Enfeksiyon hastalıkları ve aşılar

1 - The Immune Response to Infectious Agents

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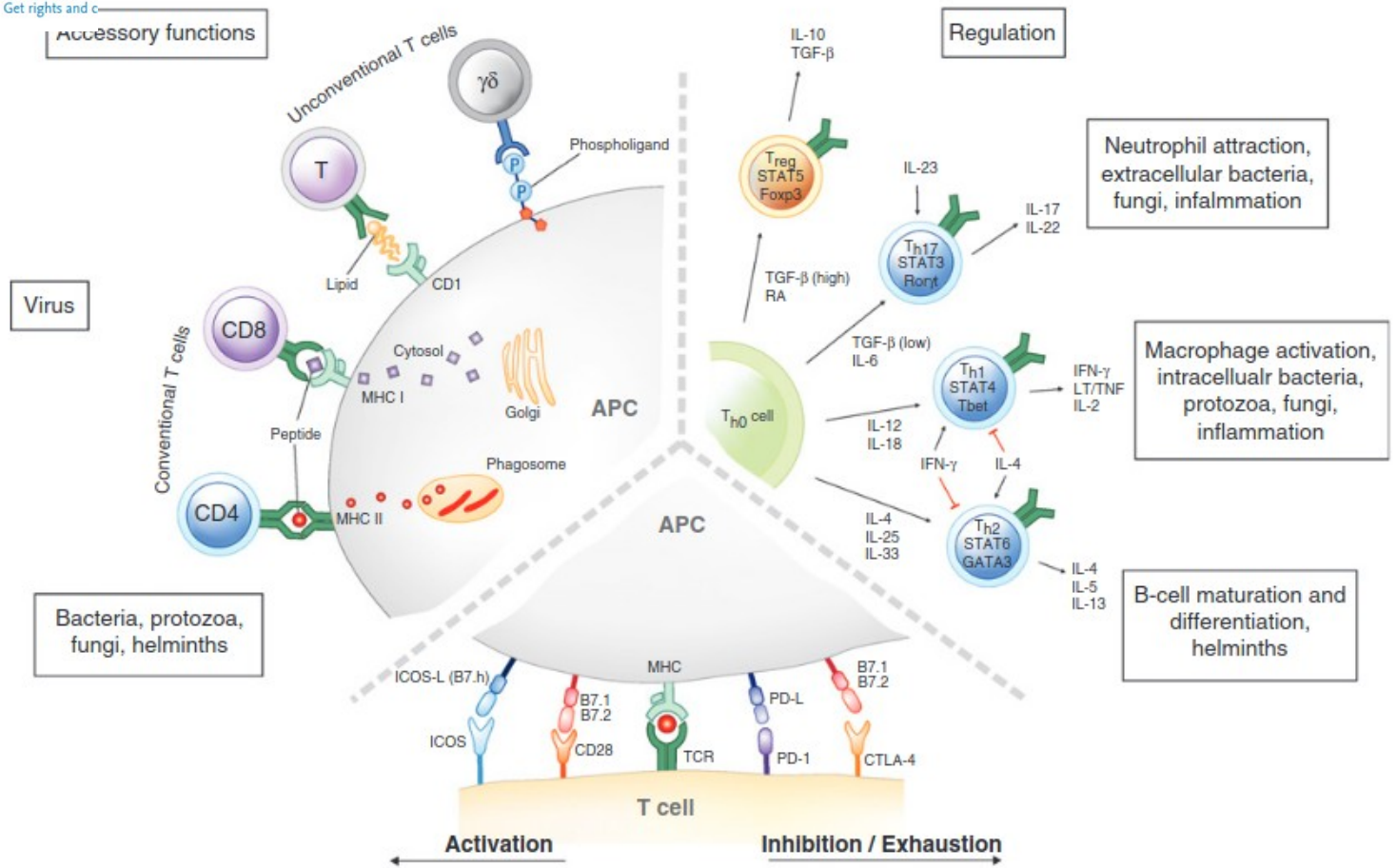
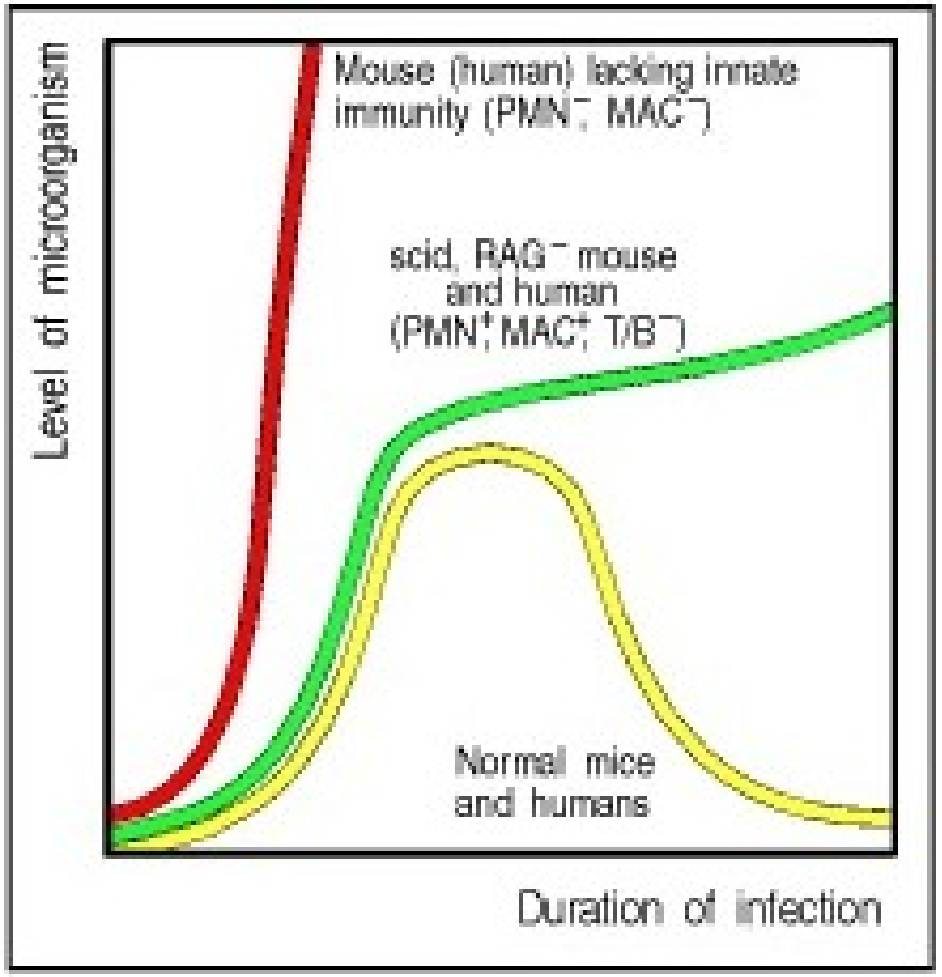


Cell surface molecule	Function in anti-infective immunity
TCR$\alpha\beta$	MHC/peptide recognition by the major $\alpha\beta$ T cell population
TCR$\gamma\delta$	Ligand recognition by the minor $\gamma\delta$ T cell population
CD1	Presentation of lipids and glycolipids to DN $\alpha\beta$ T cells
CD3	Marker of all T cells, signal transduction in T cells
CD4	Coreceptor with specificity for MHC class II, marker molecule of Th cell
CD8	Coreceptor with specificity for MHC class I, marker molecule of CTL
CD14	Pattern recognition receptor on macrophages which, for example, binds LPS from gram-negative bacteria
CD40	Costimulatory molecule on B cells and antigen-presenting cells
CD154 (CD40L)	T cell costimulation (ligand for CD40)
CD28	Costimulatory T cell molecule (positive signal)
CD152 (CTLA-4)	Costimulatory T cell molecule (negative signal)
CD80 (B7-1)	Ligand for CD28, CD152
CD86 (B7-2)	Ligand for CD28, CD152
CD95	Fas (Apo-1), a receptor which mediates an apoptosis signal
CD279 (PD1)	Inhibition of T cell activities
CD274 (PDL1;B7-H1)	Ligand for PD1

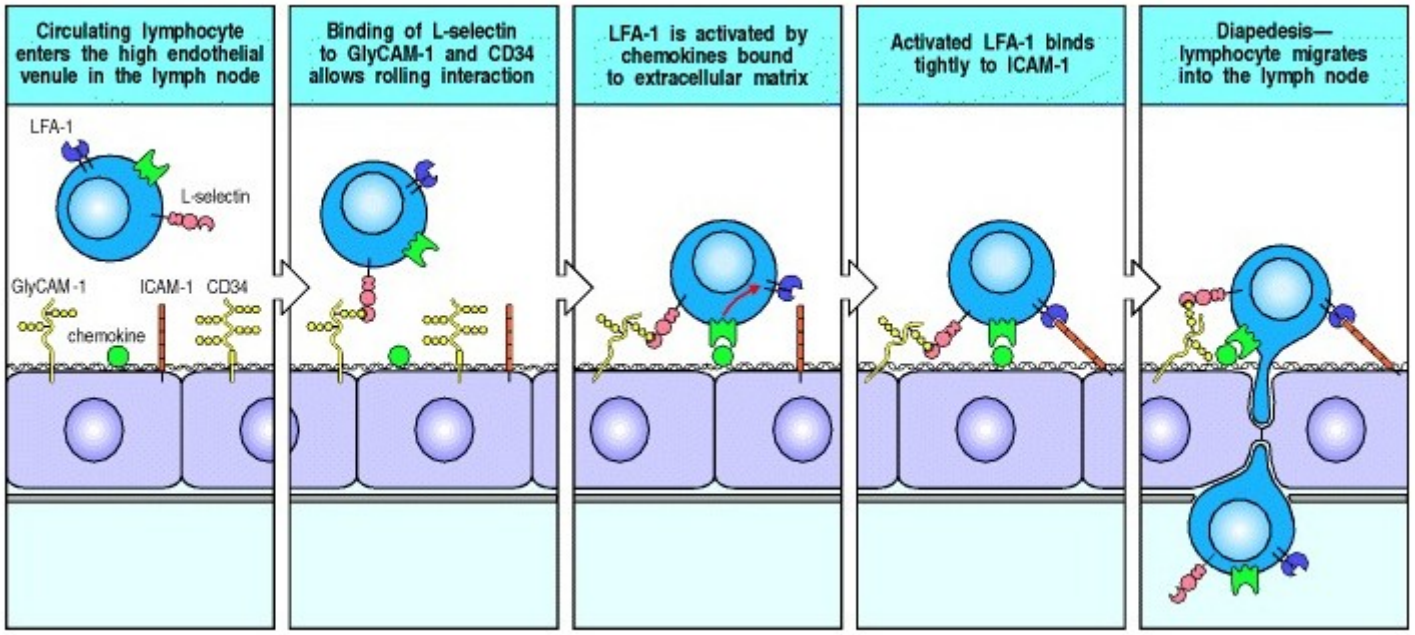
Cytokine	Major role in antimicrobial defence
Chemokines	Leukocyte attraction to site of microbial implantation
CXC chemokine	Granulocyte recruitment to site of microbial implantation
CC chemokine	Monocyte recruitment to site of microbial implantation
C chemokine	Lymphocyte recruitment to site of microbial implantation
IL-1	Proinflammatory, endogenous pyrogen
IL-6	Proinflammatory, promotion of Th17 cells
TNF-α	Proinflammatory, macrophage costimulator, cachexia
IL-2	T cell activation
IFN-γ	Macrophage activation, promotion of Th1 cells
IL-4	B cell activation, switch to IgE, promotion of Th2 cells, activation of mast cells
IL-5	Switch to IgA, activation of eosinophils
IL-12	Promotion of Th1 cells
IL-17	Proinflammatory, attraction of granulocytes
IL-18	Promotion of Th1 cells
IL-23	Promotion of Th17 cells
IL-25	Promotion of Th2 cells
IL-33	Promotion of Th2 cells
IL-21	Proinflammatory, sustenance of Th17 cells
IL-10	Anti-inflammatory
TGF-β	Anti-inflammatory, promotion of T_{reg} cells

The time course of infection in normal and immunodeficient mice and humans



Immunobiology: The Immune System in Health and Disease. 5th edition.
Janeway CA Jr, Travers P, Walport M, et al.
New York: Garland Science; 2001.

Lymphocytes in the blood enter lymphoid tissue by crossing the walls of high endothelial venules



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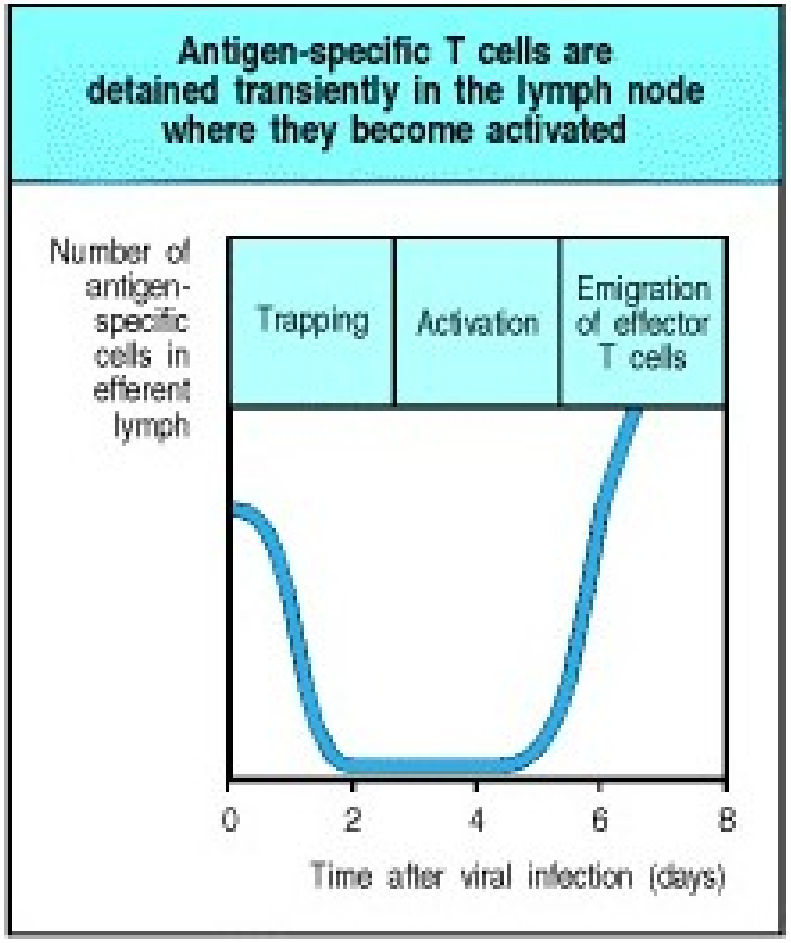

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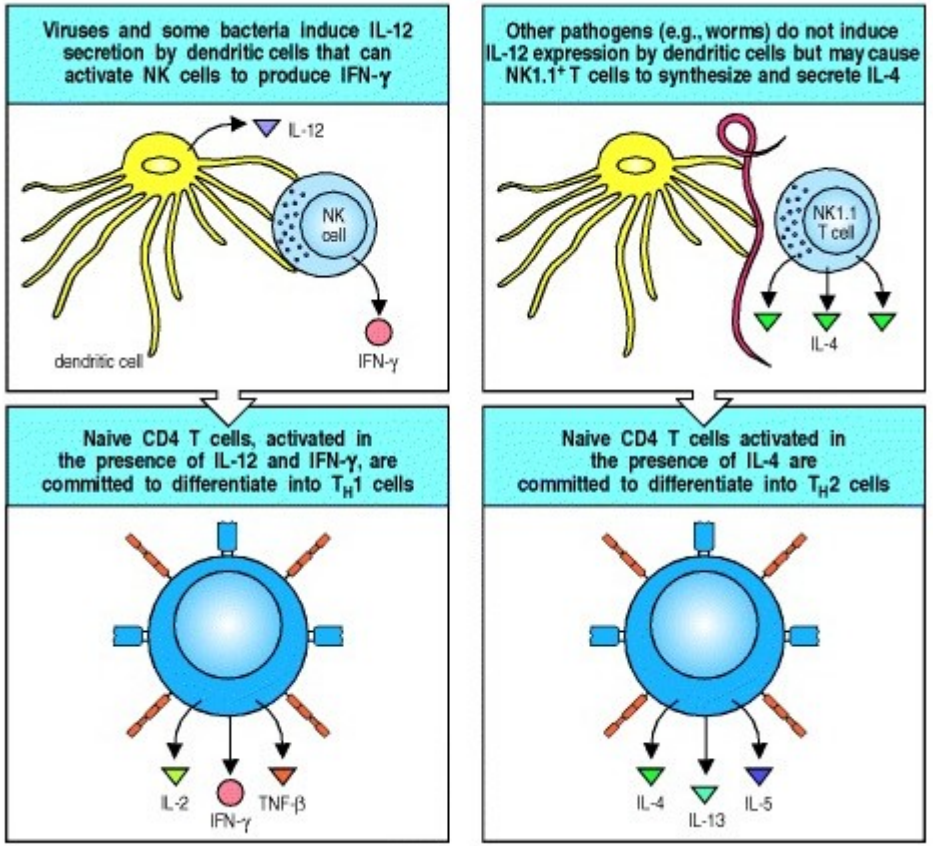
The differentiation of naive CD4 T cells into different subclasses of armed effector T cells is influenced by cytokines elicited by the pathogen



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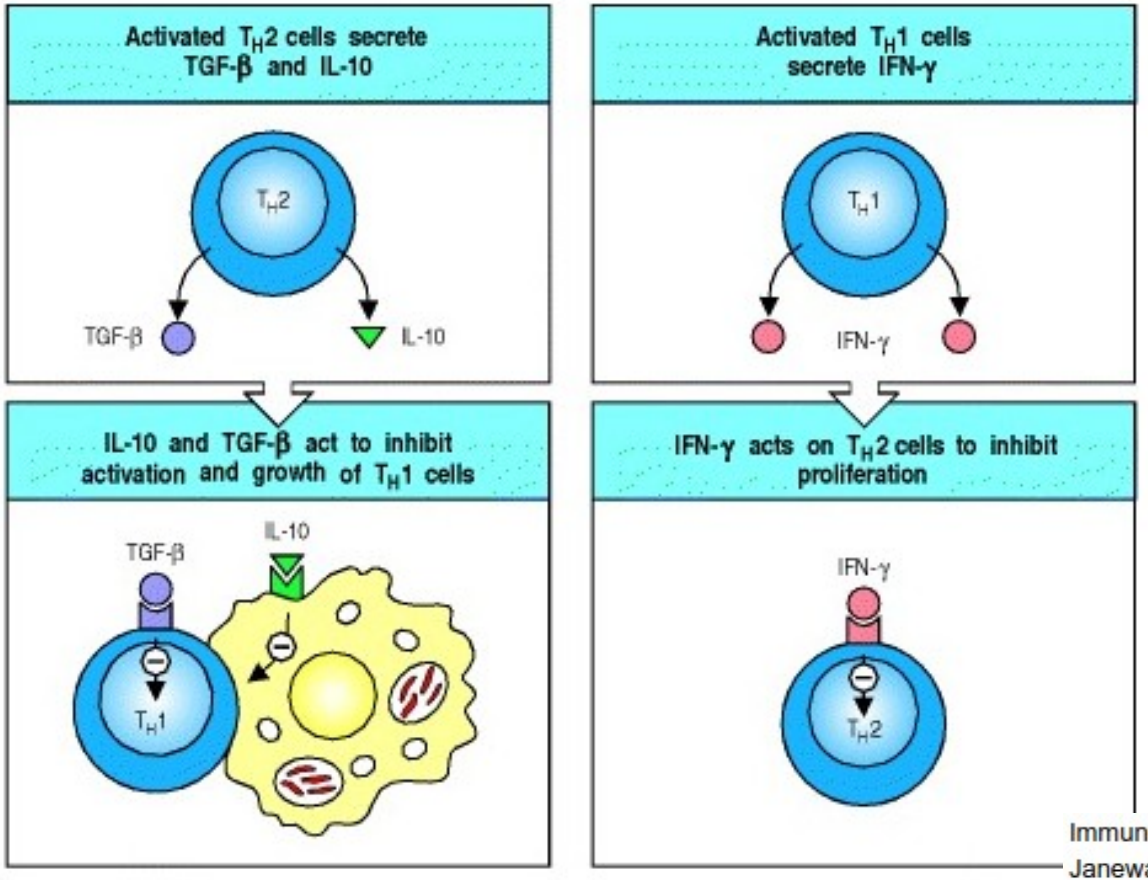
The two subsets of CD4 T cells each produce cytokines that can negatively regulate the other subset



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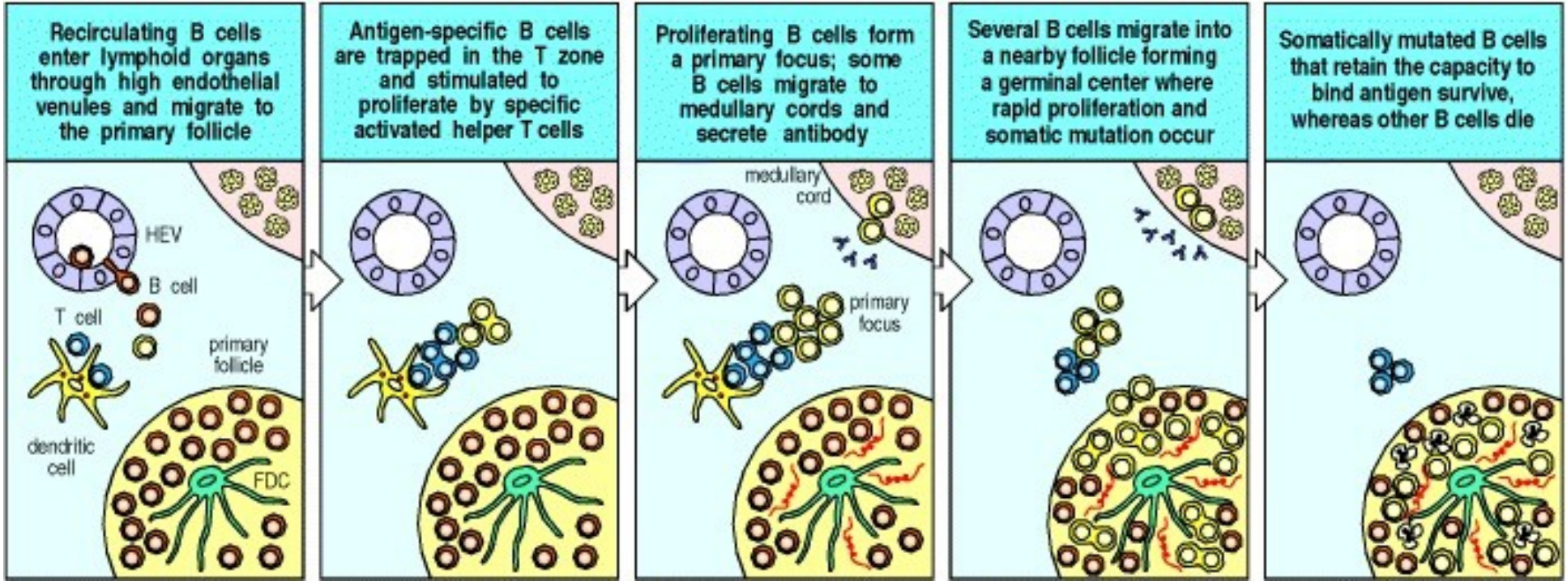
The specialized regions of lymphoid tissue provide an environment where antigen-specific naive B cells can interact with armed helper T cells specific for the same antigen



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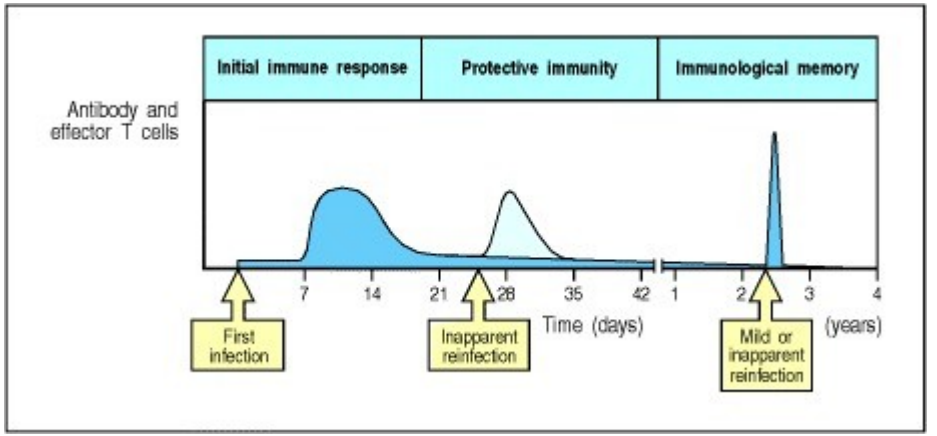
	Infectious agent	Disease	Humoral immunity				Cell-mediated immunity	
			IgM	IgG	IgE	IgA	CD4 T cells (macrophages)	CD8 killer T cells
Viruses	Variola	Smallpox						
	Varicella zoster	Chickenpox						
	Epstein–Barr virus	Mononucleosis						
	Influenza virus	Influenza						
	Mumps virus	Mumps						
	Measles virus	Measles						
	Polio virus	Poliomyelitis						
	Human immunodeficiency virus	AIDS						
Bacteria	*Staphylococcus aureus*	Boils						
	Streptococcus pyogenes	Tonsilitis						
	Streptococcus pneumoniae	Pneumonia						
	Neisseria gonorrhoeae	Gonorrhea						
	Neisseria meningitidis	Meningitis						
	Corynebacterium diphtheriae	Diphtheria						
	Clostridium tetani	Tetanus						
	Treponema pallidum	Syphilis			Transient			
	Borrelia burgdorferi	Lyme disease			Transient			
	Salmonella typhi	Typhoid						
	Vibrio cholerae	Cholera						
	Legionella pneumophila	Legionnaire's disease						
	Rickettsia prowazeki	Typhus						
	Chlamydia trachomatis	Trachoma						
	Mycobacteria	Tuberculosis, leprosy						
Fungi	*Candida albicans*	Candidiasis						
Protozoa	*Plasmodium* spp.	Malaria						
	Toxoplasma gondii	Toxoplasmosis						
	Trypanosoma spp.	Trypanosomiasis						
	Leishmania spp.	Leishmaniasis						
Worms	Schistosome	Schistosomiasis						



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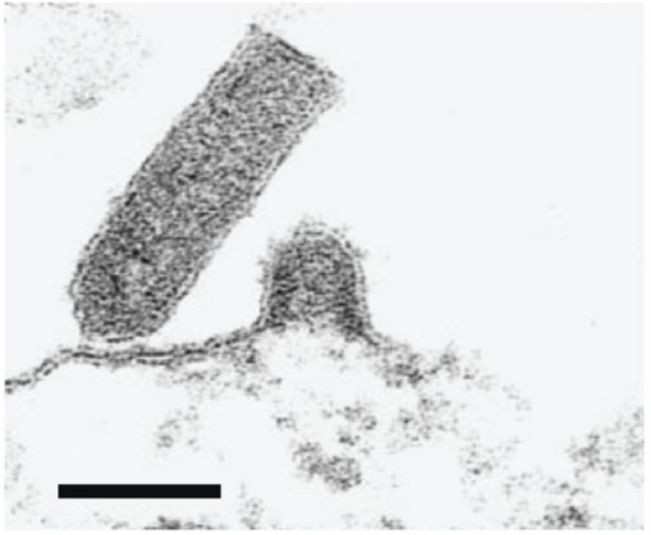


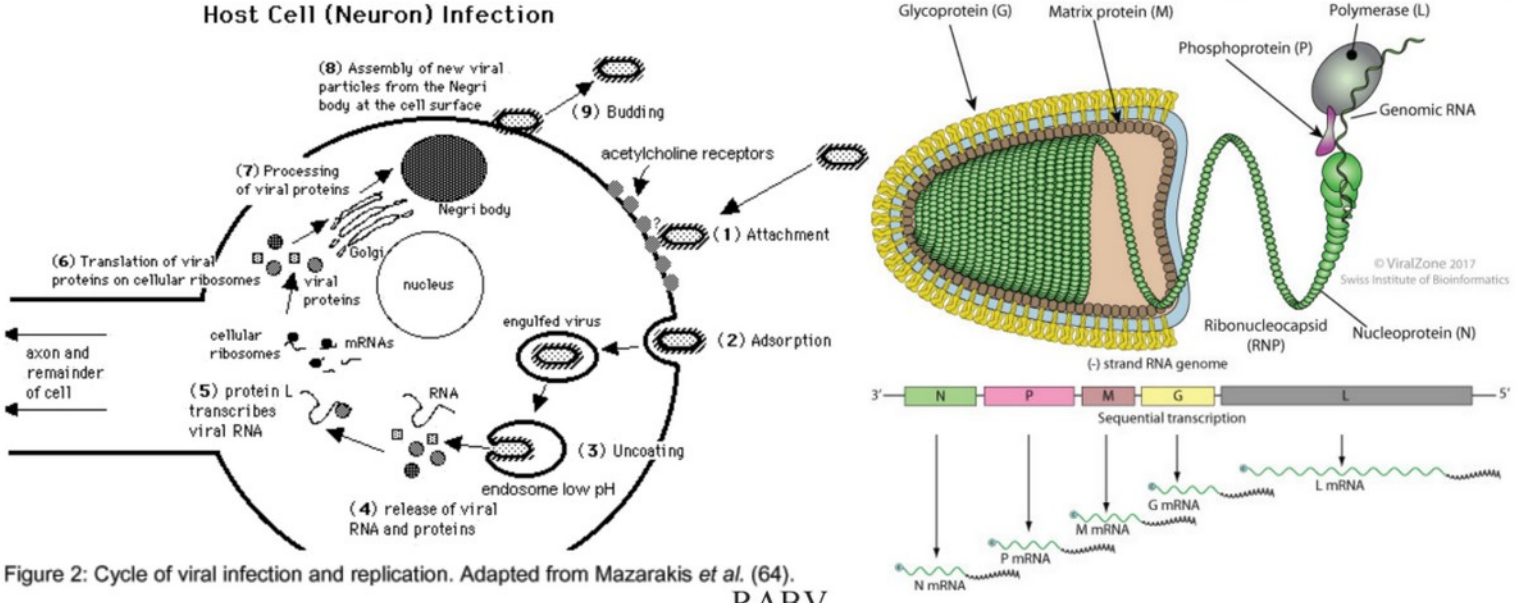
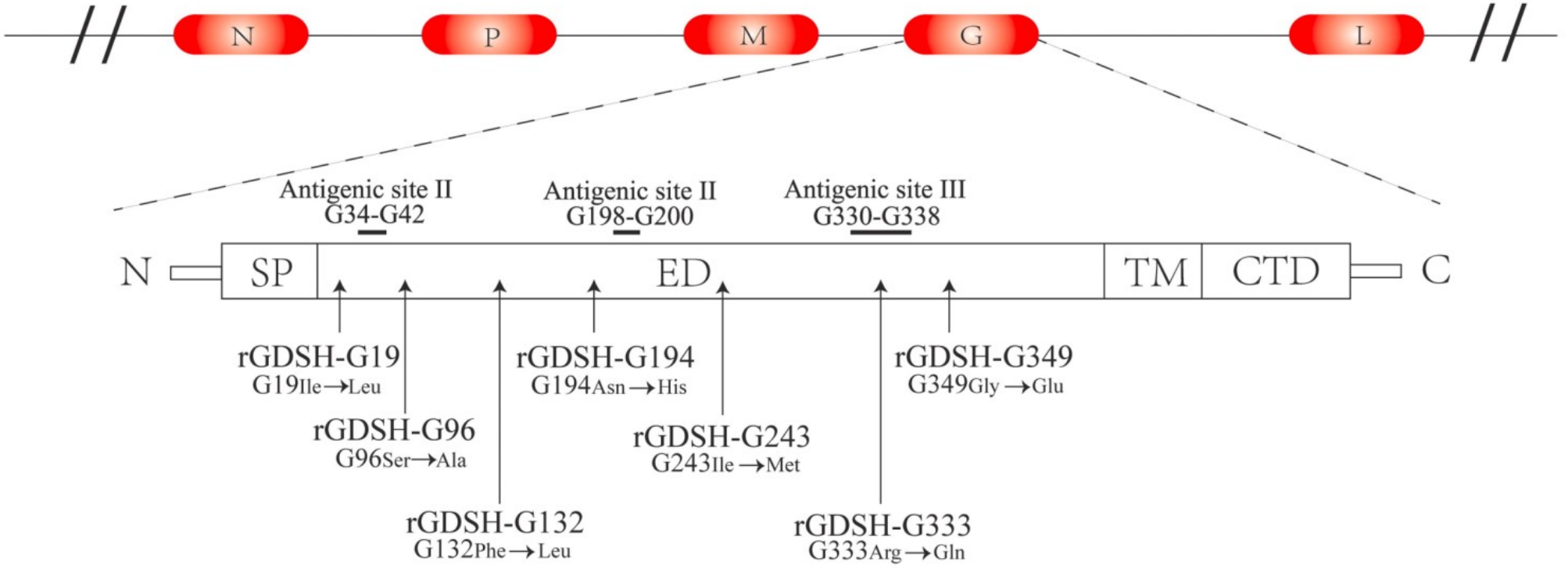
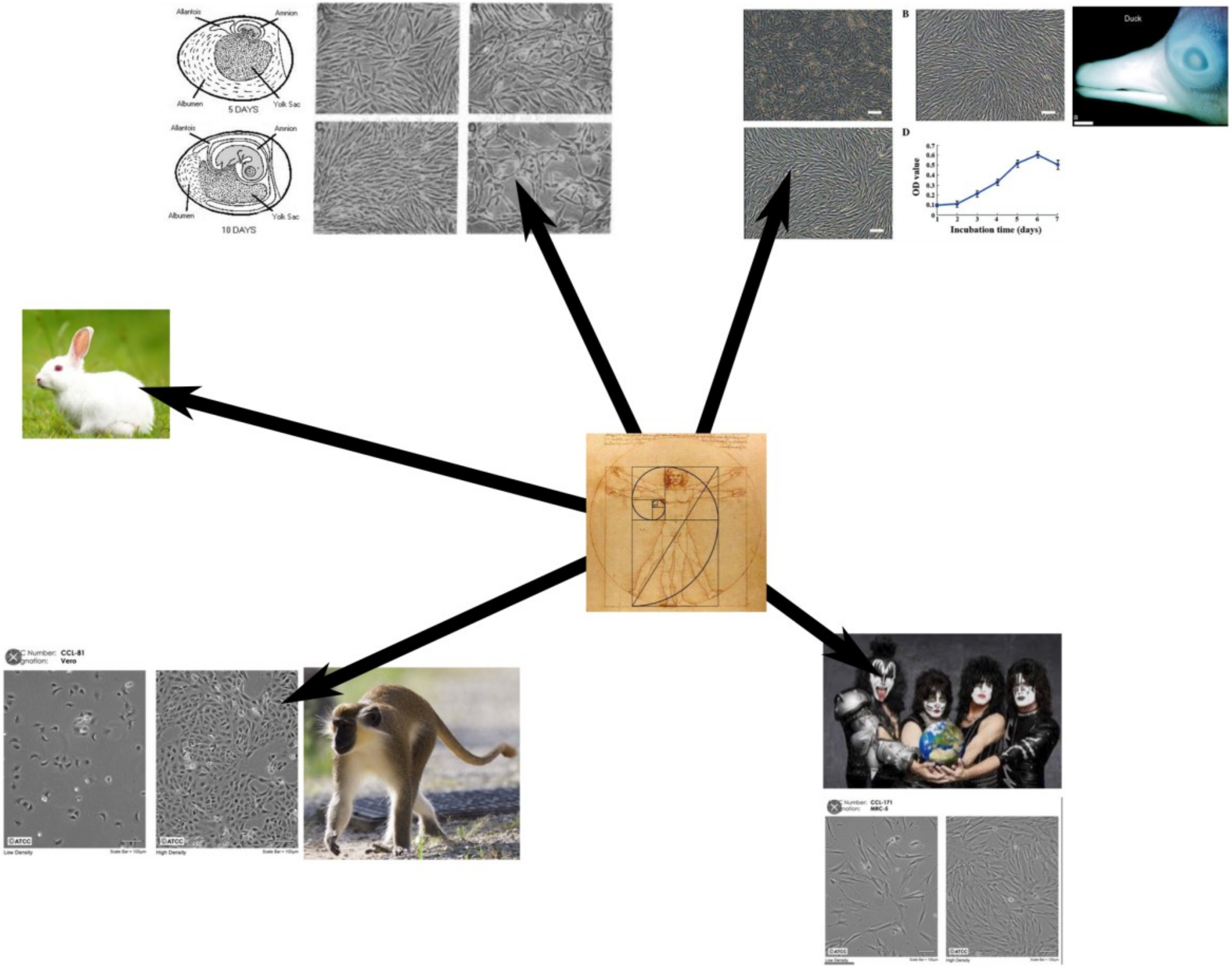
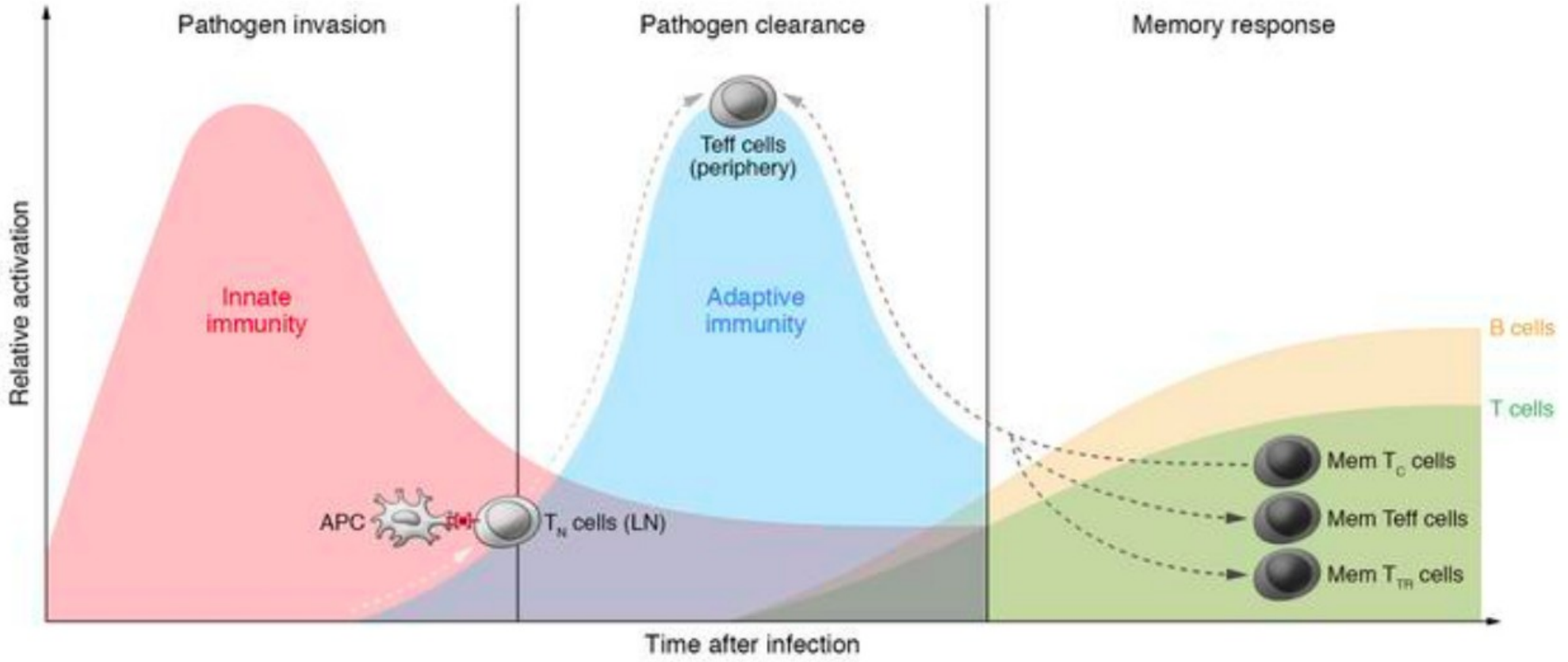


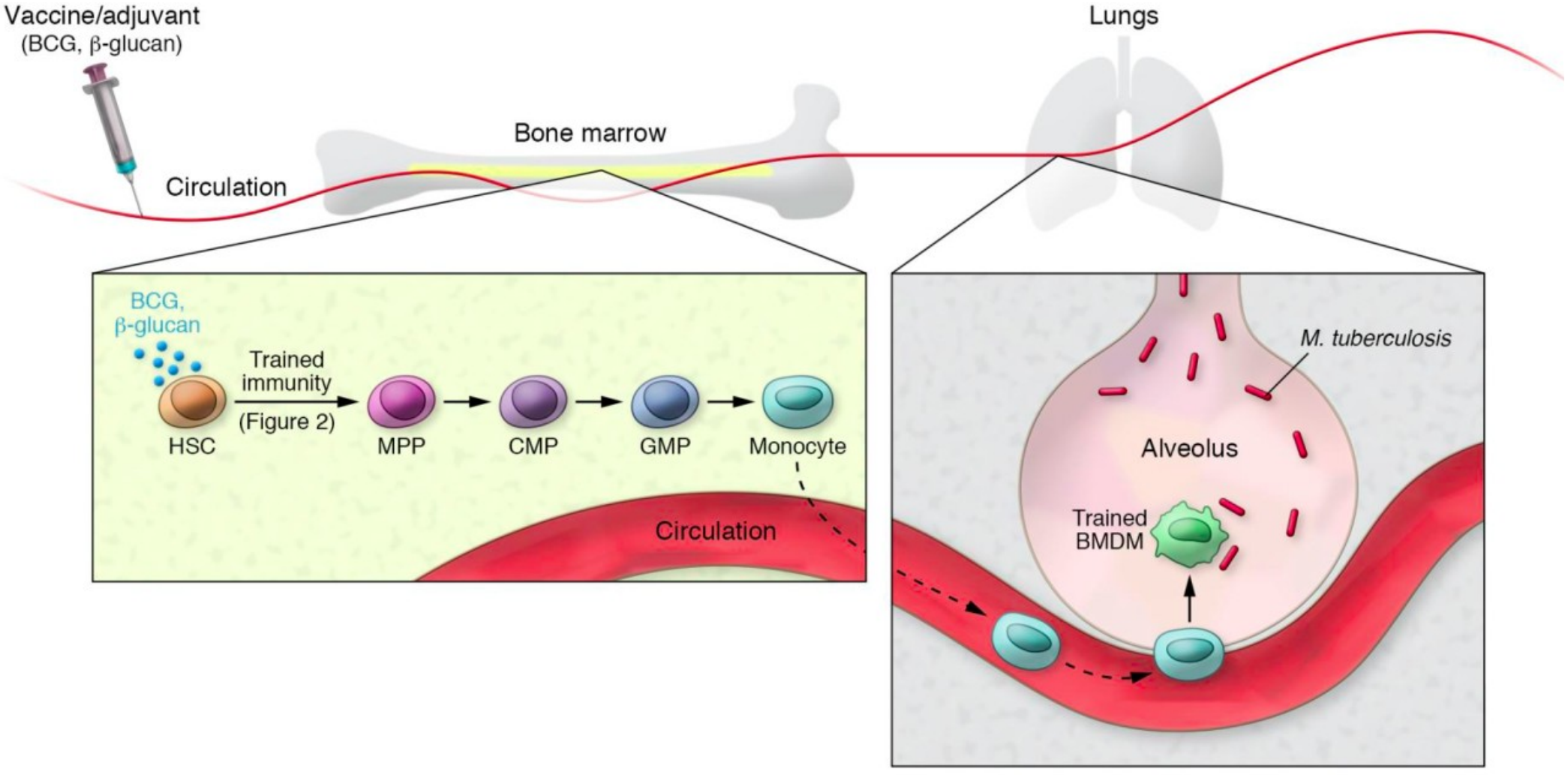
Figure 2: Cycle of viral infection and replication. Adapted from Mazarakis *et al.* (64).

RABV


N
P
M
G
L
Antigenic site II
G34-G42
Antigenic site II
G198-G200
Antigenic site III
G330-G338
N
SP
ED
TM
CTD
C
rGDSH-G19
G19Ile→Leu
rGDSH-G96
G96Ser→Ala
rGDSH-G132
G132Phe→Leu
rGDSH-G194
G194Asn→His
rGDSH-G243
G243Ile→Met
rGDSH-G333
G333Arg→Gln
rGDSH-G349
G349Gly→Glu


Allantois
Amnion
Albumen
Yolk Sac
5 DAYS
Allantois
Amnion
Albumen
Yolk Sac
10 DAYS
B
Duck
D
OD value
Incubation time (days)
C Number: CCL-81
gnation: Vero
Low Density
High Density
C Number: CCL-171
gnation: MRC-5


Pathogen invasion
Pathogen clearance
Memory response
Relative activation
Innate immunity
Adaptive immunity
Teff cells (periphery)
APC
T_N cells (LN)
B cells
T cells
Mem T_C cells
Mem Teff cells
Mem T_{TR} cells
Time after infection


Vaccine/adjuvant
(BCG, β-glucan)
Circulation
Bone marrow
Lungs
BCG,
β-glucan
Trained
immunity
(Figure 2)
HSC
MPP
CMP
GMP
Monocyte
Circulation
M. tuberculosis
Alveolus
Trained
BMDM