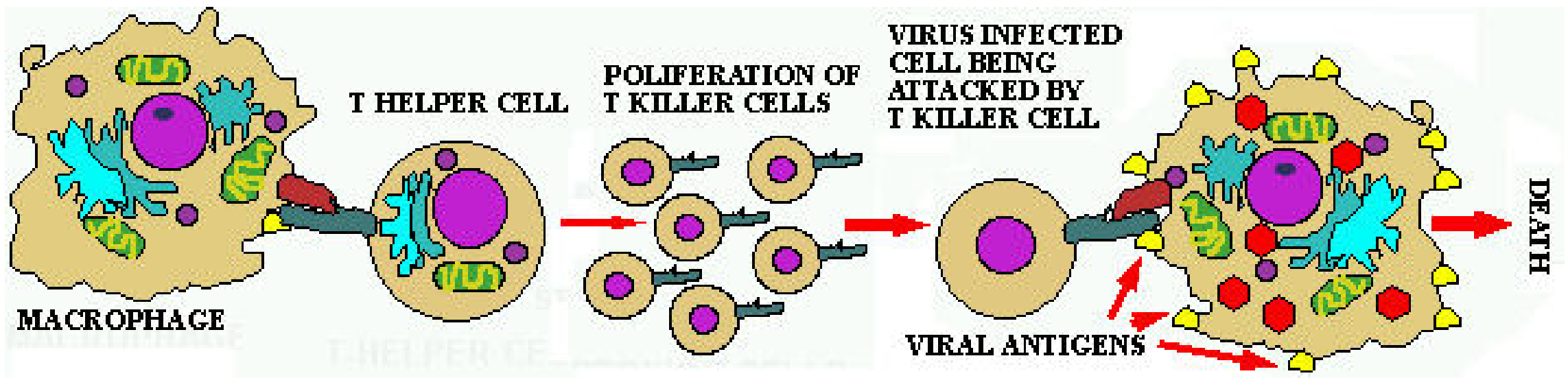
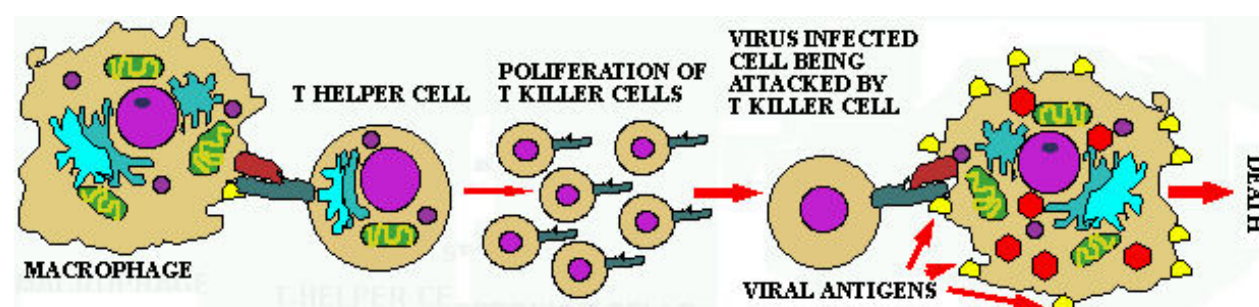


# Immune system-Acquired/Adaptive immunity

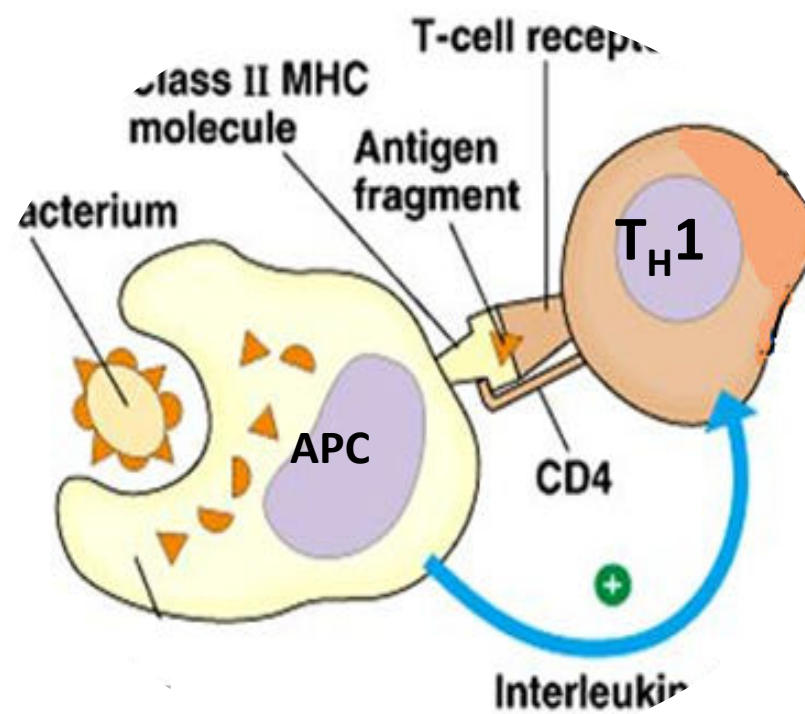


## Learning Objectives

- Steps of cellular immune response
- Cytokines
- Unwanted effects of immune system
- AIDS



# Cellular Immunity



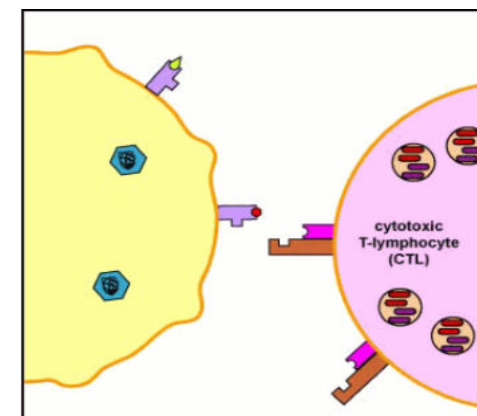
## Cellular Immunity

Clones of T cells recognize antigens  
(Clonal Selection) through the T<sub>H</sub>1

Gets activated by the released cytokines  
of T<sub>H</sub>1, start proliferating

# Cellular Immunity –Function of CTL

Cytotoxic T cell, (CD8 cells) are the main effectors of the cell-mediated immune response by secreting perforins and granzymes that destroy virally, fungal infected or abnormal body cells (cancer, transplanted cells with foreign MHC).



## Cellular Immunity – Effector Phase- Function of Helper T cells

T helper 1 (TH1) cells secrete IL-2,  $\gamma$ -interferon & TNF- $\beta$  and are concerned primarily with stimulating cellular immunity.

TH2 cells secrete IL-4, IL-5 & IL-6 and interact primarily with B cells in relation to humoral immunity.

# Cytokines

Small signalling proteins  
hormone-like molecules acting  
in paracrine way – secreted by  
number of cells mainly of the  
immune system to cause innate  
and acquired immunity in an  
effective way.

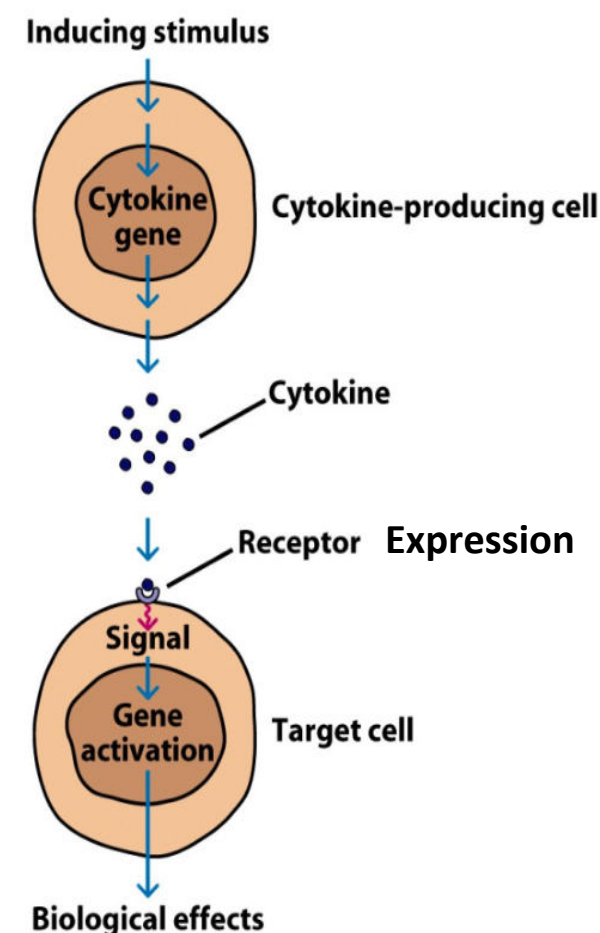


Figure 12-1a  
Kuby IMMUNOLOGY, Sixth Edition  
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## Acquired Immunity-Active and Passive Immunity

**Specific to the antigen of a particular pathogen.**

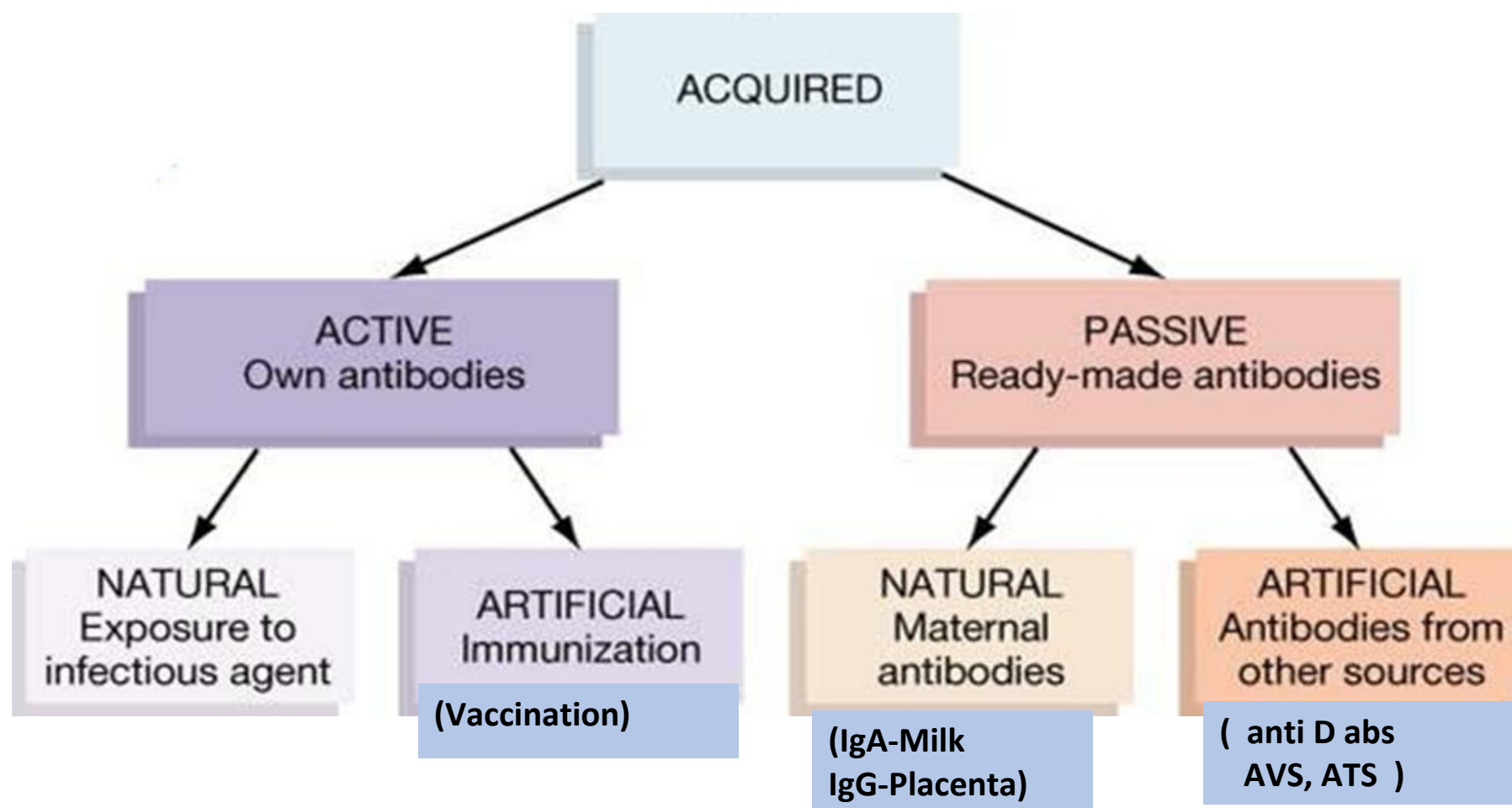
### ACTIVE IMMUNITY

Direct response by production of antibodies or activated T cells, to unknown pathogen (abs & act T-cells).

### PASSIVE IMMUNITY

It is an immune response which involves antibodies obtained from outside the body.

# Acquired Immunity-Active and Passive Immunity



## Unwanted effects of Immunity

### **Related to Humoral Immunity:**

Allergy or Immediate Hypersensitivity Reaction  
Auto-immune diseases  
Myeloma

### **Related to Cellular Immunity:**

Delayed Hypersensitivity Reaction  
Auto-immune diseases  
Rejection of Transplanted tissues



# AIDS

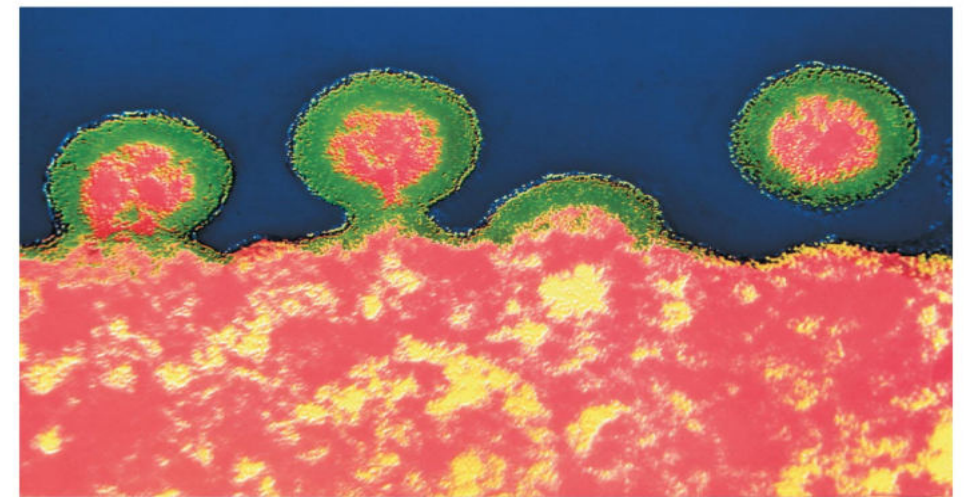
AIDS (Acquired Immune Deficiency Syndrome) is caused by an infection by the HIV (Human Immunodeficiency Virus), and Discovered in 1983.

It attacks and destroys **T-helper cells**.

Some drugs can slow down HIV reproduction, but no cure exists yet. Prevention is still the best 'cure'

The virus fools and forces  $T_H$ -cells to make more viruses, killing the T-cells when the viral replication become excessive.

The cause of death is not the HIV infection itself but since it cripples immune system and with immune system shut down, common diseases that immune system normally could defeat, become life-threatening.



(b) HIV emerging from a helper T cell

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## Self Assessment

Activated  $T_H1$  cells secrete .....

TH2 cells secrete .....and interact primarily with B cells.

.....Small signalling proteins hormone-like molecules acting in paracrine way – secreted by number of cells mainly of the immune system

Thank you

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