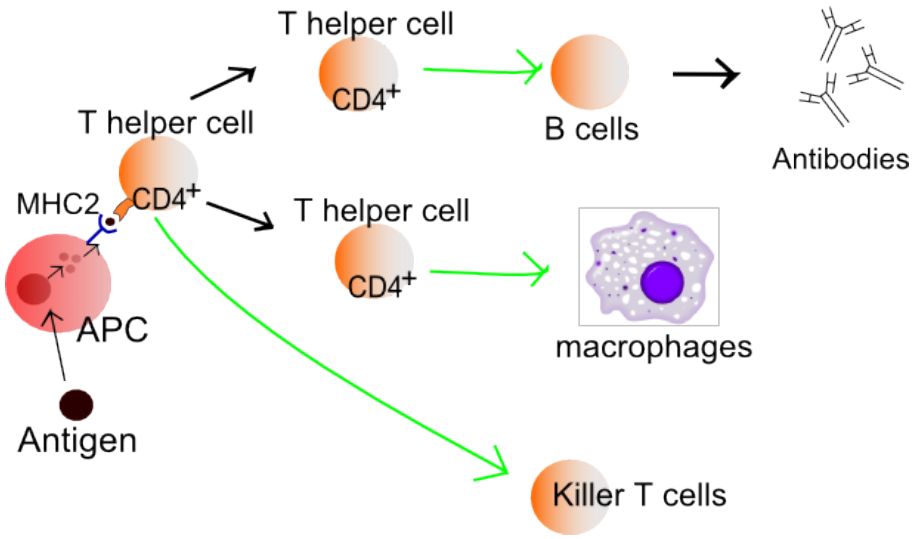
CONCEPT: T CELLS

- **T cells** are a main immune system cell used to target and kill pathogens
  - □ **Antigen presenting cells (APC)** which present antigens to T cells, are required for T cell activation
    - Ex: Dendritic cells
    - *T cell receptors* must directly contact APC with antigen
      - Also undergo *V(D)J* recombination to recognize different antigens
  - □ T cells are _____ in the thymus
    - Naïve T cells come in contact with APCs with antigens in the thymus
    - To be activated the T cell must come in contact with:
      - The antigen
      - Co-stimulatory molecules
      - Cell-cell adhesion molecules
    - If all three do not contact then this will lead to T cell inactivation or death

EXAMPLE:



● There are three _____ of T cells

□ **Cytotoxic T cells (T_c)** are responsible for directly killing cells that come in contact with an intracellular pathogen

- Recognize antigen presented on surface of infected cells (binds via T cell receptor)

- Induces the infected cell to kill itself

- *Perfornin*: forms pores or *Fas ligand*: stimulates apoptosis

□ **Helper T cells (T_h)** are responsible for stimulating the responses of other cells

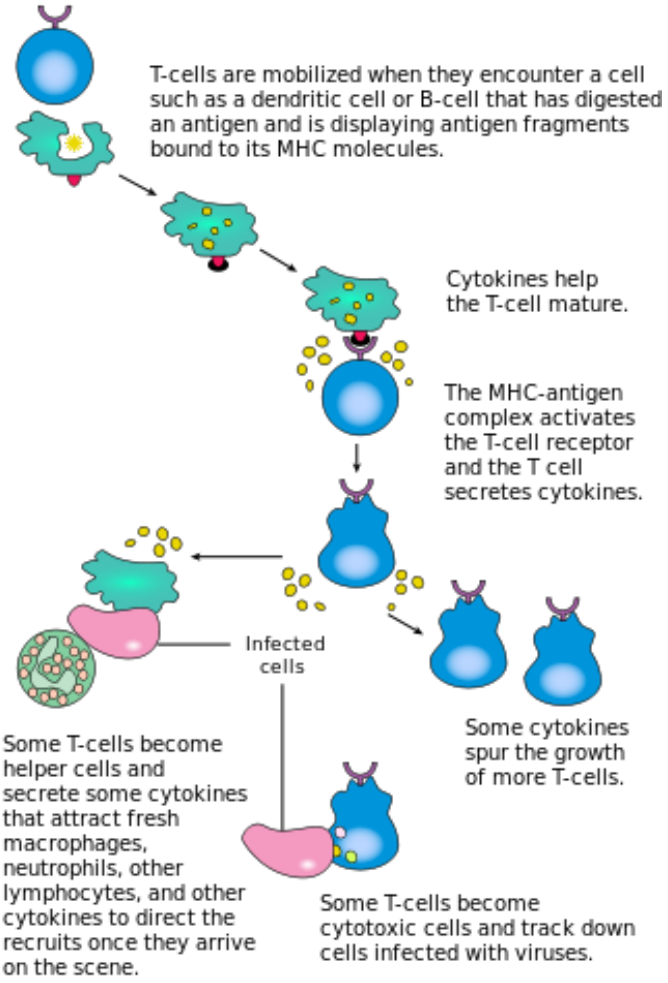
- Activates other cells like B cells, macrophages, dendritic cells

- To activate, T_h cells release or express co-stimulatory molecules to support activation

□ **Regulatory T cells** are responsible for suppressing the activity of other T cells

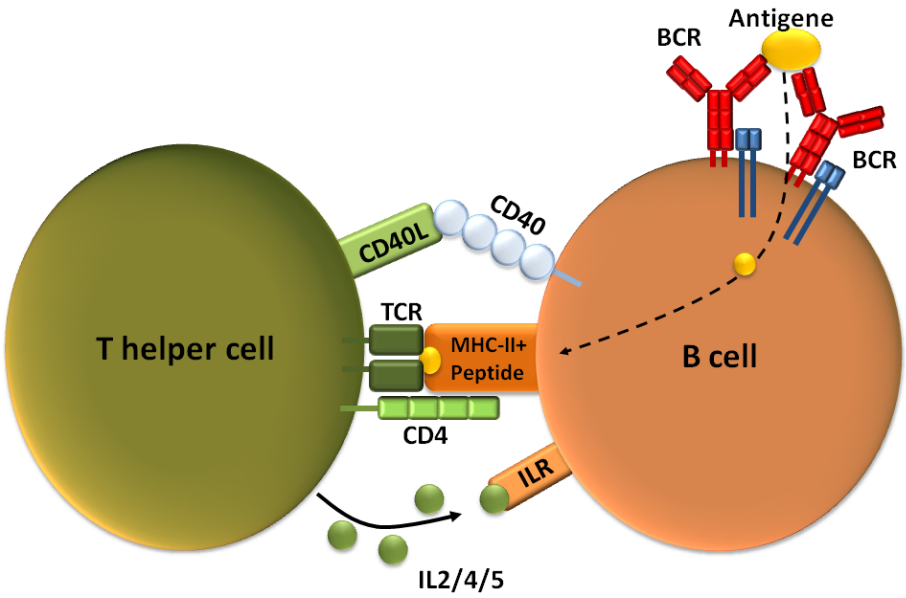
- Suppresses activity of other cells and self-reactivity of other cells

EXAMPLE:



- There are two very important accessory molecules that all T cells contain
    - □ **CD8** is found on cytotoxic T cells
        - Binds to Class I MHC molecules
    - □ **CD4** is found on helper T and regulatory T cells
        - Binds to Class II MHC molecules
    - □ These accessory receptors are requires to stabilize the binding and activation of T cells

EXAMPLE:



PRACTICE:

1. Cytotoxic T cells are responsible for which of the following responses?
    a. Suppressing other T cells
    b. Activating B cells
    c. Killing other infected cells
    d. Activating antigen presenting cells

2. Which of the following cell types is responsible for suppressing the activity of T cells?
    a. Antigen presenting cells
    b. Cytotoxic T cells
    c. Helper T cells
    d. Regulatory T cells

3. CD4 molecules are found on which of the following cell types?
    a. Antigen presenting cells
    b. Cytotoxic T cells
    c. Helper T cells
    d. Regulatory T cells