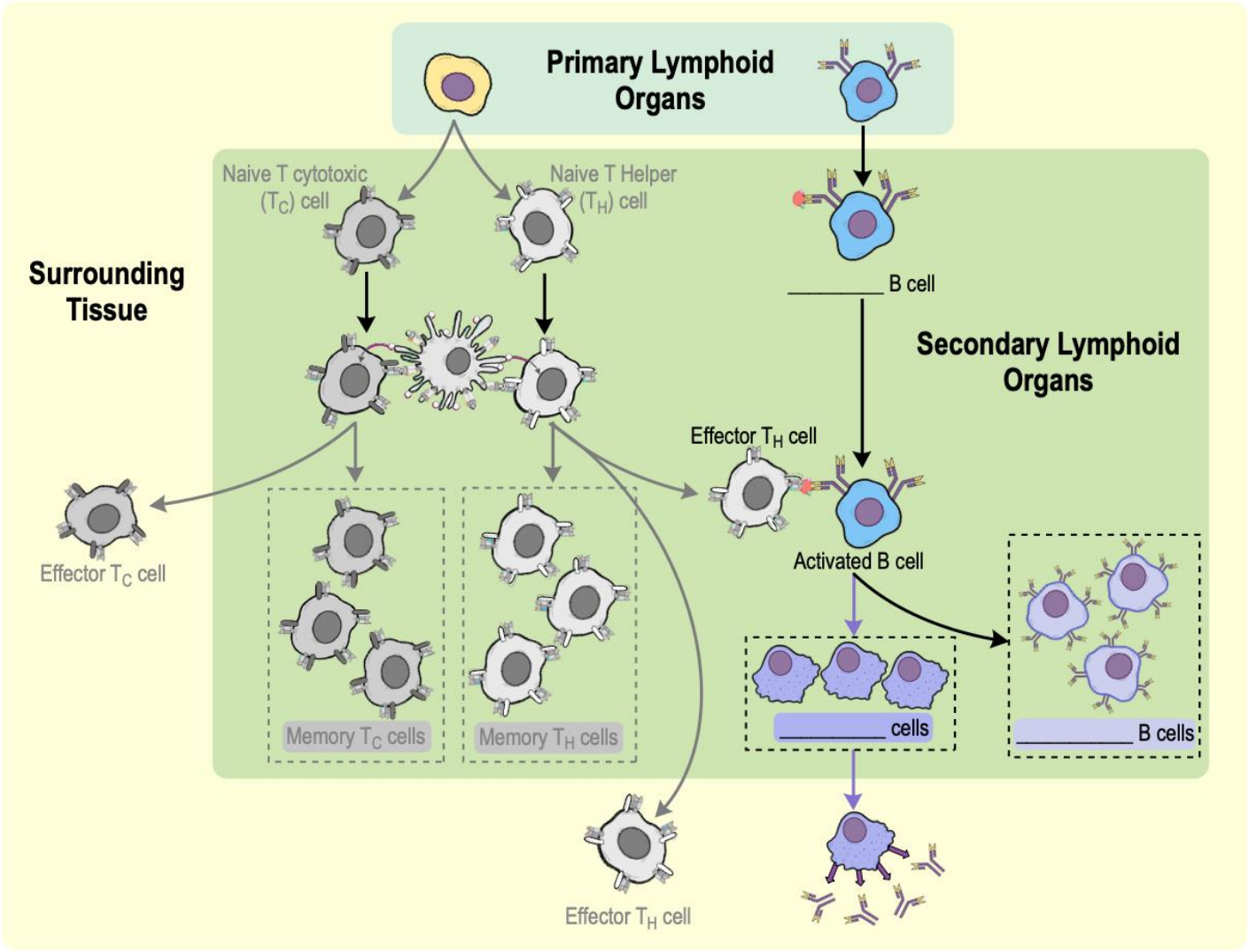
CONCEPT: INTRODUCTION TO B LYMPHOCYTES

●*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.

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B cell Receptors

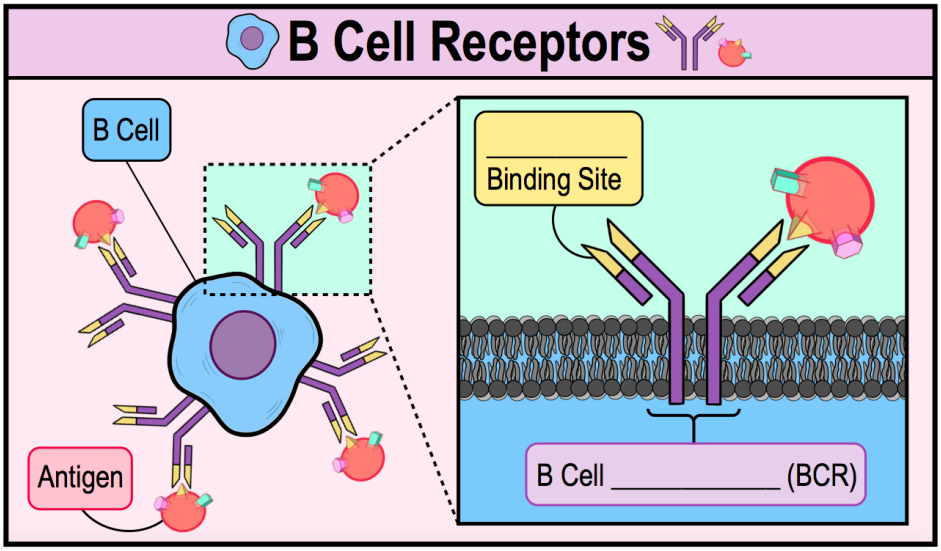
●*Recall:* ____**-cells:** develop in **B**one marrow, have *B-Cell Receptors* in their membrane, & are associated with antibodies.

□ **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?

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

PRACTICE: A naive B cell is activated when:

a) The B cell's BCR binds to an endogenous antigen presented by an APC.
b) The B cell is told to differentiate into a plasma cell or memory B cell by a CD4 effector cell.
c) The B cell's BCR binds to a "free" antigen that is not bound to an APC.
d) When A and B occur.
e) When B and C occur.

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

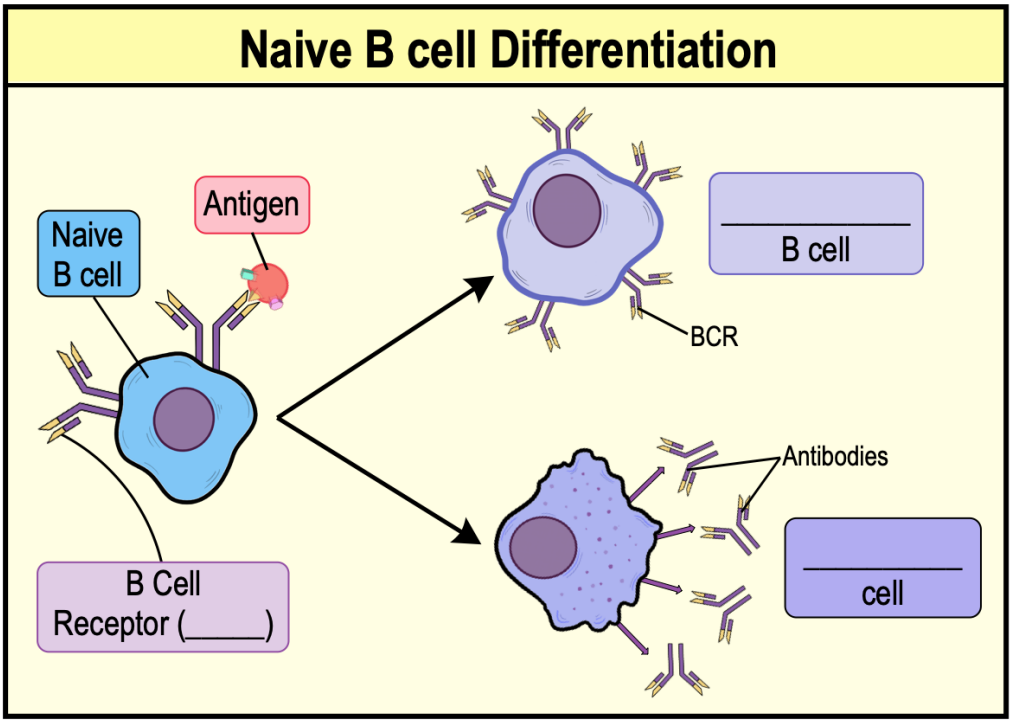
●Before a B cell encounters a "free" antigen, it exists in an _____ form called a ***naive B cell***.

□ 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.

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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.