CONCEPT: ACTIVATION OF T LYMPHOCYTES

●*Recall:* APCs, such as dendritic cells, have _____ MHC class I & II and can activate either a naive T_C or T_H cells.

□ Activated T cells proliferate & differentiate into either *effector* T cells or *memory* T cells.

●If a dendritic cell presents a _____ antigen on an MHC, it will produce *co-stimulatory molecules* on its surface.

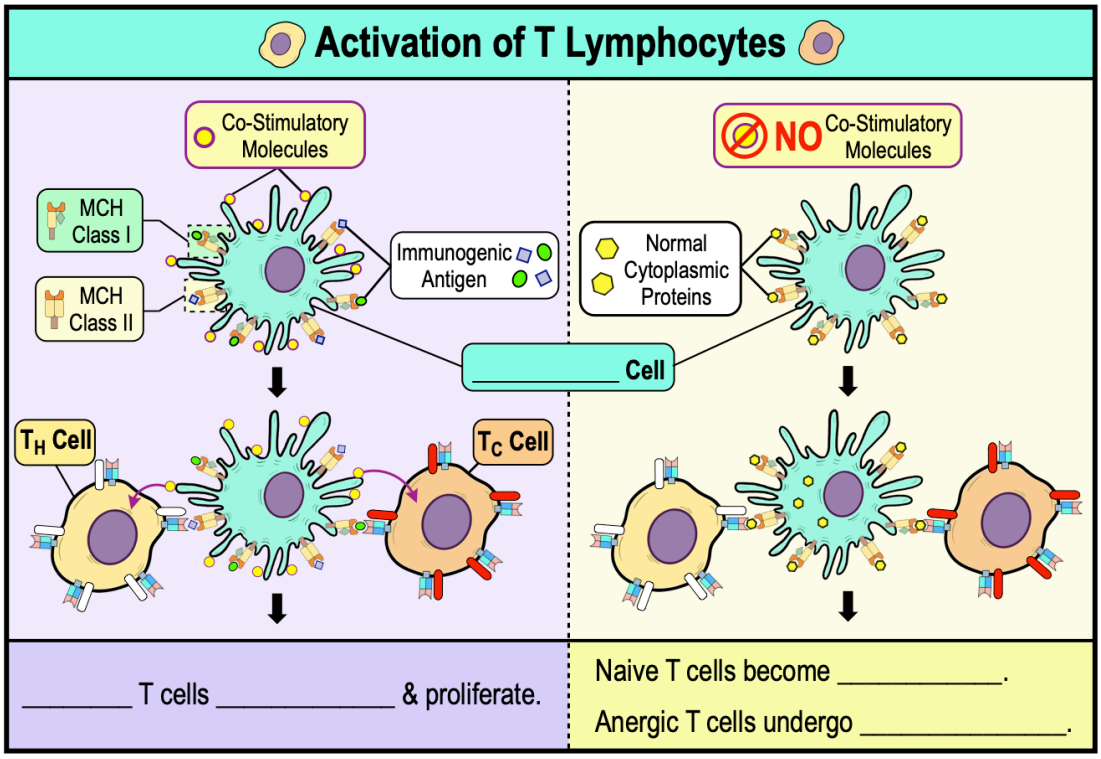
□ _____**-stimulatory molecules:** communicate the *danger/significance* of an antigen to the naive T cell.

□ Naive T cells are only activated by dendritic cells that present *harmful* antigens & co-stimulatory molecules.

●If a dendritic cell presents a _____ antigen on an MHC, it will _____ produce *co-stimulatory molecules*.

□ If co-stimulatory molecules are NOT produced, the naive T cell is NOT activated & becomes _____.

□ **Anergic:** when a cell becomes _____*-responsive* & undergoes apoptosis (no response to *harmless* antigens).



PRACTICE: Antigen presenting cells, including dendritic cells in lymph nodes, are observed to bind T cells on their surfaces. If the dendritic cell is presenting harmful antigens on its surface and creating co-stimulatory molecules, what will happen to the T cells that bind to the dendritic cell?

a) The naive T cells that bind the dendritic cell will activate and form effector T cells.
b) The cytotoxic T cells which bind the dendritic cell will signal the dendritic cell to undergo apoptosis.
c) The anergic T cells which bind the dendritic cell will undergo apoptosis.
d) The helper T cells that bind the dendritic cell will deactivate and become naive T cells.

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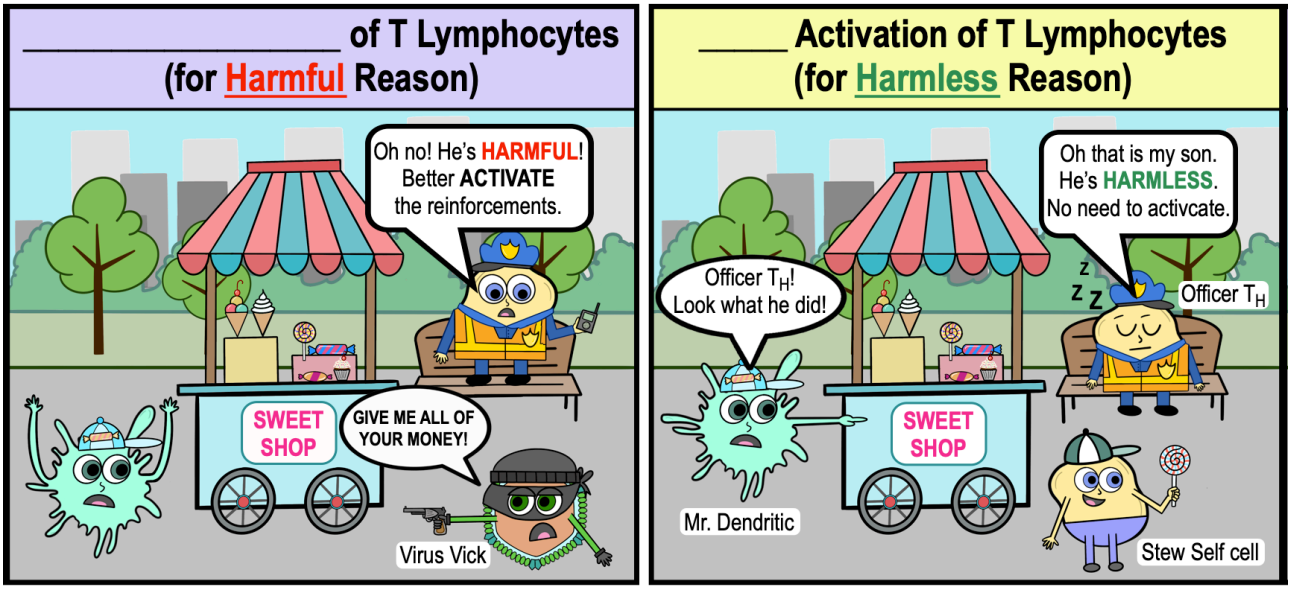
Comic Strip for T Cell Activation

●Here is a fun way to remember when T cells become activated by _____ cells.



PRACTICE: The role of dendritic cells is to:

a) Activate B cells via antigen presentation.
b) Present antigens on MHC I only.
c) Activate the complement system classical pathway.
d) Perform phagocytosis.
e) Activate T helper & T cytotoxic cells via MHC I & II.

PRACTICE: Before T cells become activated, they require an antigen encounter. Naive T cells are shown to express L-selectin which aids in binding to high endothelial cells expressing L-selectin ligand in regions where they are most likely to encounter an antigen. In which of the following locations are these high endothelial cells most likely to be located?

a) Bone marrow.
b) Capillaries.
c) Lymph nodes.
d) Heart.