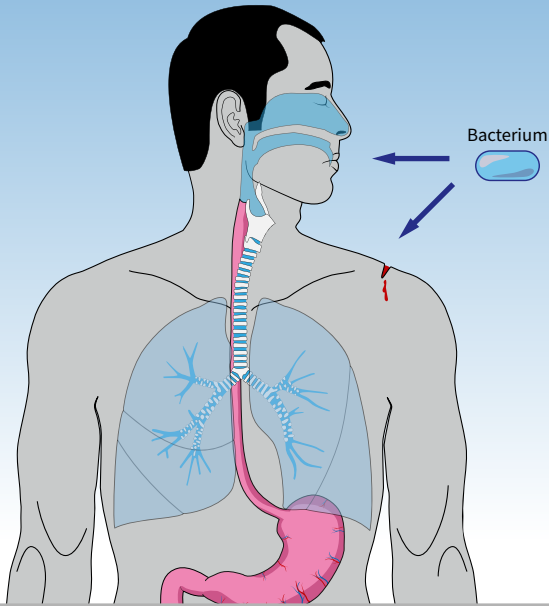


1



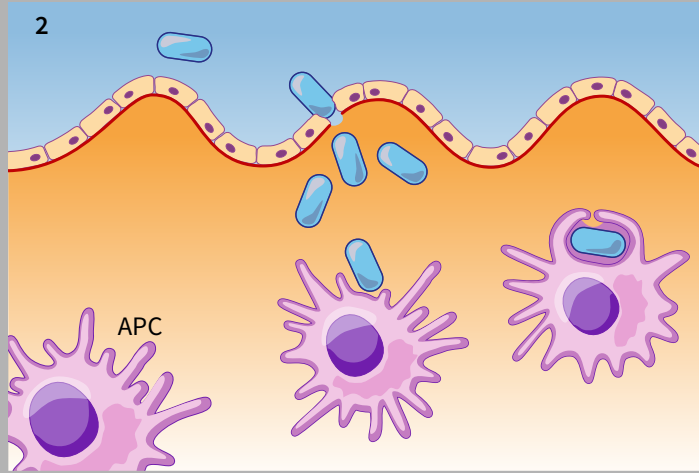
Bacterium

A bacterium may enter the body through injured skin or by penetrating the endothelia of the respiratory or gastrointestinal tract. This may trigger an immune response.



A Simplified View on the Generation of a Th1 Immune Response

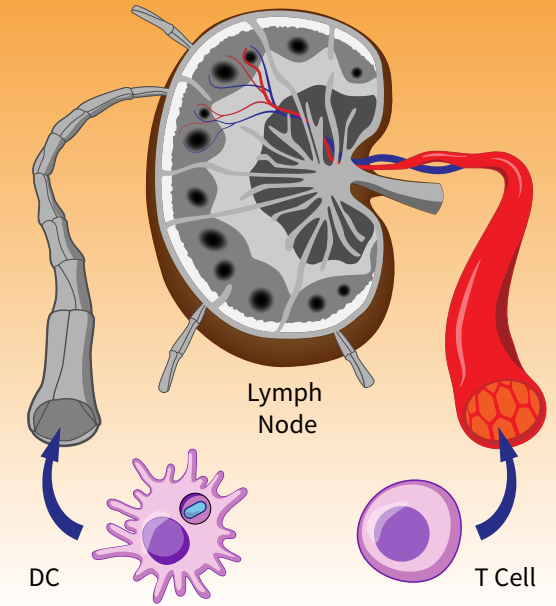
2



APC

When crossing endothelial barriers and entering human tissue an antigen-presenting cell (APC), e.g., a dendritic cell (DC), may detect the invader and endocytose bacterial antigens.

3



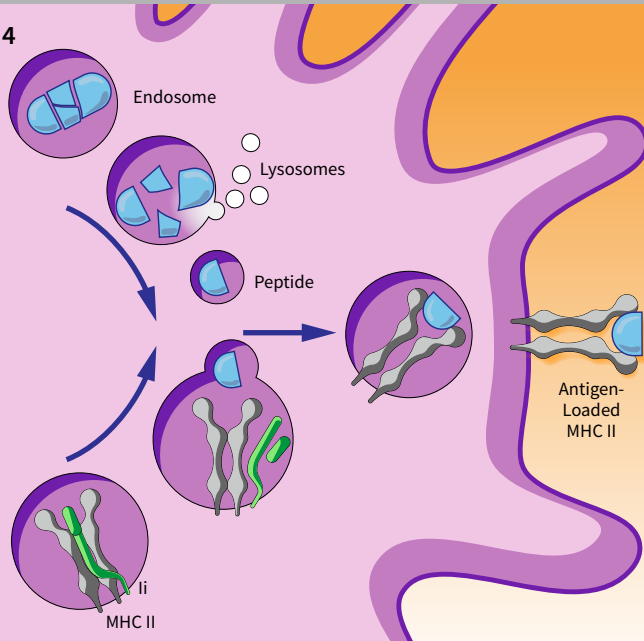
Lymph Node

DC

T Cell

The DC migrates through lymphatic vessels to a nearby lymph node. Here, it presents bacterial antigens to T cells that have reached the same lymph node via blood vessels.

4



Endosome

Lysosomes

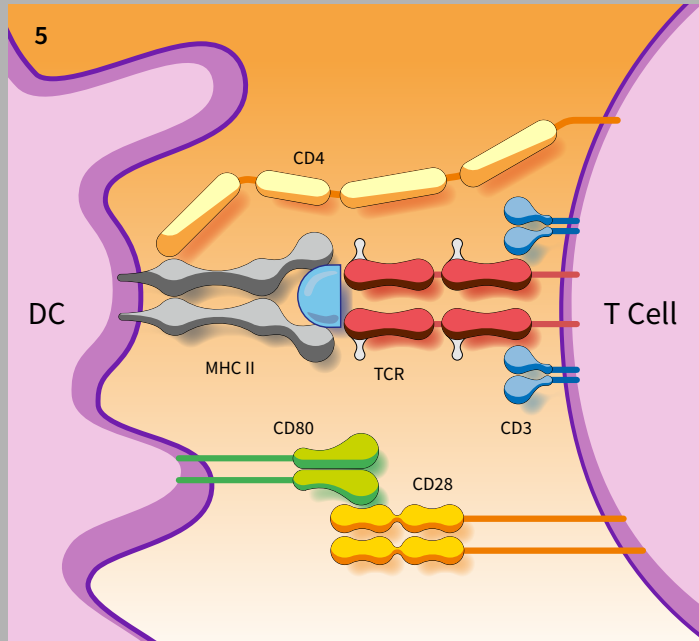
Peptide

Antigen-Loaded MHC II

MHC II

Endosomes containing bacterial proteins are fused with lysosomes and antigenic peptides are released. These are then loaded on MHC class II molecules to present them on the cell surface.

5



DC

T Cell

CD4

MHC II

TCR

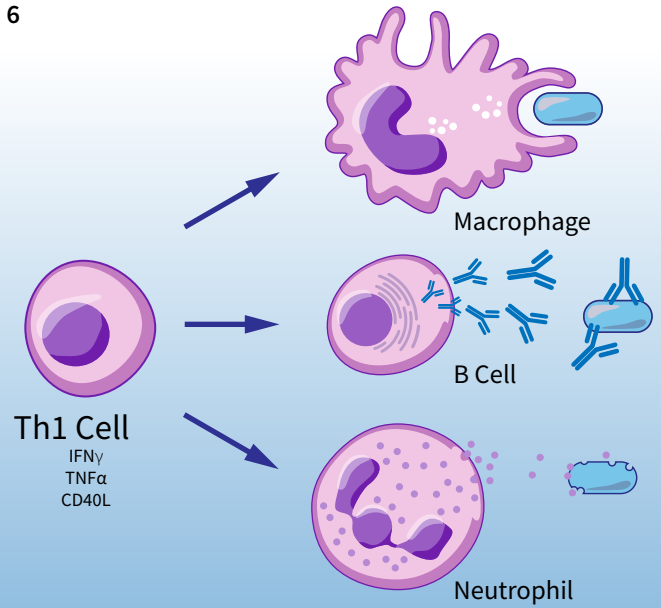
CD80

CD28

CD3

Mature DCs present antigenic peptides on MHC II to the T cell receptor of naïve CD4 T cells together with co-stimulatory surface molecules. This activates the T cell to proliferate and differentiate.

6



Macrophage

B Cell

Th1 Cell

IFN γ

TNF α

CD40L

Neutrophil

T cells of the Th1 subtype activate macrophages to phagocytose and digest bacteria. B cells are stimulated to synthesize IgG for opsonization. Neutrophils are activated to act at the site of infection.