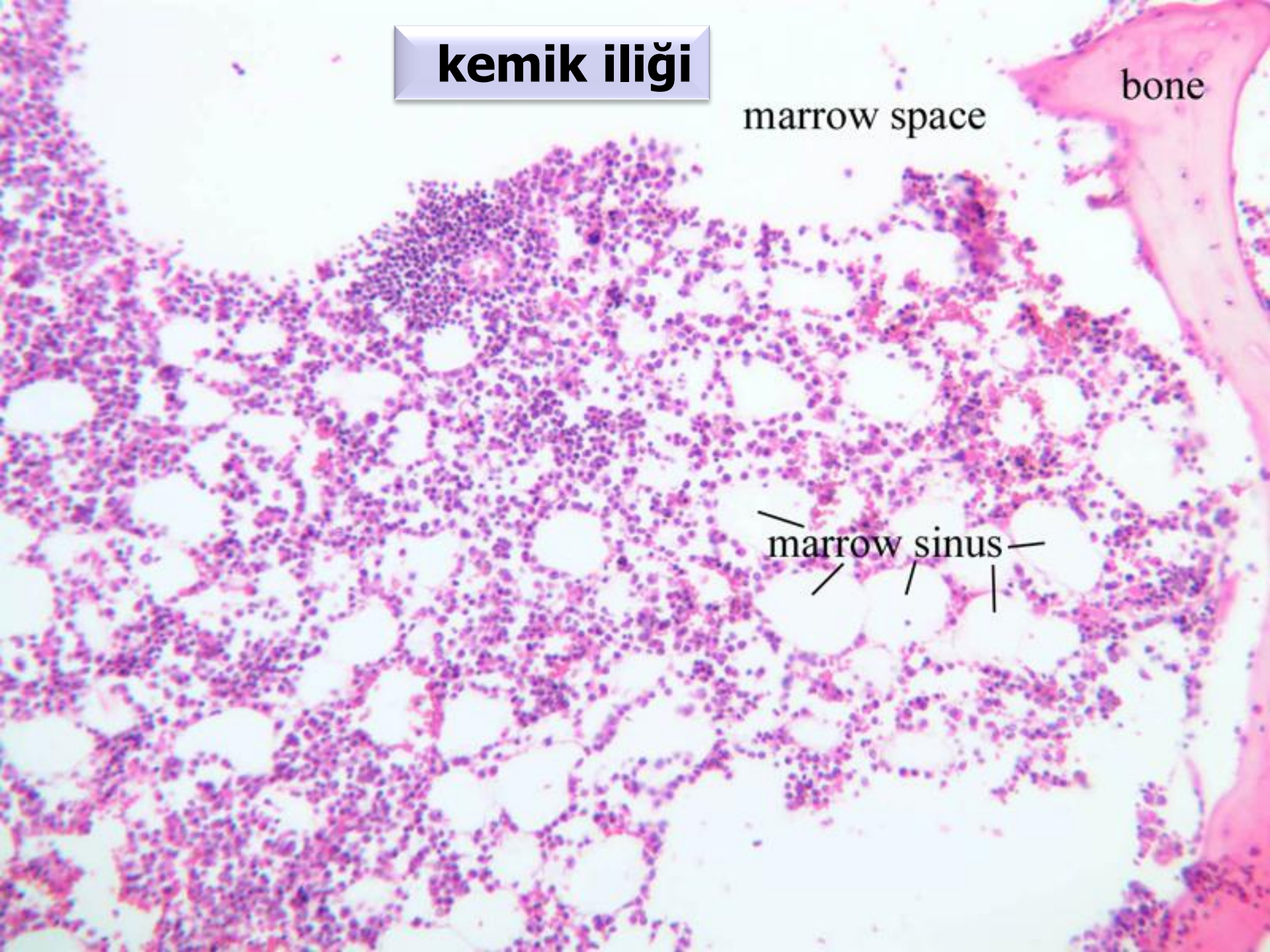
köken hücreler

kemik iliği

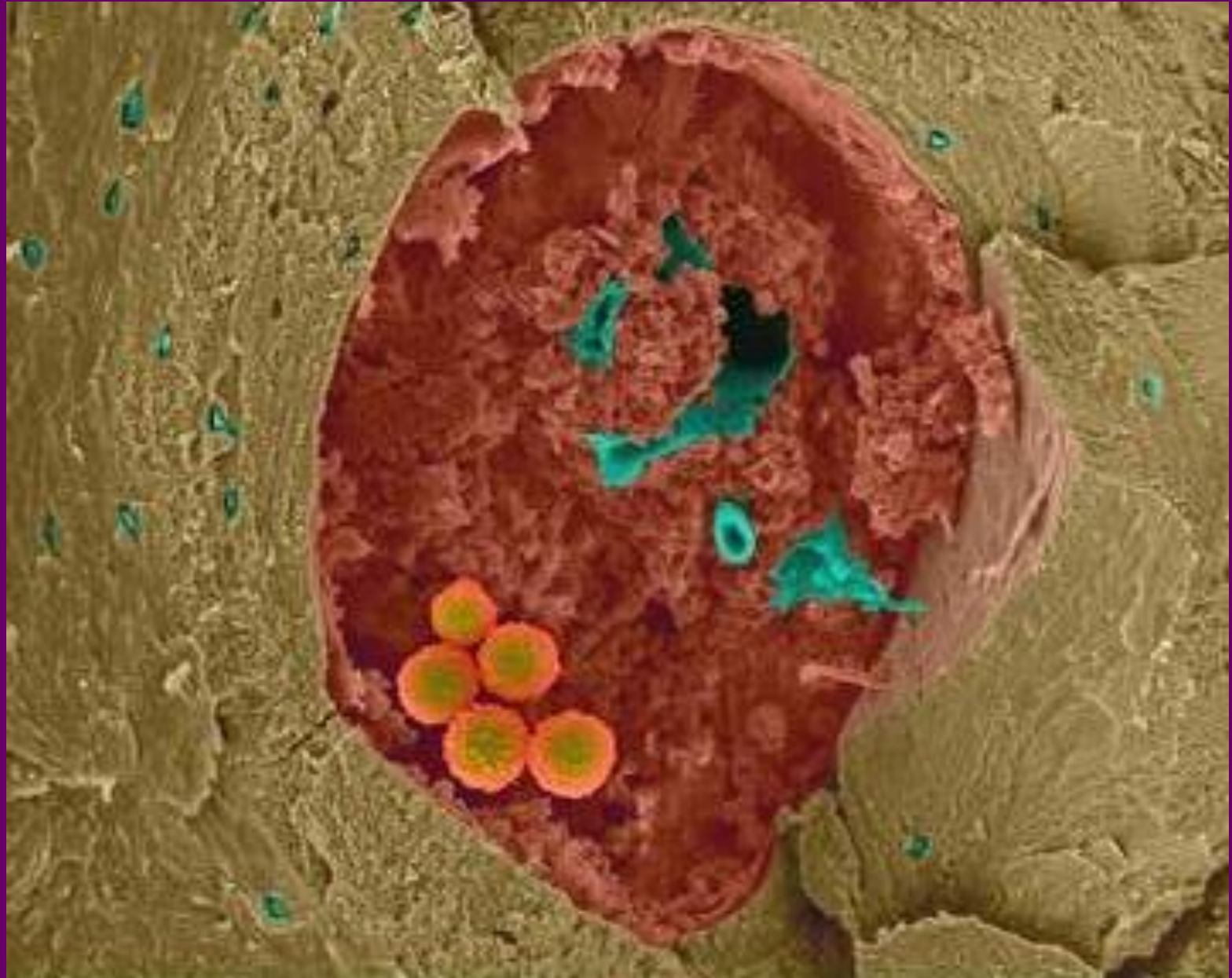
marrow space

bone

marrow sinus



kemik iliği

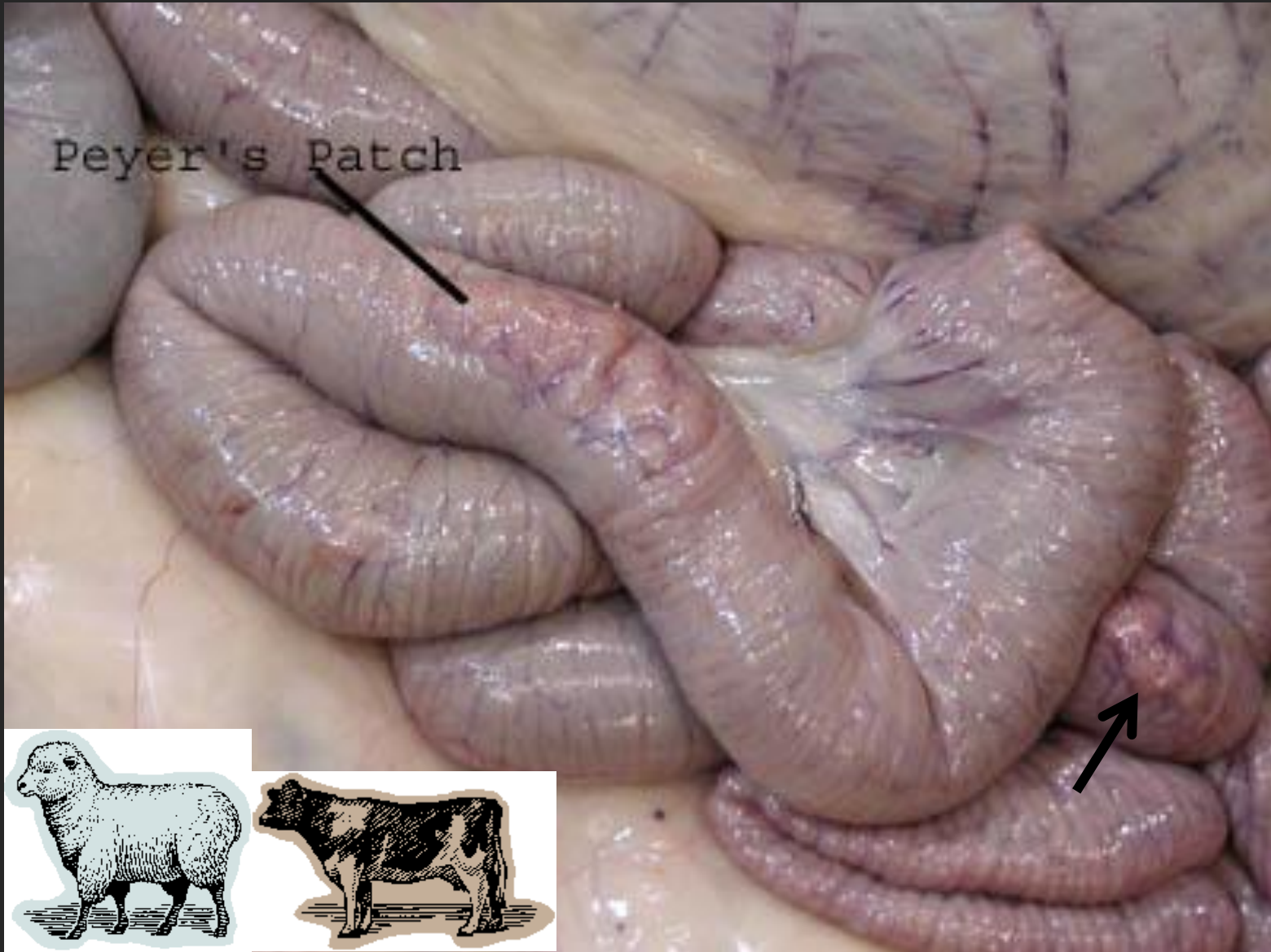


kemik iliği

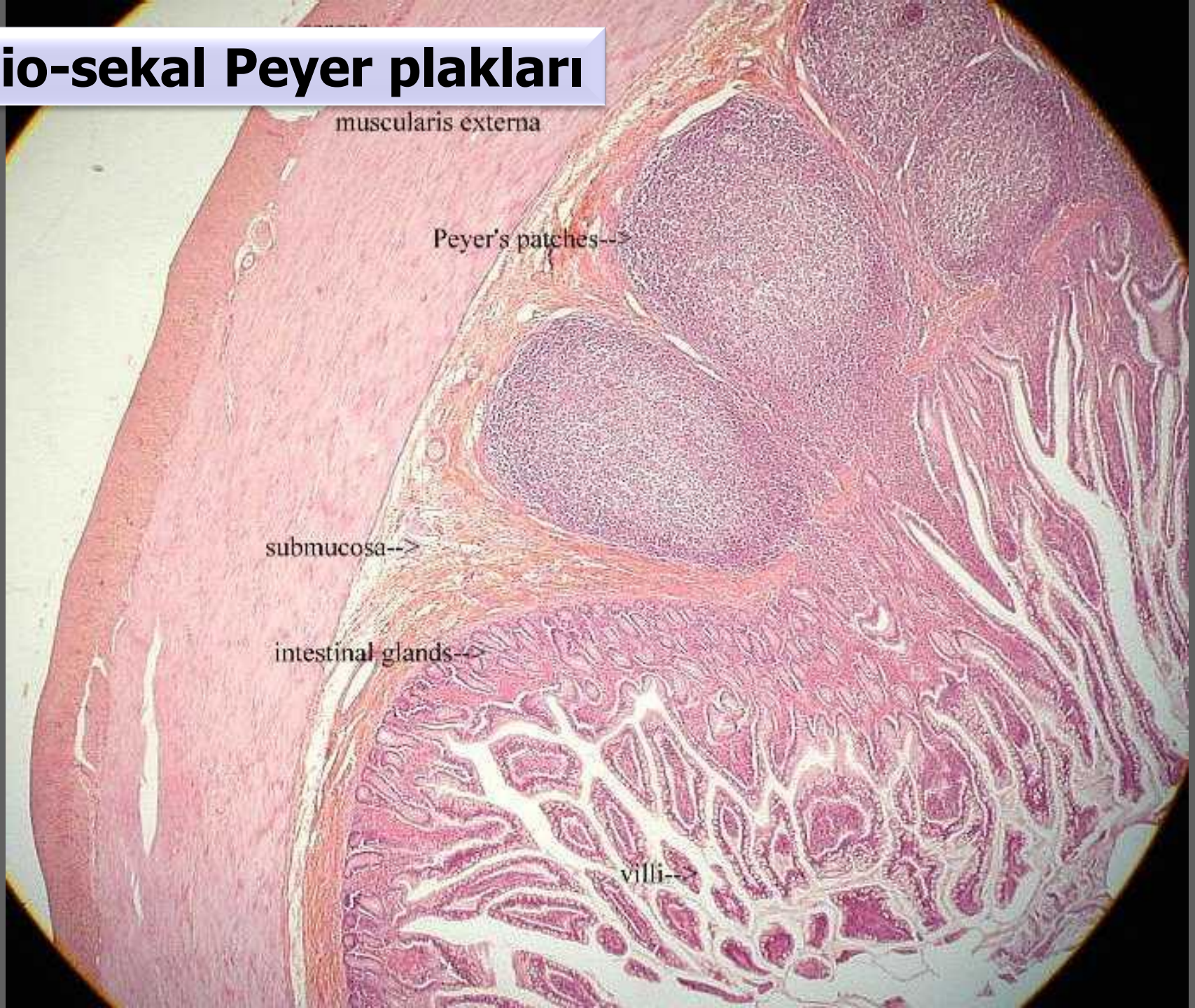


ilio-sekal Peyer plakları

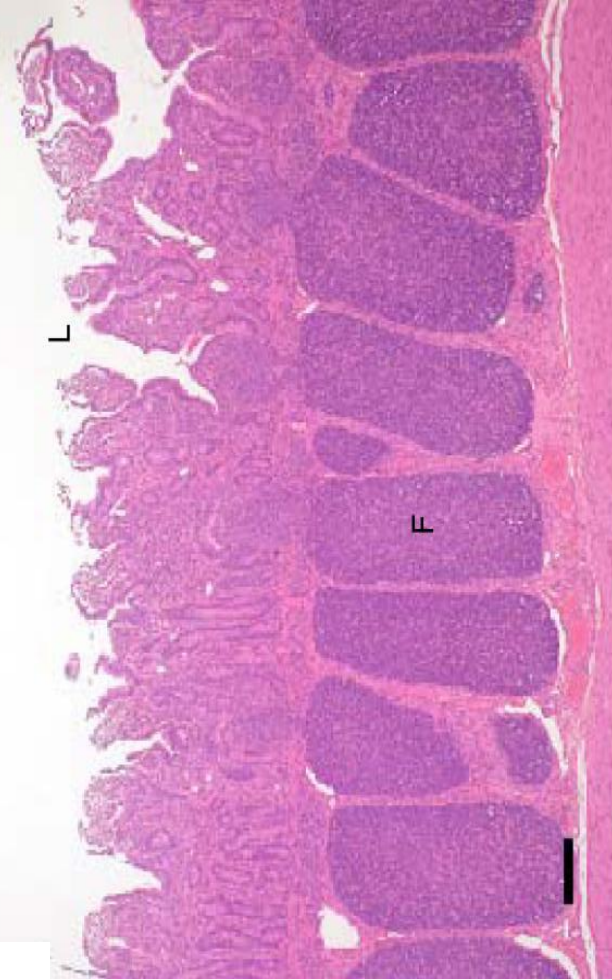
Primer Lenfoid Organ



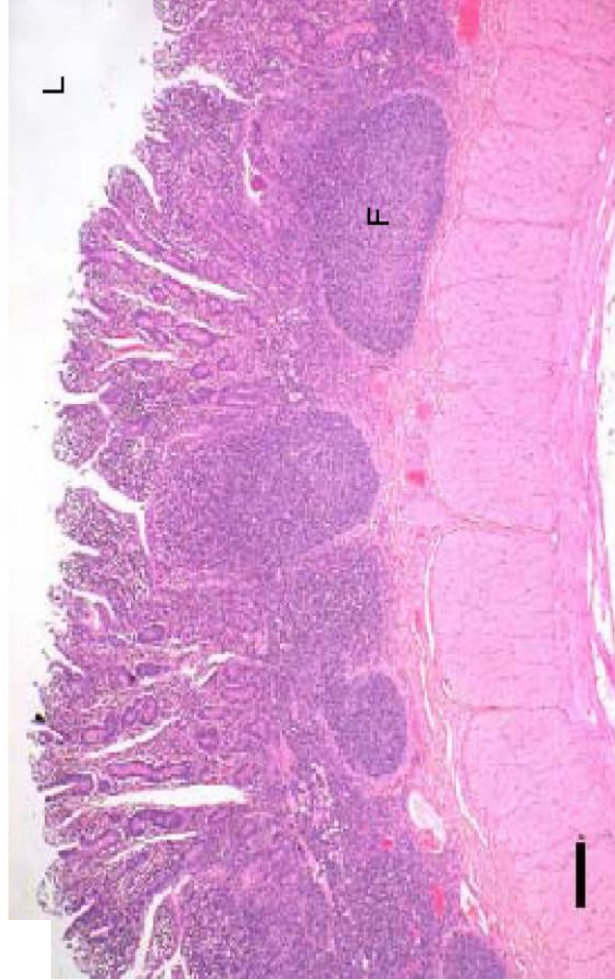
ilio-sekal Peyer plakları



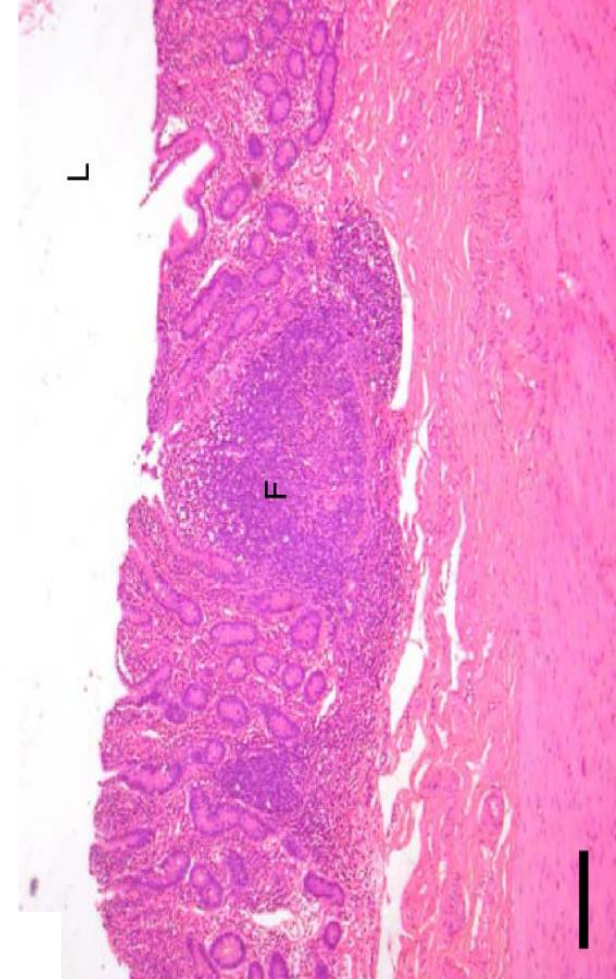
ilio-sekal Peyter plakları



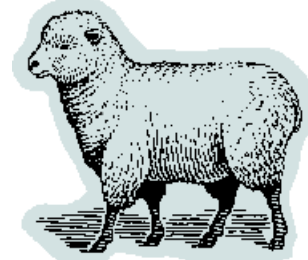
4. ay



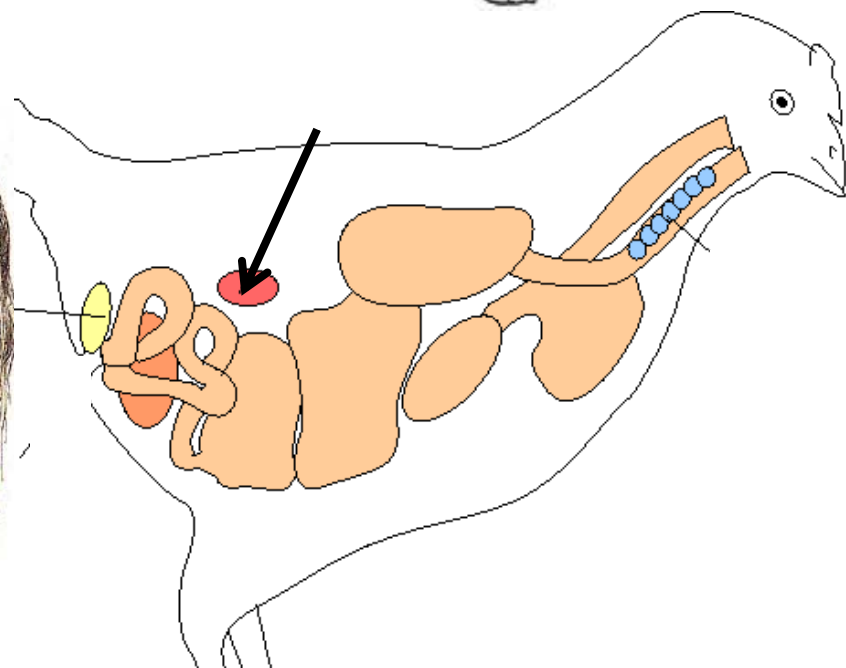
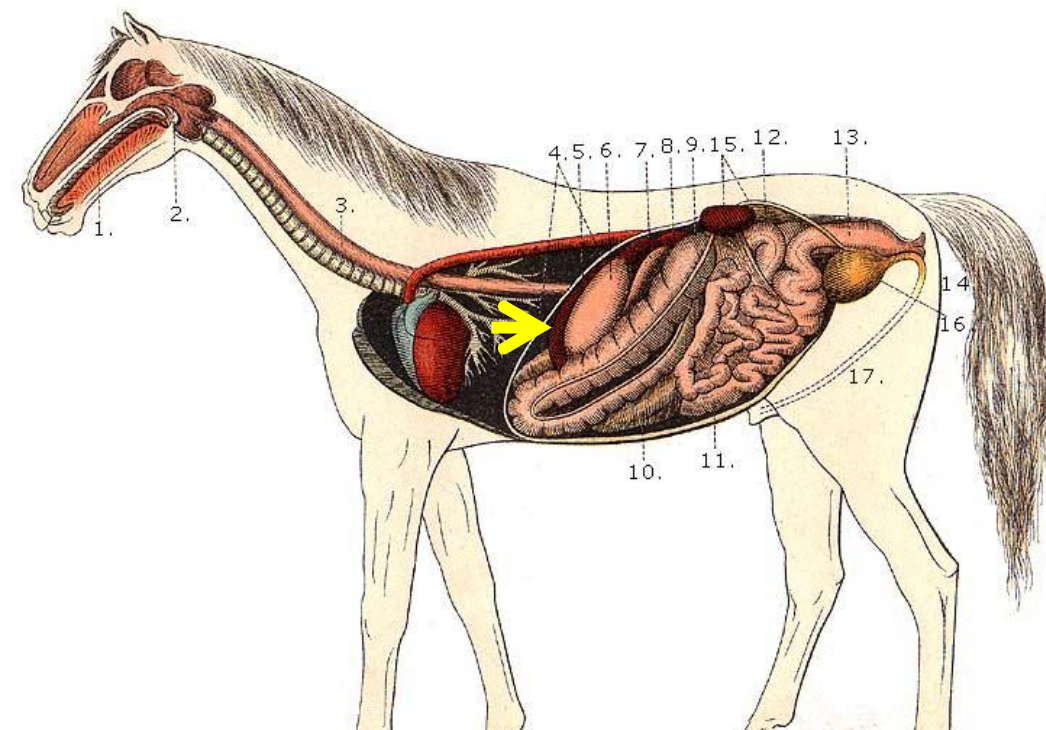
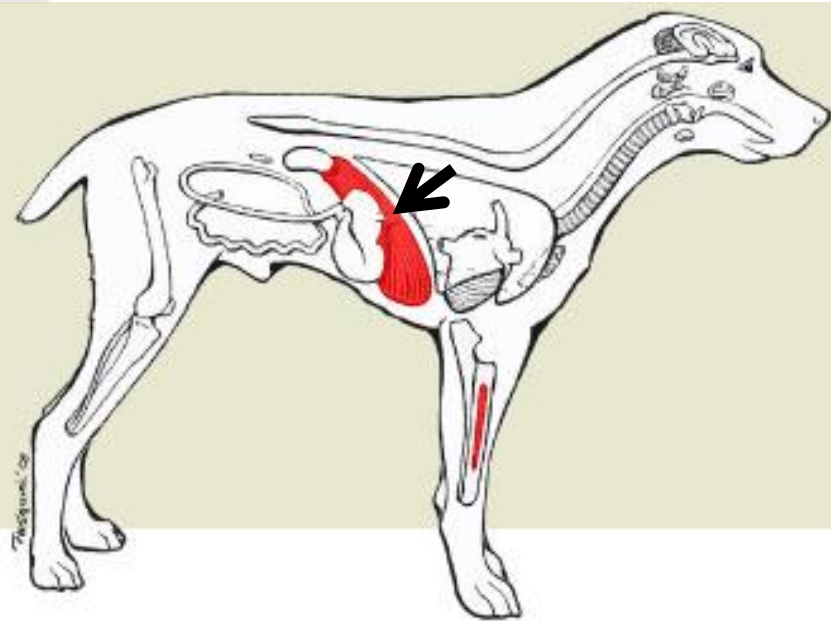
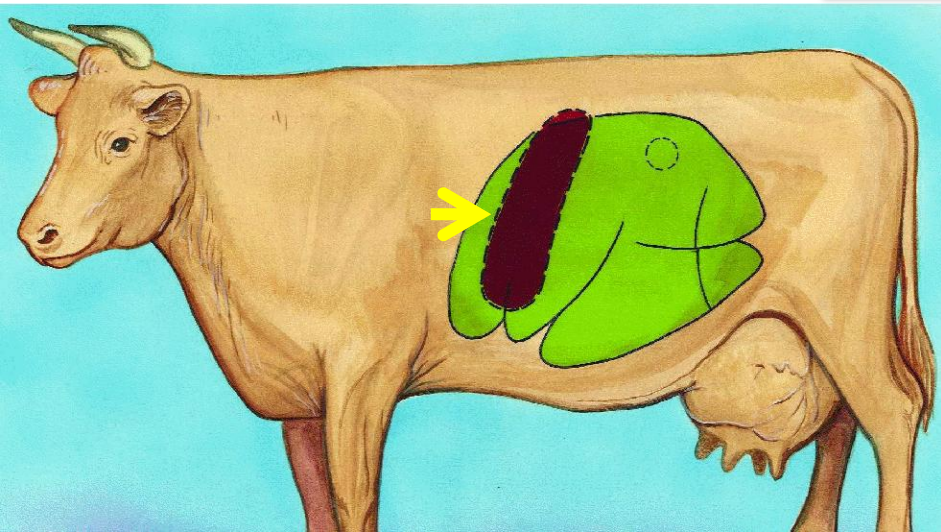
15.ay



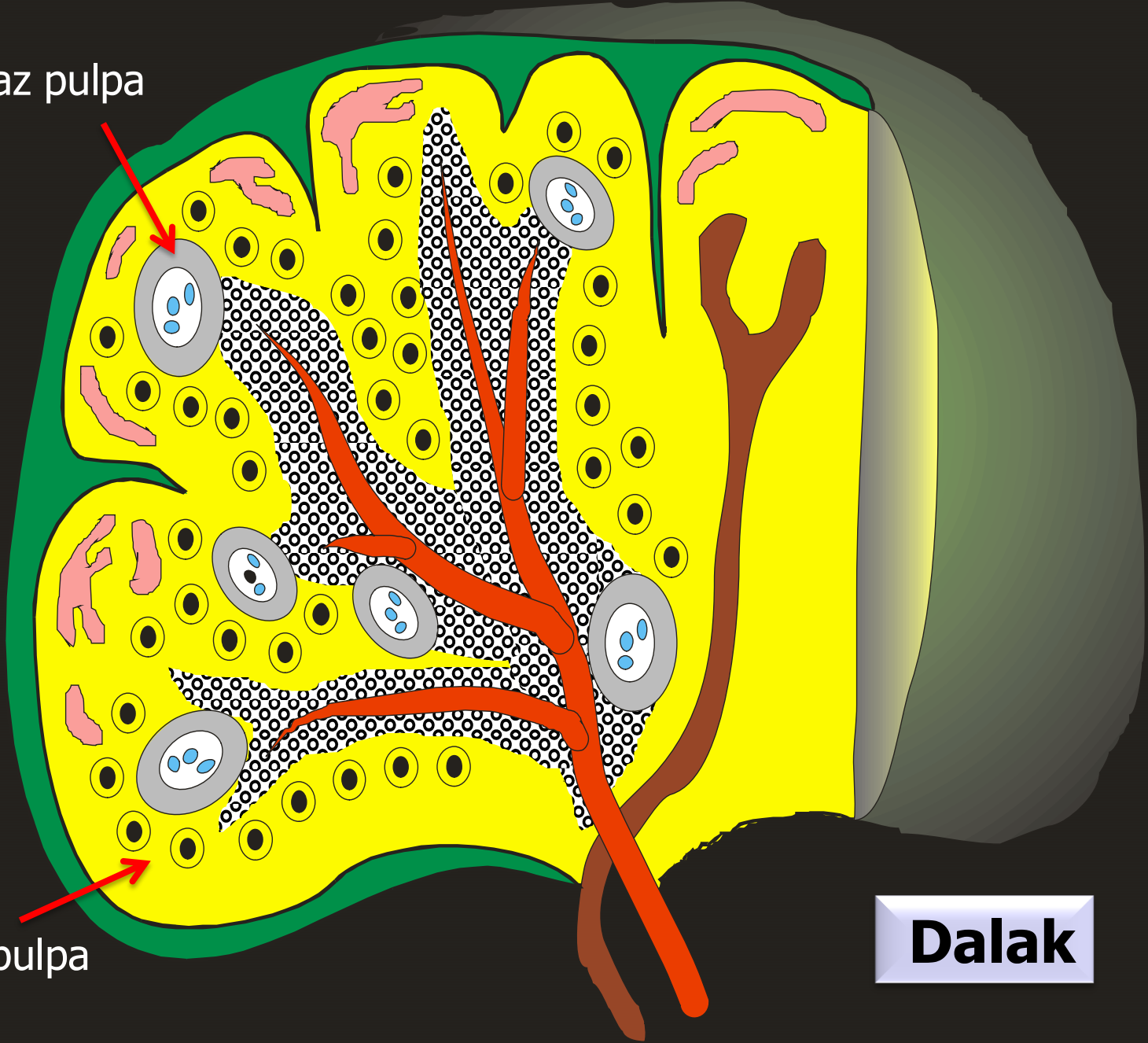
6.yıl



Dalak Sekonder Lenfoid Organ



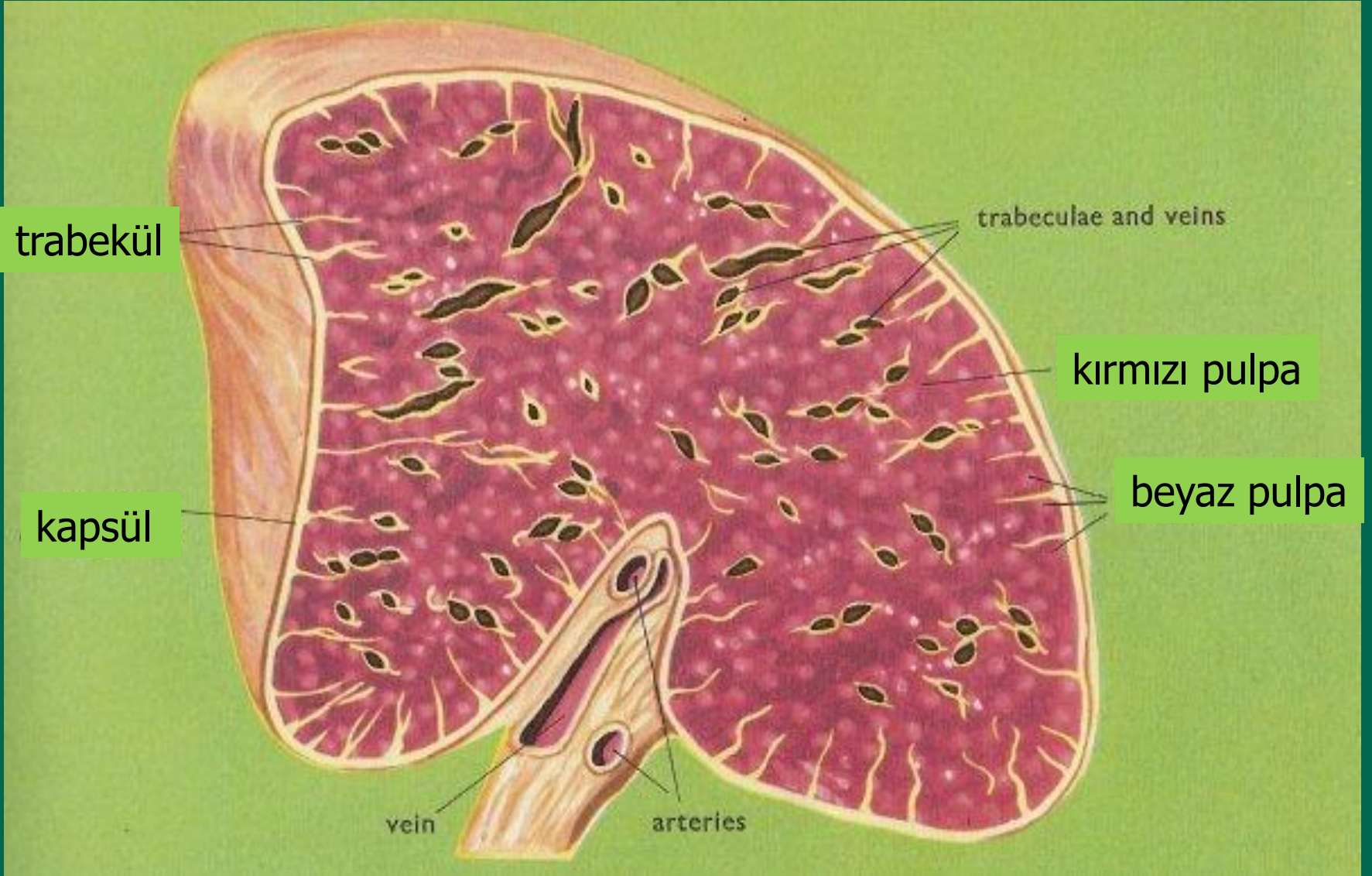
beyaz pulpa



kırmızı pulpa

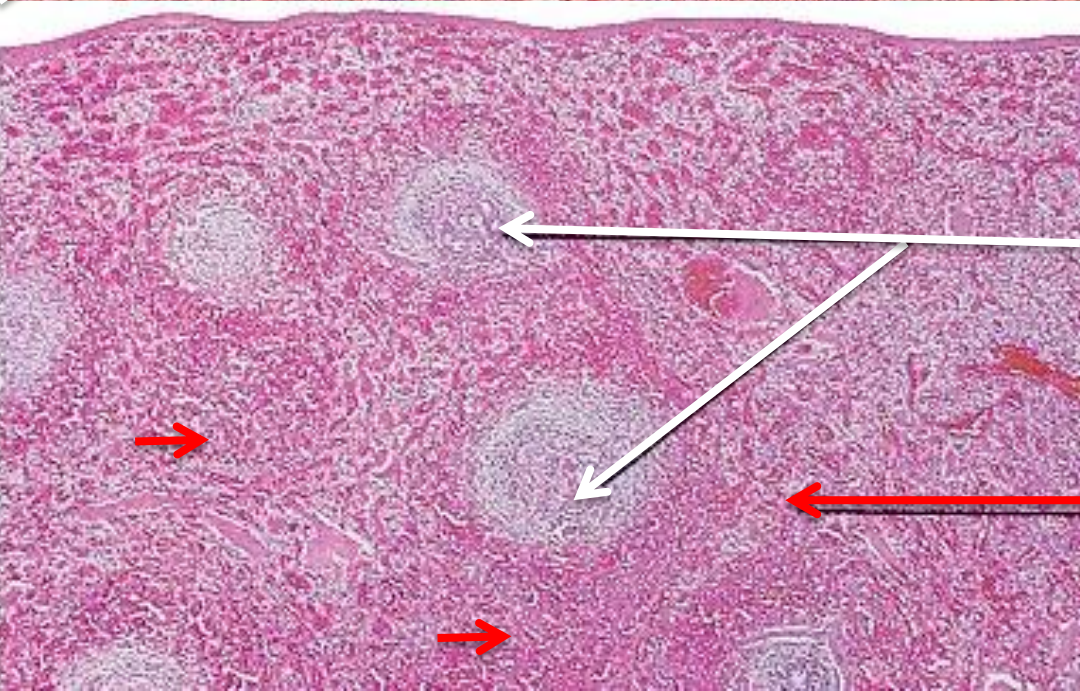
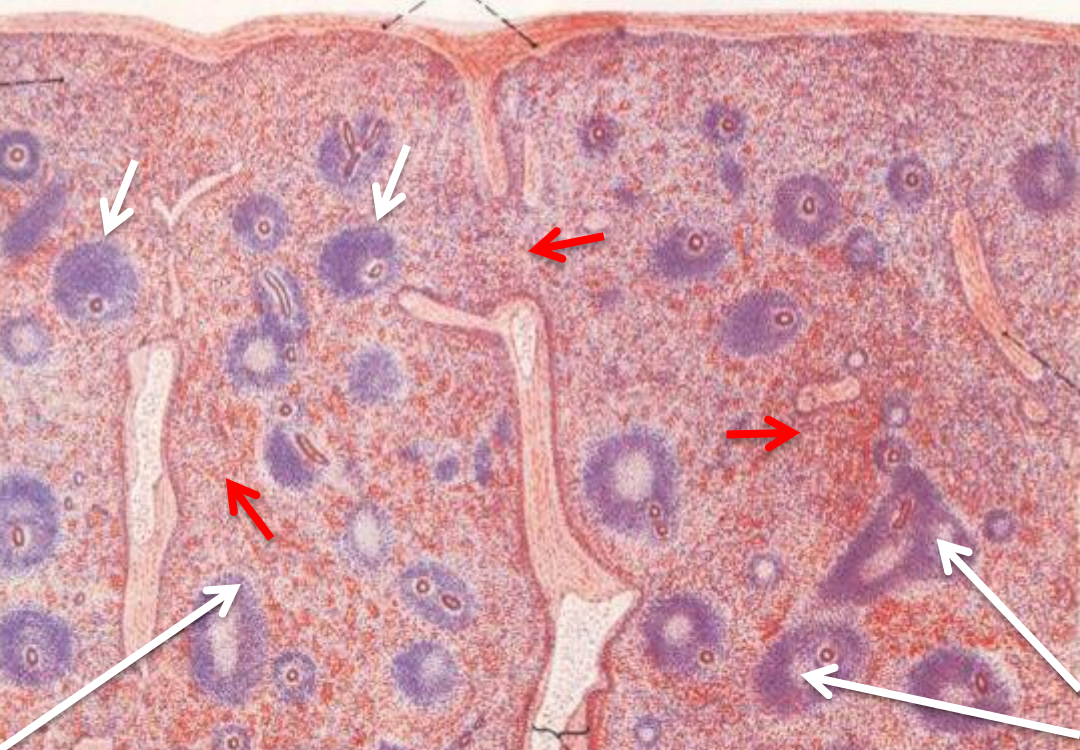
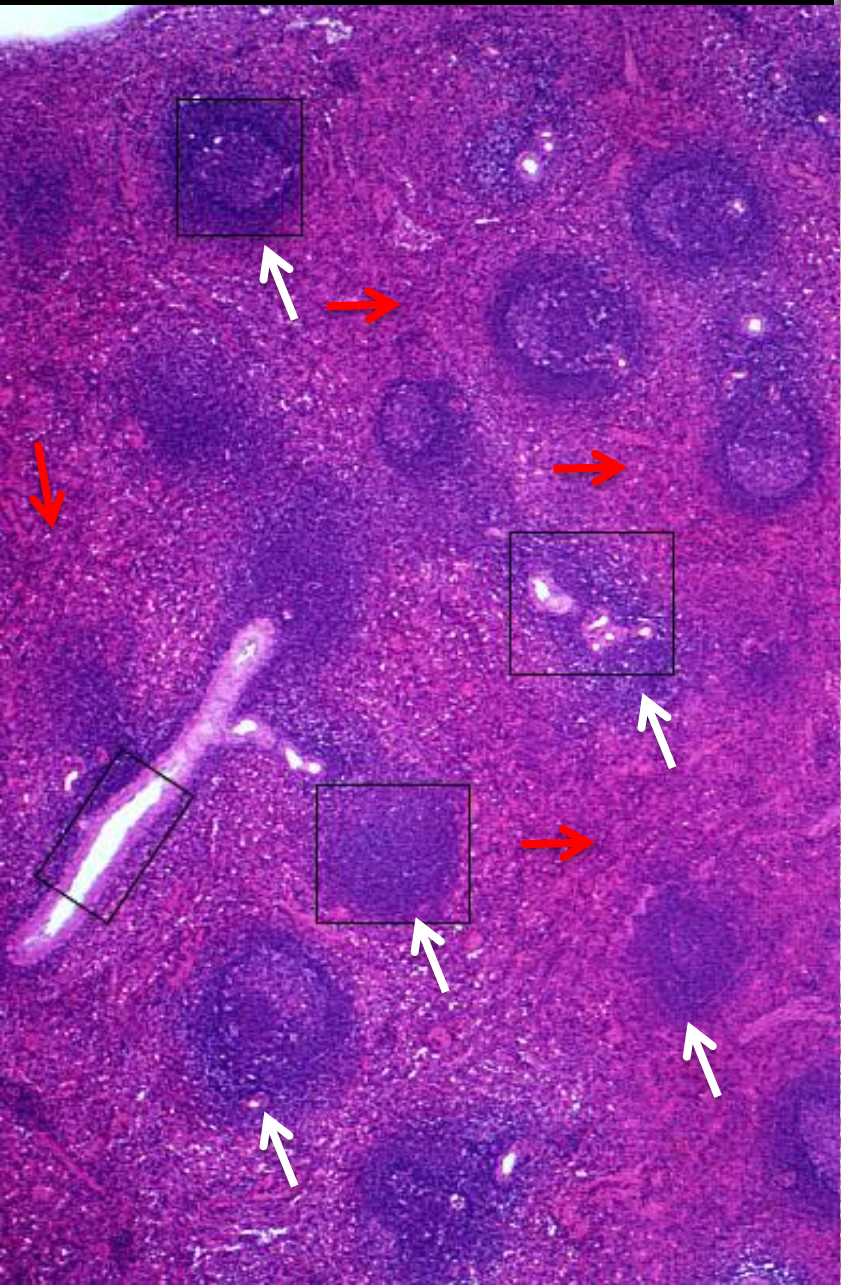
Dalak

Dalak



Dalak

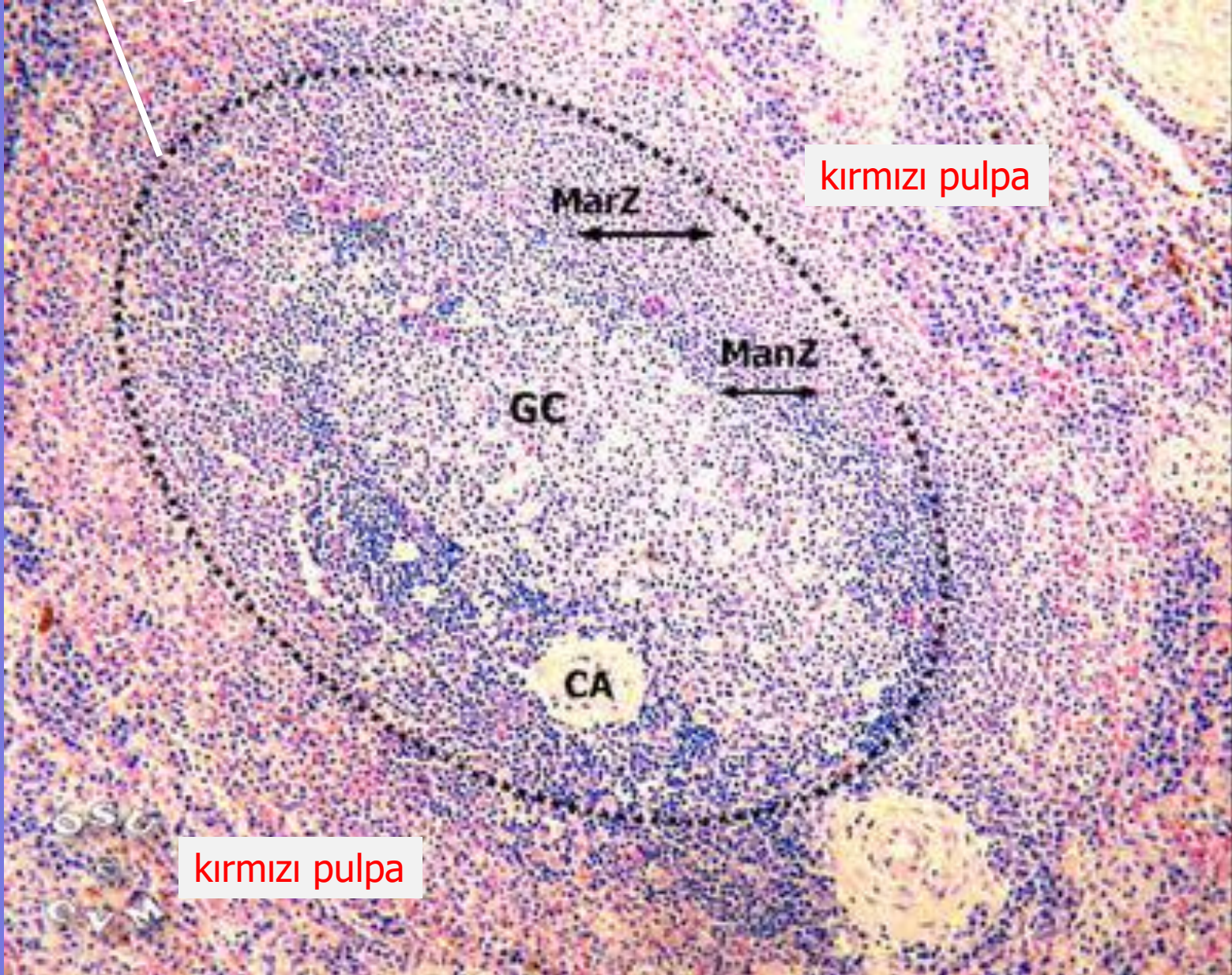
→ beyaz pulpa
→ kırmızı pulpa



Dalak

beyaz pulpa

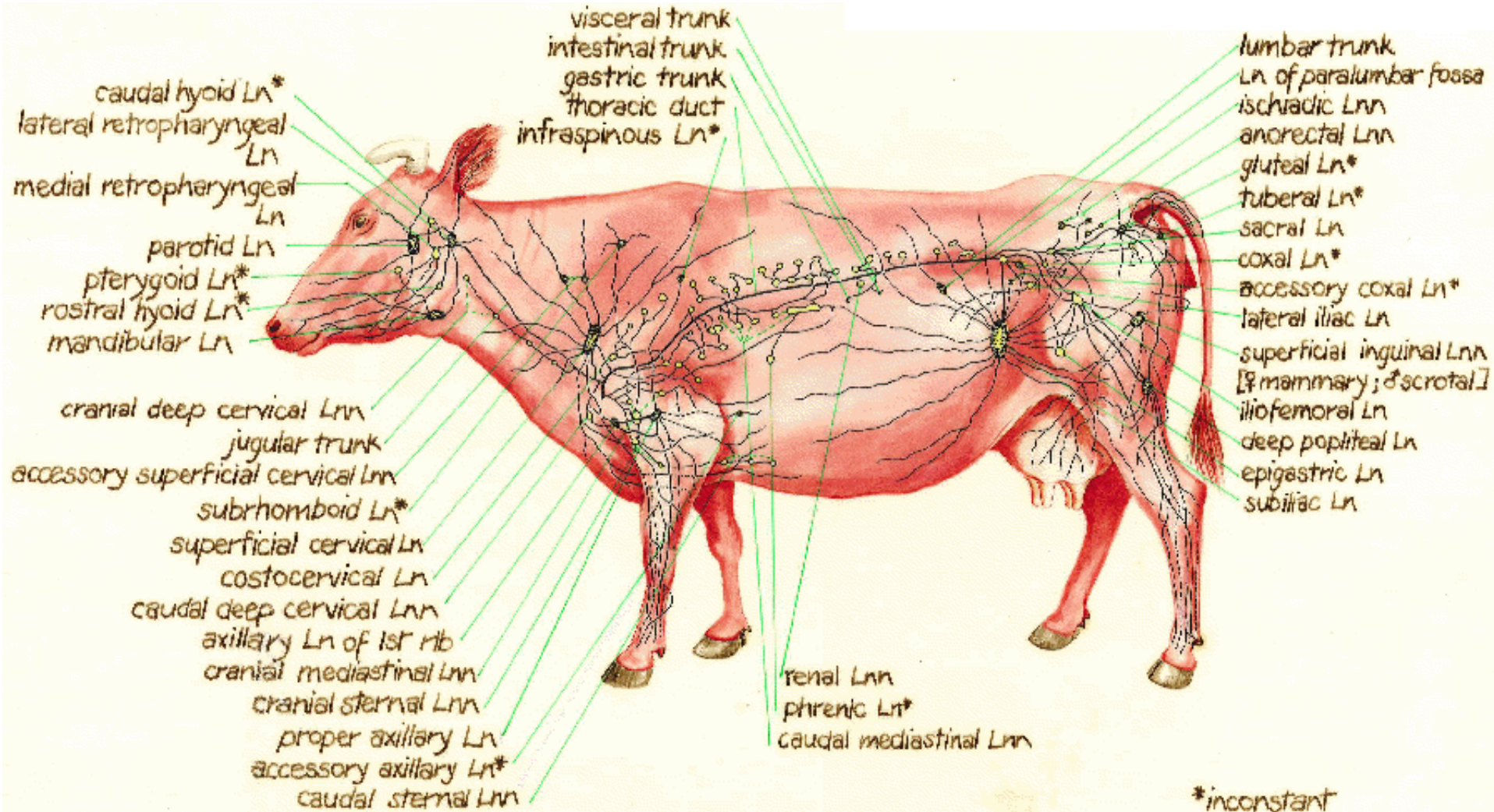
GC= germinal merkez
MarZ= marginal zon
CA= merkez arter



kirmızı pulpa

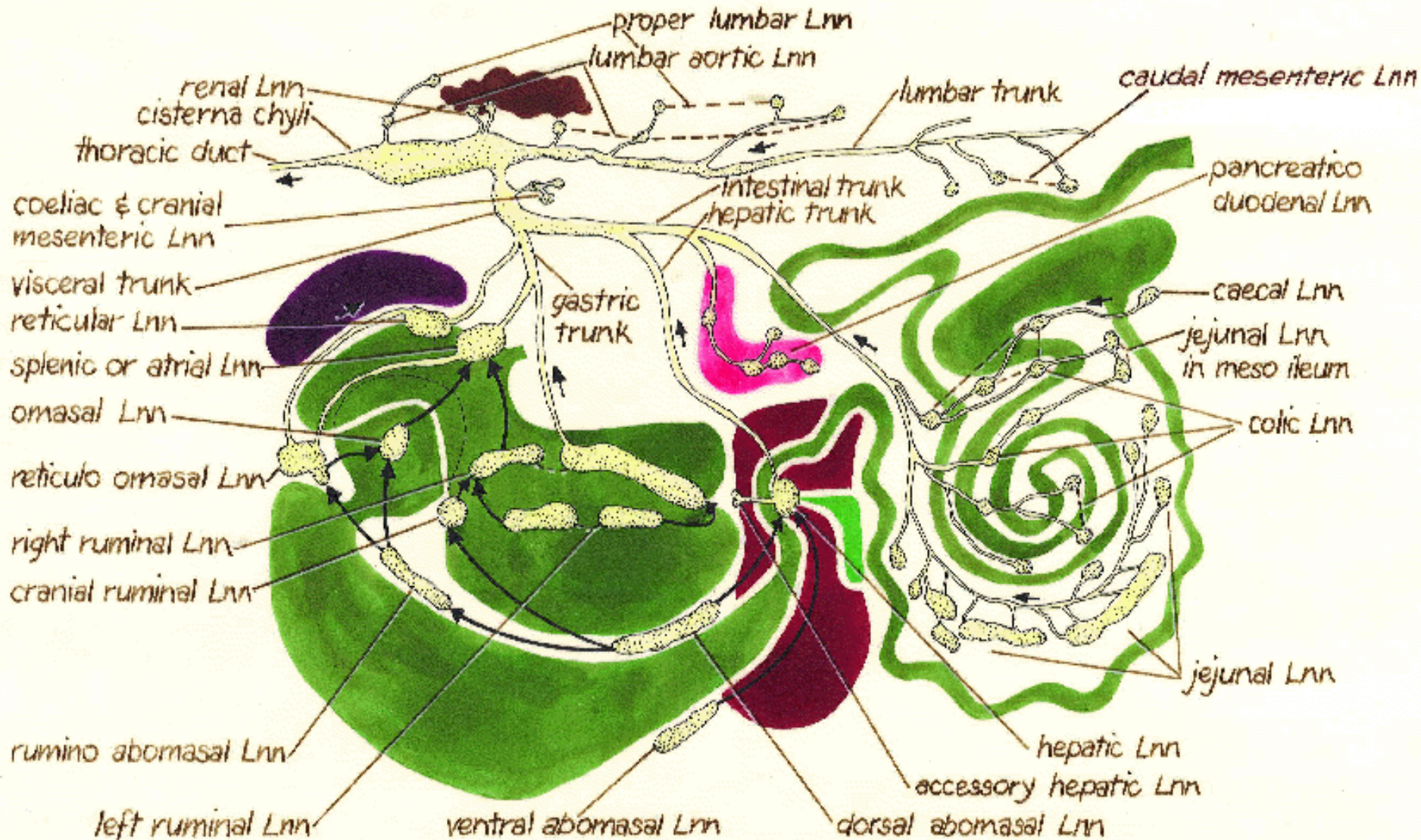
kirmızı pulpa

Lenf nodülleri

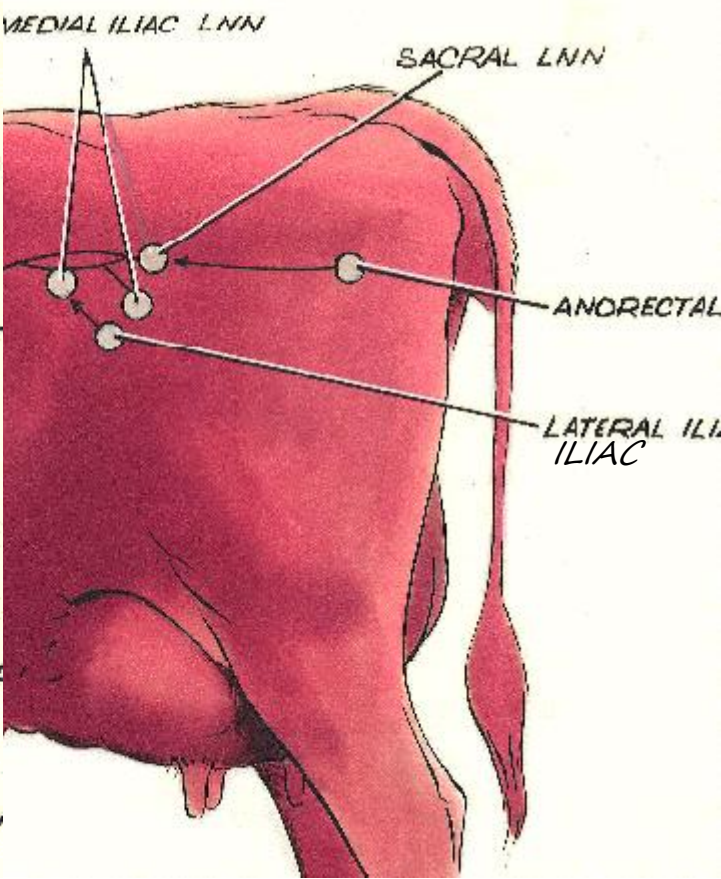
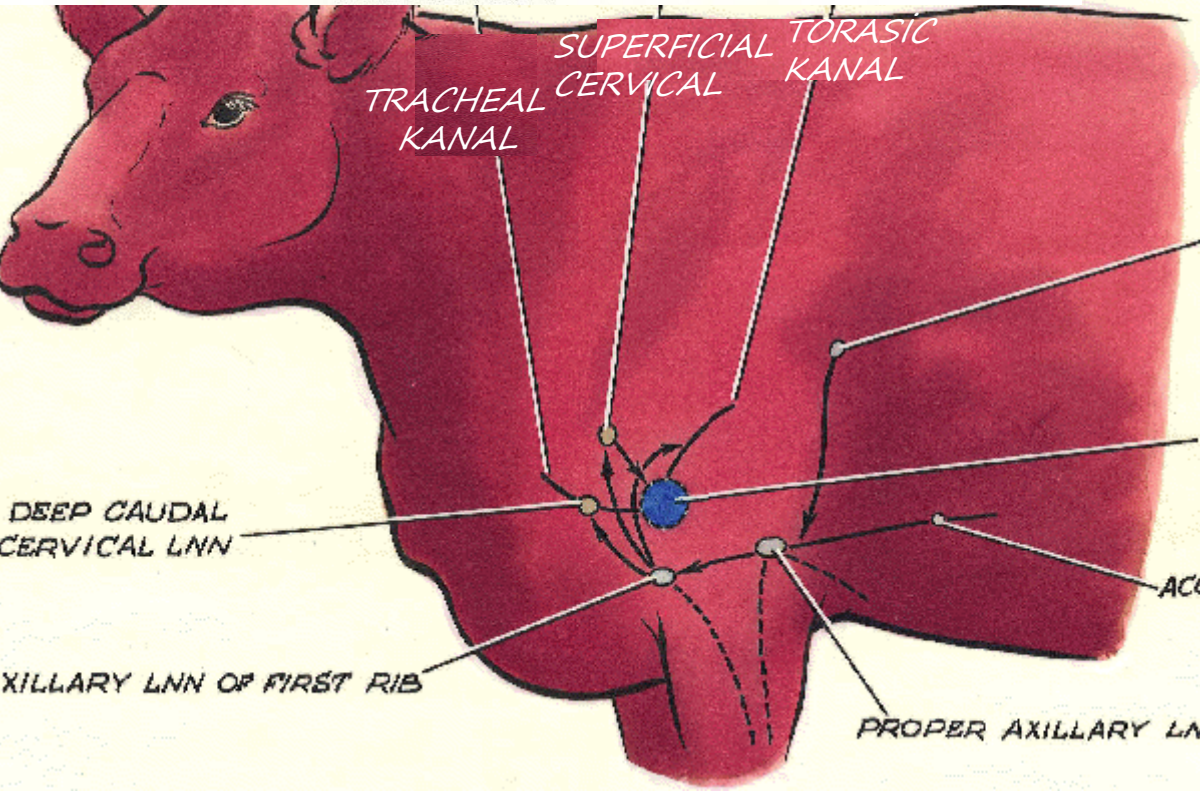
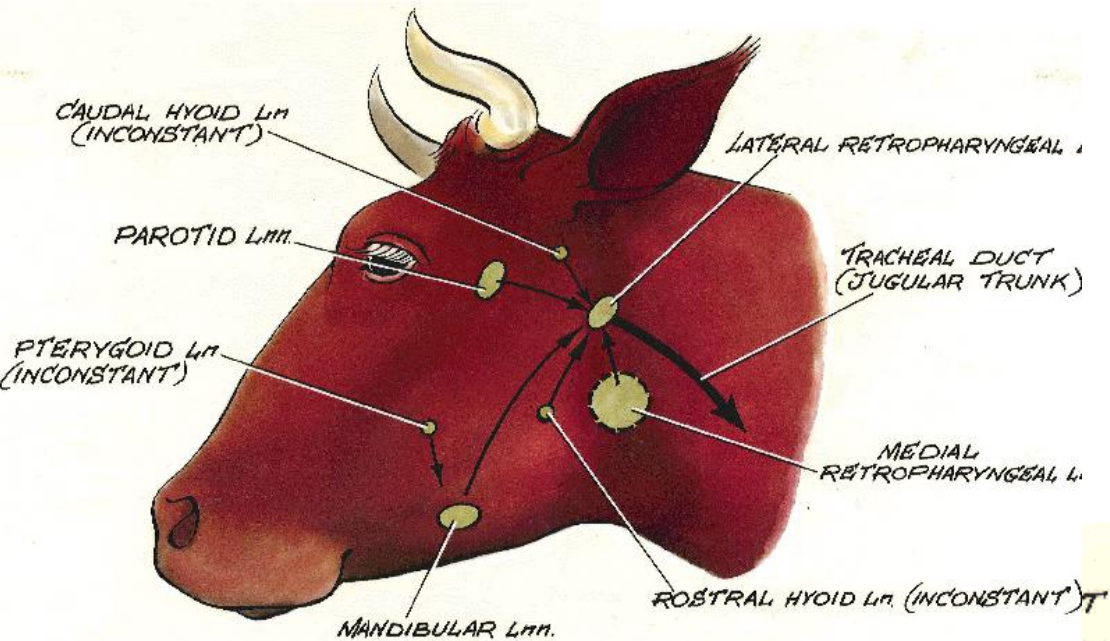


*abdominal visseradakilere gösterilmemiştir

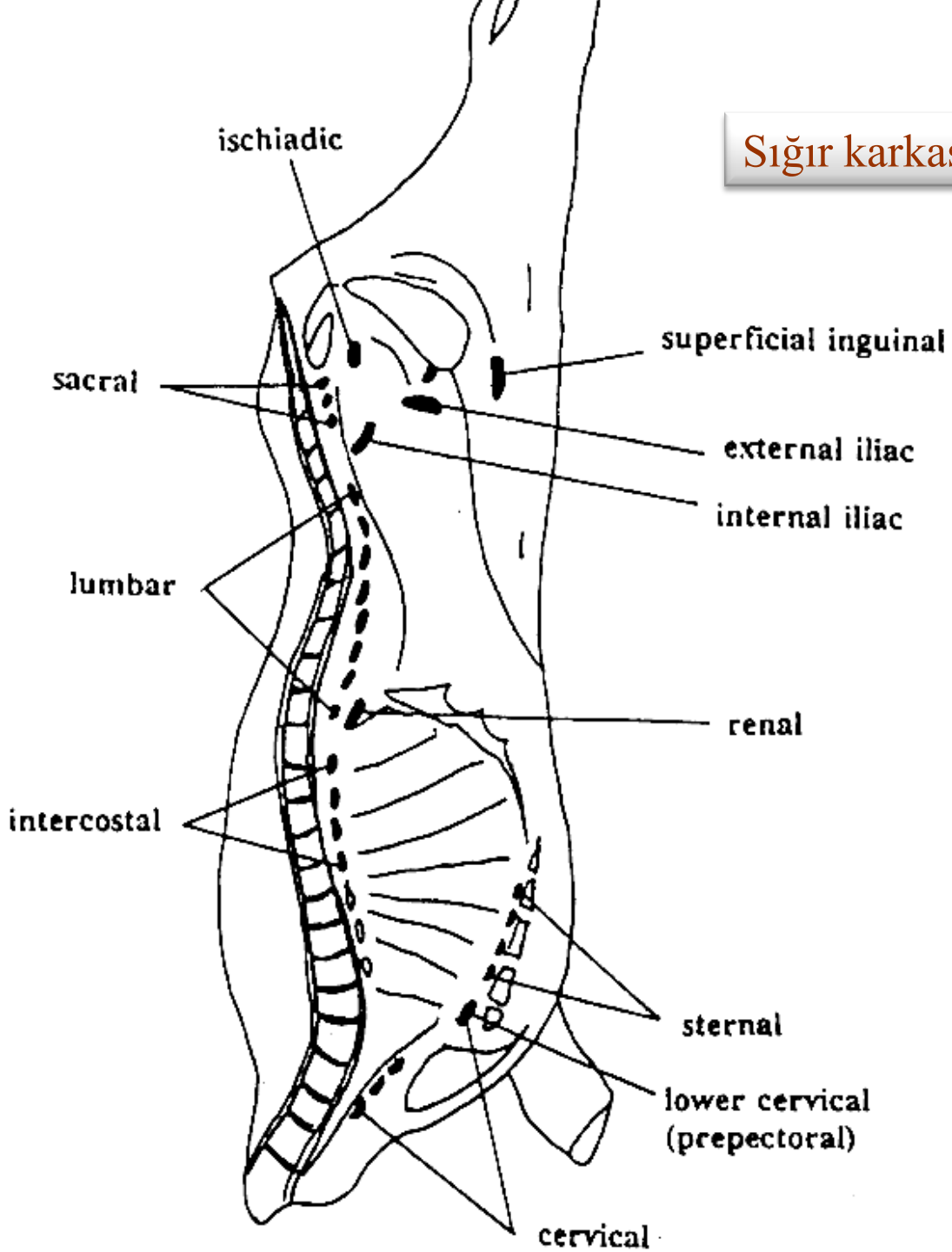
Sığır abdominal visseral lenf nodülleri



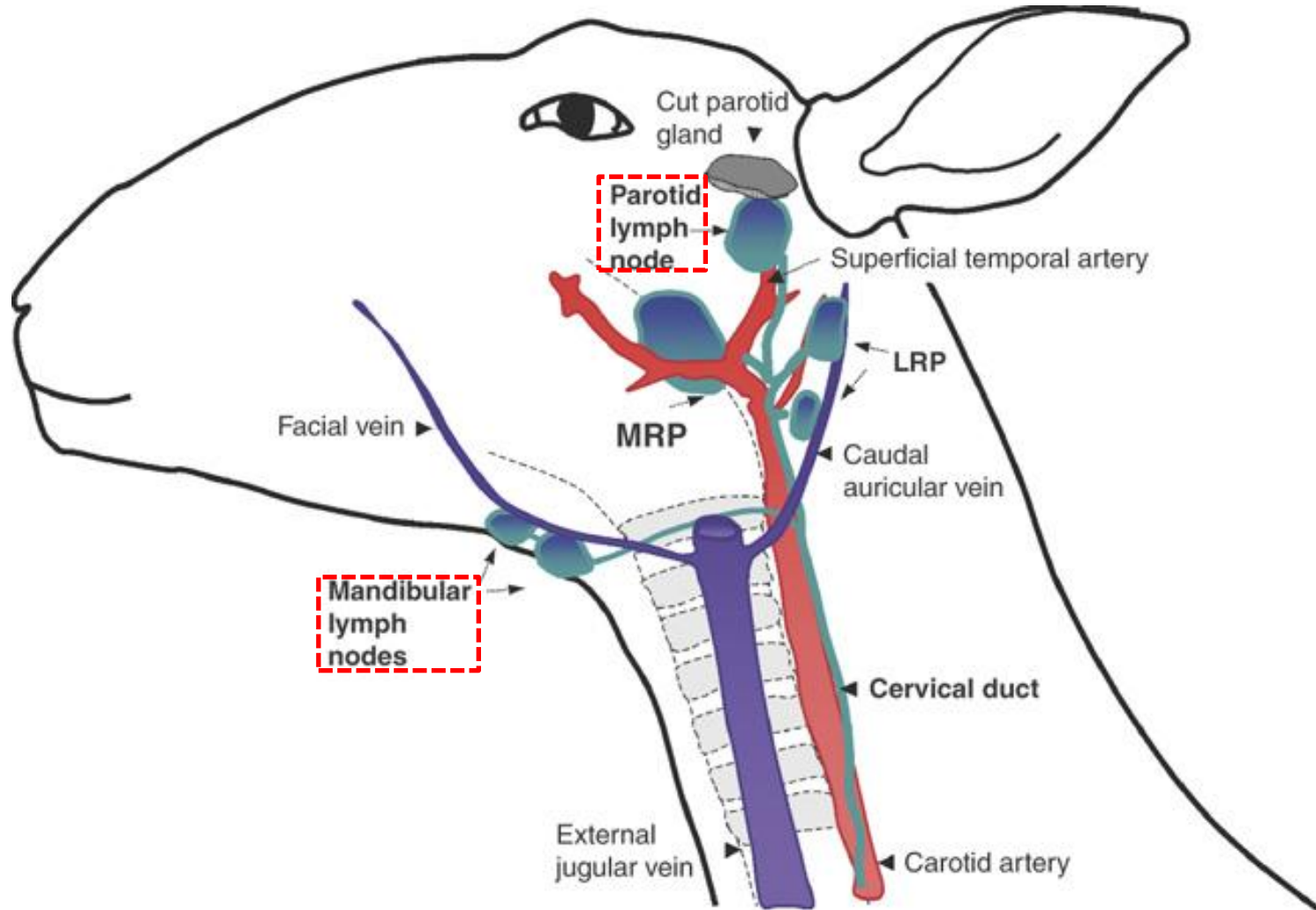
Sığır lenf nodülleri



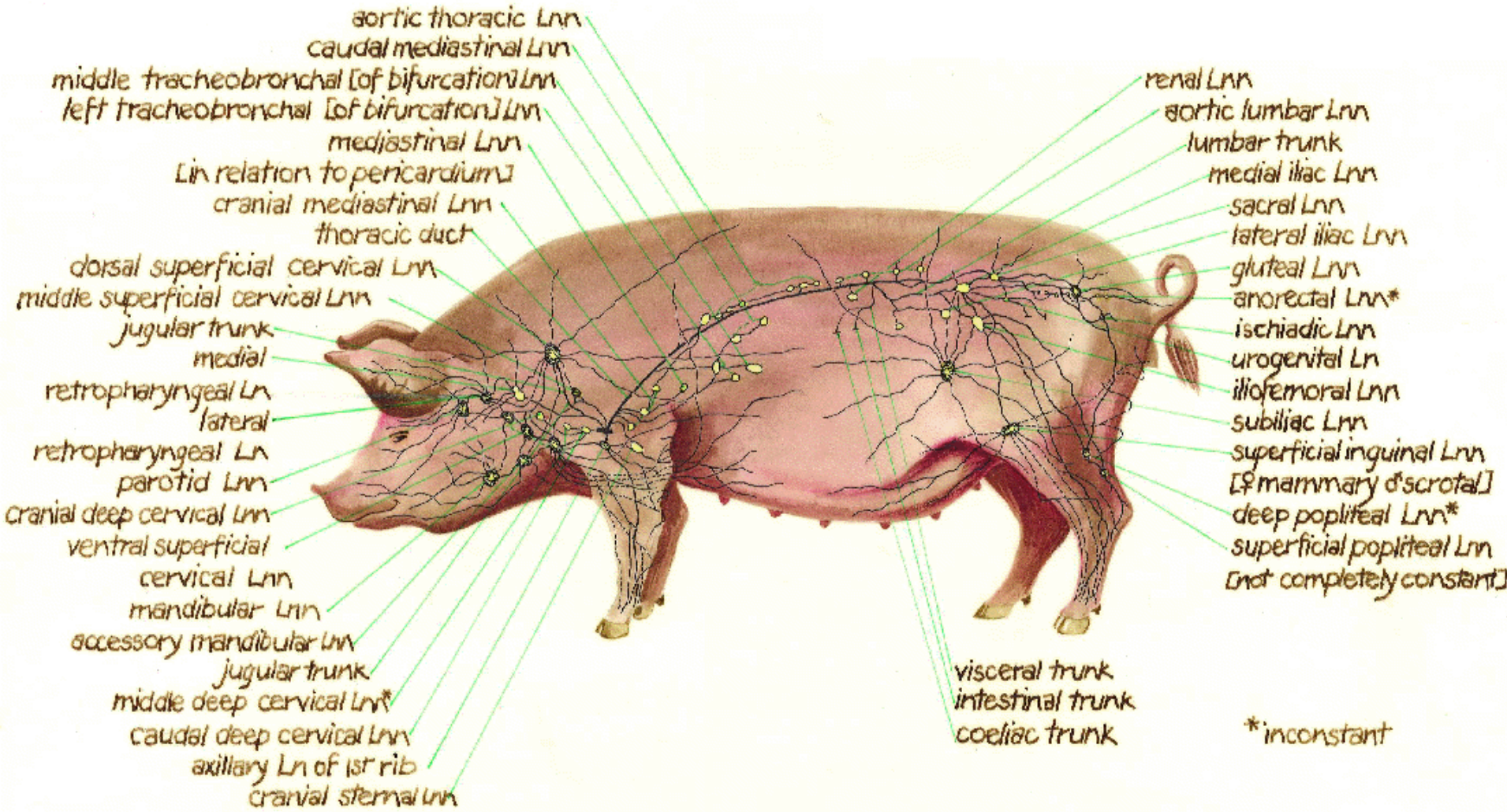
Sığır karkas lenf nodülleri



Koyun baş bölgesi lenf nodülleri



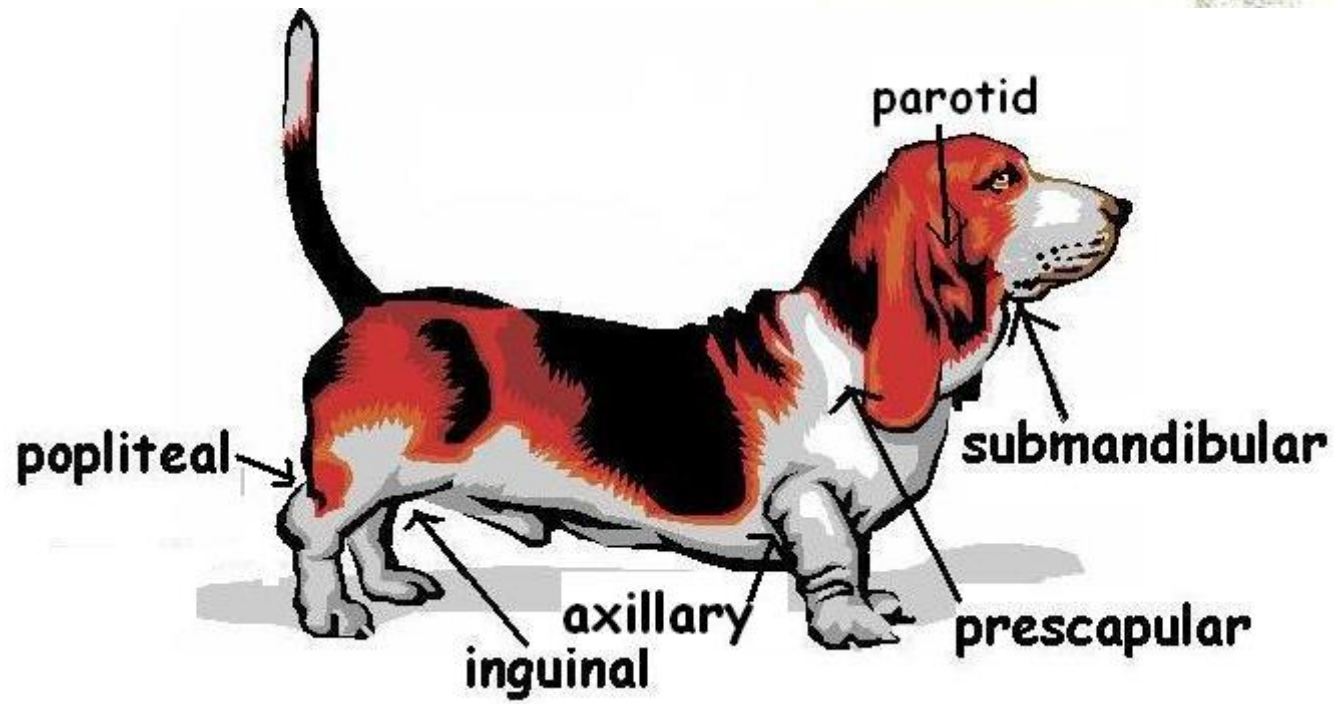
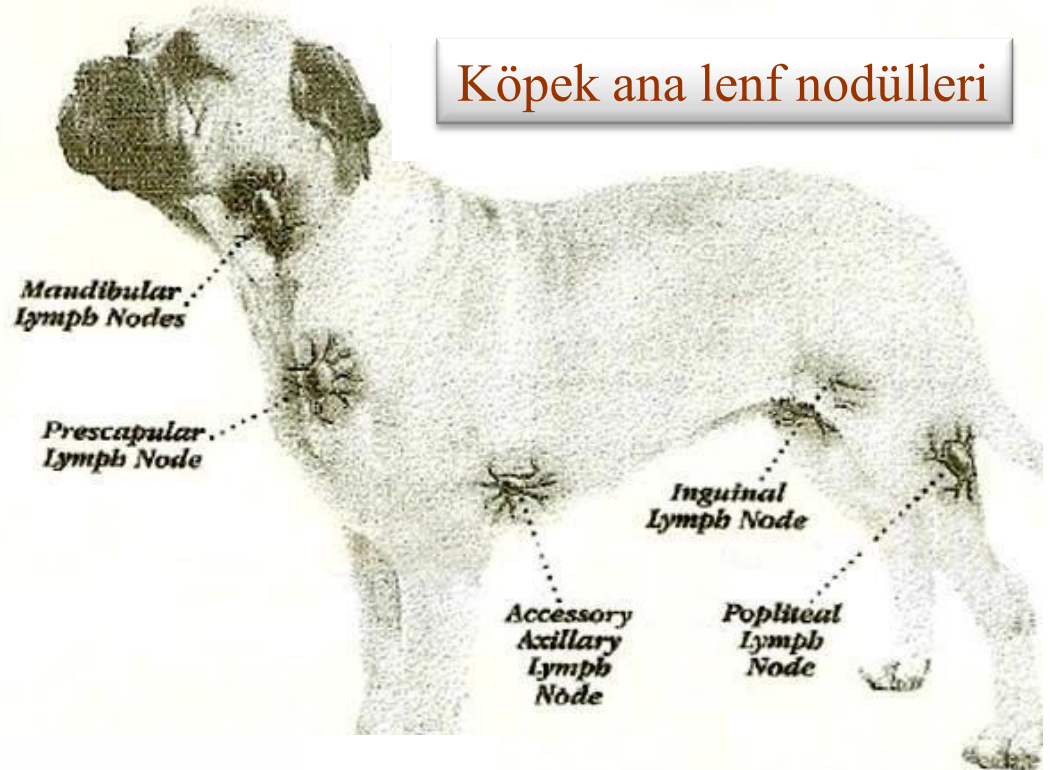
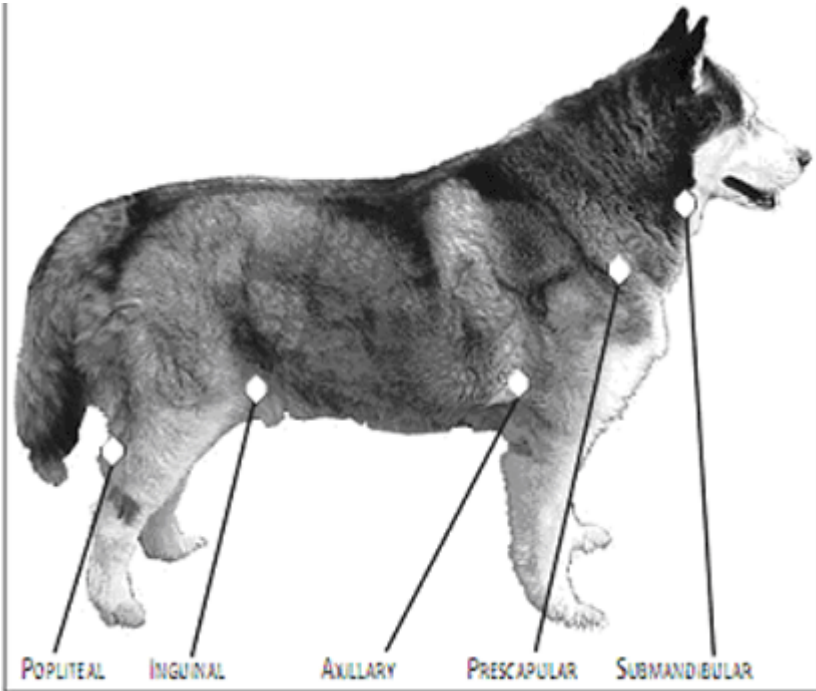
Domuz lenf nodülleri



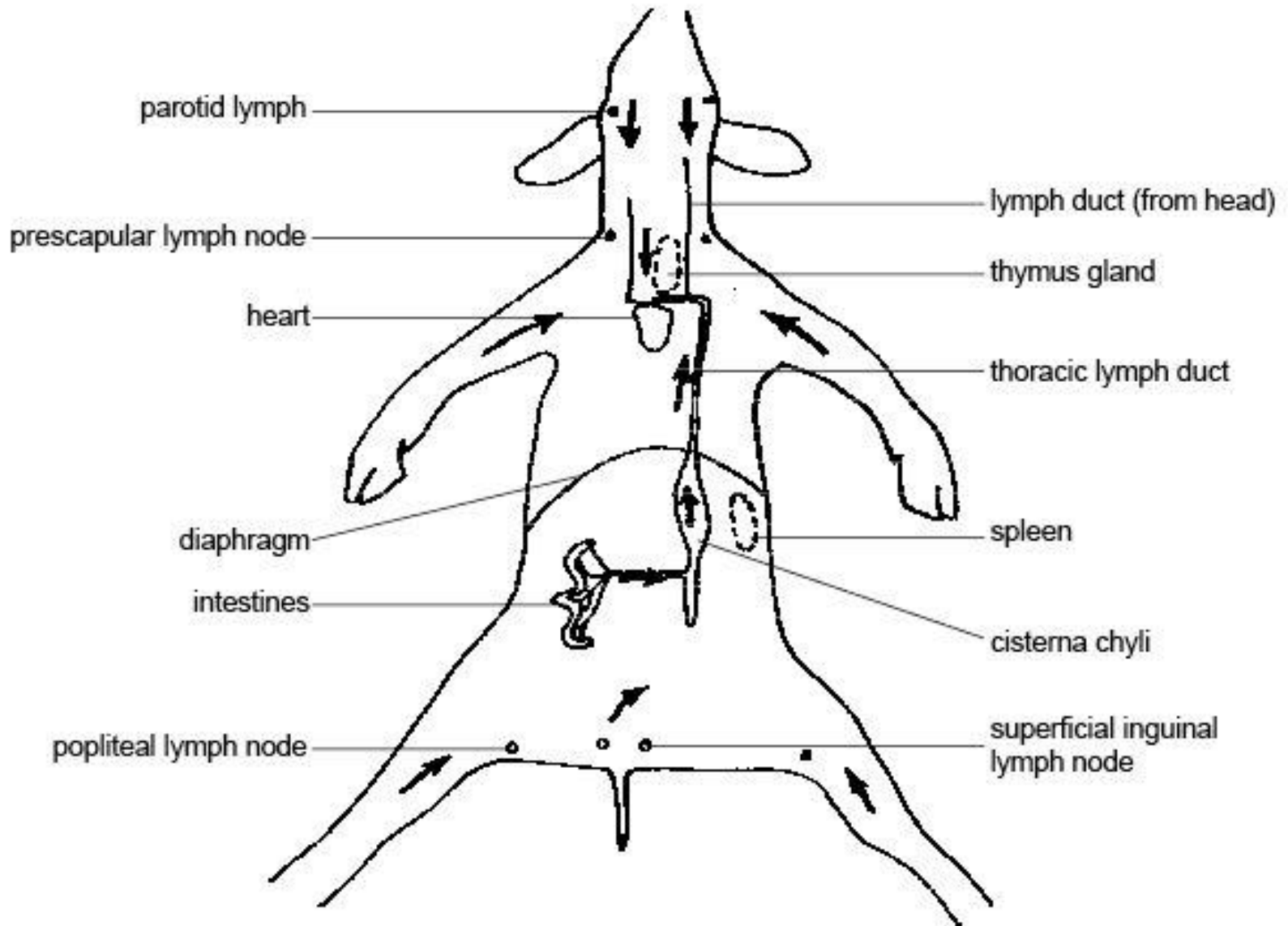
*inconstant

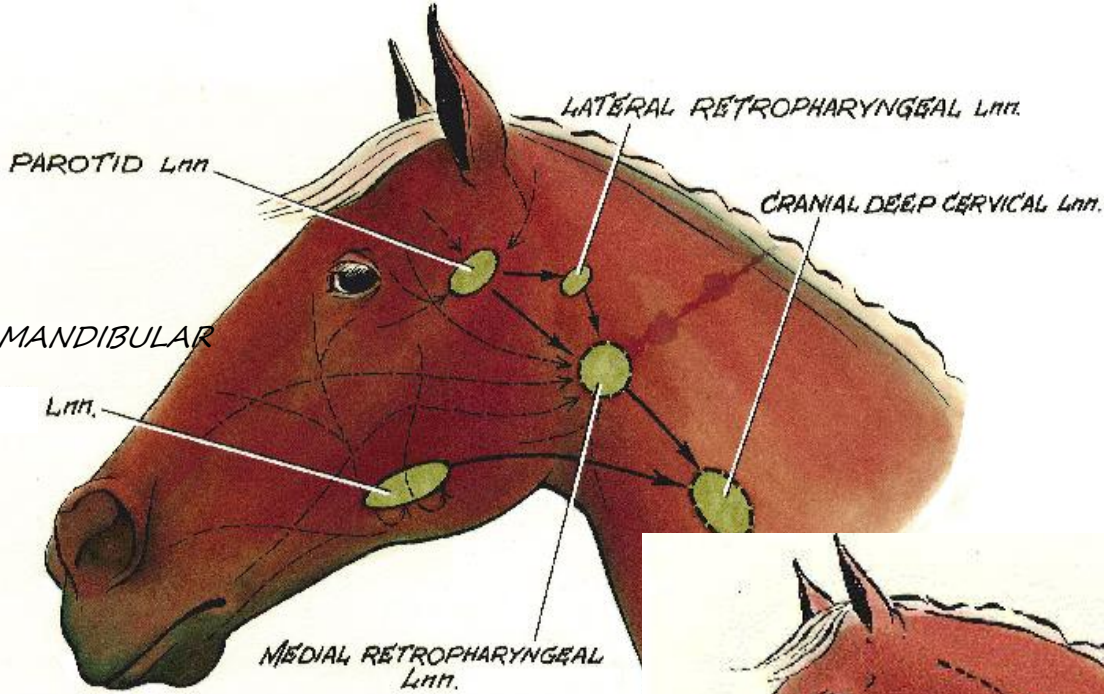
*abdominal visseradakililer gösterilmemiştir

Köpek ana lenf nodülleri

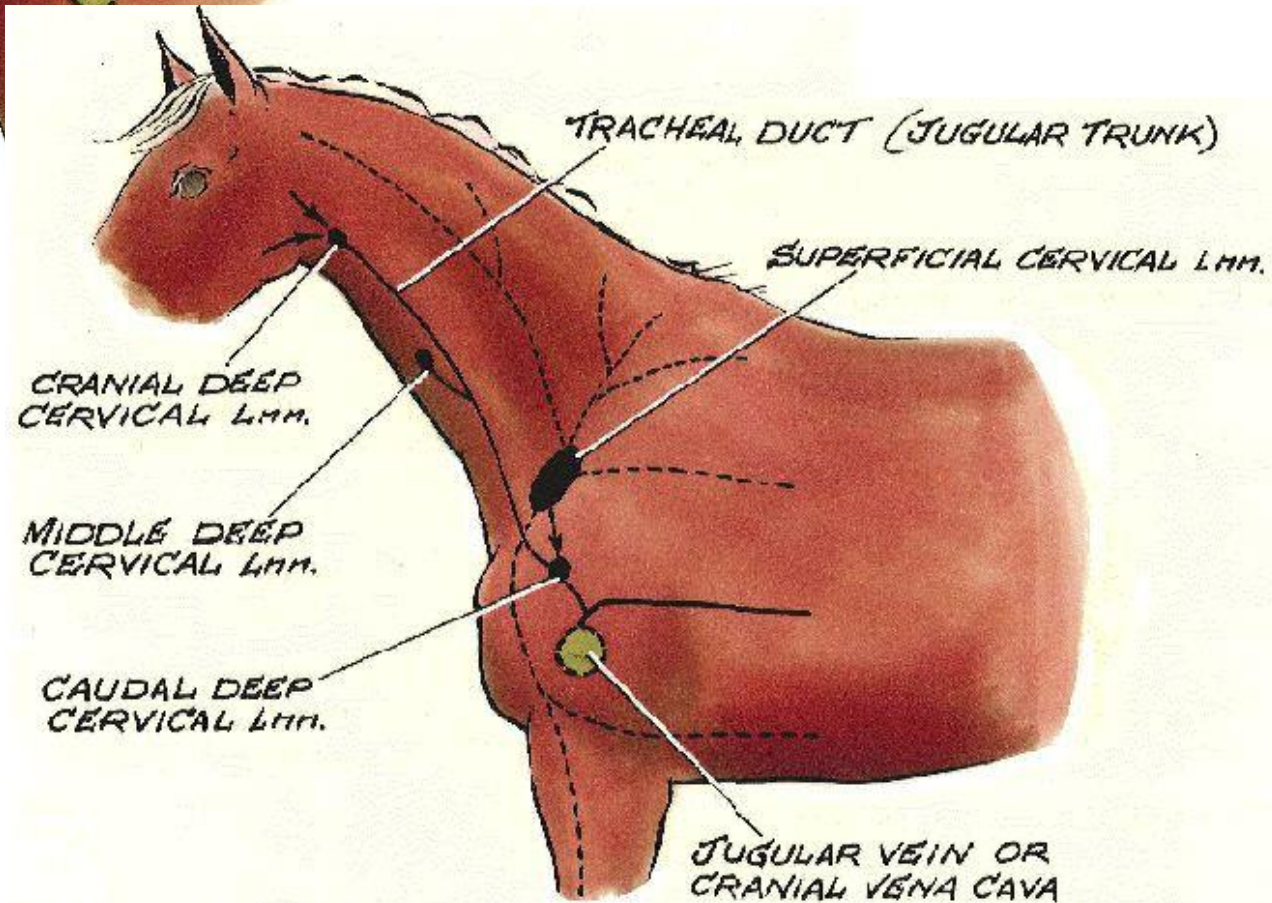


Köpek ana lenf nodülleri

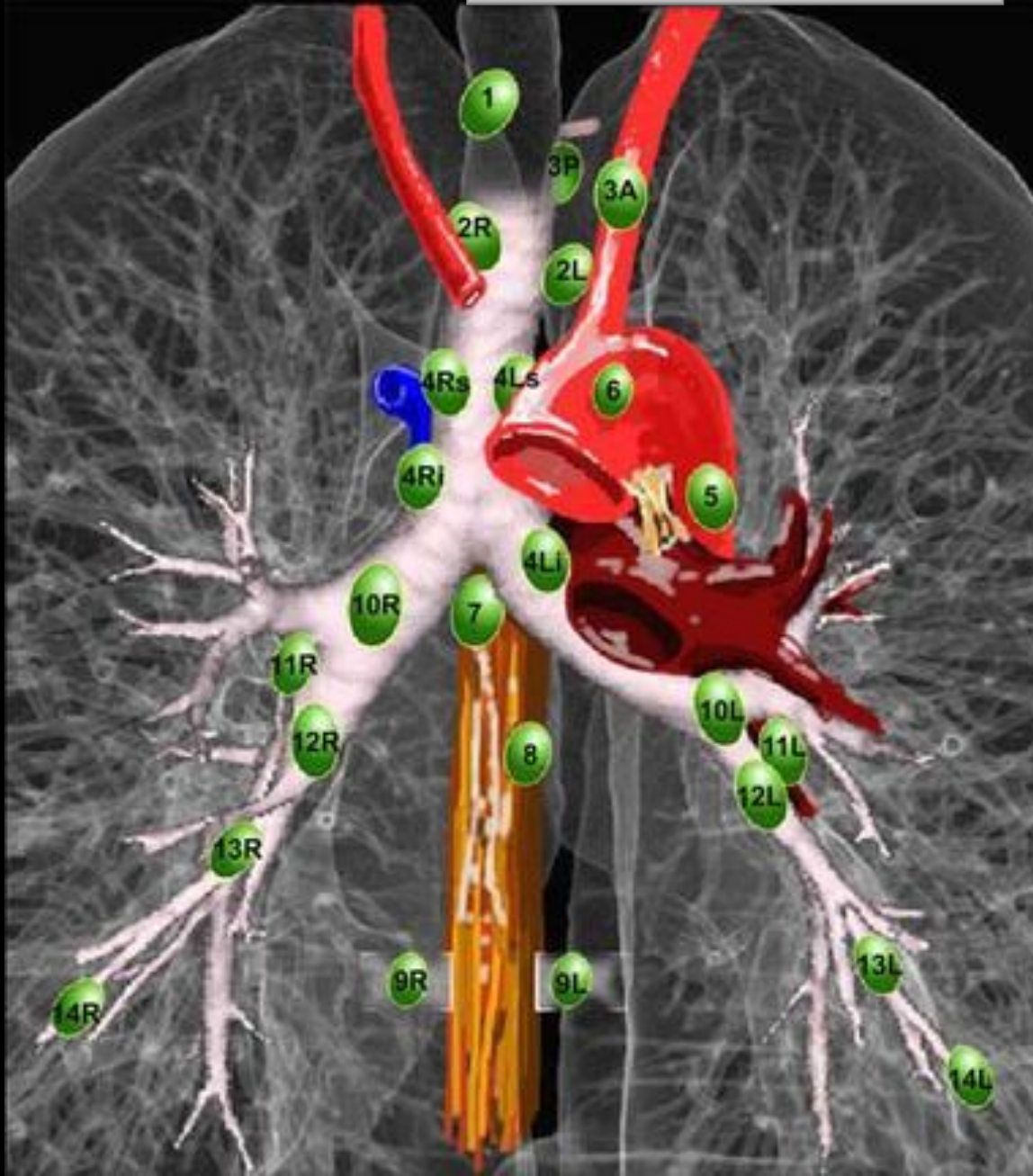




At baş-boyun lenf nodülleri



Mediastinal lenf nodülleri



1 - Ganglions médiastinaux supérieurs

2 - Ganglions paratrachéaux supérieurs

3 - Ganglions prévasculaires et rétro-trachéaux

4 - Ganglions paratrachéaux inférieurs

5 - Ganglions sous-aortiques (fenêtre aorto-pulmonaire)

6 - Ganglions para-aortiques (aorte ascendante ou chaîne phrénique)

7 - Ganglions sous-carinaux

8 - Ganglions para-oesophagiens

9 - Ganglions des ligaments pulmonaires

10 - Ganglions hilaires

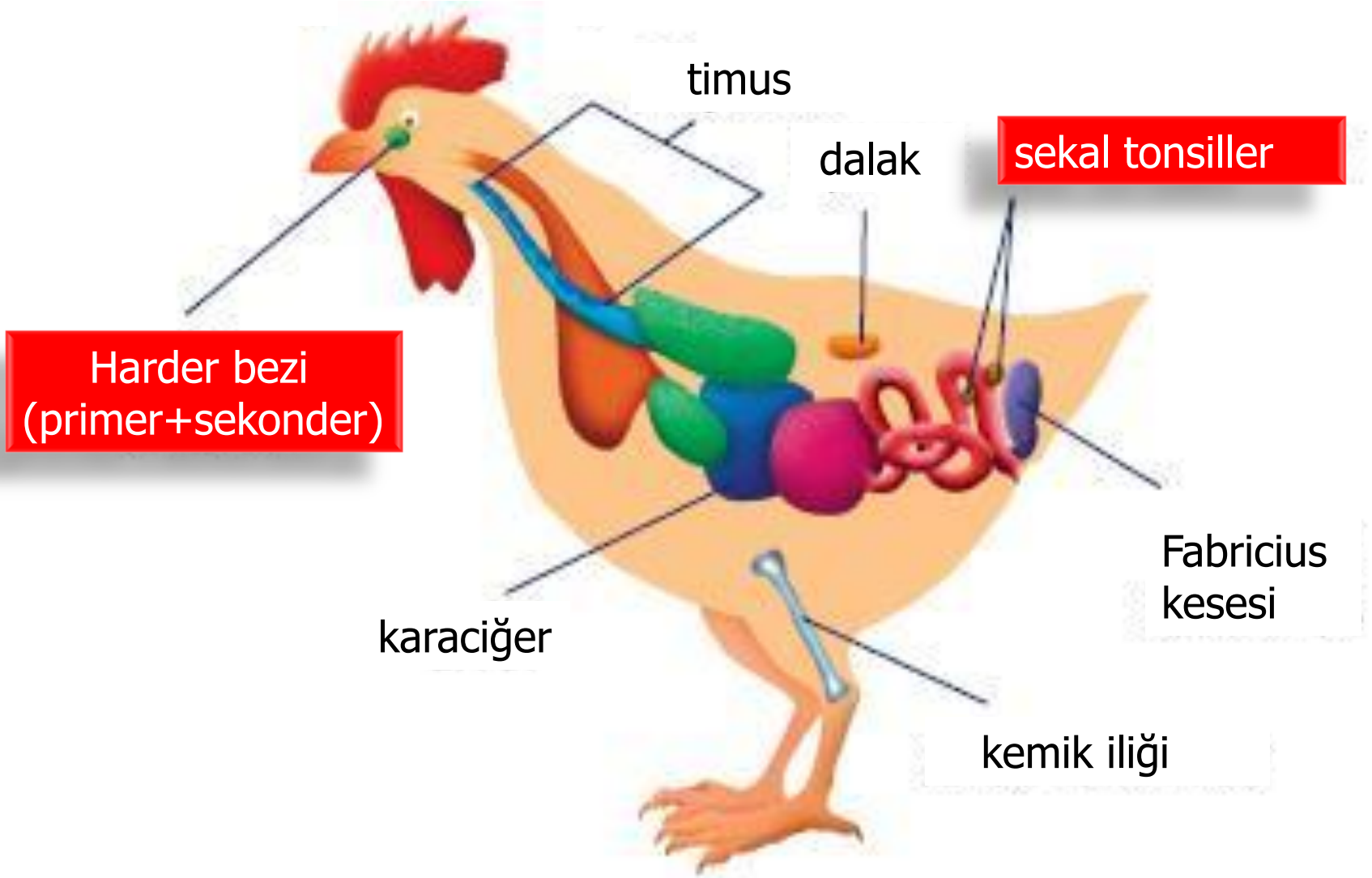
11 - Ganglions interlobaires

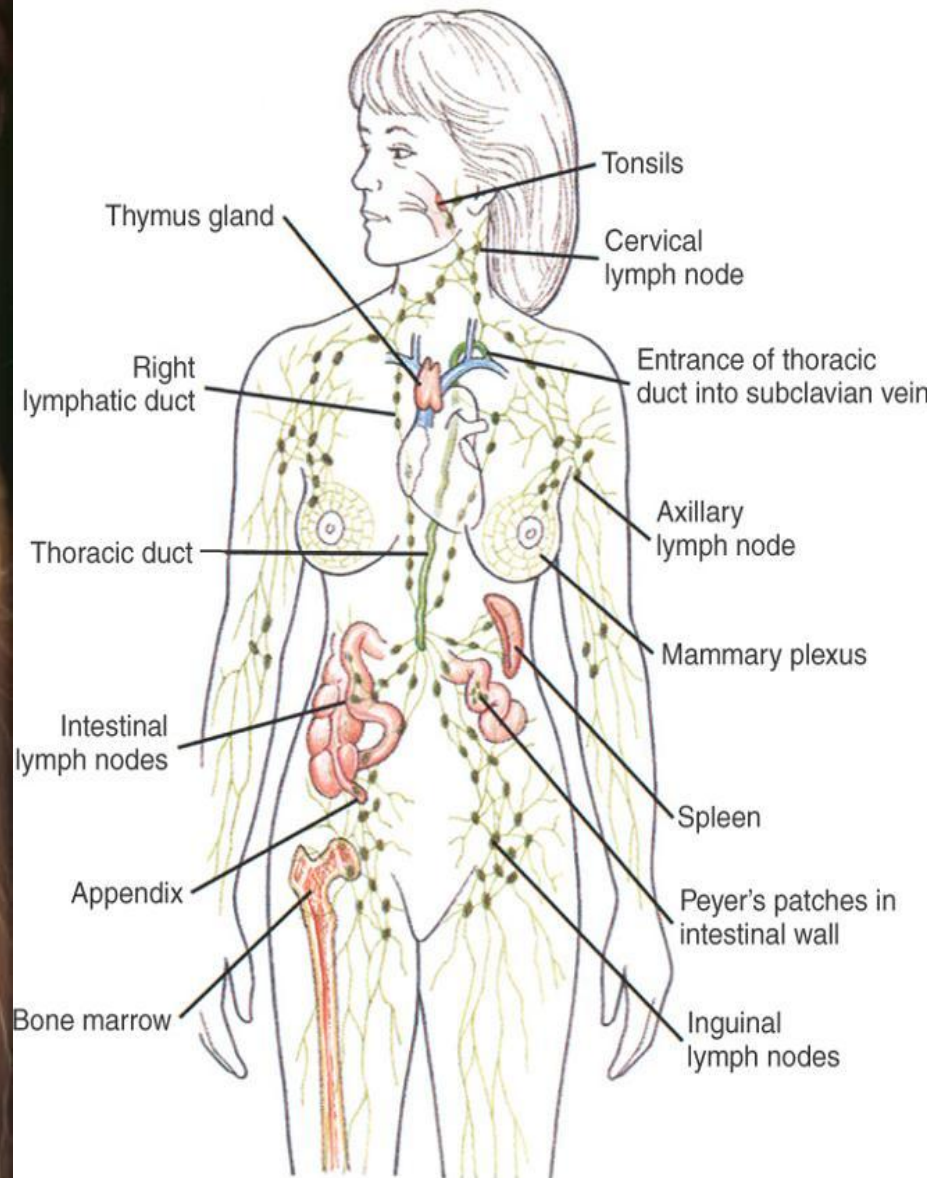
12 - Ganglions lobaires

13 - Ganglions segmentaires

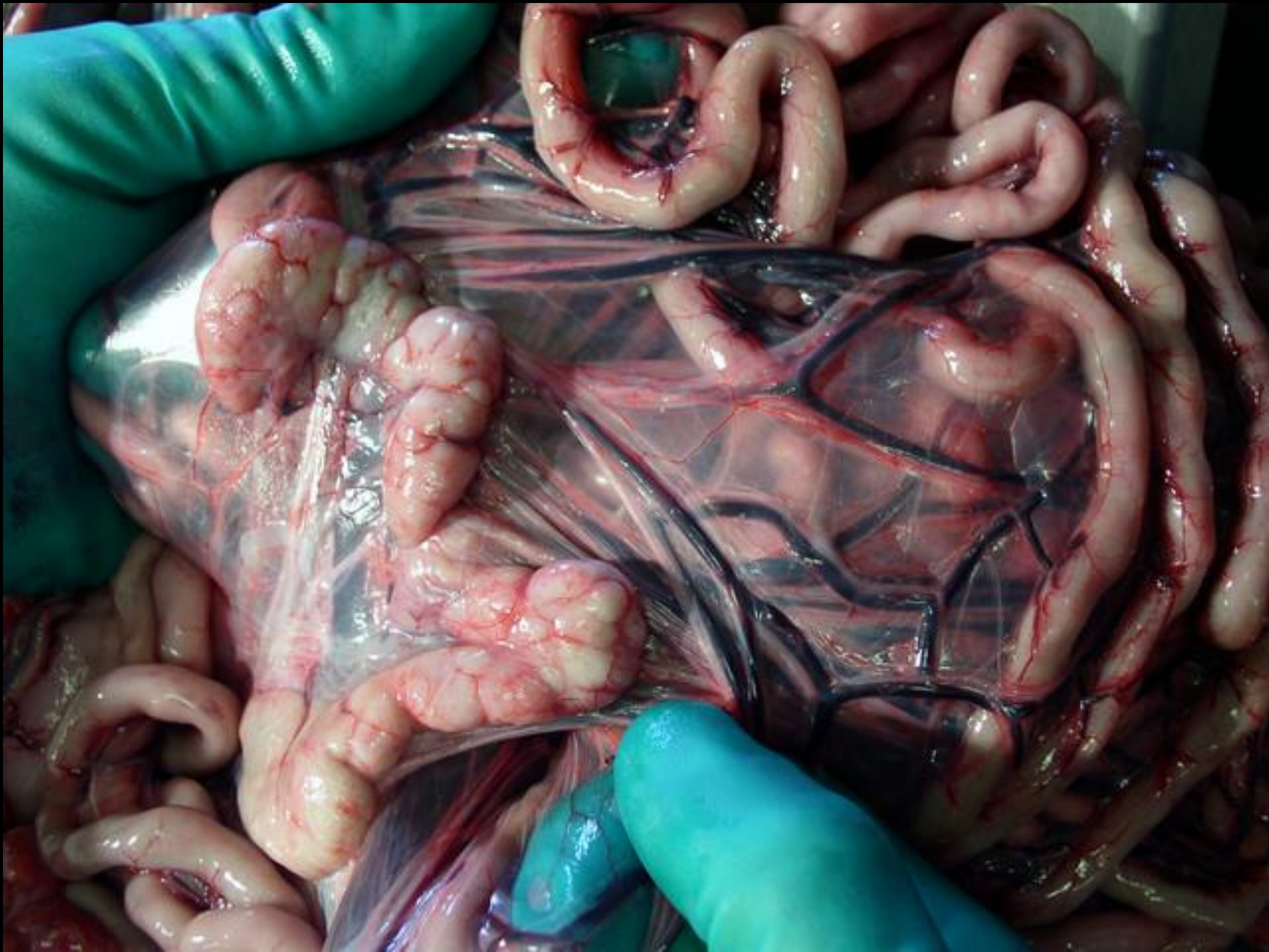
14 - Ganglions sous-segmentaires

Tavuk Harder bezi ve sekal tonsiller

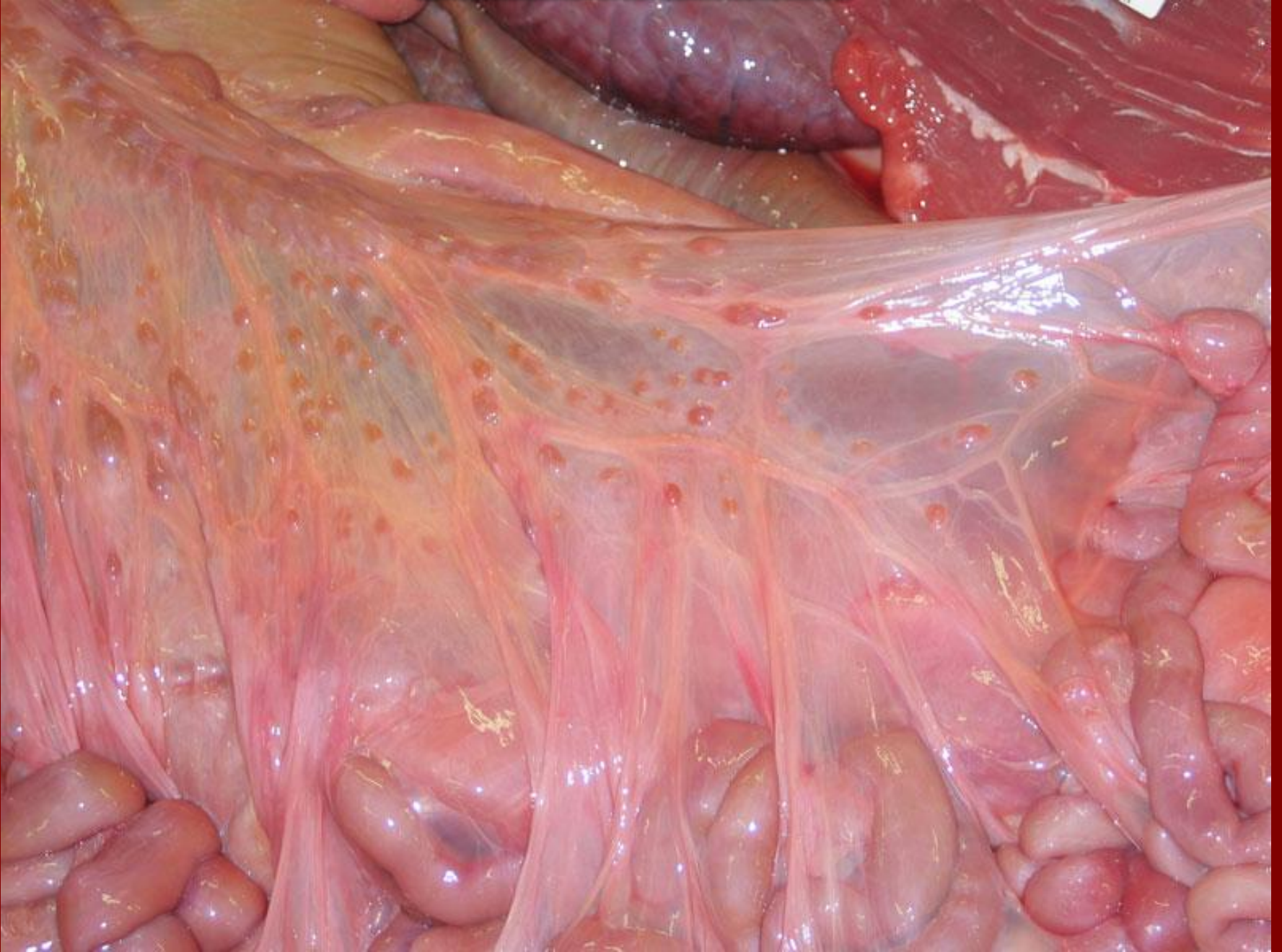




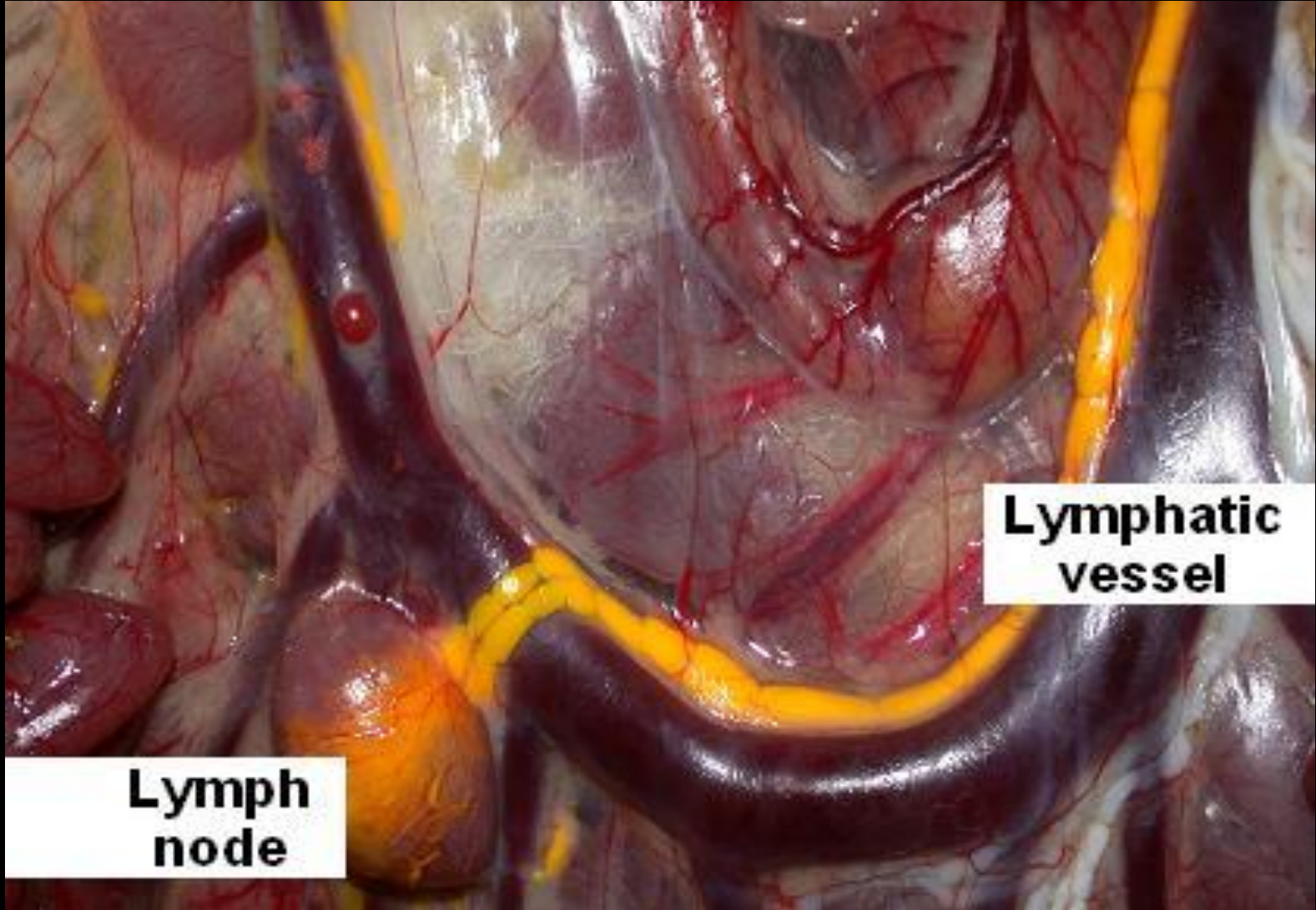
Mezenterik lenf nodülleri



Mezenterik lenf nodülleri



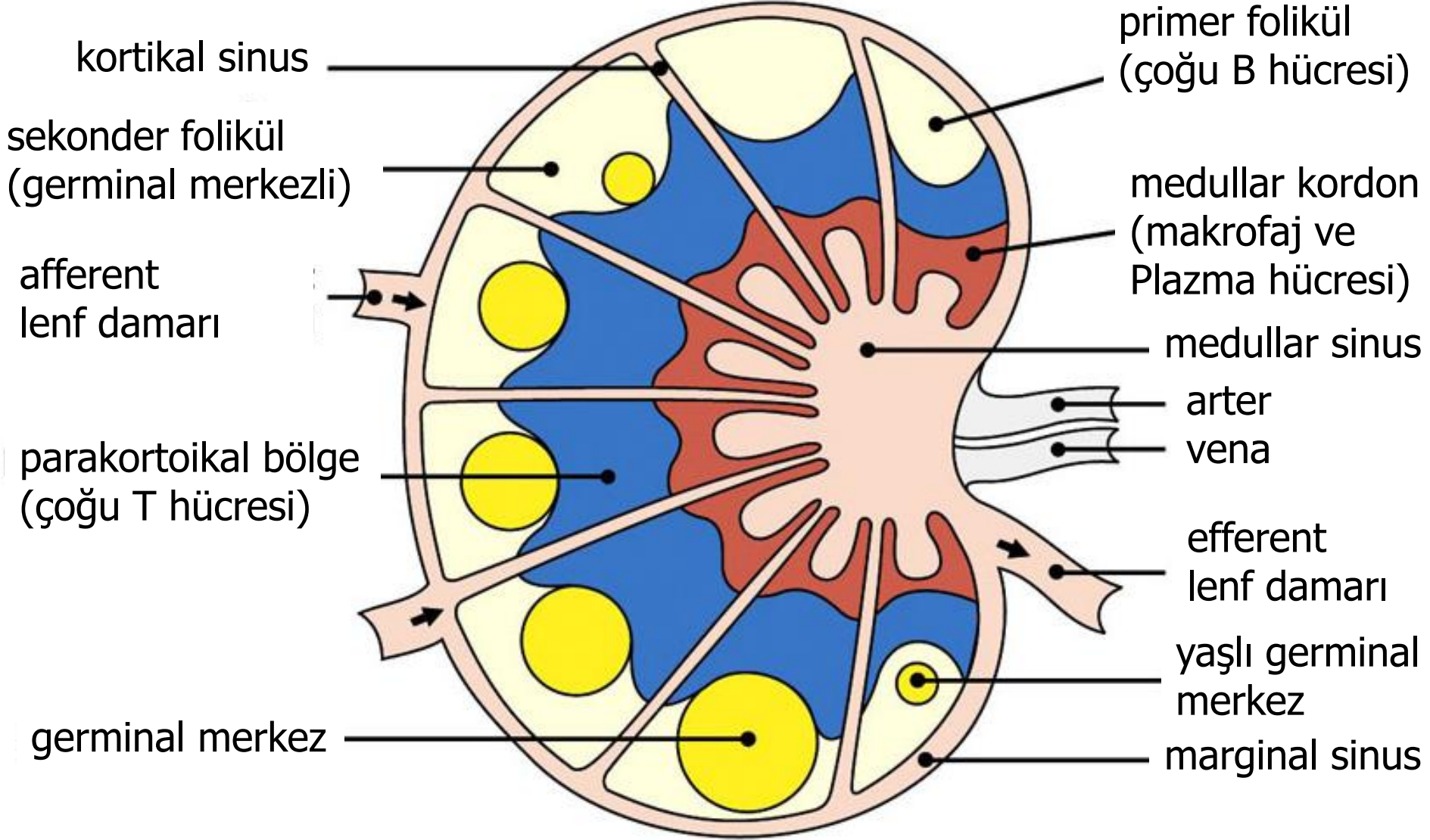
Mezenterik lenf nodülü ve damarı



**Lymph
node**

**Lymphatic
vessel**

Lenf Nodülü

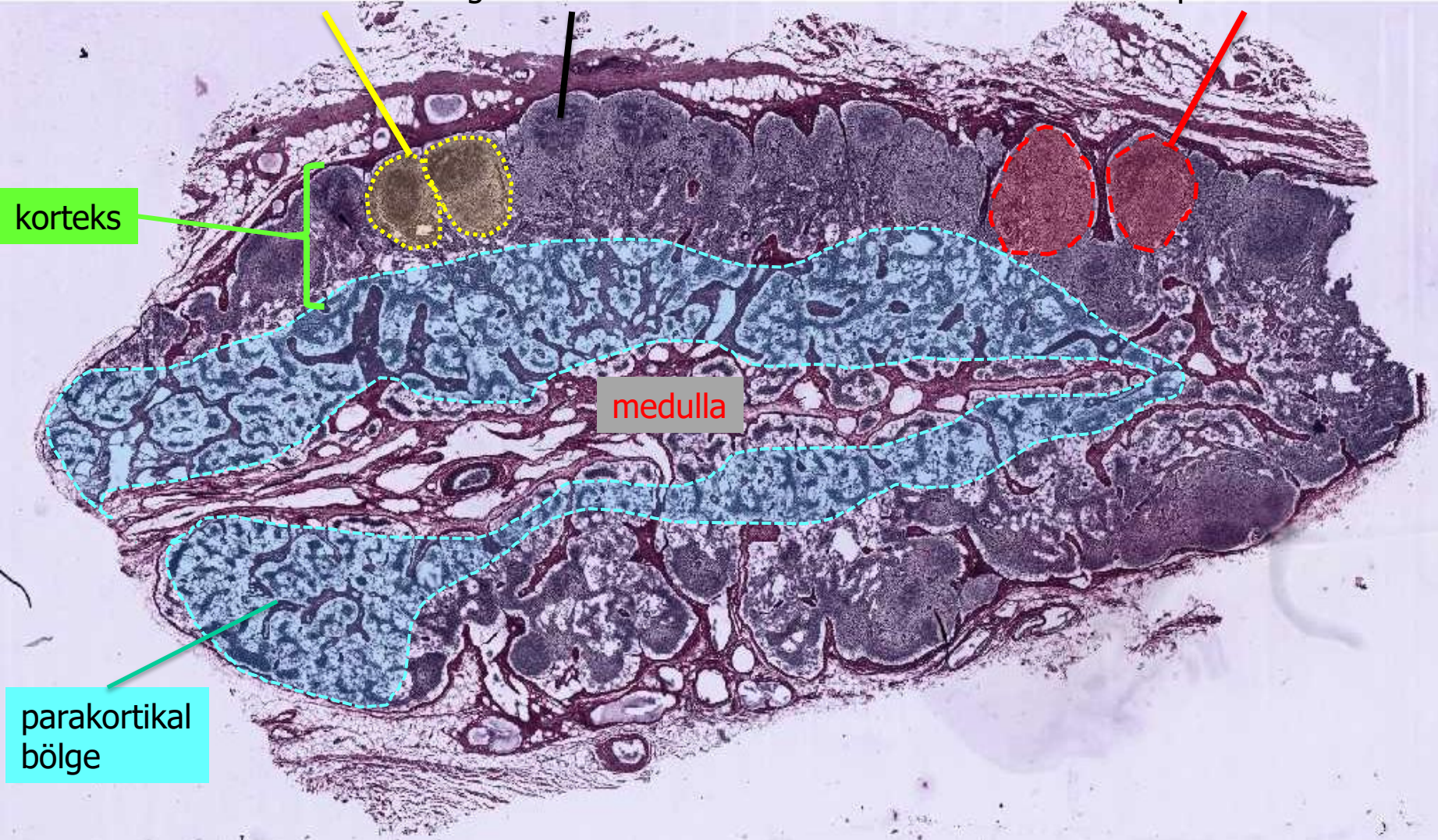


Lenf Nodülü

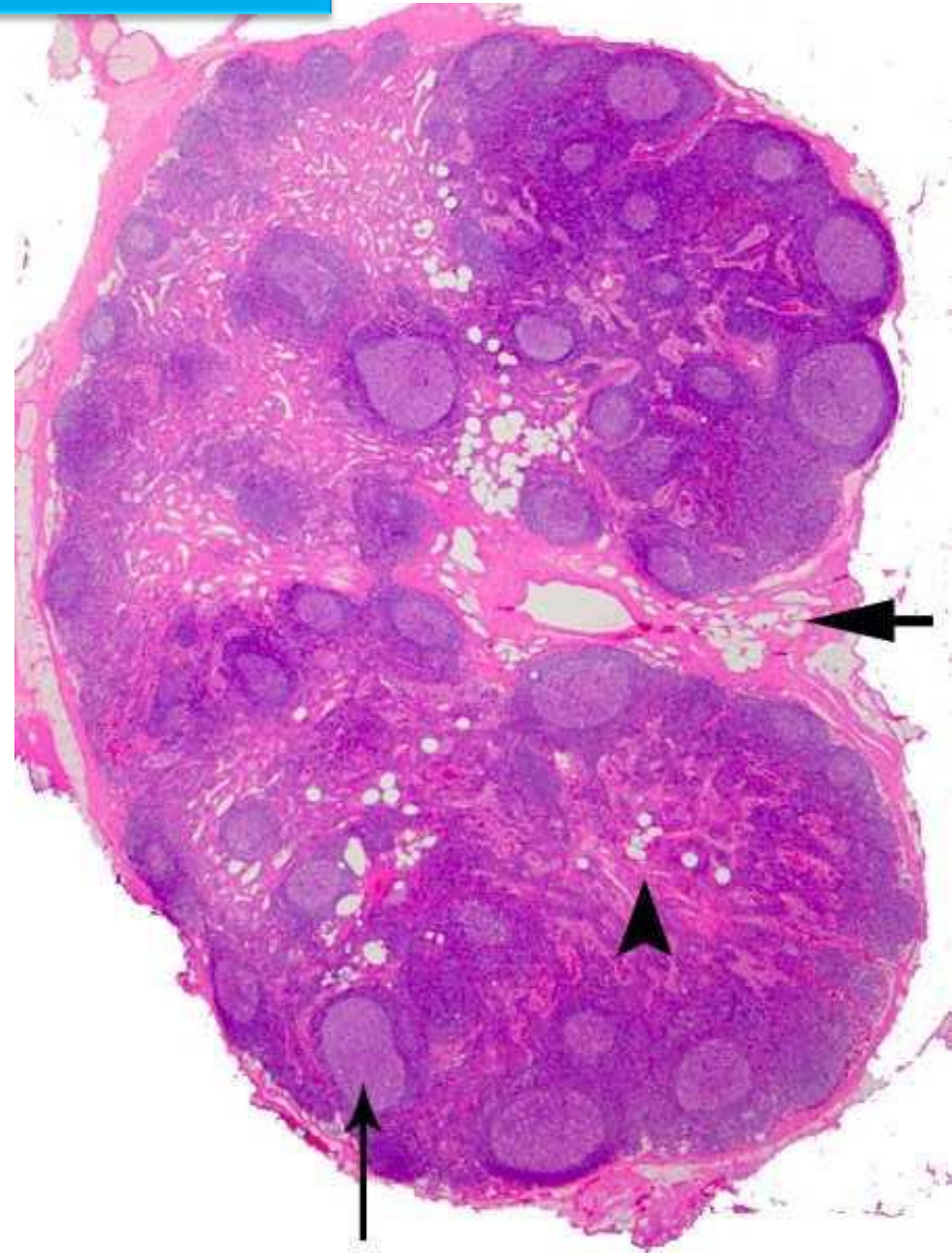
sekonder folikül

germinal merkez

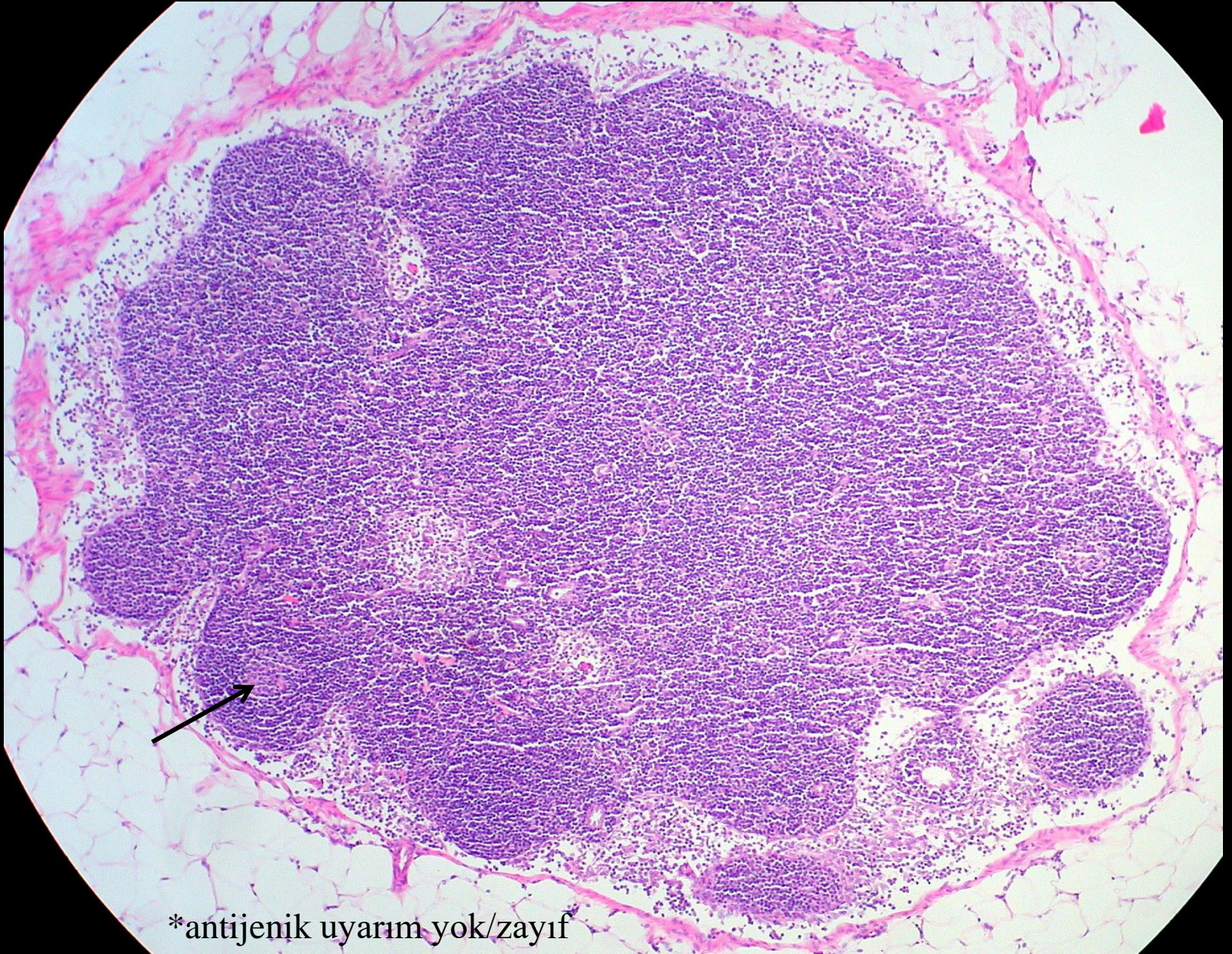
primer folikül



Lenf Nodülü

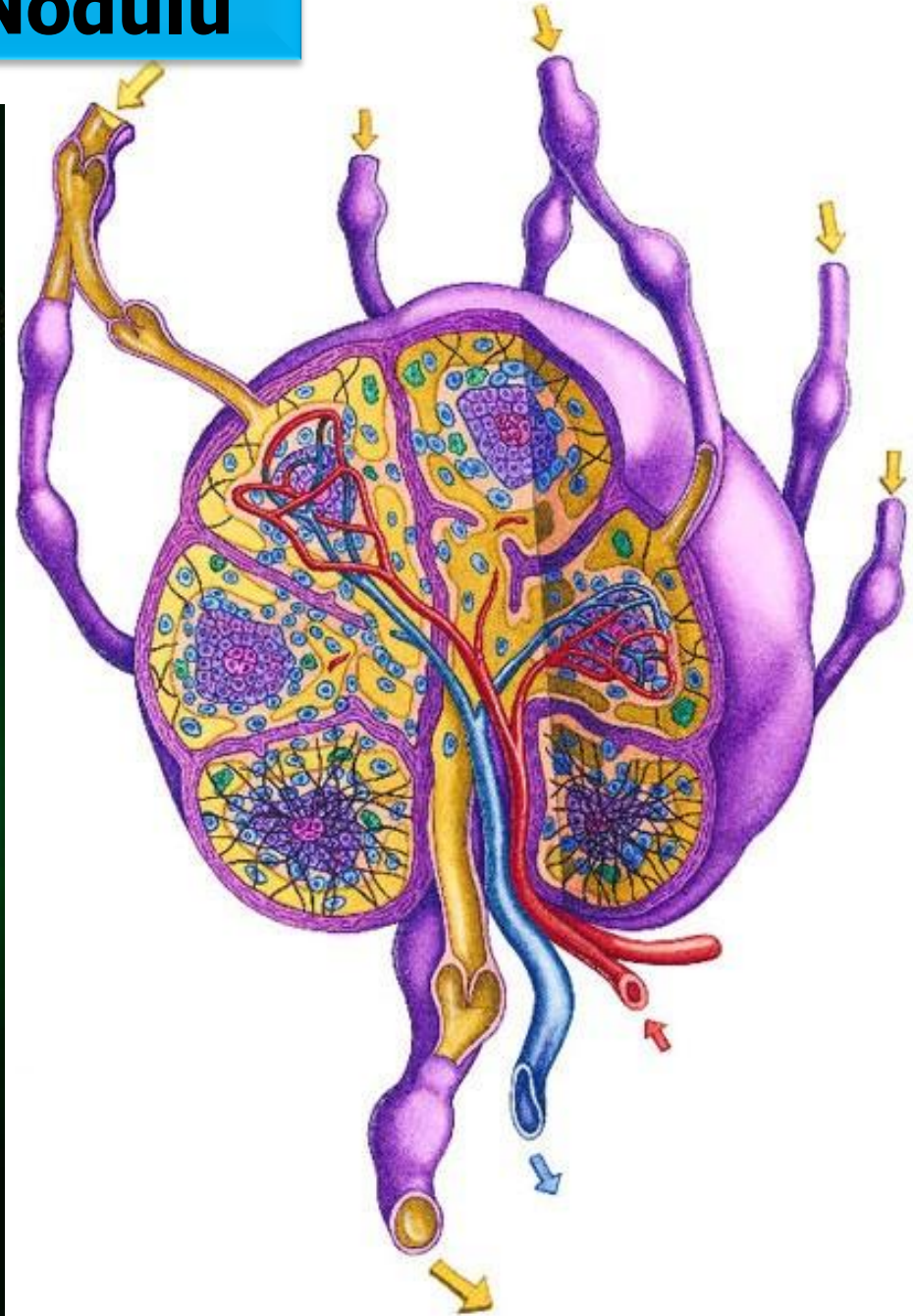


Lenf Nodülü

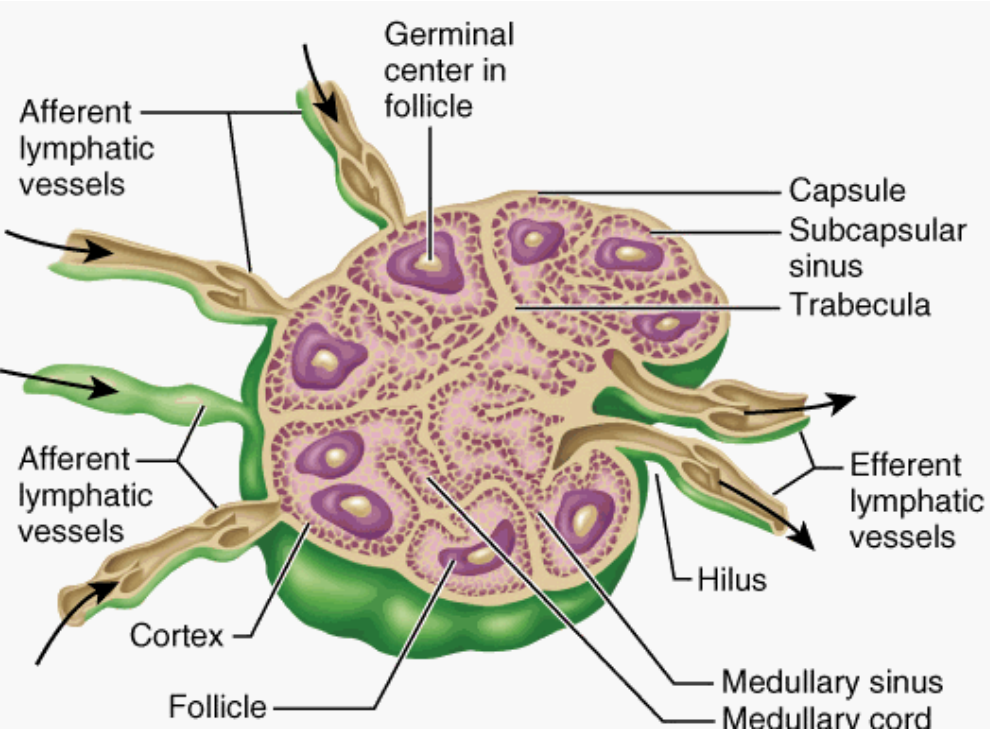
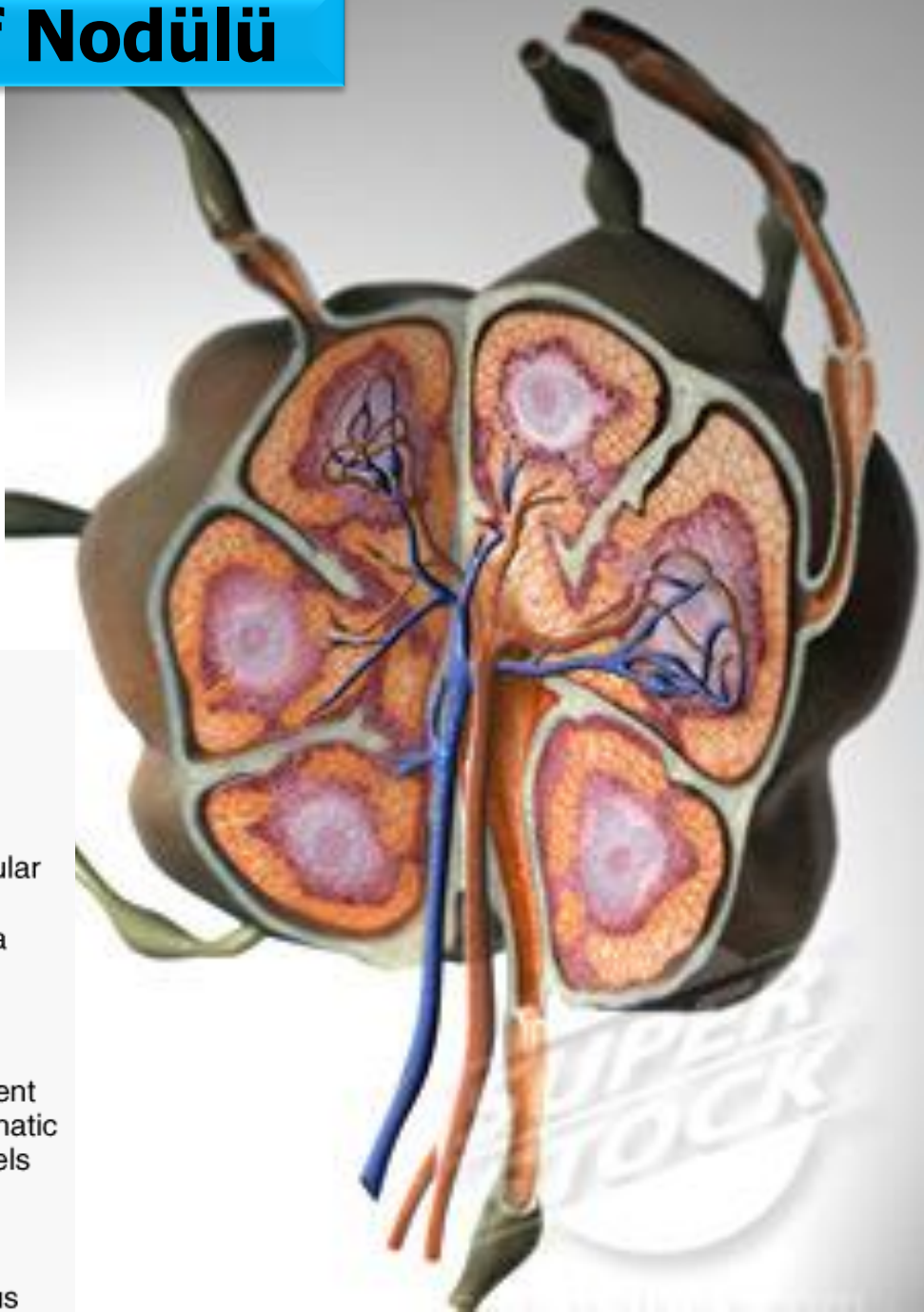


*antijenik uyarım yok/zayıf

Lenf Nodülü



Lenf Nodülü



Lenf Nodülü



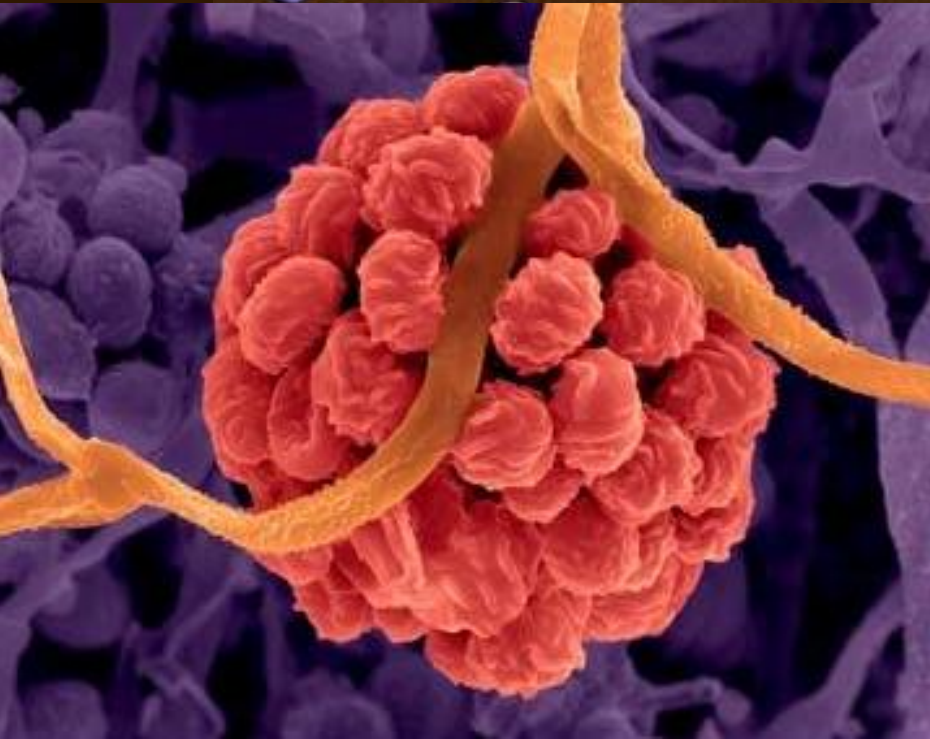
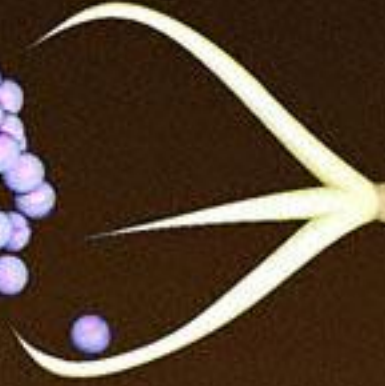
SCIENCEPHOTO LIBRARY

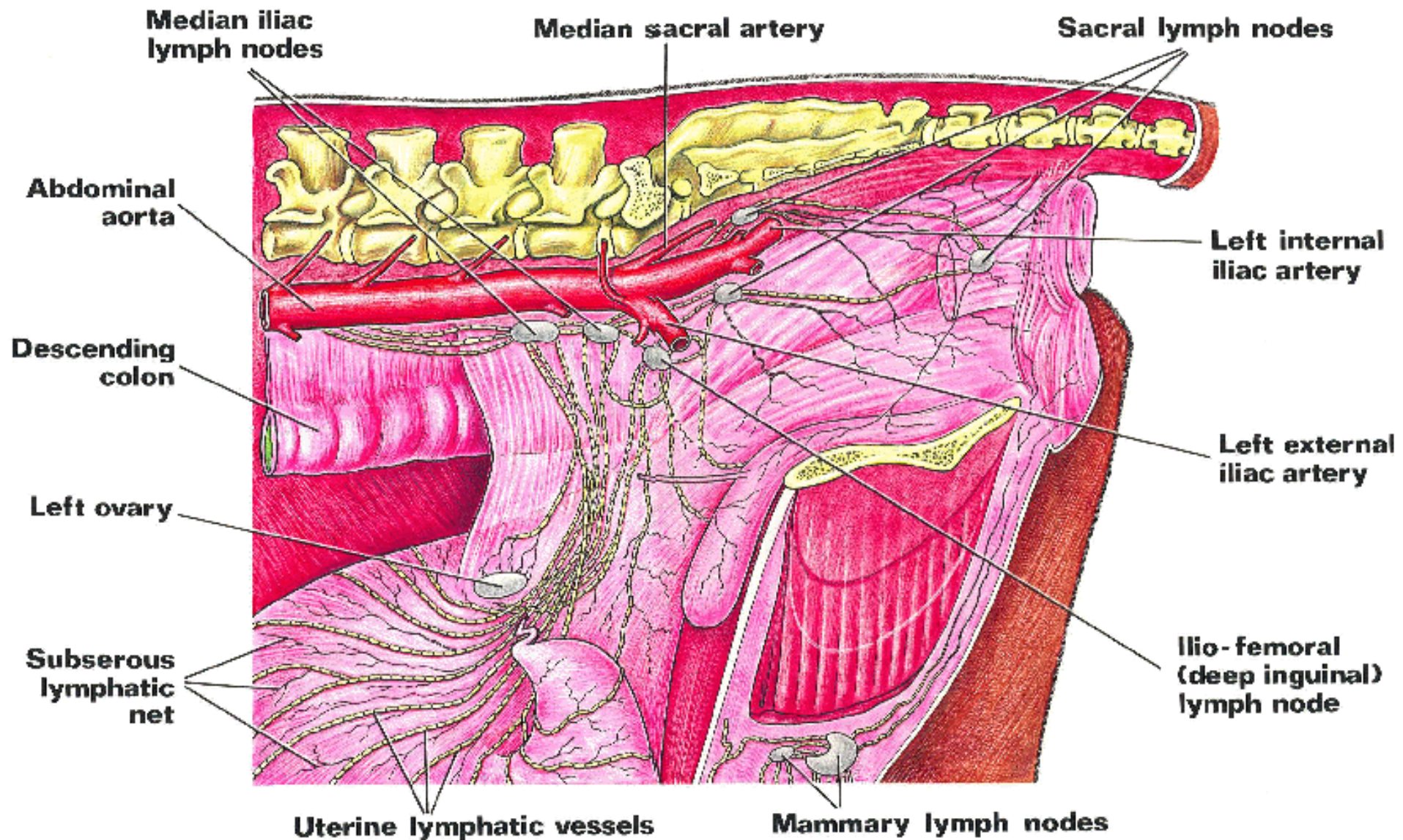
*retiküler yapı

Lenf Nodülü



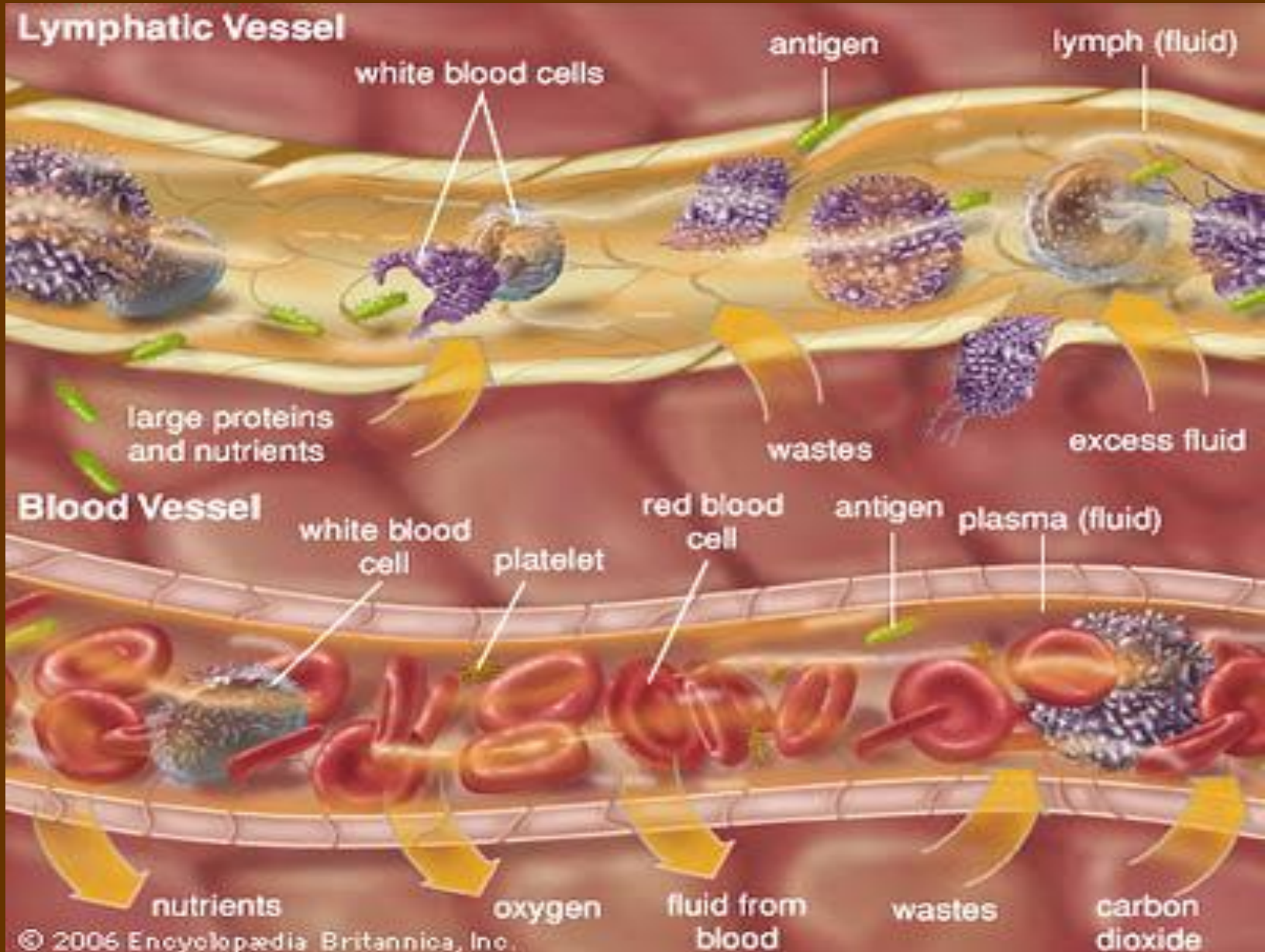
Lenf Dolaşımı



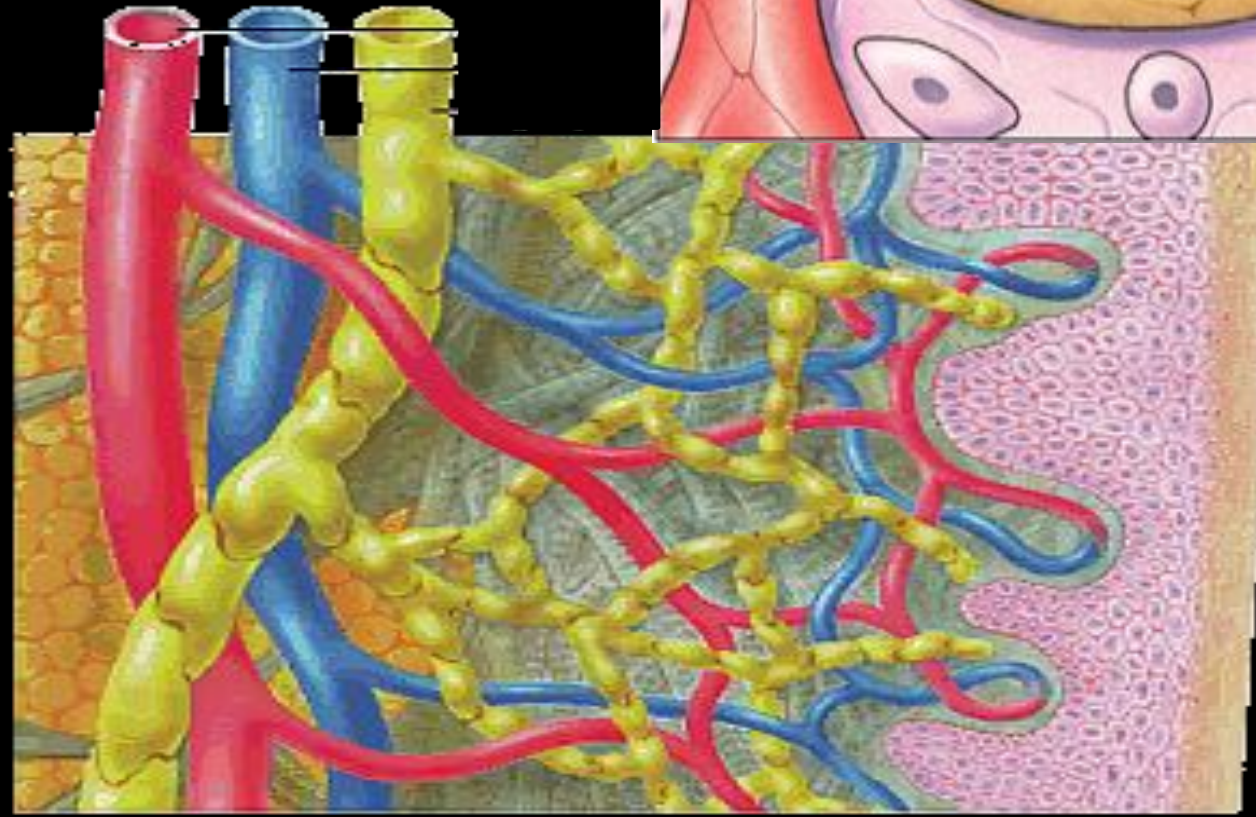
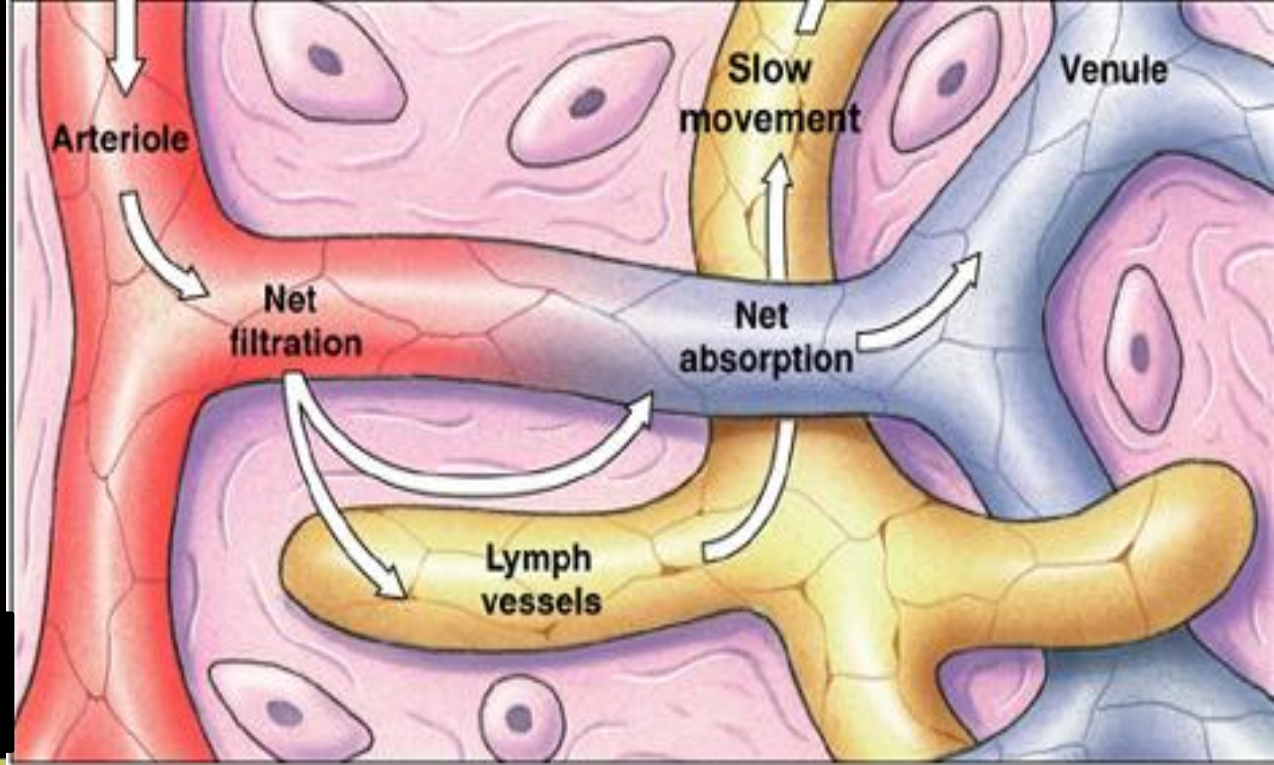


Örnek: sığır uterusunun sol boynuzunun lenf drenajı

Lenf Dolaşımı



Lenf Dolaşımı

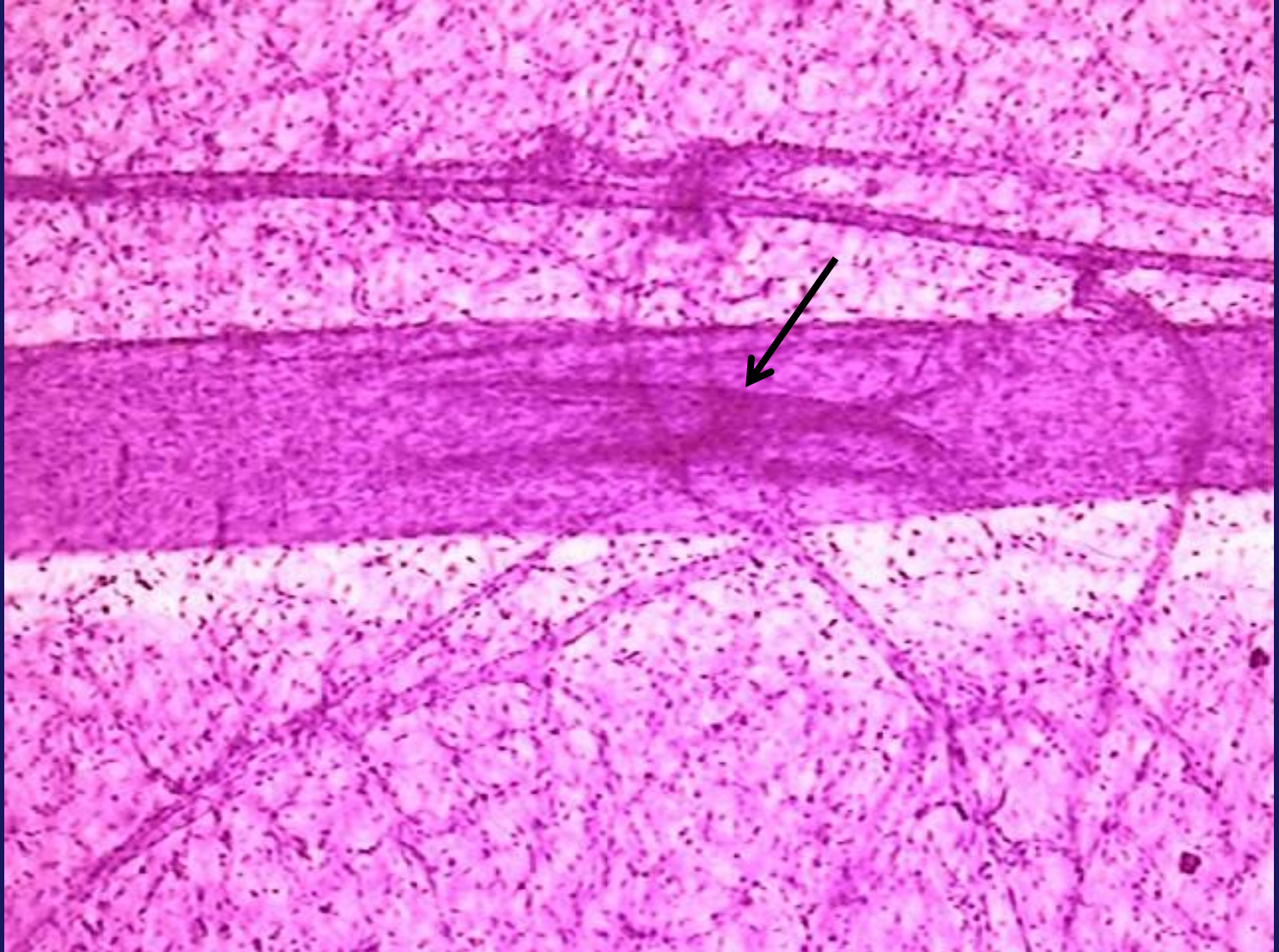


Lenf Damarları



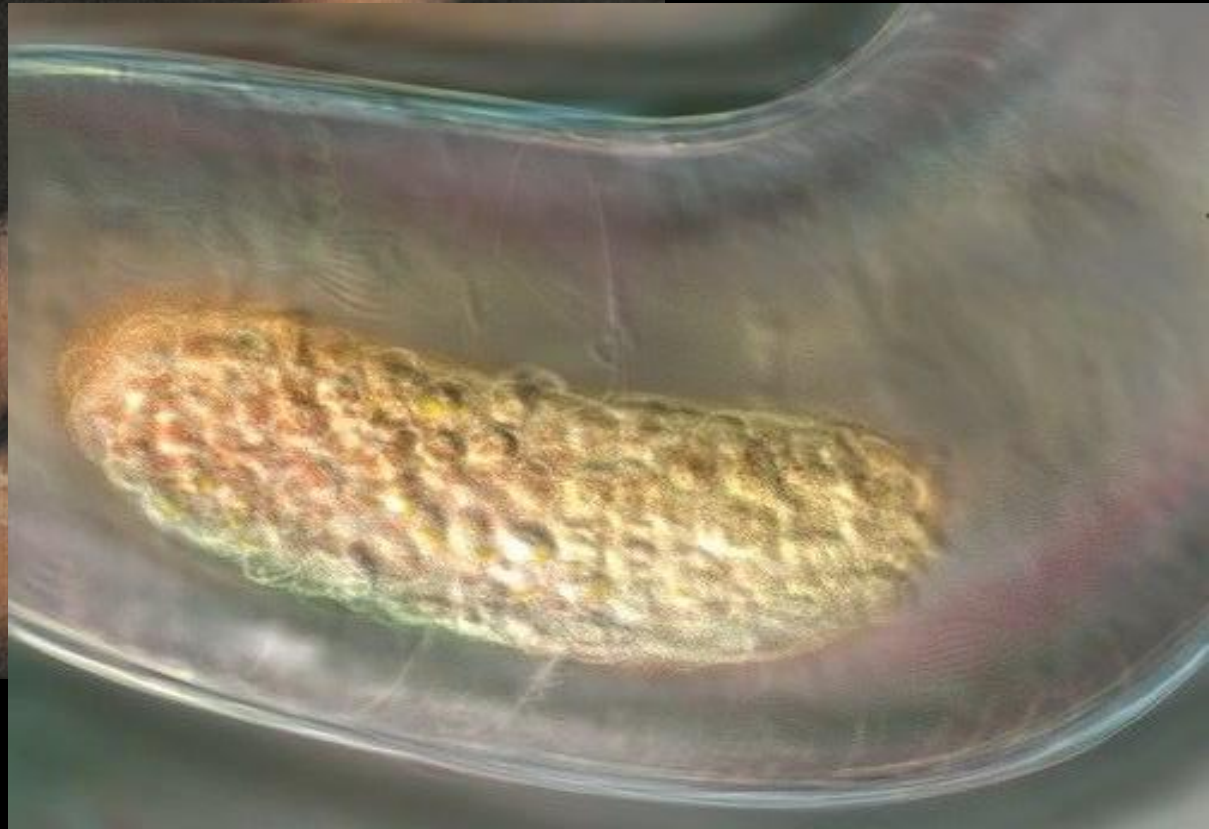
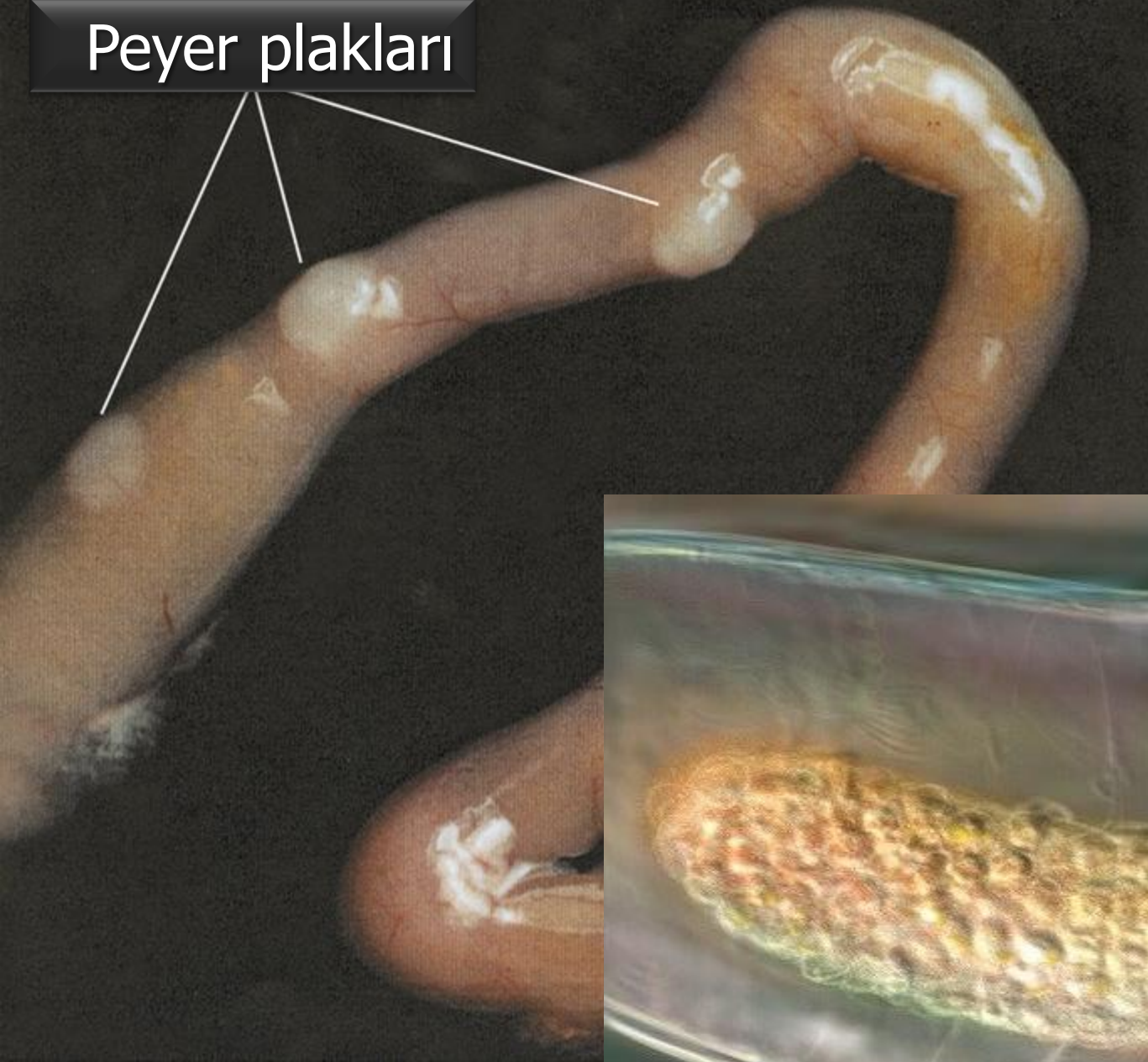
SCIENCEPHOTOLIBRARY

Lenf Damarı



*lenf damarında kapakçık

Peyer plakları



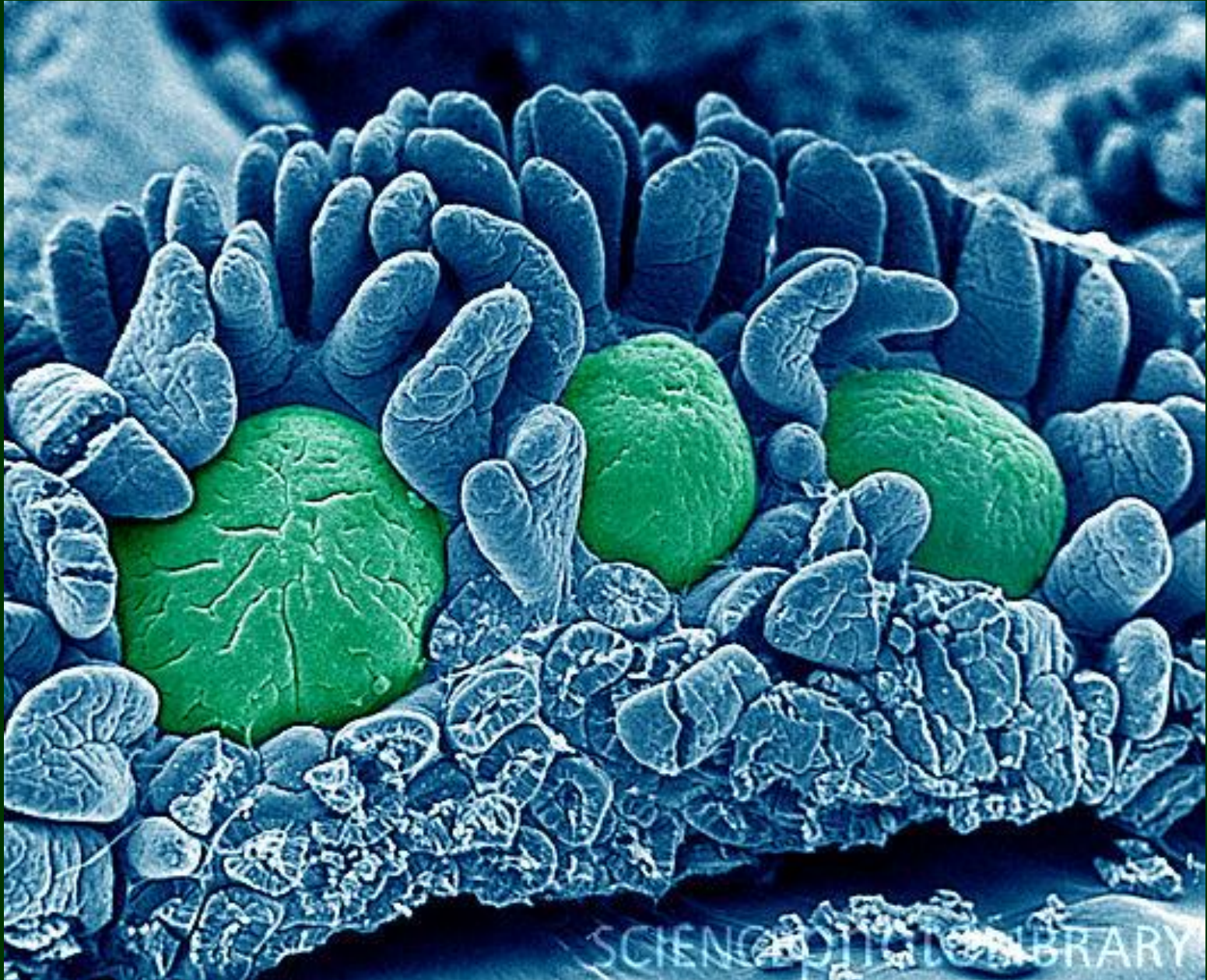
Peyer plakları

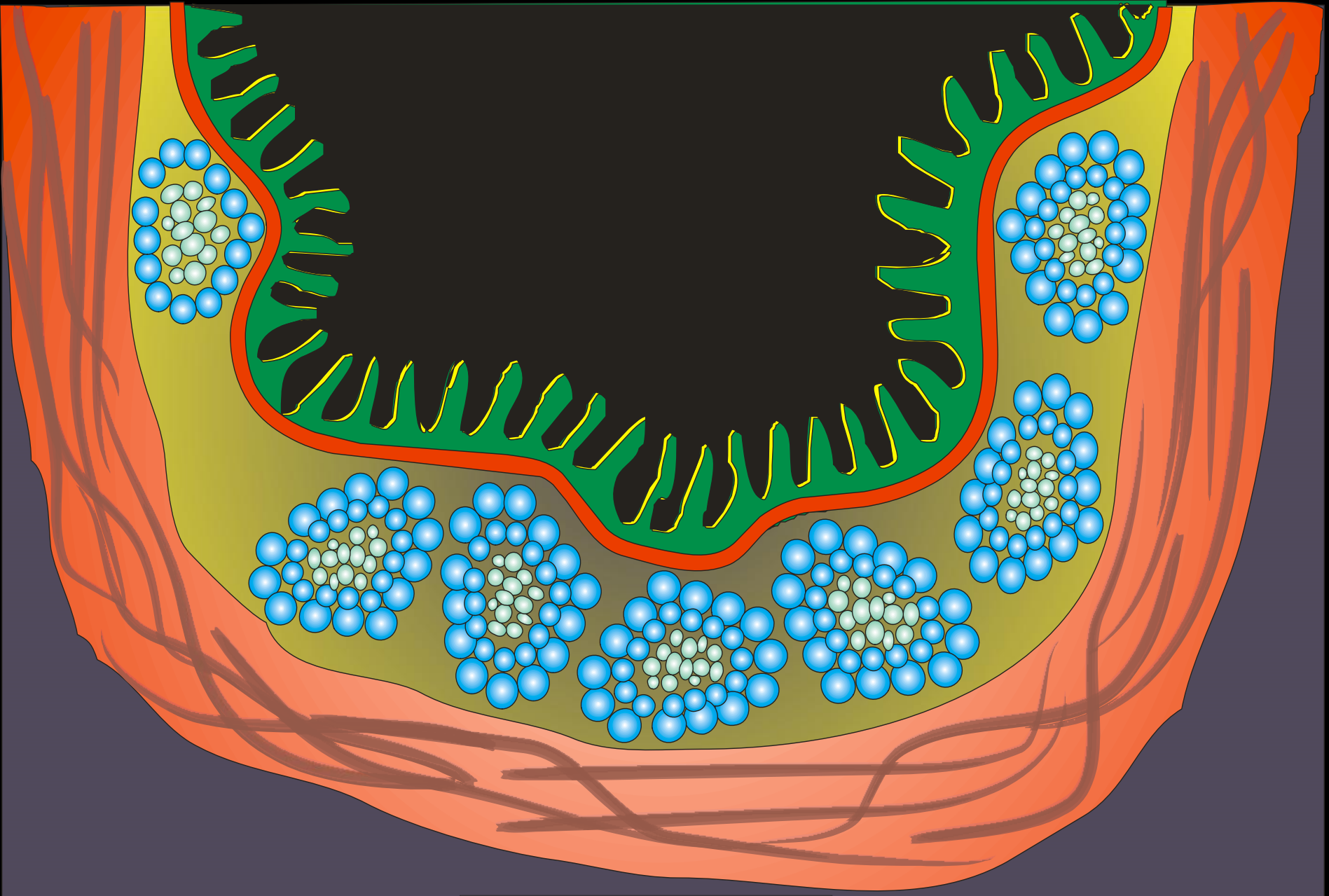
nekroz



hemoraji

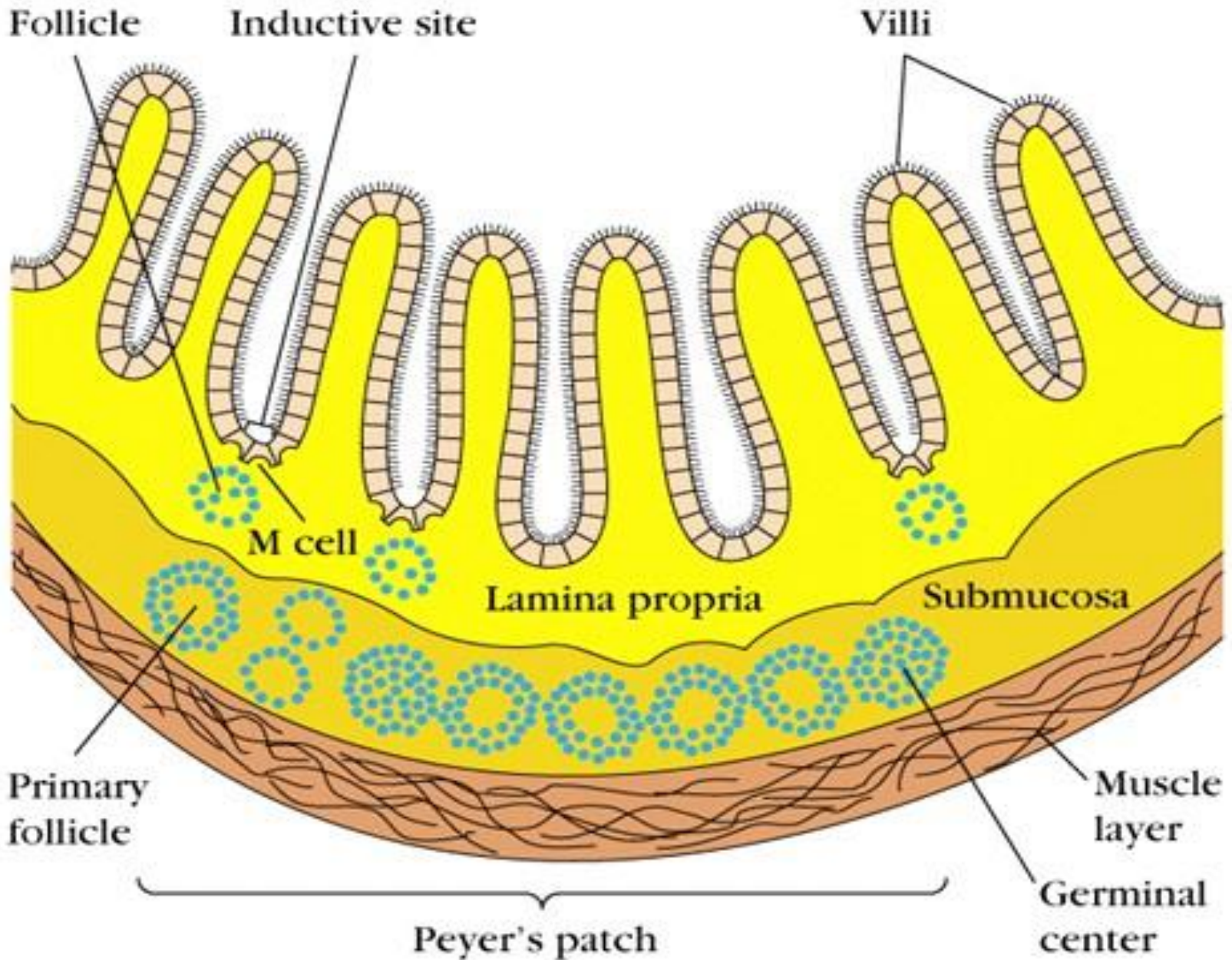
Peyer plakları



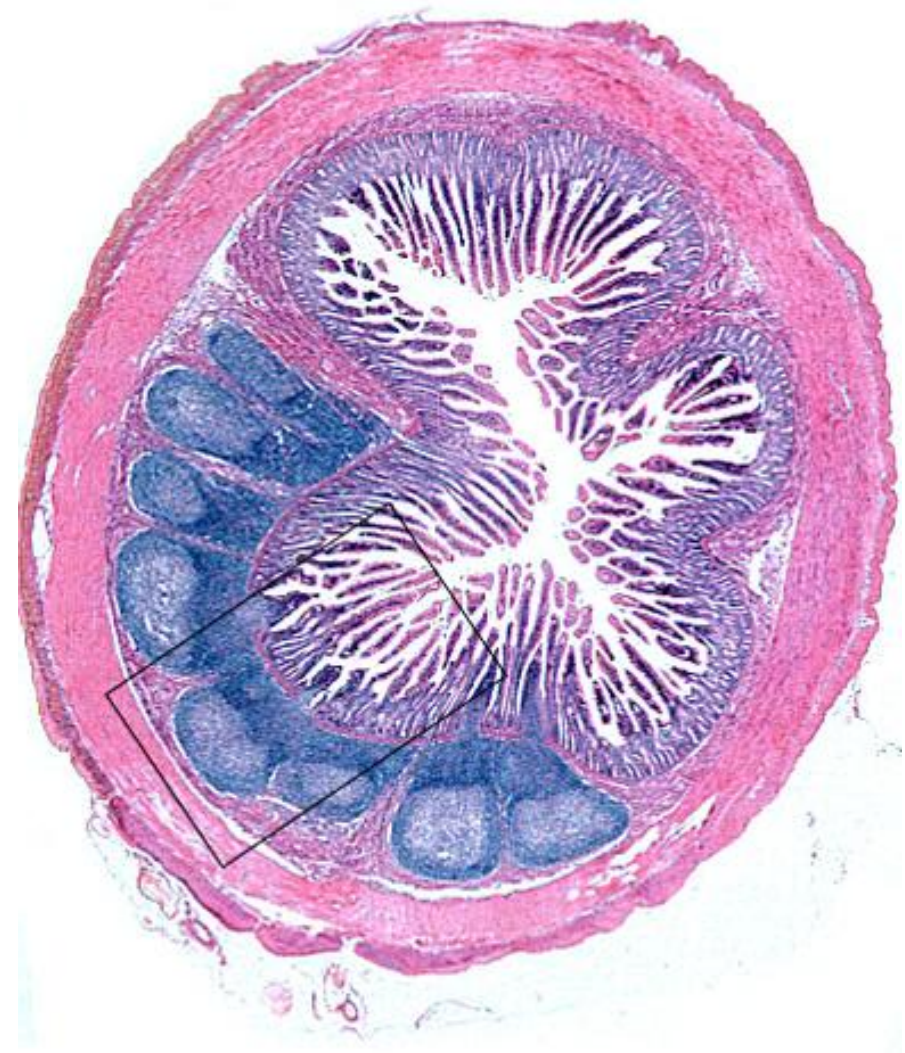
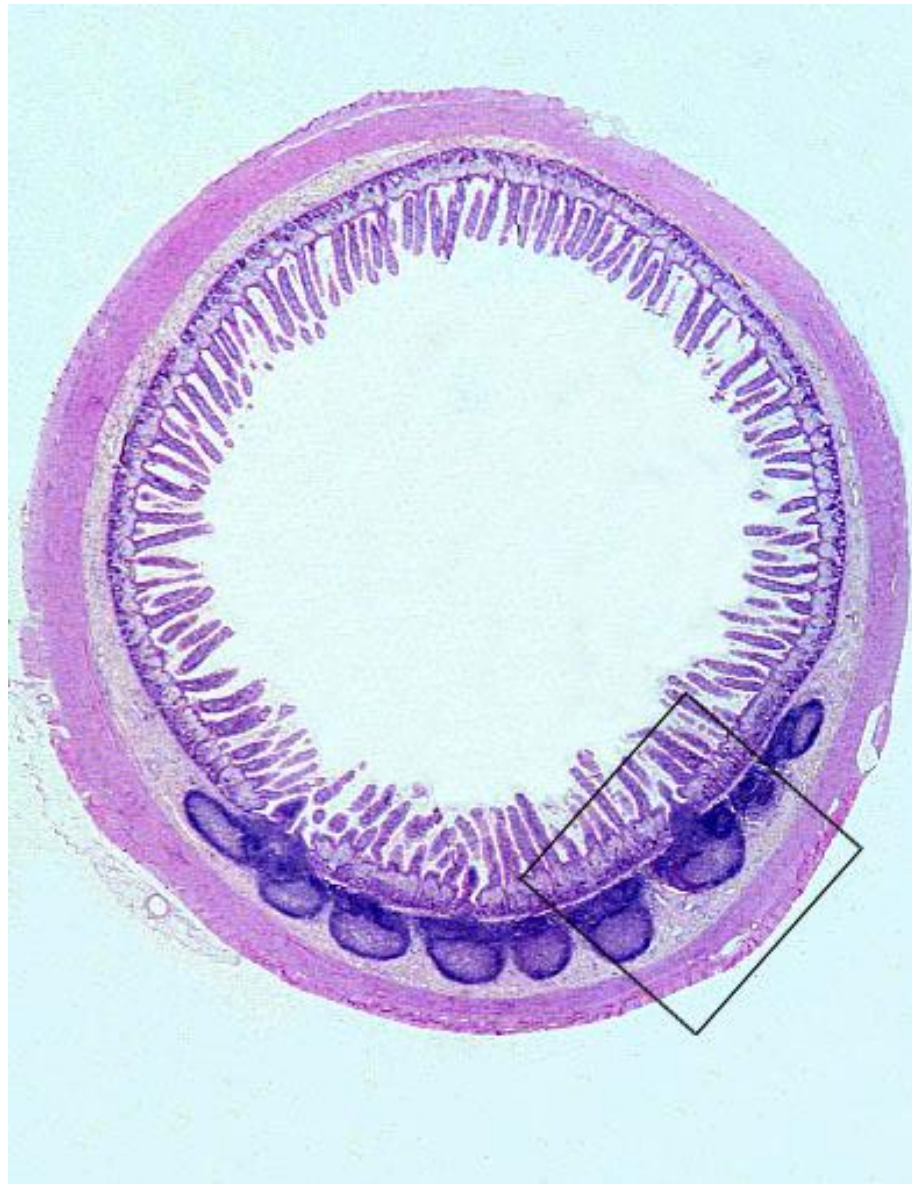


Peyer plakları

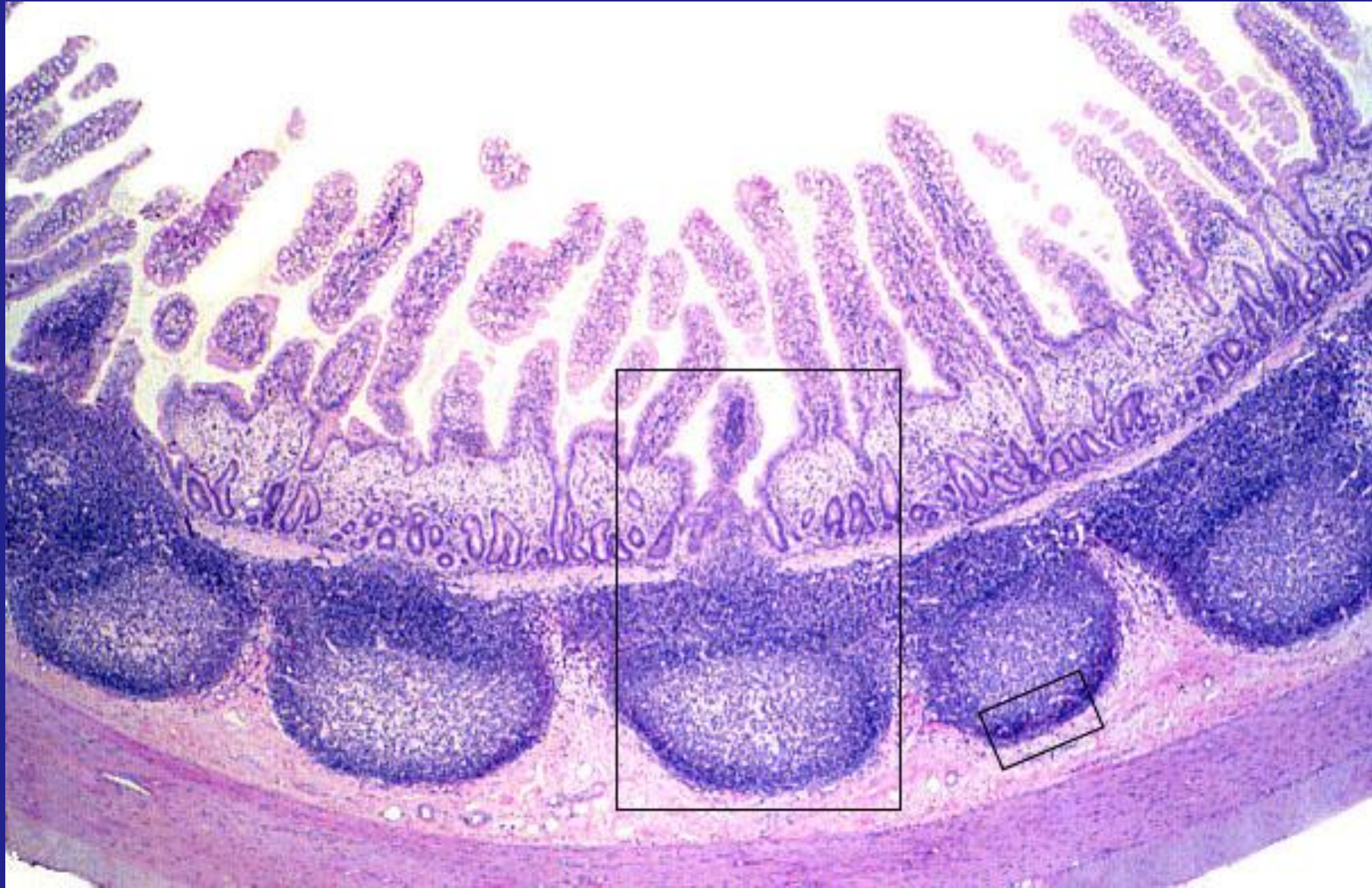
Peyer plakları



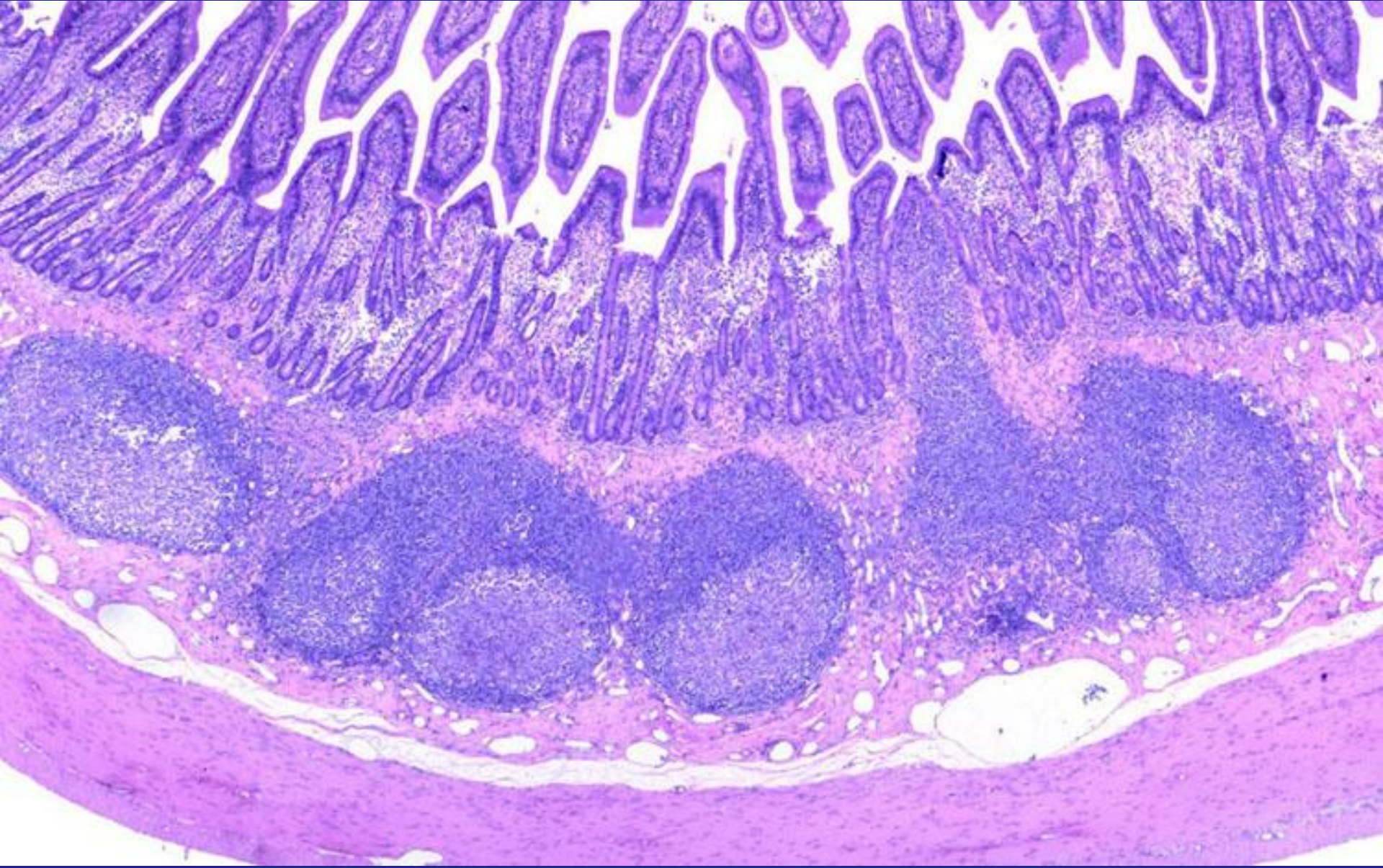
Peyer plakları



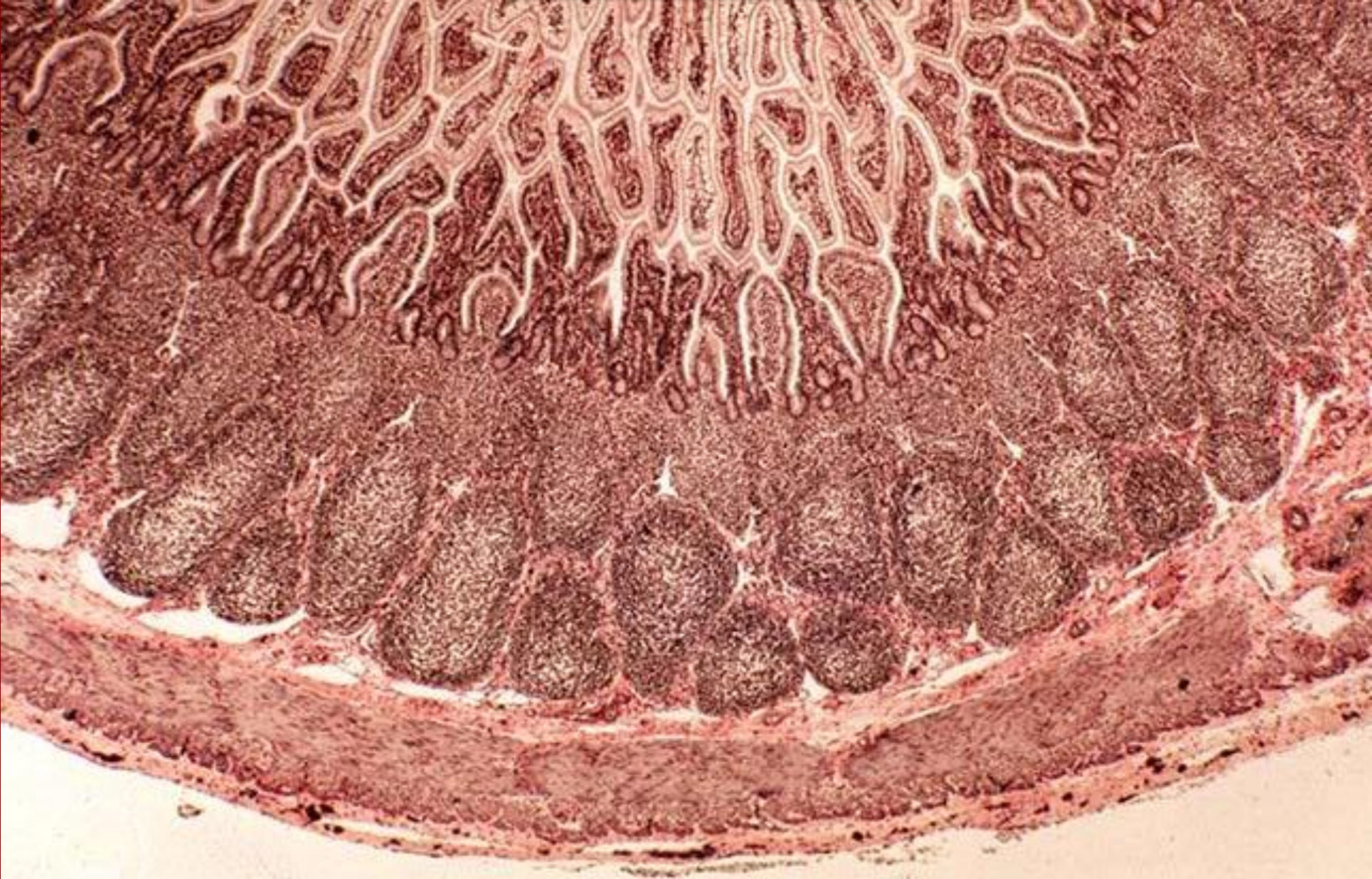
Peyer plakları



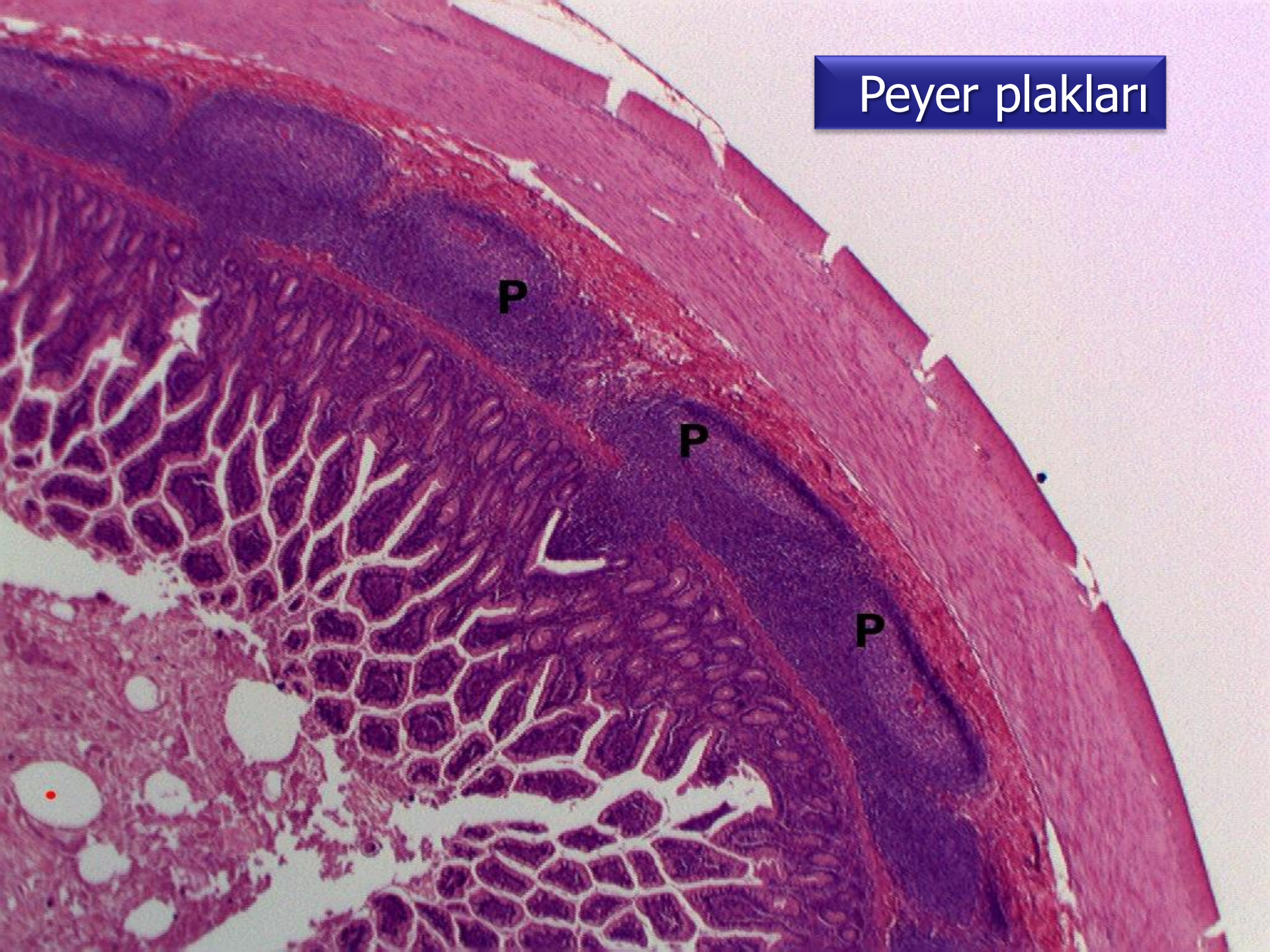
Peyer plakları



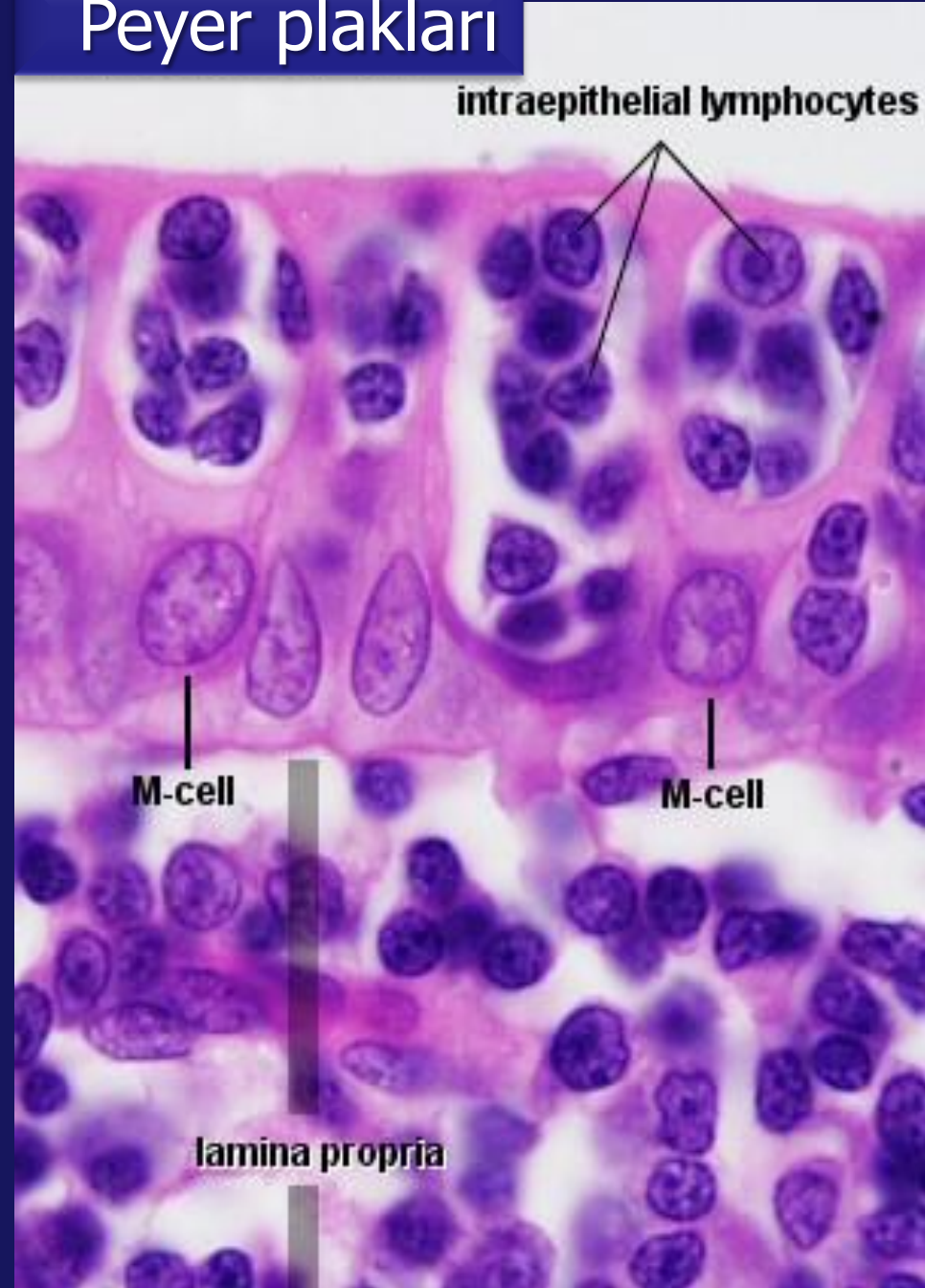
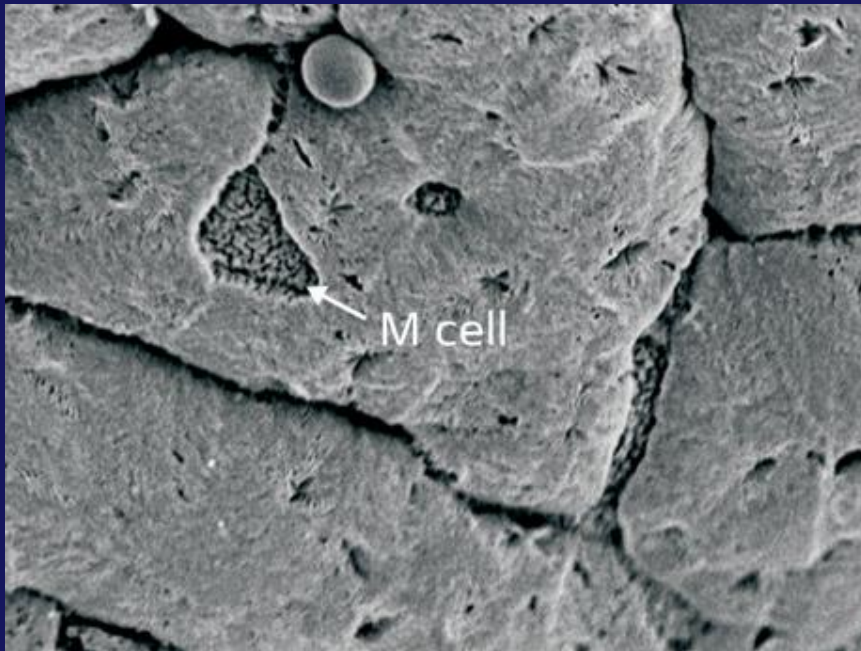
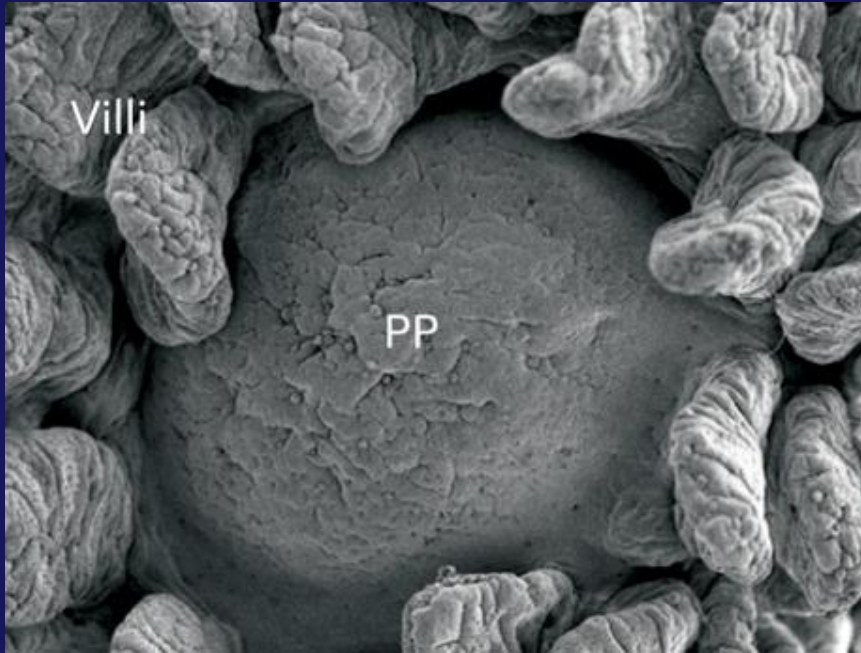
Peyer plakları



Peyer plakları



Peyer plakları



Tonsil

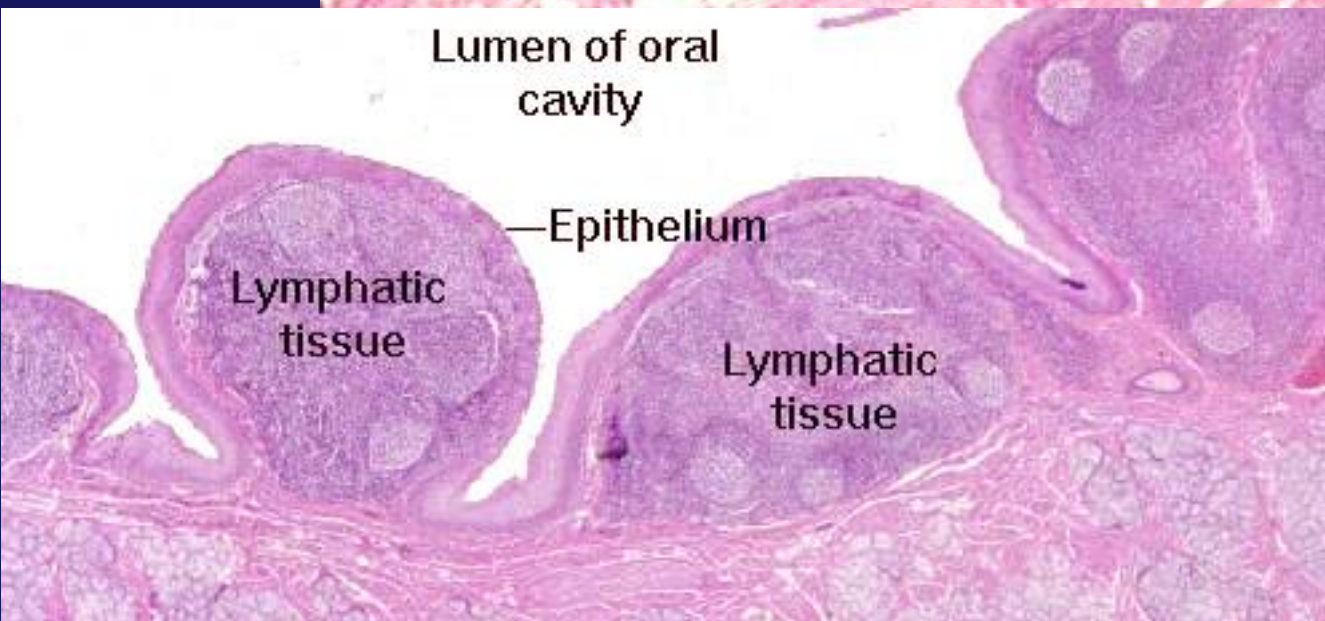
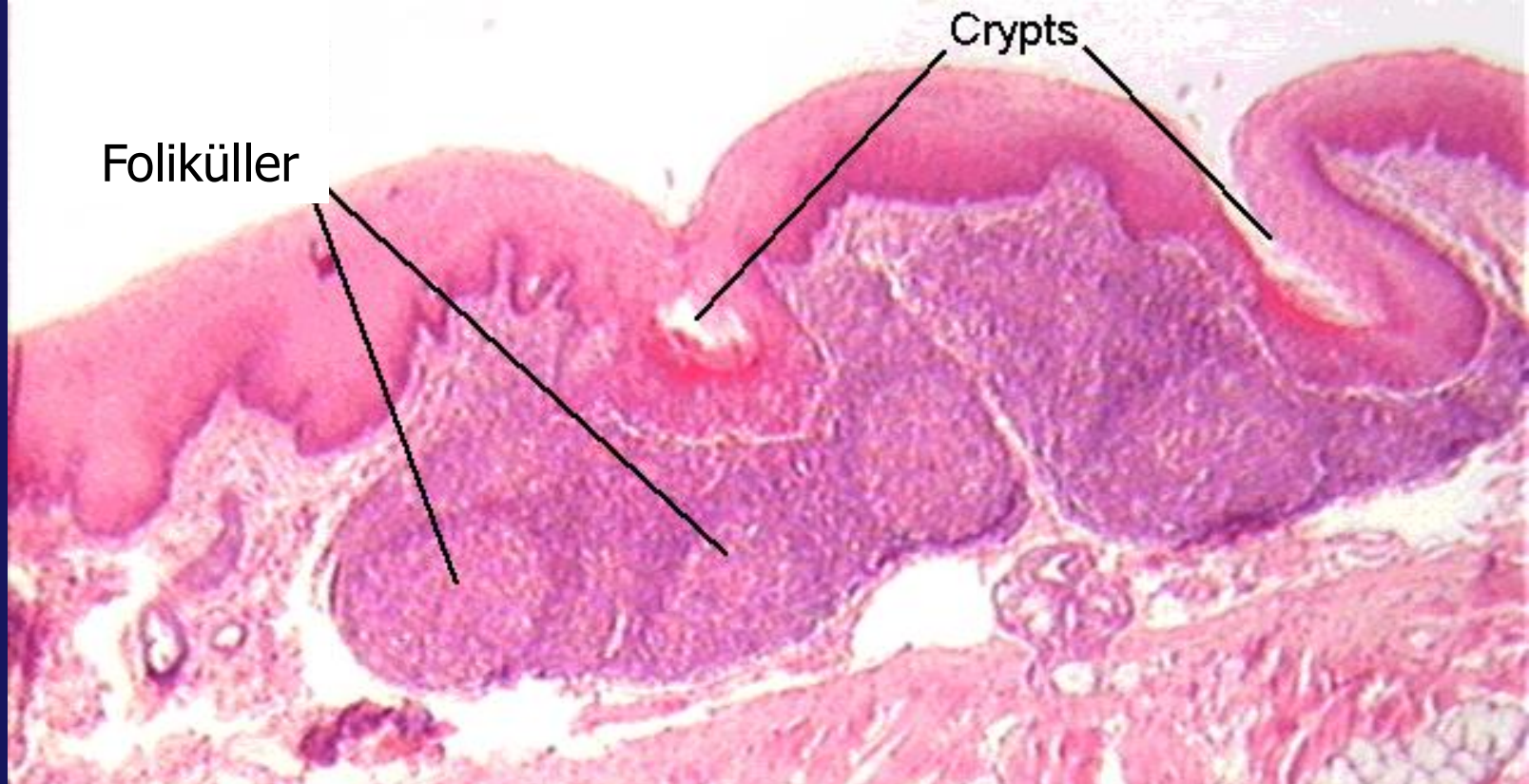


Bad breath due to **tonsillitis**
Get a smaller-sized endotracheal tube as
enlarged inflamed tonsils
intubation past epiglottis (Y) dif

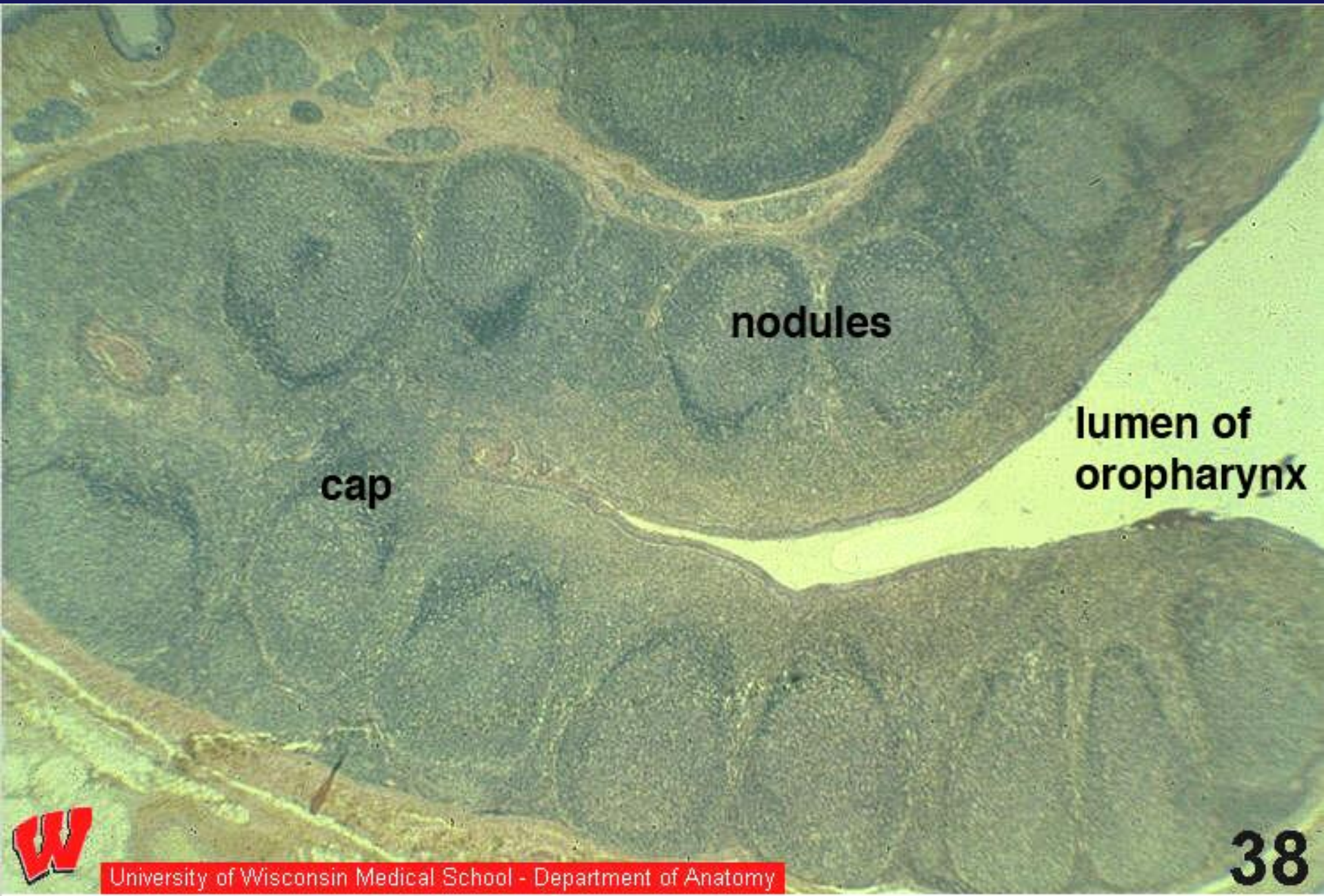
Tonsil



Tonsil



Tonsil

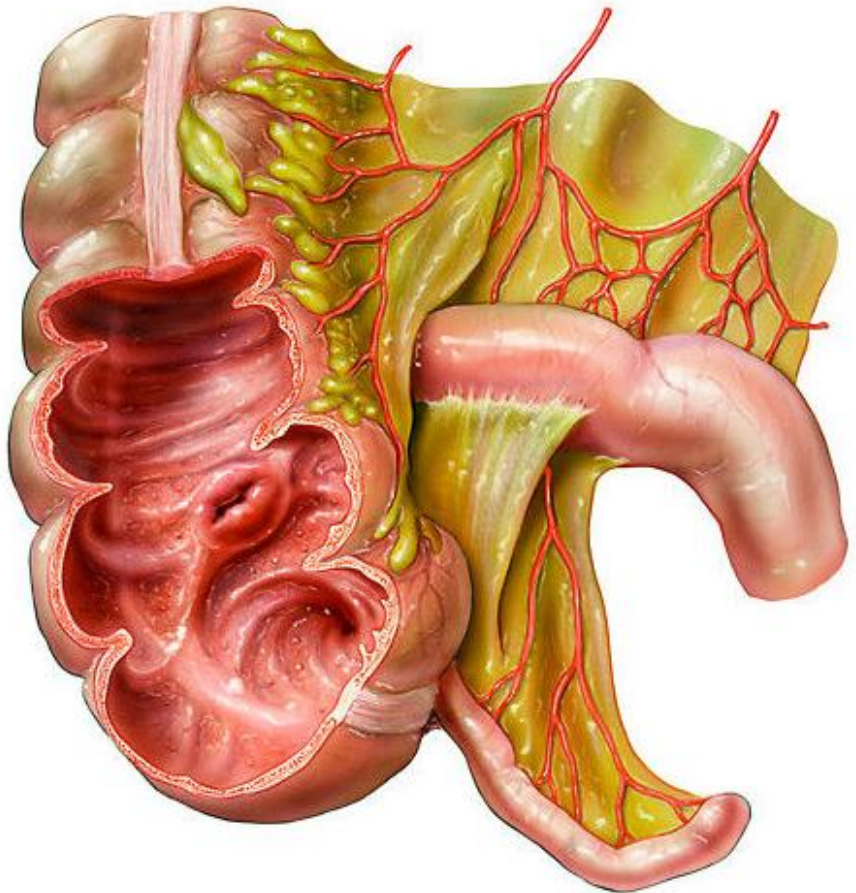


nodules

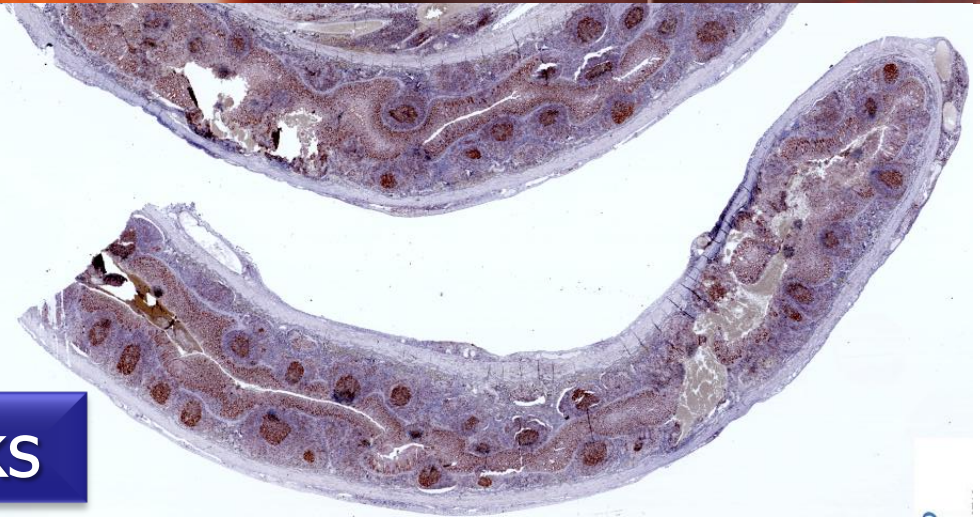
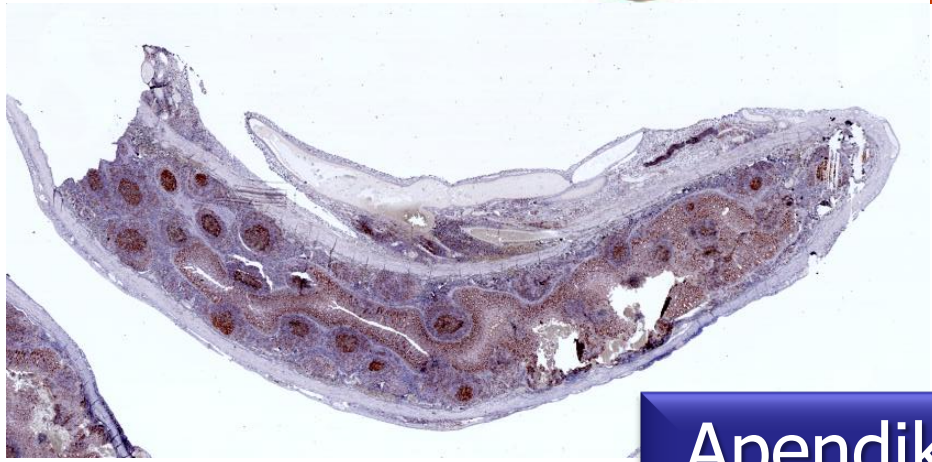
cap

lumen of
oropharynx





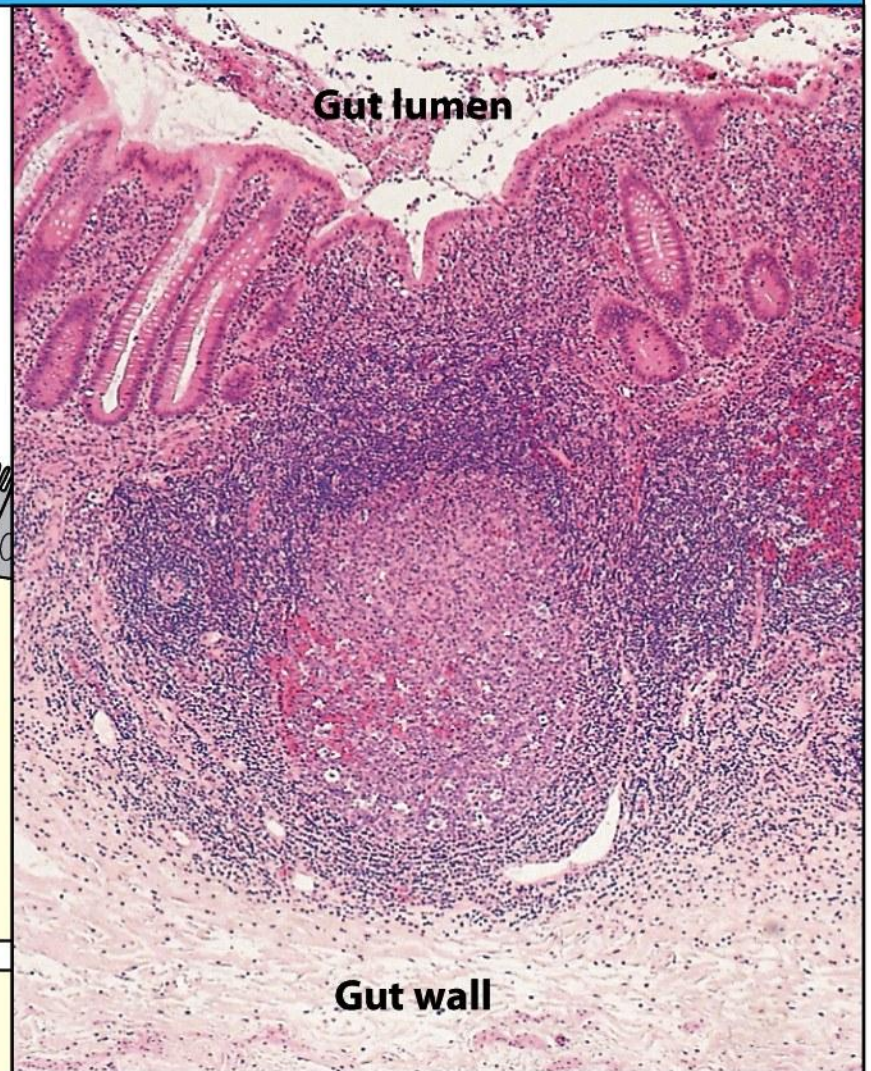
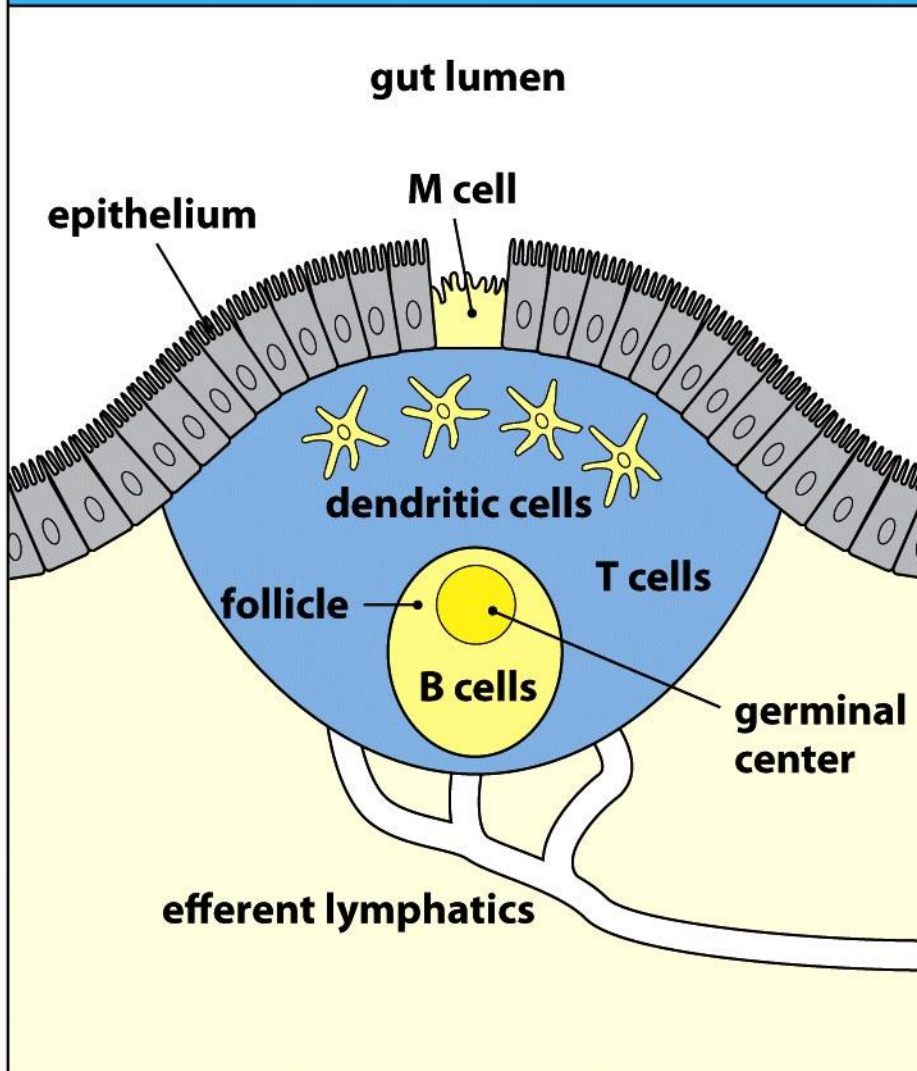
SCIENCEPHOTOLIBRARY



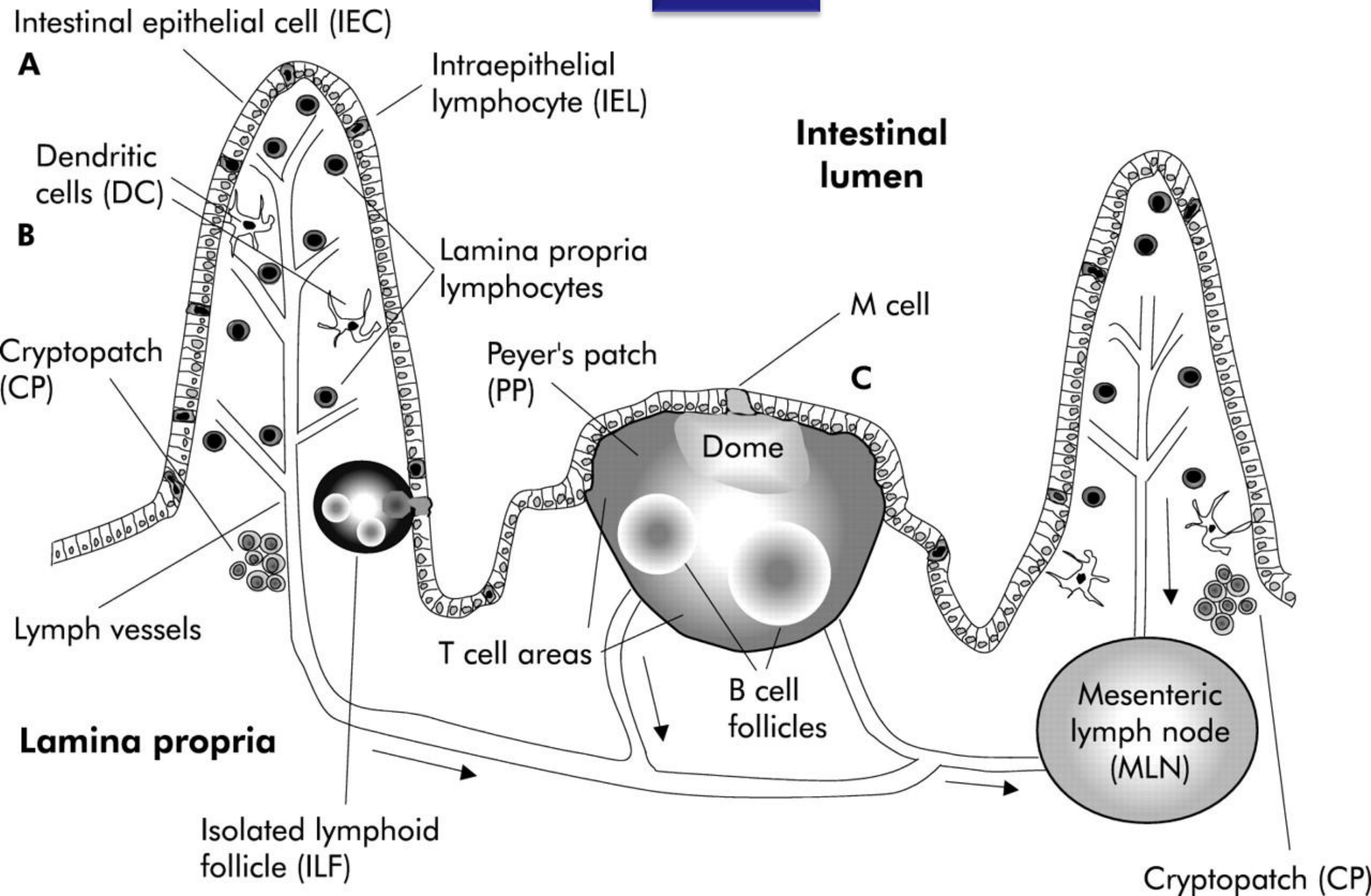
Apendiks

MALT - Mukoza Alakali Lenfoid Toku

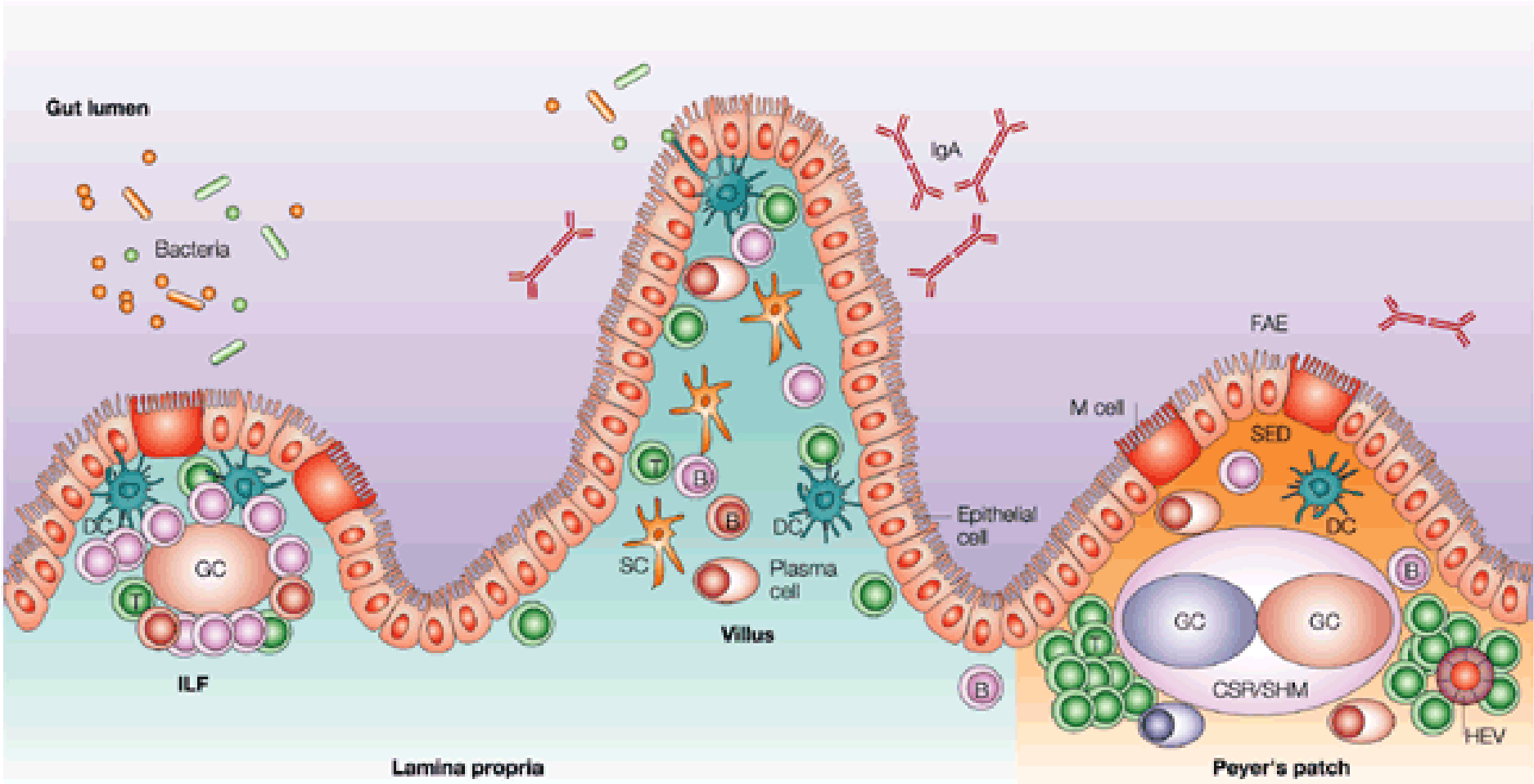
Gut-associated lymphoid tissue

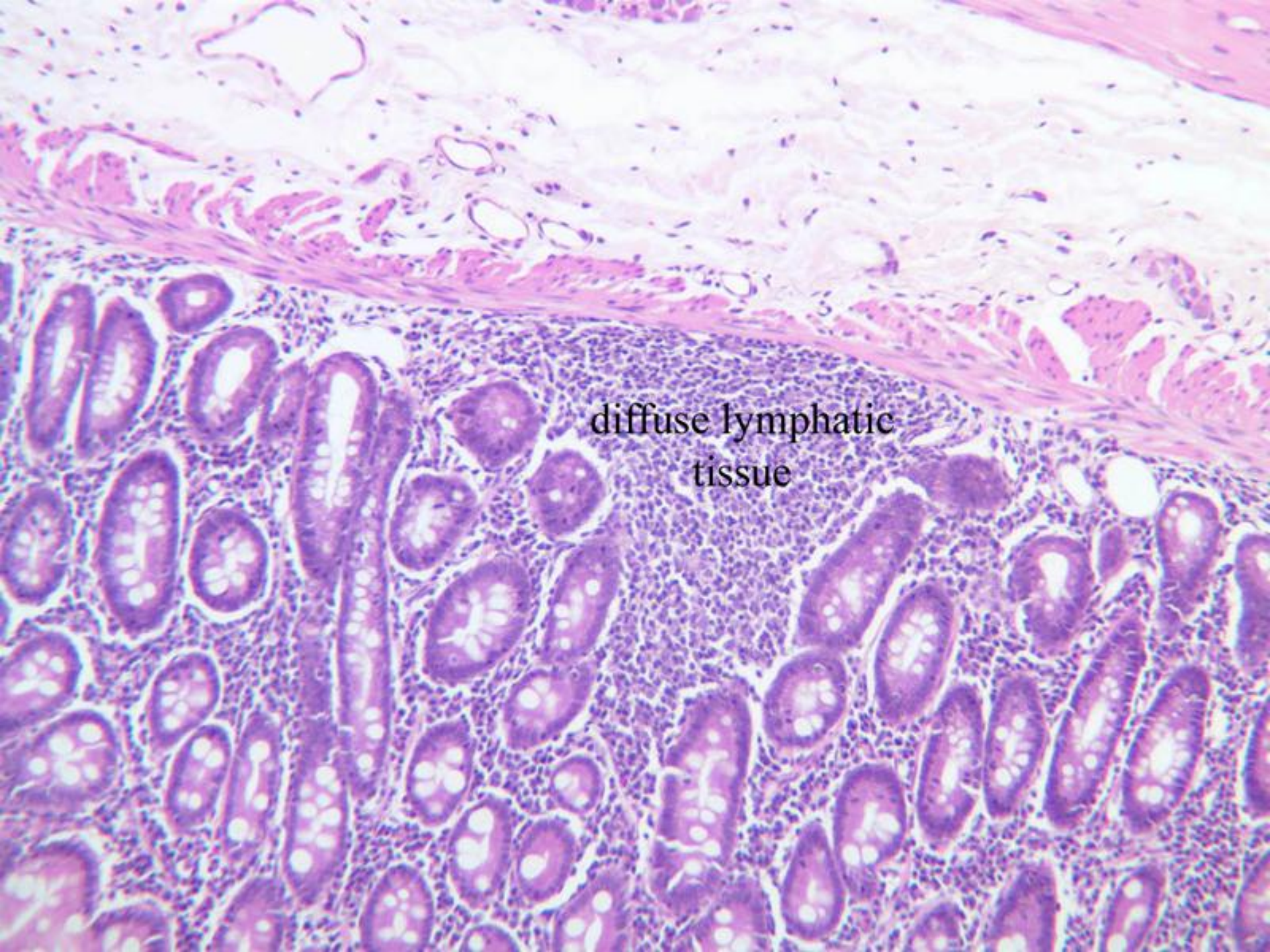


GALT

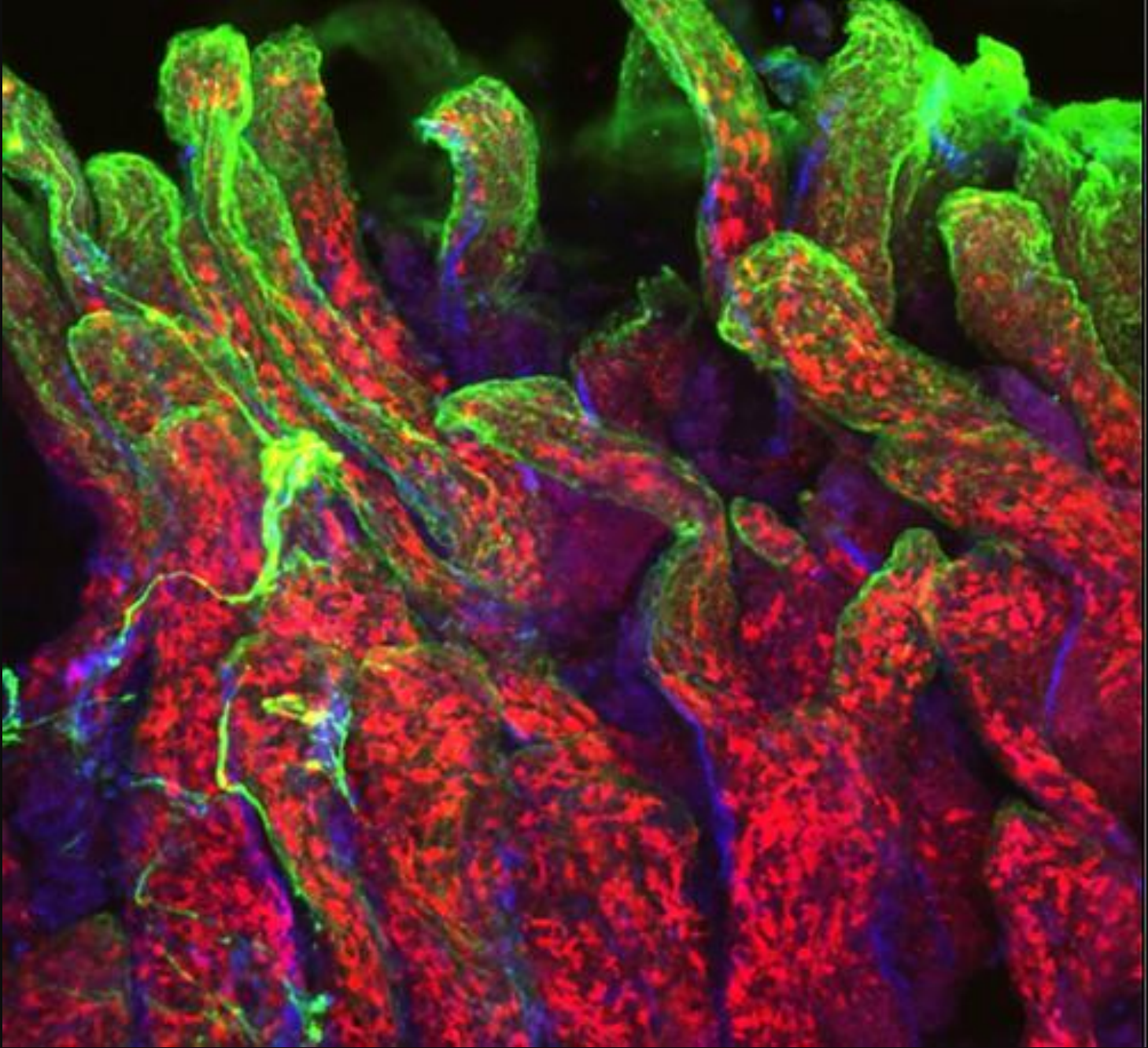


GALT





diffuse lymphatic
tissue

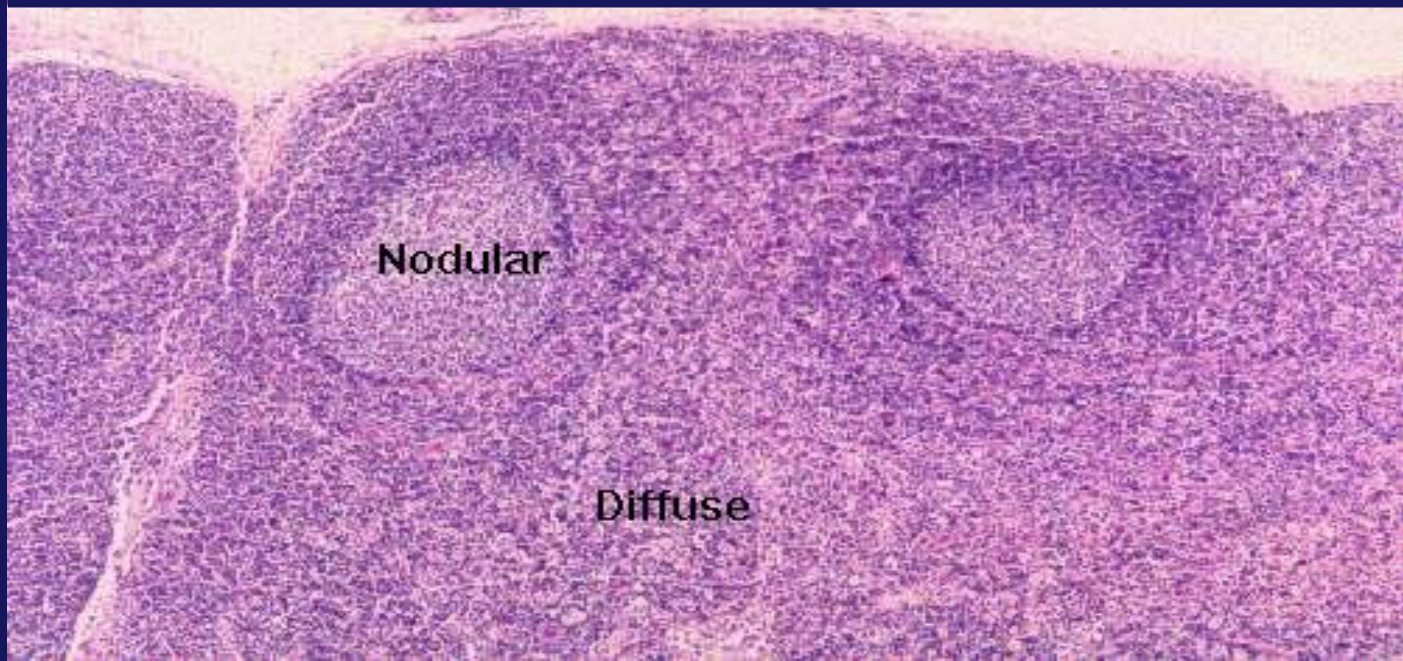


Villus lamina propriasında dendritik hücreler (kırmızı)

Oesophagus H&E



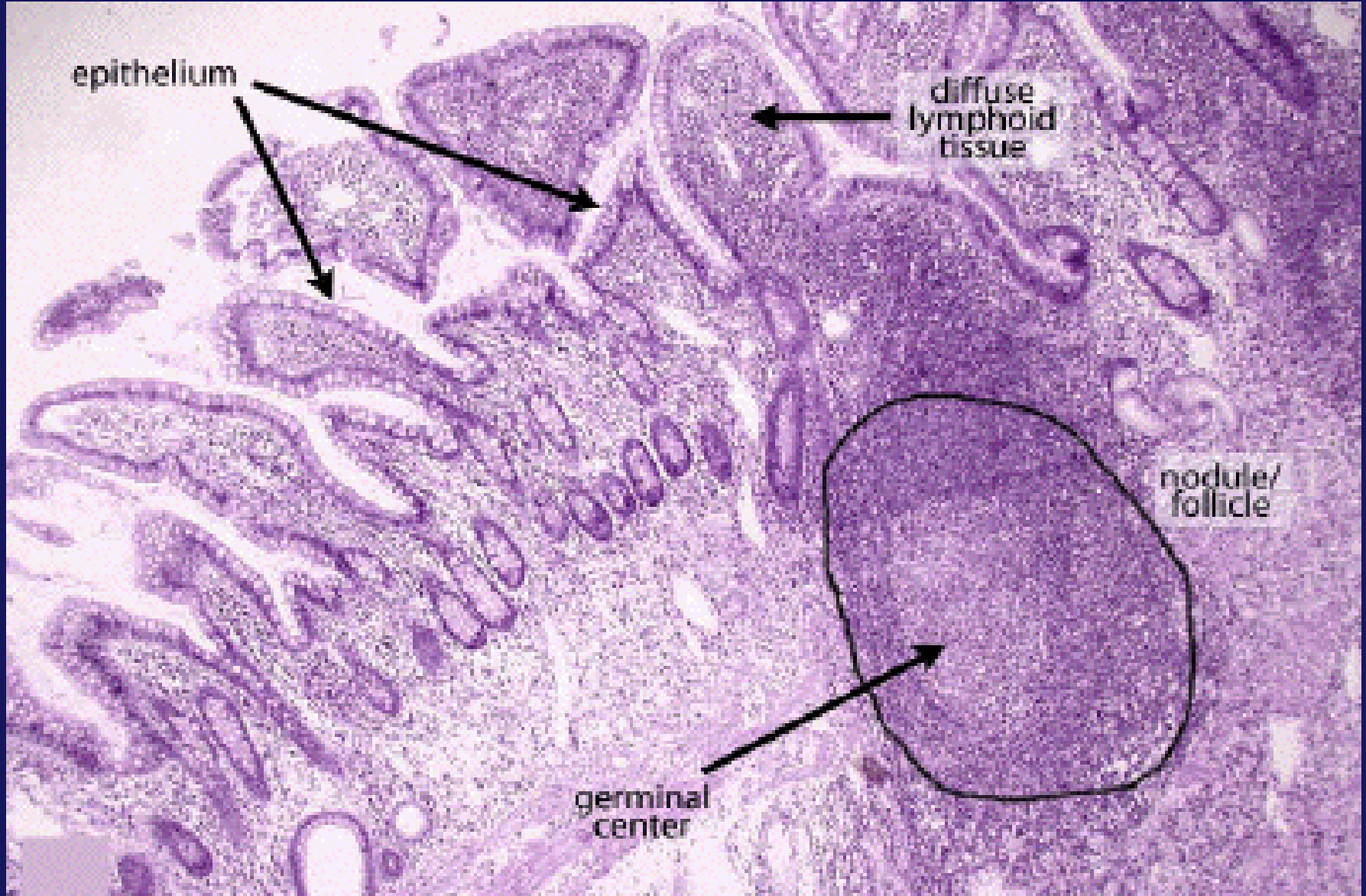
MALT



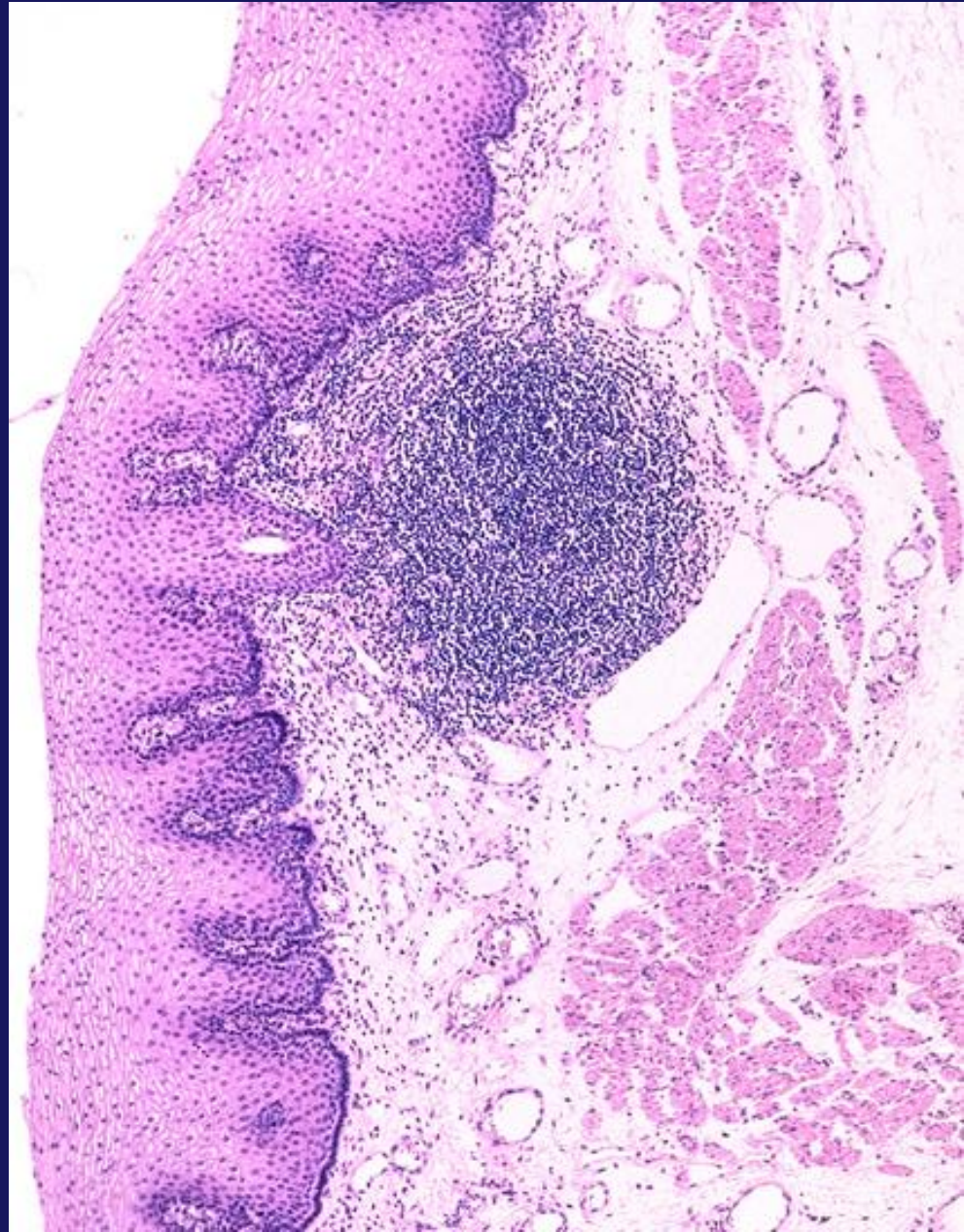
Nodular

Diffuse

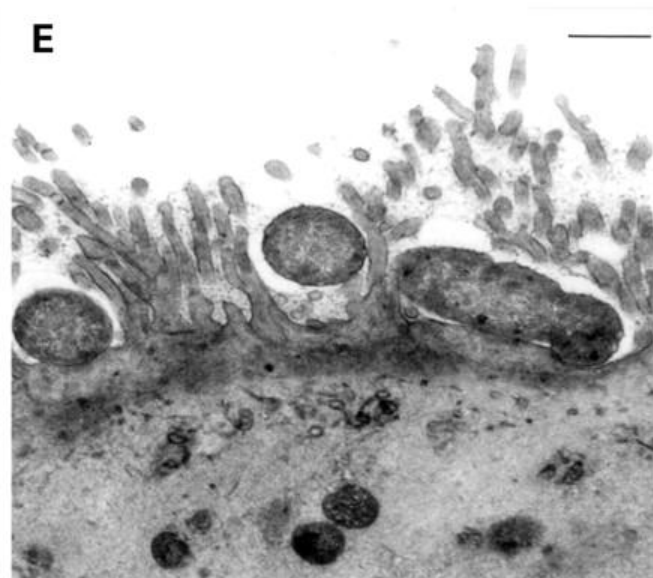
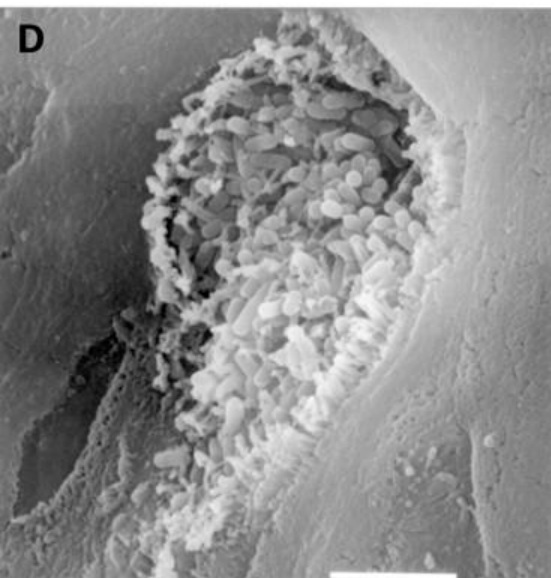
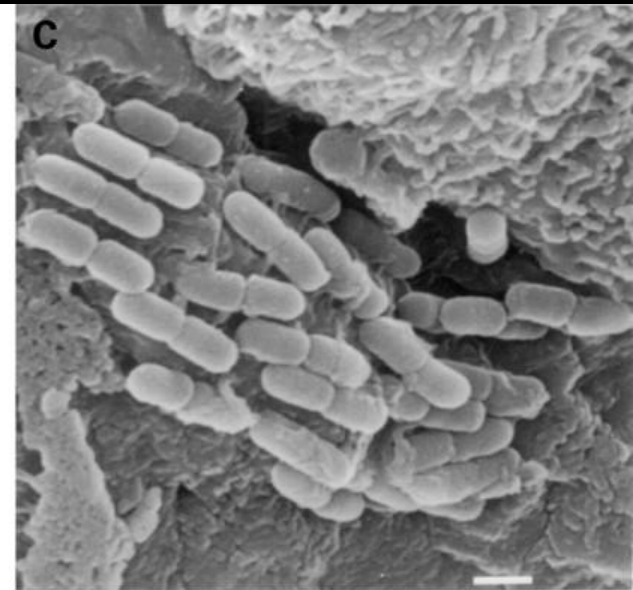
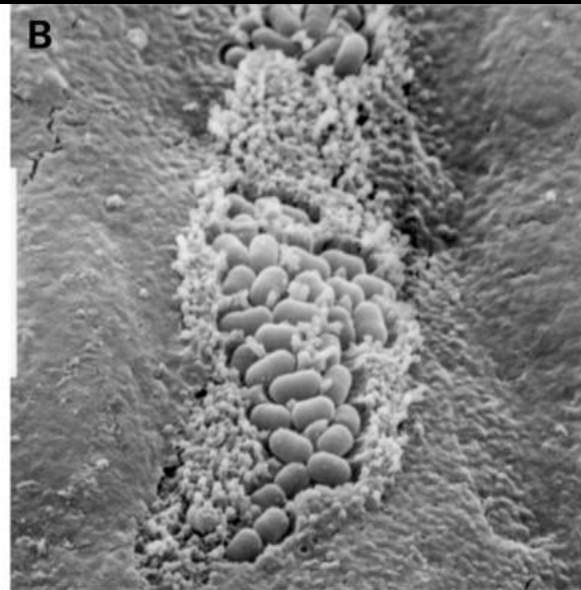
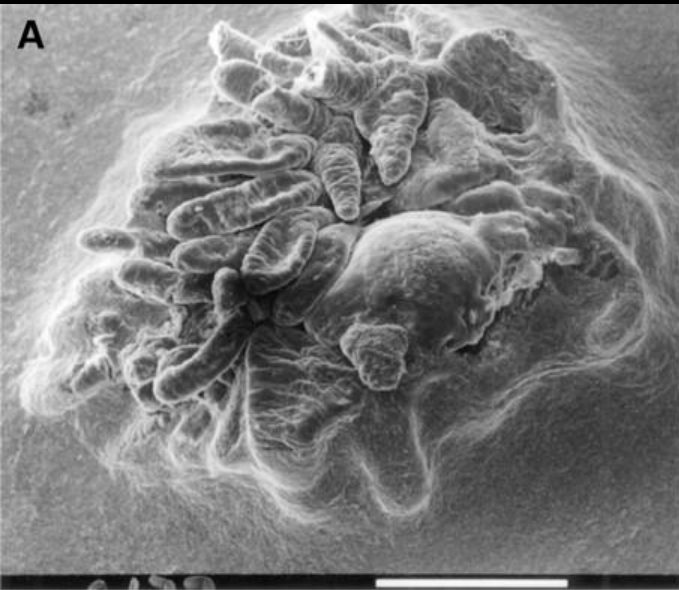
GALT



MALT



İnfeksiyonda mukozal lenfoid doku



Hemolenf nodülü (Hemal nodül)



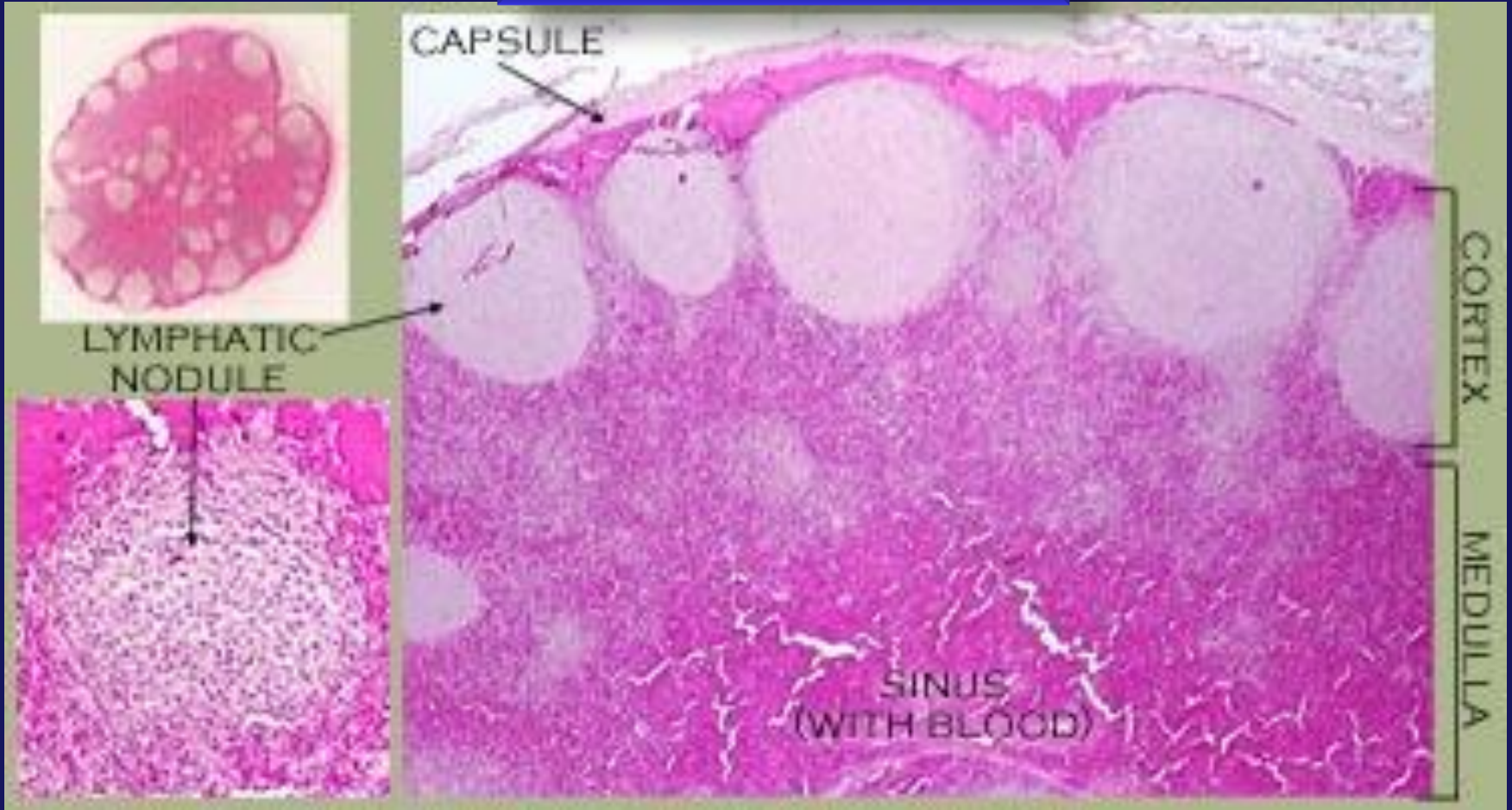
Karın boşluğunun dorsalinde yağ dokusu içinde hemal nodül

Hemolenf nodülü (Hemal nodül)



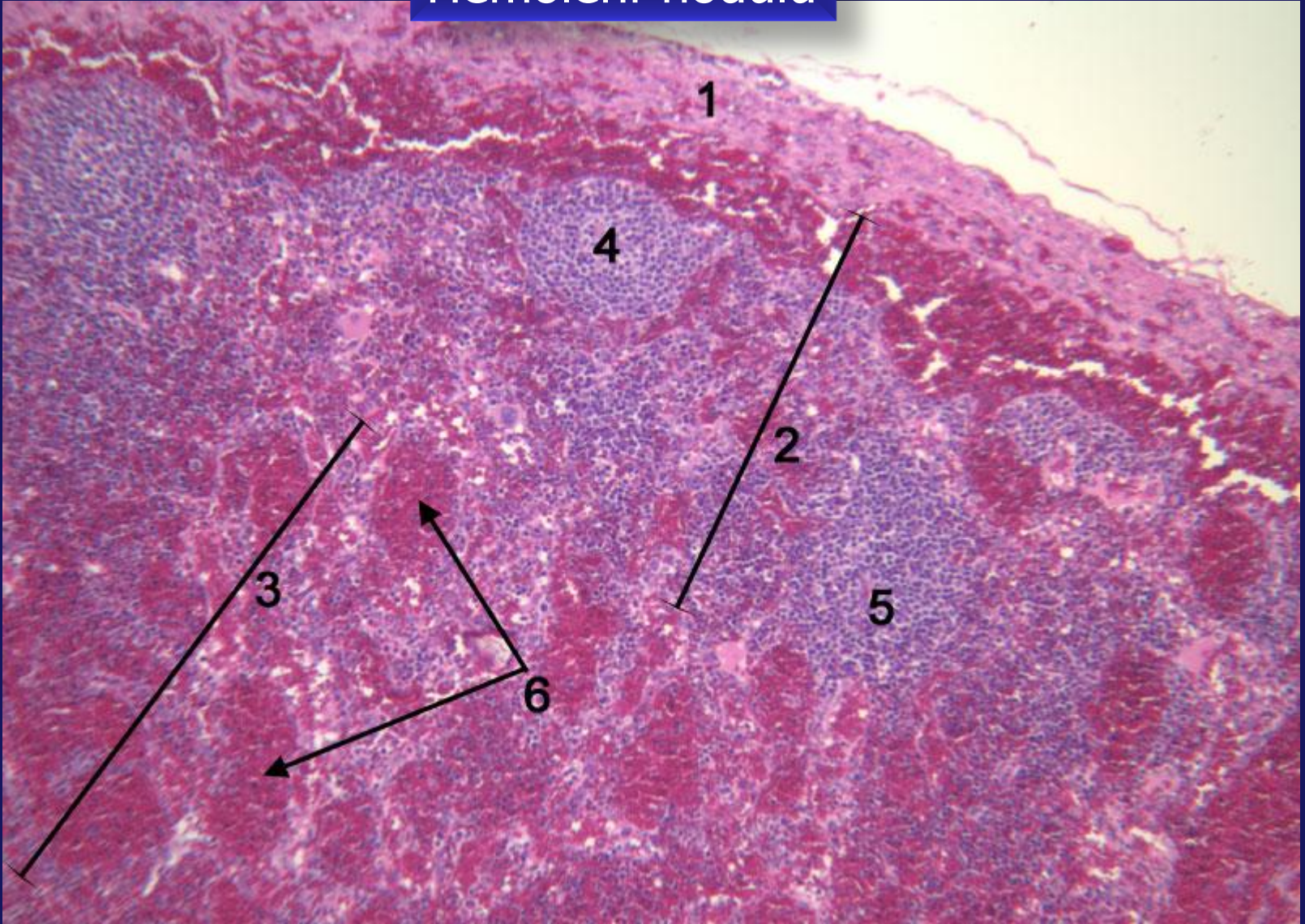
yağ dokusu içinde hemal nodül

Sığır hemolenf nodülü



Sadece ruminantlarda vertebra boyunca yağ dokusu içinde bulunur
Mercimek büyüklüğünde, ovoid, koyu renkli, kan pıhtısı benzeridir
Lenf dolaşımı yok, kan damarları ile bağlantılıdır

Hemolenf nodülü



1.kapsül

2.korteks

3.medulla

4.lenf folikülü

5.diffuz lenfoid doku

6.kanla dolu medullar sinus

Hemolenf nodülü



1.kapsül 2.lenf folikülü 3.diffuz lenfoid doku 4.medullar sinus

Hemolenf nodülü

