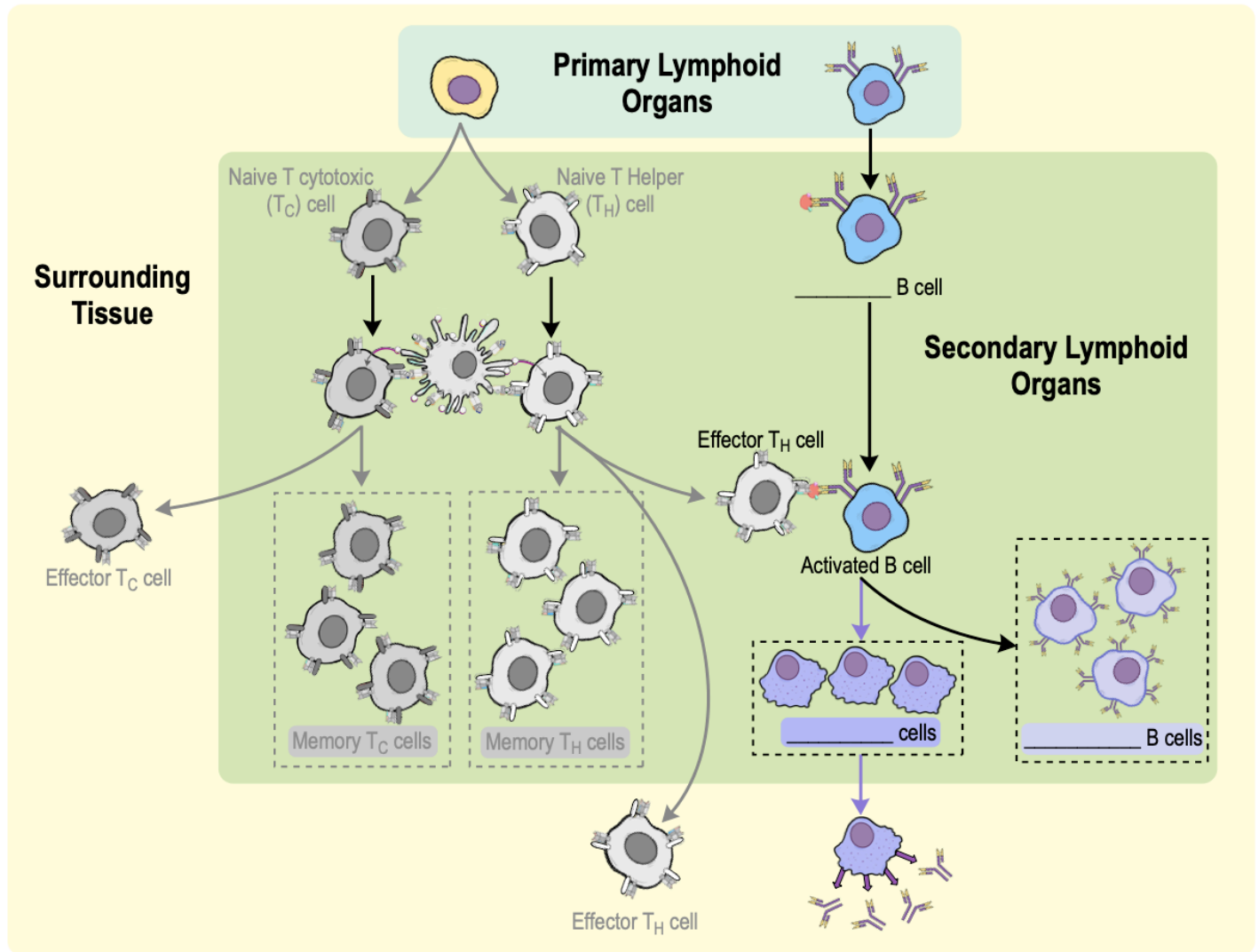


CONCEPT: INTRODUCTION TO B LYMPHOCYTES

- **Recall: Humoral Immunity:** targets & destroys *extracellular* (outside host cell) pathogens using ____ cells & *antibodies*.
 - Dendritic cells activate naive T_H cells which then go on to _____ B cells.



PRACTICE: Match the correct form of adaptive immunity to the scenarios below.

A. Cell-Mediated Immunity.

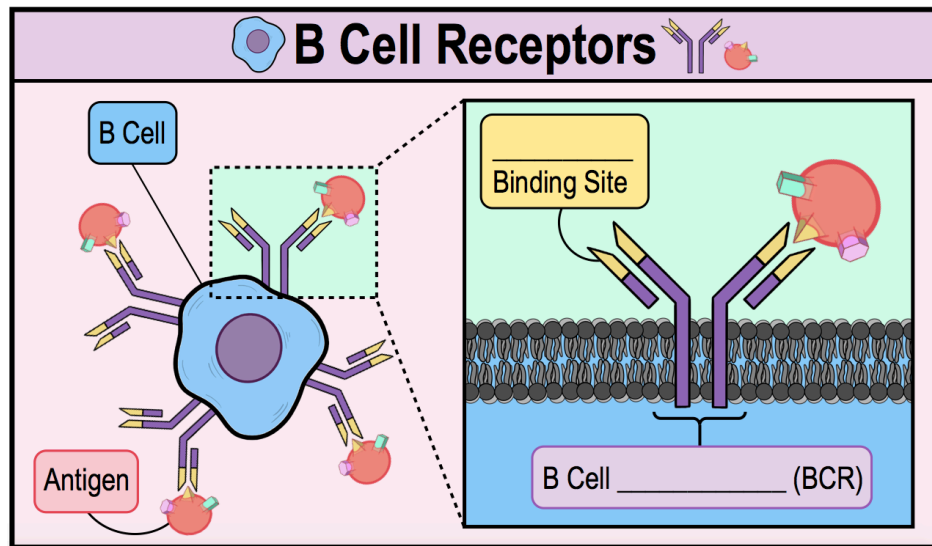
B. Humoral Immunity

- ____ 1. A macrophage acting as an APC is activated by a CD4 effector cell.
- ____ 2. A naive B cell is activated after binding an antigen and differentiates into a plasma cell.
- ____ 3. Responds to exogenous antigens.
- ____ 4. Responds to endogenous antigens.
- ____ 5. A liver cell infected with a virus undergoes apoptosis when signaled by a CD8 effector cell.

CONCEPT: INTRODUCTION TO B LYMPHOCYTES

B cell Receptors

- **Recall:** ____-cells: develop in **B**one marrow, have *B-Cell Receptors* in their membrane, & are associated with antibodies.
- **B-Cell Receptors** (____s): receptors allowing B-cells to recognize & “attack” *extracellular* pathogens.
- “_____” antigen binds to BCR & is processed & presented by the cell for activation by T_H cells.
- BCRs are practically membrane-embedded _____ with similar overall structure.
- BCRs of a B cell are almost _____ to the antibodies it eventually secretes.



PRACTICE: What is the difference between a TCR and a BCR?

- TCRs must be presented an antigen on an MHC molecule from an APC.
- BCRs must be presented an antigen on an MHC molecule from an APC.
- TCRs mimic the structure of antibodies and are essentially the same.
- BCRs are composed of amino acid chains & TCRs are composed of various carbohydrates.
- TCRs are composed of amino acid chains & BCRs are composed of various carbohydrates.

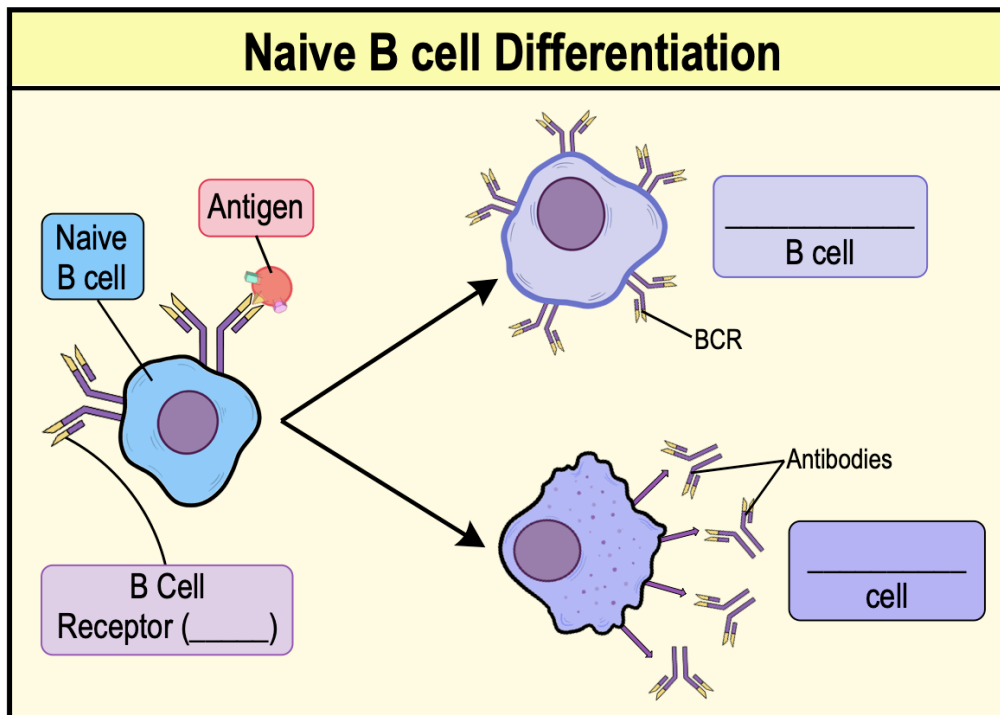
PRACTICE: A naive B cell is activated when:

- The B cell's BCR binds to an endogenous antigen presented by an APC.
- The B cell is told to differentiate into a plasma cell or memory B cell by a $CD4$ effector cell.
- The B cell's BCR binds to a “free” antigen that is not bound to an APC.
- When A and B occur.
- When B and C occur.

CONCEPT: INTRODUCTION TO B LYMPHOCYTES

Naive B cells Become Effector (Plasma) Cells & Memory Cells

- Before a B cell encounters a “free” antigen, it exists in an _____ form called a **naive B cell**.
 - Upon encountering a free antigen & then presenting it on MHC II, naive B cells are bound & activated by T_H cells.
- Activated B cells proliferate (*multiply*) & differentiate (*change phenotype*) to become **effector** or **memory** B cells.
 - **Effector (Plasma) B cells:** short-lived cells making _____ to immediately respond to 1st infection.
 - **Memory B cells:** long-lived cells that “remember” the antigen & make antibodies *faster* in future infections.



PRACTICE: Antibodies are made by:

- a) Red blood cells. b) Plasma cells. c) Dendritic cells. d) Helper T cells.

PRACTICE: In which of the following sites in the body can B cells be found?

- a) Lymph nodes.
b) Spleen.
c) Red bone marrow.
d) Intestinal wall.
e) All of the above.

CONCEPT: INTRODUCTION TO B LYMPHOCYTES

PRACTICE: The antibody-secreting progeny of an activated B cell are called:

- a) Antibodies.
- b) Sensitized T cells.
- c) Activated macrophages.
- d) Plasma cells.

PRACTICE: Which of the following are properties of B cells?

- a) Naive B cells, like naive T cells, can differentiate into effector and memory B cells once activated.
- b) Effector B cells when activated secrete antibodies which fight a novel infection.
- c) Memory B cells when activated secrete antibodies which fight subsequent infections more effectively.
- d) To become activated, a naive B cell must present an immunogenic antigen to an effector CD4 cell.
- e) All are properties of B cells.