CONCEPT: FUNCTIONS OF T LYMPHOCYTES

Functions of Cytotoxic T Cells (T_C)

●*Recall:* **T_C Cells** target infected host cells presenting _____-*cellular* pathogens on MHC I & induce apoptosis.

● T_C Cells can distinguish between *uninfected* & *infected* host cells by what is presented on the MHC I molecules.

□ **Uninfected cells:** present *nonimmunogenic* _____-made peptides (does NOT elicit immune response).

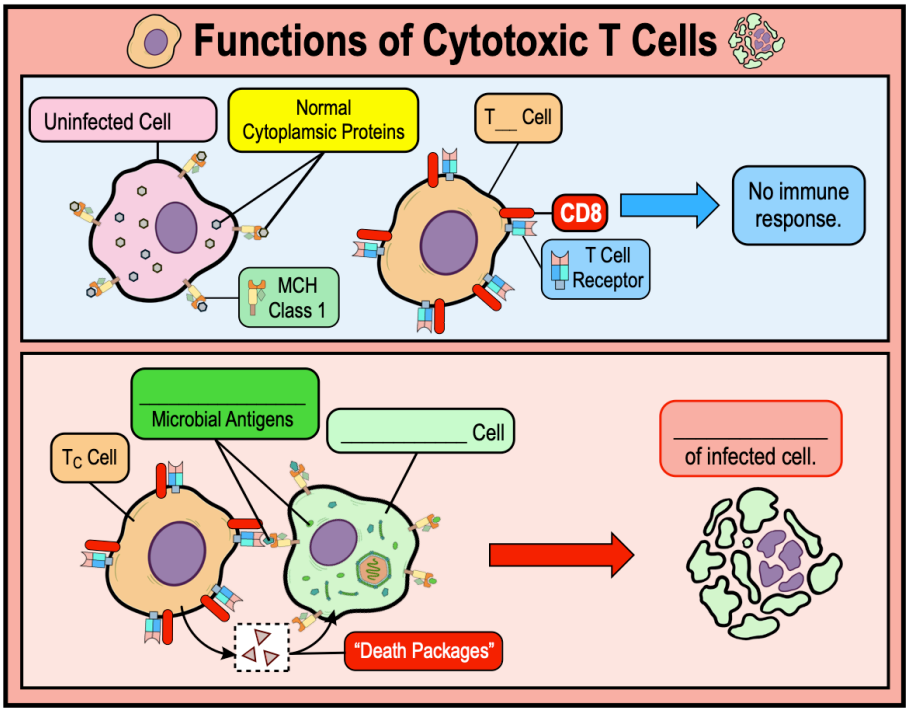
□ **Infected cells:** present _____ microbial *antigens* (do elicit immune response).

● When T_C cell binds an infected cell, it releases proteases & *perforin* (creates _____ in the infected cell).

□ Proteases enter infected cell via pores & _____ cellular proteins, inducing *apoptosis*.

□ Apoptosis is a controlled way of killing infected cells *without* exposing pathogens to nearby healthy cells.

●T_C cells release *cytokines* to neighboring cells activating macrophages & increase antigen presentation on dendritic cells.



PRACTICE: Which statement is FALSE about cytotoxic T cells?

a) They stimulate B cells.

b) They destroy virus-infected cells.

c) They recognize MHC I bound antigens on APCs.

d) They induce apoptosis in infected cells.

PRACTICE: Tc cells recognize epitopes only when the latter are held by

a) MHC proteins. b) B cells. c) Interleukin-2. d) Granzyme.

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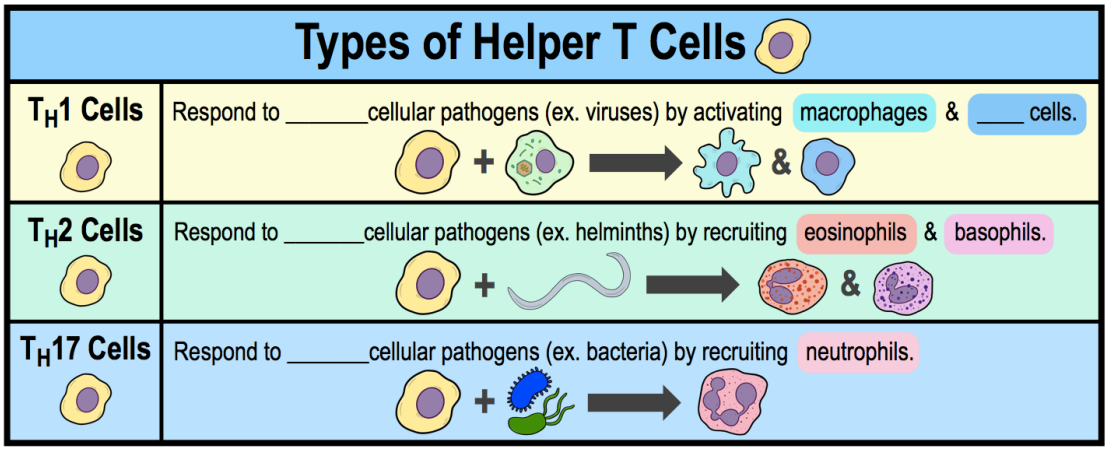
Types of Helper T Cells (T_H)

●Depending on signals provided by a dendritic cell, naive T_H cells differentiate into one of many effector T_H cell subtypes.

□ Each subtype of effector T_H cells produce different *cytokines* that control an immune response.



●For our lesson, we will consider functions of ALL T_H cell types as a group.

Functions of Helper T Cells (T_H): Activation of Macrophages

●*Recall:* Naive T_H cells are activated by *dendritic cells* via antigen presentation.

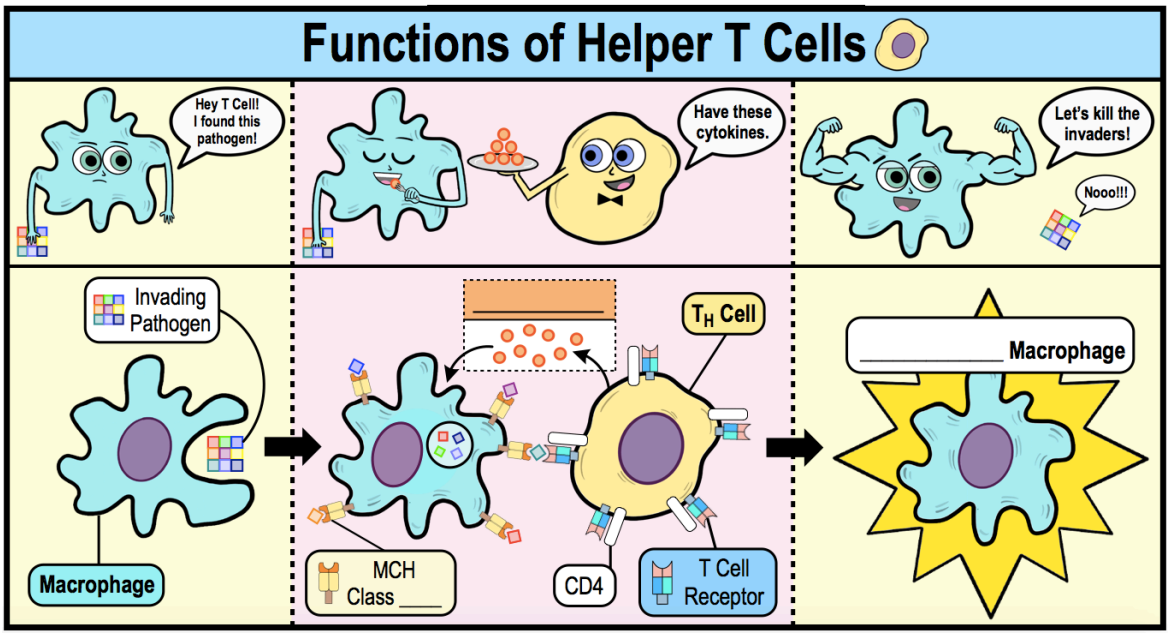
□ **T_H cells** make cytokines to *help* stimulate & activate immune cells (ex. macrophages & naive T_C & B cells).

●Macrophages routinely engulf, degrade, & process invading pathogens to present them as antigens on MHC ____.

●Effector T_H cells bind antigens presented on MHC II & produce cytokines that _____ the macrophage.

□ Stimulated macrophages *increase* production of lysozymes & antimicrobials to destroy invaders more effectively.

□ T_H cells can also release additional cytokines that activate *nearby* _____ cells as well.



CONCEPT: FUNCTIONS OF T LYMPHOCYTES

PRACTICE: Why are cytokines important signals for cell-mediated immunity?

a) Cell-mediated immunity requires immune cells to communicate to perform most efficiently.
b) Cytokines are signals that allow immune cells to communicate.
c) Effector cells, like CD4 cells, use cytokines to activate other immune cells.
d) Cytokines signal to specific immune cells to increase their destructive properties and destroy pathogens.
e) A and B.
f) C and D.
g) All of the above.

PRACTICE: T_____ cells assist in the functions of certain B cells and other T cells.

a) sensitized.
b) cytotoxic.
c) helper.
d) natural killer.

PRACTICE: Which type of helper T cells are involved in fighting extracellular pathogens?

a) T_H1.
b) T_H2.
c) T_H17.
d) A and B.
e) B and C.
f) All types of helper T cells help fight extracellular pathogens.