

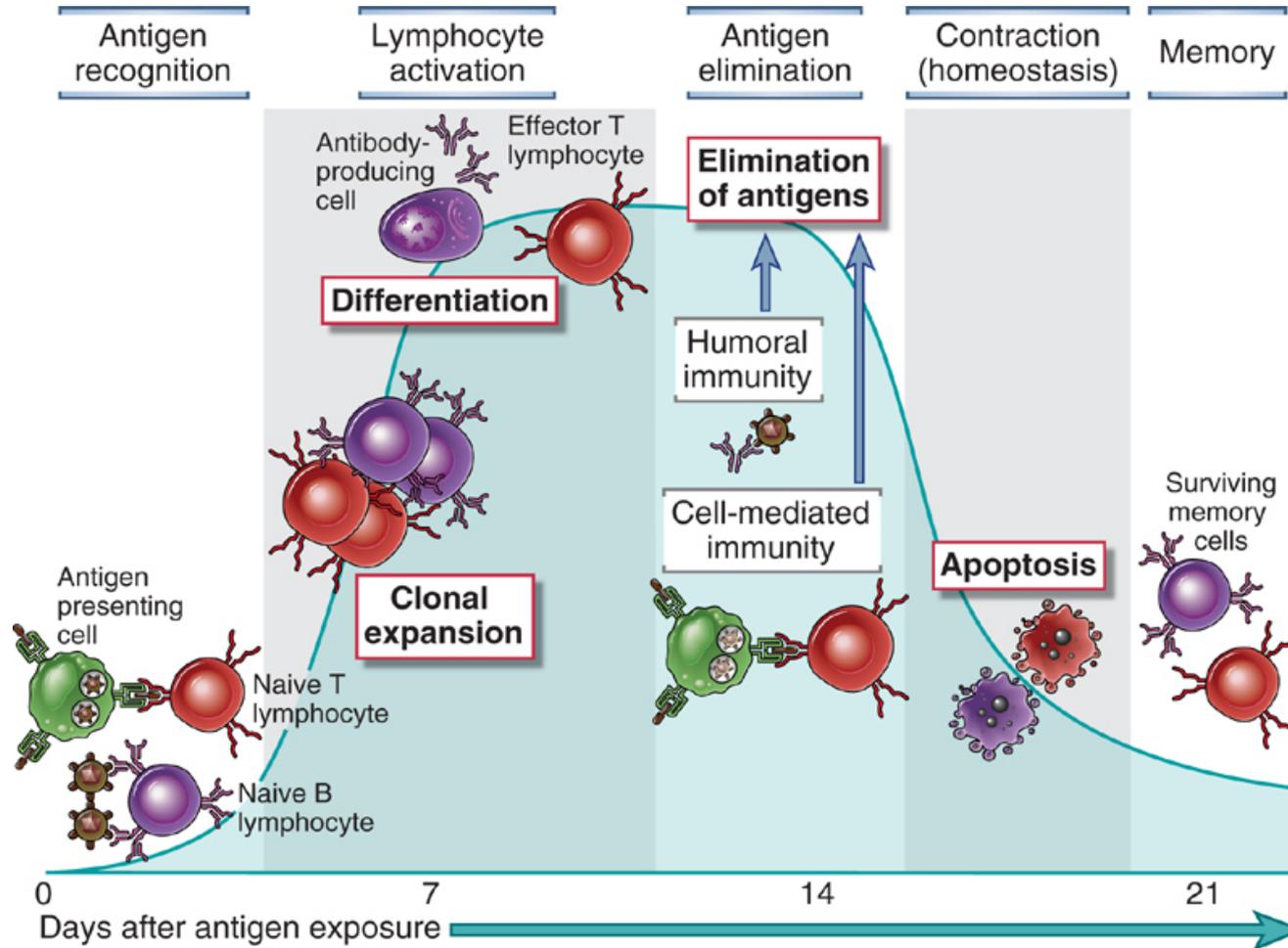


Ativação de Linfócitos T e B

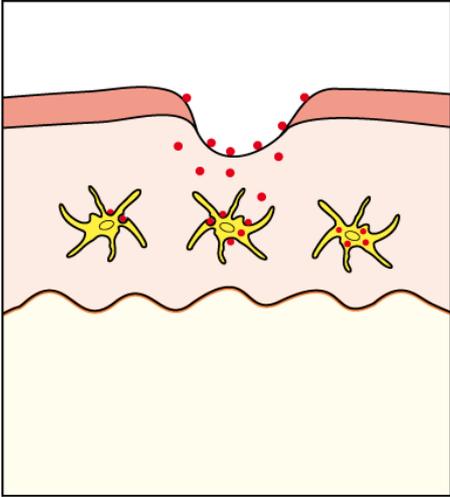
Prof. Vanessa Carregaro
Departamento de Bioquímica e Imunologia
FMRP-USP

Ribeirão Pret,o 12 de Março de 2020

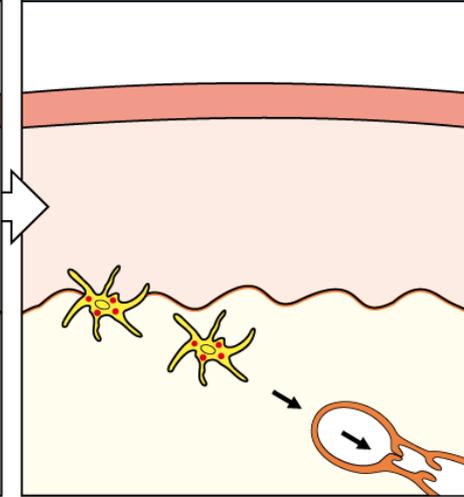
Fases das Respostas de Células T



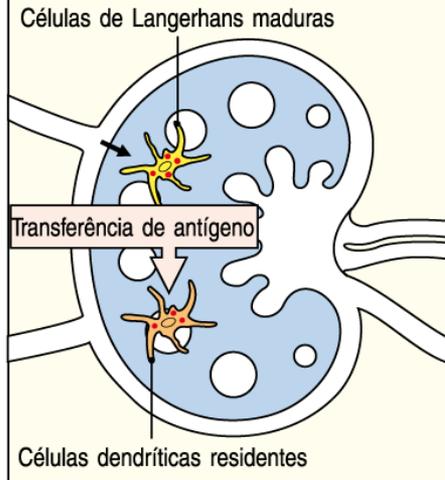
Antígenos são capturados na pele pelas células de Langerhans



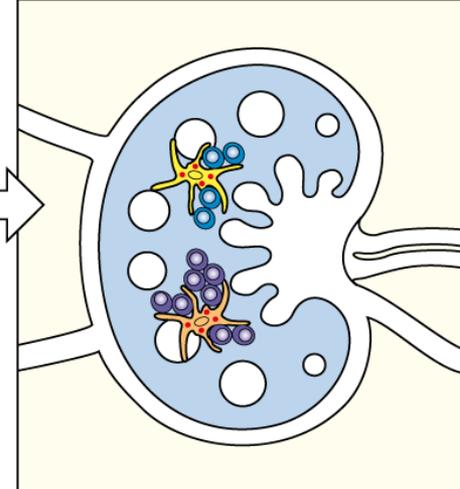
As células de Langerhans deixam a pele e entram no sistema linfático



As células dendríticas maduras dos tecidos infectados entram nos linfonodos e podem transferir alguns antígenos para as células dendríticas residentes

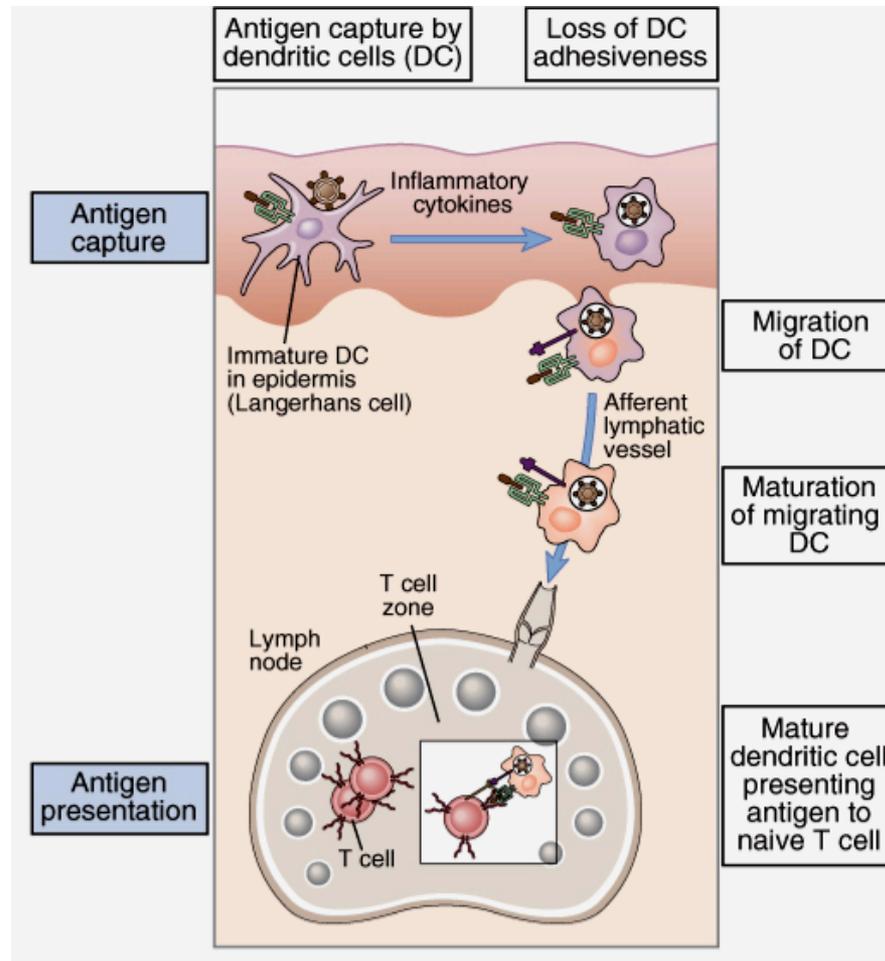


As células dendríticas B7 positivas estimulam as células T virgens



Fase 1: Reconhecimento do Antígeno

Captura e Apresentação



Células Presentadoras de Antígenos

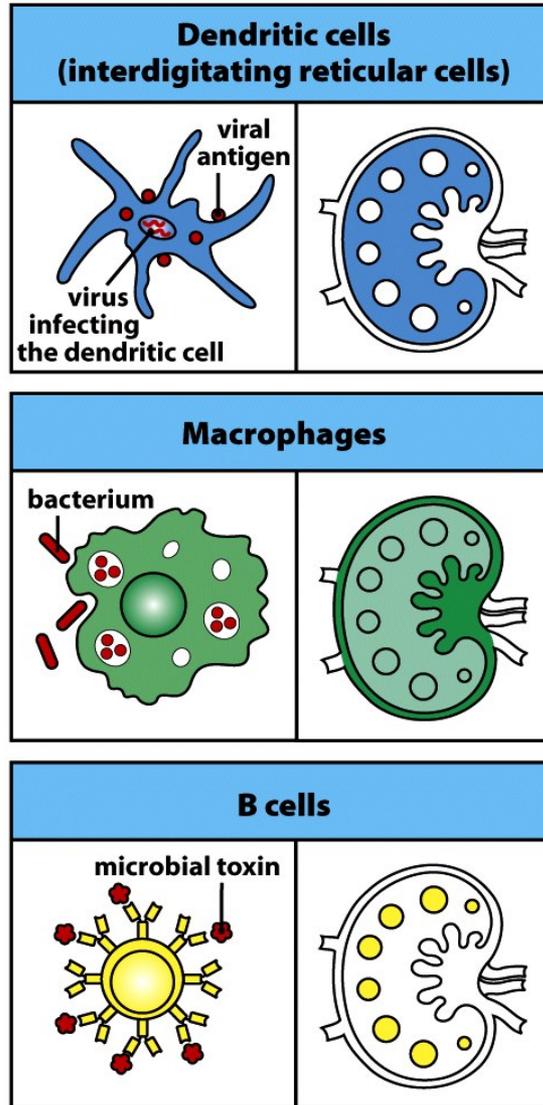
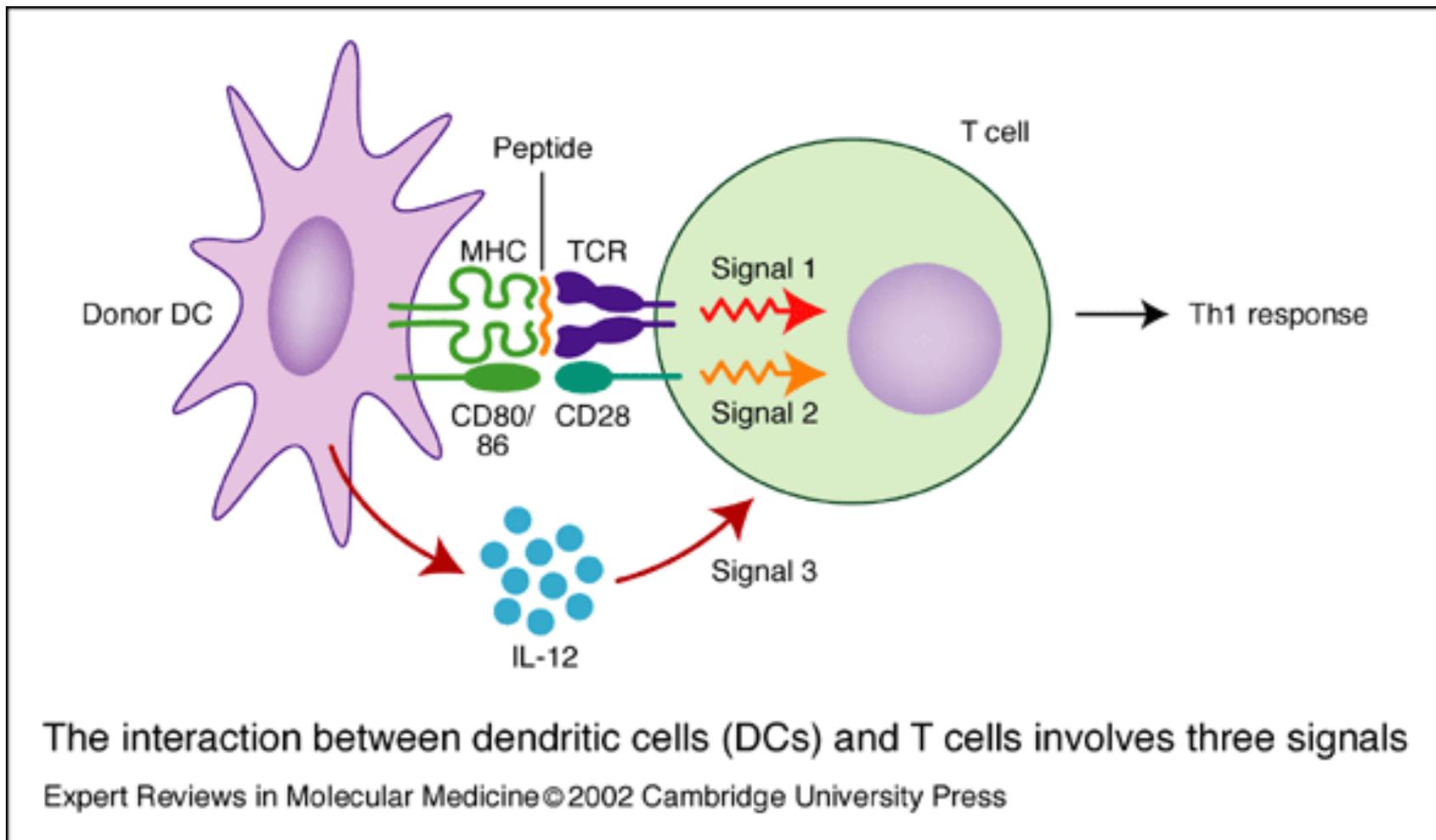


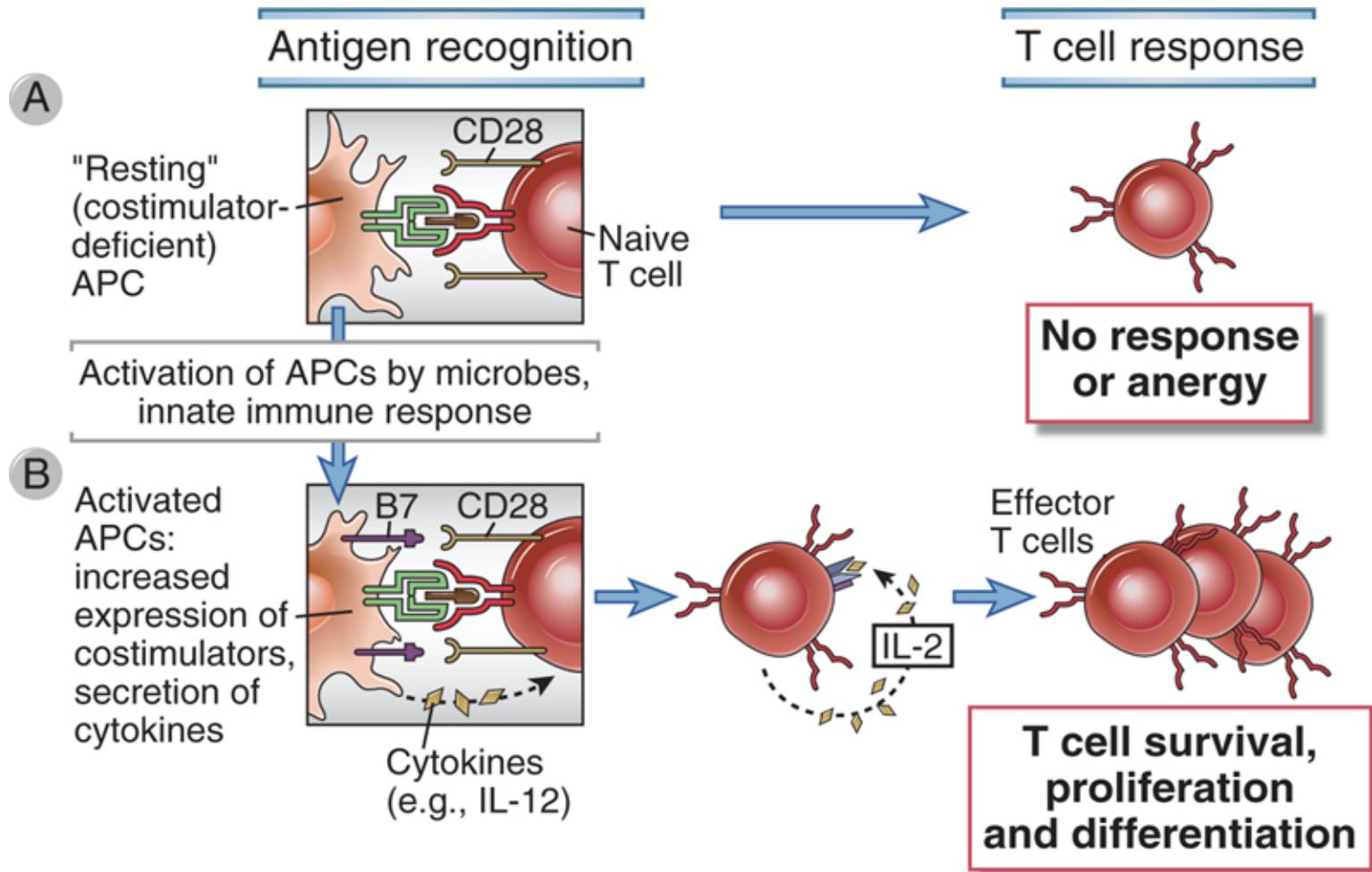
Figure 8-10 Immunobiology, 7ed. (© Garland Science 2008)

Fase 2: Ativação de Linfócitos

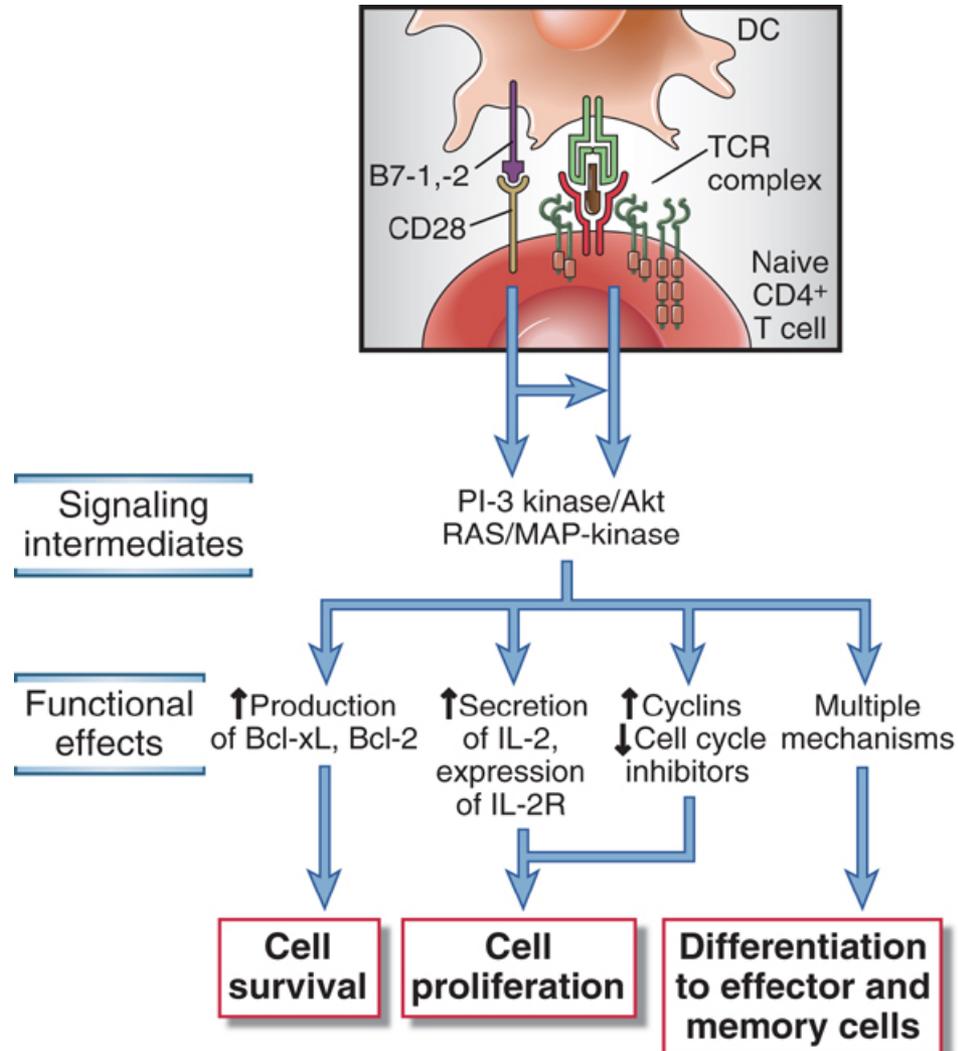


Fase 2: Ativação de Linfócitos

Papel de Moléculas Coestimuladoras



Molécula Coestimuladora: CD28



IL-2 e IL2R

T cell activation by antigen + costimulator

Secretion of IL-2

Expression of IL-2R α chain; formation of high-affinity IL-2R $\alpha\beta\gamma$ complex

IL-2-induced T cell proliferation

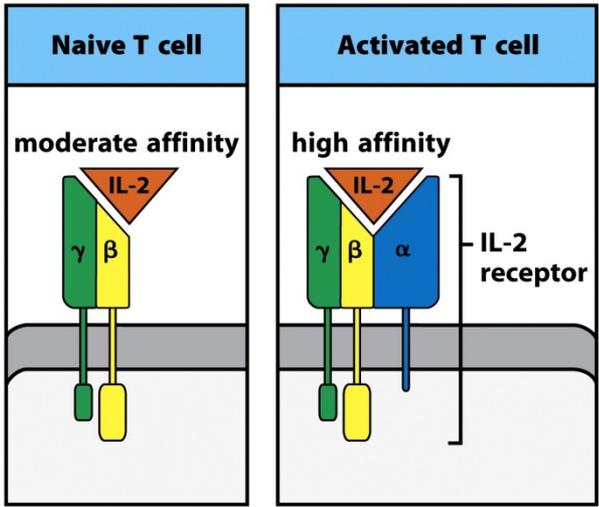
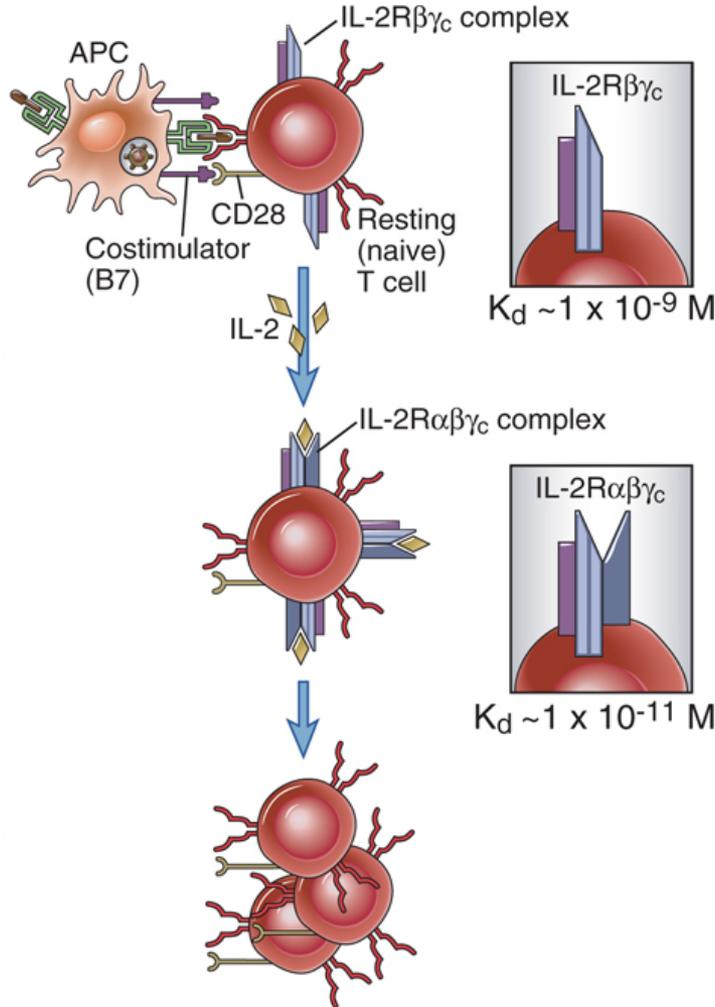
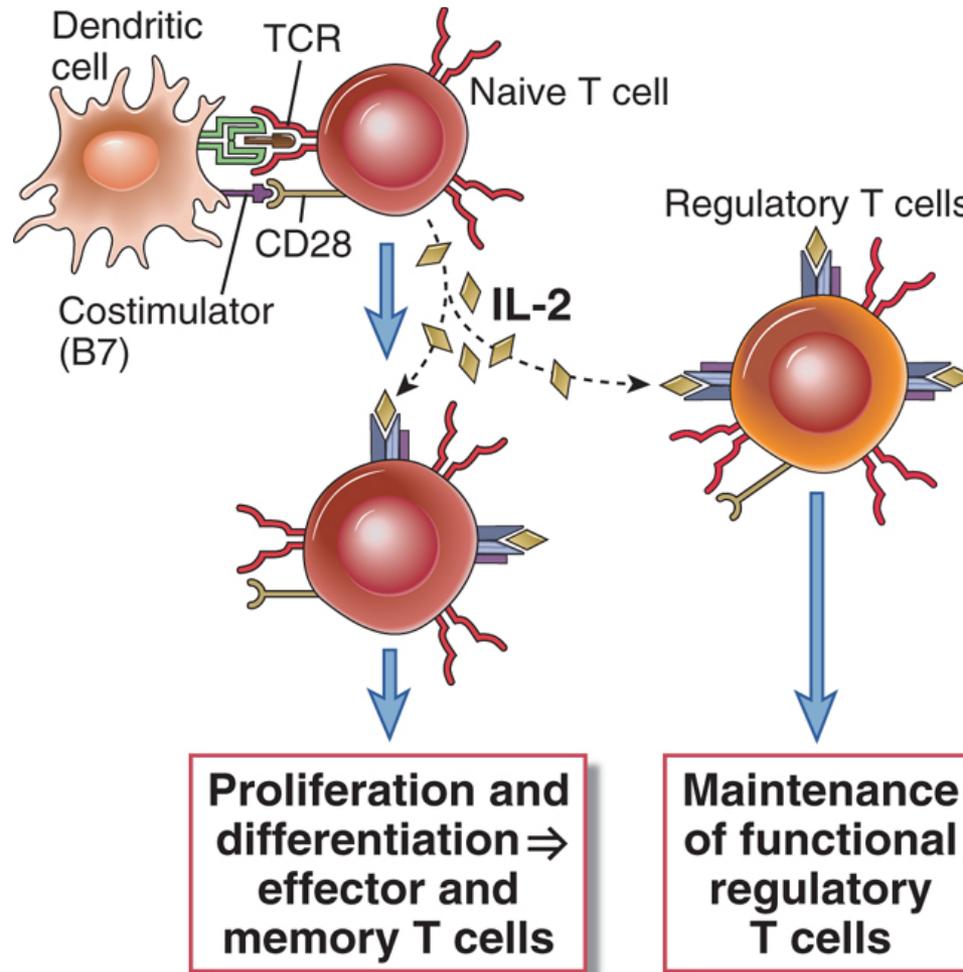


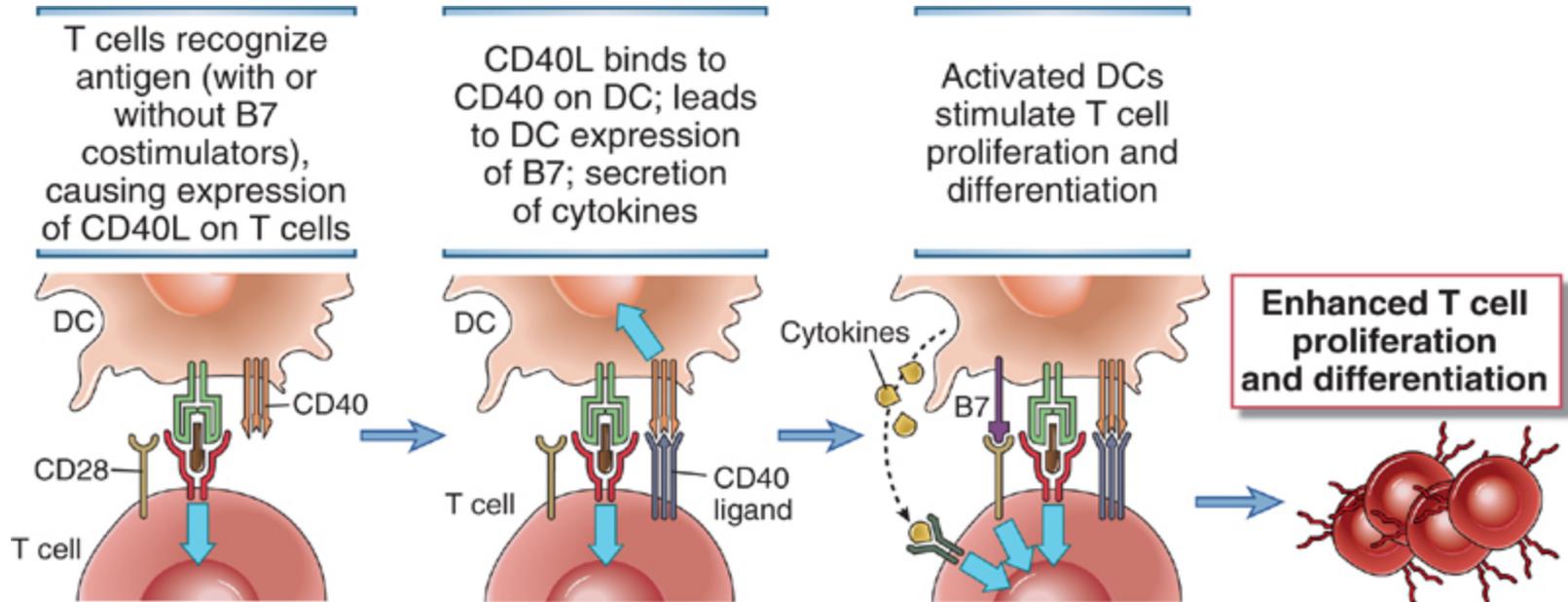
Figure 8-20 Immunobiology, 7ed, (© Garland Science 2008)

Papel Biológico da IL-2

Fase 3: Expansão Clonal



Molécula Coestimuladora: CD40



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Sinal 3: Citocinas

Diferenciação de Linfócitos T (Fase 4)

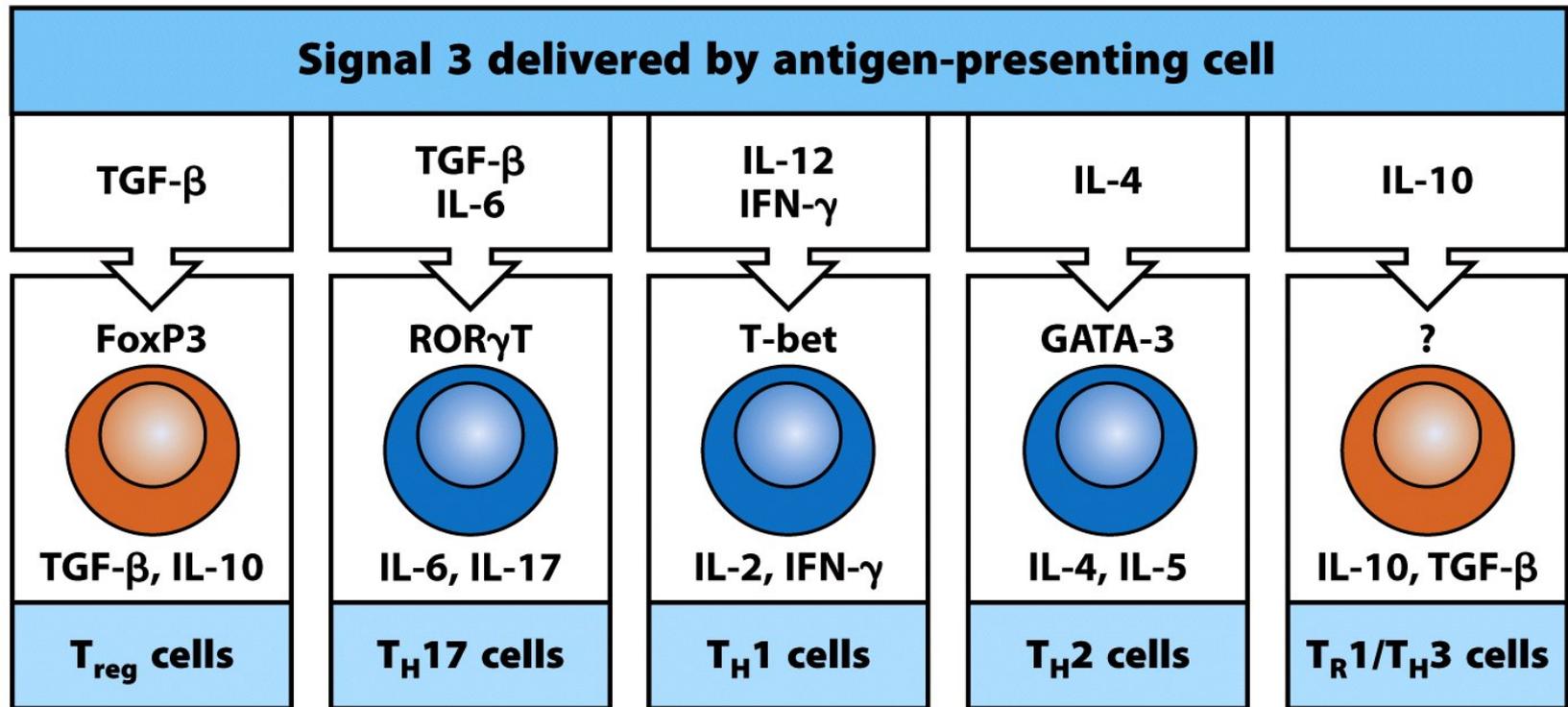
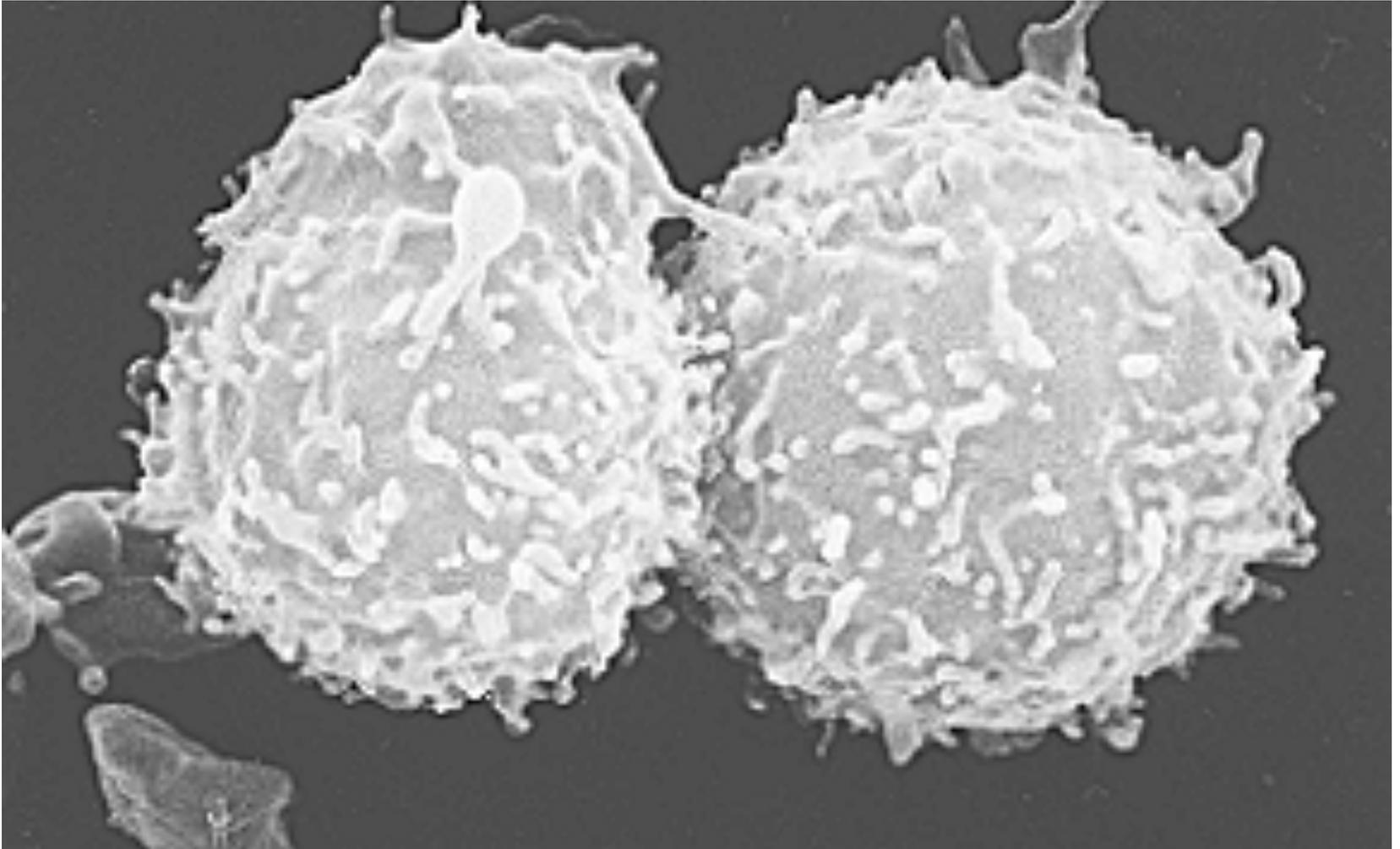
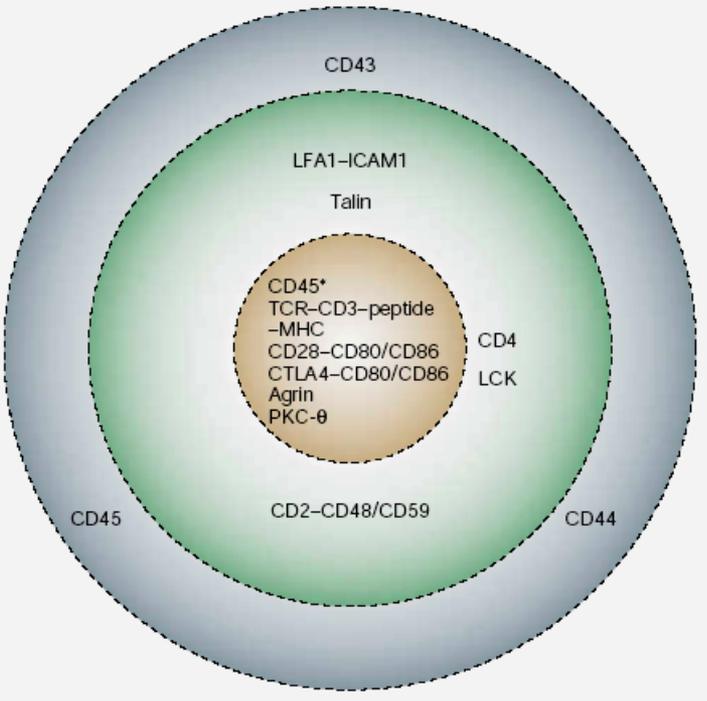
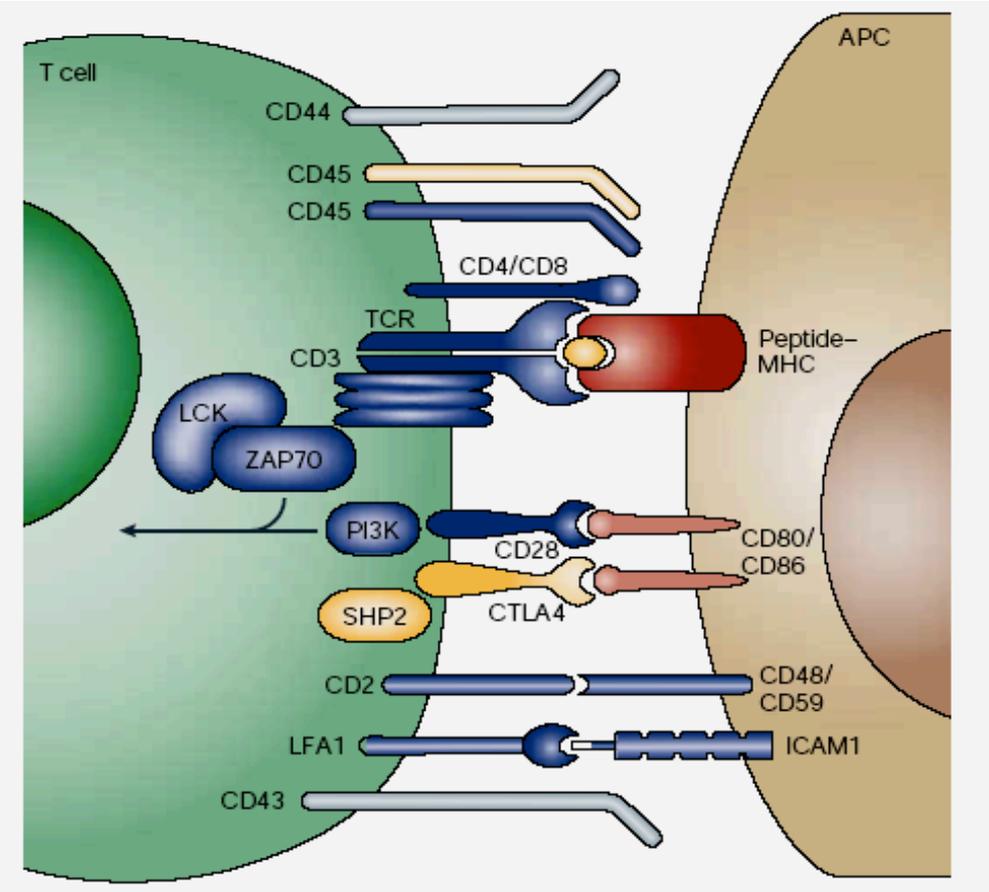


Figure 8-29 Immunobiology, 7ed. (© Garland Science 2008)

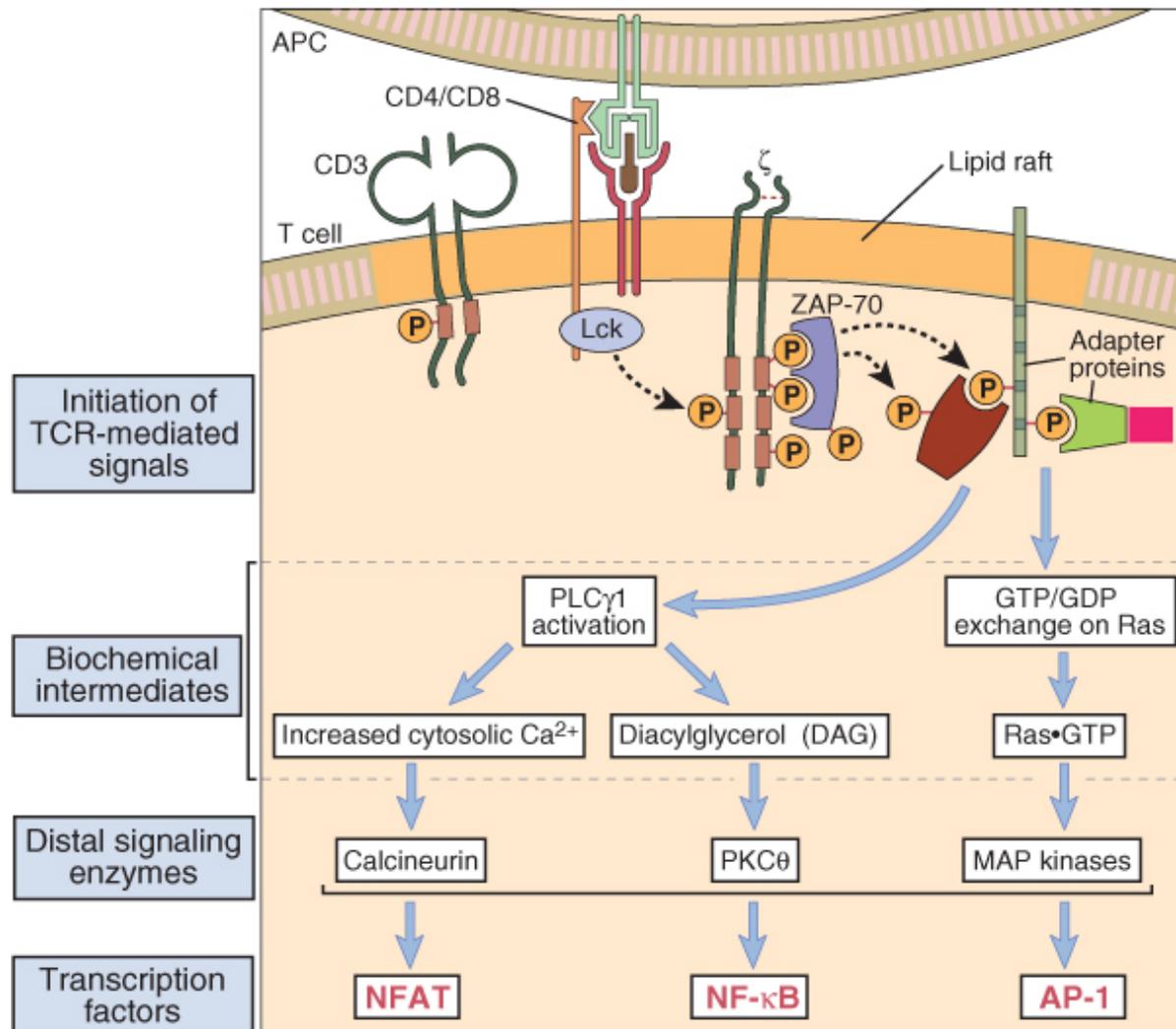
Sinapse Imunológica



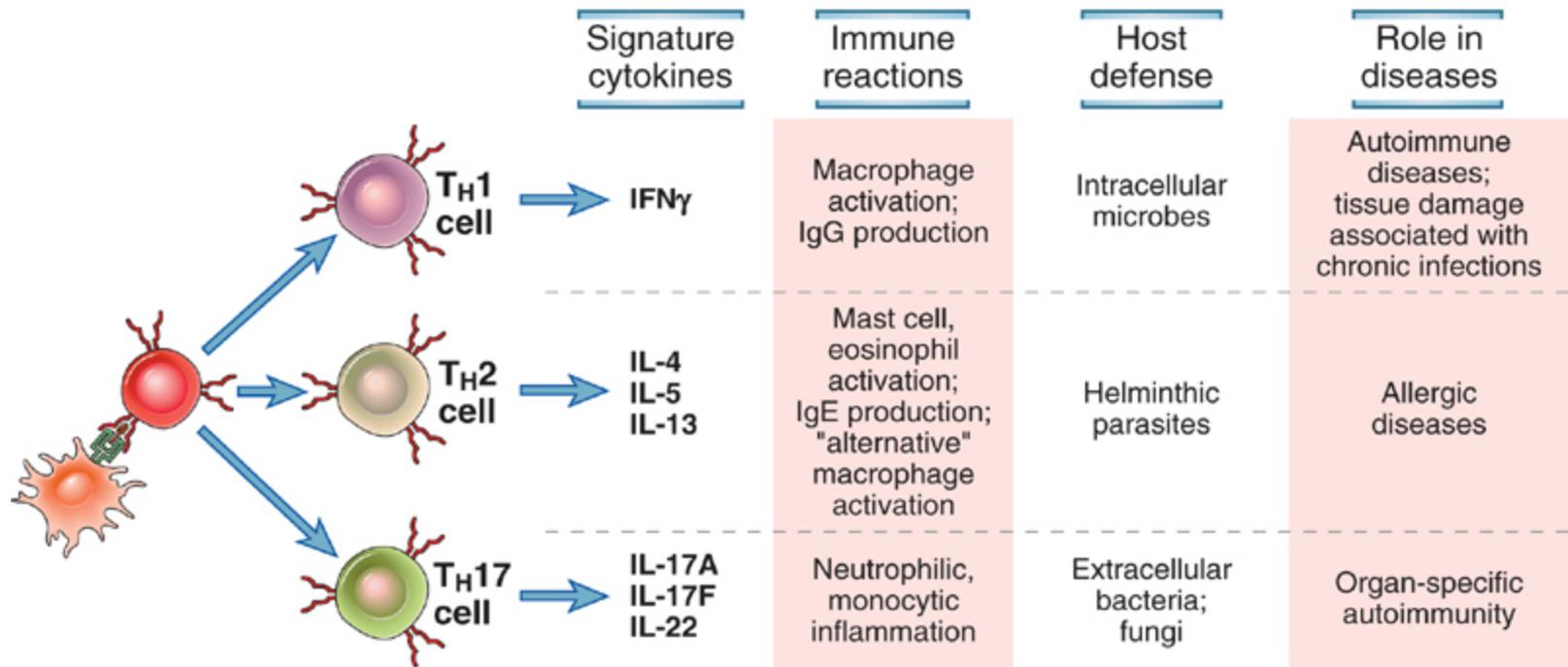
Sinapse Immunológica



Sinalização intracelular durante ativação de linfócitos T

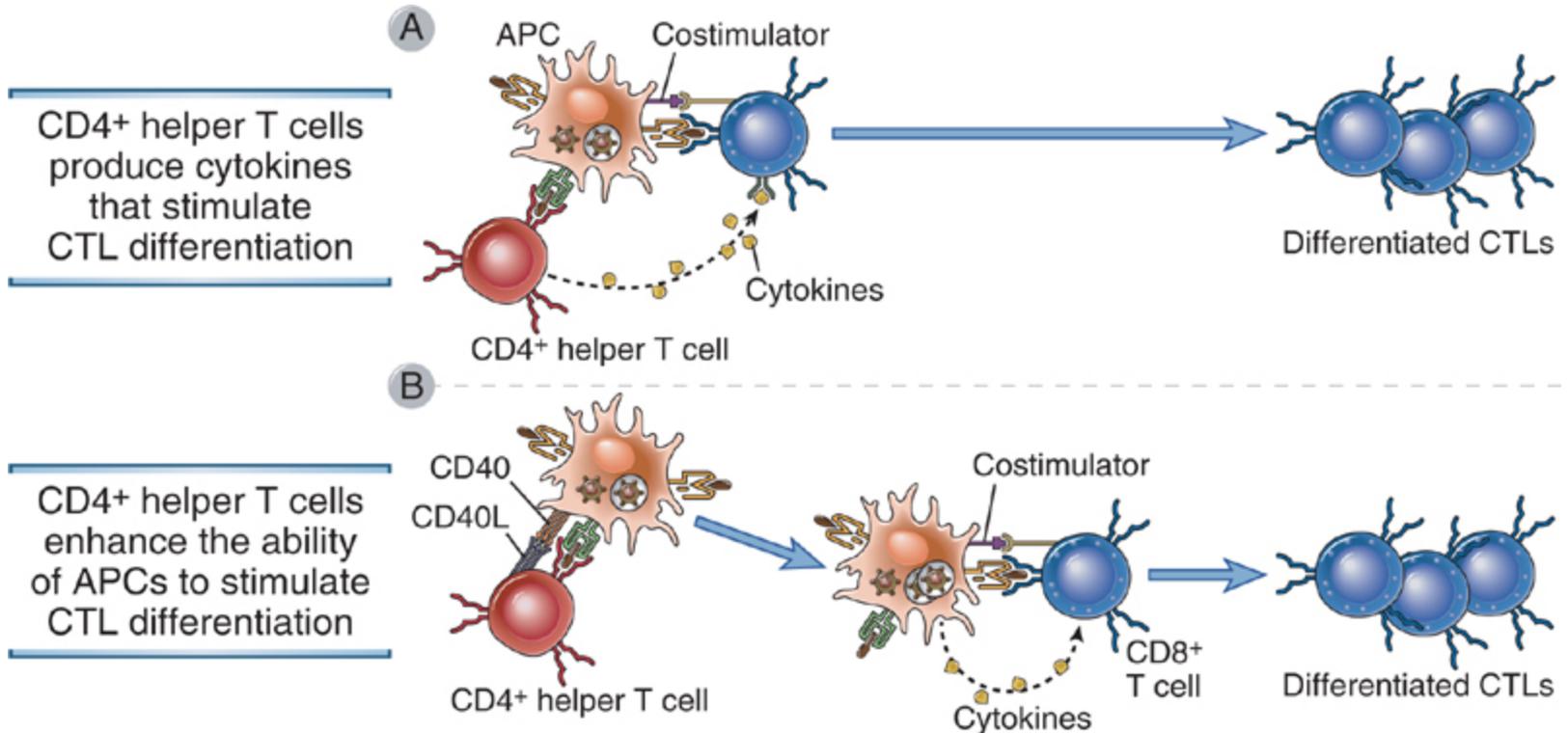


Propriedades Gerais dos Subtipos Th1, Th2 e Th17



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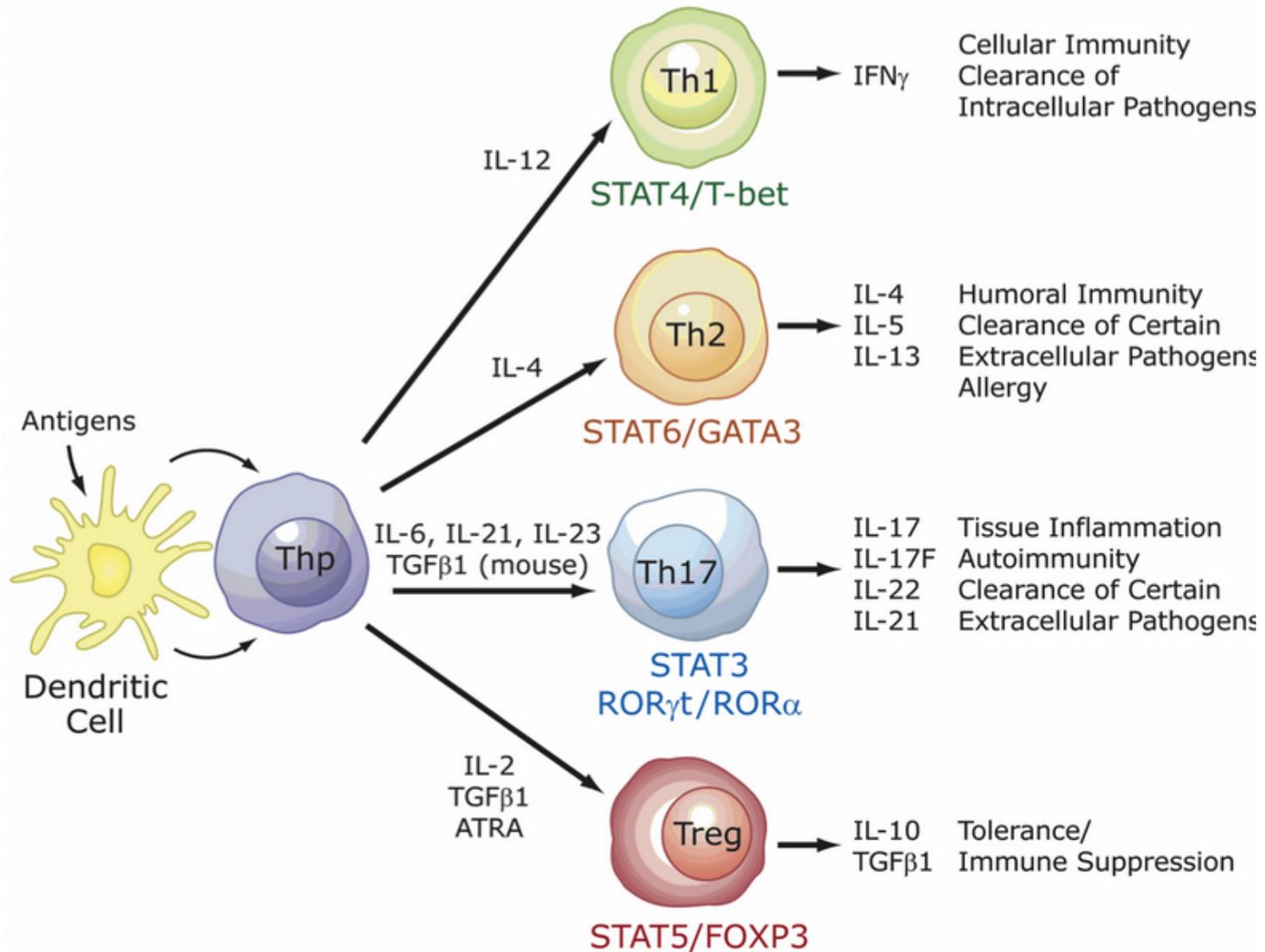
Papel de Th na diferenciação de TCD8



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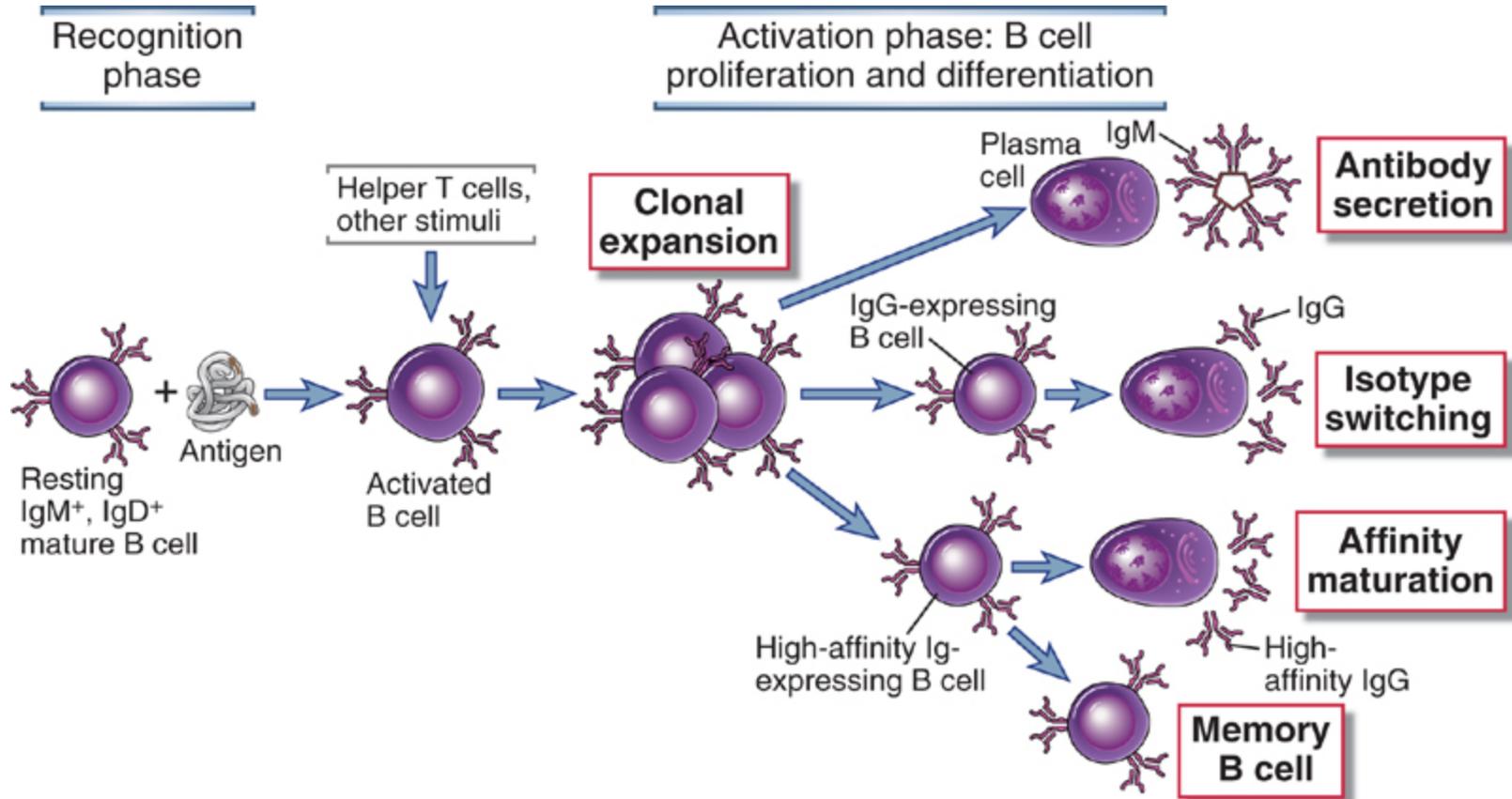
Diferenciação de Linfócitos Th



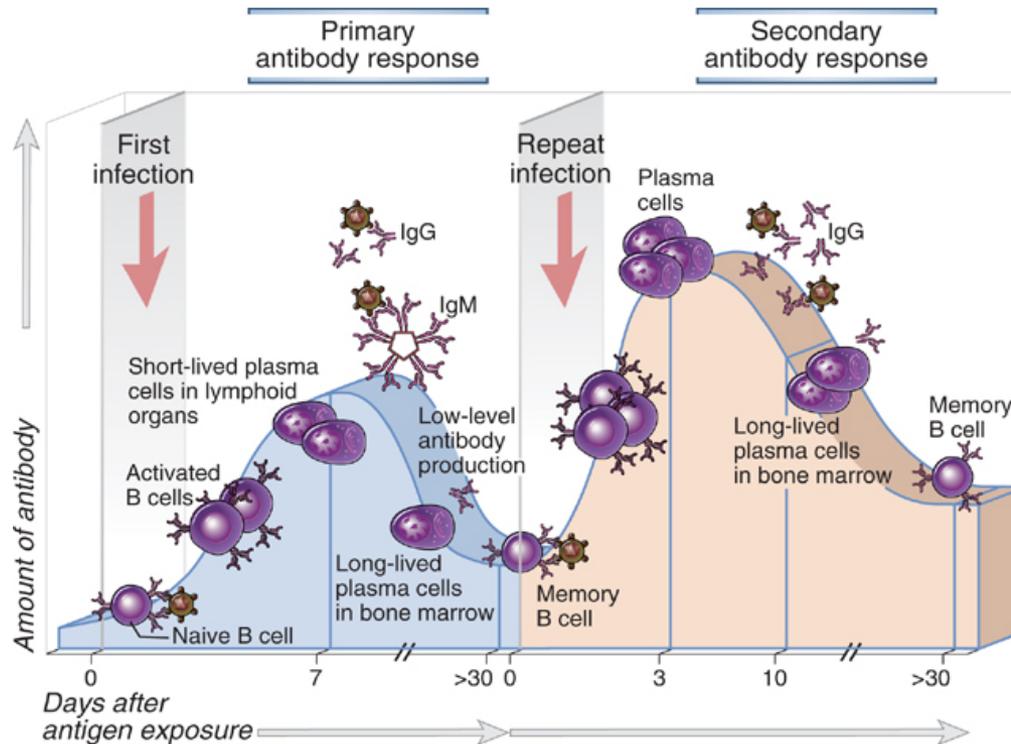
Ativação de Linfócitos B



Fases da Resposta Imune Humoral

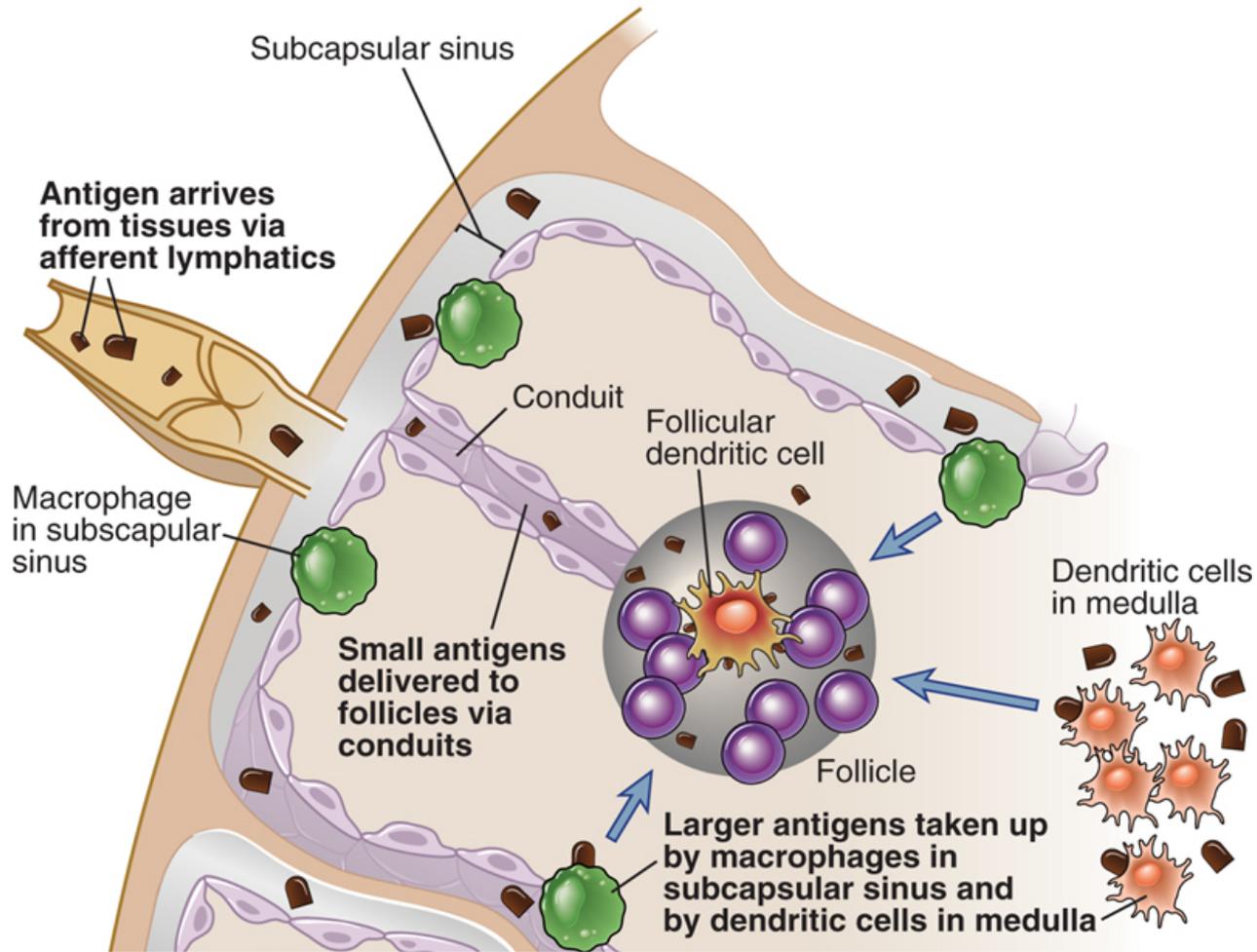


Respostas Imunes Primárias e Secundárias



Feature	Primary response	Secondary response
Peak response	Smaller	Larger
Antibody isotype	Usually IgM > IgG	Relative increase in IgG and, under certain situations, in IgA or IgE
Antibody affinity	Lower average affinity, more variable	Higher average affinity (affinity maturation)
Induced by	All immunogens	Only protein antigens

Captura e Reconhecimento do Antígeno

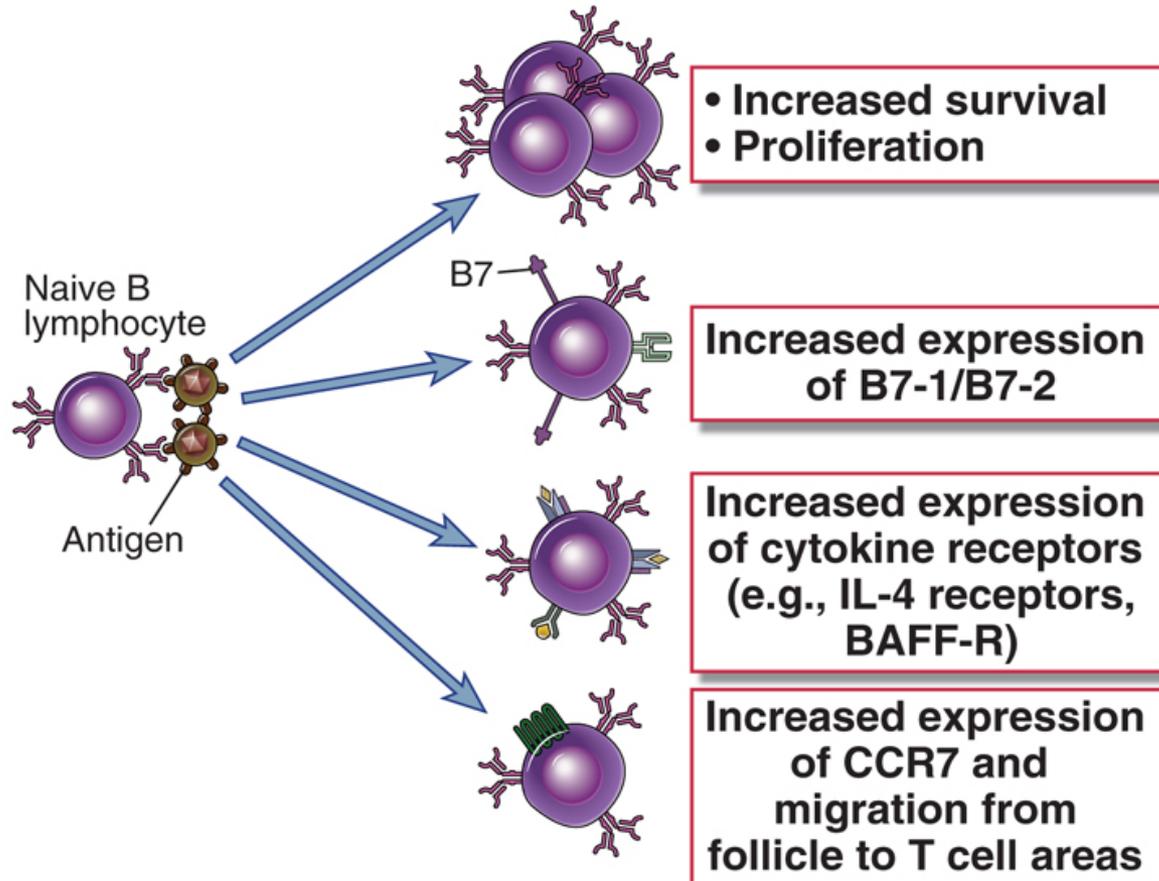


Efeito da Ligação Antígeno:BCR

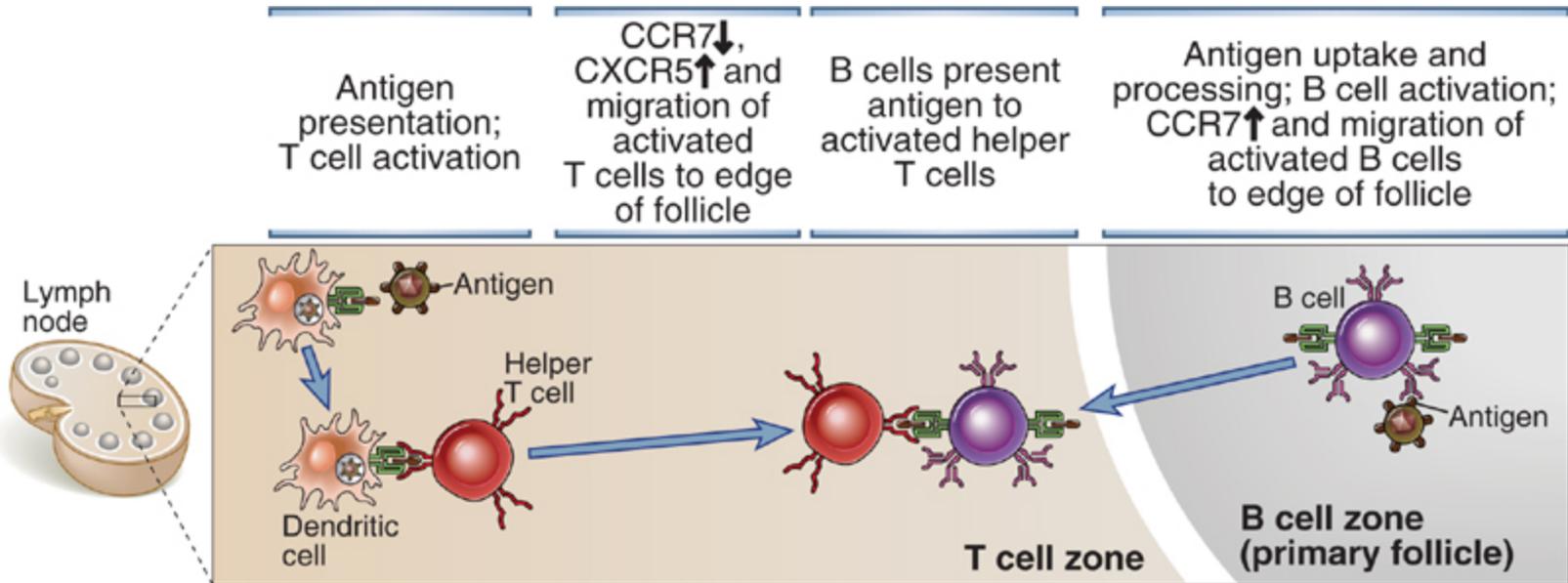
Antigen binding to
and cross-linking of
membrane Ig

Activation of
B lymphocytes

Changes in
B cells



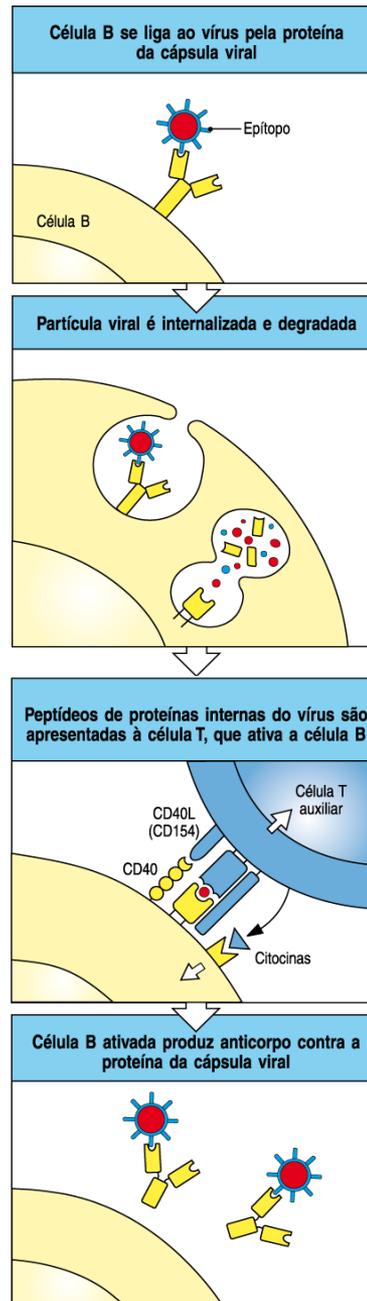
Migração e Interação entre T e B

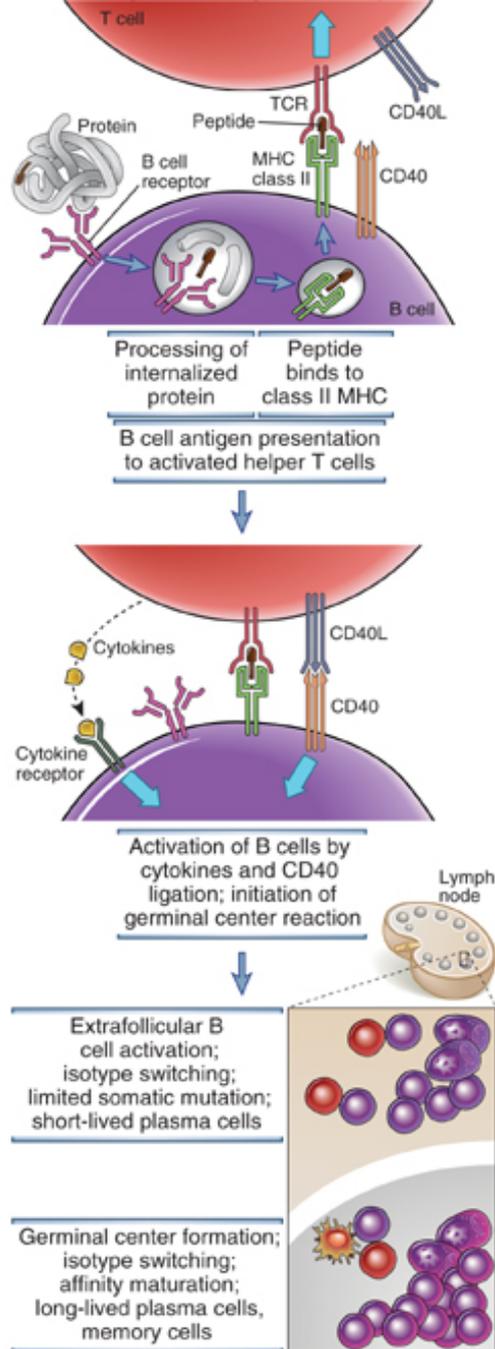


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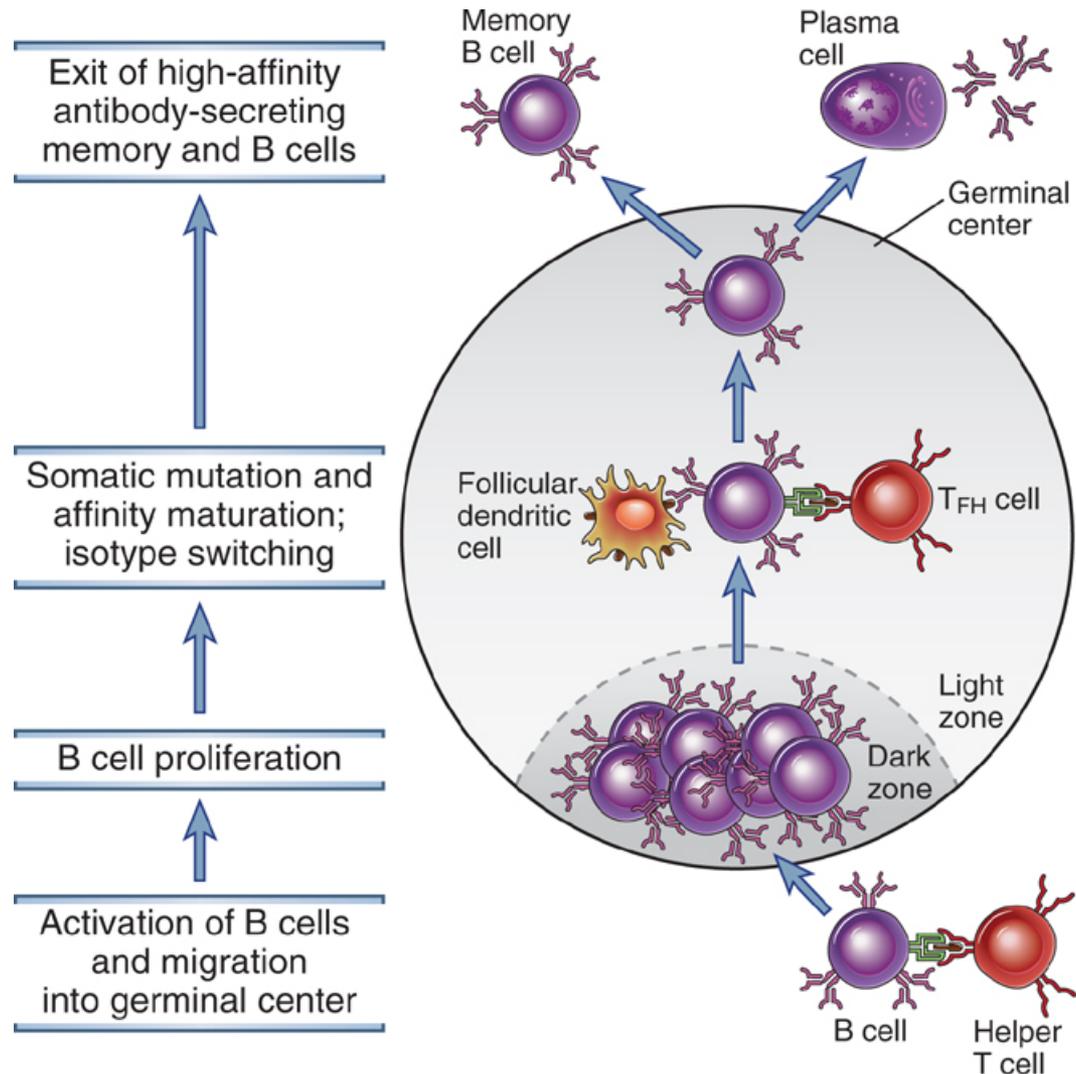
Efeito Hapteno - Carreador



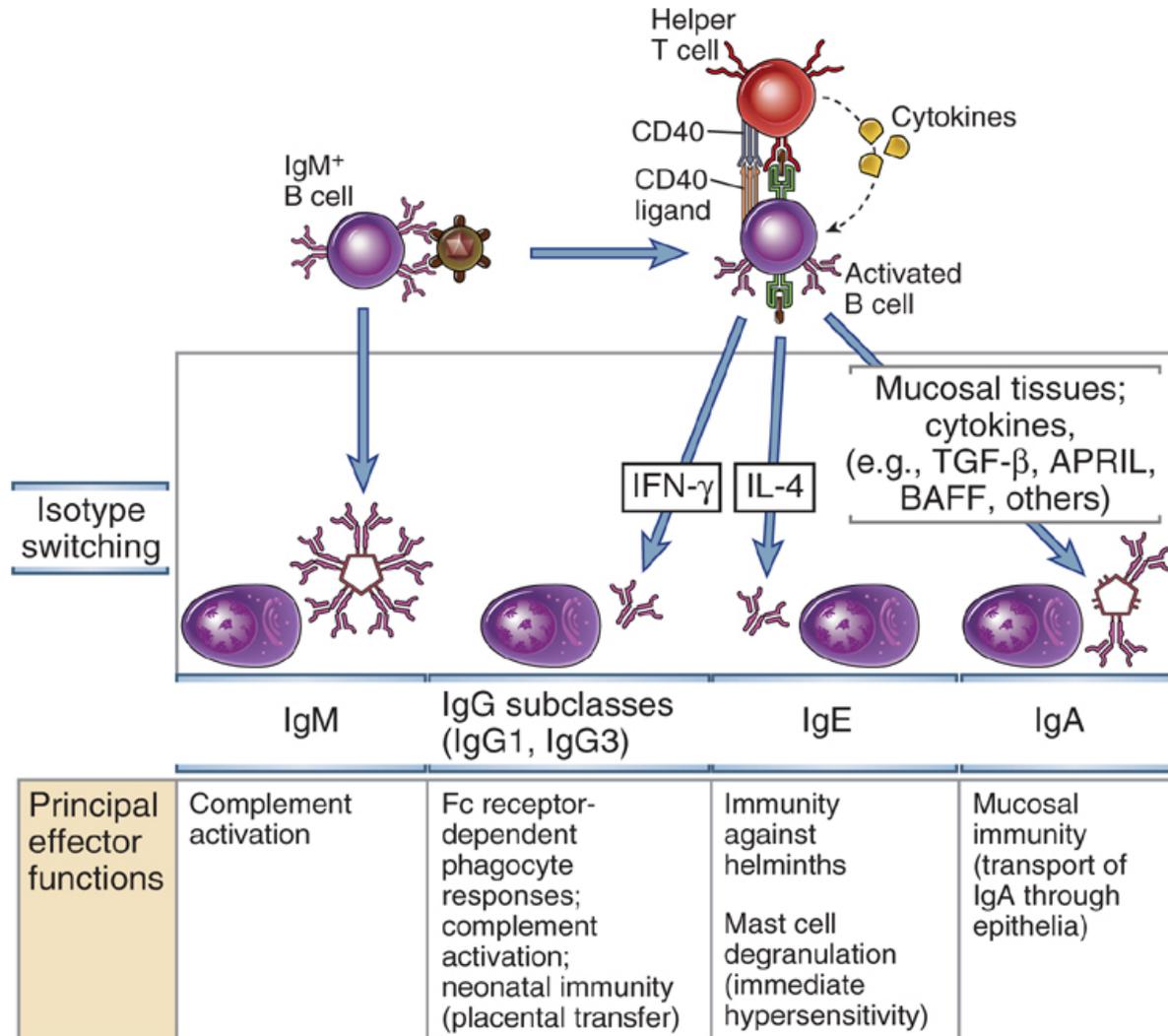


Mecanismo de ativação de células B por células T auxiliares : Papel de CD40 na Ativação de Linfócitos B

Reação de Células B de Centro Germinativo



Mudança de Isotipo de cadeia pesada

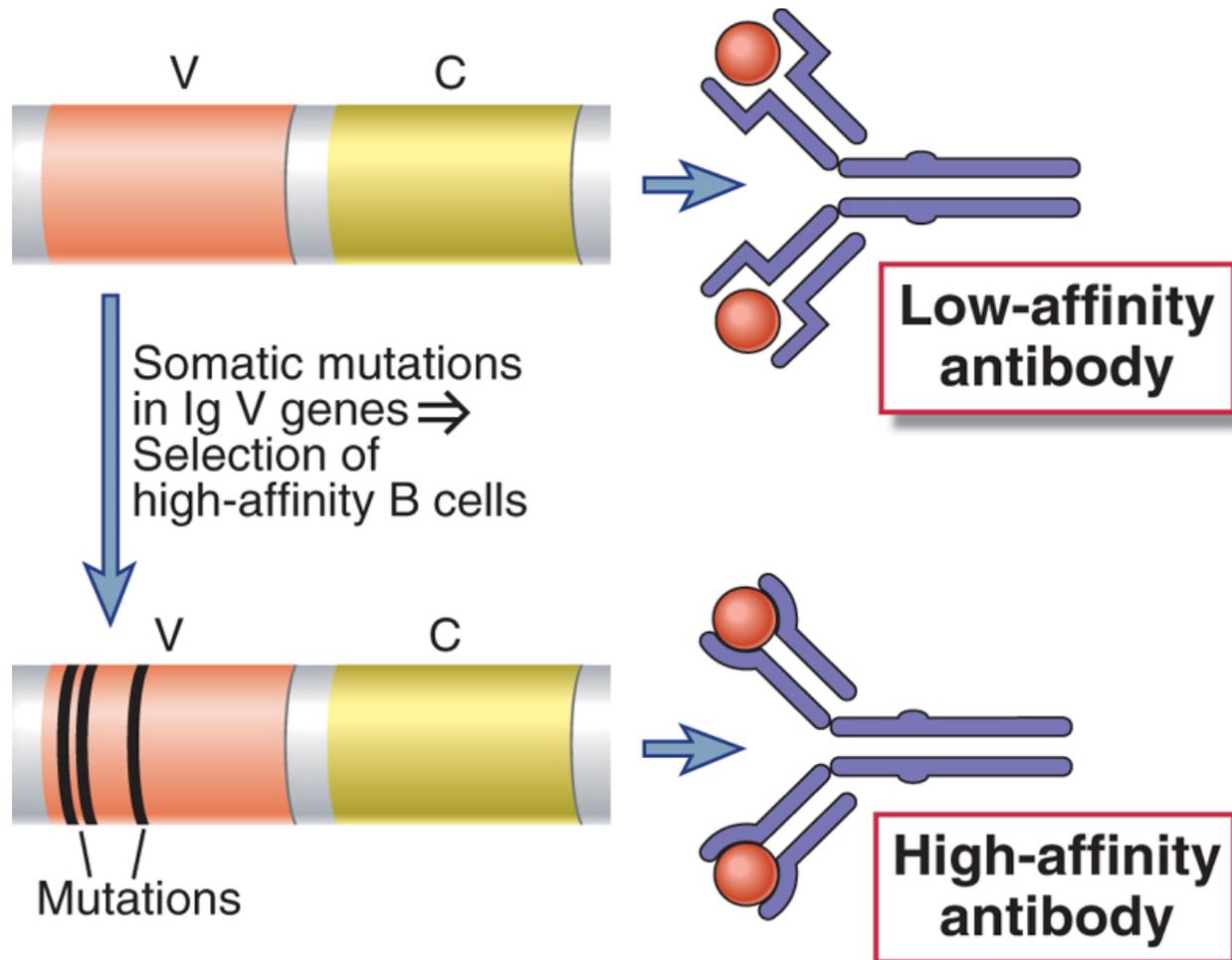


Citocinas e troca de Isotipo

Papel das citocinas na regulação da expressão de classes de anticorpos

Citocinas	IgM	IgG3	IgG1	IgG2b	IgG2a	IgE	IgA
IL-4	Inibe	Inibe	Induz		Inibe	Induz	
IL-5							Aumenta a produção
IFN- γ	Inibe	Induz	Inibe		Induz	Inibe	
TGF- β	Inibe	Inibe		Induz			Induz

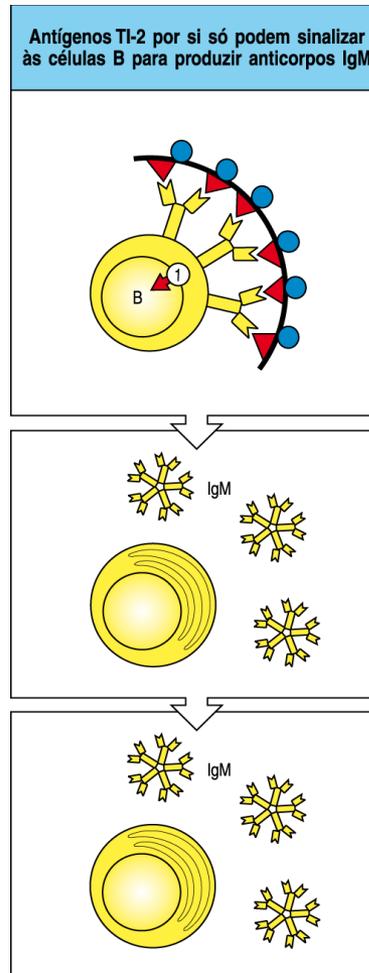
Maturação de Afinidade



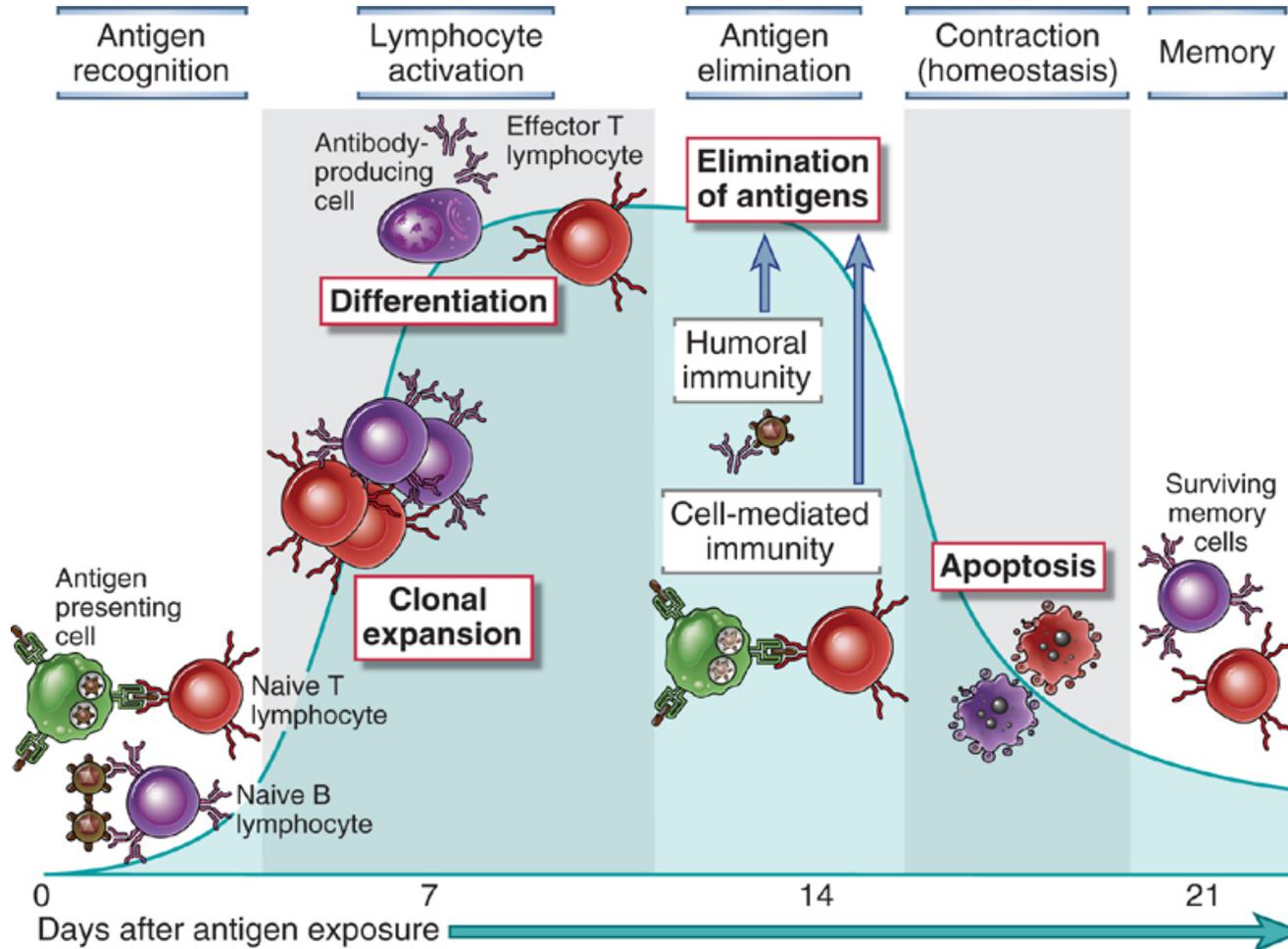
Respostas de Anticorpos T Independentes

Antígenos T independentes:

- ✓ Polissacarídeos;
- ✓ Glicolípidos;
- ✓ Ac. nucleicos



Resumindo...



Bibliografia

Abbas, A. K. Imunologia Celular e Molecular – 8 ed.

Cap 9 pags 199-212, Cap 10 pgs 213-219, 222-223, 225-226 (para essa aula não precisa estudar funções dos subtipos de T)

Cap 11 pags 231-232, Cap 12 pags 239-258.

Murphy, K.; Travers, P.; Walport, M. Imunologia de Janeway - 8 ed.

Cap 9 ativação de células T pags 353 – 381.

Cap 10 ativação de linfócitos B pgs 387-407