CONCEPT: T DEPENDENT & T INDEPENDENT ANTIGENS

●The mechanism of B-cell activation depends on the type of antigen it *encounters*:

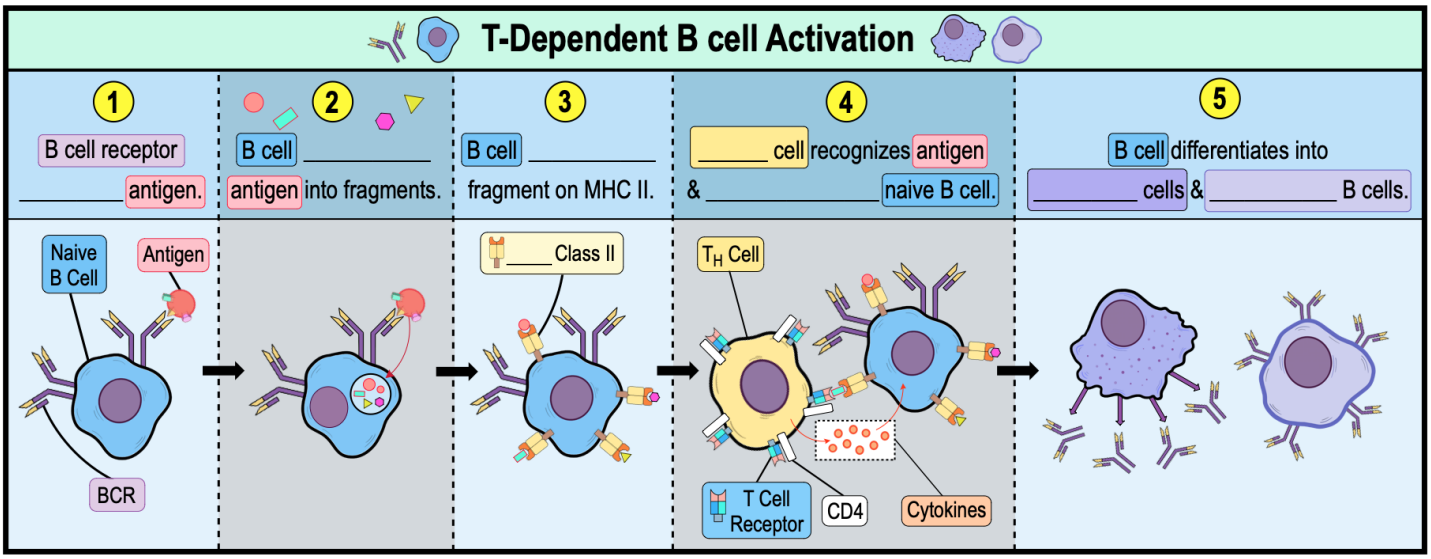
1) T-Dependent Antigens: antigens that _____ on (require) T_H cells for naive B cell activation.

2) T-Independent Antigens: antigens that activate naive B-cells *independent* of (_____) T_H cells.

B cell Activation by T Dependent Antigens

●*Recall:* Naive B cells can be activated by T_H cells.

●Activation of a naive B cell via a T-dependent antigen occurs in a series of _____ steps:



PRACTICE: Which of the following is a step required for activation of a B cell by a T-dependent antigen?

a) The antigen is presented on MHC class I proteins of the T cell.

b) The antigen binds to the BCR of a naive B cell.

c) The antigen is presented on MHC class II proteins of the B cell.

d) T_H cell recognizes the antigen as a pathogen and triggers apoptosis in the B cell.

e) T_H cell recognizes the antigen as a pathogen and activates the B cell causing the B cell to secrete antibodies.

f) B, C, & E.

g) A, B & E.

PRACTICE: T-dependent antigens can stimulate B cells to become activated but require _____ assistance.

a) Interleukin.

b) Cytokine.

c) Interferon.

d) Antibody.

CONCEPT: T DEPENDENT & T INDEPENDENT ANTIGENS

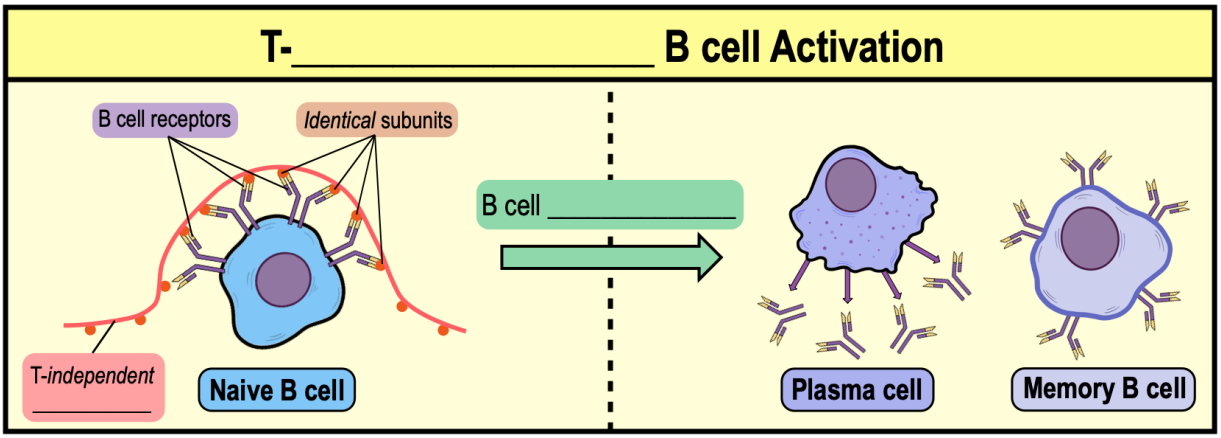
B cell Activation by T Independent Antigens

●*Recall:* T independent antigens can activate naive B-cells *independent* of (_____) T_H cells.

□ They are typically polysaccharides with multiple, closely spaced, _____ repeating subunits.

□ Do _____ initiate an immune response in young children, making kids *more* susceptible to some pathogens.

□ T independent antigens are _____ as common as T dependent antigens.



PRACTICE: T-independent antigens:

a) Interact with MHC I molecules.

b) Require the involvement of T cells.

c) Include pathogen associated polysaccharides.

d) Are usually pathogen associated nucleic acids.

PRACTICE: Lipopolysaccharide (LPS) is an endotoxin found on the surface of gram-negative bacteria. LPS can cause the body to enter septic shock and result in multi-system organ failure. Because of its severe effects, it is important that the immune cells react quickly to LPS. LPS is an antigen that can directly trigger antibody secretion once it comes in contact with a B cell. LPS is what kind of antigen?

a) T-independent antigen.

b) Direct antigen.

c) T-dependent antigen.

d) B-independent antigen.