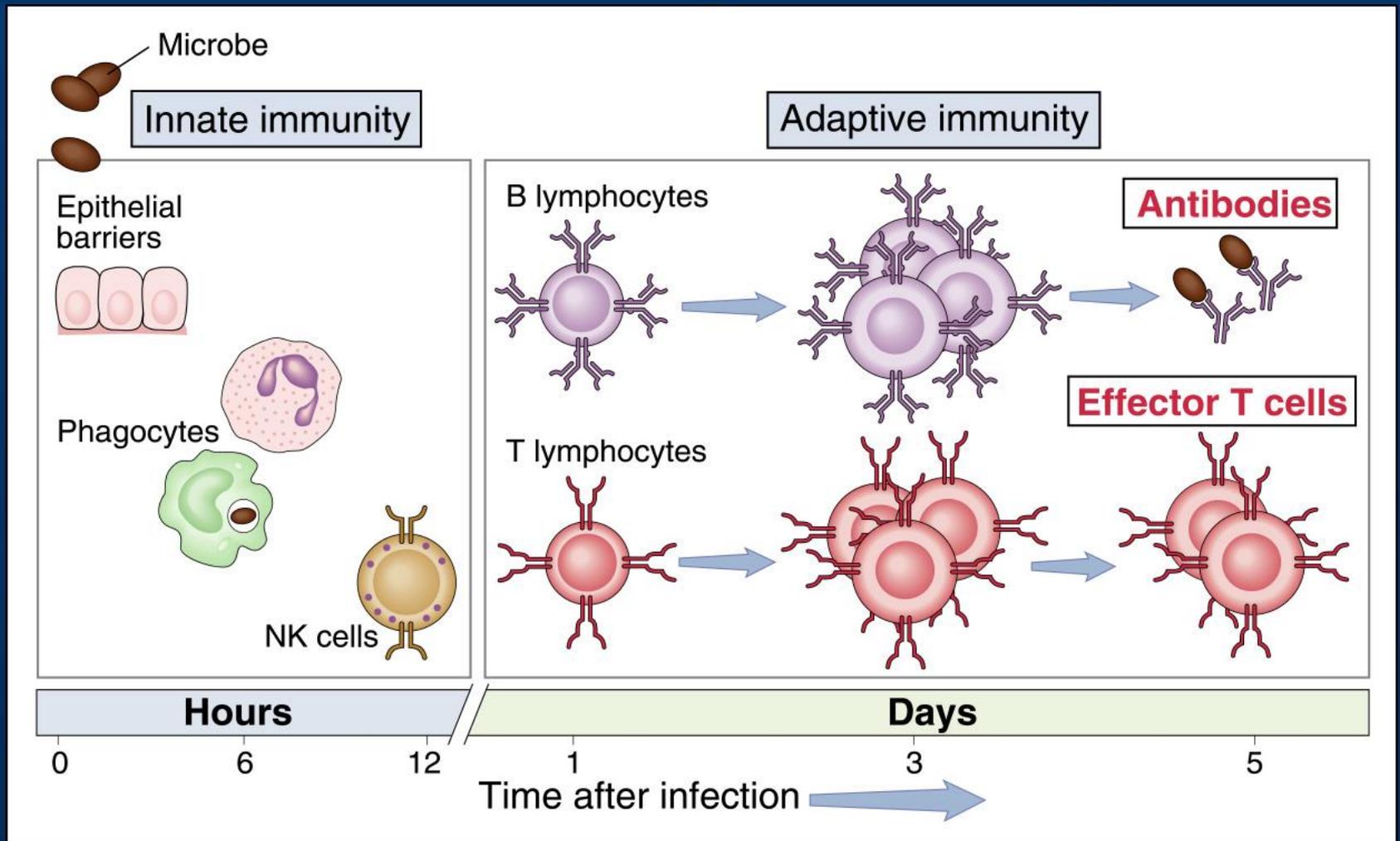


**Departamento de Imunologia
Instituto de Ciências Biomédicas
Universidade de São Paulo**

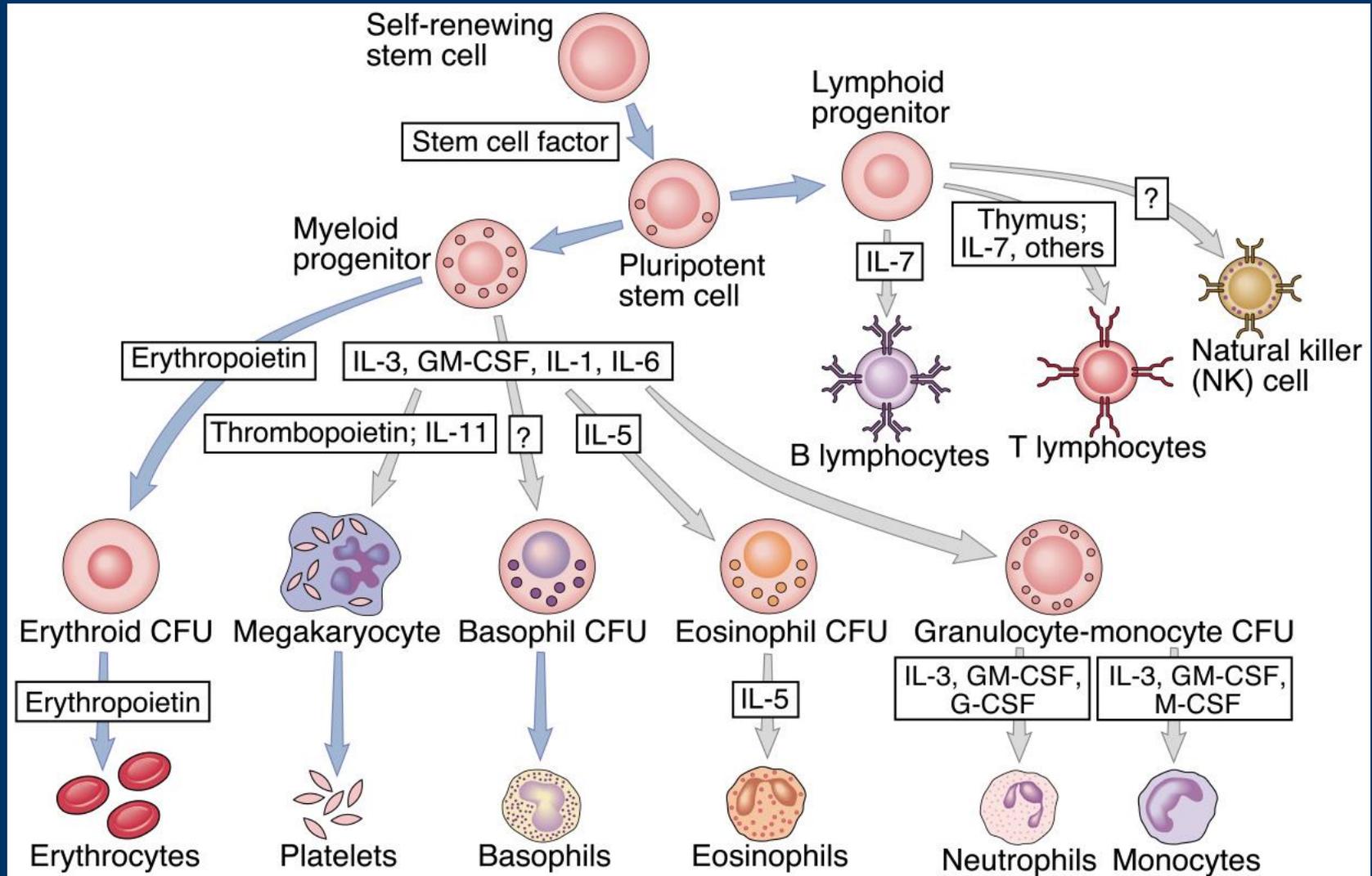
Células e Órgãos Sistema Imunológico

**Antonio Condino Neto
Professor Titular**

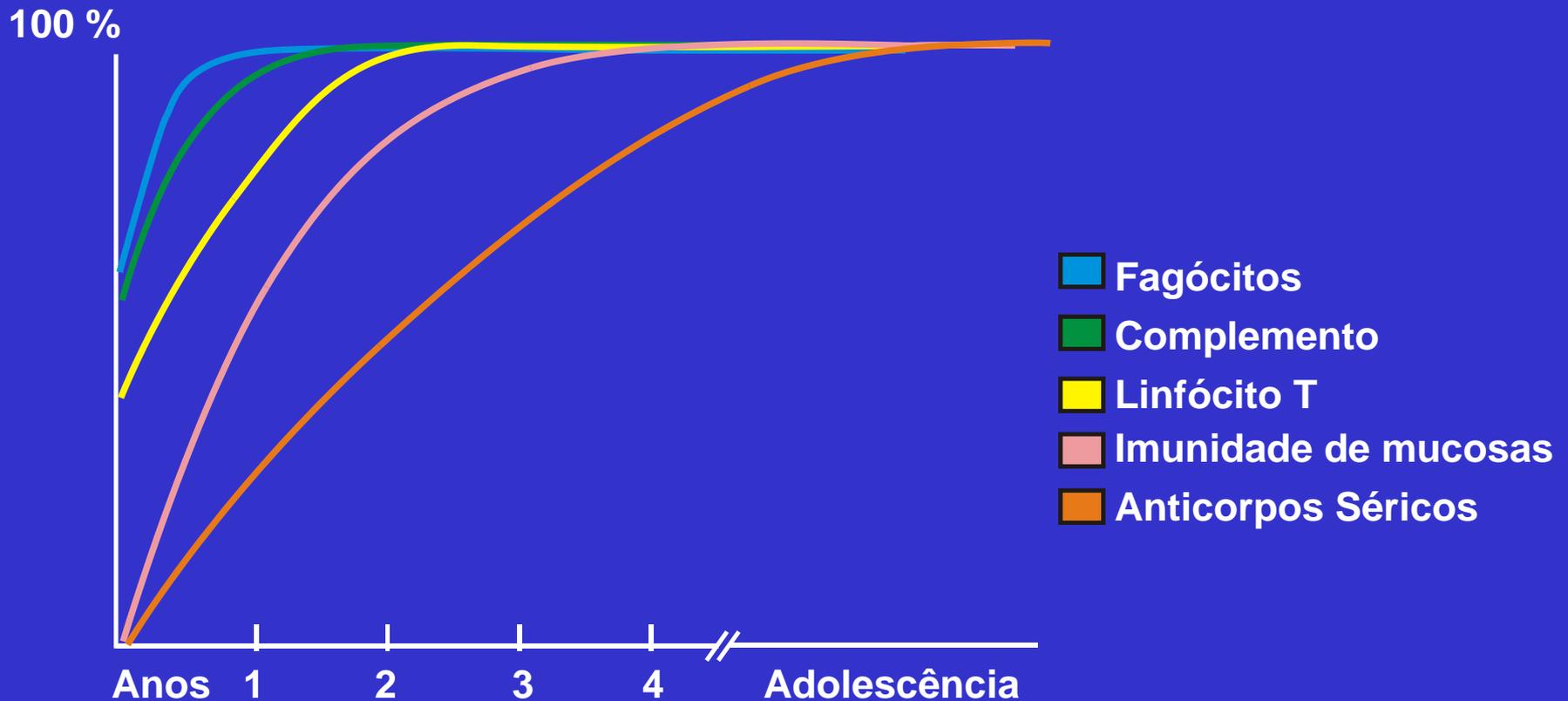
Imunidade Inata e Adaptativa



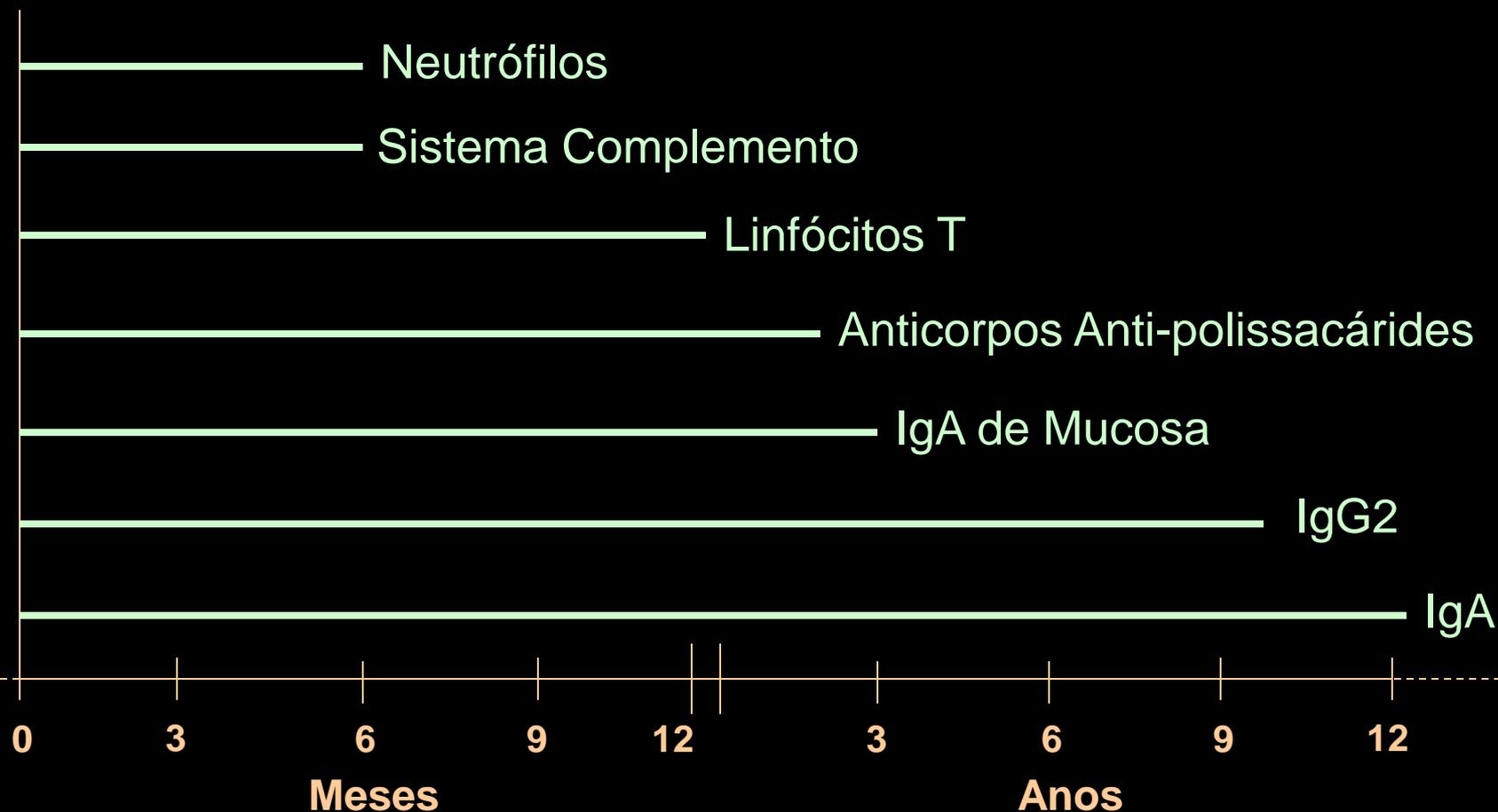
Diferenciação Celular - Efeito de Citocinas



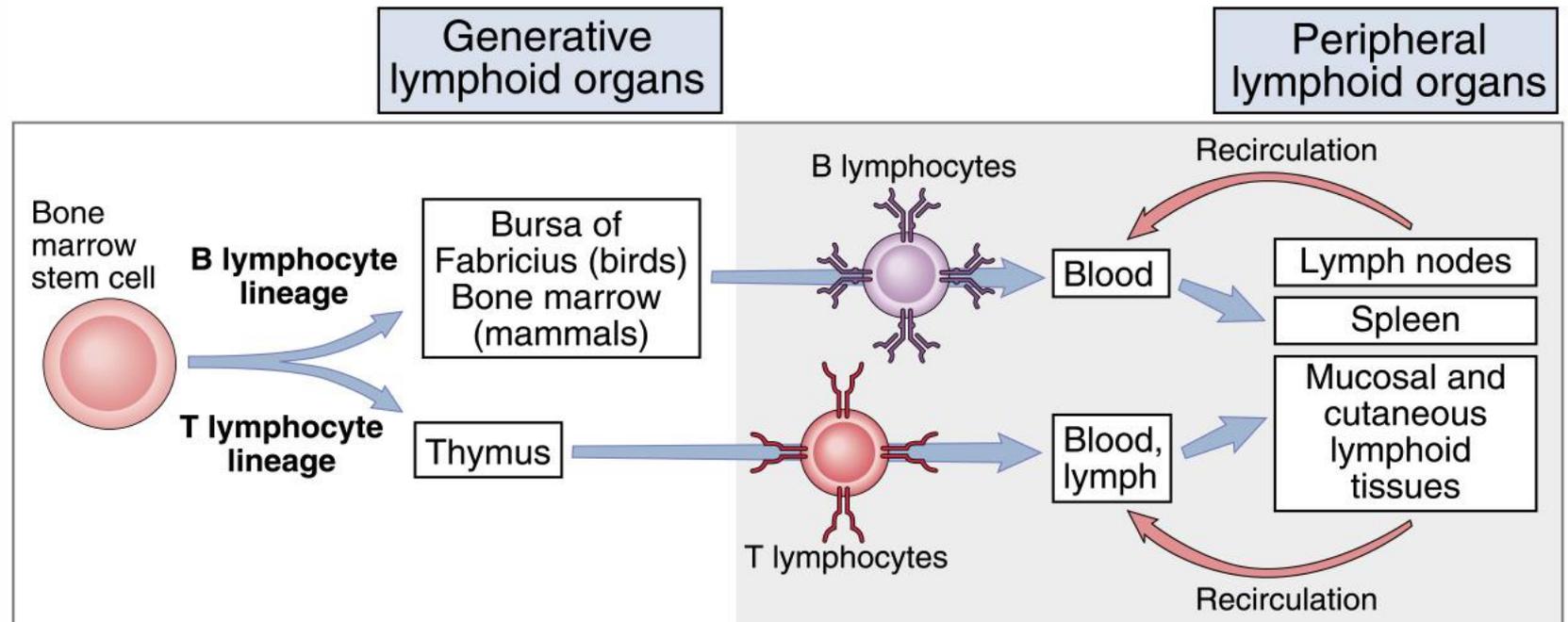
MATURIDADE FUNCIONAL DOS ELEMENTOS DA RESPOSTA IMUNE



Desenvolvimento de mecanismos imunes efetores

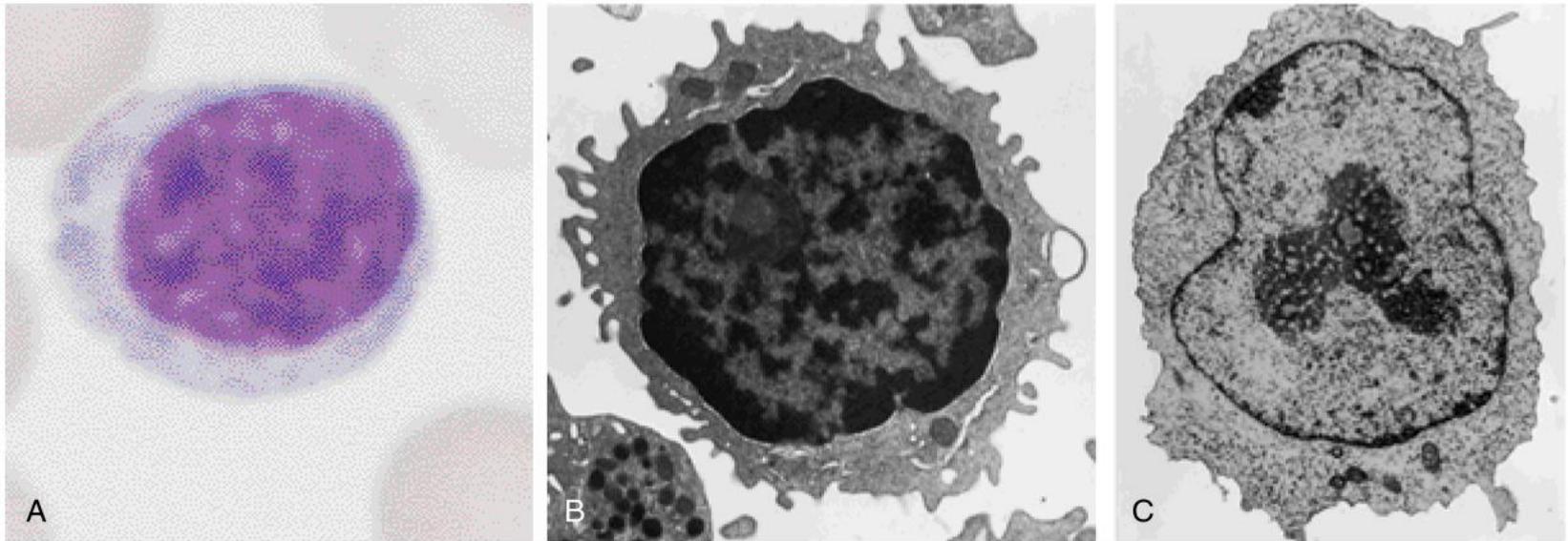


Maturação dos Linfócitos



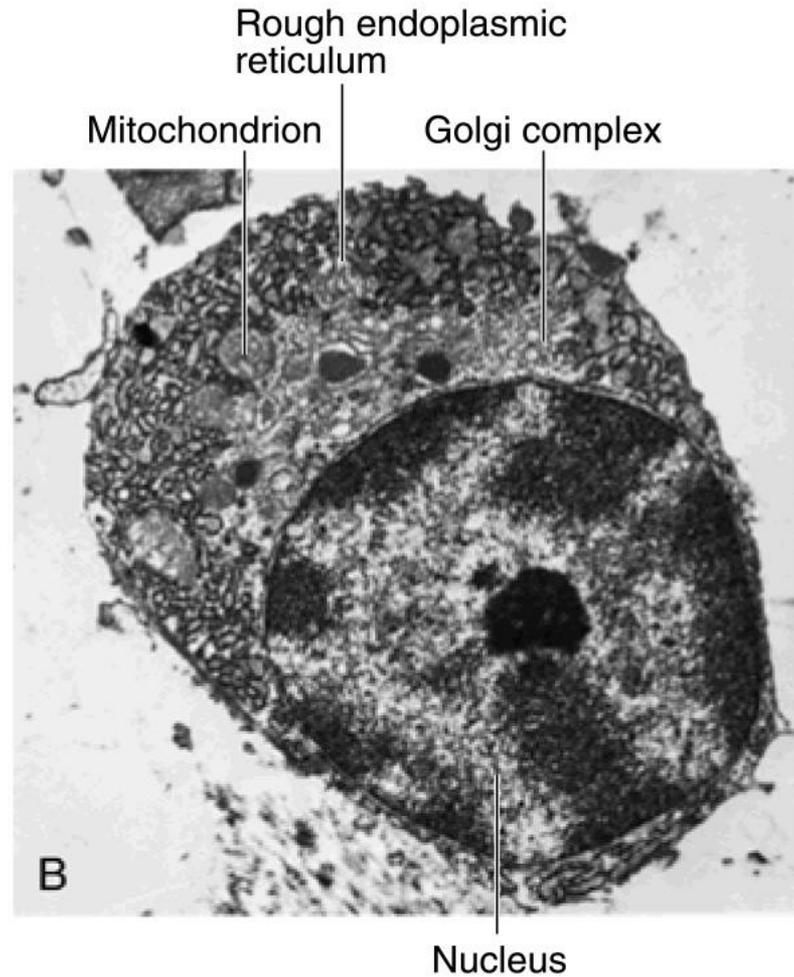
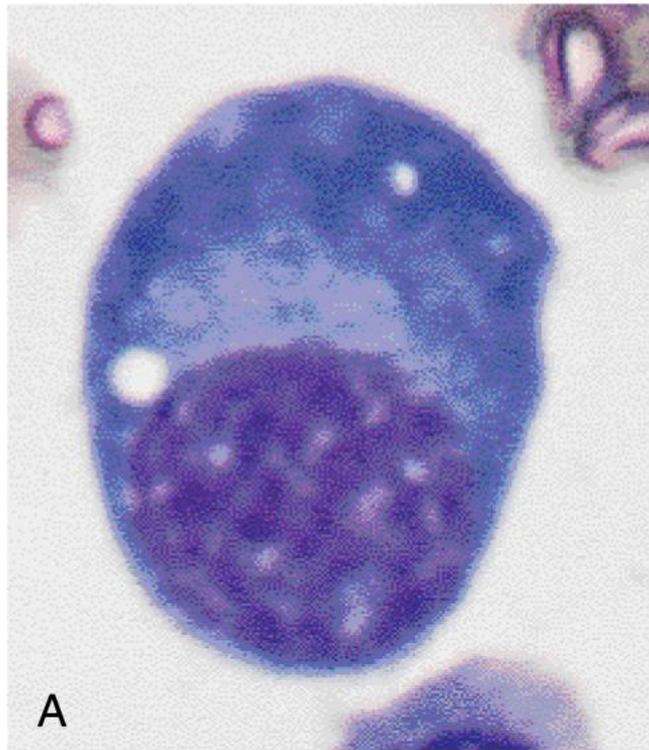
From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-2

Morfologia dos Linfócitos



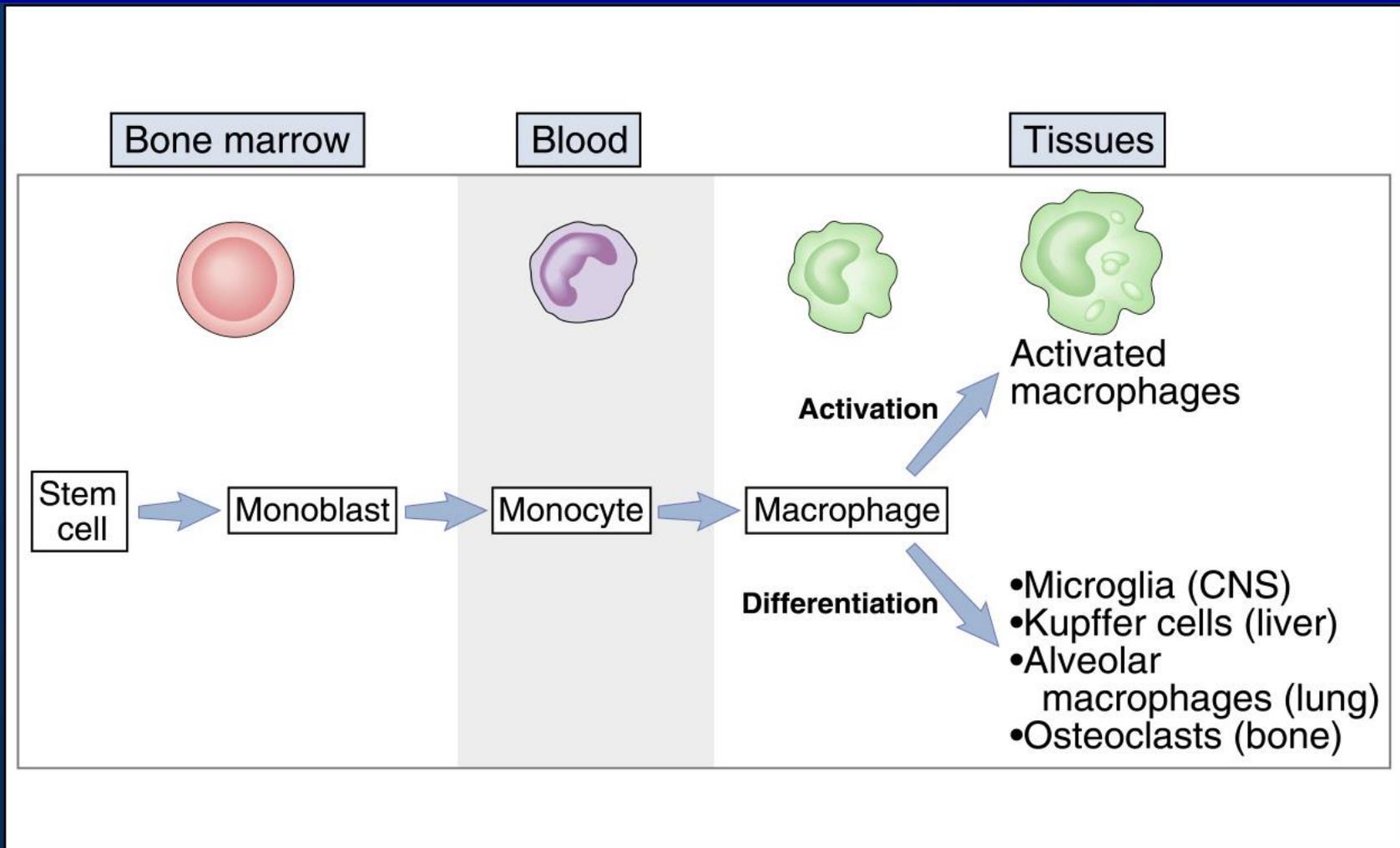
From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-1

Morfologia dos Plasmócitos



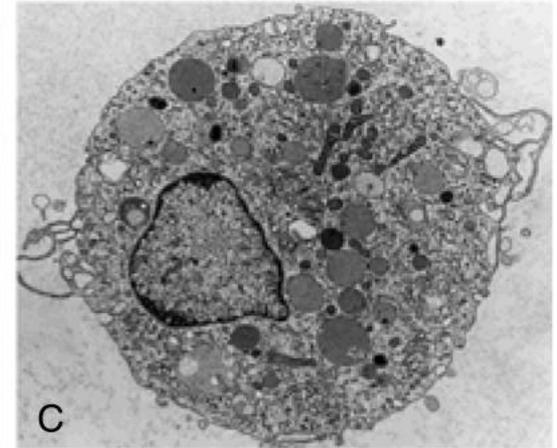
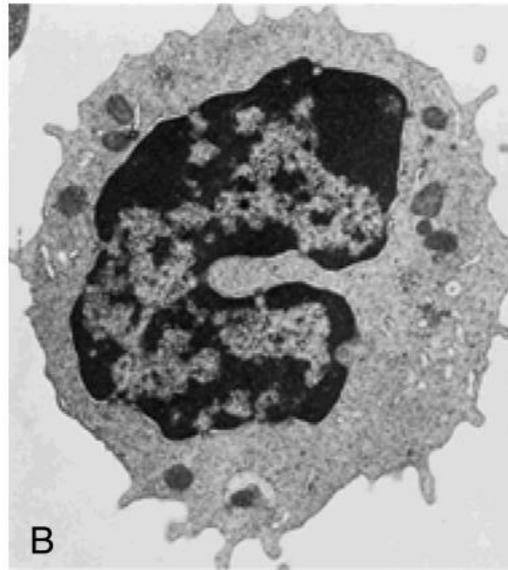
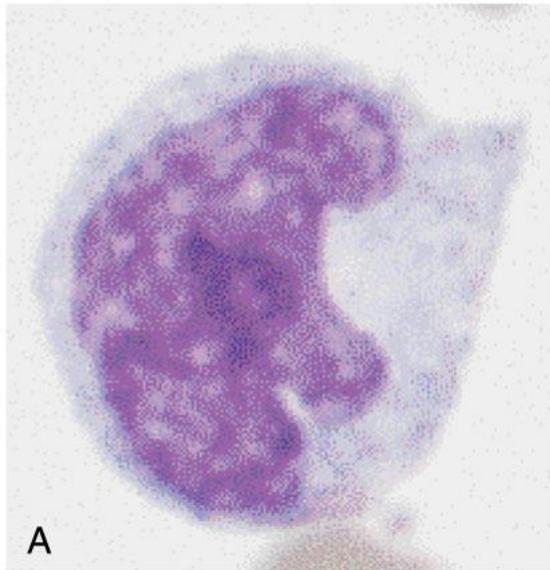
From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-3

Maturação dos Fagócitos Mononucleares



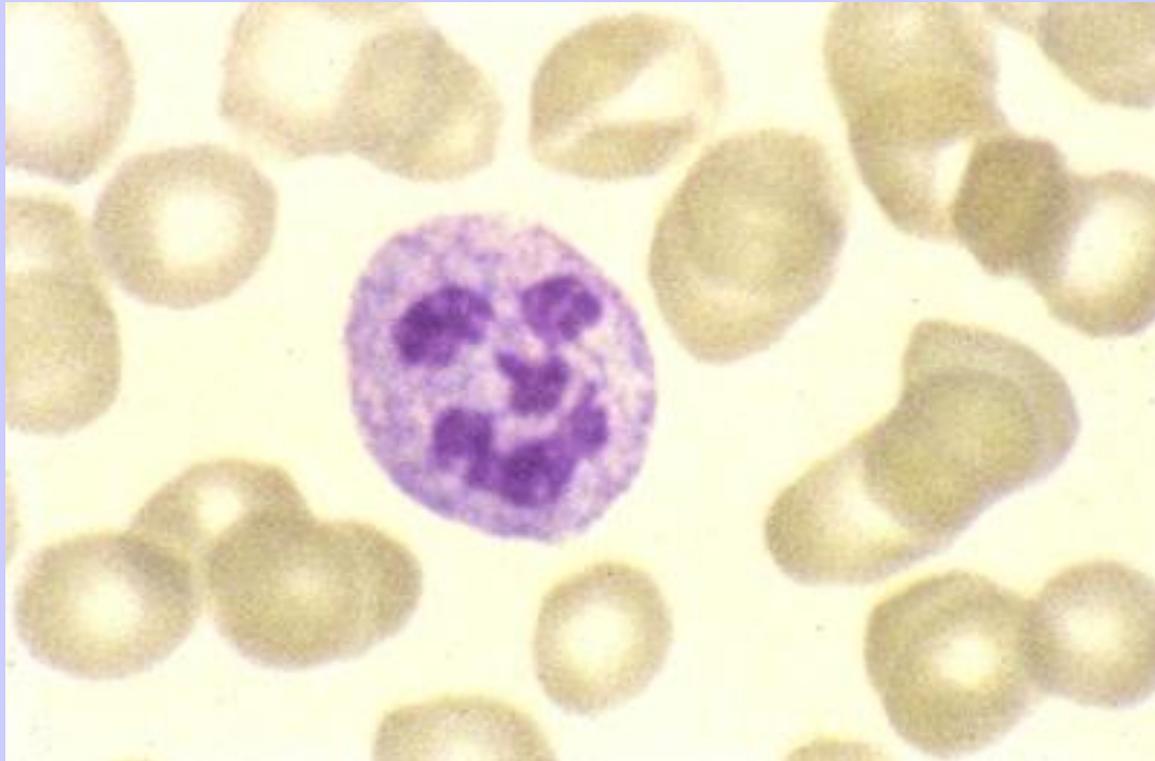
From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-4

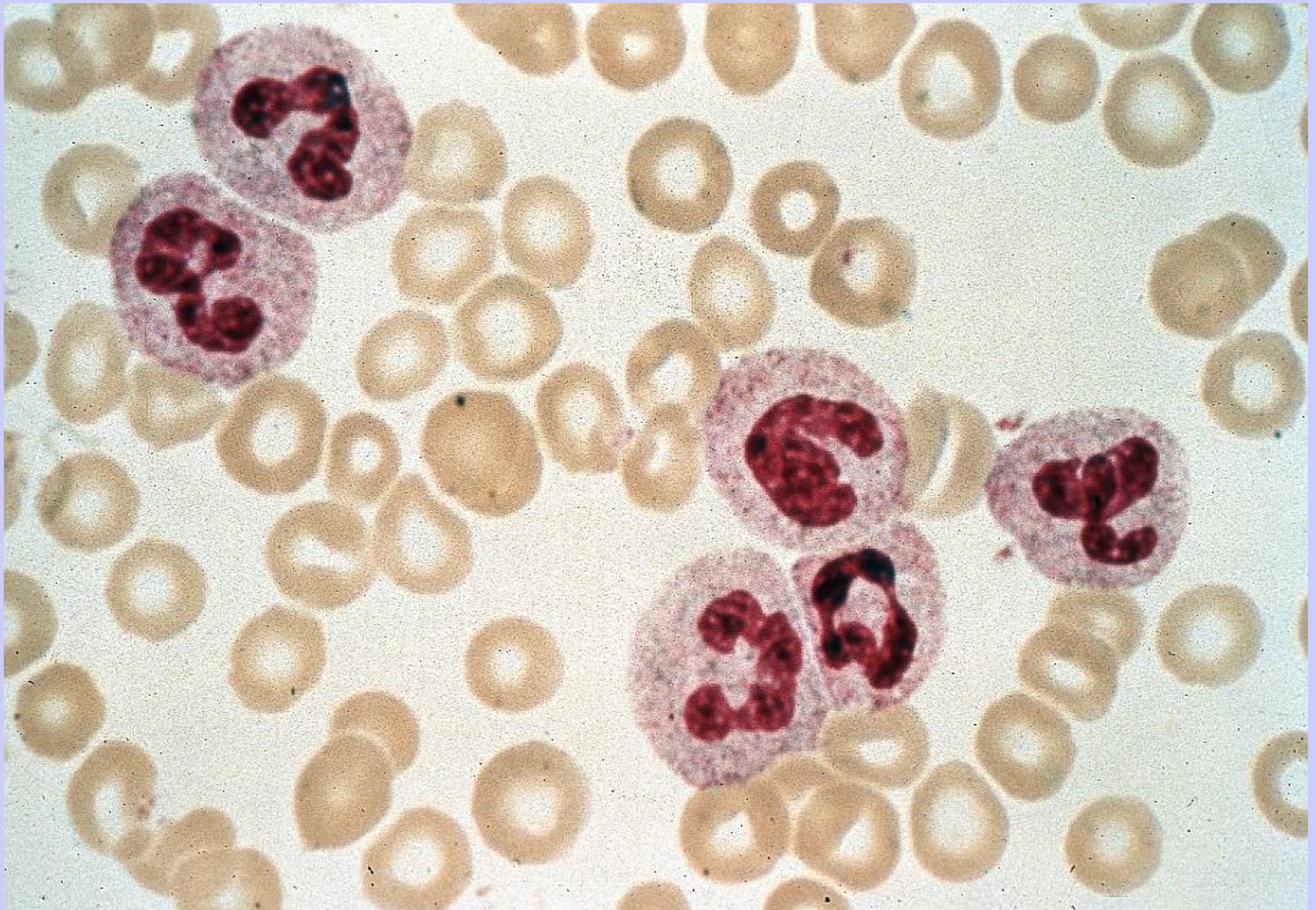
Morfologia dos Fagócitos Mononucleares



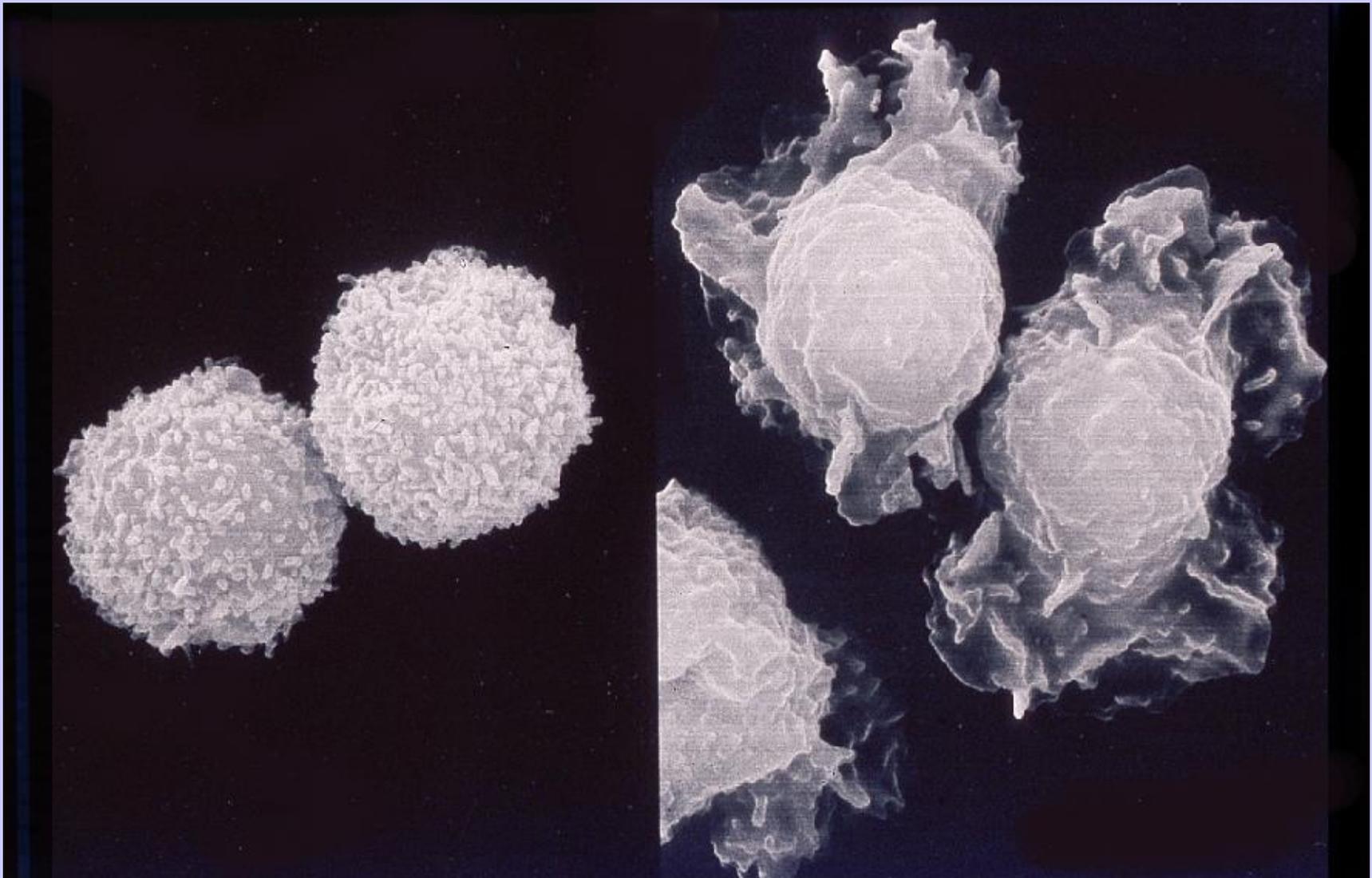
From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-5

Neutrófilos









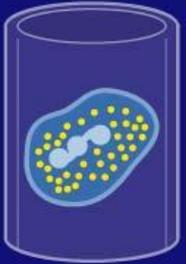
Resting

+ IL-8

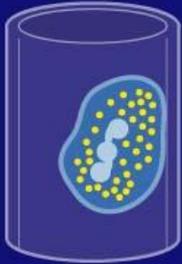
VASCULAR PHASE

TISSUE PHASE

Circulating



Rolling



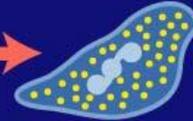
Sticking



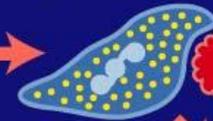
Diapedesis



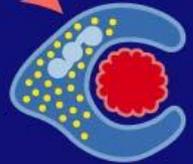
Chemotaxis



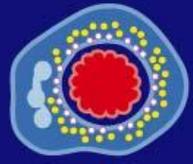
Recognition (opsonization)



Ingestion

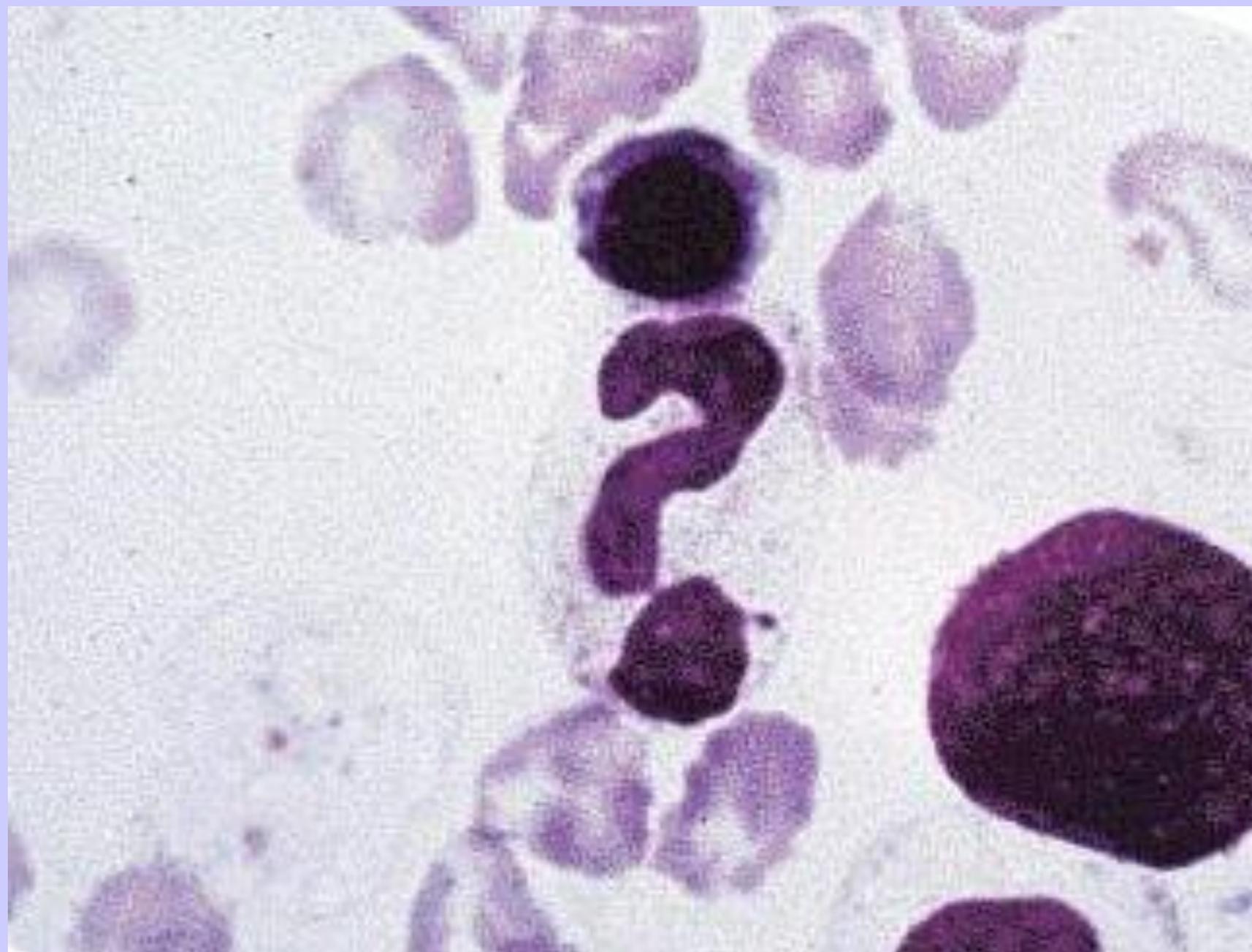


Degranulation



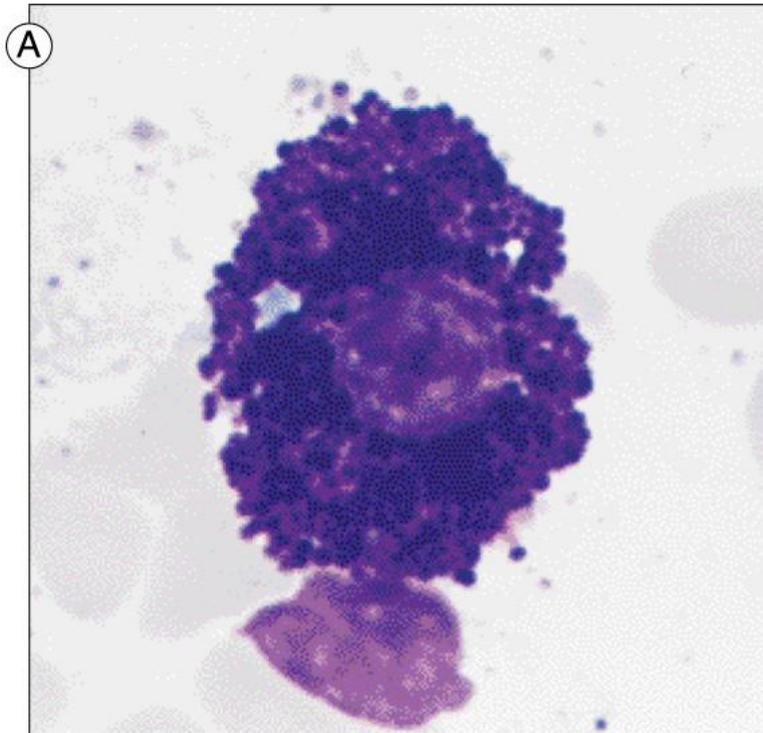
Oxidative Killing



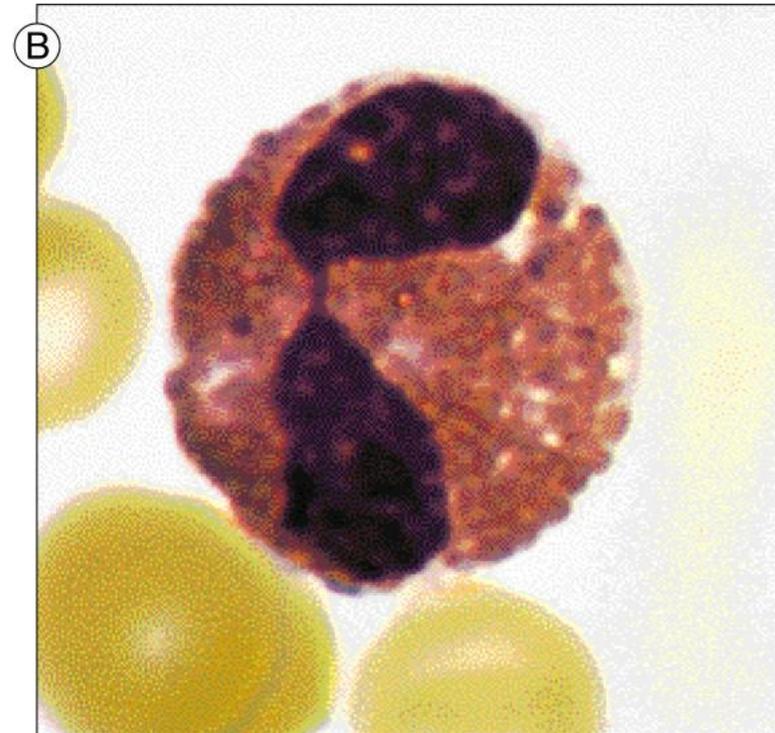


Basófilo e eosinófilo

Basophil

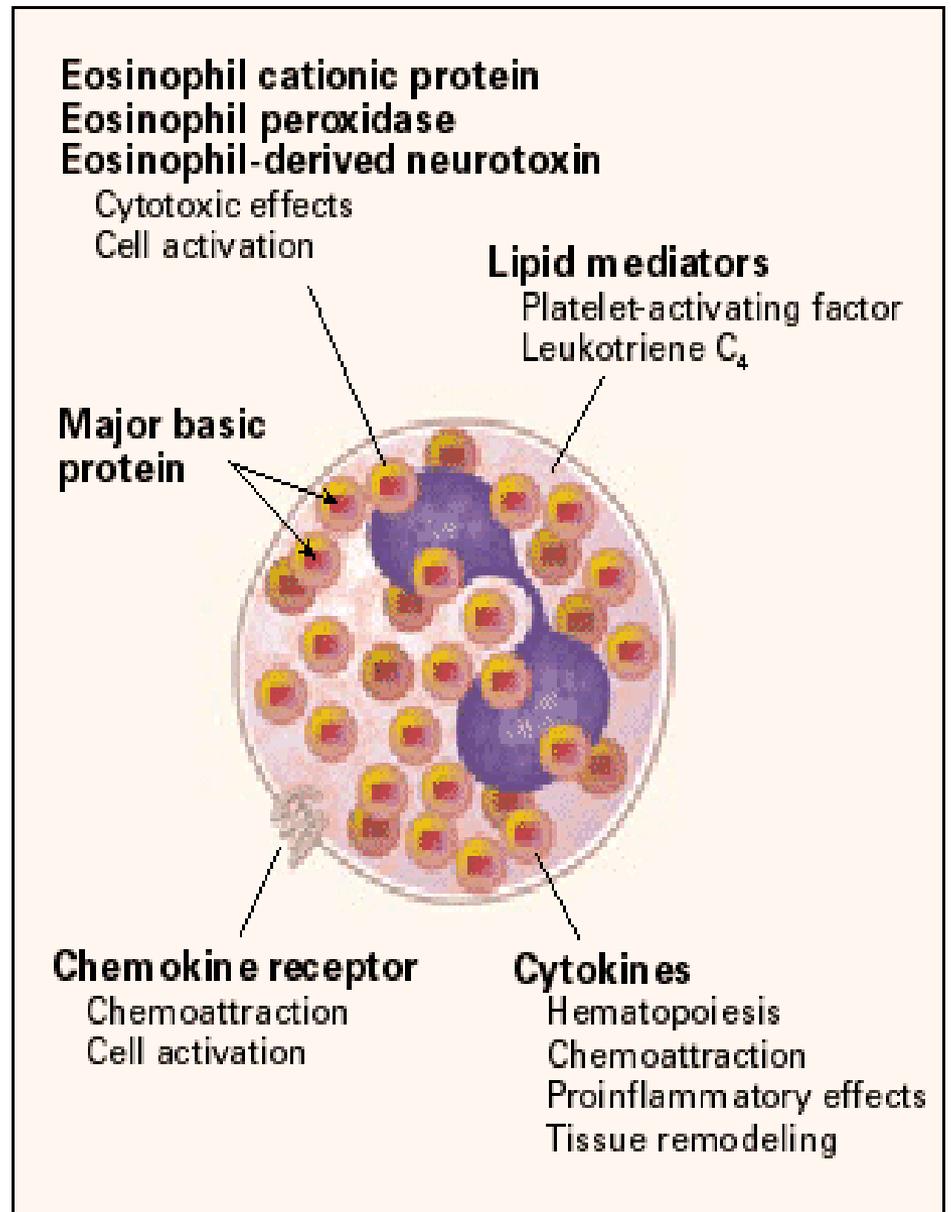


Eosinophil

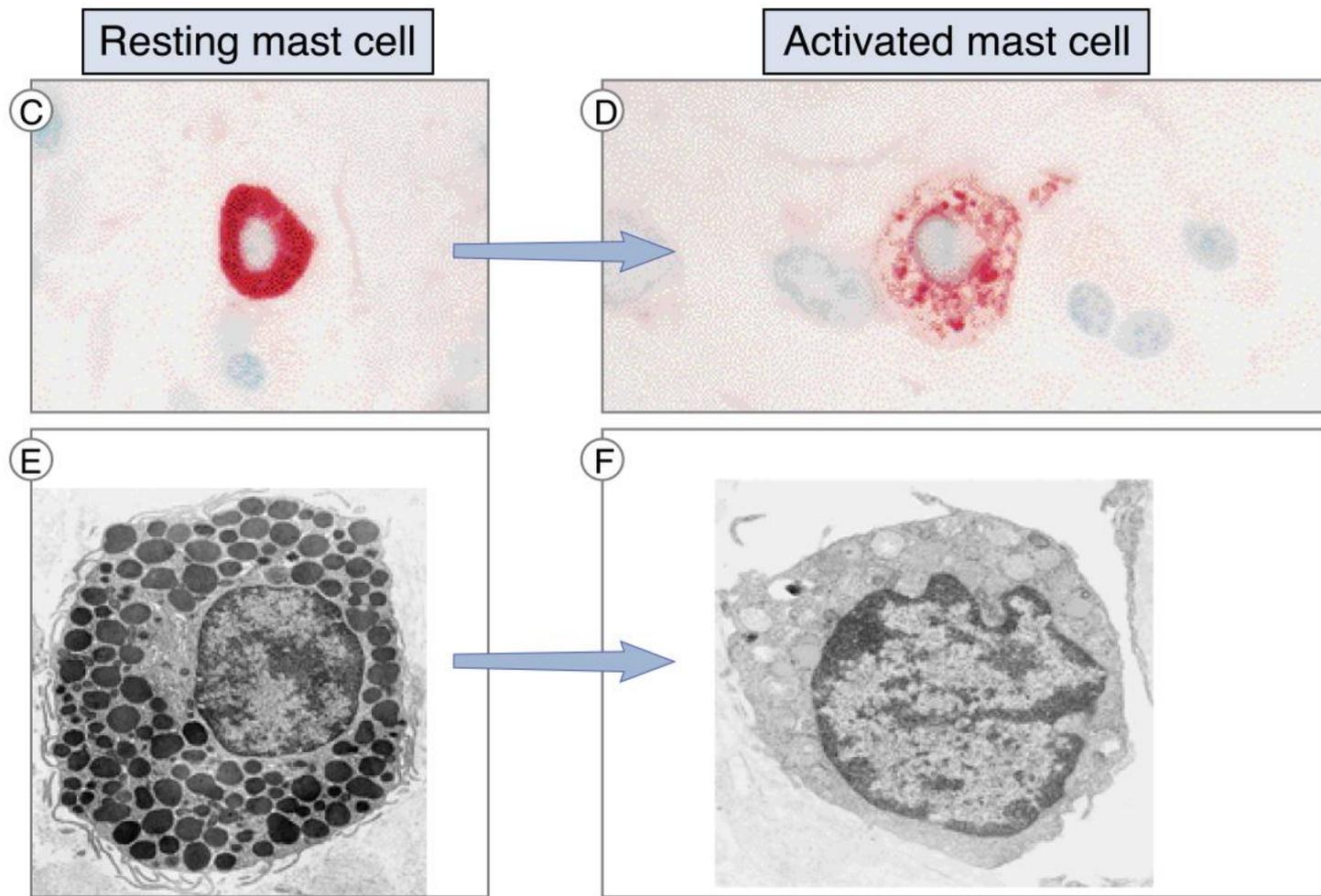


From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 19-6

Eosinófilos

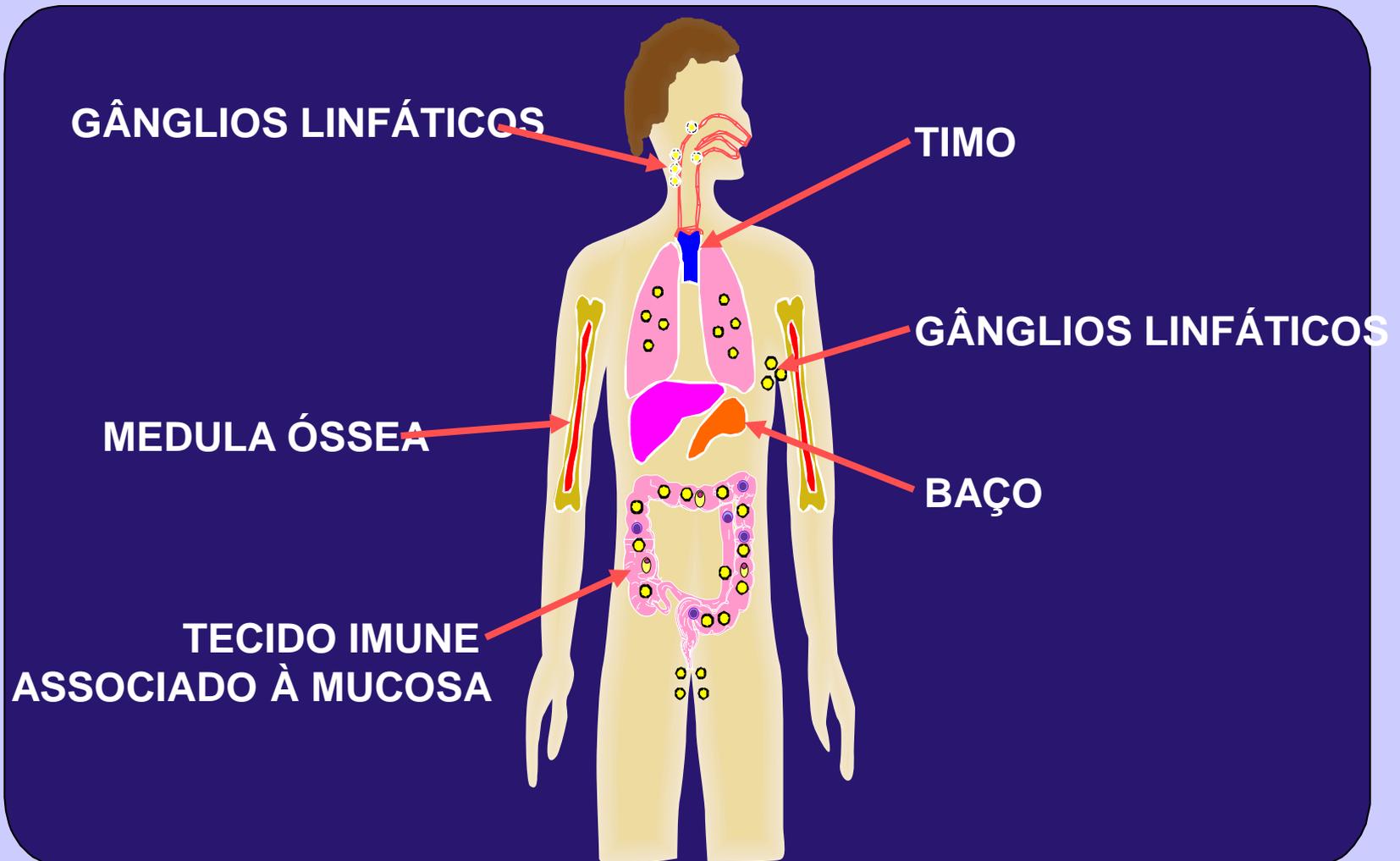


Degranulação de mastócitos

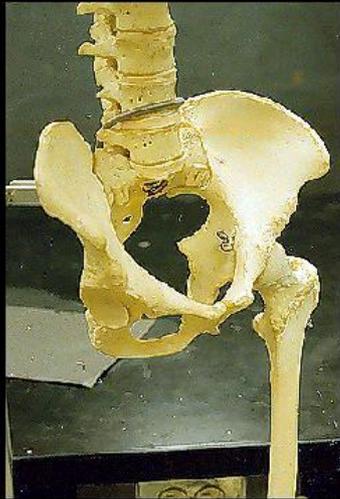


From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 19-2b

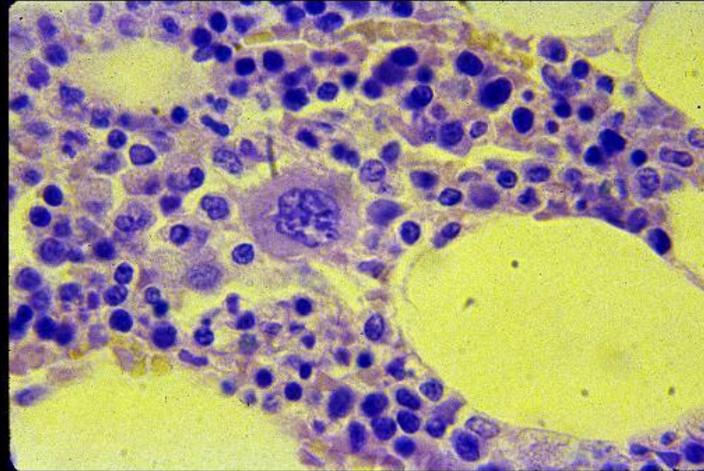
ÓRGÃOS DA RESPOSTA IMUNE



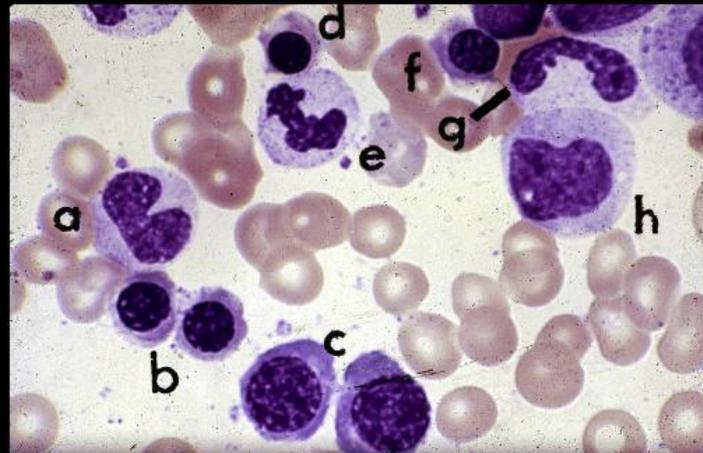
MEDULA ÓSSEA



pelvis10.jpg

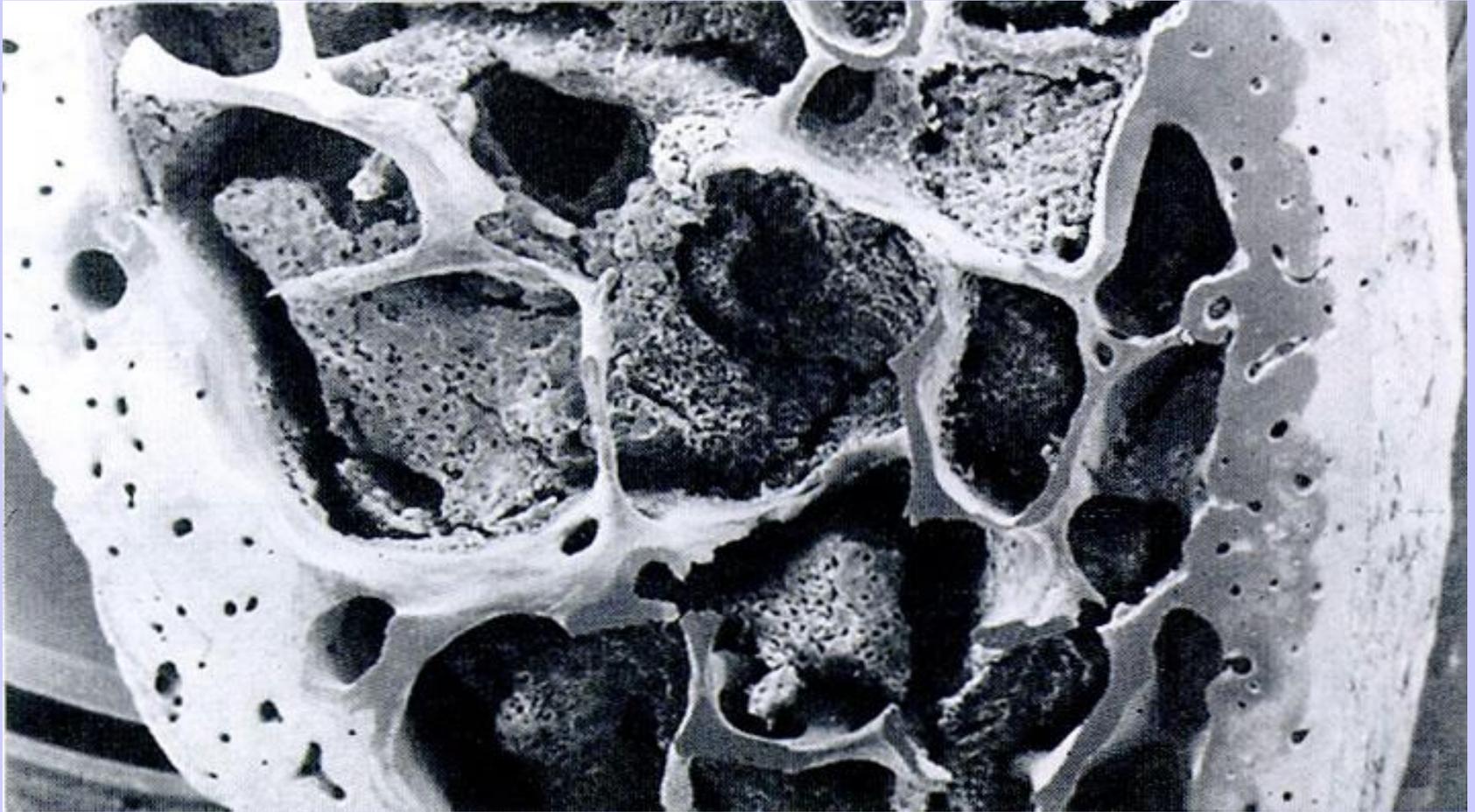


bonema~1.jpg



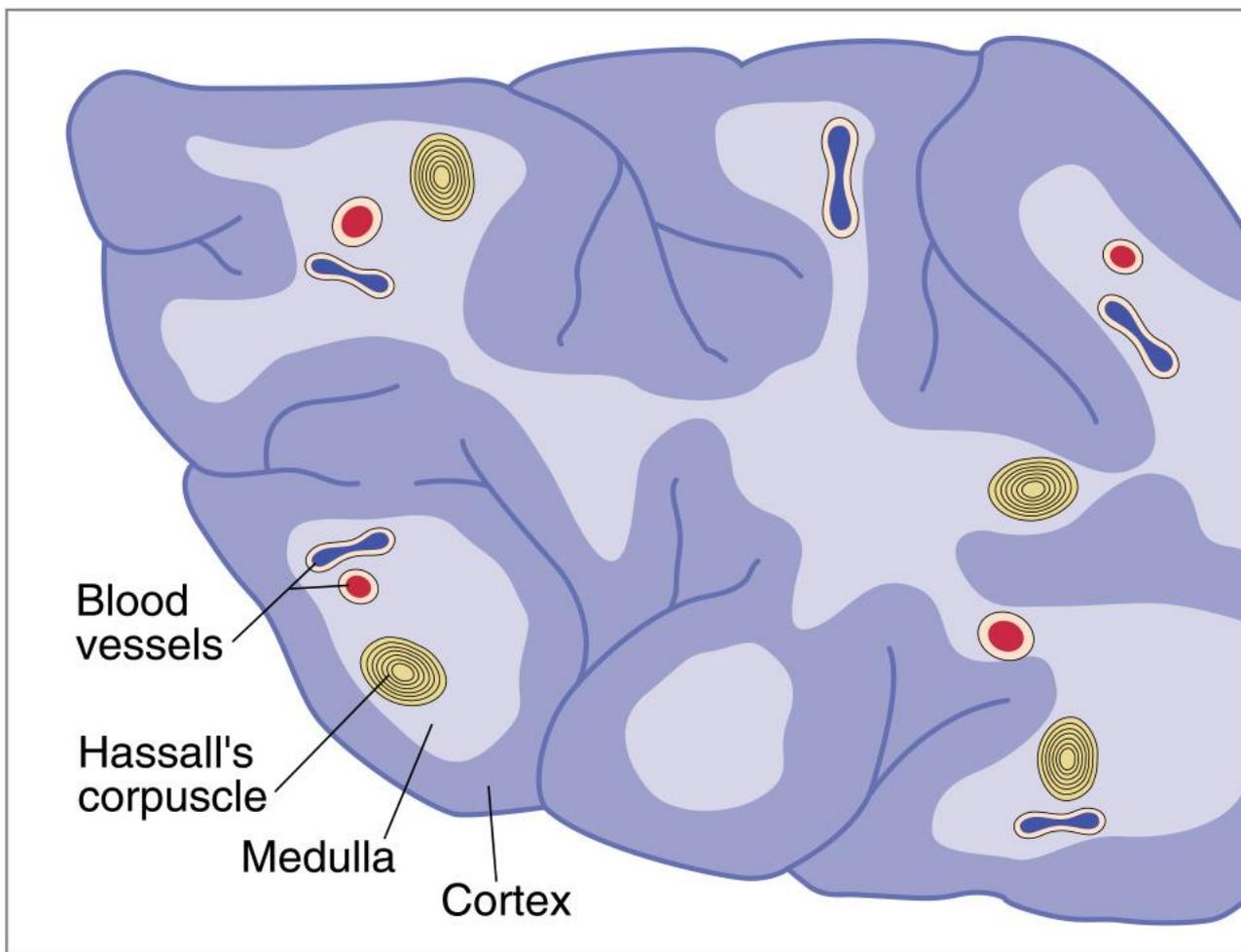
bonema~2.jpg

Aspecto da Medula Óssea



* locais preferenciais de coleta de material de medula óssea no adulto: esterno e crista ilíaca

Arquitetura do Timo

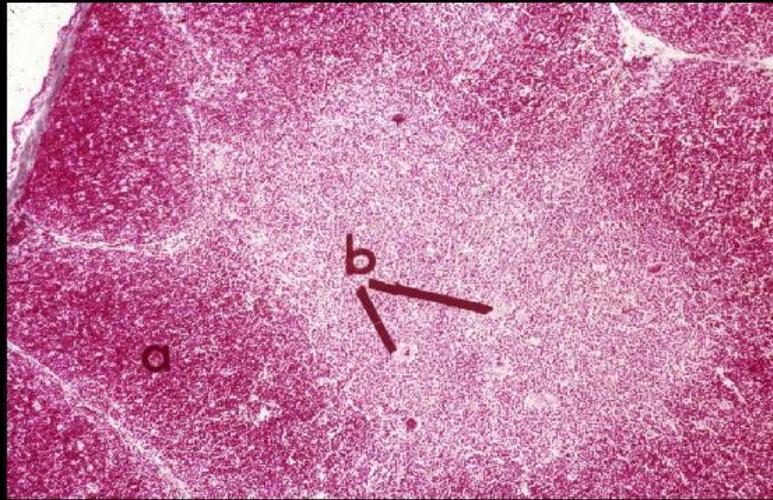


From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-8b

TIMO

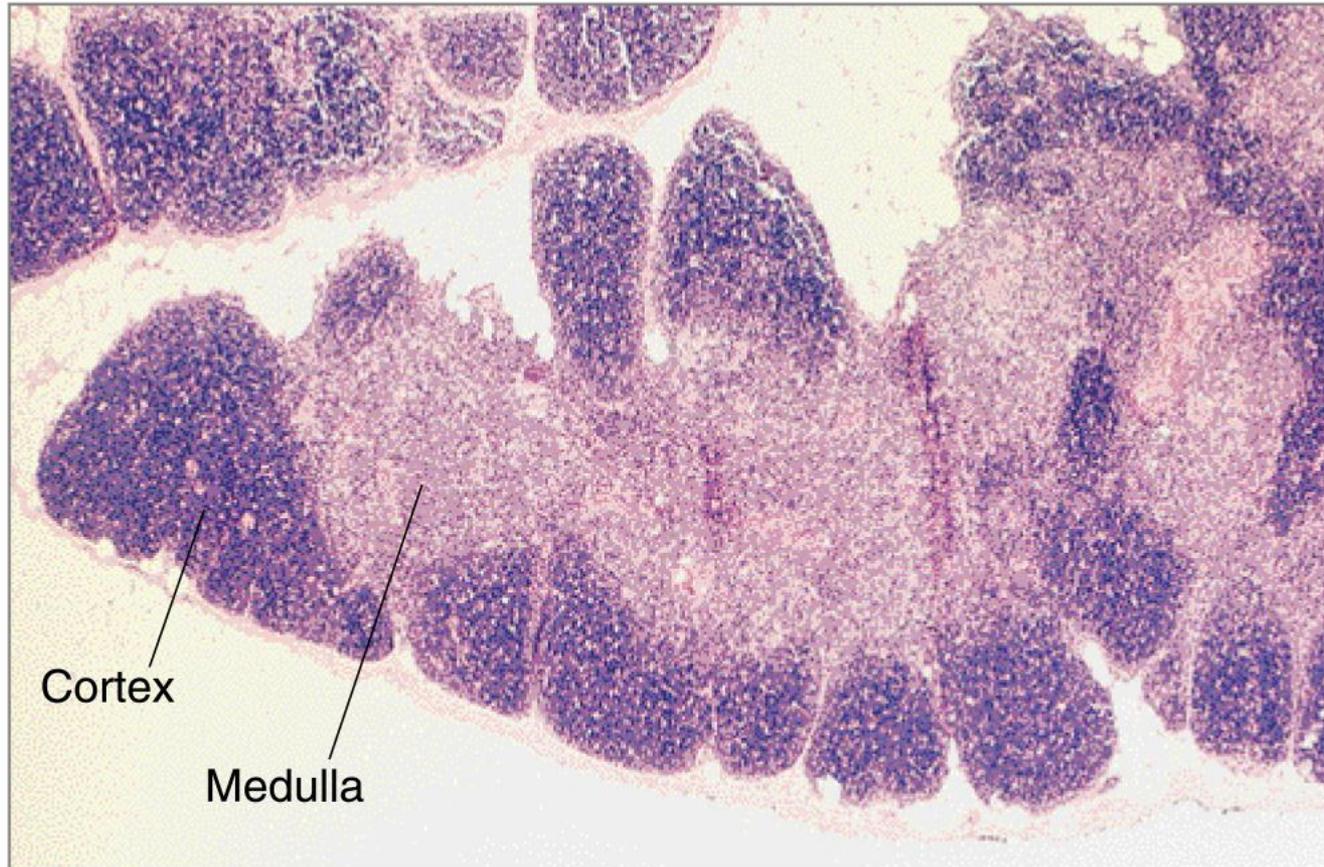


thymusm.jpg



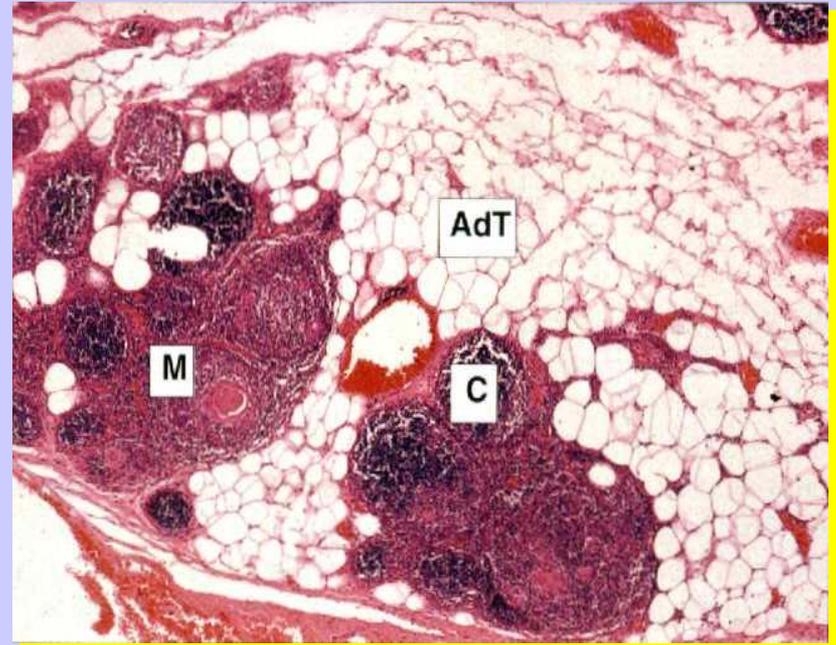
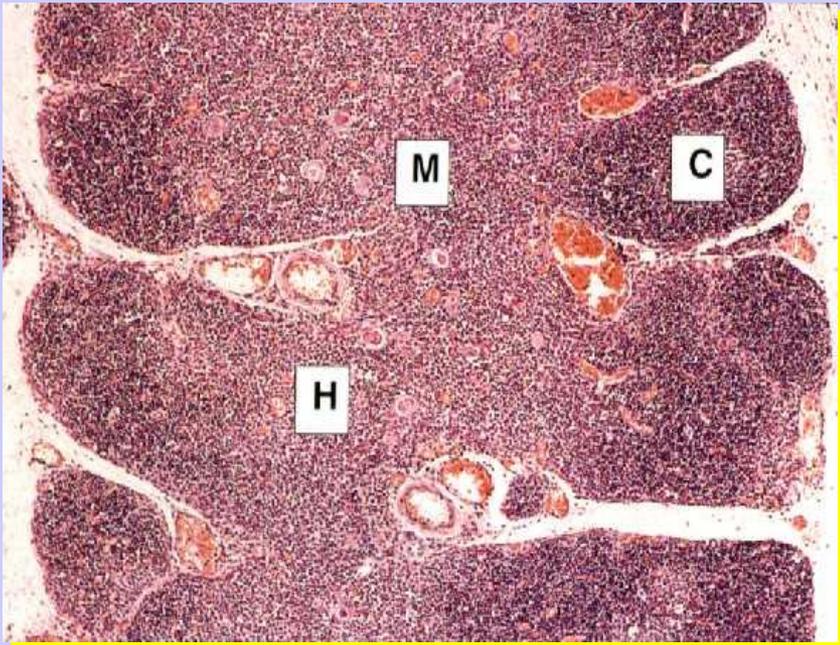
thymus.jpg

Timo

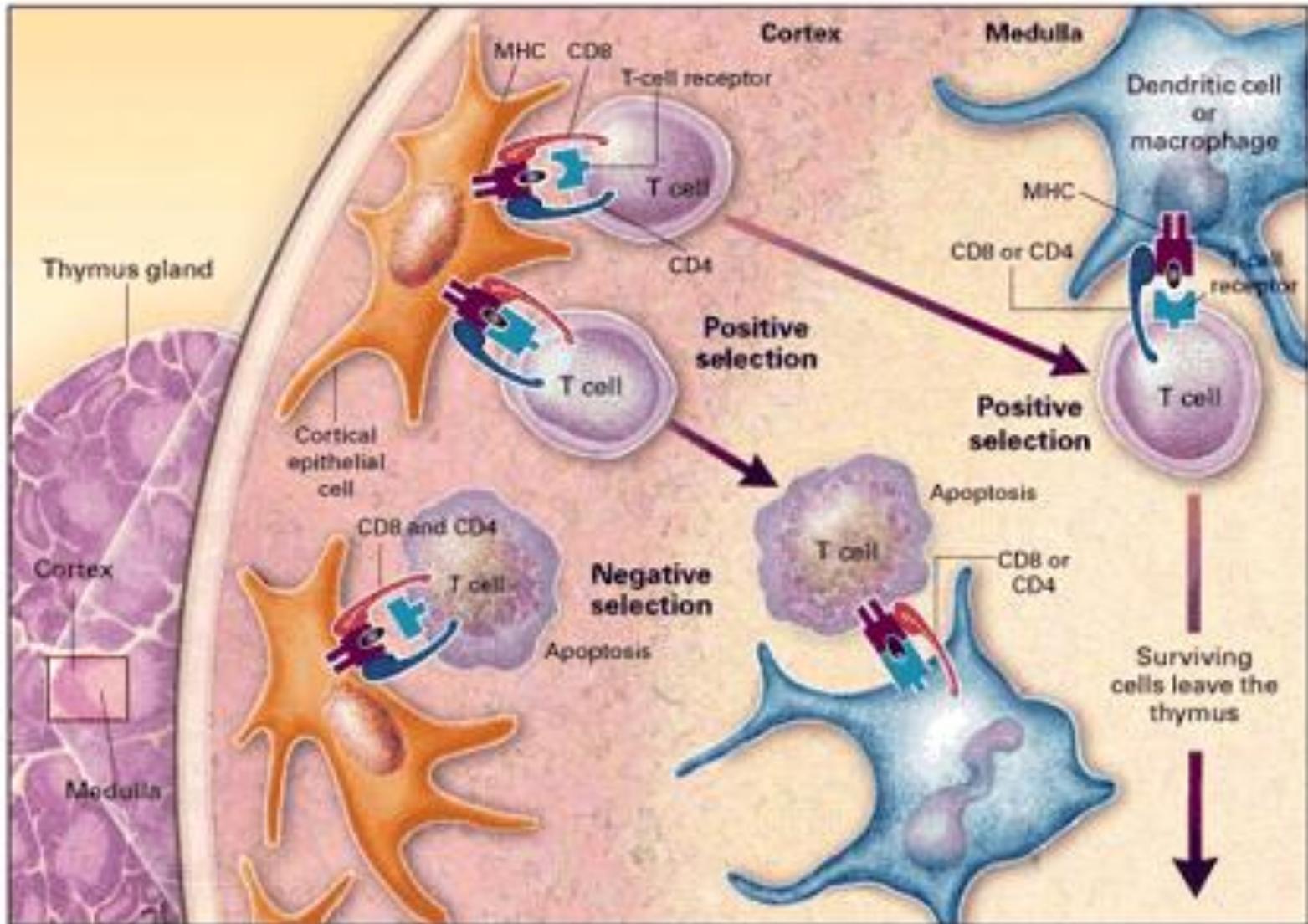


From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-8a

ESTRUTURA DO TIMO



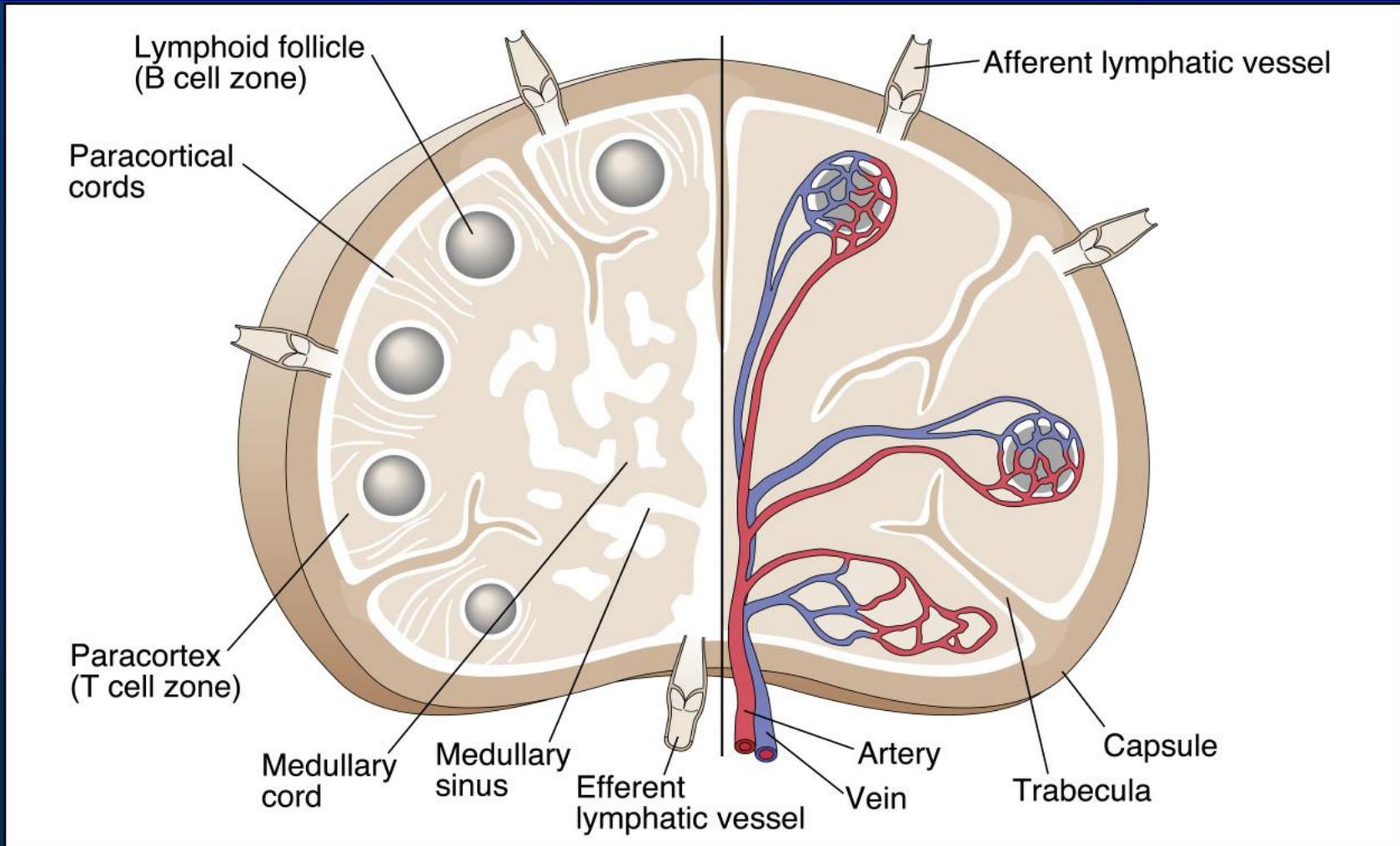
Seleção de Linfócitos T no Timo



Órgãos Linfóides Secundários

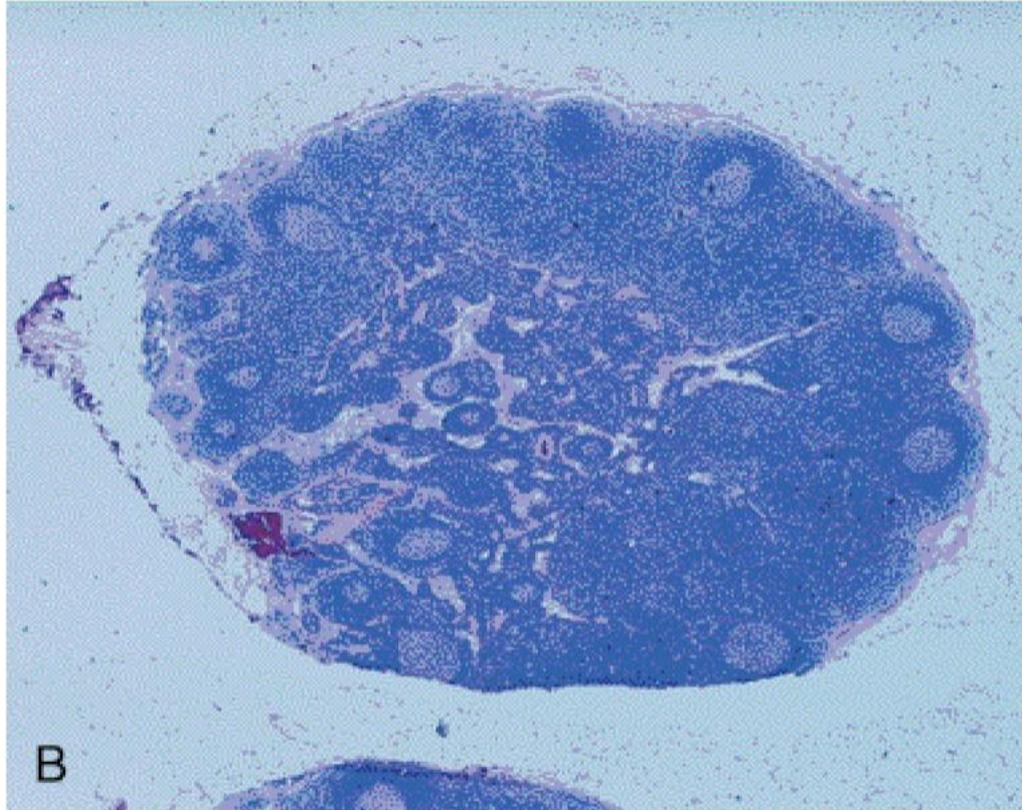
- ✓ Linfonodos
- ✓ Baço
- ✓ Nódulos Linfóides Associados às Mucosas
(MALT) - Anel Linfático de Weldeyer
Placas de Peyer (GALT)
Nódulos dos Brônquios (BALT)

Morfologia do Linfonodo



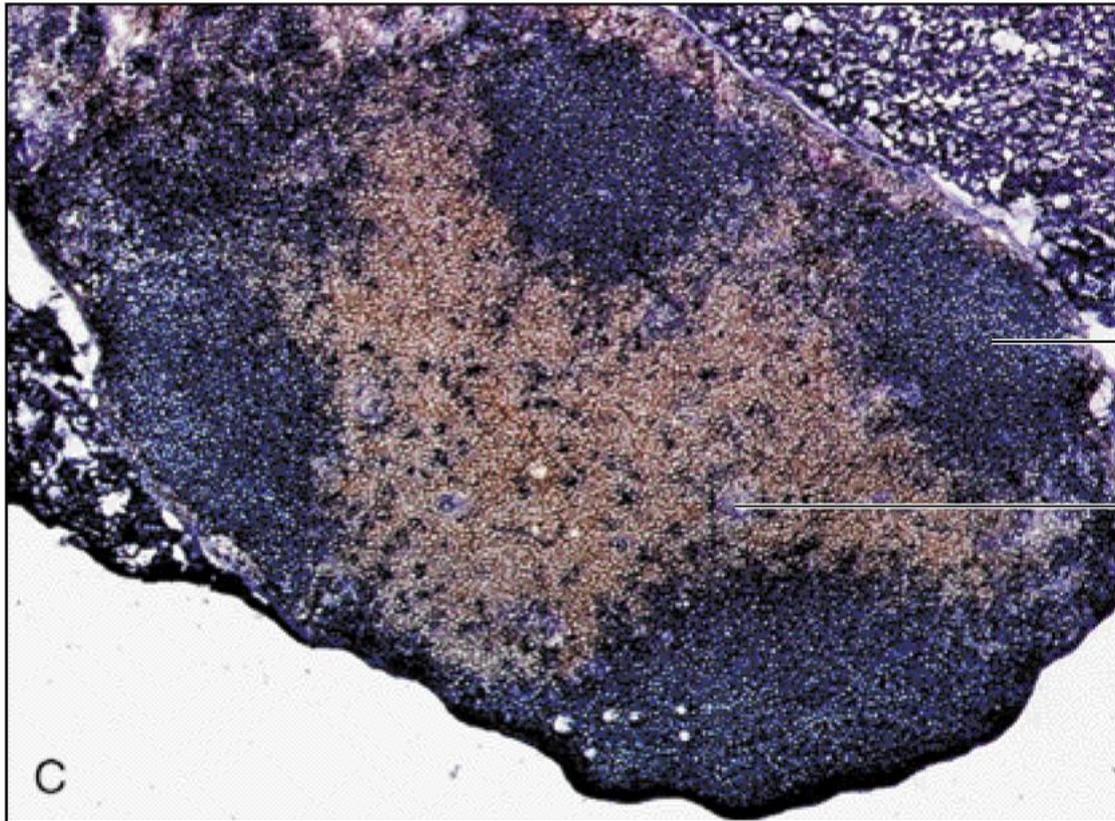
From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-9a

Morfologia do Linfonodo



From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-9b

Morfologia do Linfonodo



Follicle
(B cell zone)

Parafollicular
cortex (T cell zone)

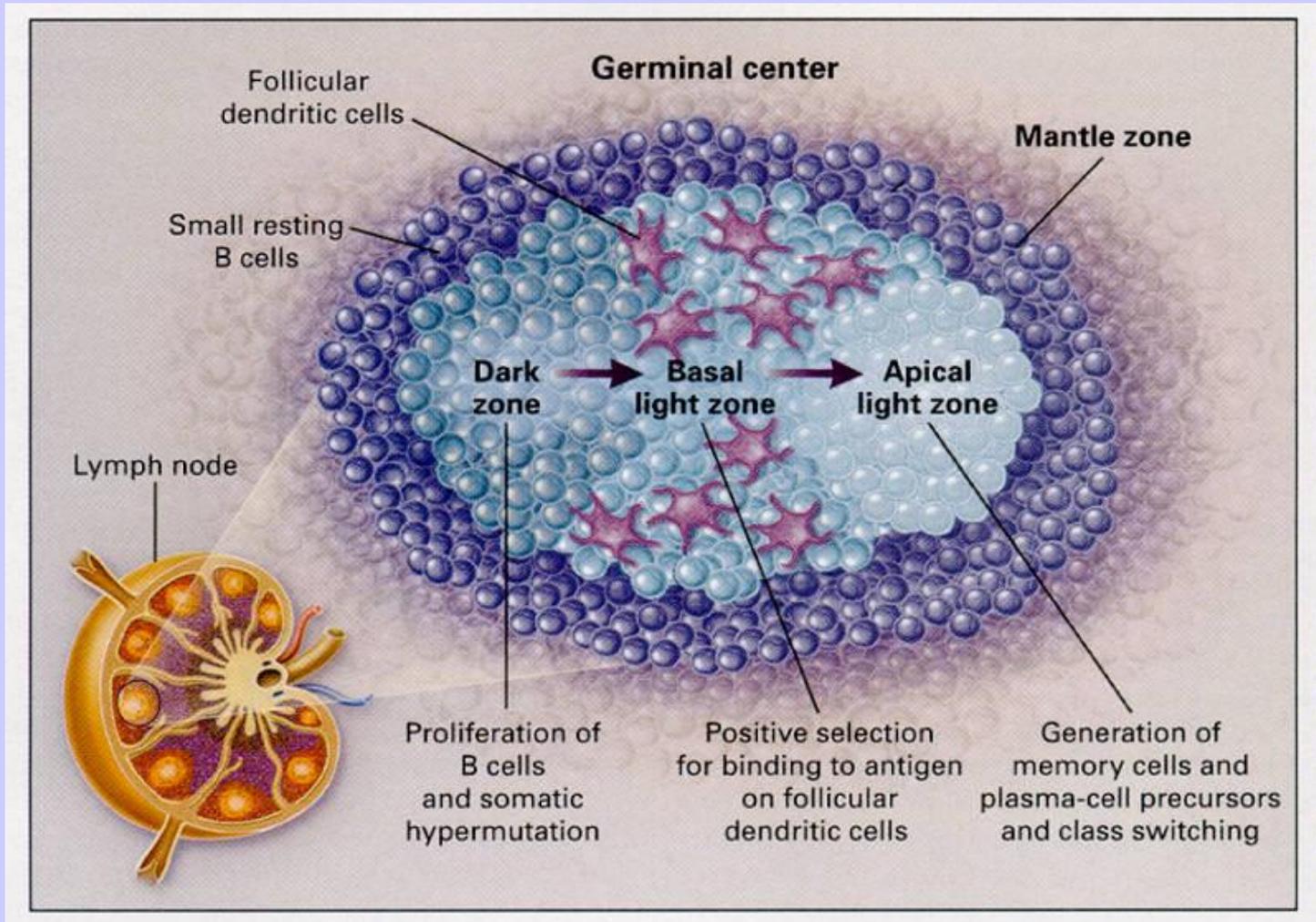
From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-9c

B

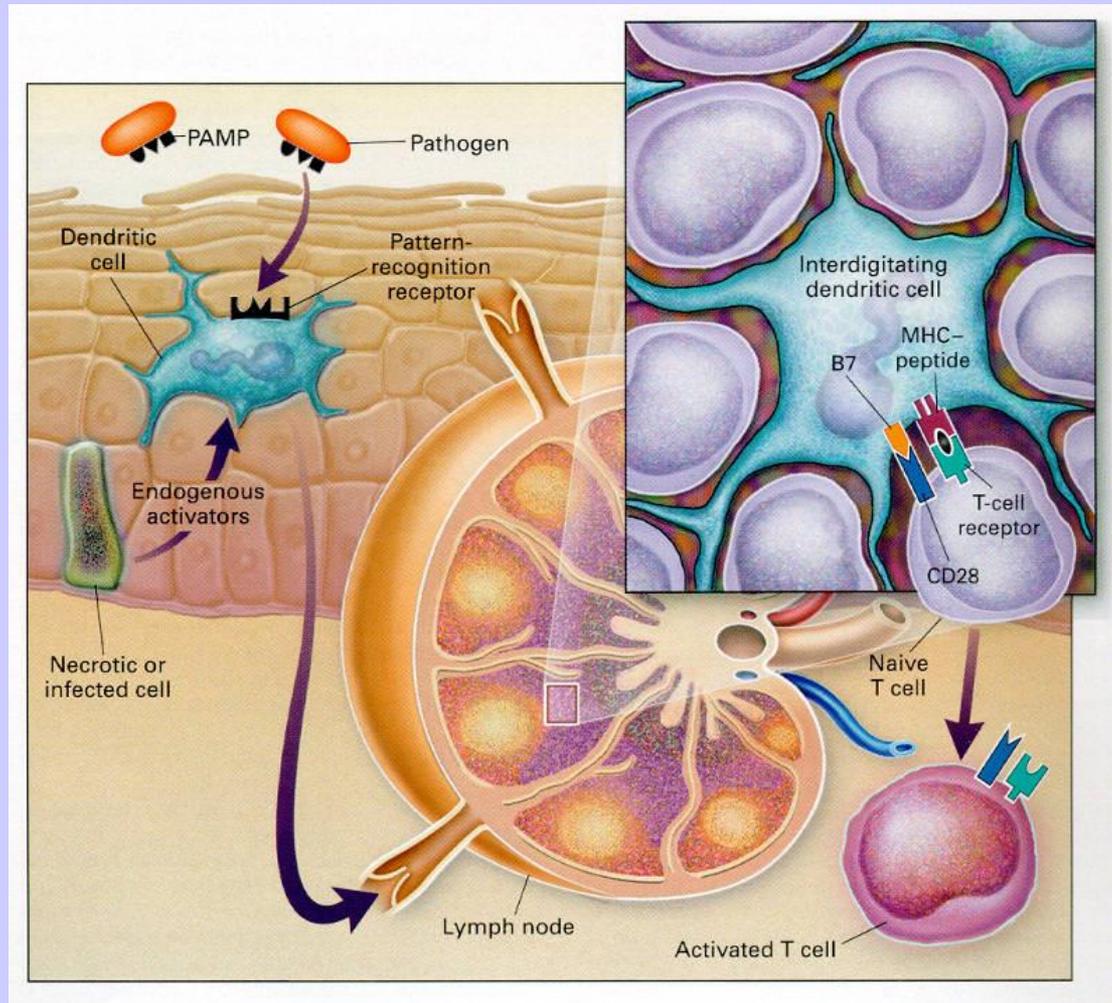
Menu

F

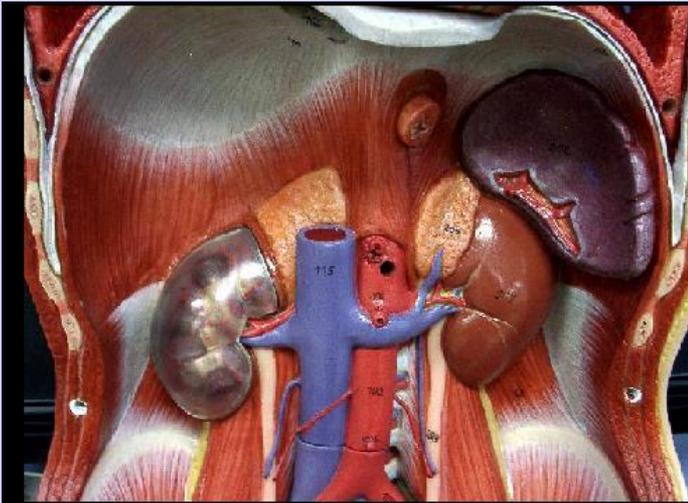
Centro Germinativo



Células Dendríticas Interdigititantes



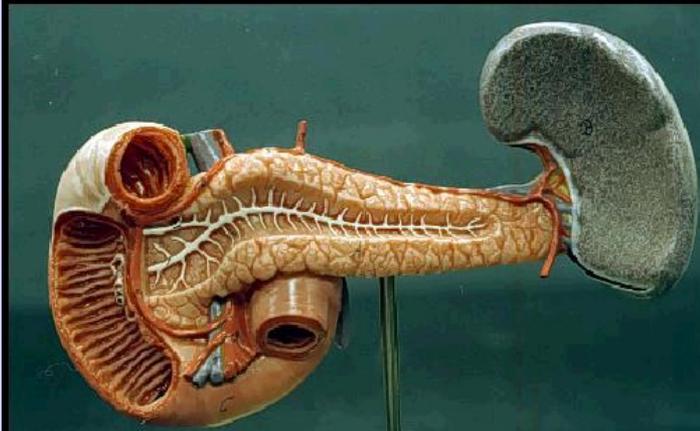
BAÇO



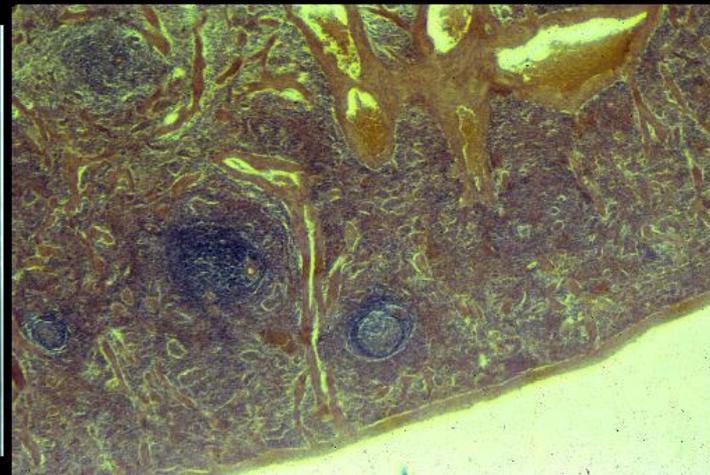
spleen2a.jpg



spleen3.jpg

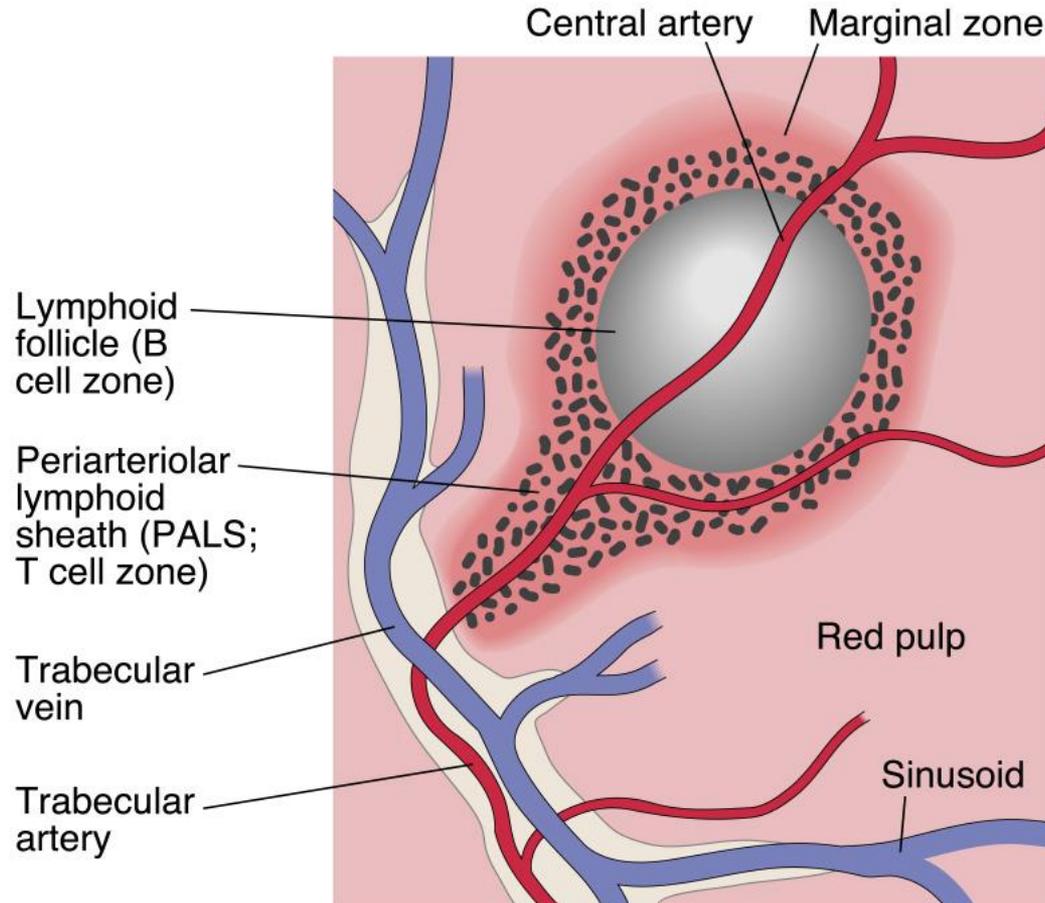


pnduosp1.jpg



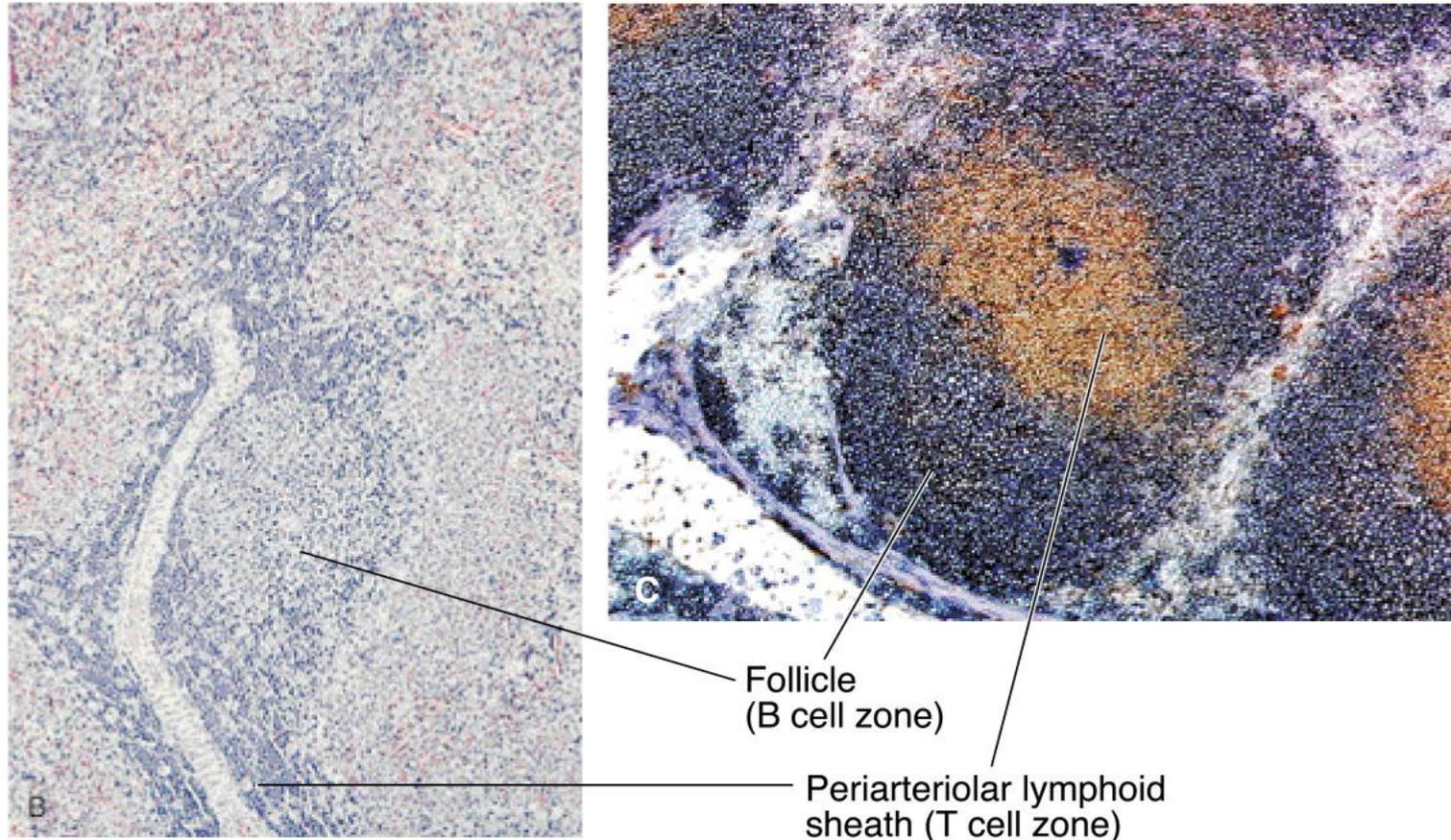
spleen2.jpg

Morfologia do Baço



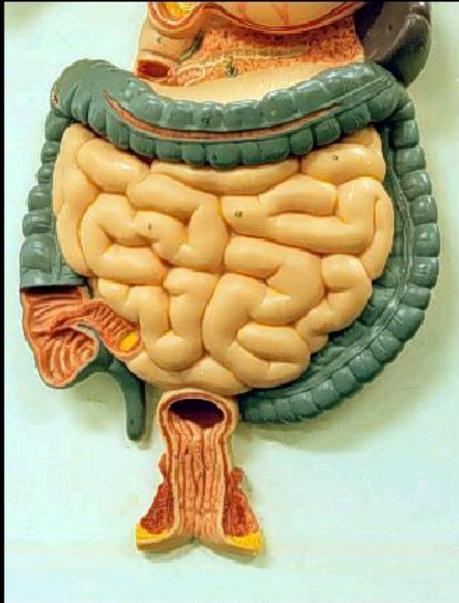
From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-11a

Morfologia do Baço

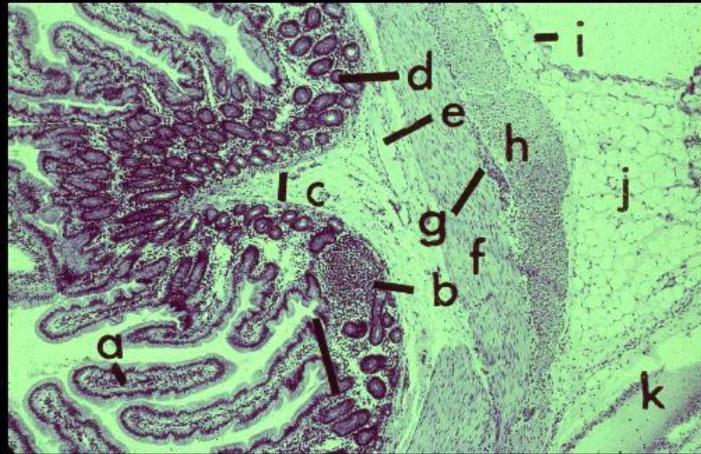


From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-11b

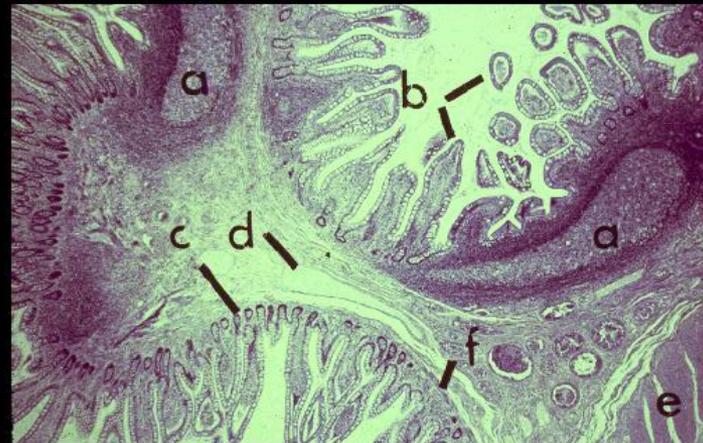
MALT



dg5.jpg



smalli1.jpg



peyer1.jpg

MUCOSAS

Mais extensa área de contato entre o organismo e o meio externo

Adulto normal :

Pele - 1,73 m²

Mucosas - 400 m²

Principal porta de entrada de antígenos

MECANISMOS DE RESISTÊNCIA ANTI-INFECCIOSA DAS MUCOSAS

1. INATOS OU INESPECÍFICOS:

Movimento muco-ciliar do epitélio respiratório

Movimento peristáltico do intestino

Acidez gástrica

Fluxo urinário e lacrimal

Presença do muco, com numerosas enzimas e outros fatores anti-infecciosos

MECANISMOS DE RESISTÊNCIA ANTI-INFECIOSA DAS MUCOSAS

2. ESPECÍFICOS OU ADAPTATIVOS

Imunoglobulina A (SIgA)

Imunoglobulina M (SIgM)

Linfócitos Intra-Epiteliais (CD8+)

CONCENTRAÇÕES DE IgA EM SECREÇÕES EXTERNAS DE ADULTOS NORMAIS (mg %)

Saliva	1
Secreção nasal	84
Secreção duodenal	31
Urina	0,62
Colostro	1.500
Sangue	200

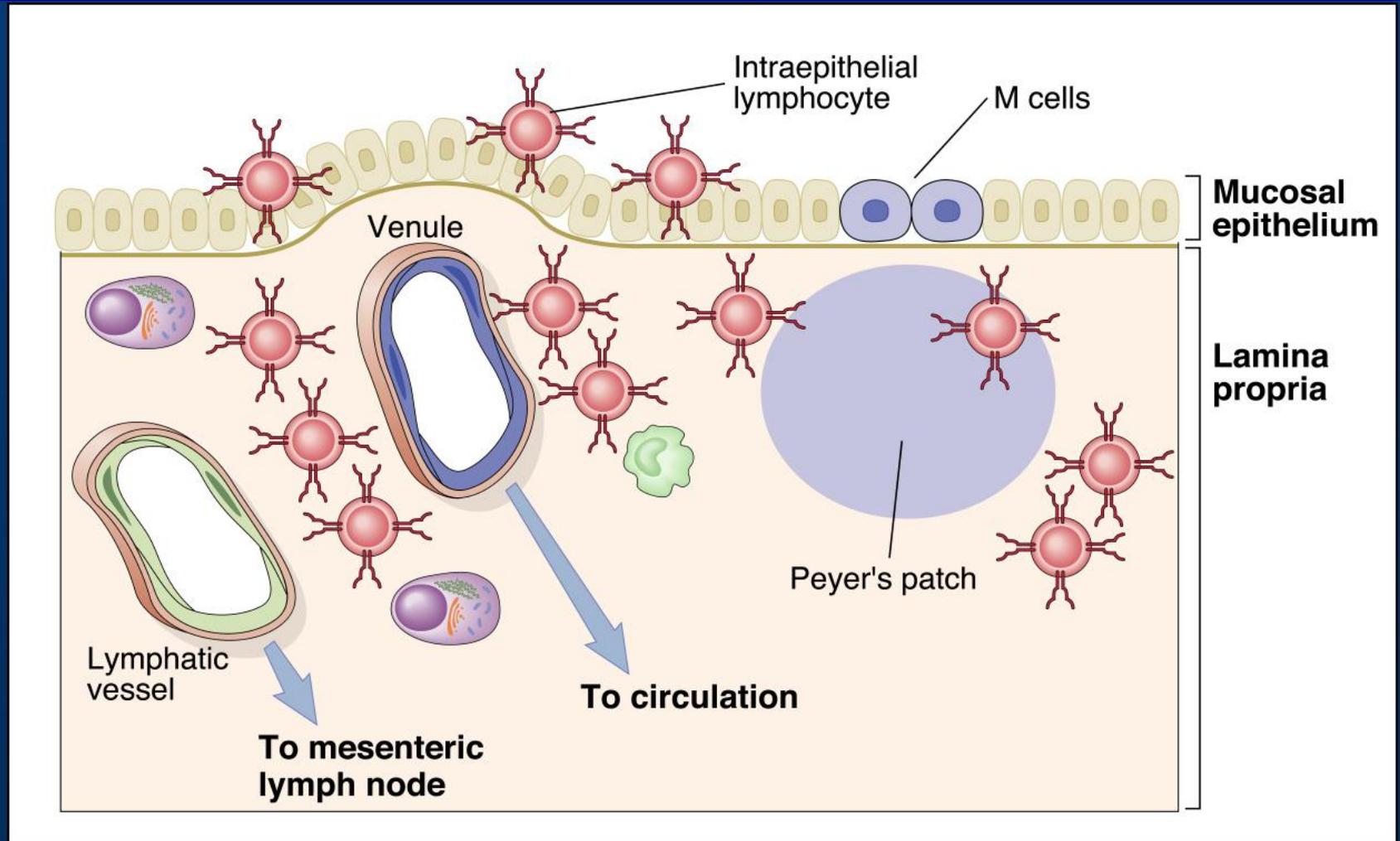
fonte: Goldblum, Hanson & Brandtzaeg, 1996

IMUNIDADE DE MUCOSAS

**Um experimento da
natureza :**

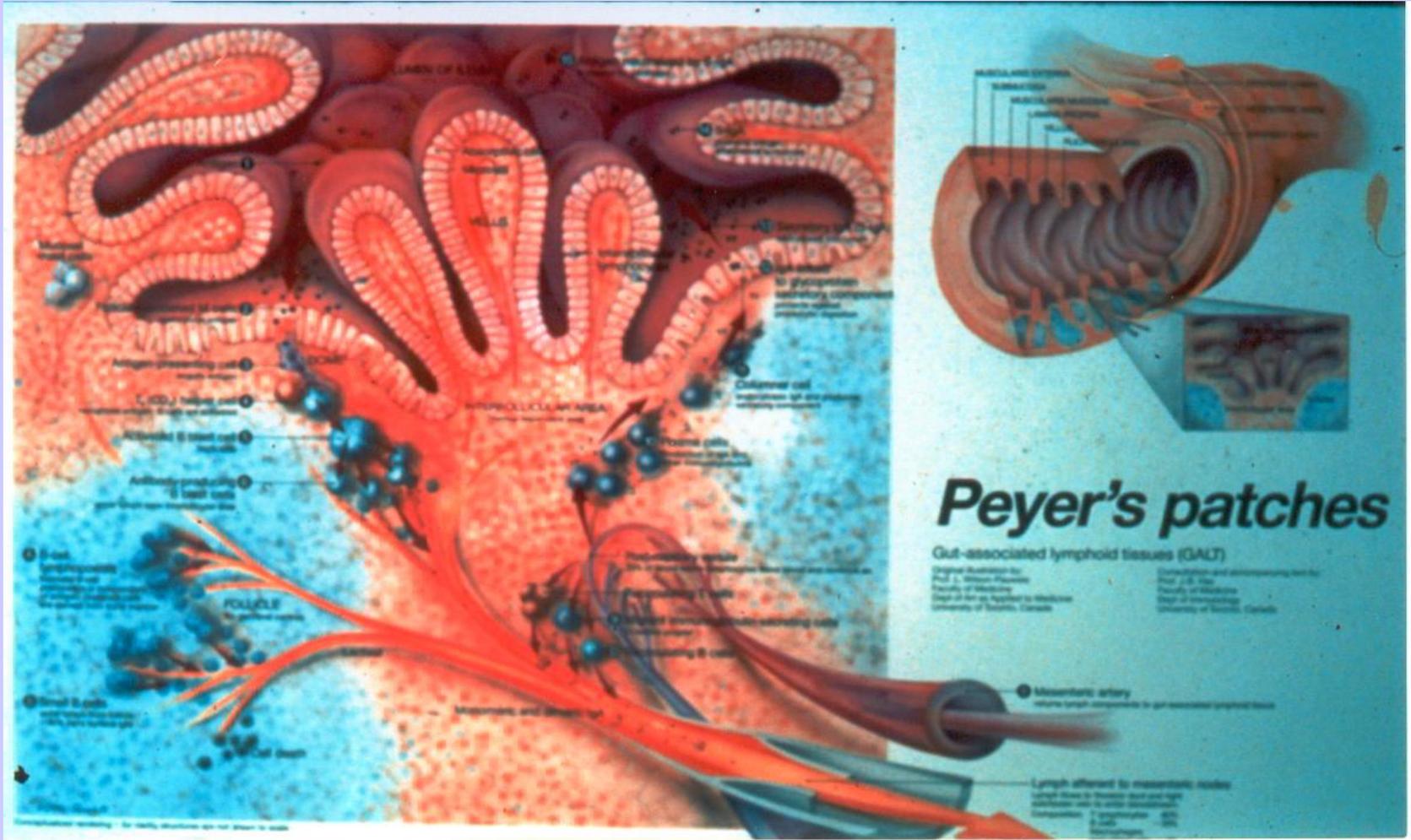
Deficiência Seletiva de IgA

Sistema Imune das Mucosas: Intestino

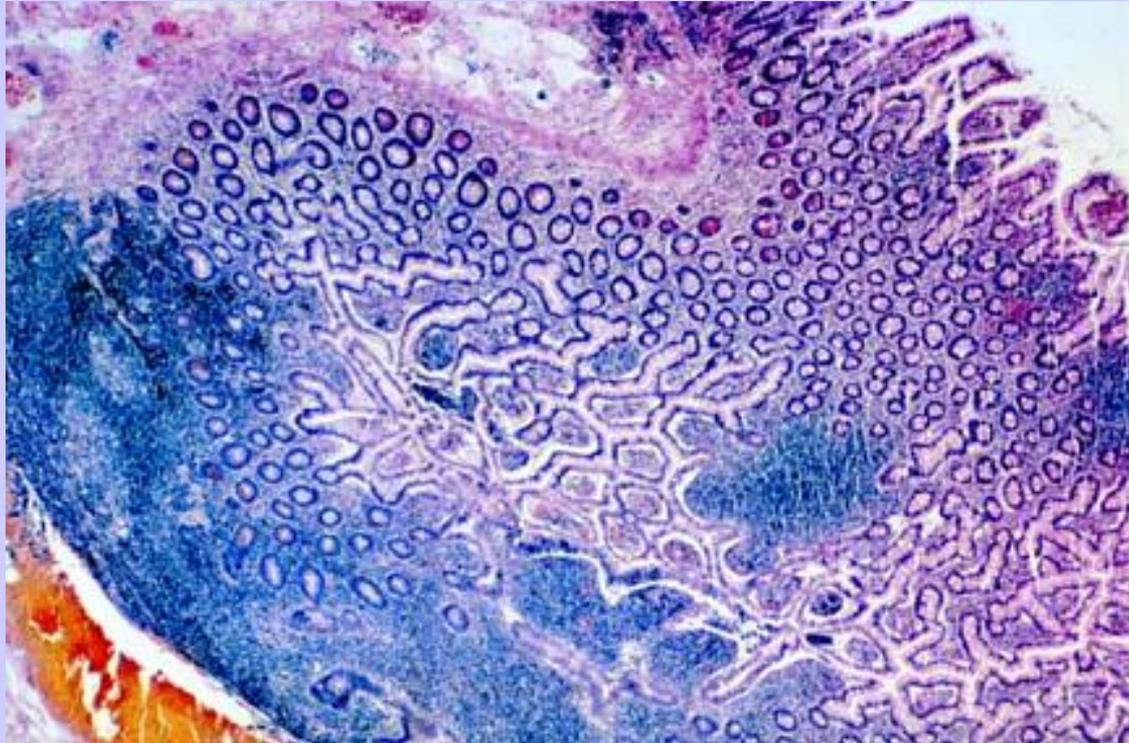


From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-13a

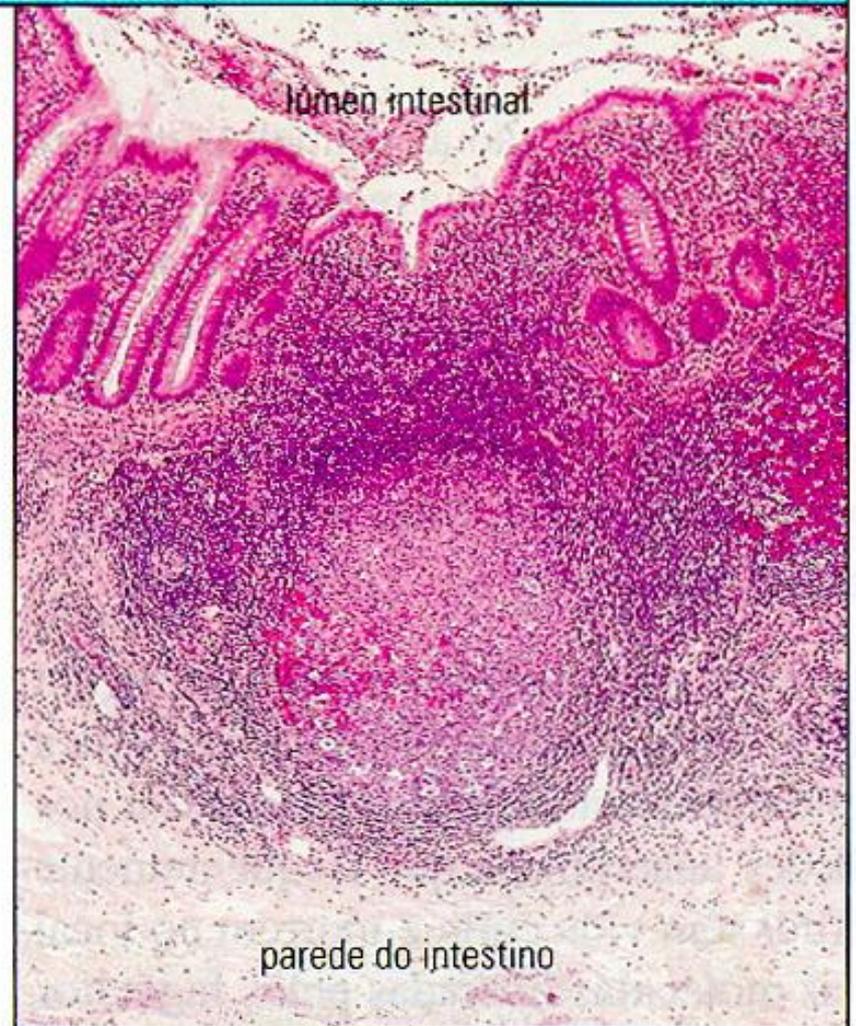
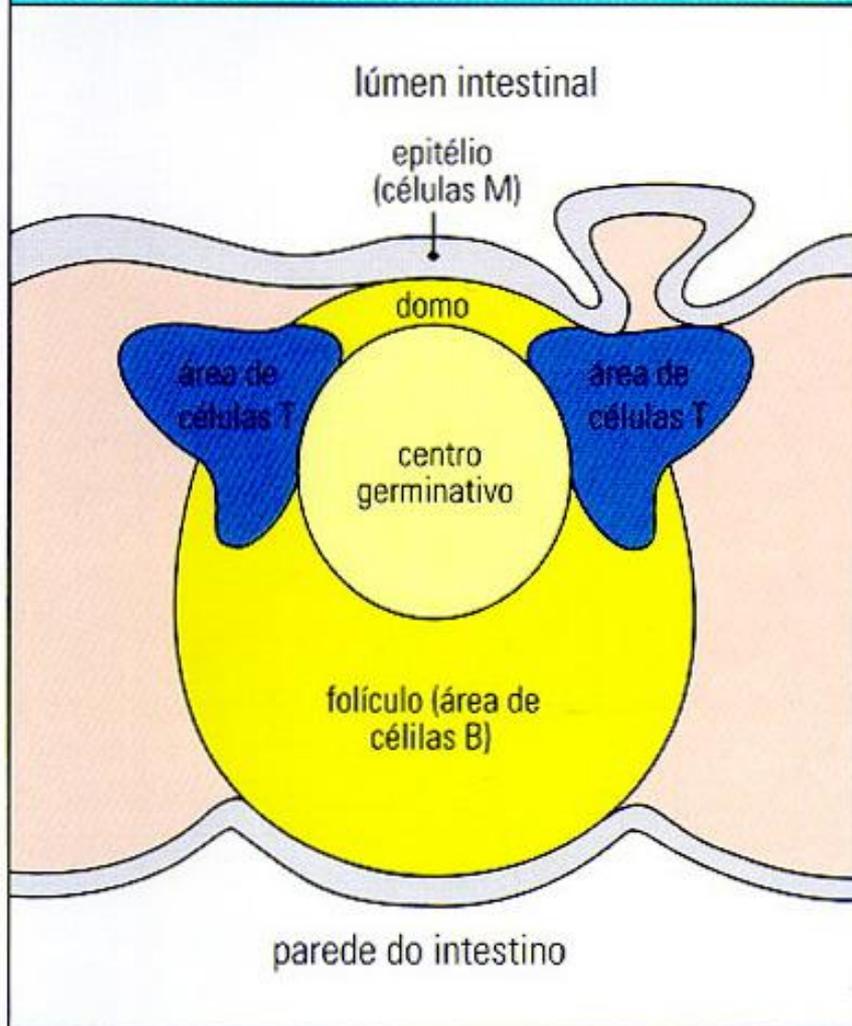
Placas de Peyer



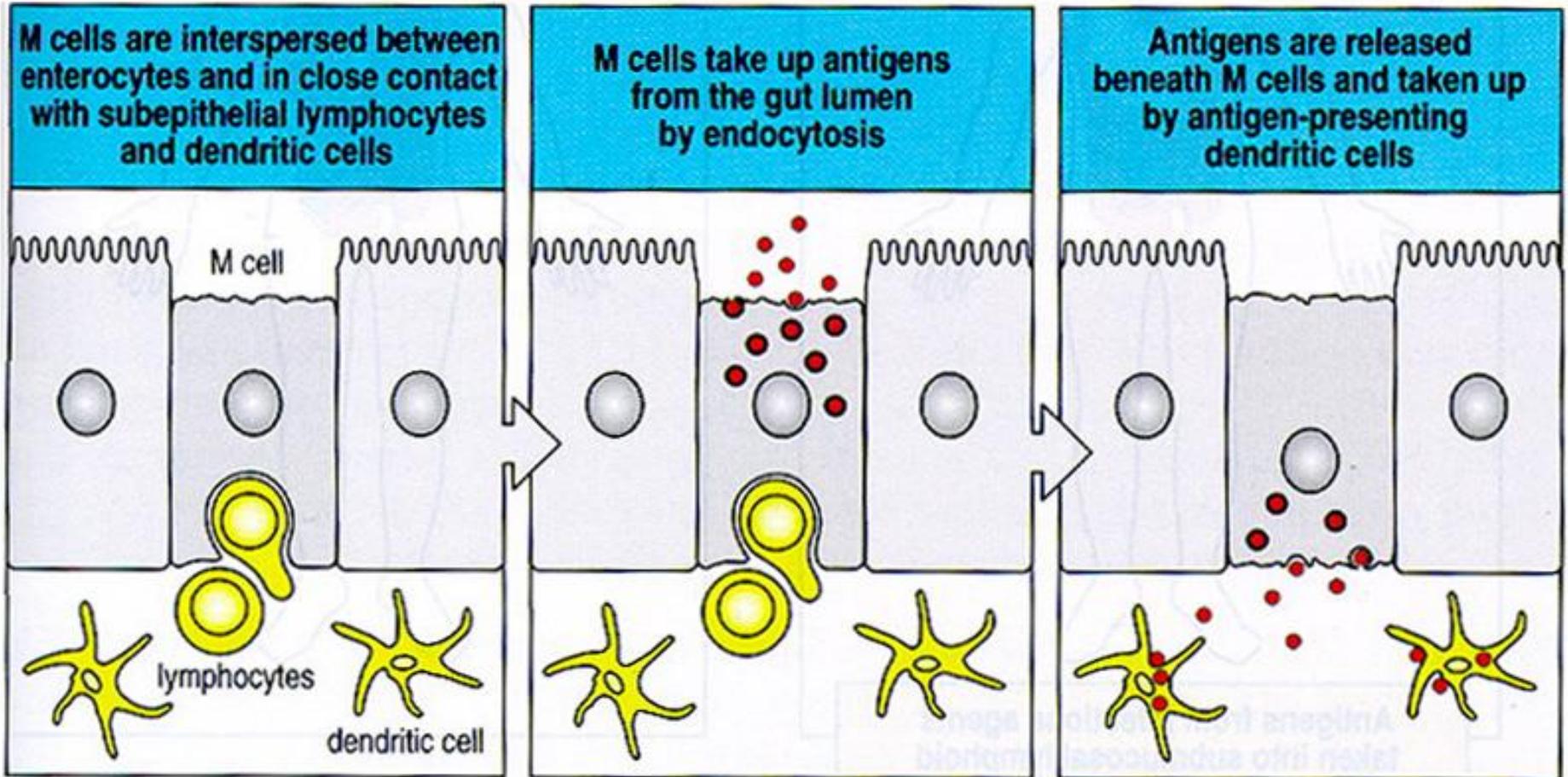
PLACA DE PEYER



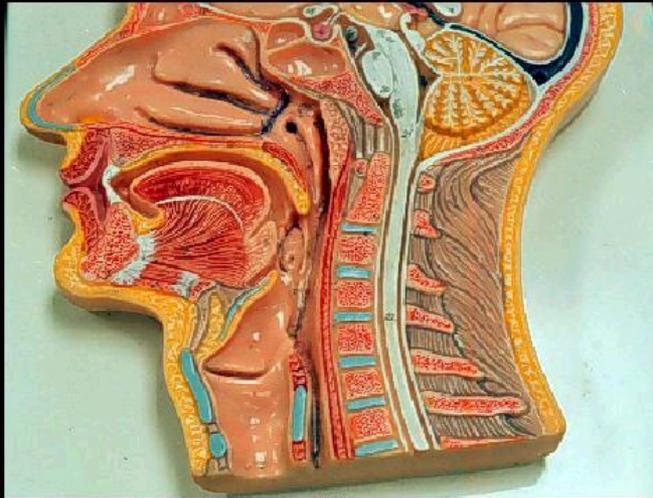
Tecido linfóide associado ao intestino



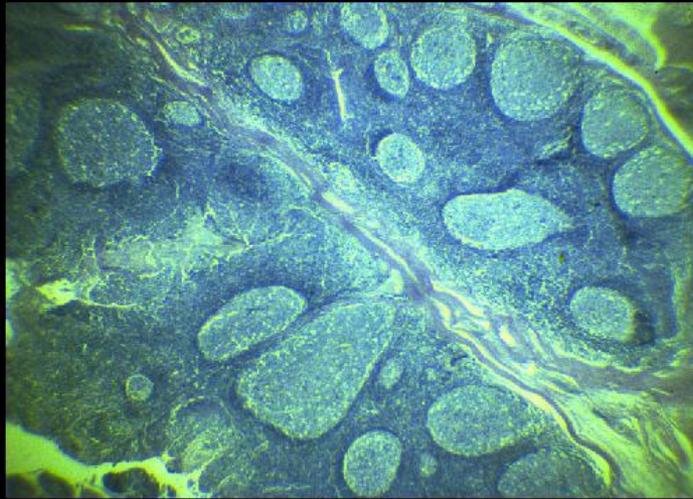
Entrada dos antígenos pelo epitélio intestinal



TONSILAS

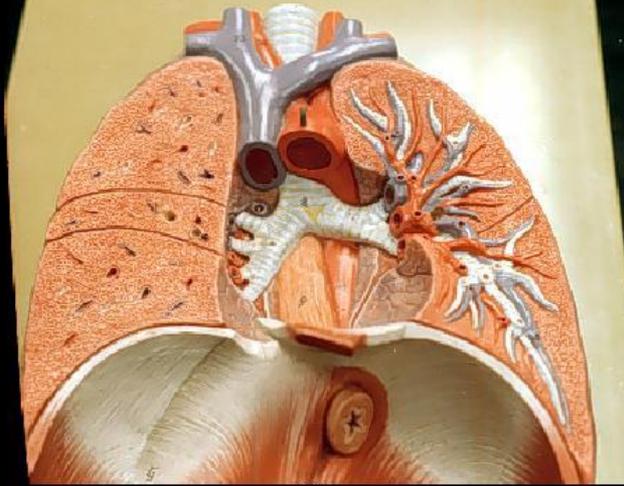


rs1.jpg

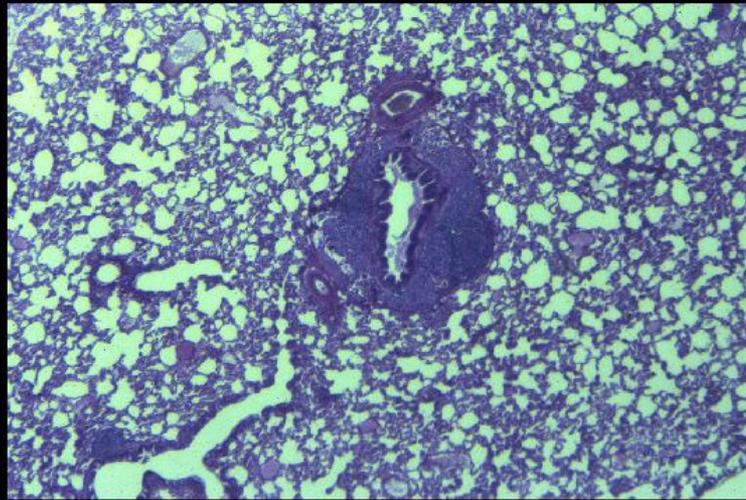


tonsil.jpg

BALT



rs10.jpg



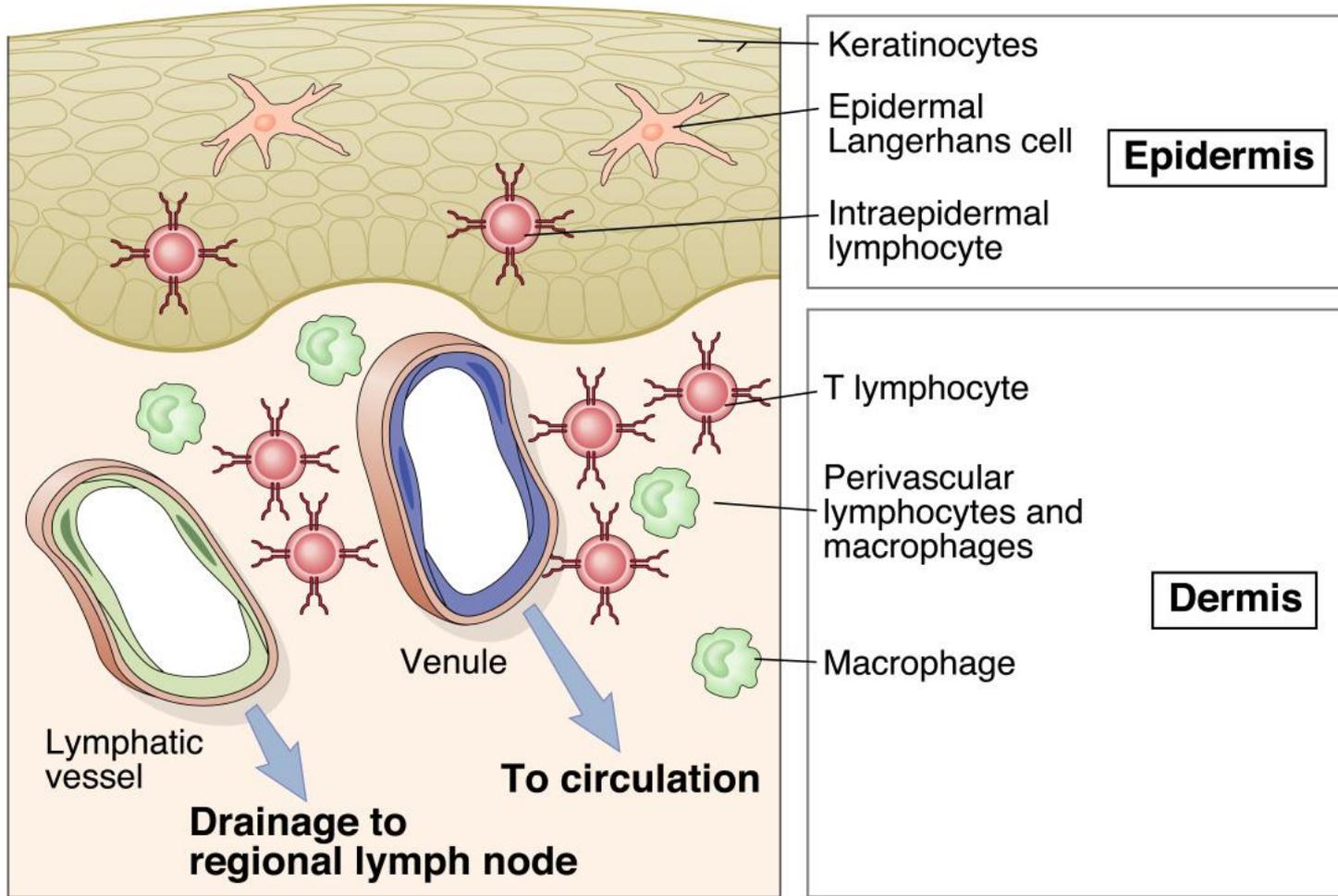
bronch~1.jpg

Barreiras Naturais

PELE

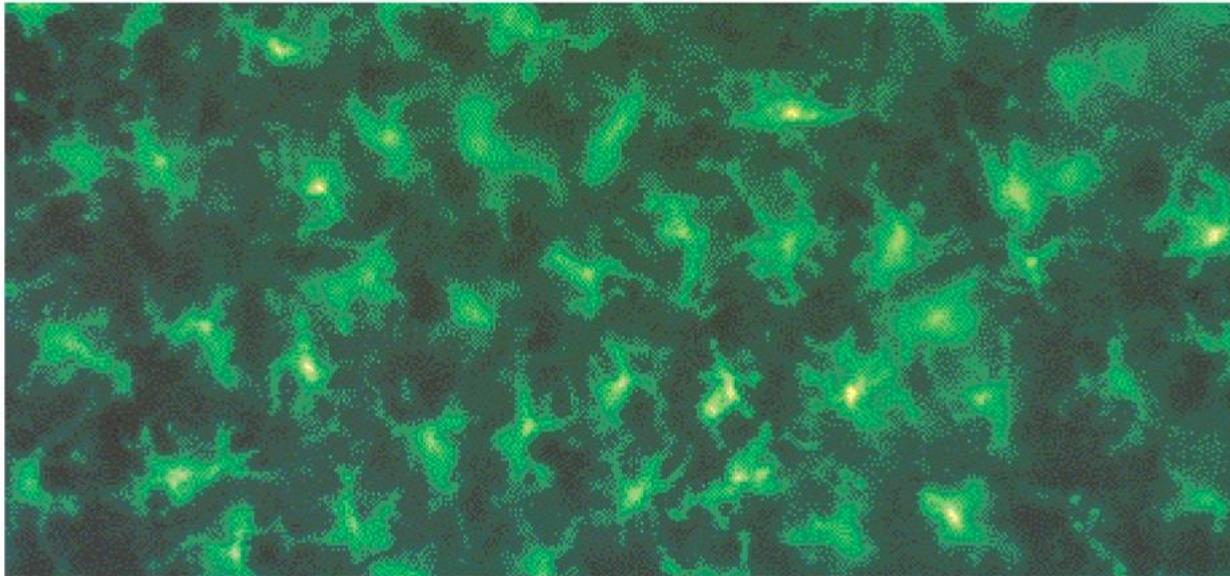
- ✓ Integridade do tecido (camadas queratinizadas)
- ✓ ácidos graxos - pH baixo
- ✓ flora normal

Sistema Imune na Pele



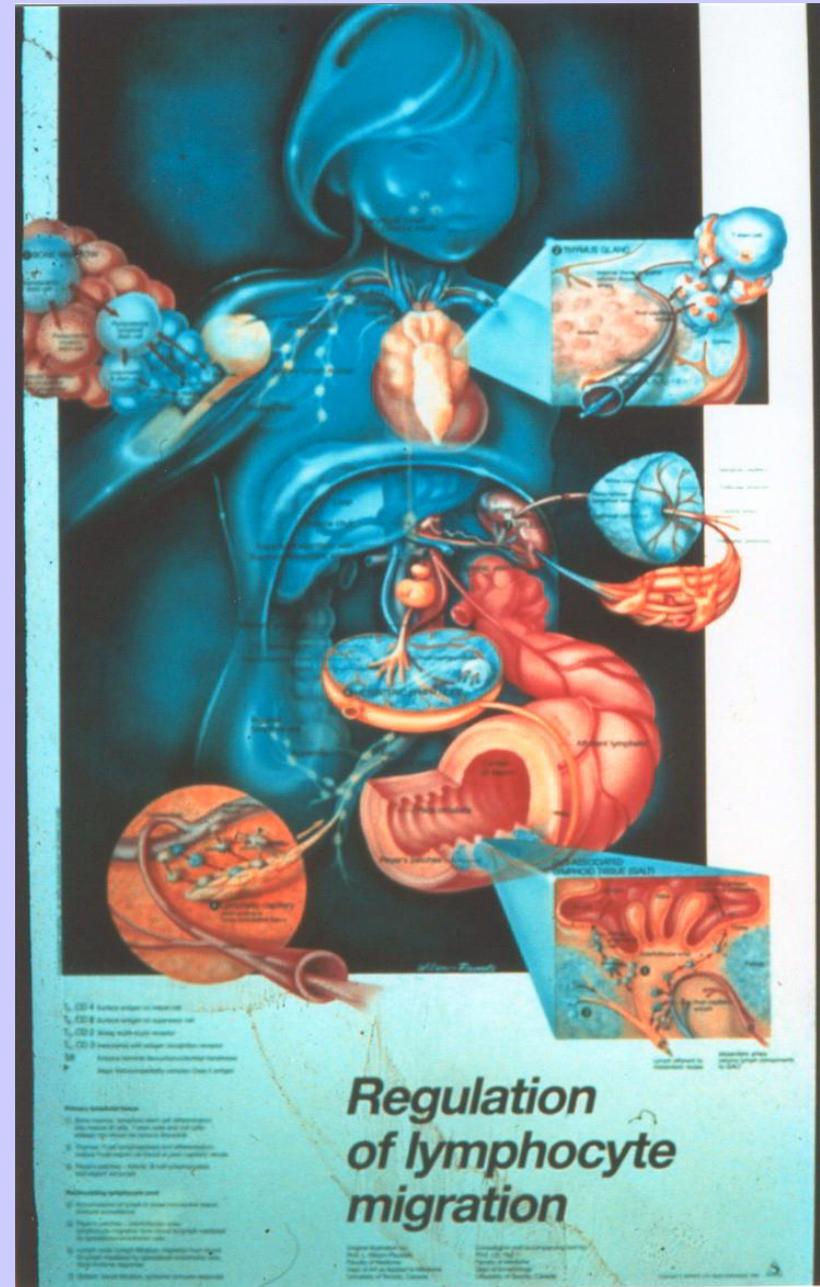
From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-12

Células de Langerhans da Epiderme

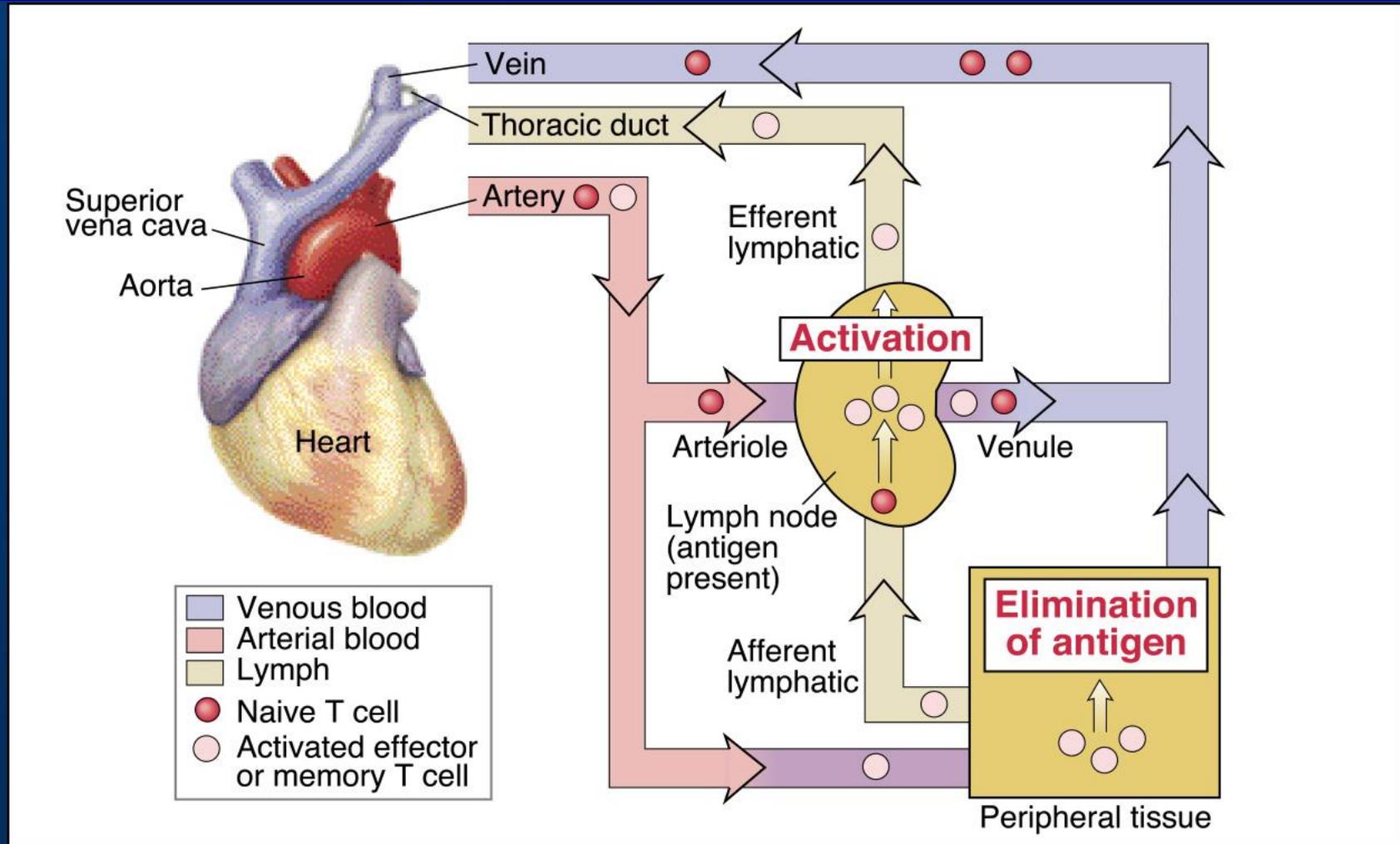


From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-6

Circulação Linfocitária

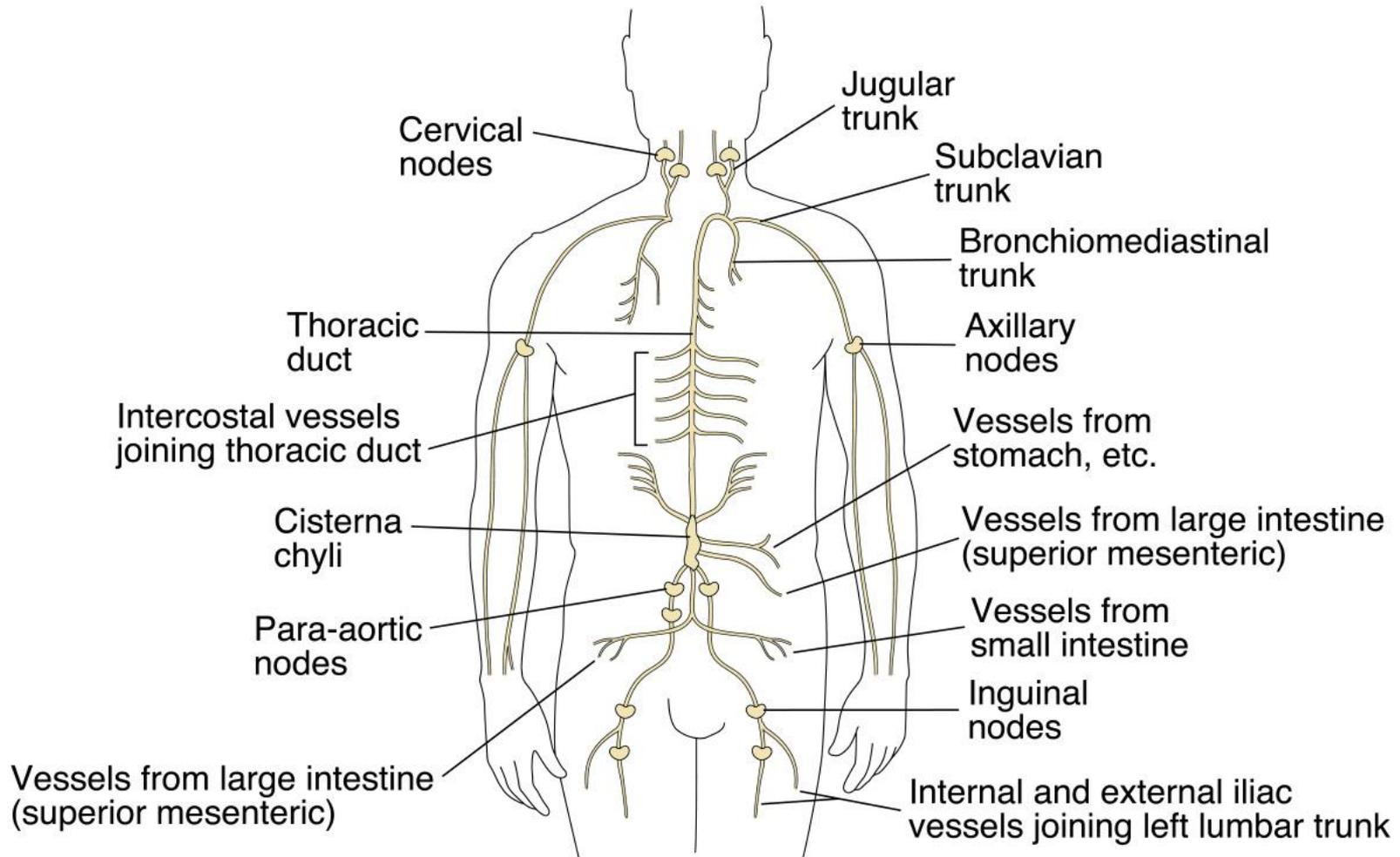


Circulação dos Linfócitos T



From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-14

Sistema Linfático

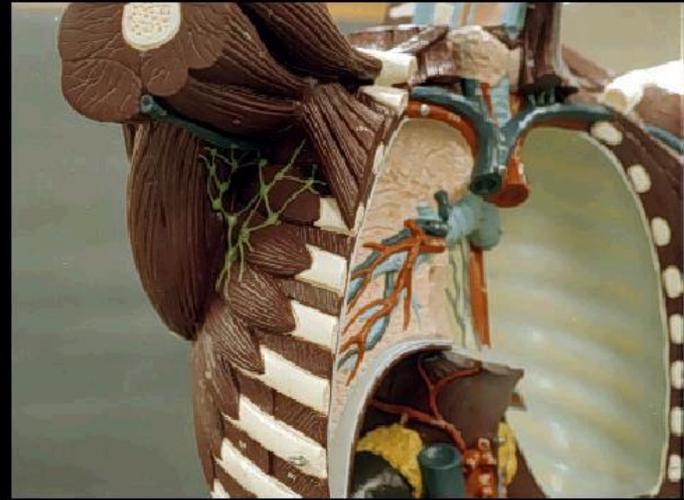


From Abbas, Lichtman, & Pober: Cellular and Molecular Immunology. W.B. Saunders, 1999, Fig. 2-10

Sistema Linfático



ly1.jpg



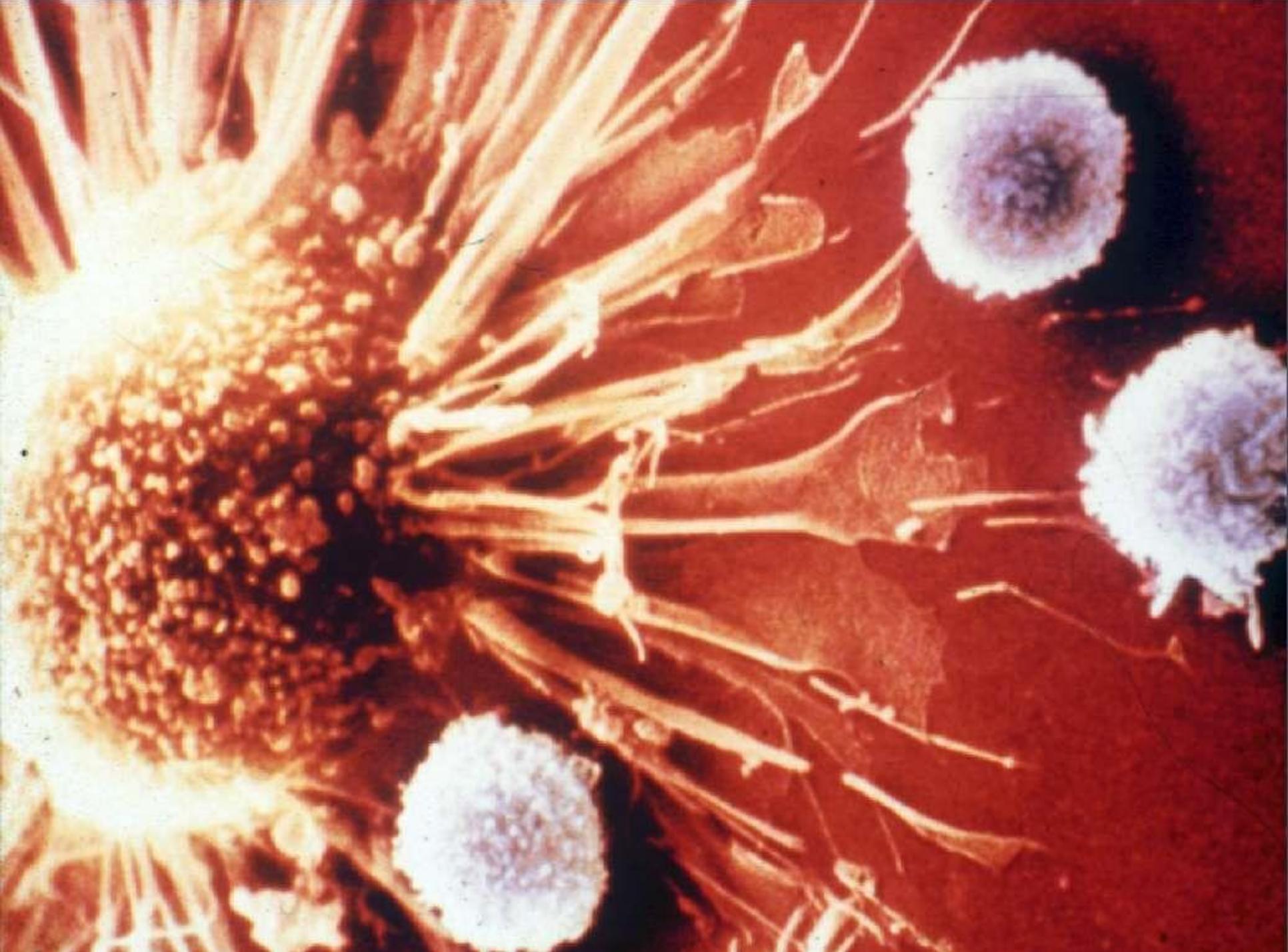
ly2.jpg



ly5.jpg



lms11.jpg



Grupo Brasileiro de Imunodeficiências



www.imunopediatria.org.br