CONCEPT: CLONAL SELECTION

●Each *individual* B & T cell has many identical BCRs/TCRs that only allows it to respond to _____ very specific antigen.

□ *Populations* of many different B & T cells can recognize & respond to a _____ range of many different antigens.

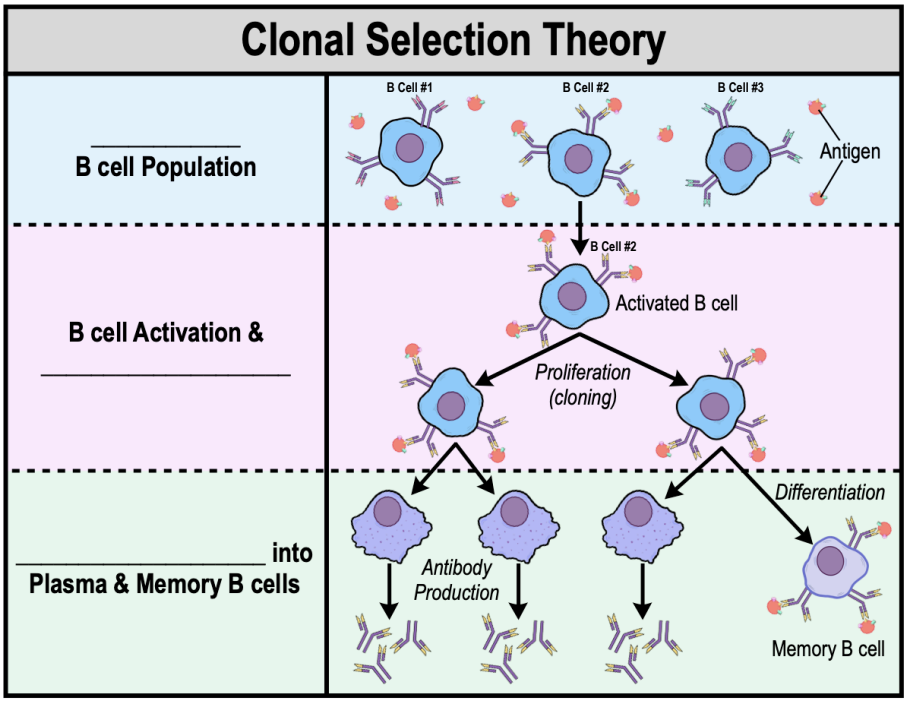
●How does our adaptive immune system ensure proliferation of *only* B & T cells that *appropriately* respond to an infection?

●**Clonal Selection Theory:** upon infection, _____ B & T cells in a mixed population are *selected* to make *clones.*

□ Only the B & T cells that _____ the antigen are selected to proliferate & create an army of *clones*.

□ B & T cells that do NOT bind the antigen are _____ selected to proliferate.

EXAMPLE: Clonal selection of specific B cells in a mixed B cell population in response to a specific antigen.



PRACTICE: Which of the following statements is FALSE?

a) Each B cell has BCRs that bind to a single antigen.

b) The cell type that secretes antibodies is called a plasma cell.

c) A BCR allows naive B cells to detect an antigen.

d) All naive B cells that are close in proximity to an antigen begin to differentiate.

PRACTICE: Clonal selection:

a) Implies that each individual lymphocyte produces a single antibody.

b) Describes how the adaptive immune system can produce millions of different antibodies.

c) Depends on an antibody recognizing a specific epitope.

d) Is based on random naive B cells proliferating and differentiating.

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PRACTICE: The clonal selection theory states that:

a) Self-reacting T cells are destroyed in the bone marrow.
b) B cells will only proliferate during an infection if their BCRs successfully bind to the pathogen.
c) Antibody structure changes as it encounters an antigen for higher specificity binding.
d) Each T cell produces many different types of antibodies.

PRACTICE: Which of the following is NOT an organ where clonal selection occurs?

a) Spleen.
b) Lymph nodes.
c) Bone marrow.
d) Mucosa associated lymphoid tissue.

PRACTICE: All of the following are postulates of the clonal selection theory EXCEPT:

a) Each B lymphocyte bears a single type of receptor with a unique specificity.
b) BCR occupation is required for cell activation.
c) Differentiated cells derived from an activated B lymphocyte bear receptors of similar specificity as the parent cell.
d) B lymphocytes bearing receptors for self-molecules are destroyed at an early stage.
e) All are postulates of the clonal selection theory.